LAND AT IMPERIAL 1 LINDHILL, LONDON, E3 3EA

Archaeological Evaluation

Planning reference			
Local planning authority	London Borough of Tower Hamlets		
PCA report no.	R13843	*Site Code*	IMP19
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PRE-CONSTRUCT ARCHAEOLOGY LIMITED

www.pre-construct.com

Project Information	
Site name	LAND AT IMPERIAL 1 LINDHILL, LONDON, E3 3EA
Project type	Archaeological Evaluation
Site address	IMPERIAL 1 LINDHILL, LONDON, E3 3EA
NGR	TQ 38252 82634
Local planning authority	London Borough of Tower Hamlets
Planning reference	
Commissioning client	AECOM on behalf of the Guinness Partnership Ltd.
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CONTENTS

1 ABSTRACT

1.1 This report details the working methods and results of an archaeological watching brief conducted by Pre-Construct Archaeology Ltd on land at Imperial 1 Lindhill, E3 3EA, TQ 38252 82634 (Figure 1). The fieldwork was undertaken between 28th August and 12th September 2019 and was commissioned by AECOM on behalf of the Guinness Partnership Ltd.

1.2 The site is almost entirely located within the Lea Valley Archaeological Priority Area (APA DLO35950) as defined by the London Borough of Tower Hamlets (Historic England 2017).

1.3 The archaeological watching brief monitored the excavation of thirteen geotechnical test pits. It was primarily undertaken in order to test and, if necessary, revise an existing deposit model for the site, which can be found in the Written Scheme of Investigation (AECOM 2019). In addition to the results of the watching brief, this report therefore also makes use of historic borehole data held on the Geological Society's online portal as well as boreholes and window samples obtained from previous investigations by Delta-Simons (2010) and GB Card and Partners (2015) that were used to build the original deposit model.

1.4 The archaeological watching brief that forms the focus of this report has demonstrated that a layer of natural sandy gravel underlies much of the watching brief area, sloping from a maximum height of 6.54m OD in the west to a low of 2.33m OD in the east-central section of the site. Historic borehole data demonstrates that the gravel continues to slope downwards in an easterly direction within the confines of the site, where it was encountered at a maximum depth of -3.5m OD in the southeast corner. This deposit represents Taplow terrace gravel and / or Kempton Park Gravel, the presence of which was predicted by the British Geological Survey (BGS 2019) and the existing deposit model (AECOM 2019). Prior to commencement of this watching brief, brickearth and peat had not been identified within the confines of the site, however this study has demonstrated that terrace gravel was indeed sealed by brickearth and a thin, isolated or discontinuous veneer of peat in the north-central section of the site. These deposits were overlain by a thick layer of alluvium, which also covered all other untruncated areas of the site. The top of the alluvium sloped from a maximum height of 6.84m OD in the west to a minimum level of -1.1m OD in the east. The alluvium was in turn sealed by made ground of late post-medieval to modern date and modern concrete.

2 INTRODUCTION

2.1 This report details the results and working methods of an archaeological watching brief that was undertaken by Pre-Construct Archaeology Ltd on land at Imperial 1 Lindhill, E3 3EA (Figure 1). The watching brief monitored thirteen geotechnical test pits that were dug in advance of the redevelopment of the site.

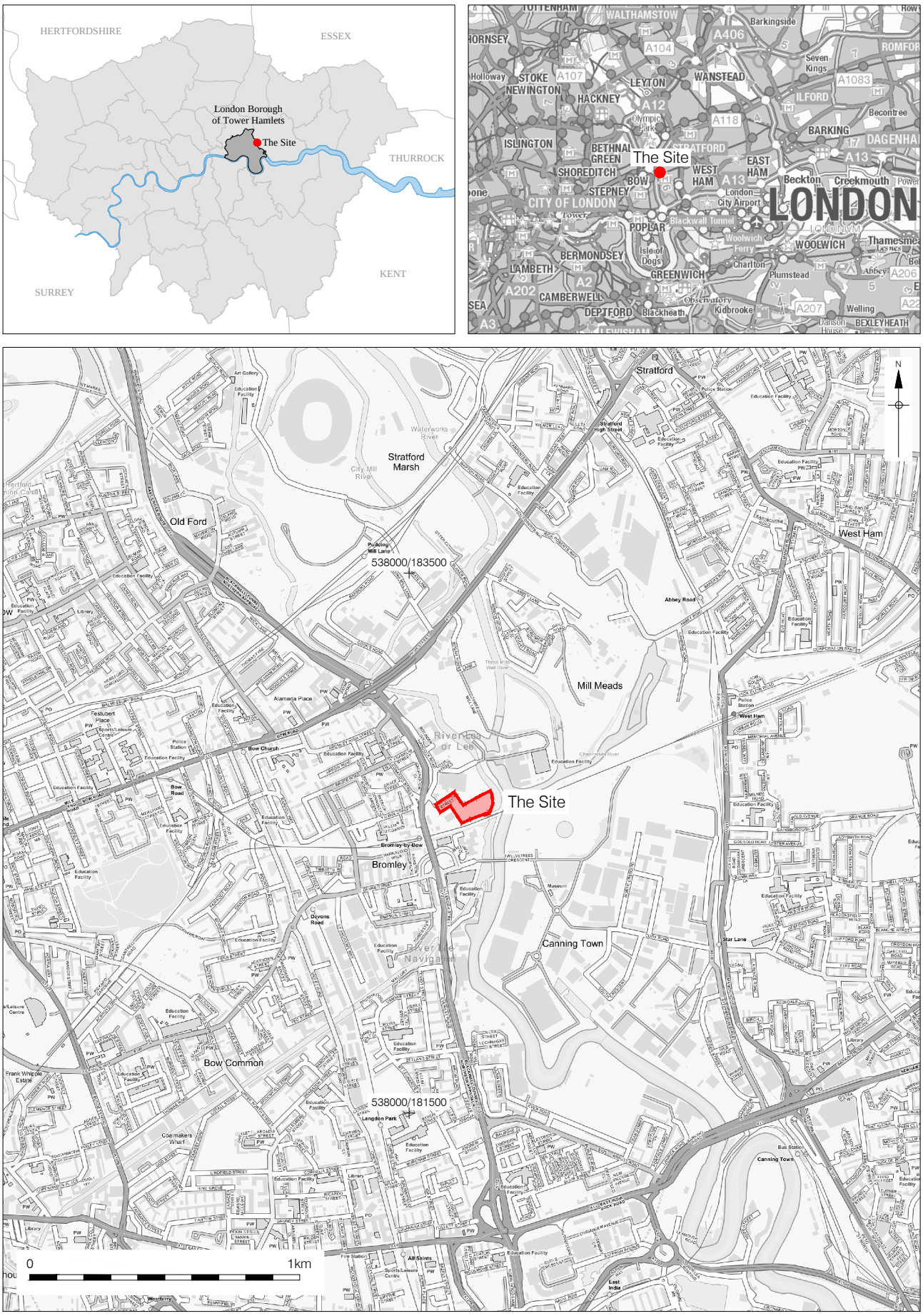
2.2 The site consisted of a plot of land situated upon the western bank of the River Lea. It was approximately 1.2 hectares in size and was centred upon National Grid Reference TQ 38252 82634. The north-west section of the site currently accommodated two office buildings, neither of which possess basements, with a car park in between. The rest of the site was in use as a scaffold yard (AECOM 2019). The site was bounded to the north by Imperial Street and a carpark associated with a superstore fronting Hancock Road and Three Mill Lane, to the east by the River Lea, to the south by a railway line and to the west by buildings and open land within a plot that fronts the A12, Hancock Road and Imperial Street (the site of Imperial 2).

2.3 The site was previously the subject of an archaeological desk-based assessment, which highlighted the fact that it is almost entirely located within the Lea Valley Archaeological Priority Area (APA DLO35950) as defined by the London Borough of Tower Hamlets (AECOM 2017; Historic England 2017).

2.4 The investigation was conducted by PCA, variously under the supervision of Ester Capuz Durán and Ellen Green. It was project managed by Helen Hawkins and was monitored by Adam Single of Historic England on behalf of the local planning authority, the London Borough of Tower Hamlets. The archaeological work was commissioned by AECOM on behalf of the Guinness Partnership Ltd.

2.5 A site-specific Written Scheme of Investigation (WSI) detailing the methodology and work programme for the archaeological watching brief was prepared prior to the fieldwork and was approved by Adam Single for the Greater London Archaeological Advisory Service (GLAAS) on behalf of the London Borough of Tower Hamlets (AECOM 2019).

2.6 The completed archive comprising written, drawn and photographic records will, upon completion of the project, be deposited with the London Archaeological Archives (LAA) under the unique site code IMP19.



15/10/19 MR

Figure 1
Site Location
1:800,000, 1:250,000, 1:20,000 at A4

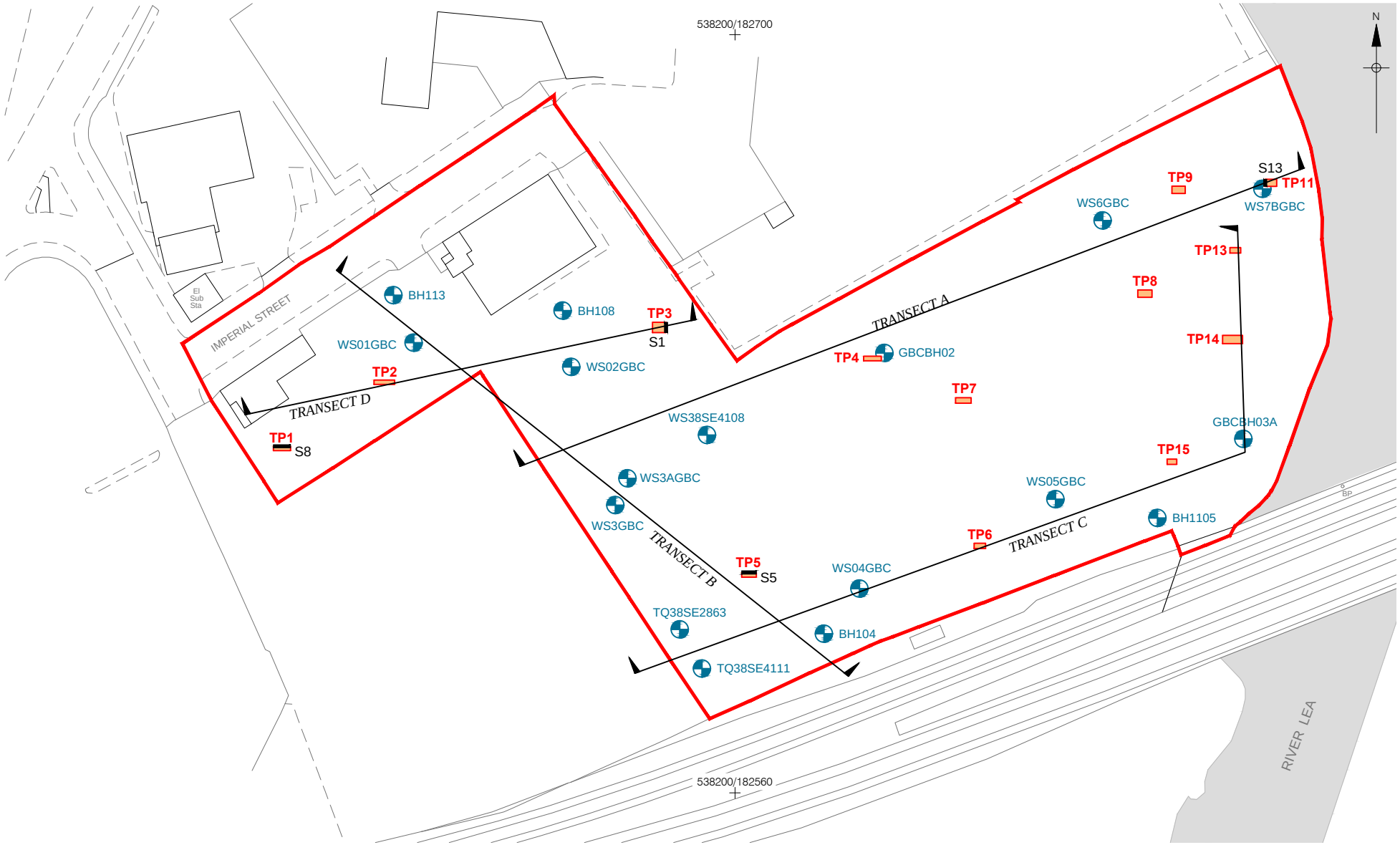


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Figure 2
Detailed Site Location showing Location of Transects
1:1,000 at A4

3 PLANNING BACKGROUND

3.1 General Planning Background

3.1.1 The redevelopment of the site is subject to heritage policies contained within the National Planning Policy Framework (NPPF), adopted in 2012 and revised in 2018 and 2019, the London Plan (2016), the London Borough of Tower Hamlets' Core Strategy (2010) and the London Borough of Tower Hamlets' Managing Development Document (2013).

3.2 National Guidance: National Planning Policy Framework

3.2.1 The National Planning Policy Framework (NPPF) was adopted in 2012 and updated in 2018 and 2019. The NPPF constitutes guidance for local planning authorities and decision-takers both in drawing up plans and as a material consideration in determining applications. Chapter 16 of the NPPF 2019 concerns the conservation and enhancement of the historic environment.

3.2.2 In considering any proposal for development, including allocations in emerging development plans, the local planning authority will be mindful of the policy framework set by government guidance, existing development plan policy and of other material considerations.

3.3 Regional Policy: The London Plan

3.3.1 Additional relevant planning strategy framework is provided by The London Plan, first published July 2011, updated March 2016. Specifically, Policy 7.8 is of relevance to archaeology within Greater London.

3.4 Local Policy: Archaeology in the London Borough of Tower Hamlets

3.4.1 This study aims to satisfy the objectives of the London Borough of Tower Hamlets which fully recognises the importance of the buried heritage for which it is the custodian. Relevant policy statements for the protection of the buried archaeological resource within the borough are contained within Policy SP10 of the Tower Hamlets Core Strategy 2010 and Policy DM27 of the London Borough of Tower Hamlets Managing Development Document 2013, both of which form part of the London Borough of Tower Hamlets Local Plan.

3.5 Site-Specific Planning Background

3.5.1 The site does not contain Listed buildings, Scheduled Monuments or registered parks and gardens, nor does it form part of or lie within a World Heritage Site or Conservation Area. The site does, however, lie within an Archaeological Priority Area as defined on the London Borough of Tower Hamlets and English Heritage (English Heritage 2017).

3.5.2 In agreement with the London Borough of Tower Hamlets' Archaeological Officer, AECOM requested Pre-Construct Archaeology to archaeologically monitor the excavation of a series of geotechnical test pits (a watching brief). Prior to commencement, the project design was detailed within a Written Scheme of Investigation (AECOM 2019) which was

approved by Adam Single of the Greater London Archaeological Advisory Service (GLAAS) on behalf of the London Borough of Tower Hamlets.

4 GEOLOGY AND TOPOGRAPHY

4.1 The Geological Survey of England and Wales suggests that the bulk of the site sits above London Clay (deposited 48 to 56 million years ago; *ibid.*). That same source suggests that within the confines of the site London Clay is sealed by Taplow Terrace Gravel of Pleistocene date, however Kempton Park Gravel, also of Pleistocene date, is predicted to be present along the eastern margin of the site (BGS 2019).

4.2 A deposit model exists for the Imperial 1 site (set out in full in the Written Scheme of Investigation; AECOM 2019). This has been built using historic borehole data held on the Geological Society's online portal coupled with the results of ground investigation works carried out by Delta-Simons (2010) and GB Card and Partners (2015). A total of twelve boreholes, ten window samples and two trial pits have been used to inform the deposit model (AECOM 2019). Three transects were created (Transects A, B and C), the locations of which are shown in Figure 2 as are the locations of the various interventions that were used to build the model. A fourth, new transect (Transect D) was created as a result of this study.

4.3 The combined results of these various borehole surveys suggest that the site is underlain by sands and gravels of the Lambeth Group, the tops of which were encountered in two interventions at depths of -19m OD (BH104) and -19.92m OD (BH105). As predicted by the Geological Survey of Britain, London Clay was found to seal the Lambeth Group, the top of this geological unit having been observed in twelve instances at depths that varied between -16.8m OD in the south-central section of the site (TW38SE4108) and 1.2m OD in the northwest corner (BH108). As demonstrated by the depths of the clay as observed in the various test pits, boreholes and window samples that were used to build the deposit model, the London Clay appears to form an irregular contact with the overlying strata.

4.4 The deposit model also suggested that Thames terrace gravels sealed London Clay within the confines of the site, which according to the British Geological Survey represent a combination of Taplow Terrace Gravel (over the bulk of the site) and Kempton Park Gravel (towards the eastern edge of the site). These were observed at a maximum level of 5.6m OD in the west (WS3aGBC) falling to a depth of -3.5m OD in the south-east corner of the site (BH3aGBC).

4.5 Results obtained from these various borehole and window sample surveys suggested that the central and eastern sections of the site were overlain by a thick layer of alluvium. This either did not survive or was never present in the western side of the site (i.e. along Transect B; see Figure 2) as well as in other discrete locations scattered across the site. Where present, the top of the alluvium was observed at a maximum height of 1.4m OD in the south-central section (WS5GBC) and north-eastern sections of the site and at a maximum depth of -1.1m OD in the south-east corner of the site (BH3aGBC). A deposit of

late post-medieval to modern made ground and a modern concrete slab sealed the entire area.

4.6 In addition to the above survey, a geoarchaeological study was undertaken by MOLA within the confines of the Imperial 2 site (i.e. the tract of land that borders this site to the immediate west). In that location, Taplow Terrace Gravel had been severely truncated in late post-medieval to modern times, meaning that no alluvial or other deposits of geoarchaeological interest survived in that location (Stastney 2018).

4.7 The modern ground surface within the Imperial 1 site slopes downwards towards the River Lea from a maximum height of 8.8m OD in the west to a low of 5m OD in the east. The River Lea is the nearest watercourse, bounding the site to the immediate east.

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 The archaeological and historical background for the site is presented in full in a desk-based assessment previously undertaken by AECOM (AECOM 2017). Unless referenced otherwise, the following represents a brief synopsis of the conclusions that are contained therein.

5.2 Prehistoric

5.2.1 The sands and gravels that underlie the site were laid down by the River Thames and its tributaries during Pleistocene cold stages, when that river system took the form of a series of braided channels interspersed by gravel eyots. The Thames and its tributaries have generally cut downwards during cold stages owing to a combination of sea-level regression and tectonic uplift. Consequently, the Taplow Terrace Gravels are higher and older, while the Kempton Park Gravels are lower and younger (Stastney 2018). Both geological units formed in similar ways, however, so any Palaeolithic artefacts present within either of them will represent chance finds that have been redeposited from their primary depositional contexts via fluvial action. As such, it was previously concluded in a desk-based assessment that there is low potential for the presence of Palaeolithic material on the site, while the value of any evidence pertaining to that period would probably be medium at most (AECOM 2017).

5.2.2 Towards the end of the Palaeolithic, the latest phase of fluvial downcutting came to an end and the current floodplain of the Thames and its tributaries was established. The floodplain was exploited by bands of hunter-gatherers during the Mesolithic and, from the Neolithic onwards, farming communities, who continued to make use of the rich resources that the valley had to offer. Consequently, archaeological evidence for settlement and other activities pertaining to the Mesolithic to Neolithic characterise the Thames and Lea valleys, both along their banks and upon dry gravel eyots. Such areas would have been surrounded by rich natural resources whilst simultaneously providing good transport opportunities for travel by boat. Should the site have been positioned upon an eyot or bank of the River Lea during the later prehistoric period (Mesolithic to Neolithic) then the potential for archaeology pertaining to those periods is deemed to be moderate, with a value that would be medium at most (AECOM 2017).

5.2.3 Water levels rose during the Bronze Age and as such many areas close to or within river systems of the Thames and its tributaries became too wet for settlement. Timber trackways, built to facilitate access to the rich resources of the marshes, as well as fish traps and such like pertaining to the Bronze Age and Iron Age can nevertheless be found and when they do occur they are often well-preserved in anaerobic conditions below alluvium or peat. The potential for the presence of archaeology pertaining to these periods is again deemed to be moderate, with a value that would be medium at most (AECOM 2017).

5.3 Roman

5.3.1 The River Lea would no doubt have formed an important transport artery in the Roman period, supplying London and the surrounding area with a wide variety of goods and raw materials.

5.3.2 A Roman settlement existed at a crossing point over the river at Old Ford, to the north of the site. An important Roman road traversed the Lea at that point, which linked the major settlements of Londinium (London) and Camulodunum (Colchester). To the south of the site an east–west Roman road may have linked Tower Hill with Ratcliff. It is thought that this road ran along the edge of a gravel terrace that overlooked the marshes of the Thames (MOLA 2010). What is now Poplar High Street, just over 1km to the south, may lie on a continuation of the road, which was constructed around AD 70–80, remaining in use until the late-3rd century (ibid).

5.3.3 Little evidence for Roman activity exists in the immediate vicinity of the site, however. As such, it was concluded that a moderate potential for archaeology of Roman date exists that would be of medium value at most (AECOM 2017).

5.4 Medieval and Post-Medieval

5.4.1 The site most probably sat in undeveloped land or farmland for the duration of the medieval and early to mid-post medieval periods. A moderate potential for low value archaeological deposits relating to those periods therefore exists, which is probably limited to agricultural or pastoral features such as ditches, watering holes and so forth (AECOM 2017).

5.4.2 The site remained undeveloped until the mid to late 19th century, when a series of industrial buildings were constructed. Consequently, the made ground at the Site has a high potential for archaeological remains relating to 19th and 20th century industrial uses, the value of which is low (AECOM 2017).

6 ARCHAEOLOGICAL METHODOLOGY

6.1 A detailed methodology for the archaeological watching brief is set out in the Written Scheme of Investigation (AECOM 2019), which accords with standards and guidance set out by the Chartered Institute for Archaeologists (CIFA 2014).

6.2 The watching brief monitored the excavation of thirteen out of the sixteen geotechnical test pits that were originally proposed in the Written Scheme of Investigation (termed Test Pits 1–16 herein; AECOM 2019). Three of the interventions, Test Pits 10, 12 and 16, had to be abandoned due to the presence of below-ground intrusions. Concrete was also encountered in the base of Test Pit 15 at a depth of 1.3m below ground level. The test pits were distributed across the entire site as shown in Figure 2. Their excavation was monitored by an attendant archaeologist to establish the survival of any underlying archaeological deposits, features or structures and to improve the existing deposit model for the site. The test pits took the form of a series of small rectangular interventions with variable dimensions that were between 1.78m and 3.8m in length and 0.8m and 1.9m in width, with depths that varied between 1.3m and 4.4m (Table 1).

Table 1: Test Pit Dimensions

TEST PIT	LENGTH (m)	WIDTH (m)	DEPTH (m)
1	3.2	0.8	3.4
2	3.8	0.8	3.4
3	2.5	1.9	3.5
4	3.3	0.85	3.7
5	2.7	0.85	3.5
6	2.1	1	3.5
7	2.9	1	3.8
8	2.6	1.35	2.7
9	2.46	1.35	4.3
10	Not excavated		
11	2.1	1.3	4.2
12	Not excavated		
13	2	1	4.1
14	3.7	1.5	4.4
15	1.78	1	1.3
16	Not excavated		

6.3 The test pits were excavated by a mechanical excavator fitted with a toothless bucket under the supervision of an attendant archaeologist. Following the removal of modern overburden, the machine excavation continued in spits of *c.*100mm until archaeological deposits, features or structures, or the underlying natural terrace gravel was encountered. A primary aim of the watching brief was to produce a revised deposit model for the site (presented herein).

6.4 All recording systems adopted during the investigations were fully compatible with those most widely used elsewhere in London; that is those developed out of the Department of Urban Archaeology Site Manual, as presented within PCA's *Operations Manual 1*. Individual descriptions of all archaeological and geological strata and features excavated and exposed were entered onto pro-forma recording sheets. All plans and sections of archaeological deposits were recorded on polyester based drawing film, the plans being at scale of 1:20 and the sections at 1:10. The OD heights of all principle strata were calculated and indicated on the appropriate plans and sections. A full photographic record was taken in the digital format.

6.5 The trenches were located by measurement to contractor's site plans; these records were then digitised in CAD software and fixed to the OS grid.

6.6 The complete site archive include site records and photographs will be deposited at the Museum of London Archaeological Archive (LAA) under the unique site code IMP19.

7 PHASED ARCHAEOLOGICAL SEQUENCE

7.1 Phase 1: Natural Gravel

7.1.1 A layer of orange silty sandy gravel was identified in Test Pits 1 to 4, 5 and 7 (Group 1; see Table 2). The top of the deposit outcropped at a maximum height of 6.54m OD in Test Pit 1 in the western side of the site, sloping to a depth of 2.33m OD in Test Pit 7 in the central section of the site. Gravel was not encountered in Test Pits 8 to 14, however the presence of natural deposits at the base of the trenches (i.e. alluvium, discussed subsequently) would suggest that the gravel had not been truncated by human activity in those locations. Rather it would seem that the Test Pits were not excavated to a sufficient depth to encounter the terrace gravel or London Clay.

7.1.2 This deposit is thought to represent river terrace gravel, perhaps a combination of Taplow Terrace Gravel (outcropping at higher levels in the western side of the site) and younger Kempton Park Gravel (perhaps outcropping at a lower level towards the east). These findings broadly fit with the existing deposit model for the site, which suggests that terrace gravel slopes from west to east. The updated model suggests that the gravel slopes from a maximum level of 6.54m OD in Test Pit 1 in the north-west, falling to a depth of -3.5m OD in the south-east corner of the site in BH3aGBC (Figure 3; Transects A and C). The gravel therefore slopes towards the River Lea, presumably because it has been eroded by that waterway during the formation of the latest incarnation of the Lea Valley from the end of the Pleistocene onwards.

Table 2: Group 1 Contexts (Natural Gravel)

Area	Context	Type	Interpretation	Length (m)	Width (m)	Depth (m)	Level (m OD)
Test Pit 1	30	Layer	Natural gravel	3.2	0.8	1.16	6.54
Test Pit 2	26	Layer	Natural gravel (horizontally truncated)	3.8	0.8	1.7	6.45
Test Pit 3	4	Layer	Natural gravel	2.5	1.8	1.64	4.75
Test Pit 4	18	Layer	Natural gravel	3.3	0.85	0.5	2.94
Test Pit 5	7	Layer	Natural gravel (horizontally truncated)	2.7	0.85	1.7	4.28
Test Pit 7	23	Layer	Natural gravel	2.9	1	0.56	2.33

7.2 Phase 2: Holocene Deposits

7.2.1 A 1.72m thick layer of yellow silty clay, [17], overlay the terrace gravel in Test Pit 4 (Group 2, Figure 3: Transect A), the top of which was observed at a level of 4.64m OD. This deposit was described by the attendant archaeologist as closely resembling ‘brickearth’, also known as Langley Silt. This deposit formed at the end of the last glaciation via a complex of heterogenous processes, but what is important to note here is that Langley Silt

is a terrestrial deposit. Consequently, if this identification is correct it would suggest the presence of a small dry eyot in the north-central section of the site in the vicinity of Test Pit 4, which has not hitherto been identified (Figure 3, Transect A). Alluvial material (discussed subsequently) was identified in nearby interventions at a higher level than the top of the brickearth, which would suggest that this eyot, if it did indeed exist, was inundated by flooding at some point during the Holocene period. However, the possible brickearth in Test Pit 4 was instead directly sealed by modern made ground rather than alluvium, which suggests that its upper reaches may have been truncated horizontally in the recent past. Alternatively, since this deposit would appear to represent such an isolated fragment it could instead represent redeposited material that forms the base of the made ground (discussed subsequently). The possibility that it formed *in situ* should not be ruled out, however.

7.2.2 Sealing the terrace gravel in Test Pit 3 was a 0.15m thick veneer of organic rich, dark brown silty clay, [3], which was interpreted as a layer of peat (Group 3; Figure 3, Transect A; Figure 5, Section 1). The top of the deposit was identified at a level of 4.9m OD. Peat forms in a very low energy, semi-aquatic marsh-like environment that is suitable for the growth of vegetation from which the deposit is primarily composed. This layer was situated to the immediate west of the brickearth horizon, so it could have formed in a marshy area that once characterised the intertidal zone of the aforementioned eyot (Figure 3, Transect A).

7.2.3 A layer of dark bluish grey clayey silt sealed the terrace gravel in Test Pits 1, 6 to 9, 11, 13 and 14 and the peat in Test Pit 3 (Group 4; see Table 3 for individual context numbers). This deposit was between 0.3m thick towards the west (Test Pit 2) and over 3m thick towards the east (Test Pit 14). Two separate layers of alluvium were recorded as being present in Test Pits 6, 13 and 14, however they are presumed to essentially represent the same depositional event and as a consequence, combined thicknesses have been given here (for thicknesses of individual contexts see Table 3). These deposits are thought to represent a layer of Holocene alluvium that was deposited by the River Lea during the later prehistoric to historic period, the top of which was observed at a maximum level of 6.84m OD in Test Pit 1 in the north-west and a minimum level of 1.8m OD in Test Pit 14 in the east. The layer becomes considerably thicker towards the River Lea to the east, where the deposit may infill a relict channel of the Lea (Figure 3: Transects A and C). The ground is also lower in this area of the site, thus elevating the potential for overbank flooding events. Further to the west, alluvial material sealed the peat and was also present at a higher level than the possible brickearth horizon. This may be indicative of a rise in water levels during the late prehistoric to historic period that for a time resulted in a widening of the floodplain of the river (Figure 3: Transects A and D).

7.2.4 A geological model of the Thames and its tributaries established by Bates and Whittaker (2004) and advanced by Stafford *et al* (2012) suggests that any alluvium occurring above

an approximate level of 0m OD is likely to be historic in date (Stastney 2018). For this reason, the bulk of the alluvium that was identified during this watching brief may have been deposited in the historic period, however earlier prehistoric alluvium may be buried at depth in the eastern side of the site.

7.2.5 The original deposit model suggested that alluvium did not survive in the western portion of the site (Figure 3: Transect B). This study indicates that, while no alluvium is present along that transect, untruncated pockets do exist to the immediate east and west as demonstrated by the presence of alluvium in Test Pits 1 and 3 (Figure 3: Transect D).

7.2.6 The presentation of the alluvium as detailed above broadly accords with the predictions that were made by the pre-existing deposit model, which has been refined to accommodate the additional information (Figure 3).

Table 3: Group 4 Contexts (Alluvium)

Area	Context	Type	Interpretation	Length (m)	Width (m)	Thickness (m)	Level (m OD)
Test Pit 1	29	Layer	Alluvial layer	3.2	0.8	0.3	6.84
Test Pit 3	2	Layer	Alluvial layer	2.5	1.9	0.36	5.26
Test Pit 6	32	Layer	Alluvial layer	3.2	0.8	1.6	3.74
Test Pit 6	33	Layer	Alluvial layer	3.2	0.8	0.1	2.14
Test Pit 7	22	Layer	Alluvial layer	2.9	1	1.04	3.37
Test Pit 8	13	Layer	Alluvial layer	2.6	1.35	0.7	3.33
Test Pit 9	10	Layer	Alluvial layer	2.46	0.85	1.5	3.73
Test Pit 11	39	Layer	Alluvial layer	3.2	0.8	2.4	3.55
Test Pit 13	34	Layer	Alluvial layer	3.2	0.8	2	3.68
Test Pit 13	35	Layer	Alluvial layer	3.2	0.8	0.5	1.68
Test Pit 14	36	Layer	Alluvial layer	3.2	0.8	1.8	3.6
Test Pit 14	37	Layer	Alluvial layer	3.2	0.8	1.2	1.8

7.2.7 The possible presence of a dry eyot in the north-central section of the site increases the archaeological potential of that area. As previously set out in Section 5.2 of this report, dry areas adjacent to the Thames and its tributaries, including banks and islands, often became foci for prehistoric and later human activity and settlement owing to their proximity to the rich resources and transport opportunities that the river could provide. It therefore remains possible that prehistoric or later archaeological artefacts or features could be present in the vicinity of Test Pit 4. The eyot may have been engulfed by the rising waters of the River Lea given the presence of alluvial material to the east, west and south at levels in excess of the top of the surviving brickearth (4.64m OD); given the height of the alluvial material, this most probably occurred during the historic period (Corcoran *et al.* 2011;

Bates and Whittaker 2004; and Stafford *et al.* 2011). As previously discussed, 19th century to modern made ground rather than alluvium was found directly above the brickearth in Test Pit 4. This suggests that in the immediate vicinity of Test Pit 4 and perhaps beyond, that area of the site was horizontally truncated during recent times, an event that destroyed the overlying alluvium in that location. It seems likely, therefore, that the upper reaches of the eyot's brickearth capping was destroyed at the same time, along with any trace of the ancient ground surface. This finding therefore decreases the archaeological potential this area of the site, however it remains possible that the lower reaches of intrusive features of some antiquity, such as pits, ditches or postholes, could survive in this area of the site.

7.3 Phase 3: 19th Century to Modern

7.3.1 A layer of clean, mid-reddish-brown sandy gravel, [28], was observed above the alluvium in Test Pit 1 (Group 5; Figure 6). It was 1.10m thick, the top of the deposit having been observed at a level of 7.58m OD. This deposit was interpreted by the excavator as representing a layer of natural material that was lain down by a fast-flowing fluvial channel, perhaps an off-shoot of the Lea River. More probably, however, given that this deposit occurs at a relatively high level relative to the River Lea itself, coupled with the fact that it almost certainly seals alluvial material that was lain down during the historic period, it more likely represents redeposited terrace gravel. This material may therefore form the base of the 19th century to modern made ground that was discovered across the bulk of the site.

7.3.2 Similarly, a layer of crushed and degraded calcareous material, [38], was discovered in Test Pit 11 (Group 6; Figure 7). The deposit was 0.2m thick, the top having been observed at a level of 3.75m OD. In all probability, this layer also formed part of the aforementioned 19th century to modern made ground, perhaps representing dumped industrial waste, for example lime from a chemical factory or gasworks.

7.3.3 Sealing the redeposited terrace gravel in Test Pit 1, the calcareous material in Test Pit 11 and either alluvium or terrace gravel in the remaining Test Pits was a thick, dark layer of 19th century to modern made ground (Group 7; Table 4). The top of this deposit was found at a maximum level of 8.73m OD in Test Pit 1 in the north-west, sloping down to a level of 3.94m OD in Test Pit 6 in the south-central section of the site. It was between 0.2m thick in Test Pit 2 and 2.06m thick in Test Pit 7.

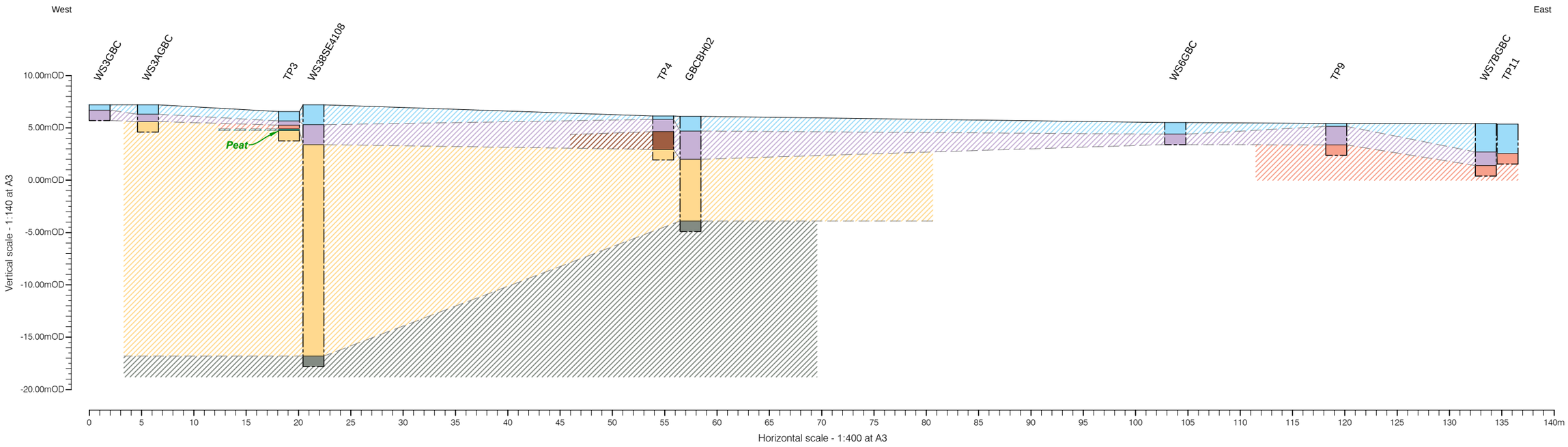
7.3.4 The made ground sat directly upon terrace gravel in Test Pits 2 and 5 in the western third of the site. Any archaeological deposits pre-dating this phase have therefore most probably been truncated by 19th century to modern activity in those locations. Test Pit 15 contained modern concrete at a depth of 1.3m below ground level, at which point excavation ceased.

7.3.5 The presentation of the made ground broadly accords with the pre-existing deposit model, which has been updated as shown in Figure 3.

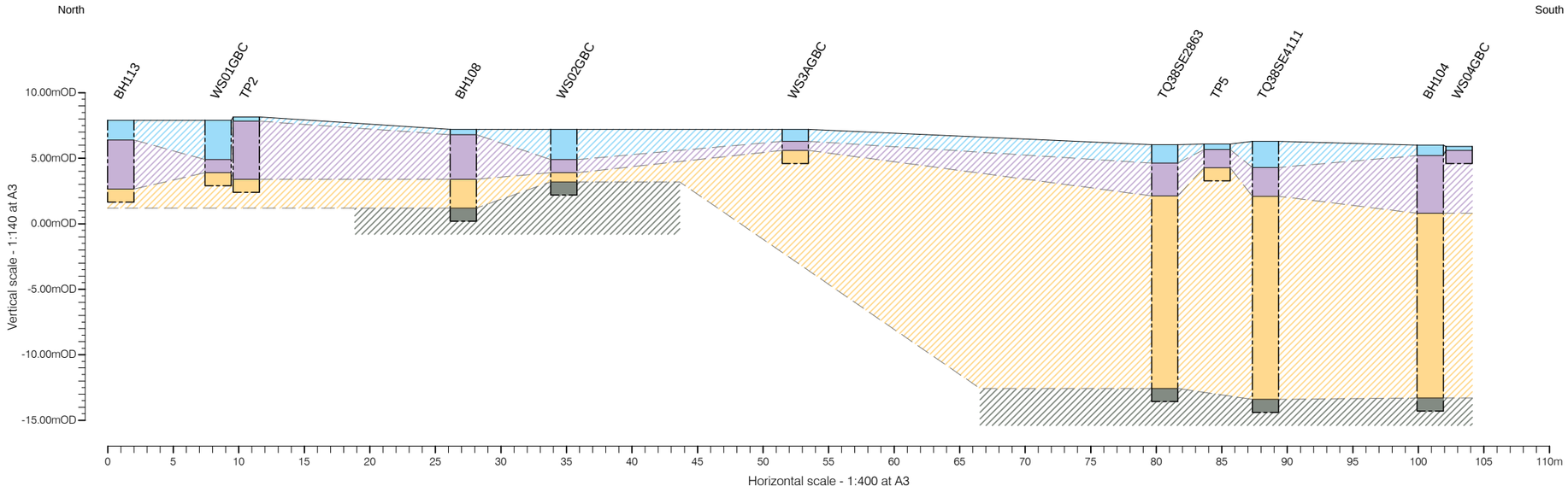
Table 4: Group 7 Contexts (Made Ground)

Area	Context	Type	Interpretation	Length (m)	Width (m)	Thickness (m)	Level (m OD)
Test Pit 1	27	Layer	Made ground	3.2	0.8	1.15	8.73
Test Pit 2	24	Layer	Made ground	3.8	0.8	0.27	7.83
Test Pit 2	25	Layer	Made ground	3.8	0.8	1.11	7.56
Test Pit 3	1	Layer	Made ground	2.5	1.9	0.69	5.66
Test Pit 4	14	Layer	Made ground	3.3	0.85	0.33	5.81
Test Pit 4	15	Layer	Made ground	3.3	0.85	0.25	5.56
Test Pit 4	16	Layer	Made ground	3.3	0.85	0.54	5.18
Test Pit 5	5	Layer	Made ground	2.7	0.85	0.4	5.67
Test Pit 5	6	Layer	Made ground	2.7	0.85	0.7	5.27
Test Pit 6	31	Layer	Made ground	3.2	0.8	0.2	3.94
Test Pit 7	19	Layer	Made ground	2.9	1	0.74	5.43
Test Pit 7	20	Layer	Made ground	2.9	1	0.62	4.69
Test Pit 7	21	Layer	Made ground	2.9	1	0.7	4.07
Test Pit 8	11	Layer	Made ground	2.6	1.35	0.85	5.15
Test Pit 8	12	Layer	Made ground	2.6	1.35	0.95	4.28
Test Pit 9	9	Layer	Made ground	2.46	1.35	0.3	4.03

TRANSECT A



TRANSECT B

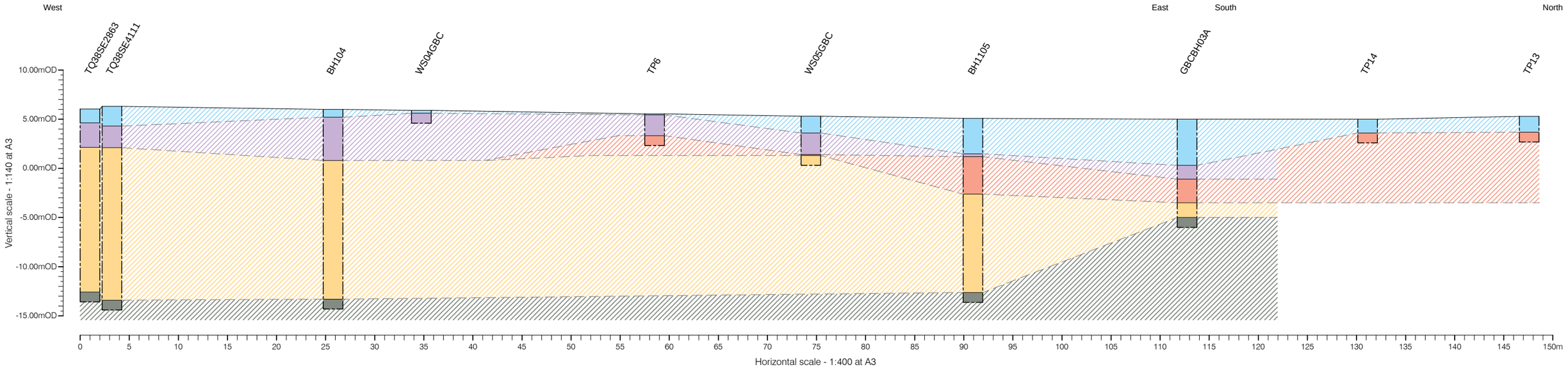


Modern Made Ground
Made Ground
Alluvium
Brickearth
Peat
Terrace Gravel
London Clay

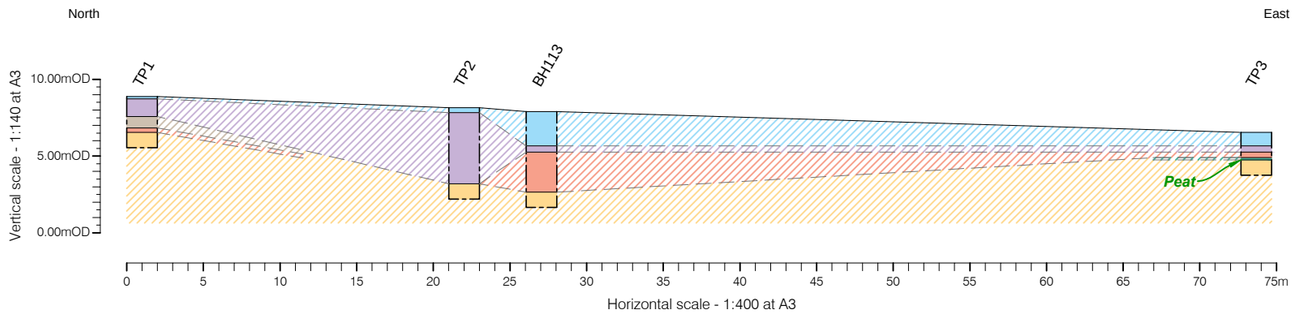
15/10/19 MR

Figure 3
Transects A and B
(Scales as indicated)

TRANSECT C



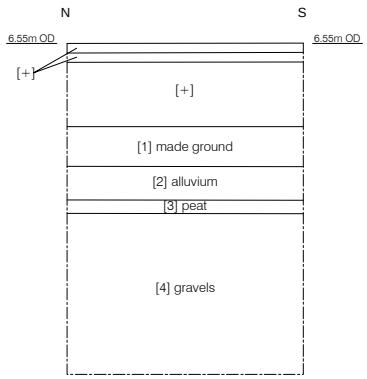
TRANSECT D



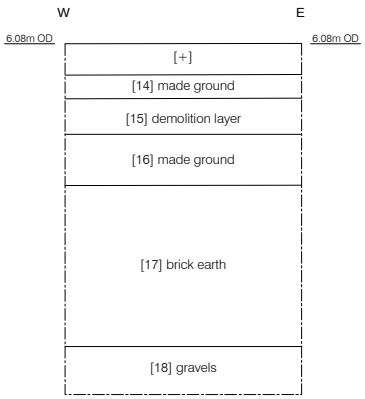
Modern Made Ground
Made Ground
Re-deposited Terrace Gravel
Alluvium
Terrace Gravel
London Clay

15/10/19 MR

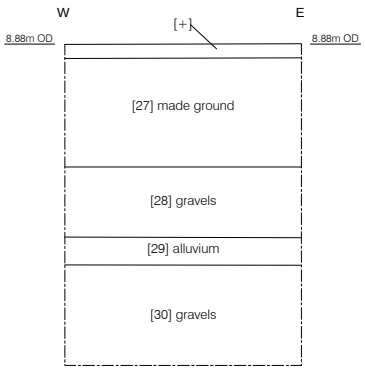
Figure 4
Transects C and D
(Scales as indicated)



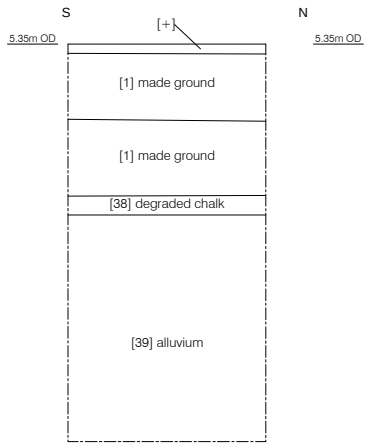
Section 1
Test Pit 3
West facing



Section 5
Test Pit 4
South facing



Section 8
Test Pit 1
South facing



Section 13
Test pit 11
East facing

15/10/19 MR

Figure 5
Sections
1:80 at A4

8 CONCLUSIONS

8.1 The following paragraphs draw together the results of this study with the pre-existing data to present a series of holistic conclusions (see also the updated deposit model, Figures 3 and 4).

8.2 Thames terrace gravels sealed London Clay within the confines of the site, which according to the British Geological Survey represent a combination of older and higher Taplow Terrace Gravel (over the bulk of the site) and lower and younger Kempton Park Gravel (towards the eastern edge of the site). These were observed at a maximum level of 6.54m OD in the west (Test Pit 1) falling to a depth of -3.5m OD in the south-east corner (BH3aGBC). This extreme difference is most probably due to the existence of a relict channel of the nearby River Lea that crosses the eastern and south-eastern portions of the site.

8.3 During the late Pleistocene to early Holocene period, a dry eyot may have existed in the north-central section of the site in the vicinity of Test Pit 4 since 'brickearth' appeared to seal the terrace gravel in that location. To the immediate west in the vicinity of Test Pit 3 a thin peat-like layer was observed, which could have formed in a marsh-like environment that would have characterised the intertidal zone of such an eyot. The brickearth and peat were respectively observed at levels of 4.64m OD and 4.90m OD, although the former may have been truncated horizontally.

8.4 These deposits were sealed by a thick layer of alluvium. This either did not survive or was never present in the vicinity of Transect B in the western part of the site (Figure 3), although it was present to the west and east of that transect (Figure 4; Transect D). Alluvium also did not survive in other discrete locations where modern truncation had taken place (Figure 3). Where present, the top of the alluvium was observed at a maximum height of 6.84m OD in the north-west corner of the site (Test Pit 1), falling to a maximum depth of -1.1m OD in the south-east corner (BH3aGBC) where it presumably infills the aforementioned relict channel of the River Lea. In accord with Bates and Whittaker (2004) and Stafford *et al.* (2011), alluvium located above *c.*0m OD was probably deposited during the historic period, while alluvium located below that level in the far eastern side of the site is more probably prehistoric.

8.5 A deposit of 19th century to modern made ground and a modern concrete slab sealed the entire area.

9 ACKNOWLEDGEMENTS

9.1 Pre-Construct Archaeology would like to thank AECOM for commissioning the work on behalf of The Guinness Partnership Ltd.

9.2 The author would also like to thank Adam Single of the Greater London Archaeological Advisory Service (Historic England) for monitoring the project on behalf of the London Borough of Tower Hamlets.

9.3 The author would also like to thank Helen Hawkins for her project managing and editing and Diana Valk for the illustrations. Thanks are also very much due to field archaeologists Ester Capuz Durán and Ellen Green for undertaking this watching brief.

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A1 PLATES

Plate 1: Test Pit 1 (photograph looks east)

Plate 2: Test Pit 2 (photograph looks south)

Plate 3: Test Pit 3 (photograph looks north-east)

Plate 4: Test Pit 4 (photograph looks south)

Plate 5: Test Pit 5 (photograph looks south-east)

Plate 6: Test Pit 6 (photograph looks east)

Plate 7: Test Pit 7 (photograph looks north)

Plate 8: Test Pit 8 (photograph looks south-west)

Plate 9: Test Pit 9 (photograph looks east)

Plate 10: Test Pit 11 (photograph faces west)

Plate 11: Test Pit 13 (photograph faces east)

Plate 12: Test Pit 14 (photograph faces west)

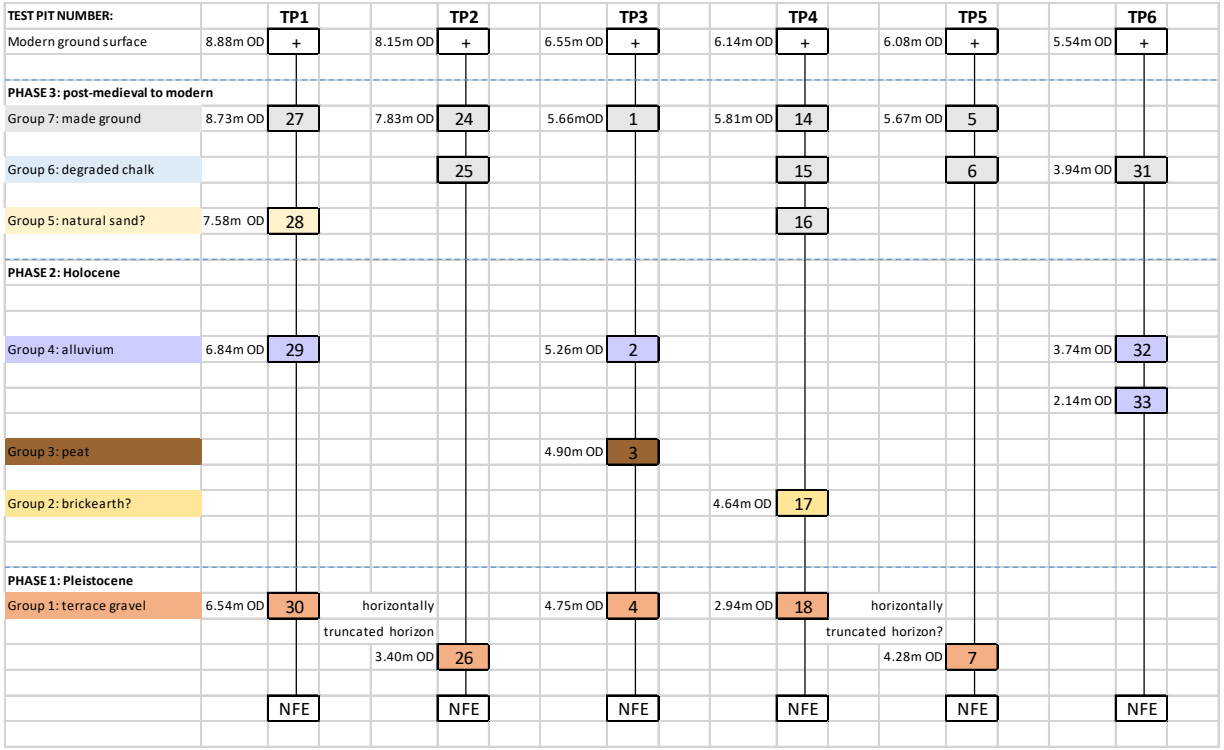
Plate 13: Test Pit 15 (photograph faces south)

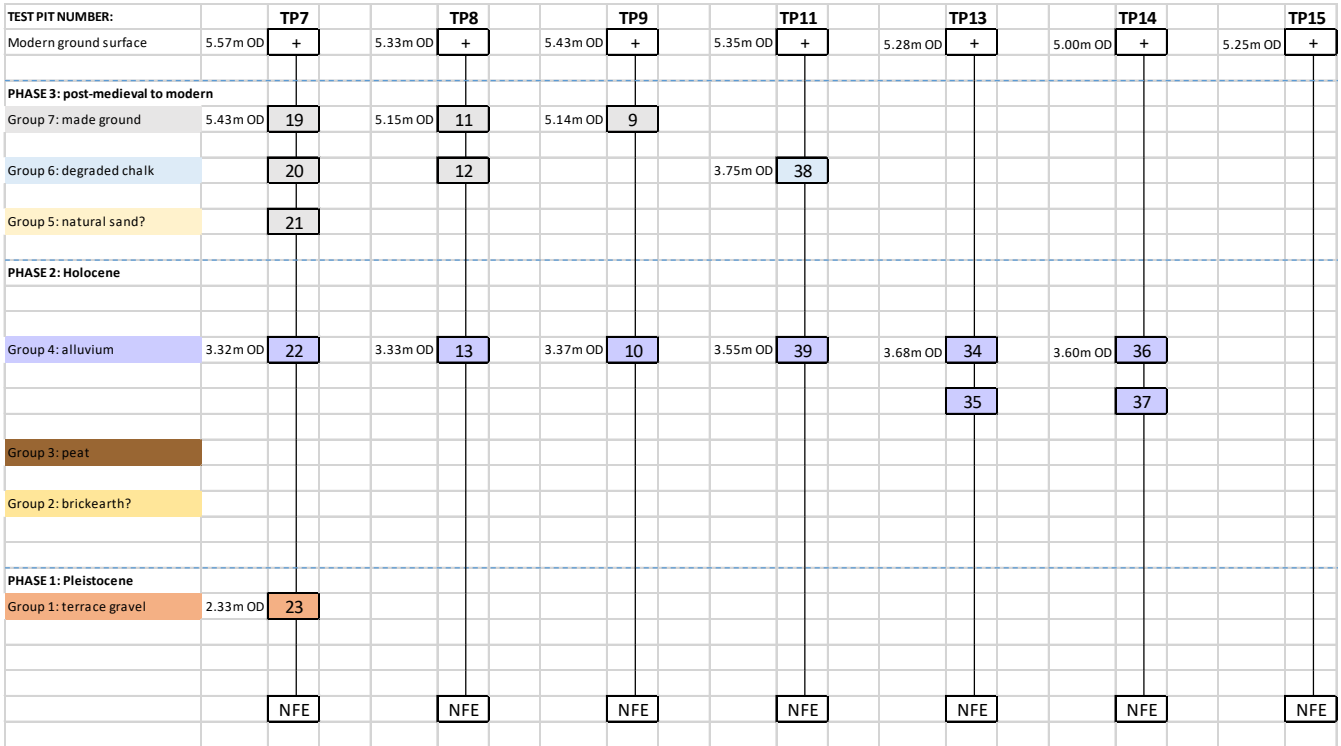
A2 CONTEXT INDEX

Context	Type	Area	Interpretation	Length (m)	Width (m)	Thickness (m)	Level (m OD)	Phase	Group
1	Layer	Test Pit 3	Made ground	2.5	1.9	0.69	5.66	3	7
2	Layer	Test Pit 3	Alluvial layer	2.5	1.9	0.36	5.26	2	4
3	Layer	Test Pit 3	Peat layer	2.5	1.9	0.15	4.9	2	3
4	Layer	Test Pit 3	Natural gravel	2.5	1.8	1.64	4.75	1	1
5	Layer	Test Pit 5	Made ground	2.7	0.85	0.4	5.67	3	7
6	Layer	Test Pit 5	Made ground	2.7	0.85	0.7	5.27	3	7
7	Layer	Test Pit 5	Natural gravel (horizontally truncated)	2.7	0.85	1.7	4.28	1	1
9	Layer	Test Pit 9	Made ground	2.46	1.35	0.3	4.03	3	7
10	Layer	Test Pit 9	Alluvial layer	2.46	0.85	1.5	3.73	2	4
11	Layer	Test Pit 8	Made ground	2.6	1.35	0.85	5.15	3	7
12	Layer	Test Pit 8	Made ground	2.6	1.35	0.95	4.28	3	7
13	Layer	Test Pit 8	Alluvial layer	2.6	1.35	0.7	3.33	2	4
14	Layer	Test Pit 4	Made ground	3.3	0.85	0.33	5.81	3	7
15	Layer	Test Pit 4	Made ground	3.3	0.85	0.25	5.56	3	7
16	Layer	Test Pit 4	Made ground	3.3	0.85	0.54	5.18	3	7
17	Layer	Test Pit 4	Brickearth?	3.3	0.85	1.7	4.64	2	2
18	Layer	Test Pit 4	Natural gravel	3.3	0.85	0.5	2.94	1	1
19	Layer	Test Pit 7	Made ground	2.9	1	0.74	5.43	3	7
20	Layer	Test Pit 7	Made ground	2.9	1	0.62	4.69	3	7
21	Layer	Test Pit 7	Made ground	2.9	1	0.7	4.07	3	7
22	Layer	Test Pit 7	Alluvial layer	2.9	1	1.04	3.37	2	4
23	Layer	Test Pit 7	Natural gravel	2.9	1	0.56	2.33	1	1

Context	Type	Area	Interpretation	Length (m)	Width (m)	Thickness (m)	Level (m OD)	Phase	Group
24	Layer	Test Pit 2	Made ground	3.8	0.8	0.27	7.83	3	7
25	Layer	Test Pit 2	Made ground	3.8	0.8	1.11	7.56	3	7
26	Layer	Test Pit 2	Natural gravel (horizontally truncated)	3.8	0.8	1.7	6.45	1	1
27	Layer	Test Pit 1	Made ground	3.2	0.8	1.15	8.73	3	7
28	Layer	Test Pit 1	Sand sealing alluvium	3.2	0.8	1.1	7.58	3	5
29	Layer	Test Pit 1	Alluvial layer	3.2	0.8	0.3	6.84	2	4
30	Layer	Test Pit 1	Natural gravel	3.2	0.8	1.16	6.54	1	1
31	Layer	Test Pit 6	Made ground	3.2	0.8	0.2	3.94	3	7
32	Layer	Test Pit 6	Alluvial layer	3.2	0.8	1.6	3.74	2	4
33	Layer	Test Pit 6	Alluvial layer	3.2	0.8	0.1	2.14	2	4
34	Layer	Test Pit 13	Alluvial layer	3.2	0.8	2	3.68	2	4
35	Layer	Test Pit 13	Alluvial layer	3.2	0.8	0.5	1.68	2	4
36	Layer	Test Pit 14	Alluvial layer	3.2	0.8	1.8	3.6	2	4
37	Layer	Test Pit 14	Alluvial layer	3.2	0.8	1.2	1.8	2	4
38	Layer	Test Pit 11	Degraded chalk layer	3.2	0.8	0.2	3.75	3	6
39	Layer	Test Pit 11	Alluvial layer	3.2	0.8	2.4	3.55	2	4

A3 PHASED MATRIX





A4 OASIS FORM

OASIS ID: preconst1-369939

Project details

Project name	Land at Imperial 1 Lindhill, London, E3 3EA: An archaeological watching brief
Short description of the project	The archaeological watching brief monitored the excavation of thirteen geotechnical test pits. It was primarily undertaken in order to test and, if necessary, revise an existing deposit model for the site, which can be found in the Written Scheme of Investigation (AECOM 2019). In addition to the results of the watching brief, this report therefore also makes use of historic borehole data held on the Geological Society's online portal as well as boreholes and window samples obtained from previous investigations by Delta-Simons (2010) and GB Card and Partners (2015) that were used to build the original deposit model.
Project dates	Start: 28-08-2019 End: 12-09-2019
Previous/future work	No / Not known
Any associated project reference codes	IMP19 - Sitecode
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Industry and Commerce 2 - Offices
Current Land use	Vacant Land 1 - Vacant land previously developed
Current Land use	Vacant Land 3 - Despoiled land (contaminated derelict and ?brownfield? sites)
Current Land use	Industry and Commerce 4 - Storage and warehousing

Monument type	ALLUVIUM Uncertain
Monument type	PEAT Uncertain
Investigation type	"Watching Brief"
Prompt	National Planning Policy Framework - NPPF

Project location

Country	England
Site location	GREATER LONDON TOWER HAMLETS BOW Imperial 1
Postcode	E3 3EA
Study area	1.2 Hectares
Site coordinates	TQ 38252 82634 51.525174450747 -0.006880556148 51 31 30 N 000 00 24 W Point
Height OD / Depth	Min: -3.5m Max: 6.54m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd.
Project brief originator	Greater London Archaeological Advisory Service
Project design originator	AECOM
Project director/manager	Helen Hawkins
Project supervisor	Ester Capuz Duran

Project supervisor	Ellen Green
Type of sponsor/funding body	Developer
Name of sponsor/funding body	The Guinness Partnership Ltd.

Project bibliography

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