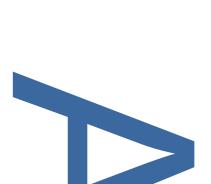
EQUIPMENT WORKS, FOREST ROAD, WALTHAMSTOW, LONDON BOROUGH OF WALTHAM FOREST E17 6JF AN ARCHAEOLOGICAL EVALUATION

SITE CODE: FSR18

LOCAL PLANNING AUTHORITY: LONDON BOROUGH OF WALTHAM FOREST

JULY 2018









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OF WALTHAM FOREST E17 6JF

AN ARCHAEOLOGICAL EVALUATION

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PLANNING APPLICATION NUMBER:	
CENTRAL NGR:	TQ 3574 8950
WRITTEN AND RESEARCHED BY:	MATT EDMONDS PRE-CONSTRUCT ARCHAEOLOGY LIMITED JULY 2018 REV 2: GLAAS COMMENTS
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1 ABSTRACT

- 1.1 This report details the results of an archaeological evaluation on land at the Equipment Works, Forest Road, Walthamstow, E17 6JF. The evaluation was undertaken by Pre-Construct Archaeology Limited and was commissioned by CgMS Heritage on behalf of Telford Homes.
- 1.2 Eight trenches were excavated across the site. Natural deposits were noted in the eight trenches excavated. Natural terrace gravels were sealed by layers of brickearth and made ground.
- 1.3 A sub-soil layer was identified in Trenches 6 and 7 sealing the brickearth, suggesting an early land surface relatively undamaged by later activity.
- 1.4 Modern truncation was encountered in all the trenches and this was seen to be most severe within the buildings towards the western side of the site; where a reinforced upper concrete floor slab and lower concrete slab from an early 20th century factory, was still in existence. The lower slab had truncated the top of the brickearth layer and removed all subsoil in Trenches 1-5. Above the lower slab was a layer of make-up material, which appeared to relate to the demolition of the earlier factory buildings after they were damaged by bombs. This was sealed by the upper slab. Outside the current buildings, the archaeological sequence was untruncated. No archaeological finds or features were identified in the top of the natural brickearth.
- 1.5 Given the extent of modern truncation across the site, and the absence of any archaeological finds or features within areas of lesser truncation, it is considered that the evaluation has suitably characterised the archaeological potential of the site and the extent of past development impacts. An archaeological watching brief on the below ground reduction of the site is recommended.

2 INTRODUCTION

- 2.1 An archaeological evaluation was undertaken by Pre-Construct Archaeology Limited on land at the Equipment Works, Forest Road, Walthamstow, E17 6JF.
- 2.2 Planning permission was achieved for the demolition of existing building and redevelopment of the site to provide a residential led mixed-use development containing 337 residential units (use class C3) and 1,750sqm of commercial floorspace (use classes A1, A2, A3, A4, B1, D2) with associated ancillary development to include hard and soft landscaping and access roads. The approved scheme included the demolition of an existing 1970s/early 1980s building which occupied c 60% of the site and the construction of three new buildings across *c* 50% of the site, with associated ancillary development to include hard and soft landscaping and access roads. No basements were proposed. Foundations were to be piled. Further details on the proposed development are not currently available.
- 2.3 An archaeological planning condition was attached to the site. The Archaeological Advisor to the London Borough of Waltham Forest recommended that the site should be subject to an archaeological trial trench evaluation as the first stage of any archaeological mitigation programme.
- 2.4 An archaeological desk based assessment had been previously carried out for the site by WSP Parsons Brinckerhoff (Mecklenburgh 2017).
- 2.5 The site did not contain any listed buildings or Scheduled Monuments. The site was located within the River Lea & Tributaries' Archaeological Priority Zone (APZ1) as designated by the London Borough of Waltham Forest. This is described in Schedule 36 of the Borough's Unitary Development Plan: 'The River Lee Valley and its tributaries is an area characterised by alluvial deposits, which have been shown to preserve important archaeological remains dating from the prehistoric period and later. The alluvial deposits also preserve palaeo-environmental remains, which indicate changing environmental conditions during the prehistoric and historic periods'.
- 2.6 The site was located to the north of Blackhorse Road underground and overground station. The site was bounded by a surface NCP car park and Forest Road to the south and Wickford Way to the west. The site was surrounded on three sides by adjacent development sites, which combine to form Plot BHL1, the Station Hub Sites. To the east was the Mandora Site and to the west there was the Ferry Lane Site, formerly occupied by warehouses. The site measured 1.28 ha. The site was centred at TQ 3574 8950 (see Figure 1).
- 2.7 The site comprised a main building sub-divided into four warehouse / factory areas. The rest of the site was predominantly hard standing associated with the former car park of the warehouses.
- 2.8 The archaeological evaluation works were carried out between 11th and 15th June 2018 and 2nd and 6th July 2018 and were commissioned by CgMS Heritage on behalf of Telford Homes. The archaeological work was undertaken in accordance with an approved Written Scheme of Investigation (Hawkins 2018) and following Historic England Guidelines (GLAAS 2014). The work was carried out pre-demolition of the current buildings.
- 2.9 The archaeological evaluation was initially supervised by Neil Hawkins and then concluded by Matt Edmonds and was project managed by Helen Hawkins throughout for PCA. The overall project was managed for Telford Homes by James Archer of CgMS Heritage. The work was monitored by Adam Single, Historic England, Archaeology Advisor to the London Borough of Waltham Forest.
- 2.10 The completed archive comprising written, drawn, and photographic records and artefacts will be deposited with the London Archaeological Archive and Research Centre (LAARC).
- 2.11 This evaluation was allocated the unique site code FSR 18.

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3 EVALUATION OBJECTIVES

- 3.1 The Written Scheme of Investigation (Hawkins 2018) highlighted the following primary objectives:
 - To determine the natural topography of the site, and the height at which it survives.
 - To establish the presence or absence of prehistoric activity, its nature and (if possible) date. Is the site located on the gravel river terrace of within the flood zone or channel? Is there further evidence for Iron Age use of the area as seen at Ferry Lane to the west?
 - To establish the potential for the site to contain peat deposits of interest
 - To establish the presence or absence of medieval activity.
 - To establish the presence or absence of post-medieval activity at the site.
 - To establish the nature, date and survival of activity and relating to aby archaeological periods at the site.
 - To establish the extent of all past post-depositional impacts on the archaeological resource.

4 GEOLOGY AND TOPOGRAPHY

Geology

- 4.1 The geological and topographical background was taken in part from the Desk Based Assessment (Mecklenburg 2017) and the WSI (Hawkins 2018).
- 4.2 According to BGS digital data, the north-western corner of the site lies directly over the solid geological strata of the London Clay Formation, Lower Eocene deposits laid down 50 million years ago. This indicates where an ancient channel of the River Lee has scoured out the Terrace Gravels on the valley sides. The rest of the site lies over the deposits of the Taplow Gravel Formation, river terrace deposits mostly comprising sand and gravel formed by the River Lea, which were laid down during the middle Pleistocene period. Ground level above the Terrace Gravel layers is usually slightly higher than where the London Clay is closer to the surface, as is the case in the vicinity of the site. The north-south continuity of the Taplow Gravel deposits has been broken to the north and north-east of the site by the predecessors of the Dagenham Brook. Deposits of the older Hackney Gravel Formation are to be found c 700m to the east of the site. The alluvium, representing the floodplain of the River Lee, is located 70m west of the site.
- 4.3 Geotechnical information from the site (GEA 2017) indicated that the made ground on the site was between 0.4m and 1.2m thick, although the investigations were carried out only outside the current buildings. Below the made ground was a layer of possible brickearth or alluvium, which overlay the gravel.
- 4.4 Further investigations were carried out in 2018 inside the buildings, and the results obtained during the archaeological evaluation works (GEA 2108). These investigations indicated that the made ground within the buildings was on the whole c. 2m thick, straight onto gravel deposits. A lower slab was noted in the majority of the investigations at either 0.40m or 1.20m BGL. Thinner deposits of made ground were noted in the centre south of the site and in the north-eastern part of the buildings, and therefore two of the trenches were moved to target these areas.

Topography

- 4.5 The site lies within the lower part of the valley of the River Lea. This river, which lies 620m to the west of the site, has also been called the Ley in the earliest documentary references to it and the Lee in many historical records, including the Lee Navigation Act of 1767. The river has been heavily canalized and transformed by the construction of reservoirs, mainly for drinking water, in the 19th and 20th centuries. One of these reservoirs, the High Maynard Reservoir, lies 140m west of the site. The modern convention is for the river to be called the Lee when referring to the canalized areas and the Lea when referring to its natural course. The Lee rises in rural Bedfordshire and flows south to join the Thames c 10km to the south of the site. In its lower reaches within Greater London its banks have tended to be heavily industrialised. The Dagenham Brook, now canalised in the vicinity of the site to form the Lee Flood Relief Channel, lies 65m west of the site.
- 4.6 The site lies on the eastern slope of the River Lee Valley and there is a visible slope down across the site from east to west towards the Dagenham Brook. Outside of the site, Forest Road falls from 12.6m OD (above Ordnance Datum) at its junction with Blackhorse Lane, 60m from the south-east corner of the site, to 8.4m OD as it approaches Dagenham Brook, 150m from the south-west corner of the site.
- 4.7 The existing topographic survey for the site (Survey Operations, dwg ref: 15K268/001, dated December 2015) shows ground levels within the site at 9.4m OD along the northern boundary, and 9.5m OD along the southern boundary of the site near Forest Road. The western extent of the site lies at 8.5m OD and the east lies at c 9.7m OD, reflecting the incline of the valley side.
- 4.8 It is also possible that the early development of the site included 'cut and fill' whereby material from the upper part of the slope is excavated and redeposited on the lower part of the slope in order to level the ground.

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5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 The archaeological and historical background is taken from the Written Scheme of Investigation (Hawkins 2018)

5.2 Prehistoric

Palaeolithic

5.2.1 A Palaeolithic flint flake was reportedly recovered from the River Lee reservoir on Ferry Lane in Walthamstow, which was presumably one of the Lockwood or Maynard reservoirs, 550m northwest of the site and 140m west of the site. Palaeolithic artefacts were also collected from the Higham Hill area by the antiquarian W.W. Smith during 1880–3, 490m north-east of the site. A flint axe was also found at a depth of six feet below ground level. Nine handaxes, a fragment of another handaxe and three flakes were recorded in his collection which were passed on to various London museums. A number of flint and prehistoric artefacts have been recorded from the excavations of the Lockwood and Maynard reservoirs. It is difficult to estimate how far from the site these artefacts would have been found and it is likely that they would have been residual objects, redeposited away from their original context.

Mesolithic and Neolithic

5.2.2 A large amount of Mesolithic flintwork was found at Glovers Drive on the western side of the River Lee c 2km to the north-west of the site and the general area of the interface between the valley floor and side slopes of the River Lee has been identified as having potential for Mesolithic archaeology. There have not, however, been any findspots of Mesolithic date within the 1km radius of the study area.

Bronze Age

5.2.3 Several significant Bronze Age finds were recovered from the construction of the Walthamstow reservoirs. A bronze leaf-shaped spearhead, probably of Bronze Age date, was recovered from the construction of the Maynard reservoir 140m west of the site in 1868, as well as two bronze cauldrons. A Bronze Age dagger was also found and donated to the British Museum, as well as a circular shield during alterations to the course of the River Lee. These finds are all individual objects from the middle of the river valley floor, where the river would have run. It has long been thought that such objects could have been ritually deposited in such environments during this period.

Iron Age

- 5.2.4 Evidence of Iron Age activity in the vicinity of the site again comes in the form of objects found and observations made during the construction of the Walthamstow reservoirs. Building works connected with the construction of the Low Maynard Reservoir in 1869 revealed a series of timber piles interpreted as a pile dwelling or crannog. Eight pottery vessels were found, possibly associated with the piles. The pots have been identified as dating variously to the Late Bronze Age, Early Iron Age and to the Roman period (one poppy headed beaker and a flagon). The pots were donated to the British Museum. Another find of an iron socketed and looped axe of possible Iron Age date was made in similar circumstances, possibly in 1882 or earlier, in the area of the Maynard Reservoir, 140m west of the site. A La Tene period sword and scabbard were found in 1905 during the digging of Lockwood reservoir.
- 5.2.5 Material of Iron Age/Romano-British date was found at the Ferry Lane site (Perkins 2016). At the western extremity of Trench 2 a short timber, implanted in the river gravels, was found in association with a number of fire-burnt daub fragments. These items were discovered in early foreshore deposits on the edge of the river, along with some possible early peat formation layers. In Trench 3, slightly further west than the previous trenches, a linear sandbank was exposed, behind which a palaeochannel or body of standing water had encouraged early peat growth. A total of seven timbers were recovered, three of which had been driven through the sand layer and were present in situ and two further stake-holes (minus their stakes) were identified and excavated. Twig wood recovered from samples taken at the base of the sandbank was radiocarbon dated to between 400 cal BC and AD cal 200 and a seed found near the surface was dated to between 50 cal BC and AD cal 90.

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5.3 Romano- British

5.3.1 Roman settlement in the form of a large farmstead has been identified in Walthamstow Village, on the higher ground above the marshes (Maher in prep), and possible Romano-British remains were noted at the Ferry Lane site (see above). Cartographic evidence dated 1699 shows a field named 'stouny douns' c 100m to the south-east of the site, approximately where Blackhorse Road underground station stands. It seems likely that the field name dates from the medieval period (it is mentioned in a document of c 1258) but it has been suggested that the name might indicate the presence of an earlier Roman stone building, although no physical evidence has been found to support this idea. It is likely during this period that the area was open field or woodland on the edge of marshland.

5.4 Saxon and Medieval

- 5.4.1 Two swords and a spearhead were recovered from the construction of the Lockwood reservoir 550m north-west of the site, provisionally dated to the Saxon period. They may have been ritually deposited in the Lee. An early Viking period sword was also found in the River Lee c 810m north-west of the site but nothing is known about the circumstances and date of the find.
- 5.4.2 Walthamstow was first recorded in c AD 1067 as Wilcumestouue and in Domesday Book (AD 1086) as Wilcumestou. The name is thought to mean 'Wilcume's stow or holy place', 'Wilcume' being the name of an abbess or queen. At the time of the Norman Conquest (AD 1066) there were two manors (estates) in Walthamstow, Wilcumestou (Walthamstow) in the south, and Hecham (Higham) in the north. The site fell within the former. The division between the manors roughly followed the line of the modern Billet Road and Wadham Road, c 1km to the north of the site. The exact locations of the early medieval settlements are uncertain, but it is likely they grew up on or in the vicinity of the later medieval villages of Walthamstow and Higham, c 2km to the south-east and 2km to the north-east of the site respectively.
- 5.4.3 In AD 1066, Walthamstow was held by Waltheof, earl of Huntingdon, and shortly after passed to his wife Judith, niece of King William I. During this period the manor was called Walthamstow Tony or High Hall. The parish church of St Mary, 2km to the south-east of the site, has Norman origins and formed the focus of the main settlement. The manor house was called High Hall and was located off Blackhorse Road, north of Forest Road, c 250m to the east of the site.
- 5.4.4 In Land within the main Walthamstow manor was later sold off to become the manors of Low Hall and the Rectory. The manor of Low Hall, also known as Walthamstow Bedyk and Walthamstow Fraunceys, lay in the south-west of the parish, mainly south of Ferry Lane and west of Blackhorse and Markhouse Lanes, beginning c 100m south of the site. The moated manor house was mentioned in AD 1397 and was located between Markhouse Lane and the Dagenham Brook, c 1km to the south of the site.
- 5.4.5 In 1277, Ralph de Tony, Lord of the Manor of Walthamstow was required to build two bridges over the Rivers Lee and Fleet (680m and 650m west of the site respectively). This River Fleet is not the same river as flows underground through the modern City of London near Fleet Street, but is a former name of one of the channels of the Lee, now sometimes called the Coppermill Stream, which has all but vanished between the Walthamstow reservoirs, though a section of this stream does exist 590m to the west of the site. The two bridges which de Tony built were close to each other (approx. 90m apart) near the site of the modern Ferry Boat Inn 650m west of the site. Tottenham Hale Quay, in the same area (790m south-west of the site), served the village of Tottenham and is also thought to be of medieval date.
- 5.4.6 Forest Road, adjacent to the south-eastern corner of the site, was part of the main road which ran between Epping and Tottenham across the Lee Valley for the whole of the medieval and post-medieval periods. It was formerly known as 'Claiestrete' (Clay Street) and is mentioned in a document of 1438 by that name. It was renamed as Priorstrete in 1532, Prioures Street in 1577 and, together with Hagger Lane, was renamed Forest Road in 1886. It led directly from the Epping area to the bridges and ferries across the Lee and its tributaries. Throughout this period the site was located towards the western edge of the Walthamstow manor and probably lay within open fields or woodland.

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5.5 Post-Medieval

- 5.5.1 In 1594 the 'mill bridge', 680m west of the site, was cited as 'one of the most useful over the Lea'. The bridge had to be repaired in 1595. In 1760 the bridge was rebuilt as a private toll road called Ferry Bridge or Hillyers Turnpike. The bridge was repaired in 1820 and replaced by an iron version in 1854. It was demolished in 1915. A ferry alongside the bridge was mentioned in 1722 together with a ferry house (now the inn) 650m west of the site. The Ferry Boat Inn itself is a Grade II listed building dating from the early 18th century but it is likely to be on the site of an earlier building.
- 5.5.2 John Rocque's map of 1745 shows the site as still being agricultural land, on the northern side of Forest Road/Ferry Lane (called Green Ferry Lane at this point). Present-day Blackhorse Lane (not named) is a short distance to the east of the site (it currently lies c 100m east of the site). To the south-east the bridges across the Lee and the Fleet can be seen west of the site, with Green Ferry Lane leading westwards across them towards Tottenham Paper Mill and beyond to the small settlement at Tottenham Hale, both outside the study area. The map shows a sharp break of slope on the river valley side close to the western edge of the site, where land would have dipped down towards the modern Lee Flood Relief channel and Dagenham Brook.
- 5.5.3 As a major tributary of the River Thames, the River Lee had been an important transport route for agricultural produce and steps had been taken to improve and maintain it for this purpose since the medieval period. Improvements to the river and its channels took place in a piecemeal fashion and a new cut to supply water for mills was made in the late 18th century on the line of the modern River Lee Flood Relief Channel, as shown on the River Lea Navigation map of 1800.
- 5.5.4 In the 18th century the manor of Walthamstow was in the hands of the Maynard family, who controlled the bridges and ferry. The ferry was run by a man called Hillier who also controlled the turnpike road to Tottenham Mill, the modern Forest Road. The 1842 Tithe Map shows the site as agricultural land within the Maynard estates.
- 5.5.5 In the early 19th century the common fields of the manor were broken up and an impetus to development was brought by the new arrival of the railway to the Lea Bridge area 200m to the south of the site in 1840. Lord Maynard was one of the earlier landowners to sell land off for development in this period and the terrace houses of Higham Place immediately to the north of the Gnome House Works office building have a date plaque of 1834.
- 5.5.6 The site is shown on the Ordnance Survey 1st edition 25":mile map of 1865–1880 as occupying parts of three enclosed fields, with a field boundary, marked by a line of trees, running east-west through the southern half of the site. The area is still very rural at this time, though to the east of the site, a line of terraced houses has now been built along the west side of present day Blackhorse Lane. To the south-east of the site the Royal Standard public house has now been built 20m from the south-east corner of the site at the crossroads between the modern Blackhorse Lane and Forest Road.
- 5.5.7 The Ordnance Survey 2nd edition 25":mile map of 1896 shows the area of the site in a similar light, as it is still undeveloped and within agricultural fields. The area at this time still remains relatively rural, with a number of terraces still lining the east side of Blackhorse Lane. The main point to note on this map is the presence of the newly excavated Maynard reservoir situated 140m west of the site, and the Tottenham & Forest Gate Railway 120m south of the site, which was opened in 1894

5.6 Modern

5.6.1 By the time of the Ordnance Survey 3rd edition 25":mile map of 1914, it can be seen that the area has undergone quite extensive change, with full scale urbanisation taking place all around. To the east of the site, beyond Blackhorse Road, are dense rows of terraces, a number of schools and allotments, at least some of which are likely to have provided for the workers at the numerous factories that have been built by the side of the reservoirs. The site itself is an 'Equipment Works' for the London Motor Omnibus Co Ltd, making chassis for omnibuses and consists of a large early 20th century shed in the west of the site and a couple of smaller buildings, one in the north-east corner of the site and the other towards the centre of the site.

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Just within the southern boundary of the site lies the edge of a racetrack and to the east the Royal Standard public house. Further factories lie outside the site immediately to the north and west.

- 5.6.2 The Ordnance Survey London Revision 25":mile map of 1936 shows further changes to the site. The omnibus factory has now moved outside the site and now lies adjacent to its south side, where the racetrack once was. A dry battery factory (Ever Ready) now occupies the site, with its much larger building covering over half of the ground space. The southern part of the site remains largely clear of development, though a series of goods lines leading to the Tottenham & Forest Gate Railway now run through this area.
- 5.6.3 No changes occur to the site until the mid-1980s when the dry battery factory has been replaced by a warehouse building split into four units, as can be seen on the Ordnance Survey 1:2,500 scale map of 1984–88 and the Ordnance Survey 1:1,1250 scale map of 1991–1994. This occupies a similar footprint to the old factory, though parts of the former factory extended a little to the south of this new building. The surrounding area of the site remains industry-based with factories, workshops and warehouses remaining, the only noticeable change being the disappearance of the omnibus factory to the south, which is now a car park.
- 5.6.4 A UXO survey completed for the Ferry Lane site (Zetica 2015) states that a High Explosive bomb fell on the Ever Ready Battery works on 17th October 1940. An AA shell also exploded on the Ever Ready Battery works in January 1944. However, an aerial photograph from August 1944 does not show any damage on the site. Further bombs and explosive devices are noted all around the site. The area was a target due to the number of factories and the railway.

6 METHODOLOGY

- 6.1 The evaluation was undertaken according to a Written Scheme of Investigation (Hawkins 2018) which was approved in advance by Adam Single, GLAAS, archaeological adviser to the London Borough of Waltham Forest. The aim of the work was to define and characterise any archaeological deposits and features, in order to allow an assessment to be made of the archaeological potential of the site, and the impact upon it from the proposed development.
- 6.2 The evaluation comprised of the excavation of eight trenches. All trenches were checked with a CAT scanner prior to excavation. The trenches were backfilled with the upcast material and compressed by the machine until the surfaces were level.
- 6.3 The eight trenches were thought to be adequately sized to safely reach the brickearth, to a maximum depth of 1.2m BGL, based on the results of the first phase of geotechnical work. Sondages below this depth were excavated where necessary to establish the depth of the gravel.
- 6.4 The trenches were excavated in two phases as various parts of the warehouses became available. The first phase of work comprised Trenches 4, 5 and 8. The second phase of work comprised Trenches 1, 2, 3, 6, and 7.
- 6.5 Trench 8 was located in the car park area, within the footprint of the proposed development, towards the south-eastern corner of the site. This trench was excavated in the first phase of work and found undisturbed brickearth c.0.60m BGL. This provided a guide to the geology of the site for the later trenches and was used to indicate if they had been truncated by the previous development.
- 6.6 Seven of the eight trenches were located in various locations throughout the warehouse buildings. Initially the trenches were excavated to their full length but as they encountered a high degree of truncation due to the construction of the warehouse floor slab, a different method was adopted for the second phase of work. The additional geotechnical results were also received at this point, which indicated high levels of truncation within most of the warehouse buildings. The new strategy involved the initial digging of a 2m x 2m trial trench to check the extent of the made ground and level of truncation, before proceeding with the full trench if undisturbed deposits were identified. Trench 1, Trench 2 and Trench 3, located in the western warehouse, encountered the highest levels of truncation so therefore only the trial trench was excavated in agreement with GLAAS. Trench 6 and Trench 7 were targeted on areas of the warehouse where the borehole logs had suggested less truncation and therefore the potential for a higher survival of untruncated brickearth. In this case both trenches were excavated to their full length.
- 6.7 A lower concrete slab was present in Trenches 1-5 at levels of 8.40m OD, 8.13m OD, 8.32m OD, 8.67m OD and 7.88m OD respectively.

Trench Number	Orientation	Length	Width	Depth	Highest level (top of concrete)	Lowest level
1	E-W	2.00m	2.00m	1.81m	9.43m OD	7.62m OD
2	N-S	2.00m	2.00m	1.98m	9.43m OD	7.45m OD
3	E-W	2.00m	2.00m	2.02m	9.42m OD	7.40m OD

6.8 The trench dimensions and highest and lowest levels are tabulated below:

Trench Number	Orientation	Length	Width	Depth	Highest level (top of concrete)	Lowest level
4	NW-SE	25.00m	2.00m	1.85m	9.37m OD	7.52m OD
5	E-W	25.00m	2.00m	2.01m	9.39m OD	7.38m OD
6	N-S	10.00m	2.00m	1.81m	9.31m OD	7.50m OD
7	E-W	10.00m	2.00m	1.43m	9.36m OD	7.93m OD
8	NE-SW	15.00m	2.00m	1.85m	9.77m OD	7.92m OD

- 6.9 All excavations were supervised by the author or an experienced archaeologist and proceeded in 100mm spits using a 360 degree tracked machine with a toothless bucket. Modern surface concrete and thick tarmac were broken out with a breaker attached to the machine.
- 6.10 Trenches were CAT scanned after each spit through made ground was removed in order to check for buried services which might not have been marked on the service plan.
- 6.11 All open trenches were secured with fence panels to prevent unauthorised access.
- 6.12 The trenches were cleaned by hand, recorded and photographed. Recording of the deposits was accomplished using the Single Context Recording Method on proforma context and planning sheets. Contexts were numbered and are shown in this report within squared brackets. Plans were drawn at a scale of 1:20 and 1:50 and sections at a scale of 1:10 and 1:20.
- 6.13 The proposal follows CIFA guidelines, and the methodologies set out in Historic England (GLAAS) Guidance Papers for standards and practices in archaeological fieldwork watching briefs and assessments and evaluation.

7 ARCHAEOLOGICAL SEQUENCE, BY TRENCH

- 7.1 Six phases of activity were noted during the evaluation:
 - Phase 1 represented the natural gravel
 - Phase 2 represented the natural brickearth and alluvial deposits
 - Phase 3 represented a layer of sub-soil
 - Phase 4 represented 19th century made ground

7.2 Trench 1

Phase 1

7.2.1 The earliest deposit encountered in this trench was layer [21] a compact mid orangey brown sandy clay gravel. This layer was interpreted as natural terrace gravel and represented the natural drift geology on this site. The layer was recorded at a highest level of 7.73m OD.

Phase 2

7.2.2 Sealing the gravel in this trench was layer [9] a layer of natural brickearth. The layer was encountered at 8.03m OD and was 0.30m thick. The top of the brickearth had been heavily reworked during the construction of the previous buildings on the site and was clearly horizontally truncated.

Modern

- 7.2.3 A layer of made ground sealed the brickearth, which was then sealed by a concrete slab. The concrete slab was encountered at approximately 8.23m OD.
- 7.2.4 Covering this layer of concrete was another layer of made ground which was sealed by another reinforced concrete slab which formed the existing ground surface at 9.43m OD.



Plate 1: General Shot of Trench 1 – Looking West

^{7.3} Trench 2

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Phase 1

7.3.1 The earliest deposit encountered in Trench 2 was a layer [20] of natural compact sand and gravel. The layer was recorded at 7.23m OD.

Phase 2

7.3.2 Sealing the gravel was a layer [10] of natural brickearth. This layer was encountered at 7.43m OD. The top of the brickearth had been heavily reworked during the construction of the previous buildings on the site and was clearly horizontally truncated.

Phase 3

7.3.3 The brickearth was covered by a layer [13] of firm mid-greyish brown 19th century made ground. This layer was recorded at 7.73m OD and was 0.30m thick.

Modern

- 7.3.4 A layer of made ground sealed the brickearth, which was sealed by a concrete slab. The concrete slab was encountered at approximately 8.23m OD.
- 7.3.5 Covering this layer of concrete was another layer of made ground which was sealed by another reinforced concrete slab which formed the existing ground surface at 9.43m OD.



Plate 2: Trench 2 – Looking North

7.4 Trench 3

Phase 2

7.4.1 The earliest deposit encountered in this trench was layer [11], a firm orangey brown silty clay interpreted as natural brickearth. This deposit was recorded in the base of the trench at 7.32m OD.

Phase 3

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7.4.2 Sealing the natural brickearth was a layer [12] of 19th century made ground which was encountered from 7.72m OD and was 0.30m thick. The layer was very dark, suggesting that some of the contamination from the battery factory had soaked into it.

Modern

- 7.4.3 A layer of more modern made ground sealed layer [12], which was in turn sealed by a concrete slab. The lower concrete was encountered at approximately 8.22m OD.
- 7.4.4 Covering this layer of concrete was another layer of made ground which was sealed by another reinforced concrete slab which formed the existing ground surface at 9.42m OD.



Plate 3: Trench 3 – Looking West

7.5 Trench 4

Phase 1

7.5.1 The earliest deposit identified in this trench was a layer of natural gravel [8] seen at the base of a sondage in the trench. This natural layer was a compact mid-orangey brown sandy clay gravel. It was recorded from 7.62m OD and was interpreted as being part of the natural geology. The full thickness of the layer was unknown as it continued beyond the base of the trench.

Phase 2

7.5.2 A layer of natural brickearth [7] sealed the natural terrace gravel. This layer was encountered at 7.92m OD and was 0.30m thick. The top of the brickearth had been truncated during the construction of the 19th century buildings and there was no evidence for features cut into it.

Modern

- 7.5.3 A layer of made ground sealed the brickearth which was sealed by a concrete slab. This concrete was encountered at approximately 8.17m OD.
- 7.5.4 Covering the lower concrete slab was another layer of made ground which was sealed by a reinforced concrete slab. The upper slab formed the existing ground surface at 9.37m OD.

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Plate 4: Trench 4 – Looking North-West

7.6 Trench 5

Phase 1

- 7.6.1 A layer of natural gravel [6] was the earliest deposit encountered in this trench and was recorded in sondages in the eastern and western end of the trench. The layer comprised a loose mid brownish orange sandy gravel and was interpreted as natural terrace gravel and was recorded sloping from 7.70m OD to the west and 7.48m OD in the east. The full thickness of the layer was unknown as it continued beyond the base of the trench.
- 7.6.2 Sealing the terrace gravel was an additional layer [5] of gravel which was also recorded in a sondage. It was loose mid greyish green sandy gravel. It was recorded at 7.74m OD and had a maximum recorded thickness of 0.26m. This layer of gravel appeared to seal the lower terrace

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gravels, but it could easily just be a discolouration of this terrace gravel sequence by the contamination on the site.

Modern

- 7.6.3 A layer of made ground sealed the gravel which was in turn sealed by a concrete slab. The slab was encountered at approximately 8.39m OD.
- 7.6.4 Covering this layer of concrete was another layer of made ground which was sealed by another reinforced concrete slab which formed the existing ground surface at 9.39m OD.



Plate 5: Trench 5 – Looking East

7.7 Trench 6

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Phase 1

7.7.1 The earliest deposit encountered in this trench was a layer [19] of firm mid reddish brown clay gravel recorded in a sondage in the trench. This deposit was recorded at a highest level of 7.53m OD and was interpreted as natural terrace gravel. The full thickness of the layer was unknown as it continued beyond the base of the trench.

Phase 2

7.7.2 Sealing the terrace gravels was a layer [18] of natural brickearth. The layer comprised a firm mid reddish brown sandy silt with occasional sub-rounded gravels. The layer was recorded at 7.96m OD and was approximately 0.43m thick. No archaeological features were identified in the top of the layer

Phase 3

7.7.3 Sealing the natural brickearth was a sub soil layer [17] of friable mid reddish brown grey silty clay with occasional flecks of CBM, charcoal flecks and occasional rounded gravels. The layer was located at 8.58m OD and had a recorded thickness of 0.57m.

Modern

- 7.7.4 A layer of made ground sealed the sub soil, which was in turn sealed by a lower concrete slab. The concrete was encountered at approximately 8.81m OD.
- 7.7.5 Covering this layer of concrete was another layer of made ground which was sealed by an upper reinforced concrete slab, which formed the existing ground surface at 9.31m OD.



Plate 6: Trench 6 – Looking east showing brickearth [18]

7.8 Trench 7

Phase 1

7.8.1 The earliest deposit encountered in Trench 7 was a layer [15] of firm of mid reddish brown clay gravel which was recorded in a sondage in the middle of the trench. The deposit was recorded at a highest level of 8.00m OD and was interpreted as natural terrace gravel. The full thickness of the layer was unknown as it continued beyond the base of the trench.

Phase 2

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7.8.2 Sealing the terrace gravel in this trench was a layer [14] of firm mid-light orangey reddish brown silty clay with occasional sub-rounded gravel. This deposit was recorded at a highest level of 8.46m OD and was interpreted as natural brickearth. No archaeological features were noted in the top of the brickearth layer.

Phase 3

7.8.3 Sealing the natural brickearth was a layer [16] of friable mid reddish brown sandy silt subsoil with occasional flecks of CBM, flecks of coal and occasional sub-rounded gravel. It was recorded at 8.66m OD and was approximately 0.25m thick. This was interpreted as the remains of a sub soil of indeterminate date.

Modern

- 7.8.4 A layer of made ground sealed the sub soil, which was in turn sealed by a lower concrete slab. The concrete was encountered at approximately 8.96m OD.
- 7.8.5 Covering this layer of concrete was another layer of made ground which was sealed by an upper reinforced concrete slab which formed the existing ground surface at 9.36m OD.



Plate 7: Showing Trench 7 looking east showing brickearth [14] and terrace gravel [15]

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Plate 8: Trench 7 – looking south showing brickearth [14] and sub-soil [16]

7.9 Trench 8

Phase 1

7.9.1 The earliest deposit encountered was a layer [4] of loose mid brownish orange sandy gravel only recorded within a sondage at northern end of the trench. This layer was recorded at a highest level of 8.04m OD and was interpreted as natural terrace gravel. The full thickness of the layer was unknown as it continued beyond the base of the trench.

Phase 2

- 7.9.2 Sealing the natural terrace gravels was a layer [3] of firm mid orangey brown sandy clay silt. This deposit was recorded at a highest level of 8. 62m OD and had a thickness of 0.60m. the layer was interpreted as natural brickearth.
- 7.9.3 Sealing the natural brickearth in the northern half of the trench was a layer [2] of firm light greenish grey silly clay with occasional small sub-rounded pebbles. The layer was recorded at 8.92m OD and was approximately 0.30m thick. This layer was interpreted as natural alluvium.
- 7.9.4 Similar to layer [2] but more patchy was another alluvial layer [1]. This was a firm light greenish grey silty clay with occasional small sub-rounded pebbles. It was recorded at a highest level of 9.12m OD and was 0.20m in thickness. This layer was mostly seen in the northern half of the trench and was not continuous across the trench. The two alluvial layers were interpreted as flood or shallow pond deposits possibly relating to the Lea flood plain.

Modern

- 7.9.5 As Trench 8 was located outside the warehouse building it did not have the same sequence of reinforced concrete and made ground as the previous seven trenches.
- 7.9.6 A layer of made ground sealed the natural deposits, which in turn was covered by a thick layer of tarmac which formed the existing ground surface at 9.77m OD. The made ground partially truncated the earlier alluvial deposits.

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Plate 9: Trench 8 – looking north showing brickearth [3]

8 CONCLUSIONS AND RESEARCH OBJECTIVES

8.1 General Discussion

8.1.1 The evaluation identified four broad phases of deposits and activity.

Phase 1 – Natural Gravel

Trench	Context No.	Highest Level		
1	21	7.73		
2	20	7.23		
4	8	7.62		
5	6	7.74		
6	19	7.70		
7	15	8.00		
8	4	8.04		

8.1.2 Natural terrace gravels were encountered in seven of the eight trenches excavated. These deposits were mostly encountered within deeper sondages in the base of the trenches. There seemed to a change in the level of the gravel terrace with a highest level of between 8.04m OD and 8.00m OD in the trenches to the east with the levels showing a fall to where the gravel was encountered to the west of between 7.73m OD and 7.62m OD. This seemed to fit the overall pattern from other data that showed the gravel sloping down from the dry land in the east towards the floodplain of the Lower Lea Valley to the west.

Phase	2 –	Natural	Brickearth
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Trench	Context No.	Thickness	Highest Level	Lowest Level
1	9	0.30	8.03	N/A
2	10	0.20	7.43	N/A
3	11	Unknown	7.32	N/A
4	7	0.30	7.92	7.68
6	18	0.43	7.96	7.89
7	14	0.47	8.46	8.44
8	3	0.60	9.18	8.62

8.1.3 The natural brickearth was encountered to some degree in all of the trenches excavated but modern truncations had an impact on the height at which it survived. Down the western side of the site in the warehouse the brickearth had been heavily truncated by 19th and 20th century

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construction. Across the site to the east and to the south a more complete sequence of brickearth had survived partly due to the varying impact of the construction of the warehouse and car park in this location and the survival of these deposits on the higher drier terrace edge away from such impacts as erosion and flooding.

Phase 3 – Sub Soil

8.1.4 A sub-soil/plough soil deposit was encountered in Trench 7, sealing a relatively intact layer of brickearth. Although no dating evidence was recovered from this layer and there were no associated features it indicated that an early land surface pre-dated the factories built on the site. Until the 19th century, the surrounding land was open fields so the layer could be an agricultural soil of an unknown date. This layer was encountered at a level of 8.66m OD. A further sub soil layer was identified in Trench 6, which had been targeted on a location where the geotechnical investigation suggested lesser truncation of the below ground deposits. The layer was located at 8.58m OD and had a recorded thickness of 0.57m.

Phase 4 – 19th century Made Ground

8.1.5 An earlier layer of made ground was identified in Trenches 2 and 3. This was dark and silty in nature, perhaps suggesting it had been wet at some point, and also stained with contamination from the battery factory.

Modern

8.1.6 The evaluation demonstrated that the trenches located within the warehouse had the most extensive impact from modern truncation. The concrete floor slab of the early 20th century factory still remained beneath the current concrete floor slab of the existing warehouse built in the late 20th century, at a depth of between 7.88m OD and 8.67m OD, in Trenches 1-5. The greatest impact was found in the far western part of the warehouse where in this location the concrete in both floor slabs was at it thickest. Within the buildings, the floor level had been raised about 1.00m from the existing ground level to form the warehouse floor. The external ground level to the south-west of the current buildings was c.8.5m OD and in the south-east of the site it was 9.78m OD, reflecting the general slope of the area down towards the Lea. Inside the buildings, the ground level ranged from 9.43m OD to 9.30m OD. To the north of the warehouses, on the northern boundary of the site, there was a drop down from the back of the warehouse to ground level, which was at 8.33m OD.

8.2 Research Objectives

8.2.1 The WSI for the evaluation identified the following research objectives:

To determine the natural topography of the site, and the height at which it survives.

8.2.2 Natural deposits were encountered in all of the trenches excavated across the site, which indicated the natural topography of the site. Towards the south-east of the site there was a higher area of intact brickearth (between 9.18m OD and 8.46m OD) away from the flood plain of the River Lea, as was seen at Mannequin House, directly to the north of the site (MOLA 2014 & 2015). At Mannequin House, the untruncated brickearth was located at 9.35m in the south of the site and 8.55m OD in the north of the site, although the topography does slope up slightly to the east in this area, away from the Lea. Towards the western side of the site the brickearth and gravel seems to fall away (between 7.43m OD and 7.32m OD), down towards the River Lea. This can only be broadly conjectured at this stage as the impacts of later 20th century activity has made it difficult to get a more accurate picture of the original topographic landscape across the site.

To establish the presence or absence of prehistoric activity, its nature and (if possible) date. Is the site located on the gravel river terrace or within the flood zone or channel? Is there further evidence for Iron Age use of the area as seen at Ferry Lane to the west?

8.2.3 Despite being close to sites containing evidence of prehistoric activity there were no features or finds related to this period. The Ferry Lane site (PCA 2016) found no brickearth at all-the sequence comprised gravel overlain by alluvium and peat layers. The prehistoric archaeology found at Ferry Lane was located at 5.88m OD, reflecting the site's location on the edge of the river channel.

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To establish the potential for the site to contain peat deposits of interest

8.2.4 Despite the presence of alluvial deposits in one of the trenches no peat deposits were encountered in any of the trenches during this phase of work. The site appeared to be located wholly on the higher, drier land, with the alluvium in Trench 8 relating to localised flood or pond features.

To establish the presence or absence of medieval activity

8.2.5 No evidence for medieval activity was recorded on the site. It is possible that the subsoil may be of this date but no dating material was recovered from it.

To establish the presence of post-medieval activity at the site.

8.2.6 There was no direct evidence of early post-medieval activity on the site. The layer of plough soil / sub-soil could be attribute to this period as there were open fields in this area but without any dating evidence this cannot be said with any great certainty.

To establish the nature, date and survival of activity relating to any archaeological periods at the site.

8.2.7 There is no evidence from any of the trenches of activity that can be attributed to any archaeological period. Layers of a possible agricultural soil were encountered, but the absence of any dating evince makes it difficult to relate it to any archaeological period.

To establish the extent of all past post-depositional impacts on the archaeological resource.

- 8.2.8 The construction of the factory in the early 20th century and the later construction of the warehouses have all had an impact to some degree or another across the site. On the western side of the site the construction of the early factories has had the most impact. The extent of the truncation was less comprehensive in Trenches 6 and 7. A layer of subsoil was identified in these trenches at 8.66m OD and 8.58m OD.
- 8.2.9 In Trench 8, the later development had partially truncated the alluvial layers over the brickearth and no sub soil survived.
- 8.2.10 It is likely that the lower concrete slab, located between 7.88m OD and 8.40m OD, comprised the floor slab constructed for the first factories on the site, with horizontal levelling and made ground inserted below this slab to form a base for it. The made ground located above this lower slab may represent demolition rubble from the bomb damaged factories, which the current slab has subsequently been constructed on. This would account for the slope upwards into the current buildings. Ground level at Mannequin House was at 8.62m OD in the north of the site and 9.88m OD in the south of the site.

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MOLA 2015 BLACKHORSE LANE London E17 London Borough of Walthamstow [sic] Report on archaeological evaluation unpublished client report

10 ACKNOWLEDGEMENTS

- 10.1.1 Pre-Construct Archaeology would like to thank CgMS Heritage for commissioning this investigation on behalf of Telford Homes.
- 10.1.2 Pre-Construct Archaeology would like to thank Adam Single of Historic England for monitoring the work. James Archer of CgMS for his consultancy management work and Suki of Oakwood Demolition for his on-site assistance.
- 10.1.3 Thanks are given to Guy Seddon for on-site surveying advice and Ray Murphy for the illustrations.
- 10.1.4 Special thanks are given to Helen Hawkins for her project management and the editing of this report.

Site Code	Context No.	Trench	Plan	Section	Туре	Description	Highest Level	Dimensions (N-S)	Dimensions (E-W)	Thickness/Depth	Phase
FSR18	1	8	Tr. 8	2	Layer	Alluvium	9.12	11.90	2.00	0.20	2
FSR18	2	8	Tr. 8	2	Layer	Alluvium	8.92	11.90	2.00	0.30	2
FSR18	3	8	Tr. 8	1, 2	Layer	Brickearth	9.18	15.20	2.00	0.60	2
FSR18	4	8	Tr. 8	2	Layer	Gravel	8.04	2.60	2.00	Unknown	1
FSR18	5	5	Tr. 5	3	Layer	Gravel	7.74	2.00	4.40	0.26	1
FSR18	6	5	Tr. 5	3, 4	Layer	Gravel	7.70	2.00	4.40	Unknown	1
FSR18	7	4	Tr. 4	5, 6	Layer	Brickearth	7.92	2.00?	2.10?	0.30	2
FSR18	8	4	Tr. 4	5, 6	Layer	Gravel	7.62	2.00?	2.10?	Unknown	1
FSR18	9	1	Tr. 1	9	Layer	Brickearth	8.03	2.00	2.00	0.30	2
FSR18	10	2	Tr. 2	8	Layer	Brickearth	7.43	2.00	2.00	0.20	2
FSR18	11	3	Tr. 3	7	Layer	Brickearth	7.32	2.00	2.00	Unknown	2
FSR18	12	3	Tr. 3	7	Layer	Made ground	7.72	2.00	2.00	0.30	4
FSR18	13	2	Tr. 2	8	Layer	Made ground	7.73	2.00	2.00	Unknown	4
FSR18	14	7	Tr. 7	10	Layer	Brickearth	8.46	2.30	10.00	0.47	2
FSR18	15	7	Tr. 7	10	Layer	Gravel	8.00	2.30	2.50	Unknown	1
FSR18	16	7	Tr. 7	10	Layer	Sub soil	8.66	2.30	10.00	0.25	3
FSR18	17	6	Tr. 6	11	Layer	Sub soil	8.58	5.00	2.00	0.57	3
FSR18	18	6	Tr. 6	11	Layer	Brick-Earth	7.96	5.00	2.00	0.43	2

APPENDIX 1: CONTEXT INDEX

APPENDIX 2: SITE MATRIX

	Trench 1	Trench 2	Trench 3	Trench 4	Trench 5	Trench 6	Trench 7	Tren
	+	+	+	+	+	+	+	-
Modern:								
hase 4:								
		13	12					
hase 3:		+	++-+-+					
						47	16	
						17	10	
hase 2:								
				7				
	9	10		7		18	14	
hase 1:					5			
	21	20		8	6	19	15	4
	NFE	N						

APPENDIX 3: OASIS REPORT FORM

OASIS ID: preconst1-322526

Project details

Project name	Equipment Works, Forest Road, Walthamstow: An Archaeological Evaluation							
Short description of the project	An archaeological evaluation was carried out on land at the Equipment Works, Forest Road, Walthamstow, E17 6JF. Eight trenches were excavated across the site. Natural deposits were noted in the eight trenches excavated. Natural terrace gravels were sealed by a layer of brickearth. Some areas of alluvial/flood deposits were identified in one trench and seemed to be formed by localised flooding from the nearby River Lea. A sub-soil layer was identified in two trenches. Modern truncation was encountered in all the trenches and this was seen to be most severe towards the western side of the site, within the standing buildings, where a concrete floor slab from previous factory buildings was located at 1.2m BGL. Less disturbance was noted in the car park area. No archaeological finds or features were noted.							
Project dates	Start: 11-06-2018 End: 06-07-2018							
Previous/future work	No / Not known							
Any associated project reference codes	FSR18 - Sitecode							
Type of project	Field evaluation							
Site status	Local Authority Designated Archaeological Area							
Current Land use	Industry and Commerce 4 - Storage and warehousing							
Monument type	PLOUGH SOIL Uncertain							
Methods & & & & & & & & & & & & & & & & & & &	"Targeted Trenches"							
Development type	Urban residential (e.g. flats, houses, etc.)							
Prompt	National Planning Policy Framework - NPPF							
Position in the planning process	After full determination (eg. As a condition)							

Project location				
Country	England			
Site location	GREATER LONDON WALTHAM FOREST WALTHAMSTOW Equipment Works, Forest Road, Walthamstow,			
Postcode	E17 6JF			
Study area	1.28 Hectares			
Site coordinates	TQ 3574 8950 51.587491009497 -0.040421164901 51 35 14 N 000 02 25 W Point			
Height OD / Depth	Min: 7.73m Max: 8.04m			
Project creators				
Name of Organisation	Pre-Construct Archaeology Ltd.			
Project brief originator	CGMS Heritage (part of the RPS Group)			
Project design originator	James Archer			
Project director/manager	Helen Hawkins			
Project supervisor	Matt Edmonds			
Type of sponsor/funding body	Property Developers			
Name of sponsor/funding body	Telford Homes			
Project archives				
Physical Archive Exists?	No			

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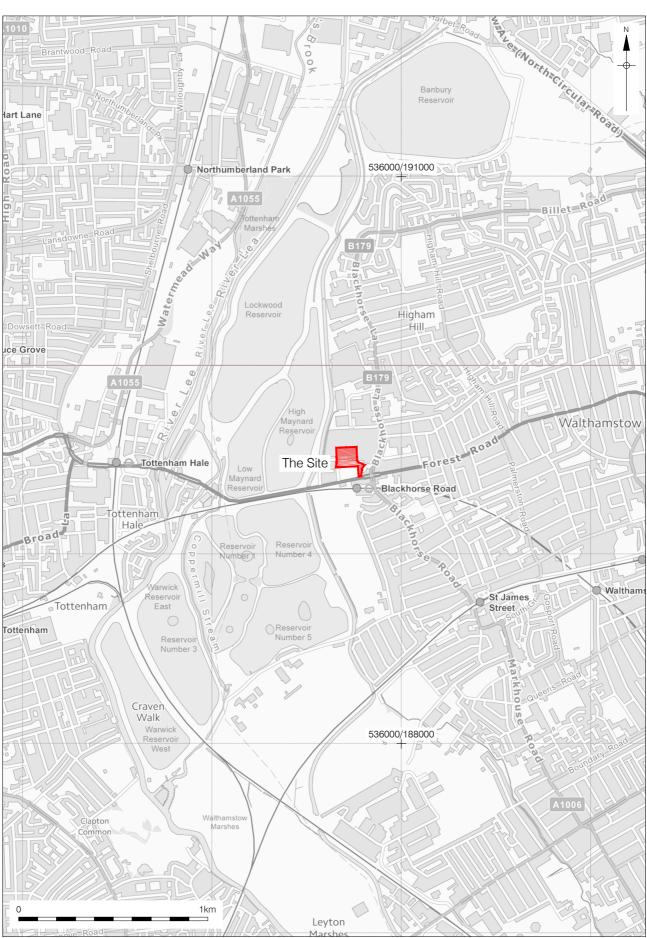
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Digital Archive ID		FSR18					
Digital Contents		"none"					
Digital available	Media	"Database","Images raster / digital photography","Spreadsheets","Survey","Text"					
Paper recipient	Archive	LAARC					
Paper Archive ID		FSR18					
Paper Contents		"none"					
Paper available	Media	"Context sheet","Diary","Plan","Section"					
Project bibl 1	liography						
Publication type		Grey literature (unpublished document/manuscript)					
Title		Equipment Works, Forest Road, Walthamstow: An Archaeological Evaluation					
Author(s)/Editor(s)		Edmonds, M.					
Date		2018					
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Place of issue or publication		London					
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APPENDIX 4: FIGURES

Figure 1 Site Location

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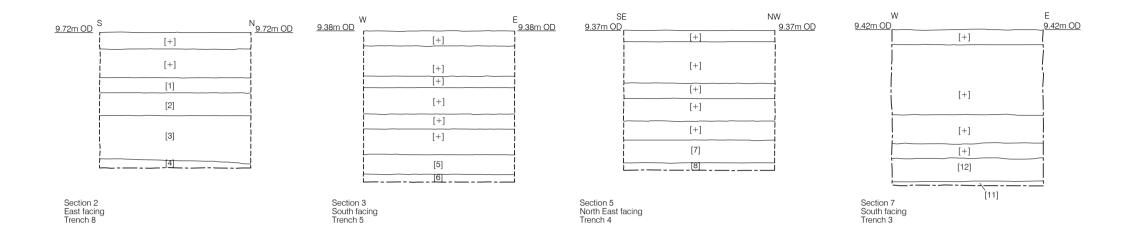
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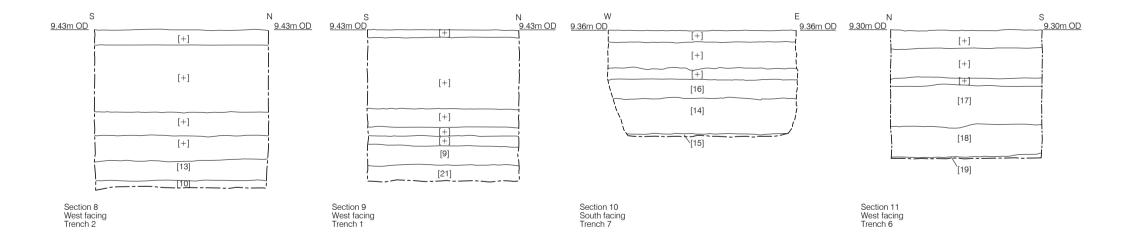
Figure 1 Site Location 1:20,000 at A4



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Figure 2 Trench Location 1:1,000 at A4







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Figure 3 Selected Sections 1:50 at A4

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