



DESIGN PACKAGE C134
TOTTENHAM COURT ROAD STATION
TOTTENHAM COURT ROAD STATION SITE
SPECIFIC ARCHAEOLOGICAL WRITTEN
SCHEME OF INVESTIGATION

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		Name	Suzanna Pembroke	Sue Blanch	Graham Williams
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		Signature			



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1 Introduction

The overall framework within which archaeological work will be undertaken is set out in the Environmental Minimum Requirements (EMR) for Crossrail (CR/HB/EMR/0001) (5th draft, July 2008). The requirements being progressed follow the principles of Planning Policy Statement 5 on Planning for the Historic Environment (2010). Accordingly, the nominated undertaker or any contractors will be required to implement certain control measures in relation to archaeology before construction work begins.

The strategy for archaeological works has been set out in the Crossrail Generic Written Scheme of Investigation (WSI) (CR-PN-LWS-EN-SY-00001); it presents the strategy for archaeology design, evaluation, mitigation, analysis, dissemination and archive deposition that will be adopted for the design and construction of Crossrail. The Generic WSI provides a general statement of objectives, standards and structure for the planning and implementation of archaeological works (February 2008, version 1.0 section 3).

This Site Specific Written Scheme of Investigation (WSI) applies to the Crossrail Tottenham Court Road (TCR) Station. There are two schemes at Tottenham Court Road being designed and implemented in parallel under the powers of the Crossrail Act;

- Crossrail Tottenham Court Road Station works (TCR)
- London Underground Tottenham Court Road Station Upgrade (TCRSU)

This site specific WSI only applies to the Crossrail TCR works. The London Underground (TCRSU) has been dealt with in a separate WSI (Document reference: HAG-N105-8742-HSE-X-PPS-X-00458-07).

Figure 1 (below) highlights the key archaeological areas of interest at TCR West. Further figures within the document illustrate the location of the key worksites (Figure 6 and 7) and grout shafts (Figure 12). Each of the design elements has the potential to impact archaeological deposits. The WSI addresses - as far as is possible at this stage - the scope, specification, timing and order of works and the deliverables required to successfully integrate the archaeological aspects of the works into the project phasing.

For the purposes of TCR Western Ticket Hall construction activities will take place at this principal location (discussed further in Section 3, see Figures 6 and 7). The Western Ticket Hall is composed of a worksite area at the Dean Street site to the north and at the Fareham Street site to the south, bisected by Fareham Street itself, which has been closed and forms part of the site. To the north of Oxford Street at Newman Street a lorry holding area will be established.

The Western Ticket Hall work necessitated a series of archaeological trial pit evaluations which located post-medieval quarrying activities. A 17th century brick structure in the northern block was mitigated through detailed excavation. In the southern block trial pit identified several post-



medieval cut features and Roman pottery redeposited during post-medieval quarrying and building activity. These finds were subsequently mitigated through detailed excavation.

Works also necessitated a series of building demolitions for which a non-listed built heritage (NLBH) recording works have been completed.

A series of utility diversions have been undertaken in advance of construction and have been subject to General Watching Brief (GWB) mitigation.

Compensation grout shafts are planned to be undertaken in May 2011.

Compensation grout shafts are proposed to be constructed in the following locations:

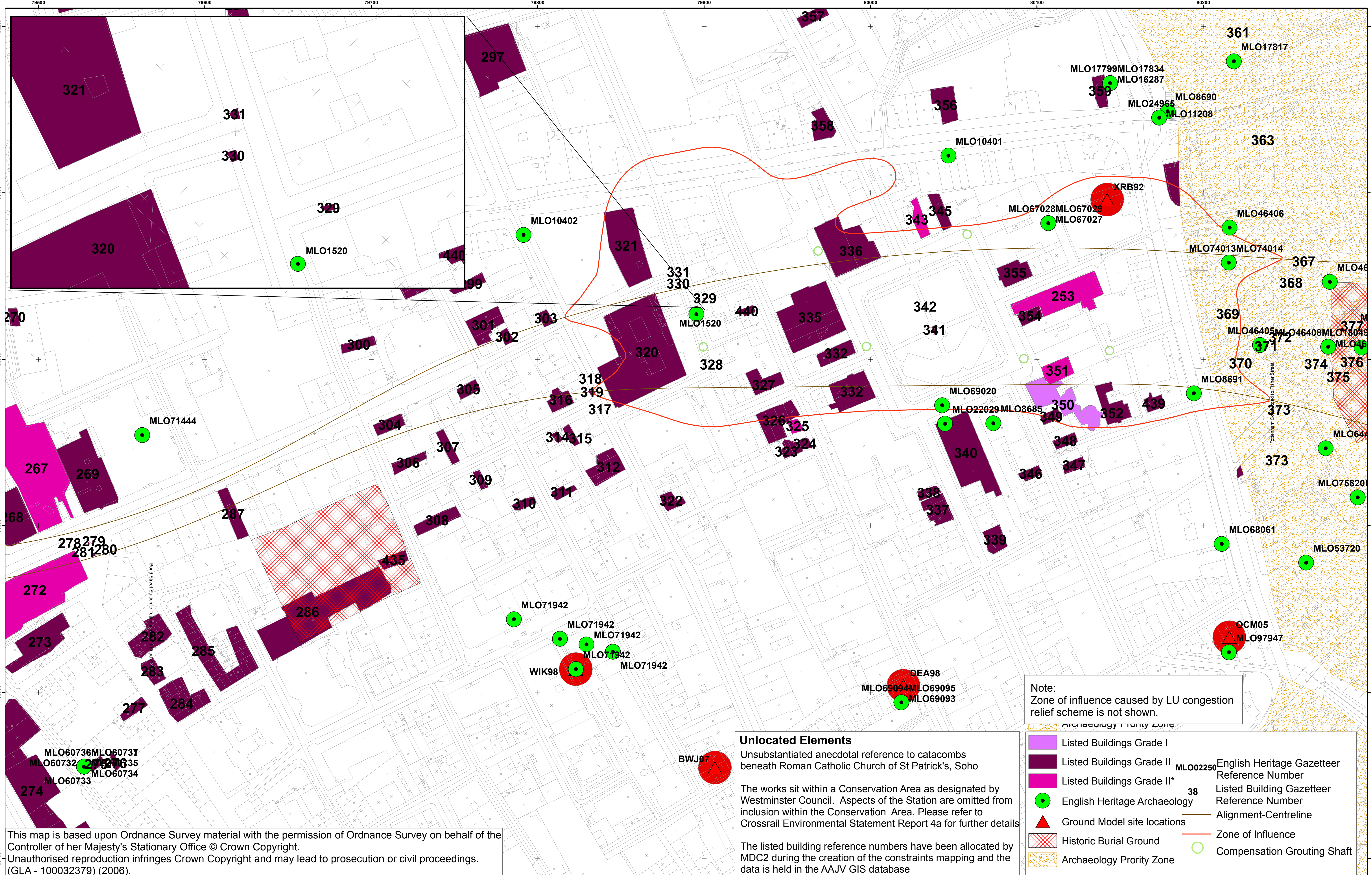
1. Corner of Sheraton Street and Great Chapel Street;
2. Soho Square north-west corner;
3. Soho Square west (in front of 38 Soho square)
4. Soho Square north-east corner/or alternatively Falconberg Mews;
5. Soho Square south-east corner;
6. Goslett Yard (in front of Royal George public house) installation by LU; and
7. TCR West (Dean Street) Station worksite.

These will be mitigated through a general watching brief.

Figure 1 (below) sets out the designated archaeology and heritage constraints identified for the area.



Figure 1 Archaeology and Built Heritage Constraints Drawing no P20201-C1M06-G00-D-00501



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Unlocated Elements
 Unsubstantiated anecdotal reference to catacombs beneath Roman Catholic Church of St Patrick's, Soho

The works sit within a Conservation Area as designated by Westminster Council. Aspects of the Station are omitted from inclusion within the Conservation Area. Please refer to Crossrail Environmental Statement Report 4a for further details

The listed building reference numbers have been allocated by MDC2 during the creation of the constraints mapping and the data is held in the AAJV GIS database

Note:
 Zone of influence caused by LU congestion relief scheme is not shown.

	Listed Buildings Grade I		English Heritage Archaeology
	Listed Buildings Grade II		Ground Model site locations
	Listed Buildings Grade II*		Historic Burial Ground
	Archaeology Priority Zone		Alignment-Centreline
	English Heritage Gazetteer Reference Number		Zone of Influence
	Listed Building Gazetteer Reference Number		Compensation Grouting Shaft

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A	16/02/07	ISSUED FOR GRIP 3					
B01	21/12/07	ISSUED FOR SCHEME DESIGN					

The zone of influence defines the area of significant settlement (>10mm) arising from the proposed works identified at GRIP 3 stage within which damage mitigation measures may be required. The relevant criteria for determining this region are discussed in the Scheme Design Report Vol. 3, Tottenham Court Road Station Report No. CR-SD-TCR-CE-RT-00002, December 2007

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	TOTTENHAM COURT ROAD STATION ARCHAEOLOGY & BUILT HERITAGE CONSTRAINTS	
1. Confirmation of all survey data must be obtained from the Cross London Rail Link Survey Team 2. Coordinates to Crossrail Grid, Heights to Crossrail Height Datum Crossrail Height Datum is 100 metres below Datum Newlyn See Crossrail standard 010000-G000-00048	SCALE: 1:1000 @ A1	DRAWING AND MAP FILE No.: P20201-C1M06-G00-D-XXX04



2 Project Background

2.1 Summary of Previous Crossrail Studies

The only previous study relating to the archaeological works was that undertaken by the Museum of London Archaeology Service (MoLA – formerly MoLAS) as technical advisors to CRL during the Bill process. The impact of the Crossrail Bill scheme on archaeological remains and deposits has been assessed in the Specialist Technical Reports: Assessment of Archaeology Impacts (Parts 1-6) prepared in support of the Environmental Statement 2005.

Although a further assessment was carried out and reported in the Archaeology Programming Assessment by MoLA (November 2006, 1E0318-G0E00-00006 Rev B); the Tottenham Court Road Station works was not included in that assessment.

MoLA, was commissioned by CRL, has also provided a range of information to the Framework Development Consultant (FDC) in support of the production of this WSI. MoLA provided an updated baseline, historic map information and data relating to the survival of deposits in the vicinity of the Works.

2.1.1 Ground investigation works

The archaeological monitoring of utility trenches by MoLA has been completed for TCR. The information from these works provides detail on the survival of potential deposits. The results of this work are discussed in Section 2.4 and more details of the trenches are given in Table 3. Further archaeological monitoring has been carried out of BT utility works at Dean Street and Great Chapel Street.

2.2 Geological and Topographical Setting

The ground level is generally at +125.45 to +125.7m ATD at the station west end and at +124.65 to +125.00m ATD at the station east end, sloping slightly from west to east.

The Western Entrance Dean Street Ground Model (Table 10.6, doc ref CR-SD-TCR-CE-RT-00002) identifies made ground at +125.6m ATD; the thickness of that deposit ranges between 3.40-4.10m. Below that, terrace gravels (Lynch Hill) are between 4.90 and 5.20m thick (+121.50 to 122.20m ATD). The terrace gravel deposits overlie London Clay at +116.30 to +117.30m ATD. This ground model has been derived from boreholes T2 and T3a as illustrated in Figure 2, and from a GCG desk study (doc ref CD-SD-TCR-CE-RT-00002).

The Western Entrance Fareham Street Ground Model (Table 10.7, doc ref CR-SD-TCR-CE-RT-00002) identifies made ground at +125.45 to 125.70m ATD; the thickness of that deposit ranges between 4.30-4.90m. Below that, terrace gravels (Lynch Hill) are between 4.90 and 5.20m thick (+121.45 to 121.90m ATD). The terrace gravel deposits overlie London Clay at +117.00 to

+117.15m ATD. This ground model has been derived from boreholes T4 and T18 as illustrated in Figure 2, and from a GCG desk study which was summarised by the MDC2 geotechnical team (doc ref CD-SD-TCR-CE-RT-00002).

The Eastern Entrance Goslett Yard Ground Model (Table 10.8, doc ref CR-SD-TCR-CE-RT-00002) identifies Made Ground at +124.65 to 124.98m ATD; the thickness of that deposits ranges between 2.30-2.80m. Below that, terrace gravels (Lynch Hill) are between 3.05 and 4.10m thick (+122.00 to 122.35m ATD). The terrace gravel deposits overlie London Clay at +118.15 to +118.95m ATD. This ground model has been derived from boreholes T7, T13, T14, T15, and T16 as illustrated in Figure 2, and from a GCG desk study which was summarised by geotechnical team (document reference CD-SD-TCR-CE-RT-00002).

Brickearth (Langley Silts Complex) was identified in the Specialist Technical Report (STR) as overlying the Lynch Hill Thames terrace gravels. Such a differentiation is unlikely to have been made in the geotechnical works. These deposits are of potential archaeological interest.

The Geological Profile (Figure 2) gives an interpretation of the geological information across the site. This profile has been prepared by the MDC2 geotechnics team using the borehole data listed above. Of interest archaeologically and geo-archaeologically are the River Terrace Gravels and brickearth deposits.

Further information is provided in the Detailed Desk-Based Assessment (DDBA) prepared for TCR station (document reference: CR-SD-TCR-EN-SR-00001).

2.3 Archaeological and Historical Development of the site

The eastern edge of the site lies within the Archaeological Priority Area designated by the London Borough of Camden for the medieval and later village of St Giles. Figure 1 plots the known archaeological (and built heritage) recorded sites, together with the location of archaeological sites and boreholes referred to below. Further information on the sites marked on Figure 1 are shown in the GLSMR gazetteer in the Detailed Desk-Based Assessment (Document reference: CR-SD-TCR-EN-SR-00001).

The area is considered to have a **high potential** for remains relating to the post medieval urbanisation known to exist throughout this area. The STR identifies a number of previous archaeological investigations have identified foundations, cellars, floors, drains, cesspits, quarries and dumps of this date.

Soho Square has been noted as the possible site of post medieval brick kilns (GLSMR 083772) and these could be present to some extent within the Crossrail worksite. At St Giles Pound, medieval and post medieval gallows are close to the worksite at the junction of Tottenham Court Road, Charing Cross Road and Oxford Street. Other heritage resources include the remains of Falconberg House, built in the 1680s on the north-eastern corner of Soho Square, and demolished in 1924; its construction spread was identified in excavations at 11, Sutton Row (XRB92).



There is a **moderate potential** for the main Roman Road from London to Silchester (Oxford Street/High Holborn) which continued in use from the Saxon period onwards and passed close to the north of the Crossrail site (GLSMR 081172). It may have intersected another Roman Road – Tottenham Court Road/Charing Cross Road (GLSMR 081493). It is also a medieval and post medieval highway (GLSMR 082050).

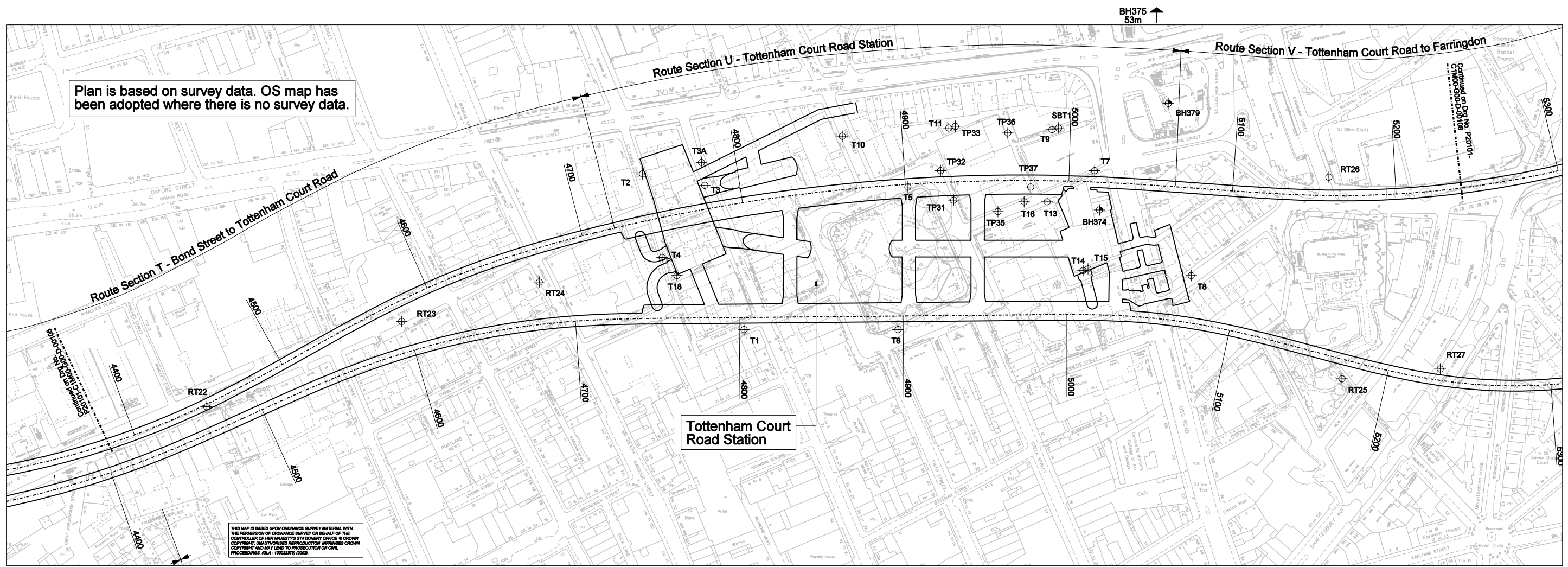
Other possible deposits of **moderate potential** relate to the medieval village of St Giles which focused around the High Street, particularly on the junction of Charing Cross Road and St Giles High Street. Civil War defences may exist within or close to the Crossrail worksite, possibly around Newman Street and its junction with Oxford Street, probably on the north side of Oxford Street.

The map regression exercise undertaken for the DDBA (doc ref CR-SD-TCR-EN-SR-00001) highlights the rapidity with what the area went from a rural landscape on the edge of the City in 1572 with the emerging road network to the densely urbanised area apparent today.

Figure 2 below outlines the geological profile for the area while figure 3 sets out the known sub-surface constraints.



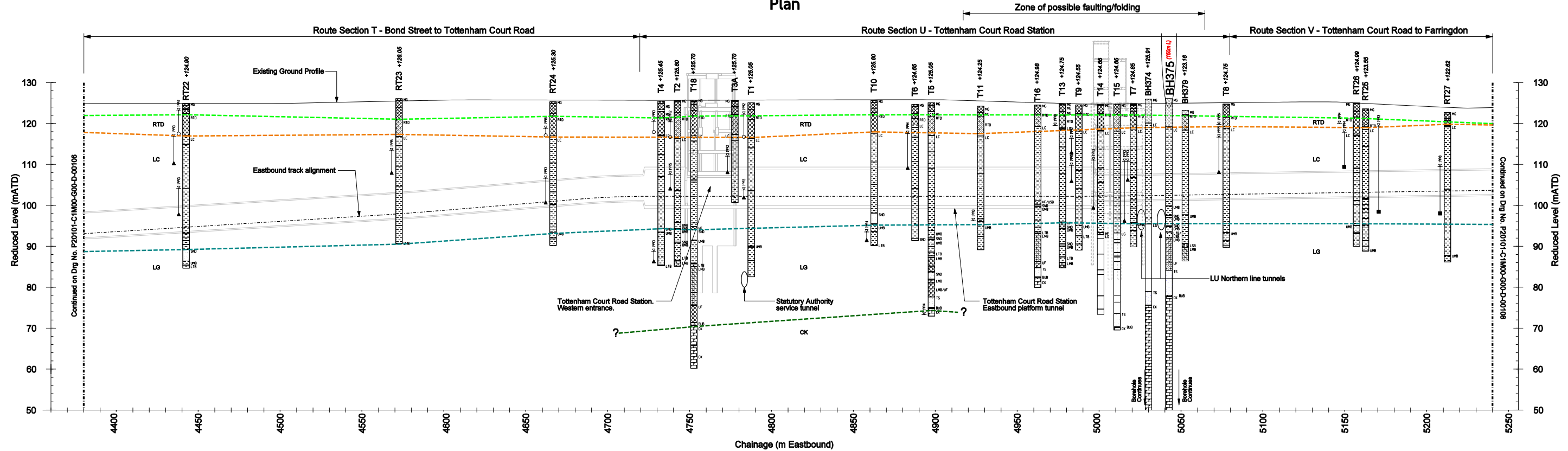
Figure 2 Geological Profile



Plan is based on survey data. OS map has been adopted where there is no survey data.

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Plan

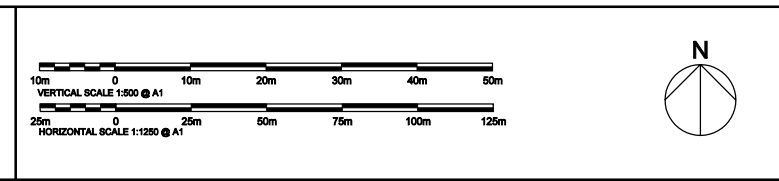


Longitudinal section through Eastbound tunnel

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A01	21/12/07	ISSUED FOR SCHEME DESIGN	JPH	IC			
A02	18/01/08	INCORPORATION OF CLRL COMMENTS ON SCHEME DESIGN	AB/TM	ARC	AS		

Notes

- For Geological legend refer to Drg No. P20101-C1M00-G00-D-00101
- Known buried obstructions (structures and tunnels, etc.) are indicated on the geological longitudinal sections. The collation of obstruction information is incomplete for Scheme Design and an ongoing exercise. Therefore there may be other obstructions comprising buried structures such as piled foundations or deep basements, etc. which have not currently been identified. Further work will be required following Scheme design to collate and confirm the obstruction information
- Details of known obstructions are presented in Crossrail Report 'Central Tunnels Obstructions Report'. Report No. D0300-C1N00-0014/C1.



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 P20101-C1M00-G00-D-00107

REV:
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Figure 3 Sub-Surface Constraints Drawing no C134-OVE-C2-DDA-N105_1-00003



Morgan's map of 1682 show the land blocks had become sub-divided into smaller narrow units, and a number of houses fronted the streets of the study area. The road layout of Oxford Street and Soho Square has been established. There is a likelihood that many of these structures had basements associated with them that will have had an impact on the survival of archaeological deposits (see below).

2.3.1 Summary

In summary, there was considered to be a low likelihood of significant prehistoric features being located in the construction sites, however if located these were likely to be of moderate archaeological importance. Similarly there was a moderate likelihood of uncovering evidence of Roman activities which would be of moderate to high archaeological importance. There was considered to be a higher likelihood of encountering medieval and post medieval archaeology.

No prehistoric material was located during the archaeological evaluation and excavation works, with some re-deposited secondary context Roman material. Post-medieval street frontages, housing early street design evidence was located.

2.4 Deposit Survival

Table 1 below sets out the deposit survival for the TCR area, as researched by MoLA from nearby archaeological investigations. The data highlights the variability of survival but also the possibility of deposits surviving below basement level. It cannot therefore be certain that the presence of basements indicates the absence of archaeological deposits. Figure 3 plots the known archaeological (and built heritage) recorded sites, together with the location of archaeological sites and boreholes referred to below.

NB height in Table 1 are metres OD, not ATD.

Data ID	Easting	Northing	Data Location	Natural surface m OD	Description	Ground Level	Notes
DEA98	529685	181035	68 Dean St	21.50	Taplow Terrace Gravels	25.00	Individual features cut into gravel down to 20.2-21.3mOD; 18 th century basement floor at 22.1mOD.
SIC06	530021	181340	St Giles Ct	22.20	Brickearth	23.00-25.00	Brickearth at 22.2-21.0mOD, over Lynch Hill gravels at 19.6-21.7mOD. Basement slab at 20.8m OD.
XRB92	529800	181330	11 Sutton Row, Falconberg Mews	22.70	Uncertain (silty sand)	24.00	Natural geology sealed by post medieval deposits.
SHA93	530030	181160	172-176 Shaftesbury Ave	20.20	Lynch Hill Terrace Gravels	23.20	Lynch Hill gravels truncated by basement slab down to 19.6-20.2mOD; no archaeological survival.
CGZ04	530020	181135	The Piazza, Covent	Not seen	—	23.20	Ground level at 21.0-23.2mOD; archaeological (Saxon) deposits

Data ID	Easting	Northing	Data Location	Natural surface m OD	Description	Ground Level	Notes
			Garden				at 20.8-21.4mOD; natural geology not observed.
OCM05	529880	181069	95 Charing Cross RD, 13-17 Moor St and 5-11 Old Compton St	21.30	Brickearth over Lynch Hill Terrace Gravels	23.80	Basement slab at 21.3mOD; natural gravels at 20.2-21.0mOD, overlain by 17 th -19 th century backyard deposits.
BWJ07	529573	180983	1-5 Berwick St and 4-5 Peter St	22.05	Lynch Hill Terrace Gravels	24.30	Basement slab at 21.5mOD truncating natural geology to 21.0mOD; 17 th century backfilled quarries on TP1 where a basement did not exist.
WIK98	529488	181040	Broadwick House, Broadwick St	20.17	Lynch Hill Terrace Gravels	24.50	Basement slab at 21.18m truncating natural geology to 20.17mOD; later 17 th century quarry pits under basement slab.
MXH07	529275	181660	Middlesex Hospital, Mortimer St	23.14	Lynch Hill Terrace Gravels	27.40	Basement slab at 23.7-24.0mOD; natural geology at 21.4-23.1mOD, overlain by 18 th -19 th century deposits.

Table 1: Deposit Survival from previous archaeological investigations

The nearest excavations to grout shafts 1, 2 and 3 is the archaeological works at 68, Dean Street (DEA 98) recorded features cut into gravel at 20.2-21.3m OD. The floor to an 18th century basement was identified at 22.1mOD.

Similar evidence was found at OCM 05 (95 Charing Cross Road, 13-17 Moor Sreett and 5-11 Old Compton Street) highlighting the potential for remains to survive in the gravels in these areas. The discovery of archaeological deposits, most probably of post medieval date is possible within these gravels.

2.5 Archaeological works carried out to date

2.5.1 Summary of watching briefs

A number of surveys and activities have assisted in more clearly determining the likely survival of potential archaeological deposits. In particular the surveys relating to basement and foundation information have helped clarify the potential for the survival of archaeological deposits and the extent of further mitigation works.

Archaeological observation of utility trenches has been carried out (see table 2). The results are summarised in Table 3, following. The information provided by this observation of utility works has been incorporated as necessary into the mitigation strategy.

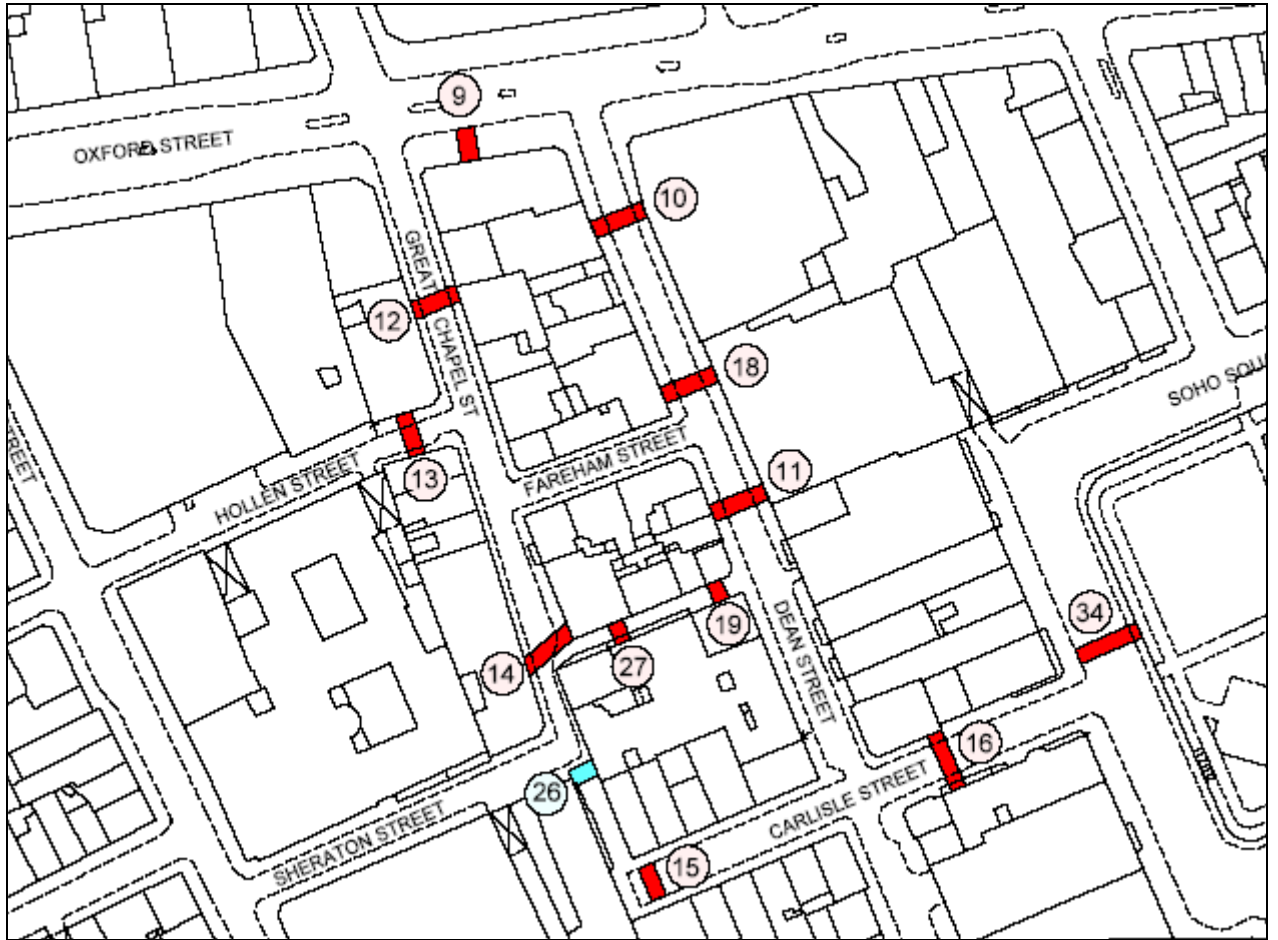


Figure 4: Plan showing location of trenches referred to in table 3 – western section

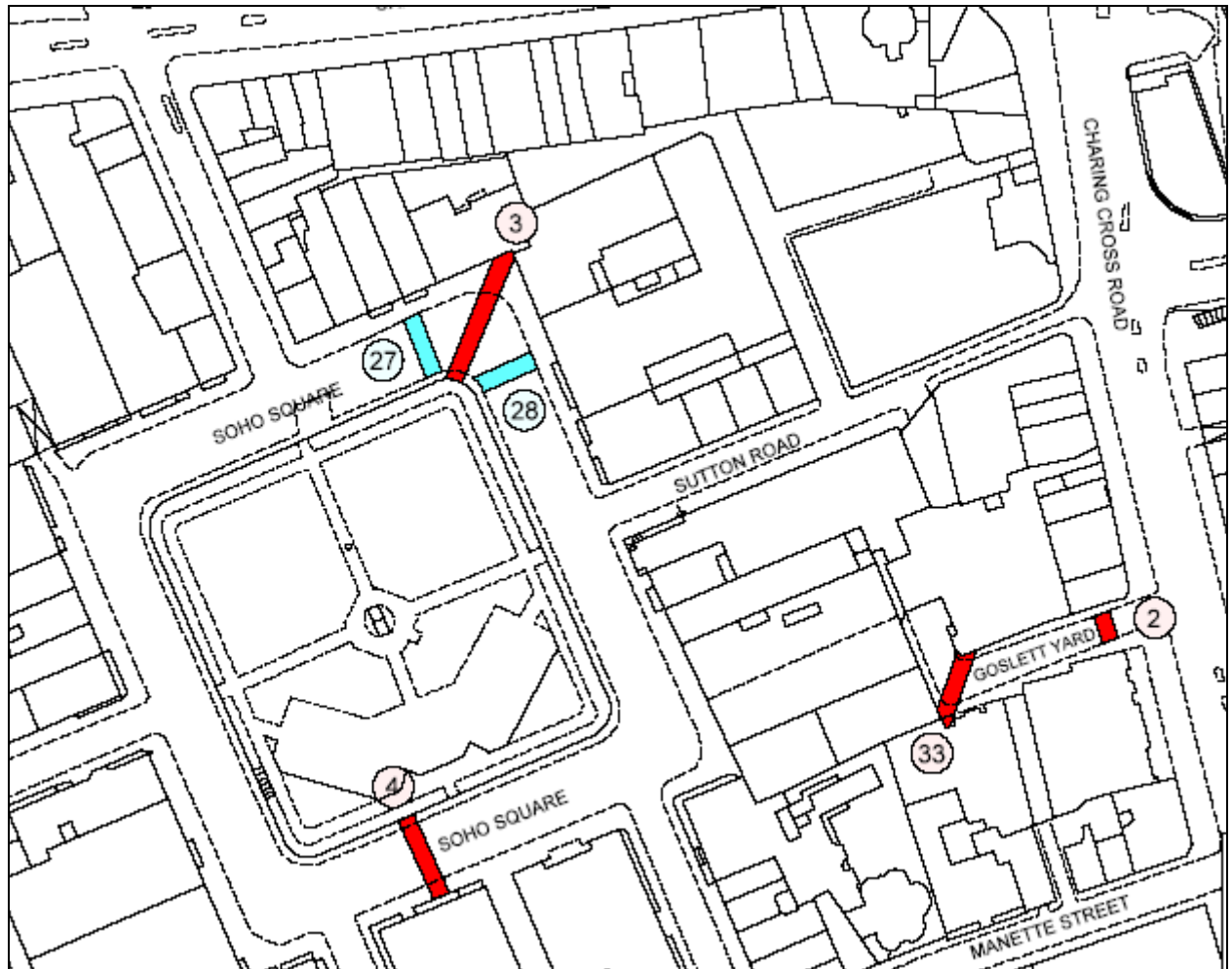



Figure 5: Plan showing location of trenches referred to in table 3 – eastern section

Trenches	Results
9	Large concrete intrusions possible modern basement – cut through post-med nightsoil quarry fill. Compare St Giles High Street with 17th-century quarry fill.
10–13, 18, 19, 27	 <p>West end of TCR11 – looking south – showing detail of occupied cellar beneath modern pipes and cables</p> <p>Historic brick coal cellar in TCR11 – 17th- or 18th-century – extend >0.7m into the carriageway (partially obscured by services so the full extent could not be exposed). This cellar is still in use by No. 94 Dean Street, providing café/coffee shop space. It cut through coal-ash rich - nightsoil fill of quarry pits.</p>
14	TCR 14, at the south end of Grt Chapel Street, exposed a late 17th-century, 18th-century or early 19th-century house wall 500mm beneath the west pavement. The west carriageway exposed only modern fills to a maximum of 1.5m BGL.




Trenches	Results	
3, 4, 33, 34	 <p data-bbox="384 647 788 703">TCR 3 south side of north pavement – brick vaults beneath cables</p>	<p data-bbox="810 241 1461 297">Trench 3: a horizontal void, which maybe remains of a rotted wooden pipe.</p> <p data-bbox="810 304 1461 387">Trench 4: two layers of compact silty sand with moderate red brick fragments, occasional clay pipe fragments and 20th - century masonry.</p> <p data-bbox="810 394 1461 477">33 and 34: similar results of yellow brick masonry was observed. Overlying deposits was a layer of compact, light brown silty sand, with moderate red brick fragments.</p>
27, 28	  <p data-bbox="384 1267 788 1406">South end of TCR27 (Soho sq) – looking north – dark coal-ashy nightsoil fill near camera. Clay tobacco pipe found by contractors to right.</p>	<p data-bbox="810 723 1461 857">TCR27 there was surviving over 1.7m long section – from 0.7m to 1.5m bGL coal-ash rich - nightsoil fill of quarry pits. Contractors had found the handle of a pipkin or skillet pottery cooking vessel and a clay tobacco pipe dated 1610–40 from the trench, most likely deriving from this fill.</p>

Table 2. Results of archaeological monitoring of utility trenches

The findings from the archaeological watching brief have provided more detailed information about the likely archaeology to be located in the TCR worksites. While for the most part modern basements occupy elements of the pavement, several locations have identified historic coal cellars dating to the 17th or 18th century. These appear to sit as cuts through coal-ash rich nightsoil, used to fill quarried section of the landscape at TCR. This confirms the initial understanding (Section 2.3) that the area would have a high potential for post-medieval urbanisation activity.

The BT utility diversion works have been monitored by an archaeological watching brief in Dean Street. Observations demonstrated the vast amount of truncation which has occurred in this area as a result of previous utility works. However the archaeological watching brief (WB) on

the deeper works also provides information as to previous ground surfaces in the area and helps to tie these levels into those located during trial pit works.

2.5.2 Summary of trial pit evaluations and detailed excavation phase

Nine trial pit evaluations were designed to evaluate the archaeological potential at the north and south blocks at TCR West (see Document reference: C134-OVE-T1-RSP-N105-00001). The Event Code defined for the trial pits investigations was allocated as XRX10.

Six trial pits were carried out in the northern block and provided evidence of truncation by quarrying activities of the brickearth and gravels. An early 17th century brick structure was located in TP 6.

Three trial pit evaluations were carried out in the southern block. These evaluations uncovered post medieval quarrying followed by later infilling and domestic dumping activity, similar to that which occurred in places in the northern block. All three uncovered linear features interpreted to be cart track impressions, while TP8 uncovered high quality residual Roman pottery fragments in a good condition. Both TP7 and 8 comprised compacted layers overlain with a deep sequence of garden soils capped with a concrete foundation, while TP9 contained redeposited gravel overlain by an ashy dump layer and capped by concrete make up and slab.

Detailed excavations were carried out in the north and south block in response to these findings. Works in the north block were carried out to refine the understanding of the post-medieval occupation of the site (as uncovered during the evaluation phase) and to record any earlier features and deposits, which would be removed by the Western Ticket Hall construction works (see document reference: C134-OVE-T1-RGN-N105-00022).

Detailed excavation in the south was carried out to understand the nature of residual Roman material located during excavation of Trial Pit 8 and to define the location of unquarried landscapes surviving as islands (See document reference: C134-OVE-T1-RGN-N105_WS089-00004).

2.5.3 Summary of above ground archaeology

The recording of significant non-listed built heritage has been completed. To date the following recording has been carried out. The Event Code used for the non-listed building recording is XRY 10.

A Level 1/2 record (without building plans/section/elevation drawings) – the Archaeological Contractor has completed a Level 1/2 recording of the following buildings:

- *97-99 Dean Street* - An Art Deco influenced building, with a radically altered interior. In addition to the front elevation, photography has included the bottom of the staircase within the northern entrance lobby, showing both the staircase's balustrade and the inner string; and

- *102 Dean Street* - A mid to late 20th century building with fine stonework to its front elevation, with an open plan interior.
- *95 Dean Street* – One of a terrace that included 94 Dean Street (A listed building, already subjected to a level 3 record and not part of the scope of this document). The building was re-fronted in the 19th century and all internal features of interest have been stripped out.
- *93 Dean Street* – A late Victorian building
- *9 Diadem Court* – A small radically altered house possibly re-fronted in the late 19th /early 20th century, when converted to work spaces. In addition to photography of the front elevation, photographs has been taken of its staircase and principal rooms internally.
- *3 Diadem Court* – A 19th century house completely altered internally in the late 20th century/early 21st century.
- *3 Fareham Street* – An austere late 19th century to early 20th century warehouse building
- *4 Fareham Street* – A late 19th Century to early 20th century office building, with Arts and Crafts influences. In addition to the external elevations, photographs have been made within the building showing the internal doorcases, typical and unusual details, materials and circulation.
- *5a Great Chapel Street* - a small house refronted in the mid 19th century. Although radically altered inside, it retains its original staircase, dating to the 1730s. Required recording of the buildings elevation, and photographs, plan and sectional elevation of the staircase.

A Level 3 record - the Archaeological Contractor has completed a Level 3 record of the following buildings:

- *Bath Public House* – a late 19th to early 20th century building (96 Dean Street and 1 Fareham Street). Although there has been much interior alteration it still retained much of its historic character both internally and externally.

3 Construction Impact Summary and Outline Mitigation Design

The new Crossrail station at TCR will comprise two platform tunnels stretching approximately 250m between new station entrances on Dean Street and Charing Cross Road. These works are required to allow the construction of a box for the western ticket hall with associated escalator, vent and escape shafts linking the concourse to ground level.

Construction activities will take place at the Western Ticket Hall (see figure 6), composed of a worksite area at Dean Street site to the north and Fareham Street site to the south, bisected by Fareham Street itself, which will be closed and form part of the site, and to the north of Oxford Street at Newman Street.

The main construction sequence will be:

- Bottom-up box-type construction comprising diaphragm walls and reinforced concrete slabs will be used for the Dean Street / Fareham Street site. The shallower Dean Street box will be separated from the deeper Fareham Street box by a median diaphragm wall located to the north of Fareham Street.

General construction sequence at each location with archaeological mitigation included is:

- NLBH recording to English Heritage specification (now completed);
- Archaeological evaluation within the existing building basements (now completed);
- Archaeological excavation following evaluation (now completed);
- Building demolition (now completed);
- Site establishment (now completed); and
- Grout shaft works.

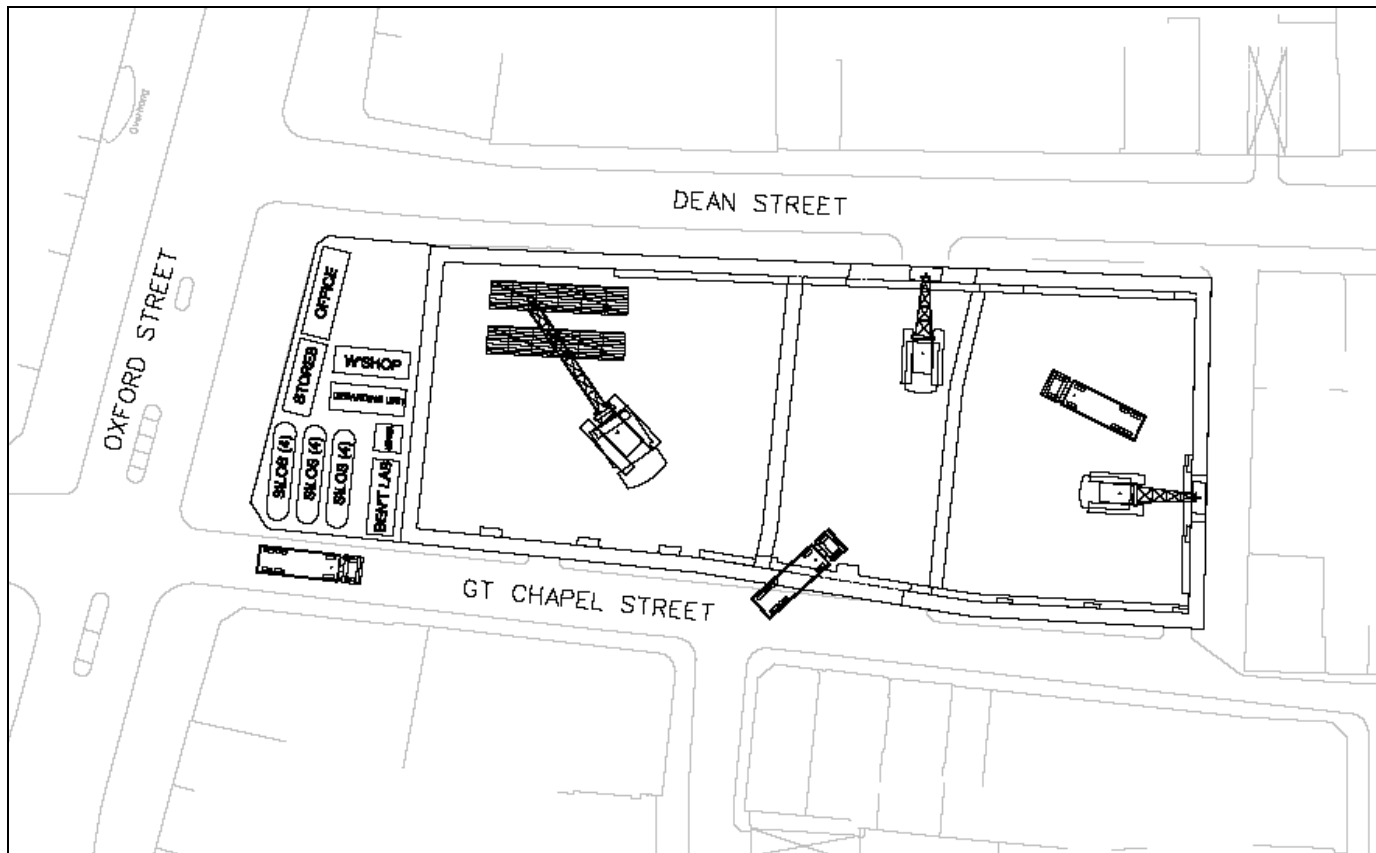


Figure 6. Plan showing WTH worksite (P20201-C1M08-C00-D-00102)

3.1.1 Demolitions

For the Western Ticket Hall at Tottenham Court Road two groups of demolitions have taken place as part of the TCR station works to facilitate the construction of the western and eastern ticket hall boxes:

1. Dean Street:

- 6-7 Fareham Street;
- 97-99 Dean Street;
- 100-101 Dean Street;
- 102 Dean Street;
- 1, 1a-2 Great Chapel Street;
- 5, 5a, 6-7 Great Chapel Street;
- 8, 8a Great Chapel Street;
- 91-101 Oxford Street.

2. Fareham Street: these buildings are believed to have basements which cover the entire footprint of the site.

- 3 Diadem Court;
- 9 Diadem Court;
- 9 Great Chapel Street;
- 10-12 Great Chapel Street;
- 2, 3, 4, Fareham Street;
- 93 Dean Street;
- 94-95 Dean Street. (94 Dean Street was a Grade II listed building EH No. 209465);
- 96 Dean Street.

Figures 7 and 8 highlight the location of the demolitions required and also the constrained nature of the central London location for evaluation works.

Figure 7 includes the plan and aerial photograph taken from the Scheme Design Report which illustrates these areas together with 138-148 Charring Cross Road, 1-15 Oxford Street, 157-167 Charing Cross Road (including the Astoria Theatre), 1-6 Falconbery Court and the existing Centre Point Pool and Plaza which will be demolished to be undertaken by LU as part of their works, this is in reference to the LU TCR WSI.

All groups of demolition have been identified as having basements across the entire footprint of the site. Further surveys, including details in relation to basement information and utility trial pits (Table 3, above) have been undertaken; the results of such surveys have been useful to assist in the archaeological design.

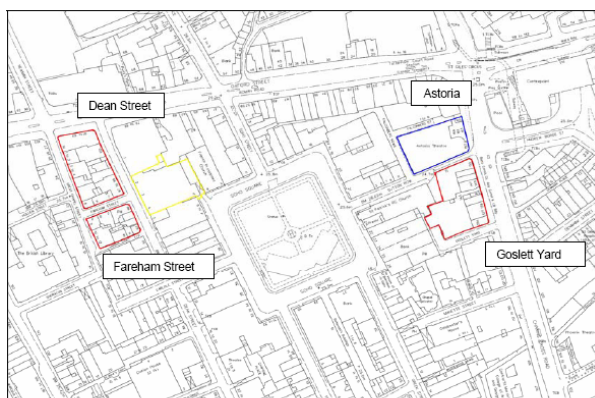


Figure 10.1 Buildings to be demolished by Crossrail works

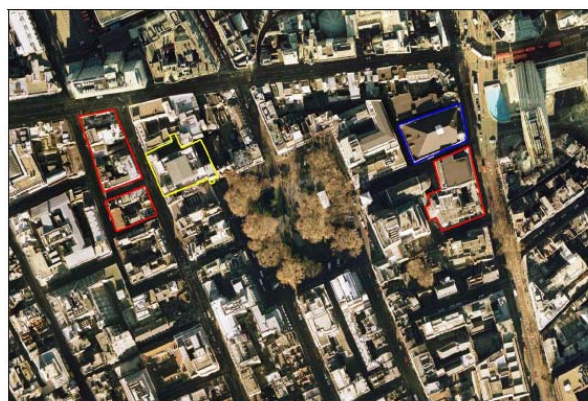


Plate 10.1 Buildings to be demolished by Crossrail works (Aerial photograph)

Figure 7: Plan and Aerial Photograph of buildings to be demolished

Archaeological deposits have been identified during assessment and recent evaluation trial pits beneath the levels of existing basements and as islands where basements have not been constructed. Detailed archaeological excavations have been carried out in both blocks north

and south of Fareham Street. These works have provided information on the depth of natural geology and truncation of this geology by quarrying in the 17th century and by building phases in the 17th, 18th and 19th centuries.



Figure 8: Demolition at TCR Dean Street

3.1.2 Advance Utility Works

A series of utility diversions are also required. Figure 9 illustrates the complexity of the utilities at Dean Street. Extensive truncation of potential deposits will have occurred where existing utilities are present. Diversions works however, have the potential to reveal features of interest and a general watching brief has been undertaken on these works.

Utility works programmed to be carried out at the site include BT diversions and construction of deep shafts, gas diversions and further combined utility works. No significant archaeology was uncovered during archaeological monitoring of these works.



Figure 9: Utilities at Dean Street

3.1.3 Compensation Grout shafts

Based on the settlement impacts associated with the current design of Tottenham Court Road (TCR) Station, the SCL works in the area, and for tunnelling works in the area, appropriate settlement mitigation measures in the form of compensation grouting shafts have been developed. Whilst the grout shafts have the potential to remove further archaeological remains, any impacts associated with these works will be mitigated through a general watching brief during the construction work.

Archaeological monitoring of utility works in the area has revealed that while much of the grout shaft areas are located in infilled former brickearth quarries, some substantial 17-19th century brick vaults (likely coal cellars) survive in the areas of the grout shafts. The locations of the seven compensation grout shafts are detailed here.

- 1) Corner of Sheraton Street and Great Chapel Street;
- 2) Soho Square north-west corner;
- 3) Soho Square west (in front of 38 Soho square)
- 4) Soho Square north-east corner/Possible alternative in Falconberg Mews;
- 5) Soho Square south-east corner;

- 6) Goslett Yard (in front of Royal George public house); and
- 7) TCR West (Dean Street) Station worksite.

To mitigate the impact of these grout shafts, a general watching brief is required when the shafts are excavated through made ground and terrace gravels. Earlier intervention, for example by archaeological test pits during the enabling works, is not considered appropriate given an understanding of likely archaeological remains to be encountered. This has been established during adjacent archaeological evaluation and mitigation site works. The utilisation of an archaeological watching brief would provide sufficient opportunity for archaeological recording to be incorporated into the early stages of shaft construction activity.



Figure 10: Proposed Grout Shafts at TCR

3.2 Outline Evaluation and Mitigation Design

Evaluation and mitigation design was informed by various archaeological assessments carried out to understand the sub-surface potential at the Western Ticket Hall (see Section 2 above). The results indicate that quarrying evidence and 17th to 19th century coal cellar construction may



be evident, as well as early basement information on previous buildings located on-site. This has helped inform the establishment of a program for evaluating the archaeological potential through the siting of nine trial pits in the area of the Western Ticket Hall.

Internal inspections of non-listed built heritage (listed in Table 4 below) have been carried out for all buildings being demolished to identify fixtures and features requiring further documentation and recording. Building recording of those buildings has been completed.

Trail pit evaluations, subsequent detailed excavations and general watching brief of utility works have been completed.

4 Research Design Objectives of the Investigation and Research Aims

The research objectives set out for Zone A between Royal Oak and Hatton Gardens (ES route Window C1-C5) are set out in Annex 1.

4.1 Research Aims

The fieldwork priorities for the Works will be to recover data that addresses the following research objectives of importance to this landscape. These are:

- To record the post medieval development of central London, including evidence for the absorption of the rural landscape into the urban one through domestic and industrial structures
- Charting how and why different parts of London, in the Soho area developed as specialist producers, and understanding the implications of this for the region of London;
- To define if possible the western extent of St Giles village and its hinterland – what evidence survives, if any, of related structures, property/field boundaries or routeways.
- To verify and record the line of the Roman roads and surviving associated sequences.
- To define levels of truncation in relation to adjacent past archaeological investigations and geotechnical works providing a clear deposits model to inform further development works in the area.

Non-listed built heritage

- Understand the social history and use of the buildings and their evolution over time.

4.2 Objectives of the Investigations

The overall objectives of the investigation are to establish the character, nature, date, extent and state of preservation of any surviving archaeological remains that will be impacted upon by the development. This includes the non-listed built heritage.

The test pit evaluations at the Tottenham Court Road site uncovered early foundations and evidence relating to medieval and post-medieval land use and urbanisation in the Dean Street/Fareham Street location.

The targeted watching briefs in the area of the utility diversions and grout shaft locations may provide information regarding depths of buried land surfaces across the site/early settlement and land use sequences relevant to understanding the growth and development of this area.



Site specific aims set out for Detailed Excavation phase (now complete)

A series of site specific aims were developed for the detailed excavation phase. These were:

- To record the post-medieval development of this part of central London, including evidence for the absorption of the rural landscape into the urban one through domestic and industrial structures.
- To determine the nature/chronology of the 17th to 19th-century urbanisation, particularly the nature of the structure identified in TP6 (see figure 1).
- To determine whether or not natural deposits are truncated, and if truncated whether this indicates widespread quarrying for brickearth and/or gravel.

5 Scope of the Investigation

5.1 Archaeology

The scope of works developed during this WSI was discussed and agreed with John Brown (GLAAS/EH representative) during site visits on 1 July, 22 July and 30 July 2010. Further mitigation works were agreed and these have since been carried out to the satisfaction of GLAAS/EH.

5.1.1 General Watching Brief

Archaeological monitoring through general watching brief of grout shafts (see Section 3.1.3) will be carried out by the archaeological contractor C254. Results from the detailed excavations carried out in the Dean Street and Fareham Street blocks, have provided the following information regarding the depth of natural geology which will be useful in terms of monitoring the grout shafts.

The results were broadly similar for both Dean Street and Fareham Street blocks. Lynch Hill terrace gravels where this survived 18th and 19th century building, was located at +122.6m ATD in the north and approximately +121.01m ATD and +121.26m ATD. These were truncated by later building phases and by early to mid 17th century piecemeal quarrying.

This general watching brief methodology has been the subject of discussion during the detailed design stage and has been agreed with the CRL Project Archaeologist following consultation with project consultees.

5.2 Further Archaeological Works

No further archaeological works are anticipated. However a provision for unexpected discoveries made during the grout shaft monitoring needs to be made and this is outlined below in Section 7.1.

6 Programme for the Investigation

6.1 Archaeological Investigation

Site-specific evaluation and mitigation measures are presented using the following phasing:

- **CRITICAL phase** advanced archaeology works which need to be undertaken prior to the Enabling Works (this may apply to very significant archaeological remains where complex mitigation is required and where early site access is required);
- **Phase 1** archaeological works to be undertaken commensurate with the programme of Enabling Works;
- **Phase 2** archaeological works to be undertaken commensurate with the Main Works;
- **Phase 3** archaeological works to be undertaken after the Main Works phase (e.g. post-excavation assessment, analysis, publication and dissemination).

It is considered that given the anticipated extent of truncation of existing utilities, building foundations and basements, that much of the potential archaeological resource is likely to have been removed. However, there is still Roman, medieval and post medieval potential across the TCR work sites.

6.1.1 General Watching brief

Phase 2 Main Works

Monitoring of the grout shaft construction sites will be completed as general watching briefs, as this will allow archaeological recording within the construction process.

6.1.2 Outline Programme/Sequence of Archaeological Works

Crossrail construction programme (PCS04) states the following:

- Shaft construction will start spring 2011 and continue to approximately the end of 2012 for the main shaft sinking. The requisite shafts for compensation grouting will be sunk and prepared within this time frame – requiring general watching brief. Monitoring shall be carried out to depths identified as sterile natural layers, evidenced by lack of archaeology or truncation due to later building and quarrying activity.

The sequence now required is:

- Undertake general watching brief of grout shaft locations.

6.2 Non-Listed Built Heritage

All recording works for NLBH have now been completed.

7 Specification for Evaluation and Mitigation (including Watching Brief)

7.1 Generic Standards

The archaeological evaluation and mitigation works and scope of any archaeological scientific methods shall be designed and undertaken in accordance with the Generic WSI and relevant best practise guidance (and any subsequent revisions) i.e.:

- Those listed in Crossrail Archaeology, Specification for Evaluation and Mitigation (including Watching Brief) section 7.A.1 (Crossrail, 2009b, Doc. No. CR-PN-LWS-ENSP-00001 Ver. 0.3);
- GLAAS Standards for Archaeological Work, London Region, External Consultation Draft (English Heritage 2009)
- Institute for Archaeologists – Standard and Guidance for archaeological field evaluation, 2008 (revised);
- Institute for Archaeologists – Standard and Guidance for archaeological excavation, 2008 (revised);
- Institute for Archaeologists – Standard and Guidance for an archaeological watching brief, 2008 (revised);
- Museum of London collections and archive policies and guidance;
- English Heritage – Geoarchaeology, 2007;
- English Heritage - Archaeological Science at PPG16 interventions: Best Practice Guidance for Curators and Commissioning Archaeologists, 2003;
- GLAAS Archaeological Guidance Papers 1999;
- Museum of London Archaeology Service site recording manual (MOLAS 1994); and



- English Heritage – Understanding Historic Buildings – A guide to good recording practice, 2006.

Potentially nationally important remains

Where unexpected, potentially nationally important archaeological remains (as defined in the Crossrail Environmental Minimum Requirements and Generic WSI) are identified during the works, the Archaeology Contractor shall undertake works in accordance with the Environmental Requirements (archaeology) section of the relevant package Works Information and shall adhere to procedures as set out in the SS-WSI.

The Archaeology Contractor shall submit details of their procedure for excavating and recording potentially nationally important remains in the Archaeology Contractor's Method Statement.

Details shall be in accordance with Crossrail procedures and include how relevant parties are to be informed of such discoveries, the criteria to be utilised by the Archaeology Contractor in the assessment of the significance of such discoveries and the timescales to be adhered to.

As a result of the discovery of unexpected, potentially nationally important archaeological remains, the SS-WSI will be updated by the Project Archaeologist to incorporate any additional specific primary fieldwork event aims.

Human Remains

Human remains are unlikely to be present on the TCR West site.

If any human remains were to be found, they will be treated in accordance with the procedures in section 7.A.6 to 7.A.15 of Archaeology, Specification for Evaluation and Mitigation (including Watching Brief) (Crossrail, 2009b). Crossrail procedures for dealing with discoveries of human remains shall identify any specific individual roles or actions that are relevant to the works.

If removal of human remains were to be required, an Exhumation Licence would be required from the Coroner's Office of the Ministry of Justice, under the terms of the 1857 Burial Act. This would be obtained by the archaeological contractor, unless otherwise required by the Project Archaeologist.

Treasure Act

The Treasure Act 1996 defines 'Treasure' as:

- Any object at least 300 years old when found which is: not a coin, but has metallic content of which at least 10% is precious metal; or
- One of at least two coins with at least 10% precious metal content;



- One of at least 10 coins;
- Any object at least 200 years old designated as treasure by the Secretary of State;
- Any object which would have been 'Treasure Trove';
- Any object found with any of the above.

The Treasure (Designation) Order 2002 extends the definition of treasure to include:

- Finds of at least two base metal objects (other than coins) of prehistoric date; and
- Any object (other than a coin) of prehistoric date with any precious metal content.

All finds falling within the definitions of treasure shall be reported immediately to the Project Archaeologist and all subsequent works must be undertaken in accordance with the relevant legislative requirements as set out in the Environmental Requirements (archaeology) section of the relevant package Works Information.

If any items falling within the scope of the Treasure Act 1996 were found on site, the procedures in section 7.A.16 to 7.A.22 of Archaeology, Specification for Evaluation and Mitigation (including Watching Brief) (Crossrail, 2009b) will be enacted. This currently appears unlikely.

Crossrail procedures for dealing with Treasure finds shall identify any specific individual roles or actions that are relevant to the works. Details shall include how relevant parties are to be informed of such discoveries, the criteria to be utilised in the assessment of the significance of such discoveries and the timescales to be adhered to.

To protect the finds from theft, the Archaeology Contractor shall record the finds and remove them to a safe place. Where recording and removal is not feasible or appropriate on the day of discovery, the Archaeology Contractor shall ensure, on liaison with the Project Archaeologist, that adequate site security is provided by the Principal Contractor.

Subject to the Provisions of the Treasure Act 1996, all material that is defined as Treasure is vested in the franchisee or, if none, the Crown.

With respect to Treasure finds, a reward may be payable to the finder, the landowner and/or the occupier. The Crown usually offers finds to a museum.

Health and safety

The Archaeology Contractor shall undertake the works in accordance with the Employer's Health and Safety requirements, the Principal Contractor's Health and Safety Plan and the Designers Risk Assessment. Where specific health and safety constraints or requirements for the Archaeology Contractor's method of work are required, these are set out below and shall be addressed in the Archaeology Contractor's Method Statement (in the Health and Safety Plan).



No ground intervention or other survey shall be made without approval of the Archaeology Contractor's Health and Safety Plan, Method Statement and Risk Assessment by the CDM co-ordinator.

The Archaeology Contractor's Method Statement and Risk Assessment shall take account of any design information (including the Designer's and Principal Contractor's Risk Assessment) pertaining to above ground hazards such as buildings and other structures or public rights of way and below ground hazards such as services, utilities and infrastructure and shall contain a site specific Risk Assessment for unknown below ground hazards such as contaminants including unexploded ordnance. All appropriate mitigation measures shall be in place prior to commencement of any ground intervention or other survey.

In addition to the general issues arising from conducting watching briefs on a major construction site, the archaeological contractor, in conjunction with the Principal contractor, will need to address:

- Conducting GWB on deep, potentially confined, grout shafts.

7.2 Location and ground elevation of interventions and survey grids

The spatial extent of the investigation(s) shall be set out in accordance with the setting out co-ordinates supplied by the Project Archaeologist. All spatial setting out and recording shall be in accordance with The London Survey Grid Standard (formerly Crossrail Survey Grid). See Crossrail standard CR-STD-010.

Interventions shall be located to a horizontal accuracy of +/-500mm in relation to the detail illustrated in the contract drawing(s). The corner points of each excavation or the centre point of each soil core location shall be set out with a Total Station Theodolite or other suitable automated equipment referenced from approved Permanent Ground Marker (PGM) data supplied to the Archaeology Contractor by the Project Archaeologist. The positions of the trenches and survey points shall be verified by the Archaeology Contractor taking additional check measurements to additional known-location points of detail.

Surface heights shall be recorded and related to Permanent Ground Markers (PGMs) or approved Ordnance Survey Bench Marks (OSBM). The full descriptions and locations of PGMs and OSBMs known to the Employer will be supplied to the Archaeology Contractor by the Project Archaeologist. Levelling accuracy between OSBMs/PGMs and site temporary benchmarks (TBMs) shall be within $10 \text{ mm}/\sqrt{k}$: where 'k' is the total distance levelled in kilometres. Each TBM shall be levelled as part of a closed loop starting and finishing on approved OSBMs or Crossrail PGMs. Where more than one TBM is required per site the Archaeology Contractor shall establish the TBMs as part of the same closed loop.

The Archaeology Contractor shall include details of their surveying methodology within their Method Statement (see Section 8), including the setting out of the grid and how they intend to provide the project grid co-ordinates to the Project Archaeologist with the Survey Report.

The Archaeology Contractor shall ensure that all trench or excavation limits, and significant archaeology detail are surveyed 'as dug' in relation to the project grid before leaving the site. Ground level height data shall be recorded for each intervention. Survey methodology and a detailed survey record shall be provided to the Project Archaeologist within the Survey Report.

7.3 Specification for watching brief

Scope of Watching Brief

Watching brief, as defined in the Generic WSI, is a programme of archaeological monitoring (i.e. observation, investigation and recording) which is carried out by a suitably qualified archaeologist during site investigations (e.g. geotechnical test pits, boreholes and utilities trial trenches) and construction works. The purpose of a watching brief is to identify the potential of any archaeological remains that are uncovered in the course of the works and record them appropriately (as far as is reasonably practicable). The watching brief shall result in the preparation of an ordered archive which will be incorporated into the post-excavation works and into publication of the project results.

The Archaeology Contractor shall undertake the watching brief for all areas of ground disturbance which may potentially contain archaeological remains as set out in the SS-WSI. This shall include any activities (including those associated with site set-up and demolition) undertaken by the Principal Contractor that involve the removal of modern material, made ground and topsoil, subsoils, and superficial geological deposits such as alluvium and colluvium.

Areas that have been previously subject to archaeological excavation and which are known not to contain significant deposits (for example tunnels, cuttings, and areas of known large-scale modern disturbance) shall be excluded from the scope of the watching brief, unless stated otherwise in the SS-WSI. Areas that have been subject to previous assessment and evaluation (e.g. geophysical survey, surface artefact collection, geotechnical survey, trial trenching etc.) shall be included within the watching brief, as appropriate.

Two classes of watching brief are set out in the Generic WSI:

- i) A general watching brief shall comprise observation and recording of the Principal Contractor's works without constraint on their working methods.
- ii) A targeted watching brief shall comprise observation and recording of the Principal Contractor's works with specific operations carried out under the supervision of the Archaeology Contractor. Under targeted watching brief, the Archaeology Contractor may impose constraints on, or require changes to, the Principal Contractors' or his sub-contractor's method of working to enable the archaeological investigation to take place alongside construction works.

Targeted watching brief shall be used for areas of known occasional, dispersed features which are either not considered to be of sufficient significance to warrant archaeological investigation in advance of construction, or where access prior to construction has not been possible and where, as a result, there is a possibility of unexpected discoveries

Except in cases where unexpected, potentially nationally important, archaeological remains are discovered, the targeted watching brief shall be designed and implemented so as to avoid adverse impact on the construction programme, wherever practicable.

The Principal Contractor shall make allowance in their activity programme for the completion of any targeted or general watching briefs as set out in the SS-WSIs.

The specification for watching briefs (general) are set out below.

Specification for watching brief

The Archaeology Contractor shall undertake a general watching brief of grout shaft excavations.

The Works to be carried out by the Archaeology Contractor shall consist of two parts:

- a) Watching brief ('observation') following, and without interruption to, the progress of the Principal Contractor by a core team of archaeologists.
- b) Investigation of archaeology and remains of quaternary geological importance undertaken either:
 - by the core team, following the progress of the Principal Contractor; or
 - by additional archaeologists (the 'support team'), to be deployed to investigate unanticipated archaeological remains, where appropriate.

The Archaeology Contractor's core team shall consist of the Archaeology Contractor's key person (the field director) and other appropriately experienced archaeologists commensurate with the scale and nature of the Principal Contractor's works.

The core team shall undertake the observation and any required investigation such as they may reasonably be able to undertake.

The Archaeology Contractor's support team shall consist of additional experienced archaeologist. The size of the support team shall be commensurate with the scale and programme of the Principal Contractor's works. The Archaeology Contractor shall be required to supply teams of 5 and 10 persons within 24 and 48 hours notice respectively.

The Archaeology Contractor's core and support teams shall be advised where necessary by specialists, as appropriate and as agreed with the Project Archaeologist.

The Archaeology Contractor shall record the following observations on a daily basis. The record shall consist of, as a minimum:

- The Event Code and chainage/location of the area observed;
- The date(s) of the observation;
- Personnel employed on site;
- A description of the construction works observed;
- The works (sub) contractor and personnel undertaking and supervising the construction activity;
- Depths and extents of excavation works observed;
- Measure of confidence that any archaeological remains would have been observed and reasons;
- The areas and horizons (both those containing archaeological or remains of quaternary geological importance and those which do not) unaffected by construction activity (with special reference to archaeological sites identified for preservation in situ);
- The reasons why any particular area of the works was not observed, and noting those areas not subject to disturbance from construction;
- Location and description of any archaeological remains; and
- Location and description of any modern remains.

Investigation undertaken during watching brief

An appropriate sample shall be excavated from cut features and other archaeological remains of importance. Sampling of cut features shall include feature inter-sections to establish relative chronologies. The extent of sampling shall be determined by the Archaeology Contractor in liaison with the Project Archaeologist (and as discussed with the relevant local authority and English Heritage, and a quaternary specialist, if necessary) but may, for instance, include the sample excavation of a selected number of deposits (both layers and negative, cut features), recording of structural remains, drawn sections and profiles, and/or be aimed at recovering sufficient information to determine function, form, and date. Any specific variations from this specification shall be indicated in The Archaeology Contractor's Method Statement.

Heights for all deposits shall be related to approved Permanent Ground Markers (PGMs) or approved Ordnance Survey Bench Marks (OSBM), where reasonably accessible. Levelling accuracy between OSBMs/PGMs and site Temporary Bench Marks (TBMs) shall be within 10 mm/k: where 'k' is the total distance levelled in kilometres. Each TBM shall be levelled as part of a closed loop starting and finishing on approved OSBMs or URL PGMs. Where more than one TBM is required per site, the Archaeology Contractor shall establish the TBMs as part of the same closed loop. The Archaeology Contractor shall prepare a record of their surveying methodology for inclusion in the archive.

It may not be possible to clean and record the archaeological profile of geotechnical test pits, due to health and safety or access constraints. Every effort shall be made to establish the presence or absence of archaeological deposits by establishing the absolute ordnance datum (AOD) for the height of significant deposits, including the depth of modern intrusions, key stratigraphic components and natural deposits.

Recording standards

The archaeological remains shall be recorded to best practice standards, recognising the special circumstances of a watching brief which demand flexibility in order to achieve archaeological objectives and requirements within the construction environment.

The recording is to include as a minimum:

- The written record of individual context descriptions on appropriate pro-forma.
- The drawn record shall normally include, plans and section drawings of appropriate features, structures and individual contexts (1:50, 1:20 or 1:10). Isolated archaeological remains (artefacts) may be spot located in plan and a height provided where possible. Deposits which are regular in plan (pits and ditches) may be located though co-ordinates, annotated with dimensions, and may be recorded digitally.

- Other appropriate drawn and written records shall also be produced (for environmental sampling etc.).
- The photographic record shall consist of monochrome prints/negatives and colour transparencies. A 35mm format (film or digital) SLR camera is acceptable for all site photography. The Archaeology Contractor shall maintain a minimum of two 35mm SLR cameras on site at all times during working hours. The photographic record shall include photographs and transparencies of archaeological features, appropriate groups of features, structures, and quaternary deposits. Each photograph and transparency shall clearly show details of the above. Each photograph and transparency shall include an appropriate graduated scale, a north arrow, and a header board detailing (as a minimum) the event code and context/feature number. In addition, the Archaeology Contractor shall take appropriate record photographs to illustrate work in progress.

7.4 Specification for archaeological investigation

A sufficient sample of the archaeological features and deposits revealed must be sampled/or fully excavated to allow the resolution of the aims and objectives of the work. Structures, features, or finds which might reasonably be considered to merit preservation in-situ shall not be unduly damaged.

Where modern foundations are likely to be present, the SS-WSI shall identify whether they should be left in-situ for the purposes of the evaluation or removed. Where it is clear that modern foundations have truncated certain archaeological levels they should be removed to assess lower archaeological levels. The Archaeology Contractor shall take all reasonable care to ensure that any damage is limited as far as practicable. If significant damage is likely to occur the work shall be suspended and the Project Archaeologist informed so that a technical solution can be agreed with the Project Manager.

The location and objectives of the trial excavations set out in Section 5 of the SS-WSIs have been established in consultation with the projects' statutory consultees.

Each trial excavation has been assigned a unique ID number by the Project Archaeologist. The Archaeology Contractor shall not vary this number unless agreed by the Project Archaeologist in writing.

The dimensions of each trial excavation in plan, inclusive of the trench support system employed (if required) to secure personnel entry to the excavation, shall be set out in the SS-WSI. Trial excavations shall be excavated to the base of the alluvial sequence or to a depth specified in the SS-WSI (Section 5). This shall be dependent on the agreed objectives of the excavation.

Temporary works and any required hand investigation to address below ground hazards shall be carried out by the Principal Contractor under supervision by the Archaeology Contractor in



accordance with their approved Method Statement and Risk Assessment. All subsequent trial excavations shall be excavated by the Principal Contractor under supervision by the Archaeology Contractor using a mechanical excavator with toothless ditching bucket, except where the nature of the made ground or surface of the pits is such that an alternative bucket or means of breaking out prior to excavation is required (and the Project Archaeologist has agreed an alternative method).

All machine work and demolition of below-ground obstructions (e.g. removal of basement slabs) shall be carried out by the Principal Contractor under supervision by the Archaeology Contractor. The Principal Contractor shall cease work when archaeological evidence is revealed and allow the Archaeology Contractor to undertake investigation, as appropriate. An excavator shall not be used to cut arbitrary trial trenches down to natural deposits without regard to the archaeological stratification.

All undifferentiated topsoil, or overburden of recent origin, shall be removed down to the first archaeological layer. An exception to this would be where a focused soil-sampling strategy is proposed to record and collect data from reworked soil contexts above recognisable stratified archaeological contexts. If a mechanical excavator is to be used to remove modern overburden, such as floor slabs or recent levelling layers, this shall be undertaken in spits of 0.20m-0.5m depth (dependant on specific site conditions), moving along the length of the trench or area. The Archaeology Contractor's supervising archaeologist shall use their professional judgement to determine the appropriate depth of each spit and will advise the Principal Contractor accordingly. Any variations to the excavation methodology shall be at the discretion of the supervising archaeologist and recorded in writing for inclusion in the final report to the Project Archaeologist.

Each spit shall be examined carefully to assist the recovery of any archaeologically significant artefacts and thus to determine when to cease machining.

The archaeological level shall be cleaned in plan by the Principal Contractor using a wide blade, ditching bucket or similar, with no teeth. If the machine has to re-enter the trench care will need to be taken to ensure that it does not damage underlying remains.

The Archaeology Contractor shall undertake hand excavation and cleaning of any archaeologically significant horizons, to fulfil the aims of the work. Within alluvial sequences the Archaeology Contractor shall pay particular attention to establishing the vertical extent of layers of archaeological potential and shall be aware that horizons of cultural activity may be interdigitated with horizons of sterile alluvium. The Archaeology Contractor shall supervise the excavation of each test pit in such a manner so as to allow a cumulative or continuous section to be recorded.

The Archaeology Contractor's excavation, sampling and recording policy shall be included in the Archaeology Contractor's Method Statement. This is to include, as a minimum:

- The recording of individual contexts on appropriate pro-formas;



- Excavation plans at 1:50 scale; planning and section drawing of appropriate single contexts and features (usually at 1:20 scale for plans and 1:10 scale for inhumations and sections);
- Photographs; and other appropriate drawn and written records; and
- Permanent Ground Markers (PGM's), any temporary benchmarks and approved OS benchmarks shall be indicated on the relevant plans.

The Archaeology Contractor's survey and recording policy shall meet the following requirements:

- All levels shall be recorded to London Grid standards and reduced to OS datum;
- All trial pit locations shall be electronically surveyed with reference to the London Grid and Crossrail PGM's upon the completion of fieldwork by the Archaeology Contractor;
- The locations of trial pits shall be plotted on appropriate scale plans related to the London Grid and labelled with six figure eastings and northings; and
- The electronic survey record shall be retained with the project archive.

In alluvial sequences, each trial excavation shall be excavated to the base of the alluvial sequence, and shall be appropriately shored and kept free of water by the Principal Contractor to allow 'person entry' to the excavations i.e. to allow the Archaeology Contractor to undertake investigation and recording to fulfil the aims of the work.

The Archaeology Contractor shall identify any temporary works and dewatering requirements associated with the archaeological investigation in the Archaeology Contractor's Method Statement and shall agree the detailed arrangements for such with the Principal Contractor. The Archaeology Contractor will be required to undertake works in accordance with the Principal Contractor's arrangements for matters such as off site-spoil disposal or storage, on-site facilities and services. Relevant requirements shall be incorporated in the Archaeology Contractor's Method Statement.

Where areas of extensive archaeological stratification are encountered, trial trenches shall not be fully excavated. However, the horizontal and vertical extent of archaeological stratification shall be assessed by the Archaeology Contractor through implementation of an appropriate strategy including, either the excavation of features cut into horizontal stratification, limited test pitting or auguring. The aim shall be to recover suitable stratigraphic, finds and environmental samples from the full, intended depth of the trench, as far as is practicable. The exact methodology may need to be determined by the Archaeology Contractor during the excavation of individual trenches and agreed with the Project Archaeologist.



A sufficient sample shall be excavated from cut features and other archaeological deposits to fulfil the aims of the work. Sampling of cut features shall include feature intersections to establish relative chronologies.

Recording systems

The trial excavations shall be recorded by the Archaeological Contractor to the standards of current best practice. The recording systems adopted during the investigations must be fully compatible with those published by the Museum of London Archaeology Service (MoLAS 1994 3rd ED) and Museum of London (MoL 1998).

The recording is to include, as a minimum:

- At least one representative section at (1:10 or 1:20 scale) of each trial excavation from ground level to the base of the excavation;
- The written record of individual context descriptions on appropriate pro-forma;
- Plans at appropriate scales (1:10 or 1:20);
- Single context planning if appropriate; and
- Photographs and other appropriate drawn and written records.
- Other sections, including the half-sections of individual layers or features shall be drawn as appropriate to 1:10 or 1:20.

Site plans shall identify both London Grid and OS co-ordinates. A 'site location plan', indicating site north shall be prepared at 1:1250. Individual 'trench plans' or 'excavation area plans' at 1:200 (or 1:100) shall be prepared which show the location of archaeology investigated in relation to the investigation area.

Section drawings shall be located on the relevant plan and both London Grid and OS co-ordinates recorded. The locations of the OSBM or PGM bench markers used and any site TBM shall also be indicated.

A record of the full extent in plan of all archaeological deposits as revealed in the investigation shall be made; these plans shall be on polyester based drawing film, and be at a scale of 1:10 or 1:20 unless otherwise agreed with the Project Archaeologist. 'Single context planning' shall be used on deeply stratified sites. Drawing information shall be digitised for eventual CAD applications. The GLSMR will accept Autocad DXF or .DWG format of extent of site and location of major features with the completed Sites and Monuments Report Form.

A 'Harris matrix' stratification diagram shall be employed to record stratigraphic relationships (Harris 1993). This record shall be compiled and fully checked by the Archaeological Contractor



during the course of the excavations. Spot dating shall be incorporated onto this diagram during the course of excavations.

Recording of structural evidence revealed below ground level will vary according to the level of special interest of the structure and its relationship to below-ground archaeology. Structures of little or no significance shall be noted on a site plan. Detailed element detail drawings of important features revealed in investigations may be required in accordance with the aims and objectives of the investigation.

The Archaeology Contractor shall agree the appropriate level of recording and analysis for discovered standing structures with the Project Archaeologist, in accordance with the Crossrail procedure for non-listed built heritage recording (Document CR-PN-PRW-EN-PD-00010). The Archaeology Contractor shall revise the Archaeological Contractor's Method Statement to reflect any additional requirements for built heritage recording.

The photographic record shall consist of monochrome prints/negatives and colour transparencies. A 35mm format SLR camera (film or digital) is acceptable for all site photography. The Archaeology Contractor shall maintain a minimum of two 35mm SLR cameras on site at all times during working hours. The photographic record shall include photographs and transparencies of archaeological features, appropriate groups of features, and structures. Each photograph and transparency shall clearly show details of the above, and may require the use of artificial lighting to achieve suitable definition. Each photograph and transparency shall include an appropriate graduated scale, a north arrow, and a header board detailing (as a minimum) the project event code and context/feature number. In addition, the Archaeology Contractor shall take appropriate record photographs to illustrate work in progress.

The transparencies shall be mounted in suitable frames for long-term curation in preparation for deposition with the archive. Digital photography and video recording may be appropriate in some circumstances and the Archaeology Contractor shall set out proposals for such recording in the Archaeology Contractor's Method Statement for approval by the Project Archaeologist.

Where appropriate a photogrammetric record or laser scan record shall be made of complex structures, features and horizons, liable to be damaged in the course of the investigation, such as buildings or parts of buildings. Appropriate technical specification and scales shall be specified in the SS-WSI and addressed in the Archaeology Contractor's Method Statement.

Generic specification for Environmental Sampling

Appropriate features and deposits shall be sampled to retrieve palaeo-environmental and economic indicators. The Archaeology Contractor shall make provision for the sampling of a wide range of contexts for potential assessment and analysis for plant and animal micro/macro fossils and soils/sediments in order to fulfil the aims set out in the SS-WSI.



The Archaeology Contractor shall use ten litre plastic buckets (with lids and handles), or strong polythene bags (double bagged) secured at the neck, for the recovery of bulk 'disturbed' environmental samples. An adhesive label recording the project event code, context number and sample information shall be securely fixed to a vertical face of the bucket only or attached to the neck of the bag. Labels shall be completed with an indelible ink pen. A duplicate non-adhesive label shall be inserted within the bucket or between the polythene bags.

The selection, preparation for and methods of taking samples together with their size, presentation and processing shall be in accordance with current best practice (e.g. IFA Standard and Guidance for Artefact and Environmental Study, Collection, Research and Conservation 2008d; English Heritage –Geoarchaeology, 2007; English Heritage - Archaeological Science at PPG16 interventions: Best Practice Guidance for Curators and Commissioning Archaeologists, 2003).

The Archaeology Contractor shall be responsible for the protection of all samples and finds and for their transport (including loading and unloading) to the Archaeology Contractor's facilities or other location as agreed with the Project Archaeologist. Samples shall be protected at all times from temperatures below 5 and above 25 degrees Celsius and from wetting and drying out due to weather exposure.

Bulk samples shall normally be in the range of 10-60 litres. The size selected will depend on the likely density of macrofossils in the soil. The lower end of the range (10-20 litres) will be suitable for the recovery of macrofossils from waterlogged deposits. For non-waterlogged deposits the sample volume is likely to be in the middle to higher range (20-40 or 40-60 litres) dependant upon site activity, conditions and preservation. The residue of soil left in the bottom of any inhumations after the removal of human remains shall be retrieved for bulk processing. Vessel or pit fills containing human remains shall be processed as bulk samples to ensure the maximum retrieval of cremated bone. Cremation vessels and deposits of placed human bone within cut features may require excavation in spits. The fill residues from the excavation of these features shall be bulk sampled to ensure maximum retrieval of cremated bone, associated small finds and floral and faunal remains. All work shall be undertaken in compliance with the generic Crossrail standards for Human Remains (see Section 7A) which may require the reburial of human remains within a specific timeframe.

For 'bulk disturbed' samples the limits of the sample zone shall be recorded and identified on plan.

The Archaeology Contractor shall use appropriately sized monolith or kubiena boxes for the recovery of 'undisturbed' monolith samples for geo-archaeological study (pollen, other microfossil and micromorphological studies etc). Care shall be taken to ensure that wherever possible only newly exposed sections are sampled to avoid contamination, desiccation and decalcification. This sampling shall be undertaken under supervision of the Archaeology Contractor's environmental specialist. Boxes shall be wrapped neatly and tightly in bin-liners or plastic sacks and secured with rubber bands. A label shall be attached to the outside (in duplicate) with site name and code, feature/context number and depths of sample.



The Archaeology Contractor shall record the depth of the 'undisturbed' monolith at the top and the bottom of the sample. There shall be a 50mm overlap between each monolith. This information shall be plotted onto a section drawing at an appropriate scale, with all levels reduced to heights relative to Ordnance Datum. Where the sample crosses archaeological context boundaries these shall be noted on the sample recording pro-forma.

Where it is not possible to insert monolith boxes, the Archaeology Contractor shall take a vertical series of small 'spot' samples. Samples shall be at 20mm vertical intervals with no more than 10mm depth being sampled. In the case of deposits with a low organic content it may be necessary to take as much as 5g or even 20g per sample. If so, sampling shall be extended laterally at a given depth in 10mm deep spits.

Where appropriate, the Archaeology Contractor shall take contiguous column samples for the retrieval of macrofossils. The individual sub-samples will be of 1-10kg, depending on the nature of the deposit and the category of material to be retrieved. Where several specialists are involved it may be necessary to take separate sub-samples for a range of palaeo-environmental evidence, for example, insects, molluscs and seeds, to ensure that adequate sub-samples are available for specialist assessment.

8 Deliverables

This section sets out what is required from the Archaeological Contractor per event. The specific event types listed at TCR West are:

- General watching brief of grout shafts. These require weekly progress reporting followed by a fieldwork report (section 8.6).

All other requirements such as archiving, summary report for HER and post-excavation should be followed as set out below.

8.1 Archaeological Contractors Method Statement

The Archaeology Contractor shall provide a detailed Method Statement for the works for the Project Archaeologist's approval. The Method Statement shall be prepared in association with the Principal Contractor, taking account of their Environmental Management Plan and other relevant site information provided by them and requirements for the works set out in the Works Information (e.g. relating to health and safety, security, engineering design requirements and attendances). The Method Statement shall include, as appropriate:

- a) A resource plan and programme and CVs;
- b) The Archaeology Contractor's IT capability and proposed IT plan (including specific survey methods for on-site recording of stratigraphic profiles and sub-surface topographic modelling;
- c) The Archaeology Contractor's approach to Archaeological Science;
- d) The methods for survey and setting out works;
- e) The methods to address the specific event types required (trial trench, area excavation etc);
- f) The safe method of working whilst excavating trenches or pits including any temporary works required;
- g) The method for disposing of water from trenches and test pits in waterlogged ground;
- h) Site management plan to include details of the method for preparing safe access route to the working areas, the proposed site accommodation, services and welfare;
- i) The retention and disposal policies for samples and artefacts recovered during the work;
- j) The method for excavating and recording inhumations and cremations in compliance with the generic Crossrail standards for Human Remains (see Section 7.1);
- k) The method for preparation of the required reports, archive and all associated deliverables;
- l) The procedures for assessment of potential for analysis (post excavation assessment); analysis and publication proposals;

- m) The method for preparation of the digital dataset, digital drawings, and digital report deliverables;
- n) The Archaeology Contractor's methods and approach for undertaking the site based works and off site processes to completion.
- o) The Health and Safety Plan and Site-Specific Risk Assessment (including unexploded ordnance);
- p) The Quality Assurance Plan;
- q) The procedures for on- and off- site security and emergency response plan (including environmental incidents);
- r) The method for complying with project generic and site specific environmental and consent requirements; and
- s) The Archaeology Contractor's requirements and specification for services and facilities and attendances required to be supplied by the Principal Contractor or the Employer.

8.2 Site Archives

The site archive shall be organised to be compatible with other archaeological archives in London, or where outside the greater London area, any specific requirements of the receiving museum. This requirement for archival compatibility includes computerised databases.

For London archives, individual descriptions of all archaeological strata and features excavated or exposed shall be entered onto prepared pro-forma recording sheets which include the same fields of entry on the recording sheets of Museum of London Archaeology. Sample recording sheets, sample registers, finds recording sheets, registered finds catalogues and photographic record cards shall also follow the Museum of London Archaeology equivalents.

Archives shall be prepared to conform with current best practise (e.g. Brown and Duncan 2007; Institute of Field Archaeologists 2008f) The archive shall cover all finds, samples and records (drawn, written, photographic and electronic) collected and produced during the works. The archive shall be indexed and internally consistent. The Archaeology Contractor shall complete the site archive and submit to the Project Archaeologist within 8 weeks of completion of a fieldwork event.

The site archive shall be deposited by at a museum to be confirmed by the Project Archaeologist.

8.3 Digital Data

The Archaeology Contractor shall produce a digital data archive of all primary field data produced during the works in accordance with ADS guidelines (Richards and Robinson 2001).

The Archaeology Contractor shall prepare and provide field and laboratory data, evaluation or excavation trench and phasing plans showing archaeological features recorded, and report text in digital form, as well as in paper form. Consideration should be given to recording electronic plans during fieldwork.



The digital archive for each fieldwork event shall be copied to CD-R or DVD (recordable laser disc) and submitted to the Project Archaeologist for archiving in the Employer's document management system.

Final reports, site plans and other illustrations shall be prepared in accordance with the Employer's Information Management standards and procedures.

All data files submitted shall be scanned by a virus detection programme updated to the most current version. The disk label shall clearly indicate:

- Confirmation that this check has been carried out (including details of the virus checking programme name and version used) and that the submission is virus free.
- Fieldwork event name and code.
- Supplier company name, date and QA details (as a minimum, the name, position and signature of the approver).

Prior to commencing the works, the Archaeology Contractor shall submit an example hard copy and data output of each of the data formats required (i.e. data, graphic, CAD and text) produced by their current software, for approval by the Project Archaeologist. The Archaeology Contractor shall inform the Project Archaeologist of any changes or upgrades made to approved software prior to processing any works data. The sample disk shall include data from a previous real job or jobs.

A sequential numbering of data issues shall be rigorously adhered to so that no data versions are submitted out of sequence. The organisation of the data prior to submission shall be the responsibility of the Archaeology Contractor. The Archaeology Contractor shall ensure that data originating from different sources within the Archaeology Contractor's organisation is compatible with the project requirements. The Archaeology Contractor shall nominate one person to the Project Archaeologist who is the main point of contact for matters relating to the digital data submissions.

Where errors or inconsistencies are noted in the data, by either the Project Archaeologist or Archaeological Contractor they shall be corrected by the Archaeology Contractor and a corrected data file issued to the Project Archaeologist. When a change or addition is made to the data within an issue, a complete data group shall be re-issued, not just the changed fields. This may not require complete replacement of the whole data set which includes other previous issues.

Where any changes are made to a data record between digital data submissions, the Archaeology Contractor shall record the date of the change and the name of the person carrying out the change. The Archaeology Contractor shall ensure that each data amendment is carried out correctly.



The Archaeology Contractor shall make two identical copies of the digital archive. The first copy shall be retained by the Archaeology Contractor until the expiry of the Contract maintenance period. The second copy shall be issued to the Project Archaeologist.

A digital archive for each Crossrail site (incorporating individual event archives) shall be submitted to a regional or national data archive as agreed with the service provider by the Employer.

8.4 Interim Statement

Within 7 days of completion of a fieldwork event the Archaeology Contractor shall submit an Interim Statement to the Project Archaeologist.

The Interim Statement shall be brief, and the information contained commensurate with the timescale for production. The report shall not duplicate effort to be utilised at a later date and shall draw on the data gathered during the initial assessment undertaken during fieldwork.

A site plan indicating all as-dug investigations shall be provided. Key stratigraphic profiles and topographic templates of the major stratigraphic units shall be provided.

The Interim Statement including illustrations shall be submitted as a single PDF file to the Project Archaeologist. CAD drawing files shall also be submitted.

The Interim Statement text shall be submitted in hard copy and as an MS Word document in accordance with the Employer's information management standards and procedures.

The Interim Statement shall include an approved report title sheet and QA page (to be supplied by the Employer).

The following shall appear in the footer or header of each Interim Statement:

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Copies of the Interim Statement shall be provided by the Project Archaeologist to Rob Whytehead (English Heritage) and the London Borough of Camden for comment.

8.5 Survey Report

The Archaeology Contractor shall provide a written and graphic survey report for the works upon completion of fieldwork. Evidence shall be provided for check measurements and results of levelling for establishment of TBMs. The survey report shall be submitted by the Archaeology Contractor to the Project Archaeologist within 2 weeks of the completion of fieldwork.



The Archaeology Contractor shall prepare and submit 'as excavated' site area outlines and levels in accordance with Crossrail standard CRS-SDT-05. Each drawing shall identify the relevant event code and sub-site division, if applicable.

8.6 Fieldwork Report

The watching brief reports shall be prepared by the Archaeology Contractor within 6 weeks of the completion of the fieldwork (unless this is varied by the Project Archaeologist). The evaluation report will be prepared either as soon as is practicable if significant find requiring mitigation are uncovered, or within 6 weeks of completion of fieldwork if no archaeological finds are uncovered. The Fieldwork Report shall follow the standard structure set out in City of London Planning Advice Note 3 and IFA standards i.e.:

Contents list

Non technical summary

1. Introduction
2. Planning background
3. Previous work(s) relevant to archaeology of site (DBA, DDBA, surveys etc)
4. Geology and topography of site
5. Research objectives and aims
6. Methodology of site-based and off-site work
7. Results and observations including quantitative report, stratigraphic report(including any constraints on site).
8. Assessment of results against original expectations (using criteria for assessing national importance i.e. period, relative completeness, condition, rarity, and group value) and review of evaluation strategy
9. Statement of potential of archaeology
10. Conclusions and recommendations for appropriate mitigation strategy
11. Publication and dissemination proposals (in addition to fieldwork report)
12. Archive deposition
13. Bibliography
14. Acknowledgements
15. Sites and Monuments Record form
16. A3 plans

The Fieldwork Reports shall provide an illustrated factual statement and statement of importance with associated assessment of potential for further fieldwork and/or analysis of the archive. The Fieldwork Reports shall utilise information collected during archaeological fieldwork and from any other appropriate sources agreed with the Project Archaeologist.

The Fieldwork Reports shall include sections detailing the background to the project, any previous relevant research and investigation, location and topography/geology, a description of



the methodology employed and the techniques adopted. Where relevant, these sections shall include location plans with scale and grid co-ordinates.

Each component of the works (e.g. stratigraphic/structural, artefactual and environmental/economic) shall be supported by a statement setting out:

- A quantification of the resource (tabulated and cross referenced as appropriate);
- Provisional dating and evidence for residuality and intrusiveness;
- The range of material, including sampling and/or taphonomic biases; and
- The condition of the material, including preservation bias.

The stratigraphic statement shall include: a description of the geomorphology and sedimentation record of the survey area; a description of the fieldwork results (brief context descriptions supported by plans and sections as necessary, with levels related to Ordnance Datum); a trench summary table indicating depths of all major stratigraphic units, and their boundaries. Photographs shall be included where appropriate.

The Archaeology Contractor shall produce a subsurface model(s) and profiles to illustrate the extent, character and depth of the major stratigraphic topology identified. The model shall be correlated with previous works within the survey area in order to inform the mitigation design. The processing software and presentation format of the data shall be included in the Archaeology Contractor's Method Statement for approval by the Project Archaeologist.

The assessment of results and statement of potential shall include the Archaeology Contractor's conclusions based on the recorded data, e.g. the monument/site class represented, site/feature function and relevant parallels. The statement shall also comment on the potential of the data to address the projects' research themes. As appropriate, comment shall be made on the site as a whole and the individual components (e.g. artefactual, palaeo-environmental, economic). The statement shall utilise the criteria laid down by the Secretary of State for Culture, Media and Sport Criteria for Scheduling, to establish importance.

In reporting the results of the works, the accuracy of the original expectations and the appropriateness of the methods adopted shall be assessed by the Archaeology Contractor in order to illustrate what level of confidence can be placed on the information. The Project Archaeologist will use that information as the basis for developing any further mitigation strategy and/or further analysis and publication.

The report shall be illustrated with a site location plan, survey location plans as appropriate (to include archaeological interpretation of results), and individual trench and area plans identifying archaeological features exposed and investigated.

When submitted at evaluation stage, the report shall set out an outline recommendation for mitigation. This may include preservation in situ and/or further investigation and recording of the



remains and/or watching brief. The development of a detailed mitigation strategy shall be progressed by the Project Archaeologist in liaison with the Project Manager's engineering design team, the Archaeology Contractor, and the English Heritage Regional Science Advisor (and other statutory authority), as appropriate.

Copies of the Fieldwork Report shall be provided by the Project Archaeologist to the Rob Whytehead (English Heritage) and the London Borough of Camden for comment.

The following shall appear in the footer or header of each Fieldwork Report:

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8.7 SMR/HER Summary Sheet

The Archaeology Contractor shall complete a GLSMR Summary Sheet for the works (i.e. one per fieldwork event). The Summary Sheet shall be included in the Fieldwork Report.

8.8 Summary Report

A short summary report of no more than 500 words (the Summary Report) for the works shall be prepared by the Archaeology Contractor for submission to the Project Archaeologist for subsequent publication within London Archaeologist or another local (county) journal or publication outlet specified by the Project Archaeologist.

The Archaeology Contractor shall submit the draft Summary Report to the Project Archaeologist for approval within 8 weeks of the completion date of the fieldwork event. The Archaeology Contractor shall allow two weeks in the programme of works for the Project Archaeologist to provide comments. The Archaeology Contractor shall include any amendments required by the Project Archaeologist in the final Summary Report which shall be submitted within one week of receiving the Project Archaeologist's comments on the draft report.

The Summary Report shall be submitted as an MS Word document in accordance with the Employer's information management standards and procedures.

8.9 Post excavation assessment

If instructed by the Project Archaeologist, the Archaeology Contractor shall undertake a post-excavation assessment of the site archive and submit a report of their findings to the Project Archaeologist for approval. Assessment of potential for analysis shall be undertaken in accordance with English Heritage guidelines.

The Archaeology Contractor shall provide details of its current post excavation assessment procedures with their Method Statement.



9 Site Monitoring and Progress Reports

Prior to commencing the works the Archaeology Contractor shall agree a programme of weekly written progress reports and periodic progress meetings with the Project Archaeologist and/or Project Manager and shall be represented at such meetings to the satisfaction of the Project Archaeologist. The Archaeology Contractor shall provide information describing progress on-site to date, the processing of samples and artefacts and feedback from any initial assessment.

The LB of Camden and Rob Whytehead (English Heritage) shall be informed in writing at least one week in advance of commencement of fieldwork by the Project Archaeologist.

Periodic updates on the progress of the Crossrail archaeology programme shall be submitted to the external consultees by the Project Archaeologist. The Archaeology Contractor shall provide information to the Project Archaeologist as requested to inform this reporting.

The Project Archaeologist shall arrange and convene monitoring site visits by the external consultees, as appropriate. There shall be no unauthorised access to the works in any other circumstances. Any visits to the works shall be in accordance with the Principal Contractor's health and safety, site access and security requirements.

The Archaeology Contractor may propose that archaeological excavation be carried out as an extension to evaluation works, if the scope of such work is readily incorporated into the SS-WSI. The detailed method for this work shall be agreed between the Archaeology Contractor and the Project Archaeologist at a site meeting and subsequently in writing between the Project Archaeologist and the relevant external consultees.

10 Personnel requirements

The Archaeology Contractor shall provide project personnel of experience as described below. The personnel shall be approved by the Project Archaeologist. Approval may be withdrawn by the Employer at their discretion and in accordance with the contract conditions.

The Archaeology Contractor shall submit CVs of all proposed personnel including any specialists, but excluding site technician grades, to the Project Archaeologist for approval if this has not already been done as part of the pre-qualification process.

The works shall be managed, directed and staffed by appropriately qualified and experienced personnel. The Archaeology Contractor's Key Person shall possess at least ten years relevant experience.

The excavation, sampling and recording of the works shall be directed in the field by a Fieldwork Director who is a Member of the Institute for Archaeology (MIfA) The Fieldwork Director shall be on site throughout the fieldwork stages.

The Archaeology Contractor's project team shall include an environmental archaeologist suitably qualified in archaeological science and geo-archaeological sediment description methods and on site sample processing and assessment techniques.

The Archaeology Contractor's project team shall be staffed by technician grades with minimum six months experience in appropriate aspects of excavation and recording.

Specialist staff employed on any aspect of the works, including post-excavation assessment or analysis of any kind including the writing of reports, shall be suitably qualified and shall be supervised by personnel with a minimum of ten years of relevant experience in their field (this may be inclusive of post-graduate studies).

Specialist staff shall be available, normally at 24 hours notice, for the duration of the works to provide advice on any specialist tasks to be undertaken.



References and Glossary of Terms

Brown, Duncan H 2007. Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation, Archaeological Archives Forum, ISBN 0948393912.

Crossrail, 2005. Assessment of Archaeological Impacts, Technical Reports. Part 2 of 6, Central Route Section, Document Number: 1E0318-C1E00-00001.

Crossrail, 2008a. Archaeology Generic Written Scheme of Investigation, Document Number: CR-PN-LWS-EN-SY-00001

Crossrail, 2008b. Procedure for non-listed built heritage recording. Document Number: CR-PN-LWS-EN-PD-00010

Crossrail 2008c Archaeology Specification for Evaluation and Mitigation. Document Number: CR-PN-LWS-EN-SP-00001

Nixon T, McAdam, E, Tomber, R and Swain H, 2003. A Research Framework for London Archaeology 2002, Museum of London Archaeology Service

Crossrail, 2007. Tottenham Court Road Detailed Desk Based Assessment. Document Number: CR-SD-TCR-EN-SR-00001

Annex 1 Archaeological Research Agenda

Selected research themes were identified in the ES and form the basis for the site specific aims set out in section 4 of the SS-WSI, above.

The reference numbers in brackets refer to page numbers from *A Research Framework for London Archaeology* (Museum of London, 2003).

Zone A: Royal Oak to Hatton Garden (ES Route windows C1 – C5)

- Understanding London's hydrology and river systems and tributaries and the relationships between rivers and floodplains. (79).
- Understanding the evolving character of development in central London between Westminster and the City, and Southwark. (79).
- Understanding the relationships between the different urban foci within the London region (such as two urban foci of Saxon *Lundenwic* and *Lundenburh*). (80).
- Examining the concept of core/periphery for different periods in London's past, as a means of understanding a settlement and its environs, a city and its hinterland. (81).
- Contributing to our understanding of the creation of the London suburbs (81).
- Understanding the reasons for evolution of the road systems, street layouts, river crossings and ferries, and their importance as engines of development and change. (82)
- Understanding how water supply and drainage provision were installed and managed. (82).
- Considering ethnic diversity, for instance between Frisians and Vikings, and how these are represented in the archaeological record. (85).
- Considering the relationship between cemeteries and major or minor roads, in terms of symbolism, status, privacy and convenience – both in London and at roadside settlements around the region. (85).
- Synthesising data on known religious sites and buildings, their chronology, use and influence locally, regionally or nationally. (86).



Annex 2 Site Information-

Annex 2.1 Services and Utilities

Please refer to C 254 Works Information Chapter 1 Worksite Information

Annex 2.2 Extinguishments of Rights of Way

Please refer to C 254 Works Information Chapter 1 Worksite Information

Annex 2.1 Surface Water Control

Please refer to C 254 Works Information Chapter 1 Worksite Information

Annex 2.1 Protective Fencing

Please refer to C 254 Works Information Chapter 1 Worksite Information

Annex 2.1 Credit Boards

Please refer to C 254 Works Information Chapter 1 Worksite Information

Annex 2.1 Care in Executing the Site Operations

Please refer to C 254 Works Information Chapter 1 Worksite Information

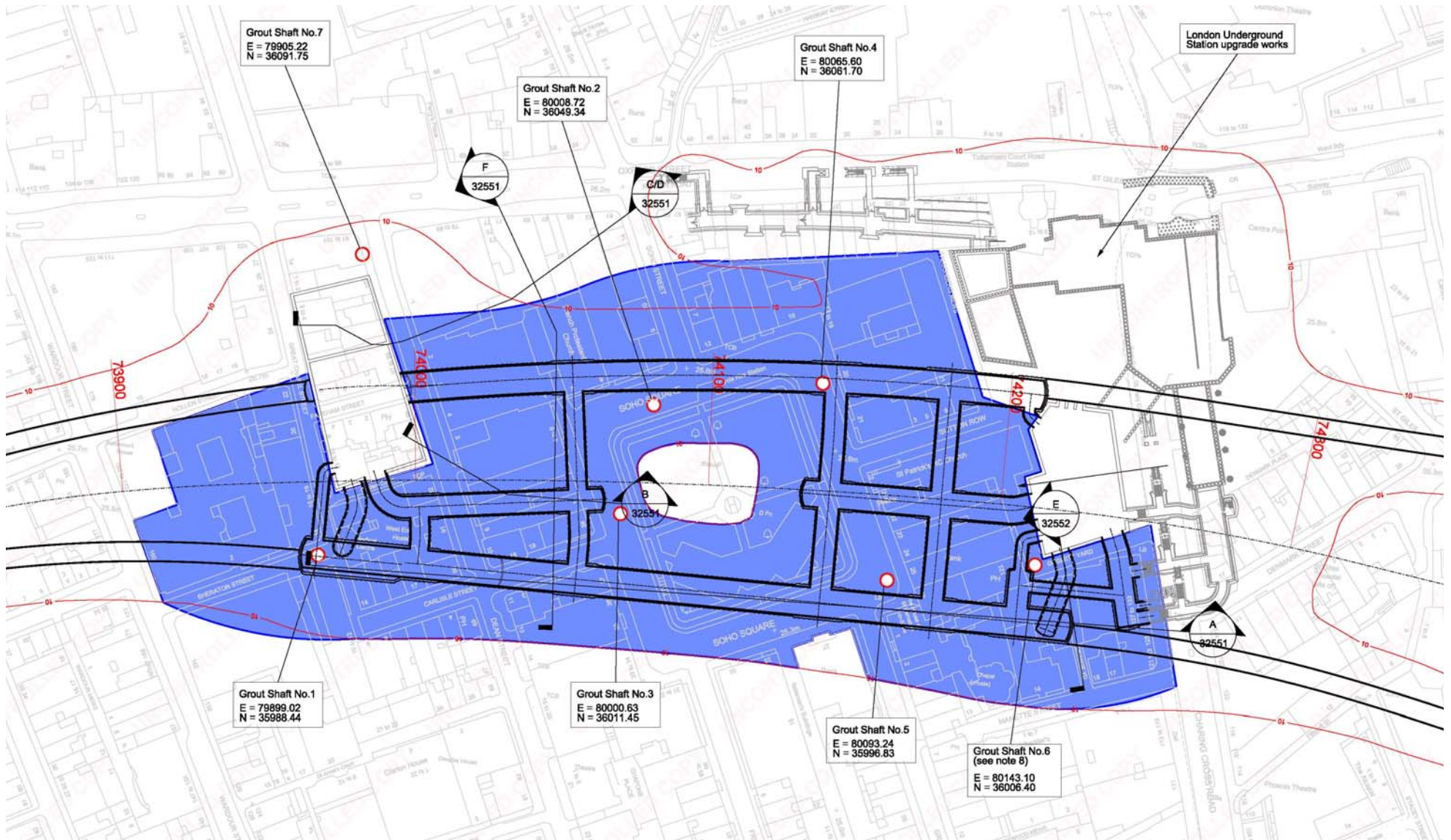
Annex 2.1 Parking of Vehicles

Please refer to C 254 Works Information Chapter 1 Worksite Information



Annex 3 Plans and Other Illustrations

Drawing Number	Title
C122-OVE-C2-DDA-CR001_Z-31552	Compensation grouting extents and Grout Shaft Locations C3100/C410





Annex 4 Health and Safety requirements:

Annex 4.1 Designers Risk Assessment and CDM requirements

Please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.2 Archaeological Contractors risk assessments and Health and Safety Plans

Please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.3 Archaeological Contractor's Safety Audits, Safety Inspections, Reporting of Accidents

Please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.4 Personal Protective Equipment (PPE)

Minimum personal PPE will consist of:

- Hi Visibility Vest (in the appropriate colour for the nature for the Worksite);
- Hard Hat;
- Gloves;
- Safety glasses;
- Laced boots with ankle support, steel insoles and toe caps (rigger boots are not permitted on Crossrail Sites).

For more details please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.5 Labelling of Hazardous Substances, Contaminated Land

Please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.6 CRL Health and Safety Management System

Please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.7 CRL Drugs and Alcohol policy

Please refer to Package Work Order C 254 Works Information Chapter 3

Annex 4.8 CRL and work on Network Rail Land

Please refer to Package Work Order C 254 Works Information Chapter 1



Annex 5 Environmental protection requirements

Please refer to Package Work Order C 254 Works Information Chapter 4



Annex 6 Programme and order of work for implementation of works and integration with other activities

Task ID	Task	ARCHAEOLOGICAL PHASE	Estimated Duration working Days (A Fieldwork)	Target Start Date C programme	Estimated Duration C Programme (Time)
1	Archaeological monitoring (GWB)	General watching brief of grouting	TBC	Q2 2011	n/a
2	Reporting		N/A	N/A	



Annex 7 Enabling and temporary works design requirements, attendances and implementation

Please refer to Package Work Order C 254 Works Information Chapter 1 and 2



Annex 8 Security requirements

Please refer to Package Work Order C 254 Works Information Chapter 3



Annex 9 Need for screening or other protective works

Please refer to Package Work Order C 254 Works Information Chapter 4



Annex 10 Procedure for notification of the Discovery of Human Remains

Please refer to Chapter 7.1 in this document and work package C254



Annex 11 Procedure for notification of the discovery of material falling under the Treasure Act 1996

Please refer to Chapter 7.1 in this document and work package C254



Annex 12 Procedure for notification of major unexpected discoveries

Please refer to Chapter 7.1 in this document and work package C254