



C261 ARCHAEOLOGY EARLY EAST
Fieldwork Report

**Archaeological Watching Briefs and Evaluation,
 Whitechapel Shaft XSH10**

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Non-Technical Summary

This report presents the results of an archaeological field evaluation and watching briefs carried out by the Museum of London Archaeology (MOLA) on the site of the location of the future Crossrail Whitechapel Station. This report was commissioned from MOLA by Crossrail Ltd. This work is being undertaken as part of a wider programme of assessment to quantify the archaeological implications of railway development proposals along the Crossrail route, and to mitigate its impacts.

The future Whitechapel Crossrail station (in the C257 Central archaeology zone of the Crossrail Project) consists of three work areas, of which this report is concerned with only two; the Cambridge Heath worksite (Cambridge Heath shaft) to the east of Brady Street and Essex Wharf worksite (Durward Street shaft).

Three evaluation trenches were opened at the Cambridge Heath worksite, and a series of watching briefs were conducted at both the Cambridge Heath and Essex Wharf worksites.

Natural gravel and sand was observed in the evaluation trenches at heights between 110.76m ATD in Trench 1 to 108.55m ATD in Trench 3.

The predominant type of archaeological remains found in the evaluation and watching briefs at the Cambridge Heath worksite was deep-cut large features, often quarries but not exclusively so, and dating to the post-medieval period. There were no remains present earlier than the 18th century, mostly a result of extensive later post-medieval and modern truncation.

The main results of the watching brief at the Essex Wharf worksite included a large brickfield quarry and a 19th-century culvert.

The results from the shaft location at the Whitechapel worksite are assessed as being of low–moderate significance, and will be used by the Crossrail archaeologist to revise and finalise the mitigation strategy for the site.

Contents

Non-technical Summary

1	Introduction	5
2	Planning background.....	6
3	Origin and scope of the report	6
4	Previous work relevant to archaeology of site	6
5	Geology and topography of site.....	7
5.1	Archaeological and Historical Background.....	7
6	Research objectives and aims	9
6.1	Objectives of the fieldwork	9
6.2	Research Aims	9
7	Methodology of site-based and off-site work	11
7.1	General and Targeted Watching Brief Methodology.....	11
7.2	Evaluation Methodology.....	12
8	Results and observations including stratigraphic report and quantitative report 13	
8.1	Evaluation Trench 1, Access tunnel shaft	13
8.2	Evaluation Trench 2, Grout shaft.....	15
8.3	Evaluation Trench 3, Cambridge Heath shaft.....	17
8.4	GWB Cambridge Heath Worksite car park canopy	19
8.5	GWB Drainage and septic tanks (interceptor).....	21
8.6	TWB Thames Water Storm Relief Sewer Shaft.....	23
9	Assessment of results against original expectations and review of evaluation strategy.....	25
9.1	Research aims.....	25
9.2	DCMS Scheduling criteria	25
10	Statement of potential archaeology.....	27
10.1	Importance of Resources	27
11	Conclusions	28
11.1	Geology.....	28
11.2	Prehistoric, Roman, medieval and Tudor/Stuart periods	28
11.3	Post-medieval remains	28
11.4	Undated deposits	29
12	Recommendations for appropriate mitigation strategy.....	30
13	Publication and dissemination proposals.....	30

14 Archive deposition	30
15 Bibliography	30
16 Acknowledgements.....	31
17 NMR OASIS archaeological report form.....	32
OASIS ID: molas1-105629	32
Annex 1 – Figures.....	34

Figures

(in Annex 1 at back of document)

Fig 1 Location of evaluation trenches and watching brief areas

Fig 2 West facing section of Trench 1

Fig 3 East facing section of Trench 2

Fig 4 South facing section of Trench 3

Fig 5 Plan of Trench 3

Fig 6 Plan of Trench 1

Fig 7 Plan of Trench 2

Photographs

Photo 1: Trench 1 Looking north facing section showing Albion Brewery Concrete foundations cutting through archaeologically sterile natural deposits 13

Photo 2: Trench 2, looking east (west- facing section and base of trench) showing Albion Brewery Concrete foundations cutting through archaeologically sterile natural deposits 15

Photo 3: Trench 2, looking east (west- facing section and base of trench) showing Albion Brewery Concrete foundations cutting through archaeologically sterile natural deposits 17

Photo 4: Canopy foundation, third stanchion from west of the southern row (left, looking east) , dug into archaeologically sterile natural brickearth and gravel 19

Photo 5: Canopy foundation, stanchion furthest east of the northern row (right, looking west): showing Albion Brewery Concrete foundations cutting through post-medieval coal-ashy nightsoil quarry fills, dug into archaeologically sterile natural brickearth and gravel 19

Photo 6: Eastern Manhole and Drainage trench: Looking west, showing Albion Brewery brick and concrete foundations cutting through archaeologically sterile natural deposits with a blackish waterlain silt (arrowed), cut through by Albion Brewery basements in the distance 21

Photo 7: Thames Water Storm Relief Sewer Shaft: Looking north-west, showing clean natural brickearth at the base of the shaft, darker filled feature to the right of the ladder, red-brown soil, cut through by a quarry and a 19th-century culvert 23

1 Introduction

This Fieldwork Report covers the archaeological evaluation and watching briefs carried out at the location of the future Crossrail Whitechapel Station by the C261 Museum of London Archaeology (MOLA).

Whitechapel Station is located along the A11 road corridor with the East London Line (ELL) railway cutting running north/south at its centre and areas of above ground lines of the District and Hammersmith and City Underground Line to the east and west. The Crossrail works fall within the London Borough of Tower Hamlets.

The site is divided into three worksite areas:-

- Cambridge Heath Worksite (Cambridge Heath shaft) to the east of Brady Street. This comprises the C217 Principal Contractor (Carillion) Worksites 1 and 2.
- Essex Wharf Worksite (Durward Street shaft) formerly referred to as Durward Street worksite located to the north of Durward Street. This includes the C217 Principal Contractor (Carillion) Worksites 3 and 4.
- Durward Street Worksite (formally referred to as Hammersmith and City and District Line (HCDL) worksite) at the Ticket Hall and HCDL platforms at Whitechapel Station.

This report concerns the Cambridge Heath and Essex Wharf worksites, the approximate centre of which is at OS National Grid Reference 534797 181945.

See Fig 1 for locations of the works carried out.

All fieldwork was conducted between 24/02/11 to 16/06/11, directed by MOLA Senior Archaeologist David Sankey, and included:

Task	FDC Notification	Principal Contractor
<ul style="list-style-type: none"> • General Watching Brief Cambridge Heath Worksite car park canopy (c 12 foundations, up to c 3–4m deep, 2.5–3m square) 	C217	Carillion
<ul style="list-style-type: none"> • General Watching Brief drainage and septic tanks, Cambridge Heath Worksite 	C217	Carillion
<ul style="list-style-type: none"> • Targeted Watching Brief Thames Water Storm Relief Sewer Shaft, Essex Wharf Worksite (c 2.8–3m diameter) 	C217	Carillion
<ul style="list-style-type: none"> • General Watching Brief EDF installations and transformer base, Cambridge Heath Worksite 	C217	Carillion
<ul style="list-style-type: none"> • Archaeological field evaluation, Cambridge Heath Worksite (three trial trenches) 	C217	Carillion

The event code (sitecode) is XSH10.

All levels in this document are quoted in metres Above Tunnel Datum (m ATD). To convert Tunnel Datum to Ordnance Datum subtract 100m, ie 1m OD = 101m ATD.

2 Planning background

The legislative and planning framework in which all archaeological work took place was summarised in the Site Specific Written Scheme of Investigation – Doc. No. C140-HYD-T1-JLTI-DO61-00001 Version 3, 15.12.10.

In summary, Crossrail will be built under the powers of the Crossrail Act (2008), which disapplies various pieces of legislation, and replaces them with alternative provisions. Those pertinent to these works are:

- PPG15 and PPG16 (replaced from March 2010 by PPS5): the principles of PPG15 and PPG16 are encompassed within the Crossrail Environmental Minimum Requirements (EMR; Crossrail 2008c), in particular Annex 2: Planning & Heritage Memorandum, and the Crossrail Generic Written Scheme of Investigation (Crossrail, 2009a)

3 Origin and scope of the report

This report has been commissioned from Museum of London Archaeology (MOLA) by Crossrail Ltd. The report has been prepared within the terms of the relevant standard specified by the Institute for Archaeologists (IFA, 2001). It considers the significance of the fieldwork results (in local, regional or national terms) and makes appropriate recommendations for any further action, commensurate with the results.

4 Previous work relevant to archaeology of site

The principal previous Crossrail studies are as follows:

- Crossrail, Environmental Statement, February 2005;
- Crossrail, Assessment of Archaeology Impacts, Technical Report. Part 4 of 6, South-East Route Section, 1E0318-E2E00-00001, February 2005 [Specialist Technical Report (STR);
- Crossrail, Amendment of Provisions 1, January 2006;
- Crossrail, Amendment of Provisions 3, November 2006;
- Crossrail, Archaeology Programming Assessment, November 2006;
- Crossrail, MDC – Work Package 3, Archaeology Detailed Desk Based Assessment, Whitechapel Station CR-SD-WHI-EN-SR-00001 version 2.0;
- Crossrail, Whitechapel Station Written Scheme of Investigation C140-HYD-T1-JLT-D061-00001 version 3.0

5 Geology and topography of site

The geological and topographical setting was covered in detail in the Detailed Desk-based Assessment, DDBA Whitechapel Station Document No CR-SD-WHI-EN-SR-00001 and the Site-specific Written Scheme of Investigation, SS-WSI Document No C138-MMD-T1-RST-C101-00001, and is summarised below:

The underlying geology is of London Clay, covered by Taplow river-terrace gravels, topped by a conformable silt deposit or “brickearth”. In this area these geological layers are without archaeological remains.

Boreholes associated with the site indicated that river terrace deposits underlay modern made ground across much of the site and alluvial deposits may also survive in pockets. Boreholes from within the Cambridge Heath Worksite show made ground to c 107.5m ATD overlying river terrace deposits, beneath which is the London Clay (at 105.40m ATD). Beneath Durward Street boreholes indicates that made ground is present to a depth of 110.30m ATD overlying c 1m of alluvium. River terrace deposits were also recorded at this location from a depth of 109.10 to 103.80m ATD overlying the London Clay. At the Essex Wharf Worksite made ground can generally be expected at approximately 112.00m ATD to between 110.00 and 105.00m ATD, overlying c 1-4m of river terrace deposits. Alluvial deposits, if present, will overlie river terrace deposits at about 109m ATD.

5.1 Archaeological and Historical Background

The archaeological and historic background was covered in detail in the DDBA and WSI (see section 5.1 of the DDBA and section 4 of the WSI above), and only the archaeological potential of the site is summarised below.

Prehistoric remains have not been recovered in the area of the site, although truncation by the growth of London and widespread excavation of brickearth quarries may account for a subsequent loss of archaeological remains, especially so when compared to the abundant remains on the gravel terraces of the east and west fringes of London.

Potentially in Whitechapel and Mile End archaeological remains could date from the Roman to the post-medieval periods.

There is potential for Roman remains relating to the London to Colchester Roman Road that is conjectured to run to the south of the Essex Wharf Worksite and possibly through the Durward Street Worksite. Roadside activities could potentially include the sites of memorials or burials, which often faced the road in prominent positions in the Roman period or small workshops and buildings often lining Roman roads outside the City Wall in the suburbs.

Also crossing the site was the Common Sewer, or the ‘Black Ditch’, a large open drain that took water from Spitalfields, through Whitechapel and Stepney to enter the Thames at Limehouse during the medieval and post-medieval period. Archaeological potential on the Cambridge Heath Worksite included remains relating to the worksite’s former use as sunken gardens. St Dunstan’s (Stepney) during the Great Plague, took possession of one and a quarter acres of land north of Whitechapel Road, near the “Stonebridge” (Common Sewer crossing) for use as an emergency burial ground in 1665 and a detached burial ground for St Mary Moorfields (Catholic) Church was potentially located within the worksite.

Later post-medieval remains relating to former housing and the Albion Brewery also have the potential to have survived below ground, in areas not truncated by the later phases of the Albion Brewery.

An archaeological evaluation of the Sainsbury's Store site in 1993 showed that archaeologically sterile gravels sloped from 109.7m ATD at the north to 8.7m ATD at the south (adjacent to Sainsbury's frontage, Sankey 1993). The slope may indicate the likely position of any Roman road lay to the north, on higher, free-draining land. Above the gravel was a layer of Brickearth, which towards the top had been reworked in antiquity. From this was recovered a corroded coin, consistent in size with Late Roman examples. The surface of reworked Brickearth rose from 109.6m ATD in the south to 110.10m ATD, in the north. The Brickearth survived as a strip between the remains of a drain with a wooden floor and brick-revetted sides. The backfill of the drain, dating its disuse, contained copious quantities of pottery from the first two decades of the 19th century. Types represented included Staffordshire slipware kitchen pots and Black Basalt tablewares as well as one piece of Chinese porcelain. However, a William IV mug indicates that they were deposited after 1830, and might indicate that this was a single "clear-out" of outdated and unwanted old pots. The other side of the Brickearth was truncated by a series of Brickearth quarry pits, indicating the silt had been systematically stripped to make bricks. The backfill of the pits were largely without finds but they must date to after the construction of the drain. It is the widespread adoption of brickfield quarrying, from late medieval period through to the 19th century, that generally accounts for the paucity of earlier remains in the East End of London.

An archaeological evaluation on the north side of Swanlea School (Sankey 2010) showed brickearth had been quarried to Terrace Gravel. Quarry backfills were predominantly 17th century and included a fragment of clear-glass Rummer (crystal glass *Roemer*) decorated with a raspberry prunt, comparable with Ravenscroft's lead-crystal c 1677 Rummer V&A C.530-1936. Dug into the backfill was an oval brick culvert, diam 750mm.

6 Research objectives and aims

6.1 Objectives of the fieldwork

The purpose of the Watching Brief was to mitigate the impact of the development works upon archaeological remains; by making an adequate record of them in advance of and during the specified construction ground works (a mitigation strategy of *preservation by record* in line with Crossrail requirements).

The purpose of the evaluations was to provide information on the presence or absence, character, extent, date, preservation, and importance of the potential archaeological remains currently predicted on the site.

Evidence for burials relating to the emergency burial ground acquired by the Parish of St Dunstons Stepney following the Great plague of 1665 had the potential to contribute to the following research aims.

- Understanding life expectancy, origins and belief, seen through studying health, diet and disease, and preparing models for future research;
- Considering the relationship between cemeteries and major or minor roads, in terms of symbolism, status, privacy and convenience; and
- Understanding the differences, if any, between burial practices in the city and outlying cemeteries.

Evidence relating to post-medieval development of the area, and in particular the development of the Albion Brewery and the Distillery at the Durward Street Shaft site has the potential to contribute to:

- Establishing how daily work and life in London reflected and contributed to the rise of London as the commercial centre of the British Empire, and to its continued eminence as a world city thereafter;
- Charting how and why different parts of London developed as specialist producers and understanding the implications of this for London as a world city; and
- Examining the concept of core/periphery for different periods in London's past, as a means of understanding how evolving settlement patterns reflect the need for sustainable, beneficial relationships between a settlement and its environs, a city and its hinterland.

6.2 Research Aims

The WSI (Crossrail 2010) stated that the overall objectives of the investigation are to establish the nature, extent and state of preservation of any surviving archaeological remains that will be impacted upon by the development.

Specifically, archaeological investigations at the worksites had the potential to recover:

- Archaeological remains of Roman to medieval date relating to the Roman/ medieval road from London to Colchester.
- The possible site of St Mary Moorfields Catholic Church additional burial site (the exact location for which is unknown).
- Archaeological remains of post-medieval agricultural, industry and general urbanisation, including the Albion Brewery at Cambridge Heath Road Shaft and the Distillery at the Durward Street Shaft and Interchange.



- The 'Black Ditch', once a natural watercourse but probably culverted from the medieval period. It ran from north to south, through the area of the Cambridge Heath worksite.
- Possible emergency burial ground used during the Great Plague of 1665.

7 Methodology of site-based and off-site work

All archaeological excavation and recording during the evaluation was carried out in accordance with the Crossrail Generic and Site Specific WSI, the MOLA *Method Statement* (Revision 3.0 17/02/11 and Revision 4.0 30/06/11) and the *Archaeological Site Manual* (MoL 1994).

The Crossrail mitigation response to archaeology is summarised as follows:

- In the event that intact and important archaeological remains are identified at Crossrail worksites through this process, it may be preferable, where practicable, to preserve these where they are found (i.e. preservation *in situ*).
- However, because of the nature of major works projects such as Crossrail, experience of other similar projects suggests that preservation by record is usually the most appropriate method of dealing with archaeological finds.
- Appropriate mitigation measures will be scoped and specified in detail in individual project designs (referred to as site-specific WSIs in this document) which will be prepared in accordance with the principles set out in this generic WSI and developed in consultation with the relevant statutory authorities.
- Archaeological information that is gained from fieldwork will be followed by analysis and publication of the results and will be transferred to an approved public receiving body.

The purpose of these evaluation trenches was to provide information on the presence or absence, character, extent, date, preservation, and importance of the archaeological remains predicted to exist at the site, in order to inform future mitigation of potential impacts of the Crossrail works.

The purpose of the Watching Briefs was to mitigate the impact of the utility works upon archaeological remains, by making an adequate record of them during the construction ground works.

The site finds and records can be found under the site code XSH10 in the MOLA archive. They will be stored there pending a future decision over the longer-term archive deposition and public access process for the wider Crossrail scheme.

7.1 General and Targeted Watching Brief Methodology

A Targeted Watching Brief was carried out on work at Thames Water Storm Relief Sewer Shaft, Essex Wharf. There were General Watching Briefs on the foundations for a car-park canopy at the Cambridge Heath worksite (off Brady Street), on drainage runs and a very large interceptor tank, and on electricity connections also on the Cambridge Heath Site.

Both general and targeted watching briefs consisted of a basic monitoring presence, by a MOLA Senior Archaeologist, to observe works carried out by the Principal Contractor. Excavation was by machine, operated by the Principal Contractor down to the first significant archaeological horizon under supervision of a MOLA Senior Archaeologist. Further manual cleaning, investigation and recording were then undertaken by the MOLA Senior Archaeologist. A written and drawn record of all archaeological deposits encountered was made in accordance with the principles set out in the Museum of London site recording manual (MoL 1994). Observations were located by offset to site instruction drawings “Enabling Works Package, Albion Yard Parking – Construction Areas” and “Enabling Works Package, Proposed Drainage & Utility Diversions, Phase 2 Plan CC217” Drawing No C140-HYD-C-DDA-D061_WS107_1-05218 Rev C01A and “Bored Tunnels North Eastern Storm Relief Sewer; Site Layout/General

Arrangement" C122-OVE-D-DDA-CR001_Z-53161 Rev P03 and these were best-fitted to common features on the OS 1:1250 map, on the Crossrail plane-survey co-ordinates.

7.2 Evaluation Methodology

Evaluation Trial Trenches 1 (Tunnel Access Shaft) and 2 (Grout Shaft) were set out by the Principal Contractor (Carillion) to Crossrail Co-ordinates specified in the method statement (Whitechapel Station, Archaeology, Layout of Archaeological Trenches C140-HYD-T1-DDH-D061_WS106_Z-90006 Rev P01.1). The trenches and features were then manually planned in by the MOLA supervisor by offsetting and triangulation from known points on the site. The plans were then digitised by MOLA geomatics and were annotated with the Crossrail control point on site.

Modern overburden was removed to 1.2m below ground level by the Principal Contractor by machine under archaeological supervision by a MOLA Senior Archaeologist. At 1.2m deep the ground floor slab was then trimmed to the slab edge and soft sub-surface deposits (where exposed) trenches were made safe and reinforcing mesh removed from the sides. Trenches 2 had soft sediments exposed at this level and they were probed for finds. Mechanical excavation was then resumed and Evaluation Trial Trenches 1 and 2 were recorded from the surface.

Evaluation Trial Trench 3 was moved from the proposed position but excavated within the circle of the proposed Cambridge Heath Road Shaft. The new location was between a live electric cable and a streetlight-type lamp. After probing of upper levels of post-medieval fill, it was machine excavated to the top of the underlying archaeologically sterile natural substrata. This was penetrated by two deep-cut features. In order to examine these, 'trench boxes' were made up. The trench was excavated to two trench box lengths, and subsequently sondages were dug into features on the base of the trench. The west trench box was removed and the final (east) third of the trench dug – and the process repeated.

Evaluation Trial Trench 3 was located by offset survey by Carillion to features that occurred on drawing Enabling Works Package, Proposed Drainage and Utility Diversions Phase 2 Plan C140-HYD-DDA-D061_WS107_1-05218 Rev C01, also to the setting out point of the centre of the shaft (already marked on the ground and with a known Crossrail co-ordinate). This was then best-fitted to the Ordnance Survey 1:1250 map, on Crossrail plane-survey co-ordinates.

No suitable features were evident in the evaluation trenches and therefore no geoenvironmental samples were taken.

Levels were derived by direct measurement from Carillion site control Temporary Bench Marks 111.24m ATD and 111.25m ATD

A survey report was prepared by MOLA Geomatics, 7th July 2011, Document number: C261-MLA-X-RGN-CRG03-50014 and has been submitted to Crossrail. It was revised on 22nd March 2012 as version 2.0 and resubmitted.

8 Results and observations including stratigraphic report and quantitative report

For trench locations see Fig 1

8.1 Evaluation Trench 1, Access tunnel shaft



Photo 1: Trench 1 Looking north facing section showing Albion Brewery Concrete foundations cutting through archaeologically sterile natural deposits

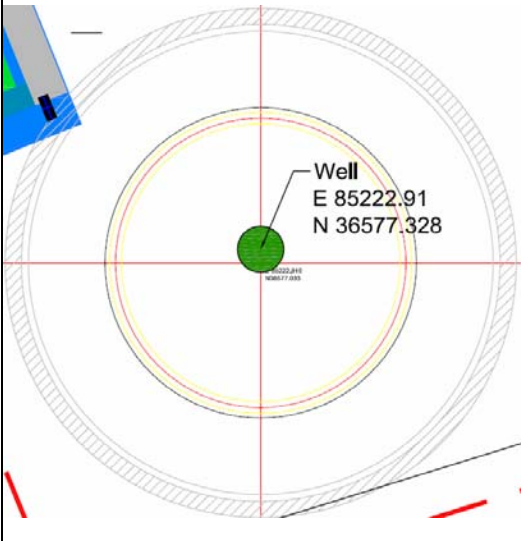
Evaluation Trench 1	
Location	Whitechapel former Sainsbury car park east of Brady Street
Dimensions	10m north to south and 2m east to west x 3.3m deep.
LSG coordinates	85180, 36574
OS National grid coordinates	534823 181934
Modern Ground Level/top of the slab	111.85m ATD
Modern subsurface deposits	A second concrete slab at 0.6m bGL below which was hardcore to the base of the trench
Level of base of archaeological deposits observed and/or base of trench	110.76m ATD at southern end to 108.55m ATD at northern end
Natural observed (truncated/not truncated ?)	Untruncated gravels at 110.76m ATD. Truncated to 108.55m ATD at northern end.
Extent of modern truncation	3.3m bGL = 113.20 ATD
Archaeological remains	Dating Evidence, Finds, and Samples
None	
Interpretation and summary	
<p>Archaeologically sterile gravels were recorded much higher at the south of this trench than elsewhere in this locality. This is thought to be because of periglacial heaving of Thames Terrace Gravel, as a result of Pingo and/or Ice-Wedge formation, similar to the Ice Wedge recorded at Lion Plaza excavations and possible Pingos at 274–280 and 298–306 (PSO90) and 284–294 (BOS87) Bishopsgate (described by the excavator as periglacial cryoturbation).</p> <p>The concrete foundations of the 20th century Albion Brewery had removed deposits above natural gravel.</p>	

8.2 Evaluation Trench 2, Grout shaft



Photo 2: Trench 2, looking east (west-facing section and base of trench) showing Albion Brewery Concrete foundations cutting through archaeologically sterile natural deposits

Evaluation Trench 2	
Location	Whitechapel former Sainsbury car park near the south perimeter in a central position
Dimensions	4m north to south and 2m east to west x 5.7m deep.
LSG coordinates	85223, 36576
OS National grid coordinates	534866 181937
Modern Ground Level/top of the slab	111.35m ATD
Modern subsurface deposits	A second concrete slab at 0.65m bGL below which was hardcore and a concrete pad to the base of the trench on the north side
Level of base of archaeological deposits observed and/or base of trench	109.4m ATD to base of archaeology – at southern end to 109.05m ATD to the base of trench
Natural observed (truncated/not truncated ?)	Untruncated gravels at 109.15m ATD [1]. Truncated brickearth above to 109.4m ATD [2]
Extent of modern truncation	1.3m bGL = 110.05m ATD on south side – truncation below base of trench to north

Archaeological remains	Dating Evidence, Finds, and Samples
<p>Dark grey-brown course sandy clay with occasional small fragments of charcoal and animal bone [4] was exposed at 109.85m ATD It was contained in a cut feature [3] the sides of which lay outside the trench, but the presence of which can be inferred from the level of the underlying natural brickearth</p>	<p>None</p>
<p>Above 109.85m ATD was 200mm of the same deposit as [4], but with yellow-stock bricks impressed into it [5].</p>	<p>Post-AD 1800</p>
Interpretation and summary	
<p>It is noteworthy that sandy clay deposit [4] contained charcoal, but not obviously coal ash. This may indicate that it was broadly earlier than later post-medieval coal-ashy fills elsewhere on site. It is not possible to determine whether it is the fill of a brickearth quarry, a pond (ponds are depicted on some historic maps of the area), a natural watercourse or a section of the common sewer (or 'Black Ditch'). However, observations of the common sewer on the east side of Sainsbury's had considerable quantities of pottery in the fill (Sankey 1993, <i>Albion Brewery, an Archaeological Evaluation</i>, 9) unlike sandy clay [4], and the fill contained coal ash compatible with the dating of the pottery (1830, or later). The reworking of the top 200mm [5] has no relevance to the dating of the lower fill.</p>	
<p>NOTE</p> <div style="display: flex; align-items: flex-start;">  <div style="margin-left: 20px;"> <p><i>Following the evaluation and watching brief, beneath the concrete foundation pad described above (left side of photograph), a modern artesian well was found. It lay below a "plug" of mixed metalwork. It continues for a considerable depth through London Clay and an adit from one side heads towards another well. Both wells are features of the late 19th- or early 20th-century Albion Brewery. An inspection of the site, by the author, on 22nd July 2011 could not determine the construction method as the remains lay below a puddle of clay mud. It is considered to have been late 19th- or early 20th-century in date</i></p> </div> </div>	

8.3 Evaluation Trench 3, Cambridge Heath shaft



Photo 3: Trench 2, looking east (west-facing section and base of trench) showing Albion Brewery Concrete foundations cutting through archaeologically sterile natural deposits

Evaluation Trench 3	
Location	Whitechapel former Sainsbury car park near the south perimeter in a central position
Dimensions	3.3m north to south and 10m east to west x 3.3m deep.
LSG coordinates	85269, 36579
OS National grid coordinates	534912 181941
Modern Ground Level/top of the slab	111.65m ATD
Modern subsurface deposits	A reinforced concrete slab over hardcore to 1.0m bGL (approximately)
Level of base of archaeological deposits observed and/or base of trench	108.35m ATD
Natural observed (truncated/not truncated ?)	Untruncated clean archaeologically sterile sand [6] at 108.55m ATD.
Extent of modern truncation	1.0m bGL = 110.65m ATD
Archaeological remains	Dating Evidence, Finds, and Samples
Dirty reworked brickearth [7] 300mm thick (overlay [6])	None

<p>Cut through by deep square feature [8] 3m E–W and >2.8m N–S was dug deeper than 107.43m ATD. The fill [9] – a dark-grey coal-ashy sandy silt – continued below this level observed in a hand-dug <i>sondage</i> and continued above this level to 110.65m ATD.</p>	<p>19th-century transfer-printed ‘oriental pheasants’ design pottery, not retained</p>
<p>To the east of [8] was another deep-cut feature [11], this time a 1.2m-wide linear feature with flat bottom aligned N–S. It had vertical straight sides and was dug to a sharp-cut flat base at 107.45m ATD. It was filled with a similar dark-grey coal ashly sandy silt [10]</p>	<p>18th–19th-century Staffordshire comb-decorated slipware, not retained</p>
<p>Interpretation and summary</p>	
<p>Reworked brickearth just 300mm thick [7] – over natural sand [6] – indicates a horizontal truncation at an unknown period in the past.</p> <p>Square feature [8] was narrow for a quarry pit – though it was dug to a depth that may indicate it was a deeper section within a wider quarry. The continuation of its fill [9] above the adjacent reworked brickearth may indicate that is so.</p> <p>Whereas feature [8] was aligned with the modern road system, the linear feature [10] was aligned N–S. Its size might indicate a drain cut, though none was found. It lies east of the position of the common sewer (or ‘Black Ditch’) which was located during the 1996 evaluation of the Albion Brewery / Sainsbury Supermarket site.</p>	

8.4 GWB Cambridge Heath Worksite car park canopy



Photo 4: Canopy foundation, third stanchion from west of the southern row (left, looking east), dug into archaeologically sterile natural brickearth and gravel



Photo 5: Canopy foundation, stanchion furthest east of the northern row (right, looking west): showing Albion Brewery Concrete foundations cutting through post-medieval coal-ashy nightsoil quarry fills, dug into archaeologically sterile natural brickearth and gravel

Car Park Canopy foundation	
Location	Whitechapel former Sainsbury car park near the south perimeter in western position, adjacent to Brady Street
Dimensions	The foundations comprised two lines of stanchion bases. The southern line measured two bases 1.5m x 2.0m at each end and four 1.5m x 4.0m in the centre, equally spaced centres with the long axis aligned parallel to the site boundary. The northern line mirrored this but was only 1.0m wide. They were dug to 3.0m deep
LSG coordinates	85183, 36561
OS National grid coordinates	534826 181921
Modern Ground Level/top of the slab	111.85m ATD

Modern subsurface deposits	A second concrete slab at 0.6m bGL below which was hardcore to approximately 2.0m bGL and concrete pad foundations to the base of the trench
Level of base of archaeological deposits observed and/or base of trench	108.85m ATD
Natural observed (truncated/not truncated ?)	Untruncated clean archaeologically sterile gravel at 109.0m ATD – 109.55m ATD.
Extent of modern truncation	1.6m bGL = 110.25m ATD
Archaeological remains	Dating Evidence, Finds, and Samples
Dark grey coal-ashy silt – with oyster shell – filled post-medieval quarries dug through brickearth to natural gravel	Presence of coal ash indicates a date later than 1650 (approx.) and oyster shells indicate quarries dug prior to 1850 (approx.)
A thin layer of brickearth lay above gravel. It was too dangerous to observe in-situ, and so it could not be determined whether this was a natural deposit or reworked. No medieval or Roman finds were observed in the up-cast spoil	None
Interpretation and summary	
These observations can be compared with the sequence in Evaluation Trench 3. It is thought that the brickearth above the gravel is likely to have been reworked, but whether by post-medieval quarrying or earlier activity it is difficult to determine. Large post-medieval quarries indicate the systematic removal of brickearth for brickmaking	

8.5 GWB Drainage and septic tanks (interceptor)



Photo 6: Eastern Manhole and Drainage trench: Looking west, showing Albion Brewery brick and concrete foundations cutting through archaeologically sterile natural deposits with a blackish waterlain silt (arrowed), cut through by Albion Brewery basements in the distance

Drainage Watching Brief	
Location	Whitechapel former Sainsbury car park Near to the north site perimeter
Dimensions	Drainage trenches were 1.2m wide and between 2m and 3m deep. Manholes were 2.5m square and dug to a similar depth. The large interceptor pit measured 7m x 5.5m and was 6.0m deep and north of it was a 3.5m x 2.0m trial pit dug 3m deep.
LSG coordinates	85197 36596
OS National grid coordinates	534839 181956
Modern Ground Level/top of the slab	111.85m ATD

Modern subsurface deposits	Except for a small area photographed above, Albion Brewery remains continued below the level excavated, except for the large interceptor pit, where a concrete blinding was encountered at 4.4m bGL (below which were natural gravels). In the small area of surviving archaeology concrete truncated deposits at 1.0m bGL
Level of base of archaeological deposits observed and/or base of trench	109.35m ATD
Natural observed (truncated/not truncated ?)	Naturally reworked Brickearth, with roots, occurred at 110.35m ATD. It was truncated by a feature with waterlogged silts
Extent of modern truncation	1.0m bGL = 110.85m ATD
Archaeological remains	Dating Evidence, Finds, and Samples
500mm thick deposit of firm black and dark grey waterlogged fine silt without visible inclusions, but with very fine specks or coal dust	Presence of coal ash indicates a probable date later than 1650 (approx.)
Interpretation and summary	
The waterlogged dark grey silts are thought also to have been waterlain and to be from the Common Sewer (or Black Ditch). However no dating material was recovered and this interpretation, without the sides of the feature containing them, must remain tentative. It is possible that the roots observed in the underlying brickearth were those of reeds.	

8.6 TWB Thames Water Storm Relief Sewer Shaft



Photo 7: Thames Water Storm Relief Sewer Shaft: Looking north-west, showing clean natural brickearth at the base of the shaft, darker filled feature to the right of the ladder, red-brown soil, cut through by a quarry and a 19th-century culvert

Thames Water Storm Relief Sewer Shaft, Essex Wharf Worksite	
Location	Whitechapel former Swanlea School area of the Essex Wharf worksite
Dimensions	A 8m x 8m preparatory ground reduction for a 5.6m diameter shaft
LSG grid coordinates	85029, 36581
OS National grid coordinates	534672 181937
Modern Ground Level/top of the slab	unknown
Modern subsurface deposits	Modern surface treatments, concrete and hardcore to 0.9m bGL
Level of base of archaeological deposits observed and/or base of trench	2.3m bGL
Natural observed (truncated/not truncated ?)	Clean, archaeologically sterile brickearth at 1.8m bGL
Extent of modern truncation	0.9m bGL

Archaeological remains	Dating Evidence, Finds, and Samples
A dark grey area of brickearth on the west side of the shaft continued below the area excavated (outside the shaft itself). It was covered by..	None
...a plough soil , which contained animal bones but no dated finds. It was cut through...	None
...on the east side of the area observed by a large post-medieval quarry filled with coal-ashy sandy silt .	None
The quarry fill was cut in turn by a brick culvert	18th- or 19th-century (bricks, not retained)
Interpretation and summary	
The dark grey area of brickearth could potentially have been an earlier medieval or Roman feature but without finds, and without fully excavating it, it is not possible to determine. Similarly, a buried soil in this location is not significant without an accurate means of dating it. The quarry is typical of the 17th-, 18th- and 19th-century quarries in the vicinity.	

9 Assessment of results against original expectations and review of evaluation strategy

GLAAS guidelines (English Heritage, 1998) require an assessment of the success of the evaluation 'in order to illustrate what level of confidence can be placed on the information which will provide the basis of the mitigation strategy'. The recommendations suggest that there should be:

Assessment of results against original expectations (using criteria for assessing national importance of period, relative completeness, condition, rarity and group value) (Guidance Paper V, 4 7).

Department of Culture Media and Sport guidelines for assessing the importance of individual monuments for possible Scheduling include the following criteria: *Period; Rarity; Documentation; Group Value, Survival/Condition; Fragility/Vulnerability; Diversity; and Potential (DCMS 2010 Annex 1)*. The guidelines stress that 'these criteria should not be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case'.

9.1 Research aims

The original research objectives were met as follows; information was recovered on:

- No archaeological remains of Roman to medieval date relating to the Roman/ medieval road from London to Colchester were recovered or observed.
- The possible site of St Mary Moorfields Catholic Church additional burial site was not located.
- Archaeological remains of post-medieval agricultural, industry and general urbanisation, were confined to mainly later post-medieval quarries and some other late deep-cut features. Remains of the Albion Brewery were found throughout the site, including the Cambridge Heath Road Shaft, but they were confined to only the later stages of the brewery when major concrete foundations and deep basements removed earlier structures.
- The Common Sewer or 'Black Ditch', once a natural watercourse but probably culverted from the medieval period ran from north to south, through the area of the Cambridge Heath worksite. Alluvial sediments in and near the east manhole of the drainage system, and in Evaluation Trial Trench 2 (Grout Shaft), may relate to this channel. However, it should be noted that there were no signs of the fill with frequent pottery fragments found during the archaeological evaluation of the Albion Brewery prior to the construction of Sainsbury's (Sankey, D. 1993 Albion Brewery, an archaeological evaluation, MoL: report p9) dated to later than 1830 by a William IV mug.
- No evidence was recovered of the possible emergency burial ground used during the Great Plague of 1665.

9.2 DCMS Scheduling criteria

- *Period*: Securely dated remains were 19th-century dug features. Less securely dated land fill is post-17th-century and prior to 1840. Undated deposits may be earlier.
- *Rarity*: All the remains were typical for the East End of London.
- *Documentation*: Documentation exists for the later phases of the Albion Brewery. In the case of the mass concrete remains, or cellars exposed, it is considered not to add greatly to the significance of the remains



- *Group Value:* Whereas the later post-medieval cut features are typical of the East End. It is considered that the significance as to group value is largely at a comparative level of dated finds. On this site, few individual finds were exposed. A specific instance that may bear fruit, though, is the 19th-century brick culvert exposed at the Thames Water Storm Relief Sewer Shaft. Although not aligning, it is comparable to a culvert exposed north of Swanlea School (Sankey 2010). There may be some scope for further research into the network of drains here in the 19th century.
- *Survival/Condition:* Later post-medieval cut features, or the concrete remains of the Albion Brewery, have largely removed earlier archaeological remains
- *Fragility/Vulnerability:* In the areas of shafts, all remains will be removed. Outside of these areas remains should broadly be protected
- *Diversity:* Remains were consistent, principally later post-medieval cut features, quarries, etc. There was some undated alluvium, a late 18th-c or 19th-c brick culvert and a brickearth feature that was undated. These latter remains were so fragmentary that they did not detract from the consistency of later post-medieval cut features.
- *Potential:* The remains have little potential for further study.

10 Statement of potential archaeology

The evaluation, supported by the results of the watching briefs at Whitechapel Station has demonstrated that the site has the following potential:

- Low potential for prehistoric Roman, medieval, Tudor or Stuart remains.
- High potential for later post-medieval remains, principally quarrying or other large-scale cut features.

10.1 Importance of Resources

The archaeological remains identified in the fieldwork are provisionally assessed as being of low importance. The 18th- and 19th-century development of the area is well documented and the archaeological remains add little to the picture, although individual finds of note may be recovered from later fills.

11 Conclusions

11.1 Geology

The British geological Survey 1:50,000 maps show the underlying natural substrata as Taplow river terrace gravel, overlain by an outlying tongue of the Langley Silt Member brickearth, mainly to the north of the site. This conforms to the observations of brickearth at the Essex Wharf Thames Water Stormwater Relief Sewer Shaft, and it may partly reflect the degree of quarries which has removed brickearth further south. However, natural brickearth was present at 109.4m ATD (Trench 2 Grout Shaft), a level truncated by later features. The underlying gravels were exposed at 110.76m ATD, this unusually high level (higher than the brickearth in Trench 2) may be a result of heaving by ice movement (cryoturbation) as a result of the formation of Ice Wedges or Pingos.

11.2 Prehistoric, Roman, medieval and Tudor/Stuart periods

There were no remains observed earlier than the 18th century. This is thought not to have been a reflection of the nature of what has occurred on the site, but rather the comprehensive nature of truncation in the 18th-, 19th- and 20th-centuries.

11.3 Post-medieval remains

The predominant type of archaeological remains found on site were deep-cut large features, often quarries but not exclusively so. Where they have been dated they were considered to have been late 18th- or early 19th-century. Where not dated finds were recovered they characteristically had large amounts of coal ash in the fill, and coal was only used in large quantities from the later 17th century. Large quarries may have finds of individual note. A raspberry *prunt* from a crystal glass vessel, from a similar brickfield quarry on the north side of Swanlea School, may be from the first lead-glass manufacturer, Ravenscroft, in the 17th century (Sankey, D. 2010 Swanlea School, an archaeological evaluation, MOLA report).

However, the quarries on Cambridge Heath Road subsite were truncated severely by late 19th–20th-century concrete foundations of the Albion Brewery. Brewery remains were limited to mass concrete foundations of the latest phase of the Brewery, which truncated earlier Brewery remains as well as earlier archaeological deposits.

These remains of the brewery included the mass concrete cap of an artesian well, exposed as the Grout Shaft was dug. This location lies inside the Albion brewery buildings on Ordnance Survey maps from 1873 to 1969, and also within the earlier brewery building (pre-dating the 1808 construction of the Albion Brewery) seen on Horwood's map of 1799. A second artesian well on the site, located some 15m to the south-east of this one, was recorded for Crossrail before being filled in (see MOLA 2012). Whilst one well might have replaced the other, it is likely that they demonstrate the vast quantities of water required by the East End brewing industry. Both wells will be addressed further during post-excavation assessment and publication.

The site of the Thames Water Storm Relief Sewer Shaft, on Essex Wharf, was different. This was outside the area of major concrete foundations (except those of the recent Swanlea School itself). Here, the edge of a large brickfield quarry, comparable to those found north of the school, was recorded. There were no individual finds of note. A brick culvert, a 19th-century drain, cut through the quarry backfill.

11.4 Undated deposits

Outside (west) of the brickfield quarry on the Thames Water Sewer Shaft Essex Wharf site, an area of grey brickearth may indicate natural geology reworked in antiquity, but no finds were recovered from this deposit. However, the date or function this particular area of discoloured brickearth cannot be determined and most of it lies outside the area of impact.

Alluvial deposits observed in, and near, the eastern drainage manhole, and also in Trench 2 are broadly in line with the course of the common sewer 'Black Ditch' recorded on the site of Sainsbury's store (Sankey, 1993, 10, Fig 5). However, they differed from the ditch fill found in 1993 by having no visible archaeological finds. Ditch fills exposed in 1993 had prodigious quantities of pottery. They may relate to earlier versions of the same sewer, to a previous natural watercourse. Without dateable objects, alluvium in this locality tells us very little about site development.

12 Recommendations for appropriate mitigation strategy

No unforeseen archaeological deposits of significance were exposed by the evaluation trial trenches or the targeted and general watching briefs. Therefore the mitigation strategy of preservation by record remains appropriate.

The paucity of survival at the Cambridge Heath Road shaft suggests that no further work is likely in that part of the site.

The Project Archaeologist will refine the mitigation strategy for Crossrail works at Whitechapel and produce recommendations for any further archaeological work.

13 Publication and dissemination proposals

The watching brief and evaluation results will initially be disseminated via this report; the supporting site archive of finds and records (including digital data). Any publication proposals will be considered in relation to later fieldwork on this site, and also the wider context of archaeological potential and results within the Crossrail scheme.

14 Archive deposition

The site archive containing original records and finds will be stored temporarily with MOLA pending a future decision over the longer-term archive deposition and public access process for the wider Crossrail project.

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17 NMR OASIS archaeological report form

OASIS ID: molas1-105629

Project details

Project name	Whitechapel Station
Short description of the project	Evaluation, targeted and general watching brief exposed undated alluvium, possibly associated with the Common sewer or
Project dates	Start: 24-02-2011 End: 16-06-2011
Previous/future work	Not known / Yes
Any associated project reference codes	XSH10 - Sitecode
Type of project	Field evaluation
Site status	Area of Archaeological Importance (AAI)
Current Land use	Industry and Commerce 3 - Retailing
Monument type	BREWERY Modern
Monument type	QUARRY Post Medieval
Methods & techniques	'Targeted Trenches'
Development type	Rail Tunnel Shaft and work site
Prompt	Crossrail act
Position in the planning process	Not known / Not recorded

Project location

Country	England
Site location	GREATER LONDON TOWER HAMLETS TOWER HAMLETS Whitechapel Station
Postcode	E1
Study area	5670.00 Square metres
Site coordinates	TQ 3480 8194 51.5194142815 -0.05689626703840 51 31 09 N 000 03 24 W Point
Height OD / Depth	Min: 9.40m Max: 10.76m

Project creators

Name of Organisation	MOLA
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OASIS ID: molas1-105629 cont'd

Project brief originator Crossrail
Project design originator Crossrail
Project director/manager Elaine Eastbury
Project supervisor David Sankey
Type of sponsor/funding body Developer
Name of sponsor/funding body Crossrail

Project archives

Physical Archive Exists? No
Digital Archive recipient LAARC
Digital Media available 'Images raster / digital photography','Images vector','Survey','Text'
Paper Archive recipient LAARC
Paper Media available 'Notebook - Excavation',' Research',' General Notes','Plan','Report','Section','Unpublished Text'

Project bibliography

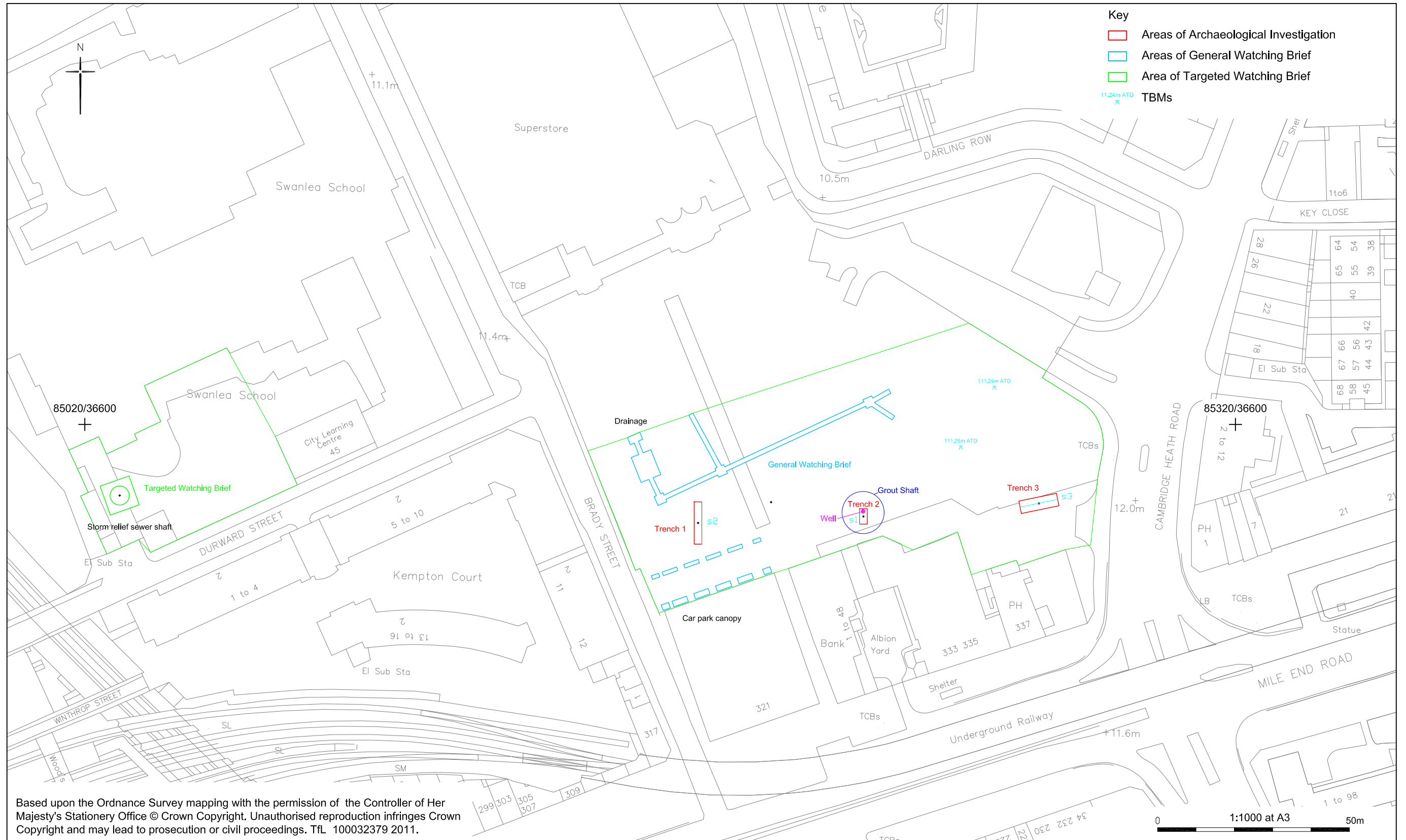
1

Publication type Grey literature (unpublished document/manuscript)
Title C261 ARCHAEOLOGY EARLY EAST Fieldwork Report Archaeological Watching Briefs and Evaluation C123 Whitechapel Station - XSH10
Author(s)/Editor(s) Sankey, D.
Date 2011
Issuer or publisher Museum of London
Place of issue or publication London
Description A4 report
Entered by David Sankey (DSankey@museumoflondon.org.uk)
Entered on 22 July 2011



Annex 1 – Figures

(to be inserted in the PDF version of this document)



Event code / Site code:

XSH10: FIG 1 Location of Evaluation Trenches and Watching Brief Areas

Site Address:

Crossrail: Whitechapel Shaft

GWB / TWB / Evaluation

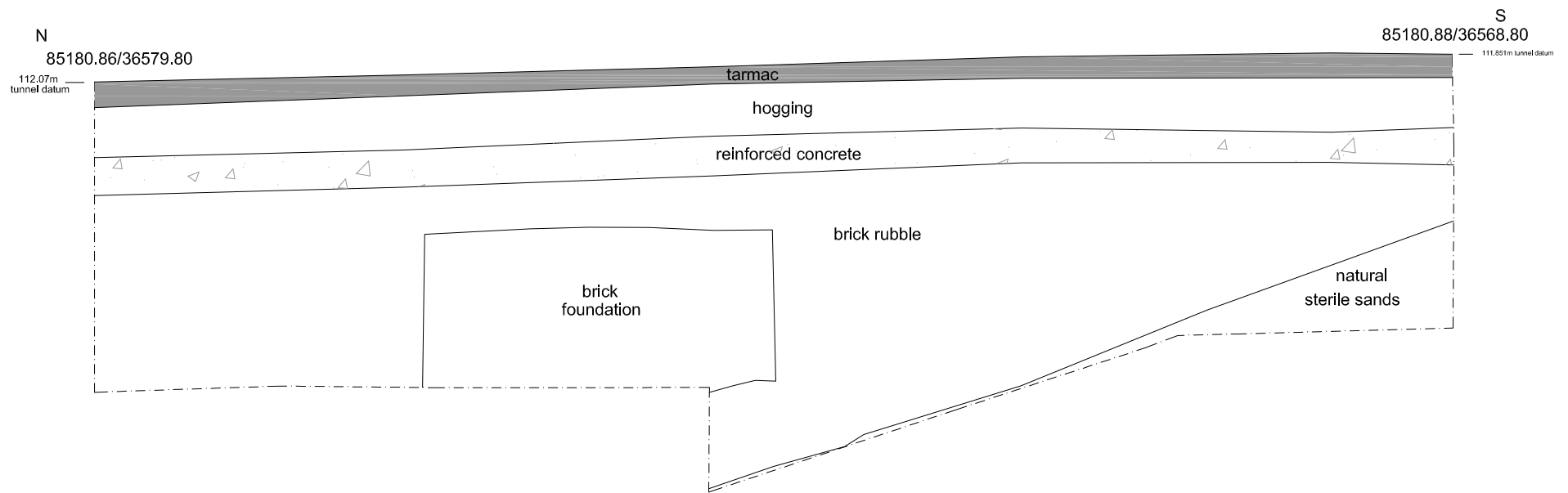



Fig 2 West facing section of Trench 1

 visible extent of section

0 1: 50 @ A4 2.5m



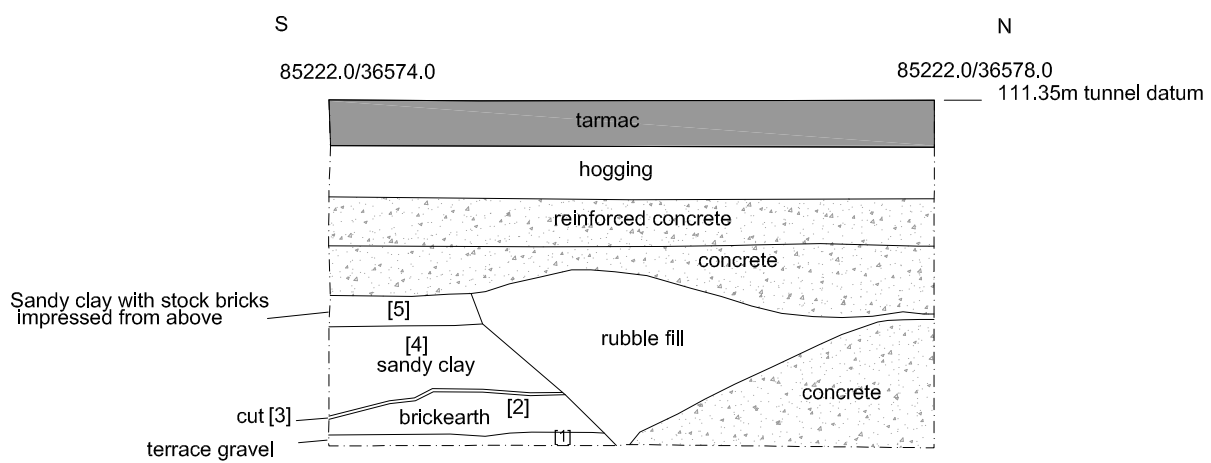


Fig 3 East facing section of Trench 2

[---] visible extent of section

1:50 @ A4



W

E

85263.84/36578.45

85273.64/36580.46

111.65m
tunnel datum

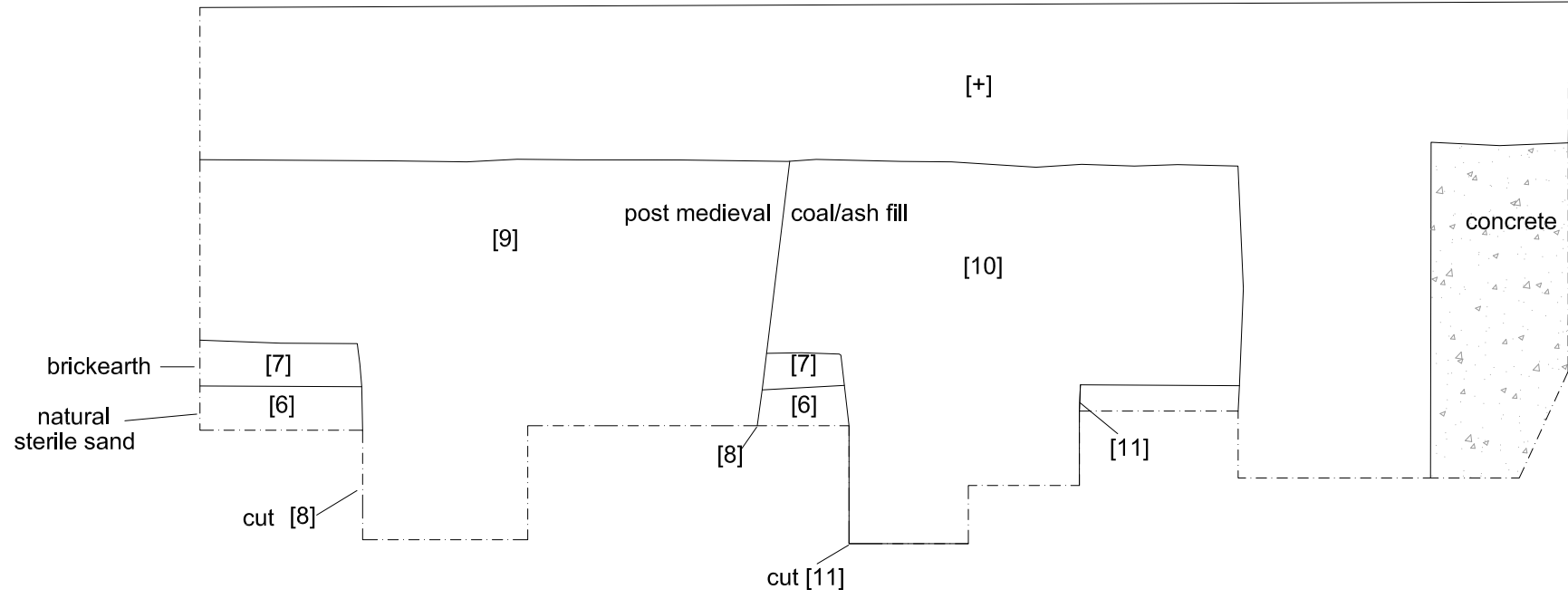


Fig 4 South facing section of Trench 3

[-] visible extent of section



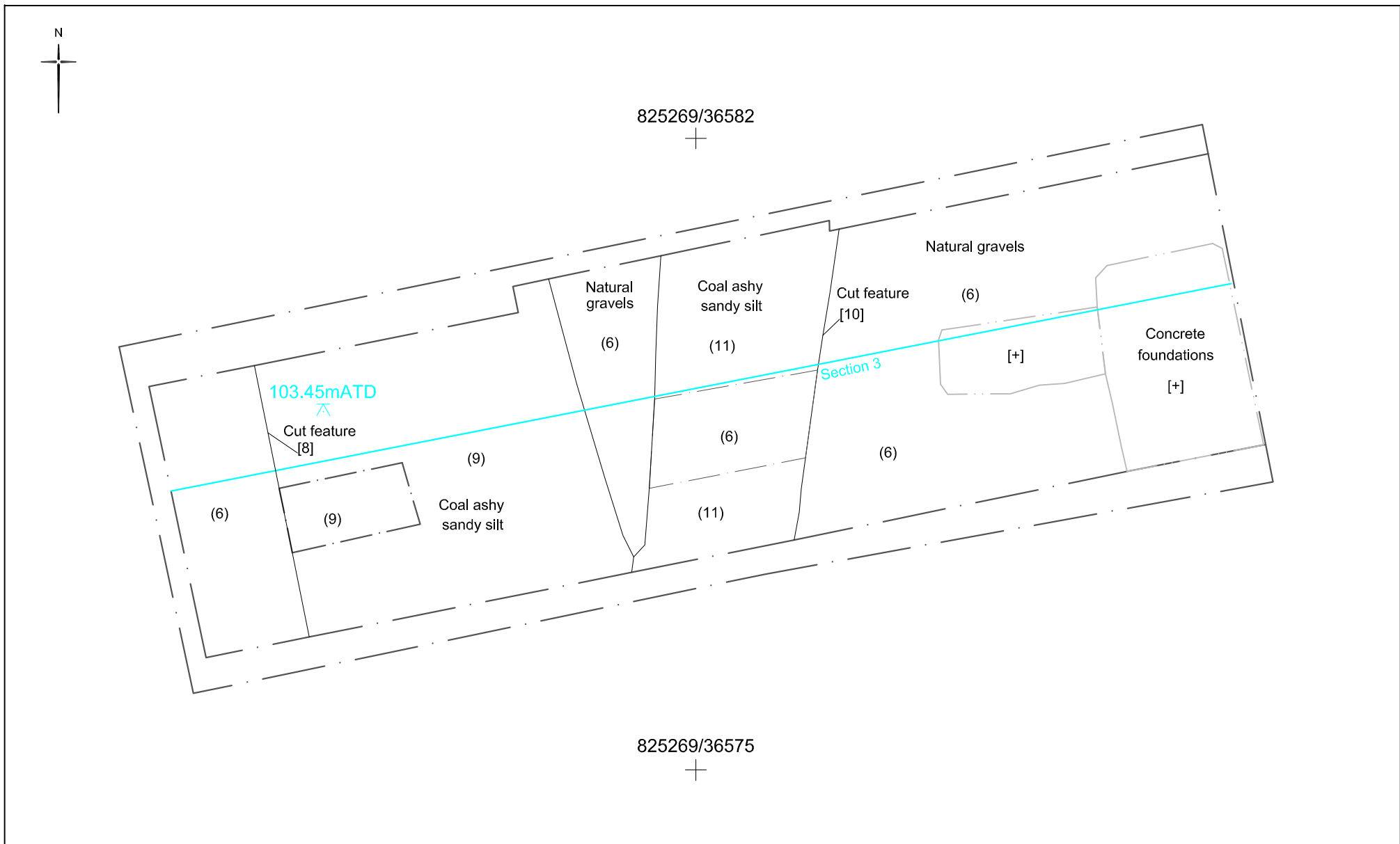




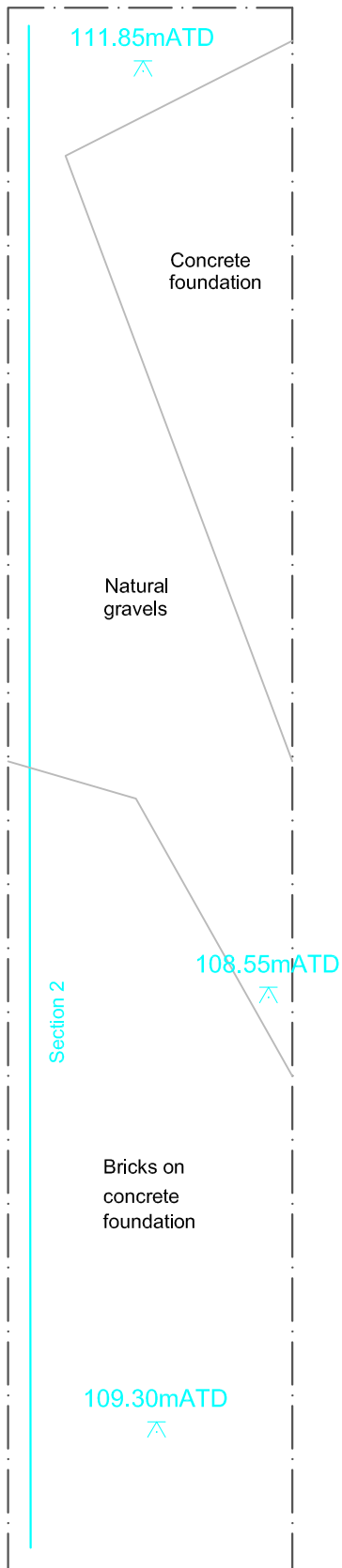
Fig 5 Plan of Trench 3

- | | | | |
|---|-------------------------|---|--------------|
|  | Trench edge |  | Section line |
|  | Archaeological features |  | Levels m ATD |
|  | Sondage | | |
|  | Modern intrusion | | |

0 1:50 @ A4 2.5m

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



85180/36580



85180/36568



Fig 6 Plan of Trench 1

-  Trench edge
-  Modern intrusion
-  Section line
-  Level m ATD

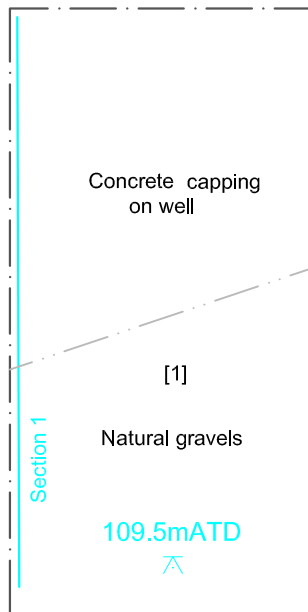
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




85225/36579
+



85223/36573
+

Fig 7 Plan of Trench 2

-  Trench edge
-  Modern intrusion
-  Archaeological features
-  Section line
-  Levels m ATD

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