Archaeological Services & Consultancy Ltd

ARCHAEOLOGICAL EVALUATION
BRITISH TIMKEN WORKS
MAIN ROAD, DUSTON
NORTHAMPTON

on behalf of Bellway Homes

A. Hancock BSc PgDip

September 2005

ASC: 699/DBT/4

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Site Data

ASC site code:	DBT	*Project no:*	699
County:	Northamptonshire		
Village/Town:	Duston		
Civil Parish:	Northampton unparished		
NGR (to 8 figs):	SP 725 640		
Extent of site:	28.6ha		
Present land use:	Former factory site		
Planning proposal:	Redevelopment for employment, residential and		
Local Planning Authority:	Northampton Borough Council		
Planning application ref/date:	N/2004/200		
Client:	Bellway Homes Oak House, Woodlands Business Park Breckland, Linford Wood Milton Keynes MK14 6EY		
Contact name:	Kim Webster (Planning manager)		
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Internal Quality Check

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CONTENTS

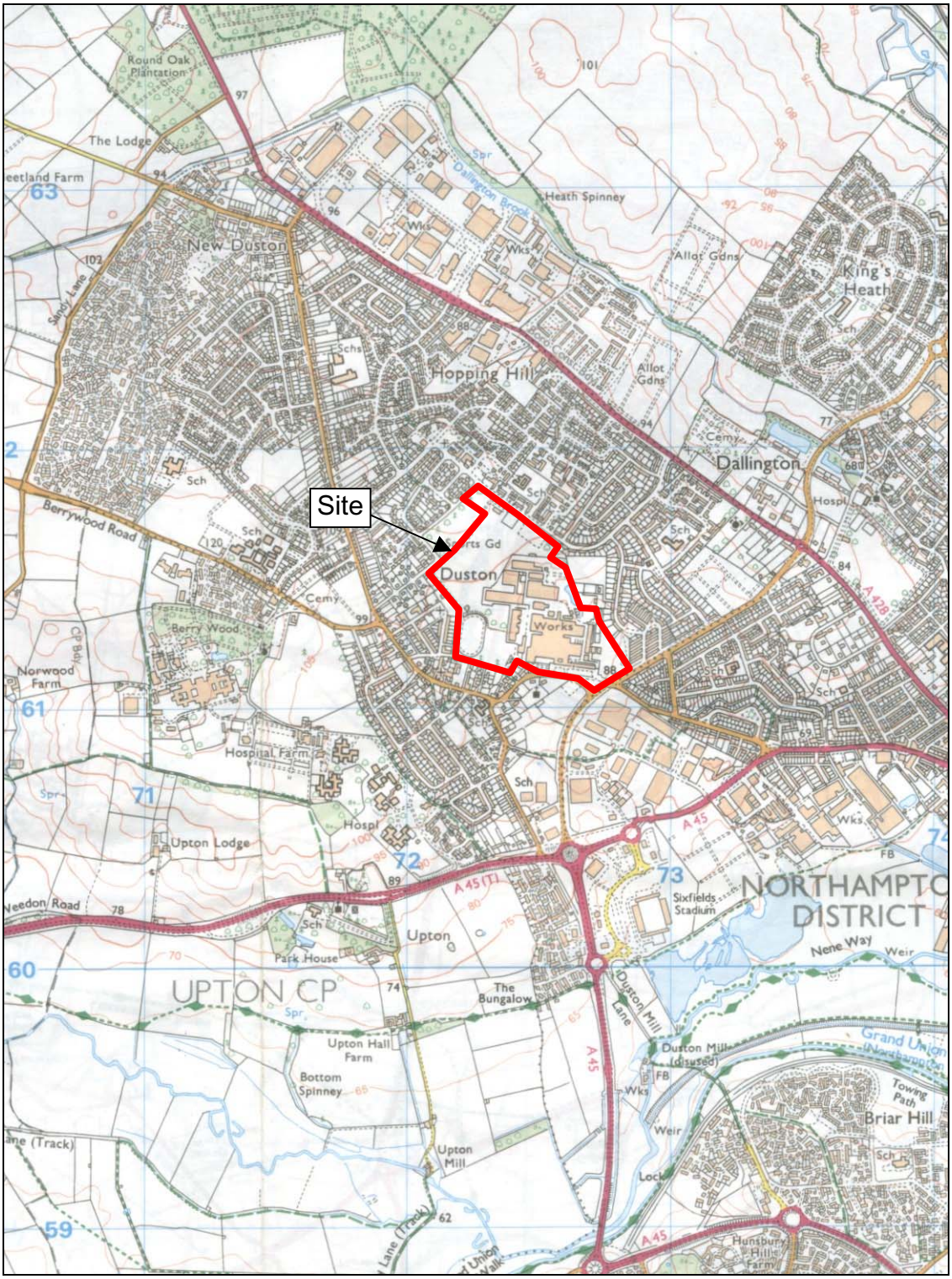

Figure 1: General location *(scale 1:25,000)*

Summary

During August 2005 an archaeological evaluation by means of geophysical survey and trial trenching was undertaken on the site of the former British Timken Works, Duston, Northamptonshire. No significant archaeological remains pre dating modern were identified.

1. Introduction

1.1 In August 2005 *Archaeological Services and Consultancy Ltd* (ASC) carried out geophysical survey and trial trenching at the former British Timken Works, Duston, Northampton. (NGR SP 725 614: Fig. 1). The evaluation formed a second stage of archaeological work which followed building recording prior to demolition of the factory (Fell, 2005). The work was commissioned by *Bellway Homes*, and was carried out according to a project design prepared by ASC (Semmelman, 2005), and a brief (Flitcroft 2005) prepared on behalf of the local planning authority (LPA), *Northampton Borough Council* by their archaeological advisor (AA), *Northamptonshire County Council*. The relevant planning application reference is N/2004/200.

1.2 *Proposed Development*

Outline planning permission was granted for the redevelopment of the site for residential, employment and recreational use in 2004. Final planning of the development will take place after the archaeological potential of the site has been established.

1.3 *Setting*

1.3.1 *Location & Description*

The site covered approximately 28.6 hectares and is situated in Duston, Northampton. It comprised a roughly triangular plot of land, bounded by Main Road to the south and Cotswold Avenue to the north (Fig. 1). The western side was overlooked by houses on Javelin Close and the east side was adjacent to former sports facilities at the rear of Mendip Road.

1.3.2 *Buildings, Access, Services Etc*

The central part of the site was formerly occupied by factory buildings; although these were largely demolished at the time of the archaeological evaluation. A few ancillary structures were extant to the north, although a tennis court, archery butt, bowling green and social club occupied most of the northern part of the site. A showground and athletics track formed the western part of the site and metalled roads and parking areas occupied the east and south sides. Vehicular access to the site was through security gates off Main Road. Examination of site service plans showed that drains, water and a gas main ran through the proposed areas of geophysical survey and trial trenching.

1.3.3 *Topography & Geology*

The site rose from *c.*91m AOD at the south to *c.*94m at the north. The natural topography and soils of the site appeared extensively modified by construction of the factory and landscaping of the playing fields and showground. Extensive basements were excavated under many of the factory buildings and the show ground was raised *c.*3m above the sports field atop an artificial terrace in the western part of the site.

The natural soils on the site have not been mapped, but elsewhere in Duston they comprise the *Banbury Association,* namely well drained fine and coarse loamy soils (Soils Survey 1983, 544). The underlying geology consists of Great Oolitic Limestone to the north, Northampton Sand and Ironstone to the south and Estuarine Clay and Limestone in the centre.

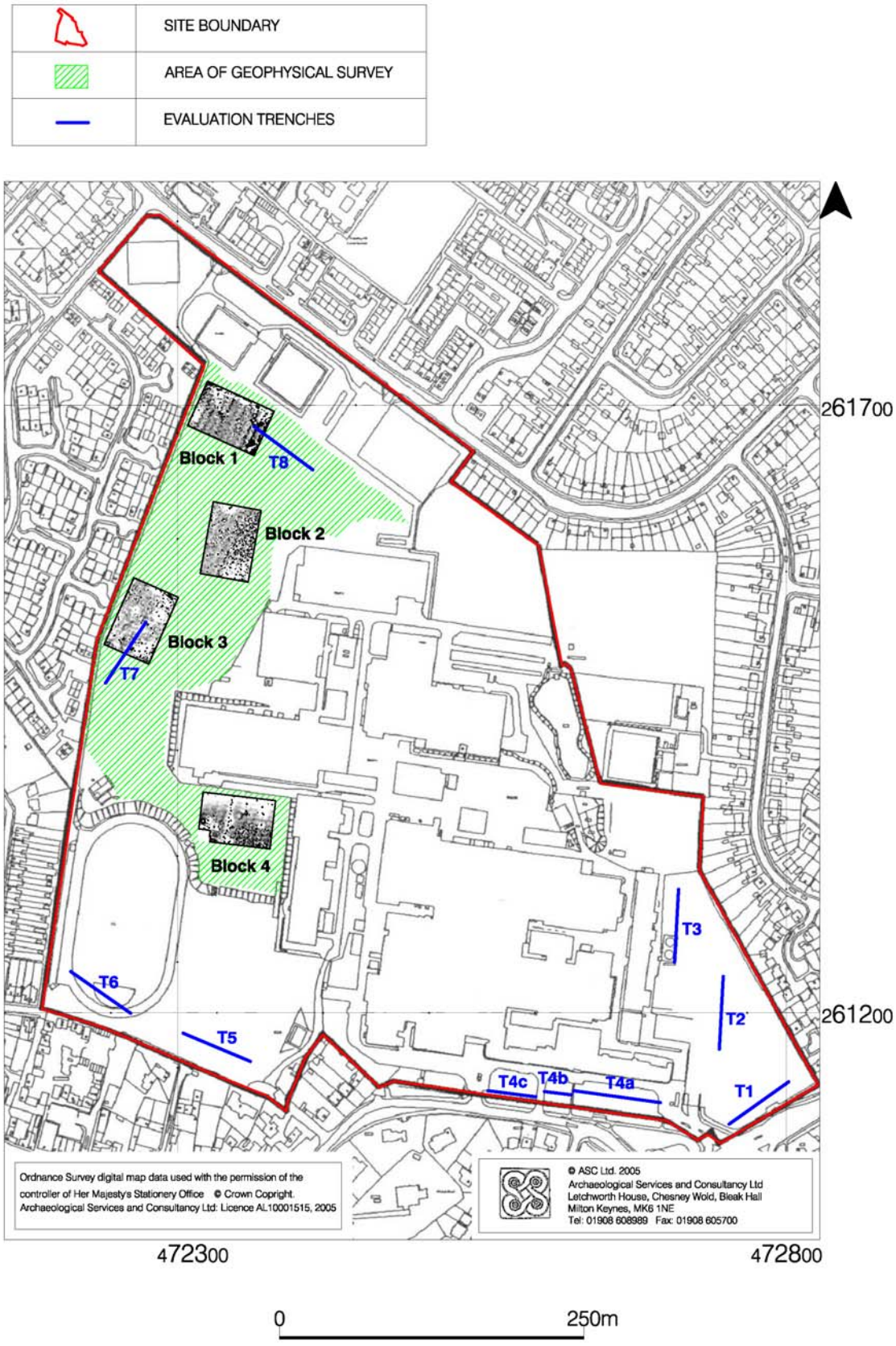

Figure 2: Site plan showing location of geophysical survey and evaluation trenches

2. Aims & Methods

2.1 *Aims*

In line with the requirements of the Brief (Section 2), the aims of the evaluation were to:

- establish presence / absence and the degree to which buried remains survive in the open areas east, west and north west of the former factory buildings
- confirm the nature of surviving archaeological remains and their date(s) of creation/deposition
- provide sufficient information on the site's surviving archaeology to allow a proper assessment to be made of the implications of future development proposals and to enable informed decisions to be made on its future management and/or effective mitigation of development impact

2.2 *Standards*

The work conformed to the requirements of the *Brief*, to the relevant sections of the Institute of Archaeologists' *Standard & Guidance Notes* (IFA 2001) and *Code of Conduct* (IFA 2000a), Northamptonshire County Council's *Policy and Guidance for Archaeological Fieldwork Projects in Northamptonshire,* to current English Heritage guidelines (EH 1991; EH 1995), and to the relevant sections of ASC's own *Operations Manual.*

2.3 *Methods*

The work was carried out according to the brief (Sections 3.2 and 3.3) and ASC's Project Design (Section 2.3) which required:

- A magnetometer scan of 4.86 hectares and subsequent detailed survey of 0.97 hectares
- Trenching in the geophysics area with the strategy informed by results of the magnetometer survey and agreed by the AA.
- Two trenches (1 x 50m, 1 x 200m) on the southern boundary of the site. Three trenches (50m) in the former tarmac surfaced car part at the southeast corner of the site. Two trenches (30m or 50m) in the north side of the site on the former tennis courts and north car park

2.4 *Constraints*

The presence of a foul sewer resulted in an adjustment to the orientation and location of Trench 3. It was not possible to strip the western 60m of trench 4 as this part of the trench traversed the site entrance and compound. It was also necessary to divide Trench 4 into three parts (4a, 4b and 4c) after discovery of shallowly buried thick concrete plinths. Excavating plant could not gain access to the tennis court and north car park and the two proposed trenches in this area were not excavated.

3. Archaeological & Historical Background

Duston has been the subject of a number of archaeological and historical studies (eg Golby 1991; Young 2002), and is an area of considerable archaeological interest.

3.1 *Prehistoric* *(before 600BC)*

It is probable that the Duston area was exploited by earlier prehistoric populations; a number of Paleolithic (SMR 4934) and Mesolithic implements have been found in the area.

3.2 *Iron Age* *(600BC-AD43)*

It is probable that the core of the subsequent Roman settlement was first established in the late Iron Age (early-middle 1st century).

3.3 *Roman* *(AD43-c.450)*

It is thought that Duston was one of the more significant undefended nucleated settlements in Northamptonshire. The fragmentary information available from antiquarian notes and 1970s rescue archaeology indicates that the settlement expanded from its Late Iron Age core and developed as a series of enclosures occupied by timber and later stone buildings on either side of at least two roads. Two cemeteries as well as individual graves are recorded and evidence suggests that the settlement may have survived until the mid 4th century

Little definite detail is known of the settlement, but traces of a road were recorded during the excavation of a sewer trench in the centre of the village (SMR 2395). It is thought that the road ran in a north westerly direction close to the south side of the site. Roman artefacts including coins, tiles and a fibula have also been recovered (SMR 7066 & 7214).

3.4 *Saxon* *(c.450-1066)*

No archaeological features or artefacts dating from the Saxon period have been recovered. However, a settlement was present by the late Saxon period as it is mentioned in the Domesday Survey of 1086 (Morris 1979).

3.5 *Medieval* *(1066-1500)*

The Domesday Survey notes that the village of Dustone was held by William Peverel and consisted of a mill, thirteen villagers, three small holders and three freemen. The oldest part of the village is centred on the church of St. Luke, which dates from the 12th century (Pevsner & Cherry 1973, 358).

3.6 *Post-Medieval* *(1500-1900)*

Duston was inclosed in 1777 (Foster & Garratt 1993) and the field boundaries, which survived until the development of the factory in the mid 20th century were probably laid out at that time.

Ironstone was quarried in Duston in the second half of the 19th century (Sutherland 2003, 22) and several limestone quarries were opened to the north and the west of the village. A narrow gauge railway line served a substantial quarry north west of Brants Lane and a short length of rails survived on the present site until 2005. Clay extraction occurred within the site bounds for use at the Watkin Brickworks (Fell 2005, 14).

3.7 *Modern* *(1900-present)*

The local ironstone quarrying industry gradually declined during the first decade of the 20th century and extraction ceased in 1909 (Sutherland 2003, 22).

In 1941 the nursery and market garden belonging to Yarde's Seed Merchants and part of the garden of Cheltenham House was purchased by the War Office for British Timken, which had become the principal supplier of roller bearings to the British military authorities. Construction works began in 1941 and the factory was producing bearings within 6 months.

After the war ownership of the factory was handed to British Timken and the site was extensively developed to provide sporting and social facilities as well as production and administrative buildings. Between 1945 and 1959 the factory floor space trebled in size and the work force rose from 2,000 to c.4,700 employees. The company continued to expand in subsequent decades although the importance formerly placed on social aspects, such as the renowned Timken Show, waned. The last show was held in 1978 after which a significant area of the showground was sold for housing.

Despite continued investment until the late 1990s, the closure of the Duston Timken works was announced in 2001. The factory closed in 2003 and the buildings began to be demolished in March 2005.

4. Results: Geophysical Survey

4.1 **"**Iron spike" responses (Appendix 2) were identified distributed across all of the survey area. These are indicative of ferrous material in the topsoil or subsoil and, although archaeological artefacts may cause them, they are more often caused by modern material. Unless there is strong supporting evidence to the contrary, for example if they are located close to areas of obvious archaeological activity, they are assumed to be non-archaeological in origin.

4.2 ***Magnetic Scanning***

4.1.1 The survey area (Fig 2) was magnetically scanned along east-west aligned transects at 12m intervals using Geoscan FM36 and Bartington Grad 601-1 fluxgate-gradiometers.

4.1.2 The magnetic scanning located a number of services, areas of made ground and illustrated that the magnetic background was heavily disturbed.

4.1.3 The strength of magnetic disturbance rendered discovery of any weaker "archaeological" magnetic anomalies improbable and no such anomalies were observed. Detailed survey blocks were randomly located over the area to further examine it for magnetic anomalies suggesting the presence of subsurface archaeological features.

4.3 ***Detailed Survey: Block 1*** **(Figs 3 and 4)**

4.3.1 Discrete areas of magnetic disturbance are evident distributed across the block. These areas indicate that pieces of modern ferrous detritus and / or accumulations of modern thermoremanent material have been incorporated into the topsoil.

4.3.2 A strongly dipolar northwest-southeast aligned dipolar anomaly runs parallel with the northern limit of the survey block. This anomaly defines the position of a power cable.

4.3.3 A strongly dipolar southwest-northeast aligned linear dipolar anomaly is visible at the southeastern corner of the survey block. This anomaly defines the position of a small pipe.

4.3.4 Parallel north northeast-south southwest aligned positive linear trends are visible distributed throughout the survey block. These linear trends are characteristic of ploughed out ridge and furrow or more modern agricultural activity.

4.3.5 Discrete areas of magnetic enhancement are visible at the northwestern corner of the survey block. The level of modern disturbance suggests that these anomalies are caused by relatively modern burning or intrusive activity although an archaeological origin is not discounted.

4.4 *Detailed Survey: Block 2* (Figs 3 and 4)

4.4.1 Discrete areas of magnetic disturbance are evident distributed across the block. These areas indicate that pieces of modern ferrous detritus and / or accumulations of modern thermoremanent material have been incorporated into the topsoil.

4.4.2 A large area of heavily disturbed magnetic background is identified. This type of magnetic response is often caused by mixing of material with different magnetic properties in areas of made ground.

4.5 *Detailed Survey: Block 3* (Figs 3 and 4)

4.5.1 Discrete areas of magnetic disturbance are evident distributed across the block. These areas indicate that pieces of modern ferrous detritus and / or accumulations of modern thermoremanent material have been incorporated into the topsoil.

4.5.2 Toward the southern boundary of the survey block are three discrete areas of magnetic enhancement. The level of modern disturbance suggests that these anomalies are caused by relatively modern intrusive activity although an archaeological origin is not discounted.

4.6 *Detailed Survey: Block 4* (Figs 5 and 6)

4.6.1 Discrete areas of magnetic disturbance are evident distributed across the block. These areas indicate that pieces of modern ferrous detritus and / or accumulations of modern thermoremanent material have been incorporated into the topsoil.

4.6.2 A north northeast-south southwest aligned linear arrangement of strongly dipolar discrete anomalies is identified. The southern end of these anomalies is adjacent to concrete steps cut into the artificial terrace. It is probable that these anomalies define the position of modern fence posts or a path.

4.3.6 Three discrete areas of magnetic enhancement are identified. The level of modern disturbance suggests that these anomalies are caused by relatively modern burning or intrusive activity although an archaeological origin is not discounted.

Figure 3: Greyscale gradiometer data, Blocks, 1, 2 and 3

Figure 4: Interpretation of gradiometer data, Blocks, 1, 2 and 3

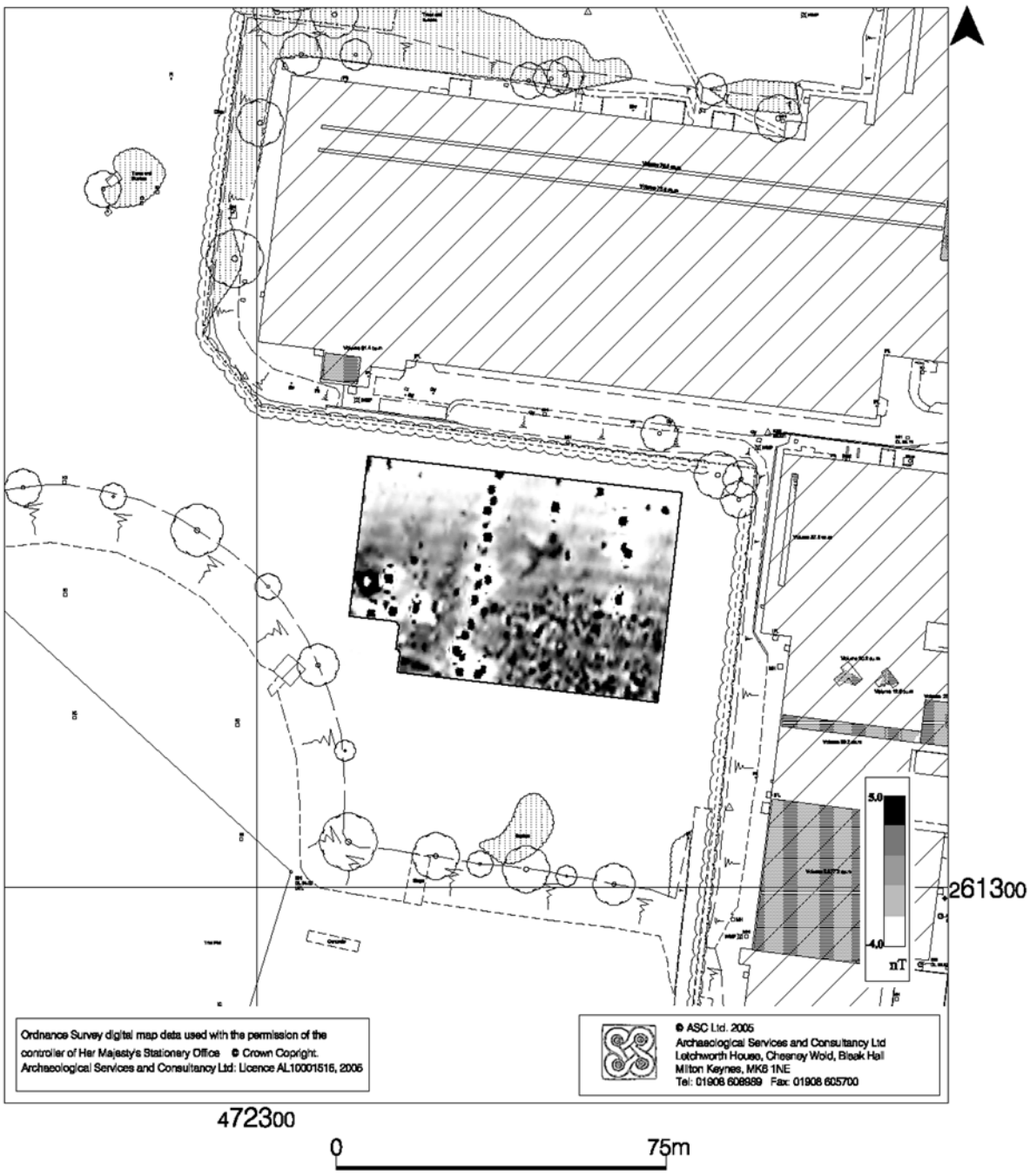

Figure 5: Greyscale gradiometer data, Block, 4

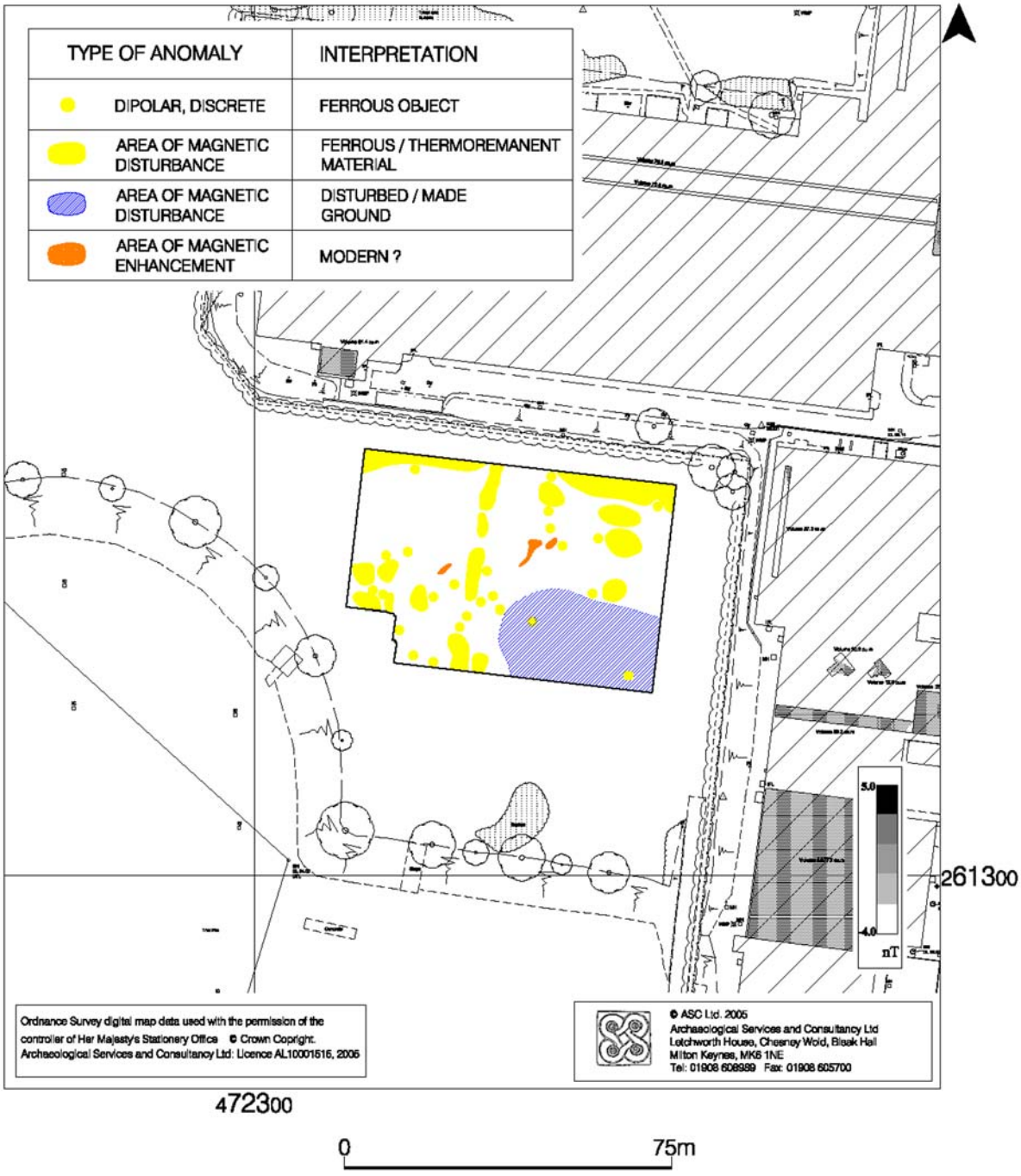

Figure 6: Interpretation gradiometer data, Block, 4

5. Results: Trial Trenching

5.1 *General*

Seven 50m x 1.8m and one 140m x 1.8m trial trenches were machine stripped to natural or the level of archaeological features under close archaeological supervision. Trenches 1 – 3 and 5 were excavated at the locations proposed in the project design. Trench 4 was subdivided into 3 parts due to the presence of services and thick concrete plinths. Trenches 6 and 8 were excavated due to a loss of length in trench 4 and failure to open the two trenches proposed for the northern area of the site (see section 2.4). Trench 7 was excavated to target a geophysical anomaly. The evaluation findings are summarised below and detailed descriptions of the trenches are provided in Appendix 1.

5.2. *Trench 1*

Asphalt and hardcore were removed revealing a layer of clayey levelling material. A buried top and subsoil were extant beneath the levelling material and overlay the natural clayey sand drift. Cut into the natural were two sub-square postholes, one sub-circular posthole, one irregular posthole / pit and two northwest-southeast aligned gullies / ditches.

Sub-square postholes [105] and [109] (Plates 1 and 2) contained the partially rotted remains of timber posts; no dateable material was recovered from either. Sub-circular pit [107] (Plate 3) did not contain the remnants of a post although its fill was otherwise identical to that of [105] and [109]; no dateable material was recovered. The irregular posthole / pit [111] and the gully [113] (Plate 1) immediately southwest of it contained similar fills to the previously discussed features; 20th century glass and porcelain were recovered from both. The fill of gully / ditch [103] was paler (Plate 5), appearing more leached than that of the other features; no dateable material was recovered.

Spoil heaps and features were scanned with a metal detector; no pre-modern artefacts were recovered.

5.3 *Trench 2*

Asphalt and hardcore were removed revealing a buried top and subsoil which overlay natural clayey sand drift. Occasional areas of the natural matrix contained moderate sub-angular laminar limestone inclusions.

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.4 *Trench 3*

Asphalt and hardcore were removed revealing a layer of disturbed natural containing lenses of stained sand from which emanated a distinctive hydrocarbon odour. Further machining exposed the clayey sand natural which contained occasional irregular areas of staining where rooting had occurred.

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.4 *Trench 4a*

The thin top and subsoil were removed revealing the natural strata of frequent sub-angular ironstone clasts contained within a matrix of silty sand. The ironstone inclusions became less frequent towards the western end of the trench and the matrix changed to a sandy clay. Cut into the natural at the western end of the trench were three service trenches containing a mixed fill with fragmentary brick inclusions.

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.5 *Trench 4b*

A thin topsoil was removed revealing a layer of brick and concrete rubble which had been deposited above a top and subsoil formed on the natural sandy clay. Excavated into the natural was a rectangular geotechnical test pit (Test Pit 135, Merebrook Projects Ltd. 2004) that had been backfilled with a light brownish yellow clay.

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.6 *Trench 4c*

Topsoil and a relatively deep subsoil lay above the sandy clay natural drift. A square sectioned concrete conduit containing cabling was buried in the subsoil at the eastern end of the trench

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.7 *Trench 5*

Topsoil and a deep subsoil were removed revealing a light brownish yellow friable natural sand.

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.8 *Trench 6*

Topsoil underlain by areas of cinder and green athletic field matting overlay a deep subsoil developed above a light brownish yellow friable natural sand. A water pipe ran southwest – northeast across the centre of the trench

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.9 *Trench 7*

This trench was machined to proof the geophysics results and target an area of magnetic enhancement.

In the southern half of the trench, thin top / subsoil and a deep deposit of made ground overlay a thin layer of black silt. The black silt rested upon a mottled estuarine clay deposited in a channel eroded into the natural silty clay. In the northern half of the trench, top and subsoil were formed directly on the natural silty clay and areas of thinly bedded limestone were visible protruding from the natural.

Corresponding with the position of the targeted geophysics anomaly and cut into the natural at the northern end of the trench was a large pit [605] containing a uniform clayey silt fill (Plate 6). No dateable material was recovered from this feature. A northwest-southeast aligned ceramic field drain was cut into the natural at the northern end of the trench.

No other archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

5.10 *Trench 8*

Topsoil and subsoil were stripped revealing the natural clay drift. A power cable and two water pipes were shallowly buried in the subsoil. Northeast – southwest aligned ceramic field drains had been inserted into the natural drift. The spacing and direction of these drains corresponded with the parallel positive linear trends visible in geophysics Block 1.

No archaeological finds or features were observed. Spoil heaps were scanned with a metal detector; no pre-modern artefacts were recovered.

Plate 1: Posthole [105] in foreground with gully [113] and modern posthole / pit [111] behind.

Plate 2: Posthole [109]

Plate 3: Pit [107]

Plate 4: Modern posthole / pit [111]

Plate 5: Gully [103]

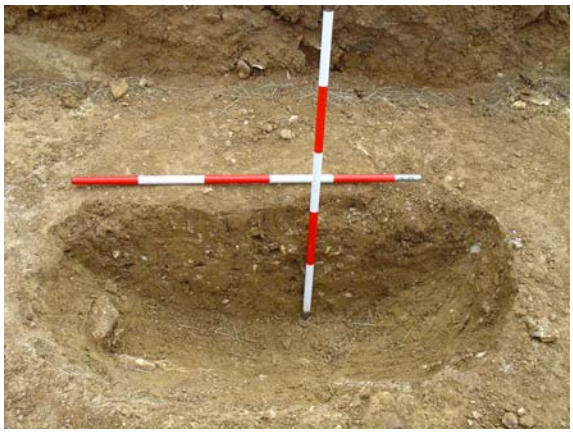

Plate 6: Pit [605]

6. Conclusions

6.1 The geophysical survey indicated that significant modern disturbance had occurred throughout the survey area and indicated that it had low archaeological potential. The survey identified the location of agriculturally derived anomalies subsequently confirmed by trench 8 as resulting from the presence of relatively modern ceramic field drains.

6.2 The geophysical survey identified a small number of anomalies possibly caused by cut and infilled archaeological features. One of these anomalies was targeted by evaluation trench 7 which revealed a large pit, unfortunately dating evidence was not present in its fill. The scale of modern disturbance evident in the geophysical data suggests that the pit may be relatively modern.

6.3 A thin layer of greyish black silt overlain by a thick layer of clayey made ground was present in the southern half of trench 7. The shells of aquatic snails were visible in this layer of silt and it may have accumulated at the bottom of a pond, which was infilled during the 20th century prior to construction of the showground.

6.4 The evaluation trenches illustrated that soils and subsoils around the periphery of the factory site remained largely unmodified and intact, or were buried under later deposits. The presence of a deep subsoil in trenches 5 and 6 showed that suggested landscaping of the southwestern part of the site (Fell, 2005: Semmelmann, 2005) did not occur or was much less aggressive than originally thought.

6.5 Six cut and infilled features were discovered in trench 1. This was the closest evaluation trench to the proposed route of a Roman road. The fills of five of these features were very similar; two of the five contained the rotting remnants of timber posts and a further two contained sherds of modern porcelain and glass. The fill of the sixth feature, a shallow gully located toward the western end of the trench, appeared more leached than the others, which suggested it may be older. However, its alignment was identical to that of one of the aforementioned features, another shallow gully, located *c.*5m to the northeast. The summarised evidence indicates that these features are relatively modern.

6.6 Evaluation trenches 4 (a-c), 5 and 6 where located adjacent to the southern boundary of the site and were archaeologically sterile. The negative results indicate that the site lies beyond the northern extent of the nearby Roman settlement and roads.

6.7 ***Confidence rating***

The confidence rating for recognition of archaeological deposits is high. The weather during fieldwork was fine and the differing strata were easily distinguished.

7. Acknowledgements

The writer is grateful to Bellway Homes for commissioning this project and for providing plant for the evaluation trenching, also to Mr T. P. Binns for carrying out the metal detecting. The project was monitored for the local authority by Myk Flitcroft, Northamptonshire HET and fieldwork was carried out by the author, Nigel Wilson HND AIFA and Nick Crank BSc AIFA. The project was managed by Bob Zeepvat BA MIFA, who also edited this document.

8. Archive

8.1 The project archive will comprise:

1. Brief
2. Project Design
3. Initial Report
4. Clients site plans
5. Site records
6. Site record drawings
7. List of photographs/slides
8. CDROM with copies of all digital files.

8.2 The archive from the evaluation along with archive material from the building recording will be deposited with Northampton Museum.

9. References

Standards & Specifications

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Appendix 1: Trench Summary Tables

Trench 1

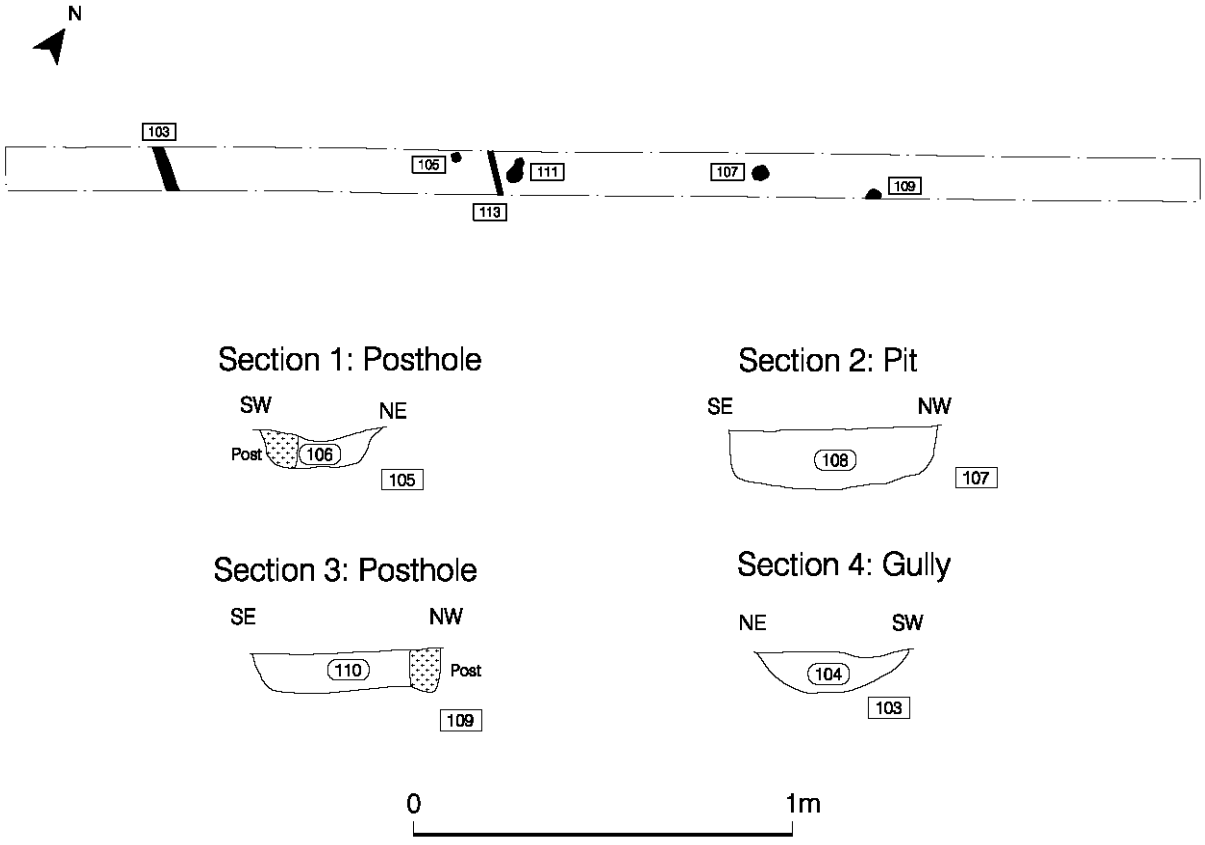
Max Dimensions					
Length	50 m	**Width**	1.8m	**Depth**	0.8m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
NE	SP 472802 261143	**SW**	472753 261108
Orientation		NE - SW	
Reason for Trench		Evaluation	

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
100	Layer	Asphalt over thin layer of hardcore. Car park surface	-	150	-
101	Layer	Mid orange clayey sand with moderate brick and concrete inclusions. Redeposited natural	-	300	150
102	Layer	Mid brown sandy loam with occasional subangular pebbles. Original topsoil subsequently buried by context 101.	-	350	450
103	Cut	Linear, parallel sides, moderate slope to sides, no discernible break to concave base. Above (115), below (101). Gully	-	-	-
104	Layer	Light brownish orange sandy silt. Fill of [103]. No finds.	-	110	800
105	Cut	Sub-square in plan, rounded corners, steep to vertical sides breaking sharply to flat base. Above (115), below (101). Posthole	-	-	-
106	Layer	Mid brownish grey sandy silt. No packing stones present but rotted remnant of timber post present on W side. Fill of [105]. No finds.	-	100	800
107	Cut	Sub-circular in plan. Near vertical sides with gradual break to slightly concave base. Above (115), below (101). Pit	-	-	-
108	Layer	Mid brownish grey sandy silt. No evidence of post or packing stones. Fill of [107] (same as [106]). No finds.	-	160	800
109	Cut	Sub-square in plan although runs in to baulk at south, rounded corners and steep to vertical sides breaking sharply to flat base. Above (115), below (101). Posthole.	-	-	-
110	Layer	Mid brownish grey sandy silt. No packing stones present but rotted remnant of timber post present on W side. Fill of [109]. Same as [106, 108]. No finds.	-	100	800
111	Cut	Irregular in plan. Irregular sides breaking gradually to irregular base. Above (115), below (101). Posthole / pit.	-	-	-
112	Layer	Light brownish orange sandy silt. Fill of [111]. Same as [106, 108, 110]. Modern porcelain and neck of glass bottle recovered.	-	150	800

113	Cut	Linear, parallel sides, moderate slope to sides, no discernible break to concave base. Above (115), below (101). Gully	-	-	-
114	Layer	Light brownish orange sandy silt. Fill of [111]. Same as [106, 108, 110, 112].Fill of [113]. Modern porcelain recovered.	-	100	800
115	Layer	Light brownish orange clayey sand, moderate sub rounded pebble inclusions. Natural.	-	-	800



Trench 2

Max Dimensions					
Length	50m	**Width**	1.8m	**Depth**	0.7m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
N	SP 472748 261229	**S**	472745 261170
Orientation	N - S		
Reason for Trench	Evaluation		

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
200	Layer	Asphalt over thin layer of hardcore (same as [100]). Car park surface	-	200	-
201	Layer	Mid brown sandy loam with occasional subangular pebbles. Original topsoil subsequently buried by context 200	-	500	200
202	Layer	Light brownish orange clayey sand, moderate sub rounded pebble inclusions and occasional subangular limestone clasts. Natural.	-	-	700

Trench 3

Max Dimensions					
Length	50m	**Width**	1.8m	**Depth**	0.55m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
N	SP 472711 261301	**S**	472708 261241
Orientation	N - S		
Reason for Trench	Evaluation		

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
300	Layer	Asphalt (same as [100]). Car park surface	-	100	-
301	Layer	Gravel hardcore	-	300	100

302	Layer	Mixed clay and clayey sand. Areas of mid greenish grey staining with hydrocarbon odour evident. Made / disturbed ground.	-	150	400
303	Layer	Light brownish orange clayey sand, moderate sub rounded pebble inclusions and frequent subangular limestone clasts. Natural.	-	-	550

Trench 4a

Max Dimensions					
Length	80m	**Width**	1.8m	**Depth**	0.4m
Levels					
Trench base north	N/a				
Trench top north	N/a				
Trench base south	N/a				
Trench top south	N/a				
NGR Co-ordinates					
E	SP 472696 261126	**W**	472753 261135		
Orientation	E - W				
Reason for Trench	Evaluation				

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
400a	Layer	Mid brown sandy loam. Topsoil	-	400	-
401a	Layer	Frequent subangular ironstone clasts in matrix of mid brownish orange silty sand changing to mid orangey brown sandy clay at western end of trench. Natural	-	-	400

Trench 4b

Max Dimensions					
Length	30m	**Width**	1.8m	**Depth**	0.7m
Levels					
Trench base north	N/a				
Trench top north	N/a				
Trench base south	N/a				
Trench top south	N/a				
NGR Co-ordinates					
E	SP 472623 261132	**W**	472601 261135		
Orientation	E – W				
Reason for Trench	Evaluation				

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
400b	Layer	Mid brown sandy loam. Topsoil	-	150	-
401b	Layer	Brick and concrete rubble. Made ground	-	200	150
402b	Layer	Mid brown sandy loam. Buried topsoil	-	350	350
403b	Layer	Mid orangey brown sandy clay. Natural	-	-	550

Trench 4c

Max Dimensions					
Length	30m	**Width**	1.8m	**Depth**	0.65m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
E	SP 472594 261130	**W**	472555 261135

Orientation	E - W
Reason for Trench	Evaluation

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
400c	Layer	Mid brown sandy loam. Topsoil	-	200	-
401c	Layer	Light orangey brown sandy silt. Subsoil	-	450	200
402c	Layer	Mid orangey brown sandy clay. Natural	-	-	650

Trench 5

Max Dimensions					
Length	50m	**Width**	1.8m	**Depth**	0.9m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
E	SP 472359 261160	**W**	472304 261183

Orientation	E - W
Reason for Trench	Evaluation

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
500	Layer	Mid brown sandy loam. Topsoil	-	350	-
501	Layer	Mid orangey brown sandy silt. Subsoil	-	550	350
502	Layer	Light brownish yellow fine sand. Natural	-	-	900

Trench 6

Max Dimensions					
Length	50m	**Width**	1.8m	**Depth**	1.1m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
SE	SP 472261 261199	**NW**	472212 261233

Orientation	SE - NW
Reason for Trench	Evaluation

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
600	Layer	Mid brown sandy loam. Topsoil	-	450	-
601	Lens	Areas of mid red cinder. Athletic area	-	50	450
602	Lens	Green matting. Athletic area	-	20	500
603	Layer	Mid orangey brown sandy silt. Subsoil	-	1100	450
604	Layer	Light brownish yellow fine sand. Natural	-	-	1100

Trench 7

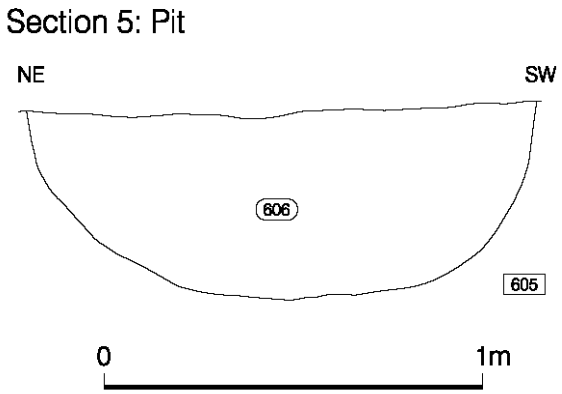
Max Dimensions					
Length	50m	**Width**	1.8m	**Depth**	1.3m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
NE	SP 472274 261521	**SW**	472240 261471

Orientation	NE - SW
Reason for Trench	Investigate geophysics anomaly

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
600	Layer	Dark brown sandy loam. Topsoil	-	450	-
601	Layer	Mid brownish grey clay. Moderate brick tile fragments. Made ground	-	800	450
602	Lens	Dark greyish black silt. Occasional angular brick fragment inclusions. Aquatic snail shells observed. Base of pond.	-	200	1100
603	Layer	Mid reddish brown clayey silt with occasional rounded flint and angular limestone pebble inclusions. No finds. Below (600). Fill of pit [604].	-	500	500
604	Cut	Sub-circular in plan (obscured by side of trench). Steep sides with gradual break to flat base. Above (606), filled by (603). Cut of pit.	-	-	-
605	Lens	Mid grey / blue clay with reddish brown mottled areas. Estuarine clay.	-	-	1300
606	Layer	Mid reddish brown sandy clay. Frequent rounded flint and limestone pebble inclusions. Thinly bedded limestone evident protruding from matrix in areas at north of trench. Natural	-	-	300 -1300



Trench 8

Max Dimensions					
Length	50m	**Width**	1.8m	**Depth**	0.8m

Levels	
Trench base north	N/a
Trench top north	N/a
Trench base south	N/a
Trench top south	N/a

NGR Co-ordinates			
NW	SP 472362 261682	**SE**	472411 261646
Orientation		NW - SE	
Reason for Trench		Evaluation	

Context	Type	Description and Interpretation	Max Width (mm)	Max Thckn (mm)	Depth BGL (mm)
800	Layer	Mid greyish brown sandy loam. Topsoil	-	250	-
801	Layer	Mid orangey brown sandy silt. Subsoil.	-	550	250
802	Layer	Mid orangey brown clay with moderate rounded limestone pebble inclusions. Natural	-	-	800

Appendix 2*:* **Magnetic Survey: Technical Information**

Magnetic Susceptibility and Soil Magnetism

Iron makes up about 6% of the Earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haematite. These minerals have a weak, measurable magnetic property termed ***magnetic susceptibility***. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms. These effects are often observable by measuring the magnetic susceptibility of the topsoil, which can enable identification of areas where human occupation or settlement has occurred by virtue of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently fills features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is a contrast between the magnetic susceptibility of deposits filling cut features, such as ditches or pits, and the magnetic susceptibility of the surrounding matrix, i.e topsoils, subsoils and rocks, into which these features have been cut that causes the most recognisable archaeological responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected. Less magnetic material such as masonry or plastic service pipes that intrude into the topsoil may give a negative magnetic response relative to the background level.

An alternative method of enhancement to the magnetic properties of soil or archaeological features is through sustained heating. This can lead to the detection of features such as hearths, kilns or burnt areas through thermoremanent magnetism.

Types of Magnetic Anomaly

In the majority of instances anomalies are termed ***'positive'***. This means that they have a positive magnetic value relative to the magnetic background on any given site. However some features can manifest themselves as ***'negative'*** anomalies that, conversely, means that the response is negative relative to the mean magnetic background. Such negative anomalies are often very faint and are commonly caused by modern, non-ferrous, features such as plastic water pipes. Infilled natural features may also appear as negative anomalies on some geologies.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies that are interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories which are used in the graphical interpretation of the magnetic data:

Isolated dipolar anomalies (iron spikes)
These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being present as a consequence of manuring.

Areas of magnetic disturbance

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. This type of anomaly is characterised by very strong, 'spiky' variations in the magnetic background. A modern origin is usually assumed unless there is other supporting information.

Linear trend

This is usually a weak or broad linear anomaly of unknown cause or date. An agricultural origin, either ploughing or land drains is a common cause.

Areas of magnetic enhancement/positive isolated anomalies

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response (sometimes only visible on an X–Y trace plot) on two or three successive traverses. In neither instance is there the intense dipolar response characteristic of an area of magnetic disturbance or of an 'iron spike' (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post holes or by kilns, with the latter often being characterised by a strong, positive double peak response. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

Linear and curvilinear anomalies

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

Methodology

Gradiometer Survey

There are two main methods of using the fluxgate gradiometer for commercial evaluations. The first of these is referred to as ***scanning*** and requires the operator to visually identify anomalous responses on the instrument display panel whilst covering the site in widely spaced traverses, typically 10-15m apart. The instrument logger is not used and there is therefore no data collection. Once anomalous responses are identified they are marked in the field with bamboo canes and approximately located on a base plan. This method is usually employed as a means of selecting areas for detailed survey when only a percentage sample of the whole site is to be subject to detailed survey. In favourable circumstances scanning may be used to map out the full extent of features located during a detailed survey.

The second method is referred to as ***detailed survey*** and employs the use of a sample trigger to automatically take readings at predetermined points, typically at 0.5m intervals, on zig-zag traverses 1m apart. These readings are stored in the memory of the instrument and are later dumped to computer for processing and interpretation.

The Geoscan FM36 fluxgate gradiometer and ST1 sample trigger were used for the detailed gradiometer survey. Readings were taken, on the 0.1nT range, at 0.5m intervals on zig-zag traverses 1m apart within 20m by 20m square grids.

Data Processing and Presentation

The detailed gradiometer data has been presented in this report in X-Y trace and greyscale formats. The former option shows the 'raw' data with no processing other than grid biasing whilst in the latter the data has been selectively filtered to remove spurious errors such as striping effects and edge discontinuities caused by instrument drift and inconsistencies in survey technique caused by poor field conditions.

An X-Y plot presents the data logged on each traverse as a single line with each successive traverse incremented on the Y-axis to produce a 'stacked' plot. A hidden line algorithm has been employed to block out lines behind major 'spikes' and the data has been clipped at 5nT. The main advantage of this display option is that the full range of data can be viewed, dependent on the clip, so that the 'shape' of individual anomalies can be discerned and potentially archaeological anomalies differentiated from 'iron spikes'. Geoplot v3 was used to create the X-Y trace plots.

Geoplot v3 was used to process the data and produce the greyscale images and XY trace plots. All greyscale plots are displayed using a linear incremental scale.

Appendix 3: SMR Summary Sheet

<table>
<tr><td>SMR Record Number</td><td>Parish
Northampton (unparished)</td><td>Site Name
British Timken</td></tr>
<tr><td>Date of Fieldwork
June – August 2005</td><td>Grid ref.
SP 725 640</td><td>Fieldworker
A Hancock</td></tr>
<tr><td>Sponsor
Bellway Homes Ltd</td><td colspan="2">Activity
Geophysical survey and trial trenching</td></tr>
<tr><td colspan="3">Landowner name/address:
Bellway Homes
Oak House, Woodlands Business Park
Breckland, Linford Wood
Milton Keynes
MK14 6EY</td></tr>
<tr><td colspan="2">Finds location
N/a</td><td>Finds Destination
N/a</td></tr>
<tr><td colspan="2">Records location
ASC Ltd</td><td>Records Destination
Northampton Museum</td></tr>
<tr><td colspan="2">Finds Quantity
0</td><td>Records Quantity
1 Box File</td></tr>
<tr><td colspan="3">Summary of Results

During August 2005 an archaeological evaluation by means of geophysical survey and trial trenching was undertaken on the site of the former British Timken Works, Duston, Northamptonshire. No significant archaeological remains pre dating modern were identified.</td></tr>
</table>