



C257 ARCHAEOLOGY CENTRAL
Interim Statement
Archaeological Watching Brief and
Evaluation
Broadgate Ticket Hall - XSM10

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1 Introduction

This Interim Report covers archaeological investigations carried out at the location of the Broadgate Ticket Hall, Liverpool Street, by C257 Museum of London Archaeology (MOLA).

It does not include the future evaluation Trial Trench 14, or general watching brief on Trial Trench 15.

All fieldwork was conducted between 20/02/10 to 27/07/11 and supervised by Robert Hartle (MOLA Supervisor), and included:

- Evaluation - Trenches 5, 6, and 9 from 20/02/10 to 14/03/11.
- Fully excavated evaluation - Trenches 1, 2, 7 and 13 from 07/03/11 to 27/07/11
- A GWB on a structural trial pit in the basement of the Railway Tavern on the 07/03/11

The event code (sitecode) is XSM10.

This document is an Interim Statement of the results of the completion of the above fieldwork at the Broadgate ticket hall site. More extensive background, results, and conclusions will be included the Fieldwork Report which will be submitted within six weeks of the final end of fieldwork, including Trenches 14 and 15 (Crossrail, *Archaeology, Specification for Evaluation & Mitigation (including Watching Brief, Doc No. CR-PN-LWS-EN-SP-00001, v. 0.3, 26.06.09)*).

The fieldwork was carried out in accordance with:

- A Crossrail **Site-specific Written Scheme of Investigation** (SS-WSI): Liverpool Street Station, Site-specific Written Scheme of Investigation, Doc. No. C138-MMD-T1-RST-C101-00001 Version 2, 29.04.10,
- The **addendum to the SS-WSI**, Doc. No. C138-MMD-T1-RST-C101-00004, Revision 1.0, August 2010.
- An **Archaeological Method Statement**: MOLA, *C257 Central Method Statement for Archaeological Evaluation and Watching Briefs Broadgate Ticket Hall (XSM10)*, Doc No: C257-MLA-X-RGN-CRG02-50002, Version 3, 17.02.11 and Version 4, 30.06.11.

2 Site Methodology and fieldwork objectives

2.1 General Methodology

All archaeological excavation and recording during the evaluation was carried out in accordance with the Crossrail 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 site finds and records can be found under the site code XSM10 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.

2.2 Watching brief methodology

One exploratory trial pit was excavated to a depth of 1m bGL (below ground level) within the basement of the Railway Tavern, by Principal Contractor JB Riney under archaeological supervision.

The general watching brief consisted of a basic monitoring presence, by a MOLA Senior Archaeologist, to observe works carried out by the Principal Contractor. Excavation was by hand by the Principal Contractor 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).

2.3 Evaluation methodology

Three evaluation trenches (Trenches 5, 6, and 9) were excavated to the surface of archaeology, between existing known utilities in the road of Liverpool Street. Modern overburden was machine excavated and removed by the Principal Contractor (J B Riney) down to first significant archaeological deposit under supervision of a MOLA Senior Archaeologist. In the case of trenches 6 and 9, the underlying archaeological deposits were excavated to the level of the burial ground and *in situ* human remains. These horizons were then recorded by MOLA (C257) to identify their survival, extent and significance. In the case of trench 5, modern truncation was considerably deeper and reduced to earlier marsh deposits. Access to trench 5 was not possible due to the extreme depth, subsequently, the trench was recorded from the ground level, with deposits examined closely after they were extracted by the machine. 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).

The locations of the trenches were recorded by MOLA Geomatics by optical survey. The survey utilised Crossrail London Survey Grid control stations, which were then tied into the OS. A Survey Report will be produced by MOLA Geomatics at the completion of Trenches 14 and 15.

Prior to backfilling, *in situ* human remains which had been uncovered in Trenches 6 and 9 were left *in situ* and covered with terram and a layer of clean sand (at least 200mm in thickness), as directed by MOLA. Any disarticulated human bone recovered during these investigations was also re-interred at the level of the burials (3 bags in Trench 6 at 11.16m OD and 8 bags in Trench 9 at 10.9m OD).

2.4 Excavation methodology and sampling method

Four trenches were excavated between existing known utilities in the centre of the road, and near the north or south pavements in Liverpool Street. Modern overburden was machine excavated and removed by the Principal Contractor (J B Riney) down to first significant archaeological deposit under supervision of a MOLA Senior Archaeologist. The trenches were then hand excavated by MOLA. Excavation was full in all trenches except Trench 7, where excavation was limited to c 1m above an active sewer which ran below.

A written, drawn and photographic 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).

The locations of the trenches were recorded by MOLA Geomatics by optical survey. The survey utilised Crossrail London Survey Grid control stations, which were then tied into the OS. (See 2.2)

Ditch fills or any waterlain/marsh deposits were recorded and sampled by a MOLA geoarchaeologist using continuous monolith tins and bulk samples.

Any disarticulated human bone recovered during excavation of Trenches 7 and 13 was re-interred at the limit of excavation level in those trenches (46 bags in Trench 7 at 8.9m OD and 16 bags in Trench 13 at 7.2m OD). However, disarticulated human remains recovered during the excavation of Trenches 1 and 2 were retained and passed to JB Riney for storage until the appointment of a burials contractor, who would then process them.

2.5 Fieldwork Objectives

The overall objectives of the investigation were to establish the nature, extent and state of preservation of any surviving archaeological remains that will be impacted upon by the development. These are defined in the SS-WSI and are reproduced below.

Specifically, the general aims of the investigations at the Liverpool Street (Broadgate Ticket Hall) worksite were to:

- Identify and record any archaeological remains of Roman date relating to extra-mural activity, including burials;
- Identify and record any medieval remains associated with St Mary Bethlehem Hospital;
- Identify and record any post-medieval rubbish dumps and remains associated with the urbanisation of the area;
- Identify and record any post-medieval burials within the known burial ground (BG208) that lies beneath the carriage way of Liverpool Street in the Broadgate Ticket Hall area;
- Identify and record any waterlain deposits with the potential for organic preservation and palaeoenvironmental remains.

3 Provisional Results

3.1 Evaluation Trenches

See Figure 1 for trench locations

3.1.1 Trench 5



Photo 1: Trench 5 – below-ground 20th century toilet block tiled brick walls (left) and concrete backfill (right), truncating organic deposits [235] and [236] (seen in a sondage at the centre)(looking south).

Trench 5	
Location	The approximate centre of the west end of Liverpool Street. Furthest trench west.
Dimensions	2.2m wide (N-S) x c 4.0m (E-W) x 4.9m deep
London Survey grid coordinates	83373 36295
OS National grid coordinates	533024 181610
Modern Ground Level	12.52m OD (112.52m ATD)
Modern subsurface deposits	Road surface 100mm thick, over concrete 400-500mm thick. Toilet block



	structure and concrete backfill between 11.92 and 8.17m OD (111.92 and 108.17m ATD)
Level of base of archaeological deposits observed and/or base of trench	7.62m OD (107.62m ATD)
Natural observed	Not reached
Extent of modern truncation/overburden	From above, there was 20th century truncation across whole trench to 8.17m OD (108.17m ATD/4.35m bGL). Also, from below, the archaeology had been removed by a tunnelled sewer, at 7.62m OD (107.62m ATD) and below.
Archaeological remains	Dating Evidence, Finds, and Samples
[235] (mid grey brown silt clay and organic material (30:70), with occasional shell and leaves, twigs etc.), overlaying [236] (dark grey black silt clay and organic material (40:60), occasional shells and charcoal) between 8.17m and 7.62m OD (108.17 and 107.62m ATD).	No finds or other dating evidence. Provisionally Roman in date?
Interpretation and summary	
The archaeology has been largely truncated by a 19th or 20th century toilet block dug from above and by the Victorian sewer tunnelled from below. Only a small band, approximately 600mm thick, survives between the two. There remains a sequence of two organic deposits [235] and [236], waterlain in nature, possibly Roman in date, and potentially associated with the Walbrook flood plain or the river itself.	

3.1.2 Trench 6



Photo 2: Trench 6 – Burial stacks (looking north-east)

Trench 6	
Location	To the west and at the approximate centre of Liverpool Street.
Dimensions	2.35m wide (N-S) x 4.0m long (E-W) x 1.4m deep
London Survey grid coordinates	83384 36292
OS National grid coordinates	533036 181607
Modern Ground Level	Road surface at 12.57m OD (112.57m ATD)
Modern subsurface deposits	Road surface 100mm thick, over concrete 400-500mm thick, above type 1 and other modern material 400mm thick.
Level of base of archaeological deposits observed and/or base of trench	Limit of excavation at 11.16m OD (111.16m ATD).
Natural observed	Not reached
Extent of modern truncation/overburden	Approximately 1.0m to >1.5m deep (a modern truncation in the SE corner extended beyond the trench limits)

Archaeological remains	Dating Evidence, Finds, and Samples
<p>[21] – cemetery soil cut by numerous burials. Contained significant amounts of residual disarticulated human bone. Nineteen articulated burials, all with coffins, were identified and recorded within this layer 11.52m OD (111.52m ATD).</p>	<p>No datable finds associated with any of the burials. These burials, given their position at the surface of <i>in situ</i> burials, are presumably of late 17th or early 18th century date.</p>
<p>[20] – re-deposited cemetery soil and/or dumping, including moderate amounts of disarticulated human bone. 11.6m OD (111.6m ATD).</p>	<p>Pottery (17th-18th century), animal bone, worked bone and ivory, glass and glass slag, brick and tile (c 17th-18th century), tobacco pipes (16th-18th century), and corroded metal items.</p>
Interpretation and summary	
<p>This trench revealed the surface of <i>in situ</i> burials [21] within the limit of excavation, and a moderate to high density of burials, with confined skeletons arranged in parallel rows and in vertical stacks. The upper burials showed signs of disturbance and truncation, and were covered by a levelling dump [20] containing moderate amounts of disarticulated human bone. In addition, the area has also been partially truncated by c 20th century activity (most likely utility trenches).</p>	

3.1.3 Trench 9



Photo 3: Trench 9 – Burials and charnel pit [6] (bottom left), cutting into cemetery soil [1] and cut by modern truncation (left)(looking east).

Trench 9	
Location	The approximate centre of the west end of Liverpool Street. Evaluation trench furthest to the east in the site area.
Dimensions	2.15m (N-S) x 2.15m (E-W) x 1.8m deep
London Survey grid coordinates	83403 36287
OS National grid coordinates	533054 181603
Modern Ground Level	12.71m OD (112.71m ATD)
Modern subsurface deposits	Road surface 100mm thick over concrete 500mm thick, above type 1 and other modern material 600mm thick.
Level of base of archaeological deposits observed and/or base of trench	10.90m OD (110.90m ATD)
Natural observed	Not reached
Extent of modern truncation/overburden	>1m deep – base of truncation not reached
Archaeological remains	Dating Evidence, Finds, and Samples

<p>[2] – cemetery soil cut by numerous burials. Contained significant amounts of residual disarticulated human bone. Seven articulated burials, all with coffins, were identified and recorded within this layer.</p>	<p>No datable finds associated with any of the burials. These burials, given their position at the surface of <i>in situ</i> burials, are presumably of late 17th-early 18th century date.</p>
<p>[6] - Within the cemetery, a charnel pit which cut burials below. The fill was comprised exclusively of re-deposited human bone [5].</p>	<p>Within the use of the cemetery – c late 17th-early 18th century date.</p>
<p>[1] - re-deposited cemetery soil and/or dumping, including moderate amounts of disarticulated human bone. 11.55m OD (111.55m ATD).</p>	<p>Pottery (17th-18th century), animal bone, worked bone and ivory, tobacco pipes (16th-18th century), and brick and tile (c 17th-18th century).</p>
<p>Interpretation and summary</p>	
<p>This trench revealed the surface of <i>in situ</i> burials [2] within the limit of excavation, and a moderate to high density of burials, with confined skeletons arranged in parallel rows and in vertical stacks. The top burials showed signs of disturbance and truncation, and were covered by a levelling dump [1] containing moderate amounts of disarticulated human bone. The charnel pit [6] was the only one found during this phase of investigation, and perhaps offers clues to how the cemetery was managed toward the end of its use, the bones from earlier burials presumably exhumed to make space for new burials. In addition, the area has also been partially truncated by c.20th century activity (most likely utility trenches).</p>	

3.2 Fully-excavated Trenches

See Figure 1 for trench locations

3.2.1 Trench 1



Photo 4: Trench 1 – Post-medieval brick structures, including wall [325] (left), drain [321] (centre to centre right), wall [332] (top), floor [329] (centre bottom) (looking east).

Trench 1	
Location	South-west corner of Liverpool Street.
Dimensions	2.96m wide (N-S) x 4.3m long (E-W) x between 5.16m deep
London Survey grid coordinates	83377 36290
OS National grid coordinates	533028 181605
Modern Ground Level	Road surface at 12.28m OD (112.28m ATD)
Modern subsurface deposits	Road surface 100mm thick, over concrete 500mm thick, above type 1 and other modern material 600mm thick.
Level of base of archaeological deposits observed and/or base of trench	Limit of excavation: Within the whole trench - 7.40m OD

	(107.4m ATD) Within a <i>sondage</i> - 7.12m OD (107.12m ATD). Within auger holes – 6.27m OD (106.27m ATD).
Natural observed	Weathered natural bands of gravel and clays ([717], [718] and [719]) were observed between 7.52m and 7.32m OD (107.52 and 107.32m ATD). Undisturbed natural terrace gravels [720] began at 7.32m OD (107.32m ATD), and overlay natural London clay [522] at 7.01m OD (107.01m ATD).
Extent of modern truncation/overburden	Approximately 1m to >5m deep
Archaeological remains	Dating Evidence, Finds, and Samples
[522] - Natural London Clay. The surface was between 6.86m and 7.01m OD (106.86 and 107.01m ATD) within auger holes.	No finds recovered.
[720] - Undisturbed natural terrace gravels. 7.32m OD (107.32m ATD)..	No finds recovered.
[718] and [719] - Weathered natural clay layers. At 7.52m OD and 7.45m OD (107.52 and 107.45m ATD), respectively.	No finds recovered.
[717] - Weathered natural gravels. 7.57m OD (107.57m ATD).	No finds recovered.
[716] - Purple grey sandy clay dump deposit. 7.74m OD (107.74m ATD).	Pottery - Roman (1st- 2nd century). Also, included a disarticulated human bone.
[715] - Orange yellow gravelly clay dump deposit. 8.18m OD (108.18m ATD).	Pottery - Roman (1st-2nd century). Also, included a disarticulated human bone.
[712] - Orange grey clay. 8.58m OD (108.58m ATD)	Pottery - Roman (1st-2nd century).
[713] - Pit cut with fills [709] and [714]. 8.58m OD (108.58m ATD)	Pottery, including amphora, coarse wares such as black-burnished and Verulamium white wares, and a large proportion of fine wares such as Samian. Roman (1st-2nd century). Animal bone Roman CBM Iron nails Leather fragments, including a shoe. Samples taken, including monoliths

	samples {21} and {22}, and bulk samples {26} and {27}.
[711] - Clay layer. 8.68m OD (108.68m ATD).	No finds recovered.
[710] - Ditch cut with fills [707] and [708]. 8.68m OD (108.68m ATD).	Pottery, CBM and animal bone. Roman – 1st-2nd century. Samples taken, including monoliths samples {21}, {22} and {23} and bulk samples {24} and {25}.
[533] - dump layer of dense organic material in dark grey black silt clay with sand lenses. 9.33m OD (109.33m ATD)	Leather fragments, including shoes (Tudor). Copper wire, a chain and pins. Medieval to early post-Medieval.
[507] – Grey brown clay silt moderate charcoal flecks, occasional CBM fragments, small stones and oyster shell. 9.83m OD (109.83m ATD)	Pottery – medieval to early post-medieval Animal bone. CBM
[493] - Light grey brown sandy silt, containing frequent building material fragments (brick and tile), chalk fragments, oyster shells, and mortar and charcoal flecks. 10.43m OD (110.43m ATD)	Pottery - medieval to early post-medieval This layer is most likely a consolidation dump layer, laid down in order to establish the cemetery sometime before 1568.
[492] - cemetery soil cut by numerous burials. Contained significant amounts of residual disarticulated human bone. 10.88m OD (110.88m ATD).	Pottery – post-medieval Peg tile - AD1180–1480
Sixty-four articulated burials, mostly with coffins, were identified and recorded cut into layer [492]. Between 10.88m OD and 9.46m OD (110.88 and 109.46m ATD).	No datable finds associated with any of the burials. Dated to within the use of the cemetery (1568-mid 18th century).
[336] – demolition layer? Dark grey sandy silt with frequent brick and tile fragments, and moderate disarticulated human bone. 11.14m OD (111.14m ATD)	No finds recovered.
[325] - Red brick wall. 11.35m OD (111.35m ATD)	Post-medieval
[332] - Red brick wall built on a foundation course of re-used worked stone [431], cut by and associated with wall [330] and floor [329]. 11.29m OD (111.29m ATD)	Brick samples taken. [332] Red brick - AD1666–1900 [330] Red brick - AD1450–1600
[335] - Robber trench filled with large amounts of disarticulated human bone.	Unknown – Post-Medieval to modern

10.80m OD (110.8m ATD)	
[321] - Brick drain with stone and brick cap stones. 11.30m OD (111.3m ATD)	17th-18th century?
[324] - Robber cut. 11.28m OD (111.28m ATD)	Unknown – 18th century to modern.
[535] - Victorian brick sewer. 8.89m OD (108.89m ATD)	Victorian (mid-late 19th century) – built with shallow frogged red and yellow London stock bricks.
[328] - Modern cut to access the Victorian sewer, which truncates all the archaeology between the surface and the sewer. 11.29m OD (111.29m ATD)	c 20th century – cut through a late 19th or 20th century ceramic drain pipe.
Interpretation and summary	
<p>At the base of the trench, weathered natural bands of gravel and clays ([719], [718] and [717]) were observed overlying undisturbed natural terrace gravels [720], which overlay natural London clay [522].</p> <p>Above these layers were several Roman dump layers ([715] and [712]) which contained disarticulated human bone fragments, as well as Roman pottery and CBM. These early Roman layers were cut by a large, approximately circular, pit [713] (see Photo 6), which contained large amounts of Roman material, including leather fragments. Above this, a build up of clay [711] could indicate short period of inactivity. Truncating this, the eastern side of a large ditch [710], aligned north-south, cut this earlier pit at the west end of the trench (see Photo 6).</p> <p>Above this, a heavily organic waterlain or semi-terrestrial deposit [533], including well preserved leather and metal finds, was found 3m beneath the ground surface and is most likely Medieval. Overlaying this layer were accumulated Medieval to early post-Medieval dump layers [507] and [493]. Layer [493] is part of a layer specifically laid down across the whole site to provide stable ground for the establishment of the cemetery (see Photo 5, Photo 13, and Photo 15), although it is possible [507] may also be part of this event.</p> <p>Within this trench, 64 articulated burials, mostly found in coffins, were identified and recorded, cut into cemetery soil [492].</p> <p>The cemetery was truncated by post-medieval features, including several robber cuts ([324] and [335]), brick buildings with an associated floor ([325], [332], [330] and [329]), and by a brick drain [321].</p>	



Photo 5: Trench 1 – Base of grave cuts, cutting layer [493](looking south-west).



Photo 6: Trench 1 – Ditch cut [710](dark grey/black), cutting pit [713] (grey fills) which truncates dump deposits [712] and [715] (orange deposits in the foreground)(looking south-west).



Photo 7: Profile of sewer [535], backfilled and bricked up westward, and largely broken out within the trench (looking west).

3.2.2 Trench 1a

Originally designated as Trench 1, this trench was abandoned shortly after it was broken out. Excavation was not viable due to the number of services which restricted access. The archaeology was not reached within this trench, although *in situ* burials were noted with the south facing section of a modern truncation in the southern part of the trench.

3.2.3 Trench 2



Photo 8: Trench 2 –Skeletons [616] (left) and [622] (right), with traces of wood from coffins (north at top).

Trench 2	
Location	Centre and south of the site, and immediately north of the pavement
Dimensions	2.83m wide (N-S) x 6.45m long (E-W) x between 5.63m deep
London Survey grid coordinates	83398 36285
OS National grid coordinates	533049 181601
Modern Ground Level	Road surface at 12.29m OD (112.29m ATD)
Modern subsurface deposits	Road surface 100mm thick, over concrete 500mm thick, above type 1 and other modern material 600mm thick.
Level of base of archaeological deposits observed and/or base of trench	Limit of excavation: Within the whole trench - 7.76m OD (107.76m ATD) Within a <i>sondage</i> - 6.66m OD (106.66m ATD). Within auger holes – 7.25m OD to 6.44m OD (107.25m ATD to 106.44m ATD).

Natural observed	Not reached
Extent of modern truncation/overburden	Approximately 1m to >5.5m deep
Archaeological remains	Dating Evidence, Finds, and Samples
[706] – Natural terrace gravels	No finds recovered.
[705] – Archaeologically sterile, weathered natural clay. 7.95m OD (107.95m ATD).	No finds recovered.
[704] – A dump layer of red brown mixed brickearth. 8.07m OD (108.07m ATD).	Roman pottery.
[703] – A probable ground surface. Green grey gravel with sandy clay silt. Very compacted at the top. 8.25m OD (108.25m ATD).	Roman pottery.
[702] – Yellow grey silty clay dump layer with demolition material. 8.4m OD (108.4m ATD).	Contained Roman material including pottery, painted wall plaster fragments, mortar and daub.
[699] – Light grey silty clay. 8.9m OD (108.9m ATD).	No datable finds recovered.
[694] – Humic sticky silty clay. 9.09m OD (109.09m ATD).	Pottery - Late medieval? Bulk sample {18}.
[698] – A linear feature (fill [697]) seen on the north edge of the trench. Possibly a ditch. 9.03m OD (109.03m ATD).	Roman pottery, CBM and animal bone. Bulk sample {20} taken of fill [697].
[701] - Pit with fill [700], which truncated an unidentified shallow cut feature [696] and it's fill [695]. 9.06m OD (109.06m ATD).	Roman pottery recovered. Bulk sample {19} taken of fill [695].
[693] – Mixed dump deposit of dark black brown clay silt, with frequent gravel, moderate CBM and animal bone fragments. 9.42m OD (109.42m ATD).	Pottery – Provisionally late medieval-16th century.
[651] - Silty dump layer. 10.11m OD (110.11m ATD)	Pottery – Provisionally late medieval-16th century.
[650] - Dump layer of light grey brown sandy silt and building material, chalk fragments, oyster shells, and charcoal flecks. 10.42m OD (110.42m ATD).	Pottery – Provisionally late medieval-16th century.
[390] - cemetery soil cut by numerous burials. Contained significant amounts of residual disarticulated human bone.	c 16th-18th century.
Sixty-six articulated burials, mostly found with the remains of coffins, were	No datable finds associated with any of the burials. Dated to within the use of the

identified and recorded. Between 11.19m OD and 9.83m OD (111.19m and 109.83m ATD).	cemetery (1568-mid 18th century).
[494] – Probable wall foundation, made of re-used masonry.	Uncertain date but certainly post-medieval.
[414] – the truncated base of a red brick wall.	Brick - AD1666–1900
[413] – the truncated base of a red brick wall.	Brick - AD1666–1900
Victorian brick sewer [535], as seen in Trench 1.	Victorian (mid-late 19th century) – built with shallow frogged red and yellow London stock bricks.

Interpretation and summary

Natural terrace gravel [706] was identified at the base of the trench, overlain by a weathered natural clay deposit [705]. These natural deposits were overlain by a dump layer [704] containing Roman material. This dump was covered by a very compacted dump of silty gravel [703], probably a ground surface, similar to a gravel floor surface seen in Trench 13 [300] (see Photo 9 and Photo 16). This was sealed by further dump deposits [702], [699], and [694]. Several features cut these layers, including an unidentified shallow cut feature [696], itself truncated by a pit [701], and a linear feature on the north edge of the trench which may have been a ditch [698]. These features also contained Roman material.

The ground beneath the cemetery was made up of several thick dump layers ([693], [651] and [650]), laid down sometime between the Roman period and the 16th century. The last layer [650] is part of a layer found across the whole site beneath the cemetery (see Photo 5, Photo 13, and Photo 15).

This trench contained 66 articulated burials within the cemetery horizon, all of which were found with coffins. When compared to other trenches, this trench appears to contain a high number of unusually positioned burials, for example, the head positioned at the east and prone burials (body laid face down) (see Photo 8).

As in Trenches 1 and 7, the cemetery was truncated by post-medieval brick walls. These walls were probably part of, or associated with, properties built on the site during and/or after the closure of the cemetery.

Victorian sewer [535], previously found in Trench 1, was found to continue east and also crossed this trench, again tunnelled through the archaeology 1m beneath the burial ground (see Photo 9 and Photo 10).



Photo 9: Ground surface [703], truncated by sewer [535] (centre - partially removed)(looking west).



Photo 10: Trench 2 – Interior of Victorian brick sewer [535] (looking east).

3.2.4 Trench 7



Photo 11: Trench 7 – Brick structure [58], burials cut into cemetery soil [4], and a well preserved coffin [61] with stud decoration (right)(looking north-west).

Trench 7	
Location	The approximate centre from the roadway at the west end of Liverpool Street.
Dimensions	2.2m wide (N-S) x 4.1m long (E-W) x between 3.96m and 4.94m deep
London Survey grid coordinates	83395 36289
OS National grid coordinates	533047 181605
Modern Ground Level	Road surface at 12.63m OD (112.63m ATD)
Modern subsurface deposits	Road surface 100mm thick, over concrete 500mm thick, above type 1 and other modern material 600mm thick.
Level of base of archaeological deposits observed and/or base of trench	Limit of excavation at 7.69m OD (107.69m ATD).
Natural observed	Not reached
Extent of modern truncation/overburden	Approximately 1m to >5m deep.

Archaeological remains	Dating Evidence, Finds, and Samples
[242] – Light yellow grey silt clay with moderate rounded stones, occasional charcoal and animal bone fragments.. Not excavated and continued below base of trench at 7.69m OD (107.69m ATD).	No datable finds. Animal bone, charcoal fragments and flecks. Bulk sample {8} and monolith sample {5}.
[241] – Light blue grey sandy clay, with frequent charcoal flecks, moderate terrestrial and marine mollusc shells, and occasional CBM fragments. 8.12m OD (108.12m ATD).	Pottery and CBM (Roman). Monolith samples {5} and {6}.
[231] - Dump layer of light brown grey silt clay, including terrestrial shells and oyster shell fragments. Cut by ditch [229] to the south and ditch [240] to the north. 8.71m OD (108.71m ATD).	Pottery (Roman), animal bone, CBM (Roman). Pottery and CBM: (Roman). Bulk sample {7} and monolith samples {4} and {5}.
[240] - Ditch with fills [239] and [245]. 8.71m OD (108.71m ATD)	Bulk samples {9} from [245] Bulk sample {3} and monolith sample {6} from [239]
[230] - Dump layer of light brown grey silt clay, including terrestrial shells and oyster shell fragments. Cut by ditch [229] to the south. 8.83m OD (108.83m ATD).	Pottery (Roman), animal bone, CBM (Roman), and daub (Roman). Two bone skates (uncertain date) were found within the top of this layer, immediately below [213].
[229] - Ditch with fills [214], [237] and [238]. 8.83m OD (108.83m ATD).	Pot (Roman), animal bone and CBM (Roman). Bulk sample {1} from [214] and {2} [237]. Monolith sample {4} through [214], [237], [238] and [231].
[213] – dump layer of mid yellow grey silty clay, with occasional, oyster shells, and charcoal and mortar flecks. 9.74m OD (109.74m ATD).	Pottery – 2nd century Roman, possibly residual. Animal bone and CBM.
[212] – dump layer of mid brown grey clay silt, including occasional mortar flecks, moderate charcoal flecks, building material and oyster shells. 10.35m OD (110.35m ATD)	Pottery (c AD1550–1600), animal bone and CBM (imbrex)(AD1480–1600) Early Post-Medieval?
[211] - dump layer of light grey brown sandy silt, containing frequent building material, chalk fragments, oyster shells, and mortar and charcoal flecks. 10.64m OD (110.64m ATD).	Pottery (c AD1550–1600) and animal bone. Brick (AD1450–1700)
[4] – cemetery soil cut by numerous burials. Contained significant amounts	No finds recovered.

of residual disarticulated human bone. 11.22m OD (111.22m ATD).	
Sixty-three articulated burials, mostly found with the remains of coffins, were identified and recorded cut into layer [4]. Between 11.22m OD and 10.09m OD(111.22m and 110.09m ATD).	No datable finds associated with any of the burials. Dated to within the use of the cemetery (c 1568- mid 18th century).
[3] – Re-deposited cemetery soil and/or dumping, including moderate amounts of disarticulated human bone. 11.5m OD (111.5m ATD).	Pottery (17th-18th century), animal bone, worked bone and ivory, brick and floor tile (AD1680–1750), tobacco pipes and coin.
[58] – The corner of a brick structure of uncertain form or function, the construction cut [59] cut layer [3] and cut burials below. 11.32m OD (111.32m ATD).	Brick sample taken (AD1666–1900).
[176] - Unidentified cut, possibly a pit, which truncated several burials below. 11.18m OD (111.18m ATD).	No finds recovered.
Interpretation and summary	
<p>The lowest deposits again provide evidence of Roman extra-mural land management, with flooded deposits interspersed with what may be deliberate reclamation or consolidation dumps.</p> <p>Above this were two Roman drainage ditches, the later [229] seemingly replacing the earlier [240] (see Photo 14). This would appear to be an escalation of earlier attempts at land management, with the provision of drainage instead of, or possibly along side, dumping. These ditches may also relate to two phases of Roman features discovered in Trench 13, found at corresponding levels.</p> <p>These features were sealed by further dump layers. The first of these [213] contained only Roman finds, while the later layers, [212] and [211], contained early post-medieval finds. Above this, as seen in Trenches 1, 2 and 13, [211] seems to have been specifically laid down to provide stable ground for the establishment of the cemetery (see Photo 12 and Photo 13).</p> <p>This trench contained 63 articulated burials. These burials were mostly found with the remains of coffins, except for a small number at the bottom of the sequence (see Photo 12).</p> <p>Above the cemetery, this trench also contained the corner of a brick structure [58] (see Photo 11). Unfortunately, it can only be loosely dated to between the 17th and 19th century, while it's form and function also remain unclear. It may perhaps be a wall along a garden boundary, as seen on Harwood map of 1799.</p>	



Photo 12: Trench 7 - The last burial [209] to be exhumed, cut into layer [211]. This burial was without a coffin, like many at the base of the cemetery (south at top).



Photo 13: Trench 7 – The base of the cemetery and top of dump/consolidation layer [211], as cut by the grave cuts (south at top).



Photo 14: Trench 7 - ditch [229] (top) and ditch [240] (bottom) (south at bottom).

3.2.5 Trench 13



Photo 15: Trench 13 – Burials at the base of the cemetery sequence, cutting layer [277], including a possible mass grave cut [263] (top left), skeleton [268] and grave cut [269] (top right), skeleton [270] and grave cut [271] (middle right), and skeleton [272] and grave cut [273] (bottom). All are without coffins (north at top).

Trench 13	
Location	North at the west end of Liverpool Street. Half in the road and half on the pavement.
Dimensions	This trench was originally intended to be larger. Concrete in an area 2.5m x 4.4m was broken and the modern overburden removed. However, the size of the trench was subsequently reduced (to the western half of the original area) in order to avoid services. Dimensions as excavated - 2.3m wide (N-S) x 2.16m long (E-W) x between 6.1m deep
London Survey grid coordinates	83403 36292
OS National grid coordinates	533054 181608
Modern Ground Level	Road surface between 12.76m OD and 12.85m (112.76m ATD and 112.85m ATD)

	Pavement between 12.92m OD and 13.07m OD (112.92m ATD and 113.07m ATD)
Modern subsurface deposits	Road surface 100mm thick, over concrete 500mm thick, above type 1 and other modern material 400mm thick.
Level of base of archaeological deposits observed and/or base of trench	Limit of excavation at 6.9m OD (106.9m ATD).
Natural observed	Natural clays [317] and [319] at 7.97m OD and 7.87m (107.97m and 107.87m ATD), respectively. Natural orange gravel [320] at 6.9m OD (106.9m ATD).
Extent of modern truncation/overburden	Approximately 1m thick
Archaeological remains	Dating Evidence, Finds, and Samples
[313] – possible dump layer of grey yellow gravel clay. 8.43m OD (108.43m ATD)	No finds recovered.
[312] – very firm metalled floor surface of grey yellow silt gravel. 8.50m OD (108.5m ATD).	No finds recovered.
[311] – dump layer of green grey silt gravel, cut by [308]. 8.68m OD (108.68m ATD).	No finds recovered.
[310] - Ditch and its recut [308] (fills from top, for [310] – [309], [315], [316] and [318], for [308] - [306], [314] and [307]. 8.08m OD and 8.59m OD (108.08m and 108.59m ATD), respectively.	From ditch cut [310]: [309] – Pottery (Roman). Bulk and monolith samples taken. [315] – No finds. Bulk and monolith samples taken. [316] – No finds. Monolith sample taken. [318] – Pottery (c.1 st or 2 nd century), including a near complete Highgate Wood ware C poppy-head beaker. Also, animal bone and a residual disarticulated human femur. From ditch recut [308]: [306] – Animal bone. [314] – No finds. Bulk and monolith samples taken. [307] – No finds.
[303]/[305] – levelling dump layer. 8.57m and 8.68m OD (108.57m and 108.68m ATD).	No finds recovered.

[304] – possible floor surface. 8.69m OD (108.69m ATD).	No finds recovered.
[302] - Beam slot (fill [301]). 8.65m OD (108.65m ATD).	[301] - Pottery (Roman)
[300] - metallised firm grey green gravel floor surface, with moderate charcoal flecks and occasional oyster shells. 8.85m OD (108.85m ATD).	Pottery – 37 sherds, dated AD 150–250. Tegula, tessera, brick – AD 140–300 Also contained nails, copper alloy metal fittings, a coin (AD 228-231), double spiked loop and three iron styli. All Roman.
[299] – layer of organic dark grey black silt clay with sand lenses. 9.42m OD (109.42m ATD).	Pottery (Roman). Brick, tegula (AD50–160)
[298] – dump layer of mid black grey silt clay, with oyster shells and moderate charcoal. 10.11m OD (110.11m ATD).	Pottery (c AD 1550–1600), CBM (tegula, imbrex, brick - AD 50–80), Painted wall plaster fragments, daub (AD 50–400) and animal bone.
[285] - Cut features (fill [284]) and [297] (fill [286]) – possible pits. 10.11m OD and 10.10m OD (110.11m and 110.10m ATD).	[284] - Pottery, animal bone and daub (AD 50–400). [286] – Pottery (Roman)
[283] – dark brown organic deposit, with occasional oyster shells and charcoal and frequent twigs and leaves. 10.11m OD (110.11m ATD).	Pottery (c AD1550–1600) Peg Tile (AD1480–1800). Bulk sample taken.
[279] – dump layer of mid grey brown clay silt, with moderate charcoal and mortar flecks. 10.45m OD (110.45m ATD).	Pottery (c AD1550–1600) and CBM.
[277] – dump layer of mid grey brown sandy silt, with occasional oyster shell, charcoal flecks and animal bone. 10.83m OD (110.83m ATD).	Pottery (c AD1550–1600) and CBM (including floor tile dated AD1250–1310)
[217] – Cemetery soil cut by numerous burials. Contained significant amounts of residual disarticulated human bone. 11.46m OD (111.46m ATD).	Pottery, glass and glass slag (16th-18th century).
22 articulated burials, mostly in coffins, were identified and recorded cut into layer [217]. A further 5 coffins were recorded without skeletons, the skeletons either truncated or beyond the limits of the trench. Between 11.46m OD and 10.02m OD (111.46m and 110.02m ATD).	No datable finds associated with any of the burials. Dated to within the use of the cemetery (1568-mid 18th century).
[216] – Re-deposited cemetery soil and/or dumping, including moderate	Pot (17th-18th century) and worked animal bone.

amounts of disarticulated human bone.
11.87m OD (111.87m ATD).

Interpretation and summary

Within this trench there is evidence for three phases of Roman activity, and possible occupation, between the 1st and 3rd century. Firstly, a re-cut ditch ([310] and [308]) and an adjacent metallated gravel floor surface [312], then a timber building indicated by a beam slot [302] with possible associated internal floor surface [304](see Photo 18), and finally, an external metallated gravel yard surface [300](see Photo 16). Fortunately, the final phase has a *terminus post quem* in the form of a silver denarius of Severus Alexander, dating AD 228–230, discovered on floor surface [300](see Photo 17). The later two phases may also be associated with parallel ditches discovered in Trench 7, as they were found at corresponding levels.

These features were then sealed by post-Roman, probably medieval, waterlain flood deposits of organic rich silts and clay, [299] and [298]. These deposits were cut by unidentified features, possibly pits [285] and [297], themselves sealed by medieval or post-medieval dumps, [283] and [279]. The highest and final dump deposit was an early post-medieval reclamation dump [277], comprised mostly of building material, most likely specifically laid down to provide stable ground for the establishment of the cemetery (see Photo 15). Within the cemetery [217], this trench contained 22 articulated burials, mostly of which were found with the remains of coffins, and a further 5 coffins without skeletons (the skeletons were either truncated or beyond the limits of the trench). As with other trenches, the cemetery was sealed by a layer of re-deposited cemetery soil and/or dumping [216], containing moderate amounts of disarticulated human bone.



Photo 16: Trench 13 - floor surface [300], looking north-west.



Photo 17 Trench 13 - Items discovered on the surface of floor [300]. The two top items are perhaps decorative fittings or fastenings. The coin is a silver denarius of the emperor Severus Alexander. Dated c AD 228-231.



Photo 18: Trench 13 – Beam slot [302] (looking south-east).

3.3 General Watching Brief on trial pit in basement of Railway Tavern, Liverpool Street.

See Figure 1 for trench location



Photo 19: Railway Tavern Trial Pit- Foundations of the Railway Tavern with 19th-century walls, disused machinery, and construction backfill (north at top)

Railway Tavern Trial Pit	
Location	North-east in the basement of the Railway Tavern, Liverpool Street.
Dimensions	1.2m long (E-W) x 1.0m wide (N-S) x 1.0m deep
London Survey grid coordinates	83436.3 36266.7
OS National grid coordinates	533088.1 181583.5
Modern Ground Level (adjacent to pit)	10.32m OD (110.32m ATD)
Modern subsurface deposits	Floor surface and concrete 300-400mm thick. Rubble and soil (dark brown clay silt) backfill, with building material and rubbish (glass bottles) – 19th or 20th century.
Level of base of archaeological deposits observed and/or base of trench	Base of trench: 9.32m OD (109.32m ATD)
Natural geology observed (truncated/not truncated ?)	Not reached
Extent of modern truncation	Whole area of trench, greater than 1m deep
Archaeological remains	Date
None	N/A
Trench interpretation and summary	
Investigation showed that no archaeology has survived within the limits of this pit and at this depth. All archaeology appears to have been completely truncated by the construction of the Railway Tavern in the 1870s.	

4 Summary and conclusions (*provisional*)

4.1 Summary of Fieldwork Results

Natural terrace gravels were reached in Trenches 1, 2 and 13. Terrace gravel was overlain by 'weathered' natural deposits of clay, interspersed with occasional bands of gravel, which showed signs of root action and disturbance. No evidence for prehistoric activity was found.

Evidence has been found for at least three phases of Roman activity and occupation from 1st century to the 3rd century. Evidence of Roman extra-mural land management is clear, with partially waterlain deposits interspersed with what may be deliberate reclamation or consolidation dumps, later cut by a sequence of potentially interconnecting drainage ditches which ran water away toward the Walbrook. Roman features included four east-west aligned ditches (see Photo 14), pits, one north-south aligned ditch (see Photo 6), a timber building beam slot (see Photo 18) and floor/ground surfaces (see Photo 9 and Photo 16). However, while several residual human bone were found in Roman contexts, no *in situ* Roman burials have yet been discovered.

The post-Roman period on this site may be characterised as one of abandonment. There were no Saxon remains in any of the trenches, and, while there were isolated Medieval finds, no Medieval features or structures were identified. In addition, no Medieval remains associated with St Mary Bethlehem Hospital have been found. However, there are deposits which may be Medieval waterlain flood or marsh deposits, particularly in the south and west of the Liverpool Street site, and thick Medieval to early post-medieval rubbish dumps and deposits associated with later gradual reclamation and urbanisation of the area.

Medieval and early post-medieval deposits were sealed across the whole site by one final rapidly-deposited reclamation dump, including large amounts of rubbish and building material waste. This layer was probably deliberately laid down to make higher, stable, ground surface for the establishment of the cemetery (see Photo 5, Photo 13, Photo 15). However, it is possible some of the underlying dump deposits may also belong to this event and analysis of finds may help determine this.

Within the burial ground, a total of 244 *in situ* post-medieval burials have been found, recorded and, where appropriate, the skeletons exhumed (see Photo 2, Photo 3, Photo 8, Photo 12 and Photo 15). A minimum number of 215 *in situ* articulated burials were exhumed: 64 burials from Trench 1, 66 from Trench 2, 63 from Trench 7 and 22 from Trench 13. The earliest burials were relatively few in number and without coffins. These burials were most likely in shrouds. However, later burial practice appears to be markedly different, with evidence for wooden coffins, arranged in distinct lines and stacks, with the exception of a possible mass pit burial in Trench 13 (see Photo 15). All coffins were the standard 'kite' shape (widest around the shoulder area and tapering to both head and feet). Coffin survival ranged from poor to good. The majority of coffins appear to have been of plain wood, which in the worse preserved examples survived as little more than fibrous traces, while in the best preserved examples survived in large relatively solid fragments. The best preserved coffins also included remains of decoration and fittings, including, for example, stud work consisting of single or double rows of upholstery pins around the edges (see Photo 11). Many of the coffins from the highest burials also had handles and coffin plates. Unfortunately, while the remains were sufficient to acknowledge the presence of these features, all were too badly corroded to offer any further information. However, one burial did include a bead necklace, discovered *in situ* with the skeleton of an infant of under three years. This is notable because post-medieval burials very rarely contain grave goods of any kind. Finally, intercutting left many skeletons badly truncated, and excavation has shown

that displaced bone and coffin fragments were reburied in the backfill of new graves. A charnel pit was also found in Trench 9 (see Photo 3), and, given its position at the top of the burial sequence, it is conceivable that this was a later strategy to deal with ever-increasing amounts of disturbed bone.

After the cemetery was abandoned as a place of burial, the entire burial ground was sealed by a layer of re-deposited cemetery soil and/or dumping, no doubt intended as levelling to facilitate building. This event appears to have disturbed and truncated many of the highest burials and left moderate amounts of disarticulated human bone within the layer. Several brick structures (c.18th century) have been discovered at this level (see Photo 4 and Photo 11). These structures correspond to buildings and boundaries seen on 18th century maps and plans of the area. Unfortunately, it is difficult to determine from historical records if these are domestic or commercial properties. However, this post-cemetery layer did contain a large and rare assemblage of c.18th century worked bone and ivory waste, as well as glass slag waste, and these finds could be an indication of the type of industrial activity in the area at that time. Although cut into the post burial ground dump/levelling layer, thus stratigraphically later, it is entirely possible that these buildings were constructed while other areas of the cemetery were still in use. Rather than a swift closure, this could represent a gradual or piecemeal encroachment and decommissioning of the burial ground in perhaps the early to mid 18th century. However, by the late 18th century the cemetery appears to have been completely abandoned. Horwood's map of 1799 identifies properties around the edge of the former burial ground, with the space in the centre labelled 'gardens' and showing continuation of property boundary lines.

The latest archaeological feature identified was a forgotten, disused, Victorian brick sewer, discovered running west to east in the southern part of Liverpool Street roadway, tunnelled through the lower archaeology beneath the burial ground, approximately 3.5m below the road surface (see Photo 7, Photo 9 and Photo 10). In addition, shafts, likely 20th century in date, appear to have been dug vertically down through the burial ground and archaeology in order to access this sewer. This structure was also connected to ceramic drainage pipes, themselves tunnelled. These were, presumably, once connected to buildings along the south side of Liverpool Street. This sewer may have been rendered redundant by the construction of the Queen Victoria tunnel and thus superseded by the known sewer, which is still active a few metres deeper and to the north.

The trial pit in the basement of the Railway Tavern confirmed that the construction of the property in the late 19th century has truncated all the archaeology in that area to at least a depth of 9.32m OD (109.32m ATD). Finally, the construction of the modern road and services has caused truncation to at least the depth of the 18th century buildings (c 11.30m OD (111.3m ATD)) and, in many areas, deeper into the cemetery.

4.2 *Provisional conclusions for future work*

- With the exception of truncation from the sewers, there has been consistently good archaeological survival of Roman horizons, which suggests that there is high potential for further survival outside the initial watching brief and trench locations. This represents a significant archaeological resource. Further work can only help further our understanding of this extra-mural area during the Roman period. Moreover, although the only human remains of a Roman date to be found during the evaluation were disarticulated, this suggests some potential for Roman burials within the Liverpool Street area – but not necessarily *in situ* within the Crossrail site.
- Excavation has shown a strong potential for the good preservation of organic material within the lower deposits, including leather and metal items. Geo-archaeological and

palaeoenvironmental deposits recovered from waterlain flood or marsh deposits will contribute to understanding the significance of geomorphology, ecology, ecosystems and climate, hydrology, and vegetational and fauna development of the site during the post-Roman to medieval period. Further analysis of monolith and bulk samples taken from waterlain and semi-terrestrial deposits will help us to understand the palaeoenvironmental, climatic and ecological conditions under which they were deposited, as well as the vegetation and fauna that survived in those environments. Further fieldwork will also allow a more thorough understanding of the period between the Roman occupation and Medieval period, prior to the reclamation of the area and establishment of New Churchyard, for which little evidence has been found in this evaluation.

- While these trenches have shown some modern truncation, the majority of the burial ground survives intact. Furthermore, the majority of skeletons have good levels of bone preservation, increasing the potential for valuable archaeological and osteological analysis. Indeed, further investigation and osteological analysis of the buried population under modern archaeological conditions will contribute to our knowledge of a population who lived at a time of great change. Early 16th to 18th century burials such as these are a hitherto archaeologically underrepresented subject, and their excavation will help further our knowledge and understanding of society and burial during a time when the city and population was greatly expanding. Valuable comparisons are likely to be drawn with contemporary assemblages in London and nationwide. The association with the Hospital of St Mary Bethlehem (Bedlam) also gives this site an unusual and much broader social significance. In addition, analysis may also reveal new information on burial practices of this period, for example the positioning of burials, zoning and general cemetery management. While the preservation of coffins and coffin furniture was generally poor, there were occasional examples of good preservation, which could also offer important insights into the burial customs of the period.
- The trial pit in the basement of the Railway Tavern appears to confirm that, barring perhaps isolated pockets of survival, archaeology has been truncated southward of the south Liverpool Street pavement by the construction of properties and their basements within that area.
- The Project Archaeologist will produce recommendations for further work and refine the mitigation strategy for Crossrail works at Liverpool Street.

5 Future Deliverables

The remaining deliverables for this site and their delivery dates as specified by *Crossrail, Archaeology, Specification for Evaluation & Mitigation (including Watching Brief, Doc No. CR-PN-LWS-EN-SP-00001, v. 0.3, 26.06.09*, are:

- **Survey Report:** 2 weeks after completion of fieldwork
- **Fieldwork Report** (including OASIS Summary Sheet): 6 weeks after completion of fieldwork
- **Summary Report:** 8 weeks after completion of fieldwork

These reporting times will be triggered by the completion of the fieldwork, in particular Tr 14 and Tr 15.

