Archaeological Test Pits at the former Marconi Site (Selex plc) Chelmsford

An Archaeological Evaluation

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Test Pitting at the former Marconi Wireless Factory (SELEX Communications plc) New Street, Chelmsford

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Introduction

Between Tuesday 8th May and Friday 11th May 2007 the Cambridge Archaeological Unit undertook a programme of archaeological test-pitting at the SELEX factory site (the former Marconi Wireless Works) located between Townfield Street East and New Street, Chelmsford (TL 7080 0735). The Proposed Development Area (PDA) covers approximately 3.64 hectares. This work was commissioned by the Ashwell Property Group who is currently in the process of negotiations to purchase the site with a view to re-developing it.

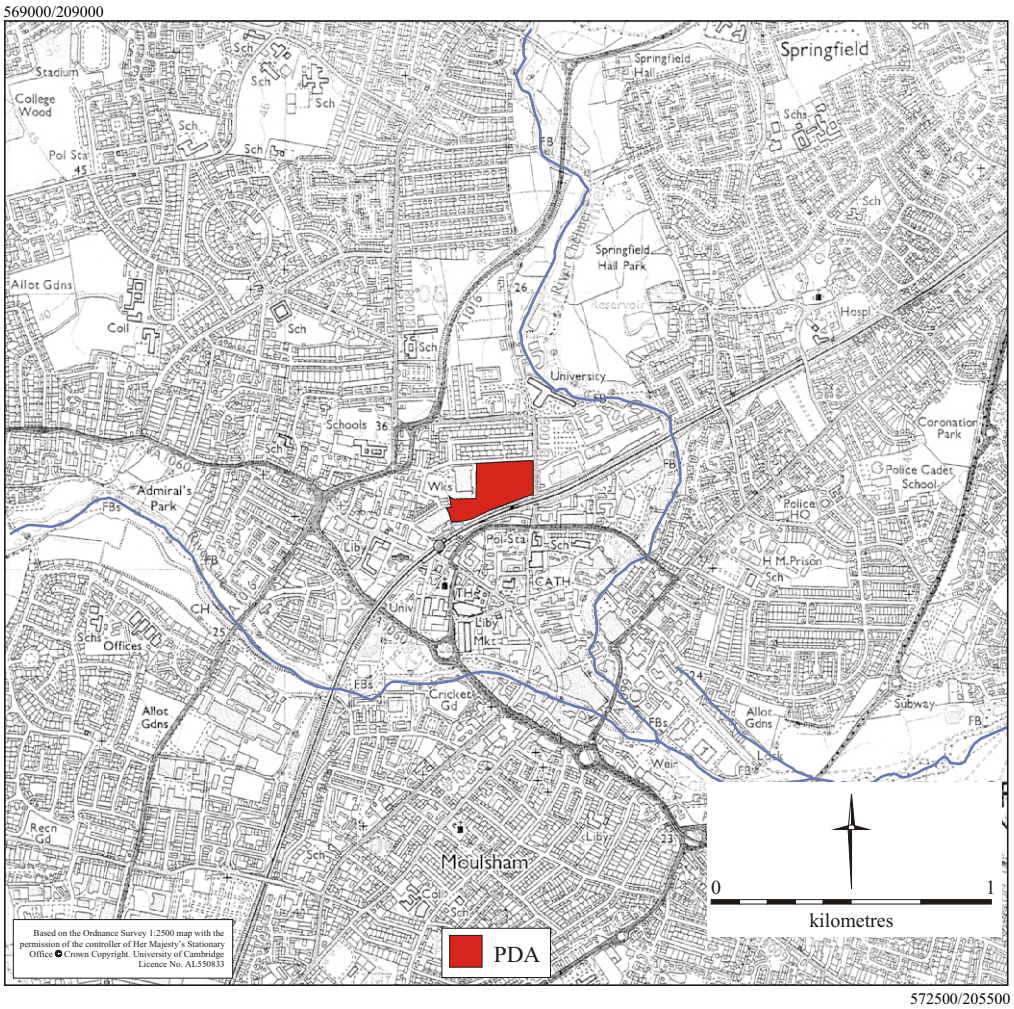
A planning condition placed by Essex CC on the proposed development at this stage included the digging of a series of test pits in order to determine the level of truncation and the potential for survival of sub-surface archaeology. Suggestions as to the degree of truncation caused by the levelling of the land in advance of the construction of Marconi's factory in 1912 (or prior to that in the creation of the Essex County Cricket Ground on the same site, some time between 1894 and 1910) are referred to within a previous CAU archaeological desk-top assessment *The Marconi Wireless Works, Chelmsford* (Timberlake 2006).

Geology and Topography

The geology of the area is dominated by the outcrop of the Pleistocene Head Brickearth composed of fine clay and sands. Although not true brickearth deposits, these clays were worked extensively within the area of North and West Chelmsford in order to supply the needs of the local brick industry. The 1:50 000 Geological Survey Sheet covering the Chelmsford area shows an outcrop of these brickearths immediately beneath the Marconi site, however, the 1st Terrace Gravel of the River Chelmer clearly transgresses this deposit over the whole area examined. Nevertheless, in some places the latter appears to be missing altogether or else greatly reduced in thickness (data from Environ borehole monitoring, November 2005). Occasionally these gravels becoming more chalky, but in general they are sandy and contain angular to round flint pebbles. Chalky Boulder Clay and pockets of Glacial Sand and Gravel underlie the brickearths on the higher ground to the north and west of the site, and to some extent these contribute to the soils which have formed on the valley sides of the Chelmer(between New Street and Glebe Road). The geological map shows alluvium within the floodplain of the River Chelmer some 400m to the west of the site. However, this may extend eastwards some considerable way, at the same level as the terrace gravel.

Historical and Archaeological Background

Little, if any previous archaeology seems to have been undertaken within the area surrounding the PDA. The land immediately to the north of the railway line lies beyond the known extents of the Roman and Medieval town, whilst the surrounding office and car park developments date from the 1970s and early 1980s, and thus preceded the planning conditions imposed by PPG16. A north-south Roman road, Broomfield Road (the current B1008) is to be found just 100m to the west of the site,



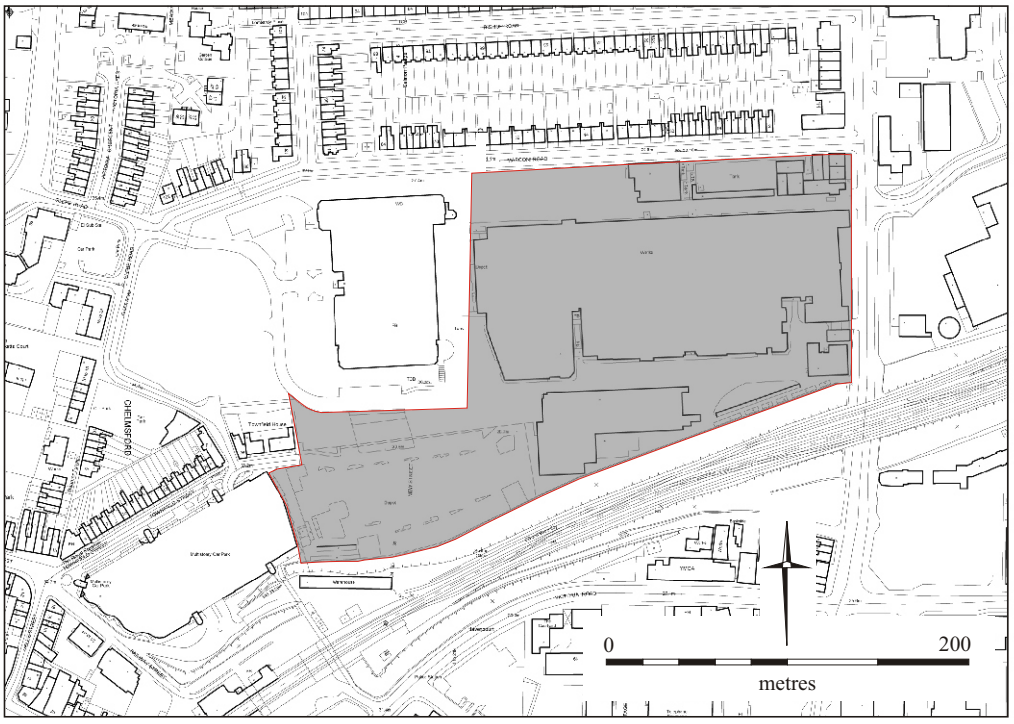


Figure 1. The Marconi New Street Wireless Works (2006) showing outline of PDA

whilst New Street that abuts the factory to the west may be the course of an Early Medieval road or track leading from the Medieval town of North Moulsham to the manorial centre of Bishops Hall, a site with possible Saxon origins (Chelmsford Historic Town Assessment, March 1999). The site of the hall now lies beneath the new Anglia University Campus. South of the railway line and the Marconi Works lays the fringe zone or "backlands" of the Medieval town. Excavations carried out within the area of the former Legg Street Car Park revealed evidence of Medieval to Post-Medieval brickearth quarrying (Barker 2005). Within these quarry pits were found redeposited sherds of both Medieval and Roman pot, implying a low-level presence of archaeology within the whole of this area, the survival of which would by and large depend upon the level of truncation of these horizons following any late Victorian development. The Walker 1591 map of the Mildmay Estates shows the junction of what were probably three large Medieval fields (Townfield, Butt Field and Performing Land) beneath the Marconi site (see Figure 2), an indication perhaps of the potential here for the survival of Medieval - Post-Medieval cultivation soils. It seemed possible that these might survive along the line of the former field boundaries, within ditches, and in track cuttings and pits.

Following the arrival of the Great Eastern Railway in the 1840s the site was cut off from the centre of Chelmsford to the south by the railway embankment, and subsequently an area of factories and warehouses develops on the Townfield site adjacent to the railway line. Amongst these were the Townfield Street Steam Corn Mill of T.D.Ridley & Sons (shown on the 1st Edition OS map) followed shortly afterwards by the Maltings and adjacent reservoir built circa. 1880s-1890s along the north side of Townfield Street East. Both were built on the site of what is now the Selex plc car park, the whole area of which is currently under tarmac. By 1894 there appears to be some sort of Sports Field Pavilion located on the edge of the still rural and undeveloped Townfield (meadow) shown on the 2nd Edition OS sheet. The latter presumably became the Essex County Cricket Ground sometime during the early 1900s.

The story of the construction of the Wireless factory and the Dunn & Watson Marconi Offices on New Street over a period of 17 weeks between February and May 1912 is recorded on one of the Marconi websites (www.marconicalling.com). The new works consisted of the offices fronting New Street, and behind this the east-west orientated factory building, railway sidings and sheds cut into the slope immediately to the south of Marconi Road. To the west of here, as shown on the 1919 OS map, the area up to Glebe Road appears to have been owned by Marconi; this was dominated by the two large radio masts, but the land beneath these were laid over to allotments (in parts up until the 1940s). Sometime during the 1930s Marconi House and the southern frontage of the factory were constructed, whilst during the war years a complex of air raid shelters and an ARP post were dug between the railway embankment and the factory, some of these beneath the site of the present wavy-roofed 720 Building. The latter was constructed during the 1950s, and by this time much of the area to the north of Townfield Street East (including the area currently occupied by Eastwood House) was covered by single-story buildings housing workshops, laboratories and stores. By the late 1960s the Corn Mill and Maltings on Townfield Street East were still standing, but disused. The latter buildings were finally demolished during the early 1970s, following which this area appears to have become the current (Selex) car park.

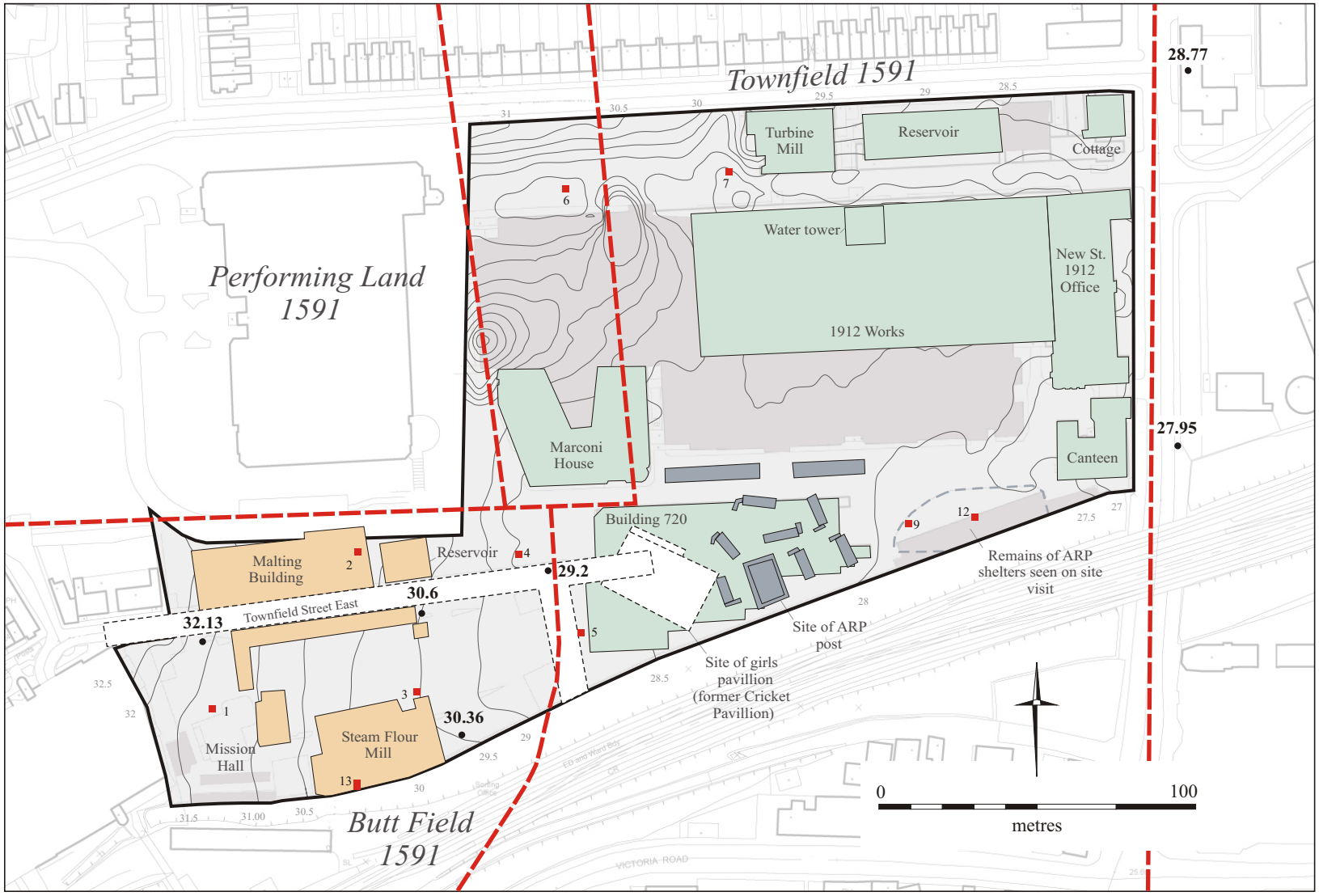


Figure 2. Plan of test pit location superimposed on map of current / former buildings, post medieval fields and ground surface contour.

To the north of here the site was landscaped and the level of the land raised in advance of the construction of Eastwood House in the 1980s.

Methodology

A series of ten 2m x 2m ($4m^2$) test pits were dug within car park, roadway and grassed-over areas outside of and surrounding the factory buildings (TP 1-7, TP 9, TP 12-13) see Figure 2. A further three test pit sites (TP8, TP 10-11) located within the factory itself had to be abandoned before work commenced, as these areas had yet to be vacated. In the end, the final choice of sites still managed to provide a fairly representative sample of the sub-surface levels of dumping and truncation that had taken place. Nevertheless, test pitting was concentrated at the south-west (Townfield Street) end. Here an initial assessment of changes in height recorded between 1874 and 2006 suggested that the ground levels had risen, raising the potential for the survival here of soils and archaeology (Timberlake 2006).

At all of the test pit sites apart from TP12 (the area of lawn to the east of the 720 Building) each square was dug through tarmac or reinforced concrete. After first being surveyed in with GPS, the outline of each was cut out using a diamond saw, then the hard capping broken up with a pneumatic hammer, the latter mounted on the boom of a 4 ton 360° tracked digger. After removal of the surface capping layer, each of the test pits was carefully CAT scanned for services before being dug out using a pneumatic hammer in conjunction with a 1.6m toothless bucket and 0.5m toothed ditching bucket, a combination to break up and remove loose rubble as well as concrete foundations. Wherever possible, the pits were dug down by machine to the level of the natural (gravel), the effective depth limit to this being 3m, but more typically not exceeding 1.5m. Typically each of the pits was fenced off, then logged and photographed from the outside, although several of the more interesting sections were drawn. Due to the predominance of modern (19^{th}-20^{th} century) material encountered, the spoil dumps were not bucket-sampled, even though a small amount of pottery sherds and glass was recovered. Within several days of recording the pits were backfilled and the tarmac or concrete caps reinstated.

Throughout, a stated Safety Plan and Method Statement was adhered to (Timberlake 20/2/2007). A full digital photographic archive has been made.

Results

Test Pit 6

Located behind the 1912 factory (NW end) at the edge of an old reinforced concrete-surfaced area used as a roadway for goods deliveries and parking at the foot of the shallow landscaped bank up to Marconi Road.

The test pit encountered natural gravel at a depth of 0.53m, almost directly beneath the modern make-up for the roadway surface. The following section was recorded.

Smooth concrete (with horizontal welded iron reinforcing rods)	0 - 0.12m
Coarse concrete	0.12 – 0.28m
Coarse rubble hard core (brick and loose concrete)	0.28 – 0.53m

Dark orange-yellow gravel with sandy and silty clay matrix and c. 40% clasts sub-angular to angular flint	0.53 – 1.14m +

At this location excavations for the roadway surface (and by inference for the construction of the factory floor as well) appears to have truncated the overlying soil, thus any potential archaeology.

Test Pit 7

Site located some 50m to the east of TP6 along the same roadway, on the edge of a parking bay at the top end of a concrete ramp, the latter immediately to the east of the old Turbine House.

Natural, possibly in the form of a sandy silt-filled channel cutting through the gravel layers, was encountered at a depth of 1.02m beneath a modern surface make-up. This overlay a much thicker bed of gravel and rubble, the latter probably a deposit dumped here within the last 40 years as part of the levelling for the ramp.

Smooth reinforced concrete	0 – 0.15m
Light pink concrete gravel	0.15 – 0.30m
Grey sandy rubble	0.30 – 0.51m
Redeposited gravel with inclusions of brick, concrete, coke and other modern materials	0.51 – 1.02m
Dark yellow silty sand with rare inclusions of angular flint	1.02 – 1.19m+

There is no survival of original soils here, thus no potential for archaeology.

Test Pit 9

South side of the site, just west of the 720 Building, and located just on the edge of a reinforced concrete roadway close to a grass lawn and flower bed, the latter the site of some of the 1940s air raid shelters.

Gravel (natural) was encountered at a depth of between 1.2 and 1.24m beneath a brown clay-rich bioturbated soil or cultivation layer, perhaps originally a river alluvium. Whilst the upper part of this contained small fragments of brick, the lower part (below 1m) appeared to be undisturbed. Above this a layer of crushed bright red brick and redeposited alluvium or soil at was encountered at a depth of 0.44m. It now appears that this horizon can be traced across much of the southern part of the site (see Figure 10), and may represent a late 19th century demolition layer.

Smooth reinforced concrete	0 – 0.08m
Coarse concrete	0.08 – 0.15m
Bitumen	0.15 – 0.25m
Redeposited/ backfilled alluvium with organic laminae (garden cultivation?) and brick rubble	0.25 – 0.44m
Crushed red brick rubble	0.44 – 0.50m
Dirty alluvium mixed with brick rubble etc.	0.50 – 0.85m
Dark reddish brown disturbed alluvium (bioturbated or	

cultivated soil on top). Moderately compact with clayey silt and rare angular flint	0.85 – 1.00m approx
Undisturbed alluvium	1.00 – 1.24m
Dark reddish-orange gravel (70% gravel plus larger sub-angular to rounded stones)	1.24m +

At least 0.35m of 19th century archaeology may be preserved within the mixed alluvium and rubble layer, with an indication perhaps of a Post-Medieval cultivation soil beneath. The degree of later disturbance of this soil remains unclear, although there was no evidence for anything earlier than 19th century. No pottery was recovered.

Test Pit 12

Test pitting carried out within the centre of the lawn adjacent to a flower bed, approx. 25m west of TP9 within the vicinity of the remains (including the concrete capping) of wartime air raid shelters.

Here natural gravel was reached at a depth of between 2.15 – 2.20m below a layer of mixed alluvium and gravel (perhaps plough disturbance) and a similar layer of reddish-brown bioturbated alluvium or soil. Above this lay a dark grey silty loam with evidence for burnt flint and stone; quite possibly a cultivation or garden soil which underlies the late Victorian red brick demolition layer. In places more than 0.5m of 'soil' layers survive beneath this demolition horizon, although a date for the earliest evidence of disturbance (probably in the form of cultivation) detectable at about 1.7m depth remains unknown. No dateable finds were recovered from this test pit.

Turf	0 - 0.10m
Yellowish-brown with rounded stones	0.10 – 0.31m
Compacted dark grey-black industrial ashy burnt layer with some loose iron reinforcing rods [01]	0.31 – 0.48m
Compact laminated burnt deposit (mixed with gravel) [06]	0.48 – 0.70m
Mid reddish-brown silty clay (alluvium) with rounded stones and brick fragments [07]	0.70 – 1.00m
Lensed layer of bright pinkish red brick fragments and brick dust (demolition layer) [12]	0.9 – 1.1m
Very dark grey, moderately soft silt with occasional/frequent burnt flint and frequent small discoloured pebbles [08]	1.00 – 1.70m
Light reddish brown silty clay bioturbated loam (possibly a cultivation soil) – originally alluvium [09]	1.70 – 2.m
Mix of dark yellow gravel and reddish brown alluvium (possibly disturbed through cultivation – ploughing?)	2.00 – 2.20m
Dark yellow gravel (natural)	2.20 m +

See NW and SW sections (Figure 3)

The outline of at least four intercutting pit or trench-like features (up to 2.20m deep) can be seen within the north-west and south-east sections of this test pit. This later truncation appears to be of immediately local origin. Given the shape and fill of these soil-cut features it seems unlikely that any of them relate to the construction of the air raid shelters, even though such a scenario is not entirely impossible. However, the recovery of small amounts of 'modern' non-ferrous slag, metal and other 'battery

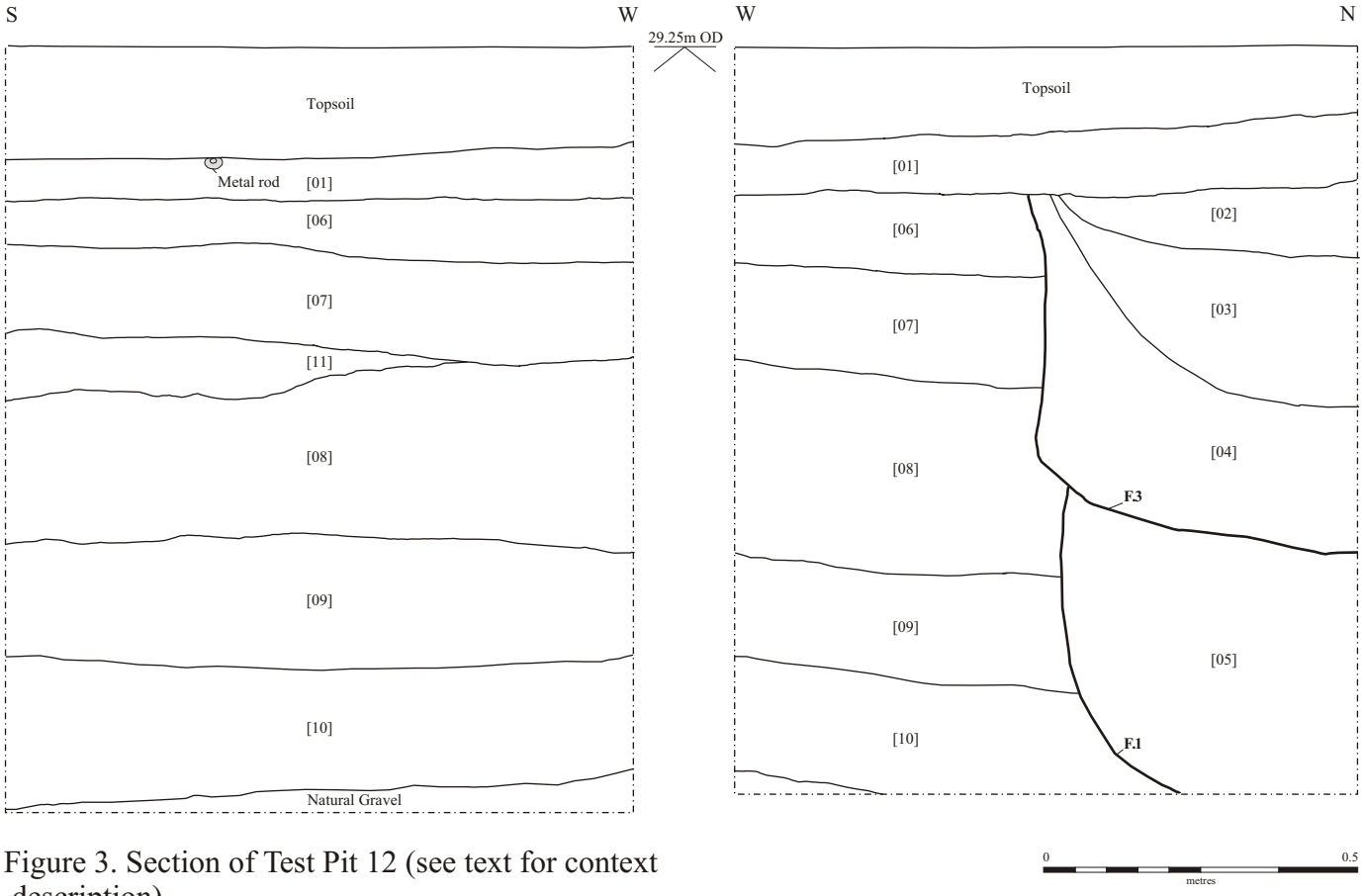


Figure 3. Section of Test Pit 12 (see text for context description)

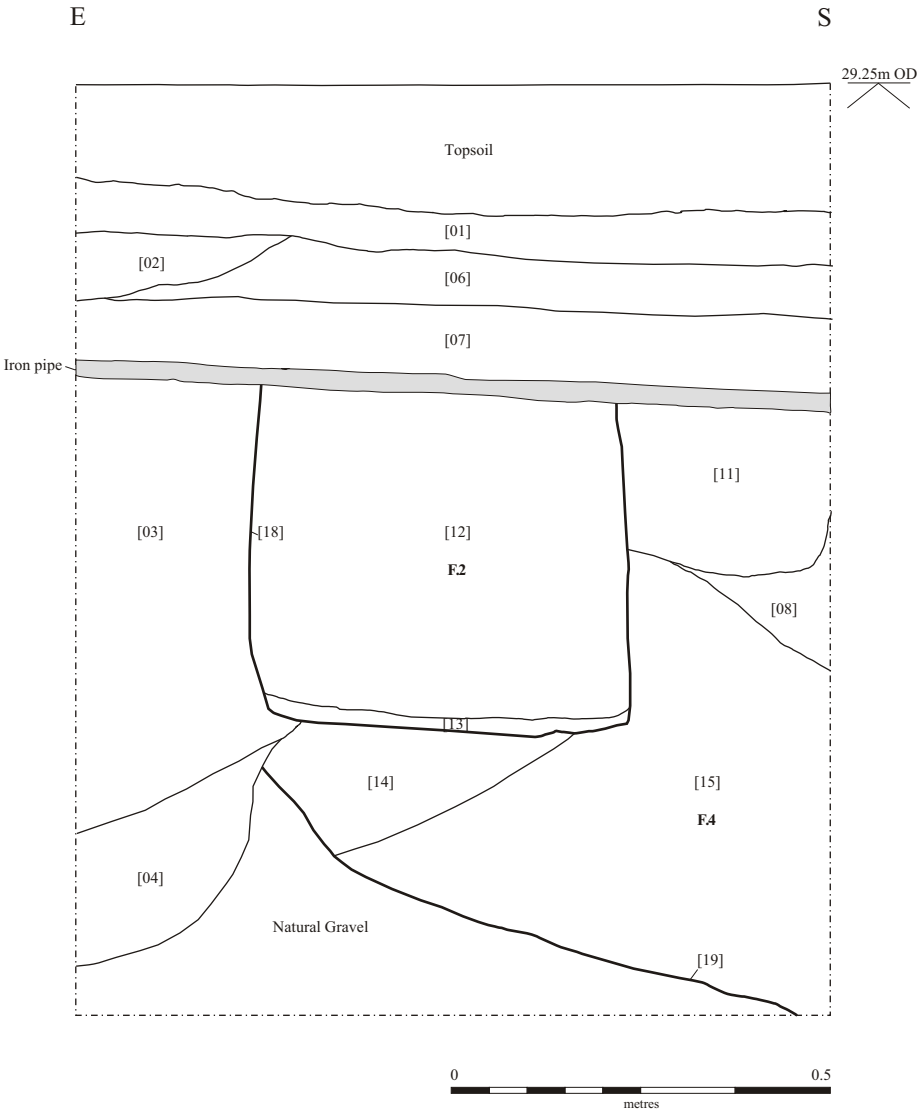


Figure 4. S/E facing Section of Test Pit 12
(See text for context description)

type' waste from the base of one of these cuts [13] (**F.2**) does suggest that some or all might be late features, and possibly associated in some way with the factory. An examination of an overhead photograph of the Marconi factory site taken sometime in the 1920s (see Figure 9) shows what appears to be a series of shallow pits and spoil mounds within this area – the latter clearly connected to the works.

F.1 (NW section)	(see Figure 4)	
Cut [17] (steep-sided concave with flat bottom)		depth > 2.20m
contains fill [05]:		
Fill [05] a moderately loose grey silt with few inclusions		1.50 – 2.20 m
Top truncated by F.3 at 1.5m depth		

F.3 (NW section)	(see Figure 4)	
Cut [16] (vertical side with sharp basal break of slope and flat bottom)		c. 1.50m
contains fills [02], [03], [04]:		
Fill [04] a mixed dark yellow gravel and silt (redeposited natural) with infrequent angular stones		0.50 –1.60 m
Fill [03] a dark greyish brown moderately firm, burnt silty deposit (industrial) with rare brick fragment inclusions		0.50 – 1.15m
Fill [02] a dark yellow redeposited gravel with large rounded stones		0.50 – 0.70m

F.2 (SE section)	(see Figure 4)	
Cut [18] (square cut with vertical sides and flat bottom = trench)		c.1.70m
contains fills [12] and [13]		
Fill [13] a dark grey burnt layer with metallurgical waste etc. (slag)		1.60 – 1.70m
Fill [12] a homogenous dark reddish brown loamy silt		0.8 – 1.60m

F.4 (SE section)	(see Figure 4)	
Cut [19] (irregular gently concave cut)		c.2.20m
contains fills [14] and [15]		
Fill [15] mix of dark brown homogenous silt and dirty gravely dark yellow sand		1.10 – 2.20m
Fill [14] dark yellow redeposited gravel and sand mix (40:60)		1.50 – 1.80m

Test Pit 5

Located immediately to the west of the 720 Building within external car park area.

Gravel (natural) was encountered at a depth of 1m, above which lay a sandy silty alluvium. The upper part of this may have been part of a cultivation soil (flecks of charcoal and/or organic were visible) although the exact identity of this remains unclear. The red brick rubble layer (a 19th century demolition layer) was recognized here at a depth of only 0.35m. A north-south pipe trench carrying two disused ceramic land drains crossed the test pit at a depth of between 0.6 – 0.7m. No finds were recovered, and there was no evidence of archaeology.

Smooth concrete	0 – 0.12m
Rubble hardcore (make-up)	0.12 – 0.35m
Red brick rubble (19th century demolition?)	0.35 – 0.44m
Fine orange silt	0.44 – 0.58m

- land drains

Dark yellow-brown sandy silt alluvium or loam with rare flecks of charcoal	0.58 – 1.00m
Dark yellow silty gravel (natural) with 50% rounded and sub-angular flint clasts	1.0 – 1.12m

Test Pit 4

Located to the west of the 720 Building within the car park area, but closer to the security gate to the Selex site. This lay on the north side of the former Townfield Street East.

Gravel (natural) was encountered at a depth of 0.83m. This was overlain directly by modern rubble and concrete, suggesting that the site lay on the edge of the area of complete truncation of the earlier soils and 19th century demolition horizons.

Smooth modern concrete	0 – 0.09m
Clean hardcore, stone and gravel (make-up)	0.09 – 0.40m
Mixed dirty hardcore, brick and wood fragments	0.40 – 0.70m
Modern concrete	0.74 – 0.83m
Dark yellow gravel (50% gravel with sub-angular and angular flint)	0.83 – 0.90m

Test Pit 3

Located within the middle of the car park area on the edge of a parking lane. The position of this lay close to the NW corner of the former Steam Corn Mill shown on the historic maps (see Figure 7).

Natural (gravel or brickearth) was not reached due to the depth of building foundations encountered within this test pit. The truncation of the top of the gravels extended to a depth of almost 2.4m, at which point a further rubble or concrete foundation [17] was encountered, possibly serving as the base for a substantial Victorian brick foundation and supporting buttress. The latter sounding was excavated in the SW corner of the test pit using the 0.5m wide ditching bucket. At a higher level (from 1.6m to 1m below current ground level) this brick wall and buttress may have been part of the interior of a cellar (see Plan in Figure 5), whilst a later plaster-lined brick tank fed by a ceramic drain (0.20m diameter) abutted this on the north side, perhaps part of an adjacent building (see N section in Figure 6).

Excavation was carried out by hand to a depth of 1.2m, removing the rubble backfill and in places the garden soil infilling the voids within the brick structures. Fragments of clay pipe stems and Victorian pottery attested to the mid-late 19th century date of this backfill ([13] – [15]). Evidently this particular area of foundations or cellar was infilled at a relatively early date in the history of the mill's use. From the base of this backfill [15] a large sherd of glazed red earthenware (GRE) pottery was recovered, the latter possibly broken from a crock or jar. This was spot dated to the late 18th or early 19th century, and may have been locally redeposited. The fresh condition of this sherd suggests that the area interpreted as being open fields prior to 1844 might have been previously occupied.

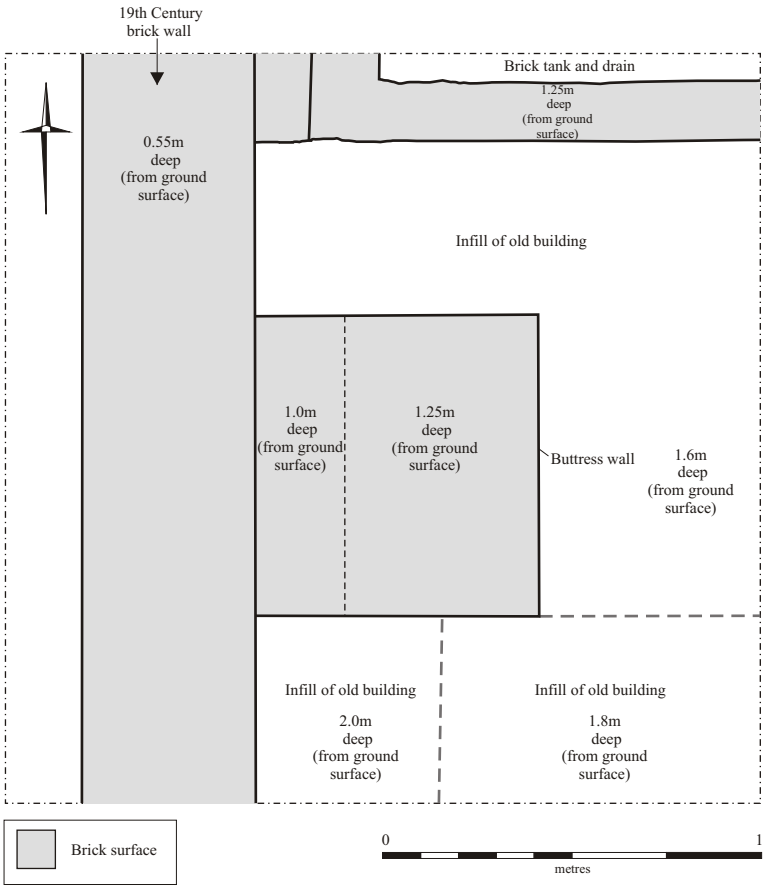


Figure 5. Plan and photograph of Test Pit 3. A corner of the foundations / cellar of T.D. Ridley's Steam Corn Mill

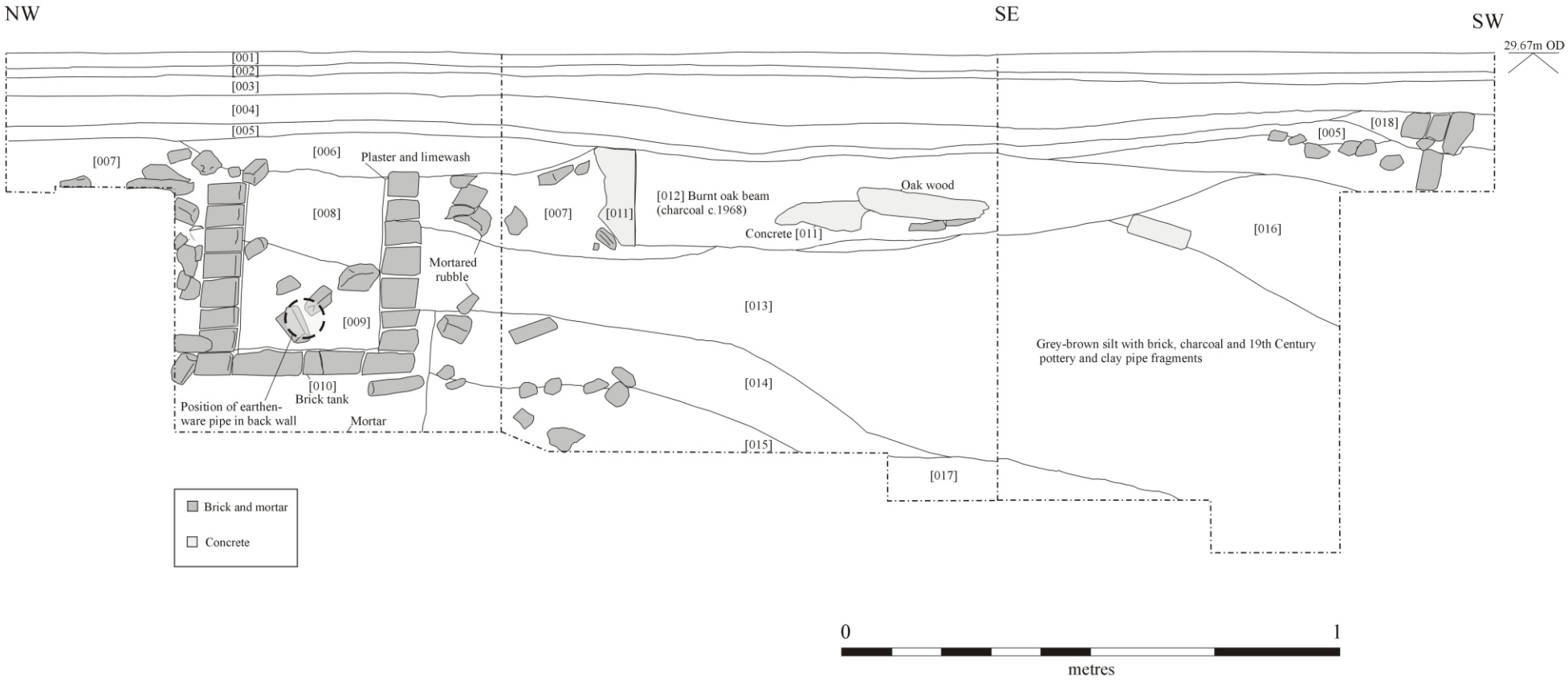


Figure 6. Section of three sides of Test Pit 3 showing plaster lined brick tank and burnt timber from c.1968? fire within disused corn mill

Preserved within the upper part of the E section (< 0.6m depth) a rubble horizon [07] associated with the circa. 1970s demolition of the disused Corn Mill contains the partly carbonised remains of an oak beam foundation encased in modern concrete. The latter may relate to the 1969 fire which is purported to have burnt down the abandoned mill.

Smooth concrete [01]	0 – 0.06m
Pink rubble (make-up) [02]	0.06 – 0.10m
Dark grey rubble (make-up) [03]	0.10 – 0.18m
Compacted light grey rubble (hardcore) [04]	0.18 – 0.30m
Brown gravel with sub-angular stones (foundation) [05]	0.30 -0.36m
Dark grey friable gritty sand (some burnt) with frequent large brick, mortar and masonry fragments; large lens of demolition material [06]	0.36 – 0.55m
Lens of yellow silty clay and rubble [07]	0.36 – 0.80m
Dark silty rubble fill within top of exposed brick tank [08]	0.50 – 0.85m
Lower rubble fill within base of tank [09]	0.80 – 1.20m
Square yellow brick structure with plaster and lime washed lining – possibly a drain sump or reservoir (N section) [10]	0.50 – 1.30m
Modern concrete encasing an oak beam foundation (E section) [011]	0.40 – 0.80m
Horizontal, partly carbonised oak beam (1.20m long) [12]	0.40 – 0.80m
Mid grey-brown soft silt with moderate brick fragments and small amounts of rounded flint, rare chunks of charcoal, rare clay pipe fragments and Victorian pottery [13]	0.80 – 2.0m
More friable silt with brick fragments [14]	1.05 – 1.60m
Mid grey-brown silt with occasional flecks of charcoal and small rounded pebbles. Contains sherd early 19th GRE pottery [15]	1.35 – 1.55m
Lens of dark yellow to light green clayey silt and marl with occasional stones and brick [16]	0.50 – 1.10m
Compact pink rubble [17]	1.80 – 2.00m

(see Figures 5 & 6)

Test Pit 2

A test pit within the Selex car parking area just to the south of Eastwood House. This approximately corresponded with the position of the Maltings (on the north side of Townfield Street East) which is shown on the historic 1st and 2nd Edition OS maps.

A yellow-orange clayey sand (natural) was encountered at approximately 1.35m and gravel at 1.6m below ground level. Above this lay a chalky clay (possibly a redeposited boulder clay) incorporating small amounts of brick and brick dust, particularly towards the top where this had been more heavily bioturbated and was evidently some sort of clay-rich loam. The top of this, now truncated by 19th century brick rubble, was probably originally an agricultural soil. The brick rubble appears to be the same late 19th century demolition layer which can be picked up across the whole of the southern part of this site (see Figure 9). Above this, and cut into this on the west side of the test pit are the brick foundations for a now demolished wall, possibly one of the walls of the former Maltings. From the middle of the test pit a large 0.8m^2 lump of concrete was removed; either a foundation associated with this building, or more likely perhaps a concrete anchor for one of the cables of the

Marconi radio masts, for example the westernmost of the two masts shown in the photograph of the factory site taken sometime during the 1920s (Figure 9).

A single abraded sherd of 19th century earthenware (GRE) was recovered from the redeposited clay loam, almost certainly a sherd reworked into the top of the cultivation layer.

Modern tarmac (car park)	0 – 0.09m
Pink stone (imported stone hardcore)	0.09 – 0.30m
Laid modern concrete	0.30 – 0.42m
Concrete rubble	0.42 – 0.53m
Bitumen (N side only)	0.53 – 0.59m
Brick foundation wall (W side only)	0.59 – 1.10m
Crushed red brick rubble and clay	0.59 – 0.65m
Clay-rich loam with small brick inclusions, and with red brick towards top (<0.7m).	0.65 – 1.10m
Clay-rich loam with increased amounts of chalk fragments (redeposited Boulder Clay?)	1.10 – 1.35m
Yellow-orange clayey sand (natural)	1.35 – 1.60m
Yellowish sand and angular flinty gravel	1.60 – 1.64m+

Test Pit 1

Test pit located at the far western end of the site, south of the Townfield Street East and close to the former Mission Hall. Today this lies at the edge of the car park perimeter fence and just to the north of the locked bike sheds.

This proved to be the deepest of the test pits, in the bottom of which a yellowish clayey silt grading into a yellowish silt was reached at a depth of about 2.6m, but no gravel. The clayey loess-like silt could be part of the brickearth deposit, in which case the gravel at this point may be missing, or else quarried away. The sudden deepening of the overlying brick-filled loam layer at this end of the site is unusual, and therefore this might represent the site of a quarry. Given the confines of the test pit, this is something which is now rather difficult to determine. However, the survival of evidence for an irregular and quite steeply dipping soil horizon overlain by a thin layer of red (19th century) brick waste at about 2m depth, re-emphasizes the possibility. Above this lies a thick deposit of redeposited clay-loam with brick waste and evidence for roots and bioturbation. Towards the top of this (at approx 1m depth) the bole of a tree stump and roots was found, along with its extended roots, confirming the idea that the ground level here has been raised through the dumping of material. An organic-rich soil was encountered above this at a depth of about 0.5m.

Finds including numerous fragments of late 19th century clay pipe, glass, china and red brick were recovered from the spoil dumped during the excavation of the brown loam and clay, whilst the well preserved neck of what was probably a late 18th century hand moulded glass bottle (*circa.* 1780s-1790s) was removed from the basal soil layer (at 2.05m). The latter was associated with a thin bioturbated organic horizon containing some preserved twigs, grasses and roots; suggesting its formation on the base of an open clay pit. Small crumbs of red brick were also recovered from root holes which penetrated a sandy-yellow clay which underlay this.

Modern tarmac (car park)	0 – 0.10m
Pink imported stone (hardcore make up)	0.10 – 0.22m
Lens of loam and brick	0.22 – 0.40m
Loose concrete	0.22 – 0.30 m
Redeposited yellow – orange gravel	0.30 – 0.50m
Dark grey-black organic soil and mud containing wood and mixed-up lumps of turf	0.50 – 0.60m
Dark brown loam and clay with some mixed brick waste, occasional organics, rare charcoal and Victorian pottery etc	0.60 – 2.05m
Very thin layer of crushed red brick and brick fragments (19th century demolition horizon?)	2.05m
Yellow-brown loamy clay (soil) with some flint, twigs and roots, and small points of brick fragments. Late 18th century bottle glass	2.05 – 2.10m
Sandy-yellow clay loam	2.10 – 2.20m
Yellow clay	2.20 – 2.50m
Yellow clayey silt (?possibly a brickearth)	2.60 – 2.90m

Test Pit 13

Test pit located at the southernmost limit of site, adjacent to the perimeter fence of the Selex car park and railway embankment, and opposite the bases of the concrete pylons which once supported the railway-edge loading shed for the Corn Mill.

Here natural (sand and gravel) was encountered at a depth of only 1.32m. Above this lay a thin horizon of mixed sandy loam at the base of a yellowish clay-rich loam (at approx. 1m below ground level), the latter probably a cultivation (agricultural) soil. The upper portion of this was heavily bioturbated, largely as a result of former root action. The crushed red brick (19th century demolition layer) underlay layers of modern road and car park foundations. No evidence of any brick footings for the Corn Mill were encountered. However, an old photograph of the Corn Mill taken from the railway embankment above it (see Figure 8) shows a roadway running alongside the front of the mill at this exact location. An earlier compacted rubble surface overlain by rough tarmac which lies *beneath* the level of the car park hardcore may well represent this former roadway access to the mill.

Modern tarmac (car park)	0 – 0.11m
Loose concrete rubble and imported stone	0.11 – 0.27m
Old asphalt and rubble (former mill road?)	0.27 – 0.33m
Concrete rubble	0.33 – 0.44m
Crushed red brick (19th century demolition)	0.44 – 0.52m
Thin dark brown soil horizon	0.52 – 0.54m
Bioturbated yellow-brown clay loam	0.54 – 0.75m
Undisturbed yellow-brown clay loam	0.75 – 1.00m
Sandy yellow loam mixed with gravel	1.00 – 1.20m
Loose yellow-orange sandy gravel (40-50% flint gravel)	1.20 – 1.30m

Discussion

The programme of test pitting has confirmed the survival of some archaeological layers within the southern and western portions of the site, yet no clear evidence for

pre-19th century remains. What has survived appears to be quite patchily preserved, and in general this supports what is already known of the recent history from map and photographic records. However, the recovery of a limited number of common artefacts (glass bottles and earthenware pottery) that appear to date from the very end of the eighteenth century or the beginning of the nineteenth century hints at the presence of earlier occupation within this area preceding the date of the arrival of the railway. None of the historic maps suggest this, the location being shown as an area of large open fields from at least the end of the 16th century onwards (see Walker 1591, Chapman & Andre 1777, Tithe Award Map 1841).

The discovery within one of the test pits (TP3) of substantial Victorian brick foundations associated with T.D. Ridley's Steam Corn Mill provides a useful link with the recent history of the Townfield Street (western) end of the former Marconi site. Some details of recent archaeology such as the presence of charred timber found within the latter foundations could be corroborated directly with the oral testimony (given by long-standing employees at the works) of the 1969 fire that destroyed the disused mill following its use as a paint store, whilst the recognition of other features, such as an earlier road level in front of the mill (observed in TP13) and the discovery of a possible concrete anchor for one of the Marconi radio masts (TP2) could be interpreted using the existing historic photographic archive. In contrast to this, the former presence of 18th – 19th century brickearth quarries at the western end of the site was only suggested by the archaeology.

In Test Pit 1 the existence of a part naturally infilled, part backfilled quarry pit was one possible interpretation for the deeper stratigraphy found. However, there is no historical record for this at this locality, even though some evidence for Medieval brickearth quarrying has been found on Legg Street several hundred metres to the south, whilst possible sites of Late Post-Medieval (18th/19th century) pits and brick kilns are also indicated (or suggested) through field names shown on the 1841 Tithe Map. For example, just to the south of the proposed railway route, and opposite the Townfield site, was to be found the parcel of land known as Brick Kiln Piece, whilst to the east of New Street and just to the south of the PDA lay the plots Upper and Lower Brickfield.

More importantly, the suspected low level or absence of truncation of the 19th century ground level and earlier agricultural soils over much of the area now covered by the Selex car park can be seen in the results obtained from the six test pits dug to the west of the 720 Building. On the other side of this, the two test pits TP9 and TP12 show similar evidence for the preservation of 19th or early 20th century features, as well as a moderately thick sequence of earlier cultivation soil (albeit one fairly sterile of artefacts). Above it, a distinct marker horizon consisting of a thin discontinuous spread of crushed red brick and brick dust underlies the modern rubble make up, and has been interpreted as a late 19th century 'demolition' horizon. An alternative explanation is that this represents the widely distributed brickfield waste spread out from local kilns, perhaps an accidental redistribution carried during the period of rapid urbanisation of the area which followed the arrival of the railway in the 1840s. Certainly the construction of the railway embankment immediately adjacent to the Townfield site would have been a massive undertaking, undoubtedly involving the cartage of soil, rubble and stone, and thus significant local disturbance.

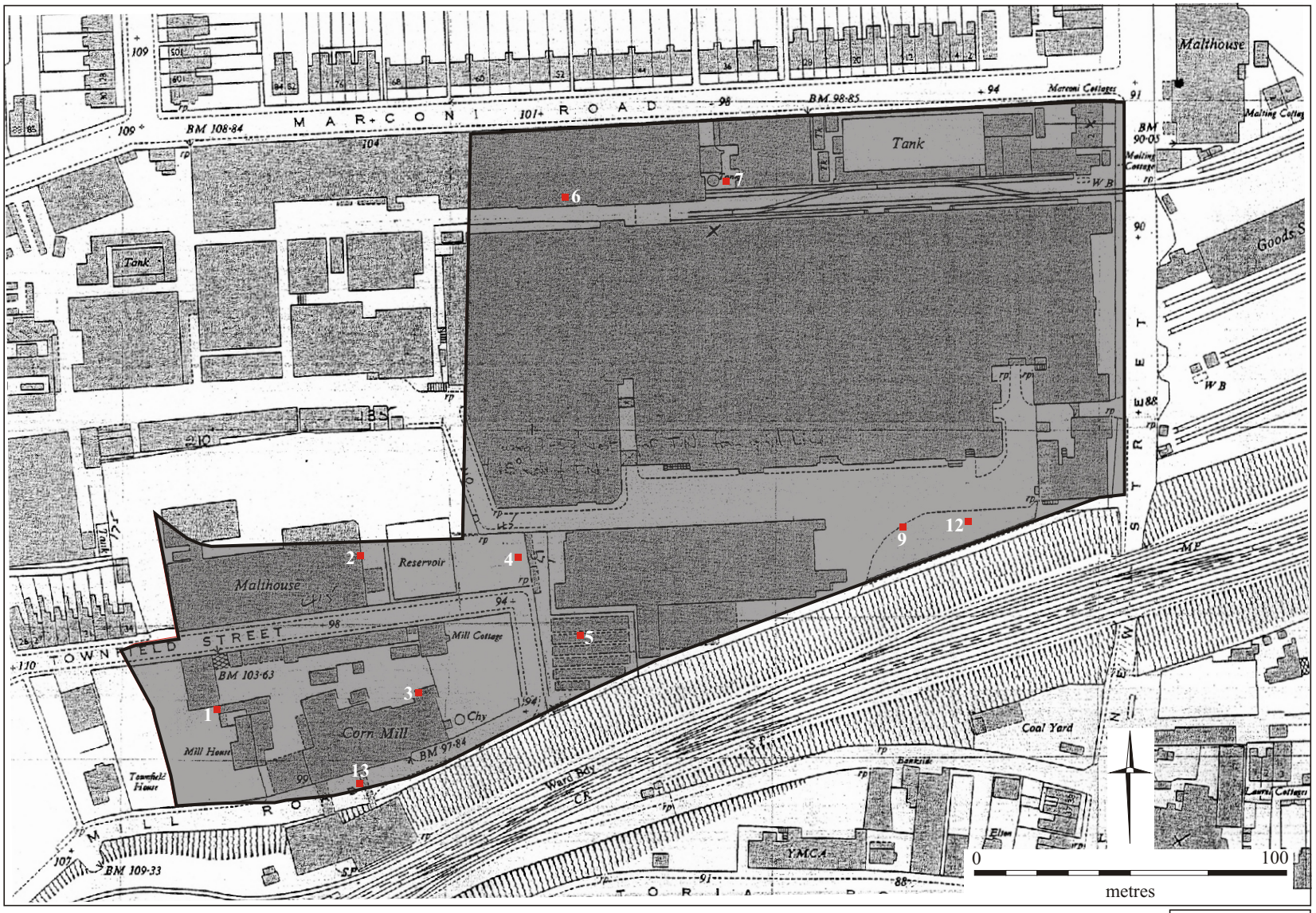


Figure 7. 2007 Test Pit location superimposed over 1949 OS. Edition. (25") Map. (Revised 1953)

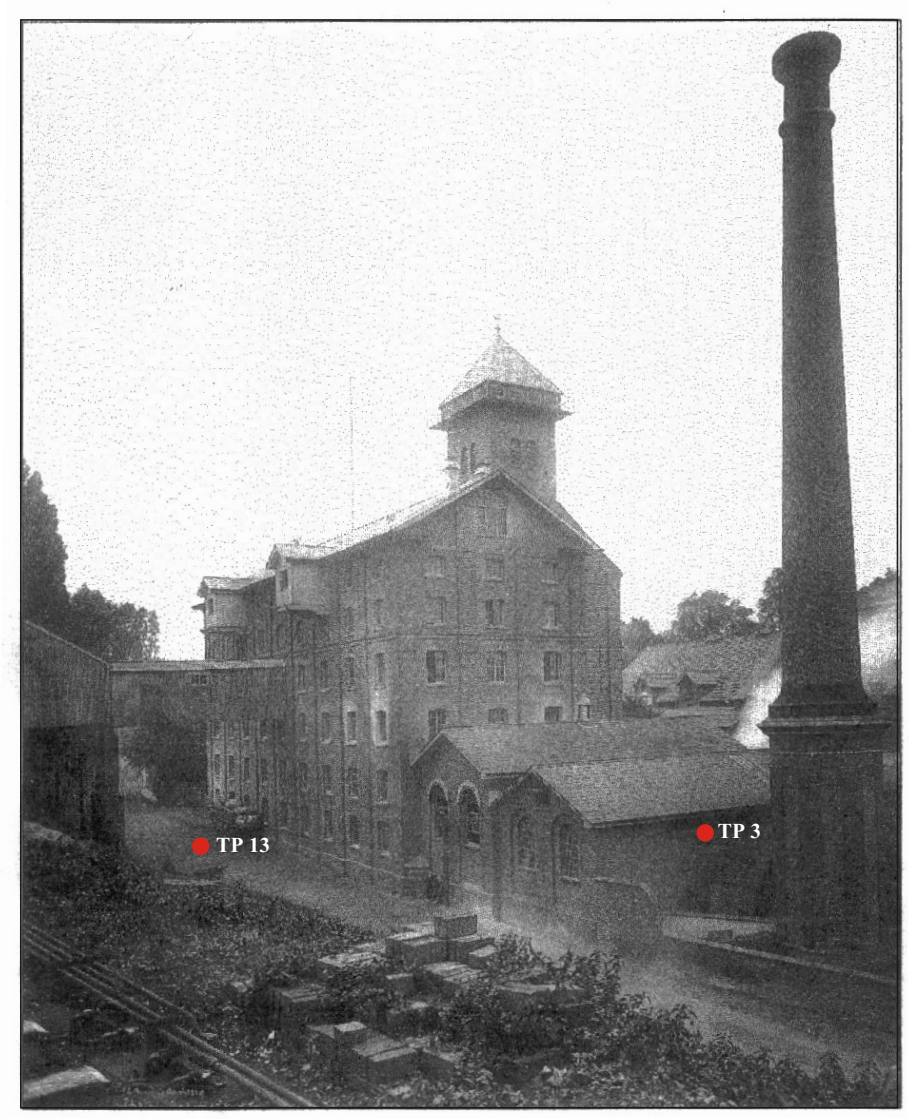


Figure 8. Photograph of T.D. Ridley's Steam Corn Mill, Townfield, Chelmsford (taken from top of railway embankment, probably early 20th Century.)

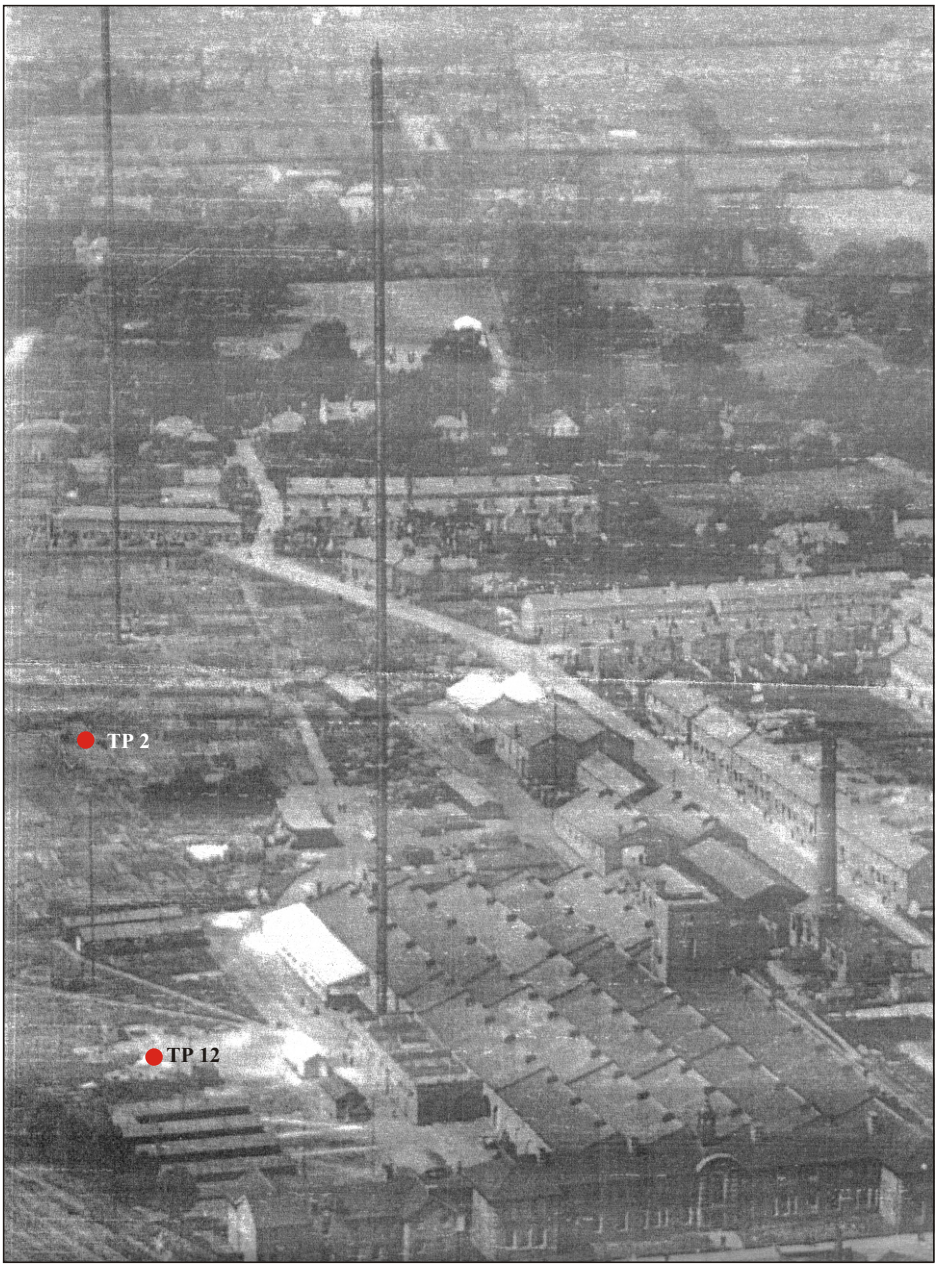


Figure 9. Photograph of Marconi Wireless Works from East.
(Circa 1920's)

Apart from the possible discovery of one of the radio mast cable anchors, the only factory-related features identified within any of the test pits appear to have been a series of late (but disused) land drains and iron water pipes (within TP5, TP9 & TP12), a thin compacted burnt horizon of 'industrial' type waste lying immediately beneath the rubble make-up for the post-war concrete roadway and landfill deposit (TP12), and a series of deep intercutting pits or trenches intersected during the digging of the same test pit (TP12). One of these earlier cuts contained pieces of 'modern' industrial waste (burnt slag and metallurgical debris), but otherwise these seemed empty apart from the backfill of soil, brick, ash and rubble. A direct connection with the digging of the air raid shelters immediately adjacent to this (in 1939-1940?) seems a possibility, yet is unlikely, instead a link is suggested with a series of pits or 'diggings' which can be seen at this approximate location south of the factory on overhead photograph of the Marconi Works taken sometime during the 1920s (see Figure 9). A well worn series of paths appear to link the factory with this area of activity, yet the function of these diggings remains unclear.

Areas of truncation and depths of preserved soils and 19th century archaeology

Based on the limited evidence available from the test pitting exercise simple contour maps have been drawn (Figures 10 & 11) which show the suggested area of truncation of soils and archaeology and provide a means for assessing the depth of the buried 19th century 'demolition' layer and the thickness of any soils preserved underneath. It is generally assumed that this truncation results from the 1912 or possibly earlier levelling of the site (for example the laying out of the Essex County Cricket Ground circa. 1900s). Additional data on the depth of natural has also been obtained from the logs of the Environ boreholes which were drilled over the whole of the site area during November 2005 (see Environ Site Investigation, December 2005). A glance at the latter data has helped make up for the paucity of information concerning the depth of truncation evident beneath the factory floor and around the perimeter of the building.

The sum of all the information available appears to confirm the fact that soil truncation and excavation into the underlying 'natural' over this part of the site is ubiquitous and perhaps a result of the levelling of the gentle slope of the valley in advance of the construction of the 200m x 80m (c. 1.6 hectare) area of floor space which underlies the factory and office buildings. In fact, the suggested area of truncation and exposure of the underlying gravel and sand extends to some 50-60% of the total area of the PDA. Whilst deeper archaeological features might survive, the likelihood of any sort of contextual continuity between these appears slim, just as the percentage recovery of archaeological information will be predictably low. Adjacent to Eastwood House, borehole data indicates some survival of buried soils, perhaps those associated with the slight natural change in contours, and perhaps also the possible survival of earlier field boundaries (this earlier survival probably bears no relationship to the current level of the ground surface surrounding Eastwood House which was raised with the addition of considerable amounts of soil and landscaping prior to its construction in the 1980s). To the east there may also be survival of nineteenth century and earlier soils at the north end of the New Street office frontage, particularly within the area of the cottages.

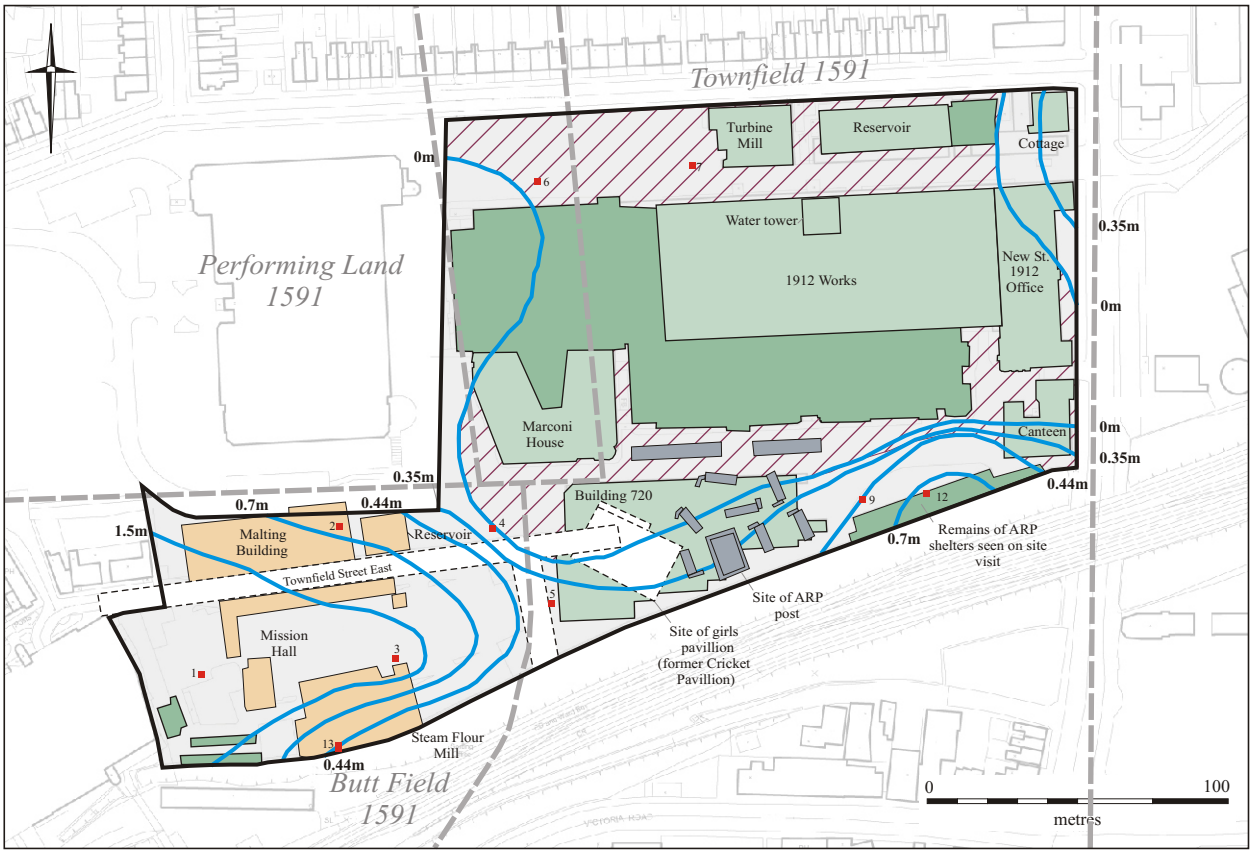


Figure 10. Estimated area of modern truncation and depths to top of suggested 19th century demolition layer.

Suggested area of modern truncation

Contour Depth to top of 19th Century demolition layer (Red brick)

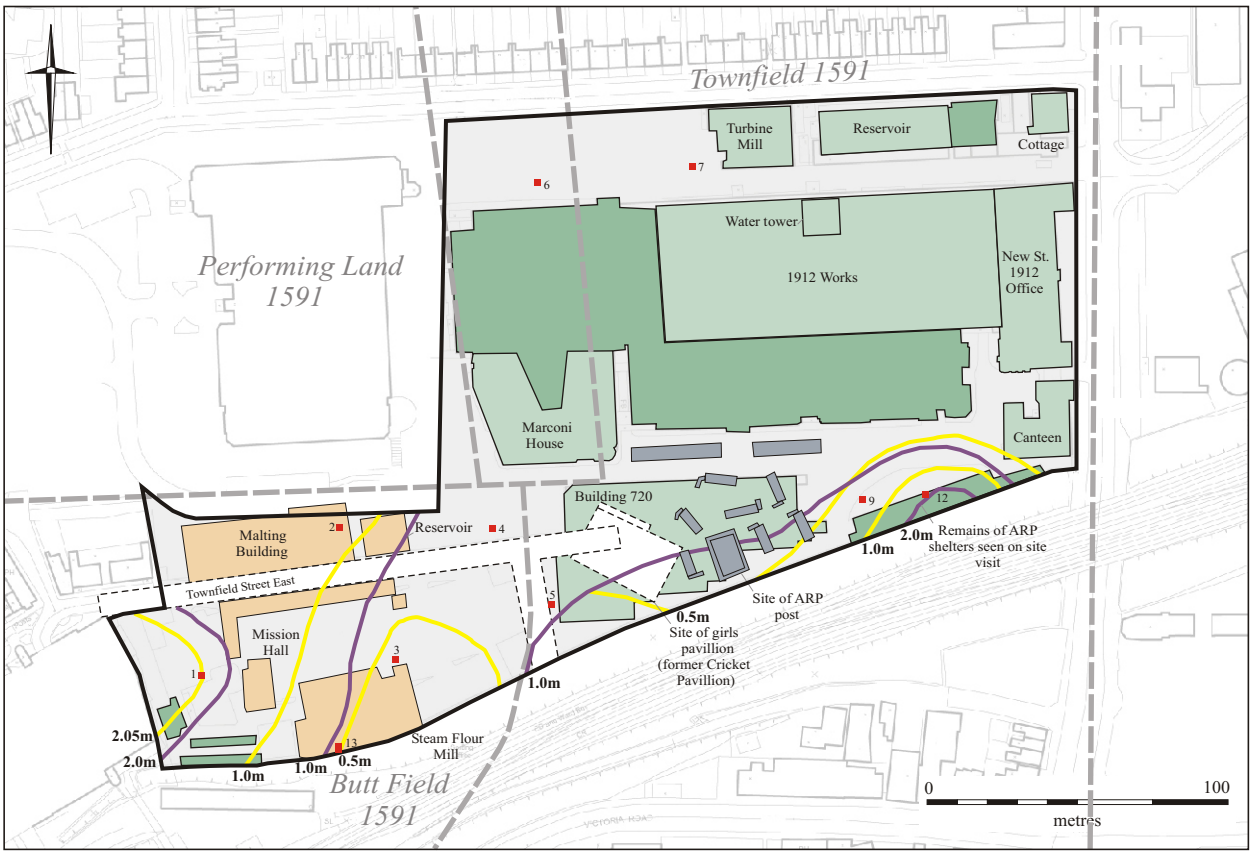


Figure 11. Depths to top and bottom of earlier cultivated soil / alluvium

PDA

Extent of standing buildings

Extent of standing buildings (Works/ Factory area)

Proposed trench locations

1591 Field boundary

19th Century buildings (Townfield Street)

Site of wartime ARP shelters

Contour Depth to suggested top of early agricultural soil

Contour Depth to base of early agricultural soil / alluvium

The depth of nineteenth century archaeology on site (and its depth below ground level) relates not only to the industrial and housing development along Townfield Street and the railway line from the 1850s, but also to the subtle continuity in division of the site between the three Post-Medieval fields of Townfield, Butt Field (corresponding to Townfield Street East) and Performing Land. For example, the depth to the top of the layer of nineteenth century red brick (the 'demolition layer' shallows both to the east and west as it approaches the traditional boundary between Butt Field and Townfield (Figure 10). East of this the deepest stratigraphy is to be found at the south end of Townfield between the later factory and the railway embankment. Westwards along Townfield Street East the built archaeology and redeposited nineteenth century soils increase in depth, perhaps corresponding to an area of late Post-Medieval brickearth quarrying which was then backfilled and levelled at the time of the Victorian development. Perhaps because of this, the thickness of preserved agricultural soil at this end of the site is shallower, or at the least varies considerably, for even approaching the former field boundaries this barely exceeds 0.5m depth (Figure 11). The greatest depth of 'earlier' agricultural soil (clay rich loam) is to be found along the southern edge of the site beneath the 720 Building and within the vicinity of the air raid shelters beneath the lawns and flower beds to the south of the factory. The accumulation of over a metre of soil at this point may have an explanation in the presumed Medieval – Post-Medieval cultivation of Townfield, for example as a *lynchet* formed by soil creep, the latter accumulating as a low ridge with a typical alignment orientated at 90° to the direction of slope.

Conclusions

A much clearer idea of the extent of truncation of buried soils and potential archaeology has been obtained following this test pitting exercise. By and large this conforms to the model predicted for the site within the 2006 desk-based assessment. An area in excess of 1.6 hectares beneath the former wireless factory floor and offices is likely to be truncated, with modern concrete surfaces resting upon the underlying sands and gravels. However, it has not been possible to sample this area fully and some deeper archaeological features may survive in places.

The deepest sequences of former agricultural soils are to be found to the south of the factory adjacent to the railway embankment (at the lower end of the former Townfield), beneath the car park to the west of the factory gate close to the former boundary between Townfield and Butt Field, and at the west end of the former Townfield Street East. These soils are preserved beneath a nineteenth century brick 'demolition' horizon and occasional earth and rubble landfill, once again deepest at the south end of the factory close to the railway and towards the western edge of the car park. A possible late Post-Medieval brickearth pit was identified within the latter area, from the base of which part of a late eighteenth century bottle was recovered. Otherwise all structures and backfill encountered were Victorian below the level of modern demolition. Amongst these were found the buried foundations or cellar of the former Ridley's Steam Mill.

Few archaeological remains associated with the early Wireless Factory were encountered during the digging of these pits, and apart from the initial levelling of the site and the insertion of reinforced floors there may be little truncation of earlier

levels. A series of 20th century pits or trenches of uncertain function were discovered just to the south of the factory, close to the area occupied by the wartime air raid shelters.

Outside the footprint of the factory building(s) up to 50% of the PDA has potential for greater sub-surface survival of archaeology. The likelihood of this being much earlier than nineteenth century seems slim, with evidence for widespread truncation caused by Victorian foundations, quarrying and late Post-Medieval agriculture. However, the possibility for still earlier archaeology remains.

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