

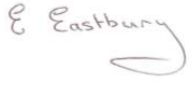




**C257 ARCHAEOLOGY CENTRAL**  
**Method Statement**  
**Archaeological Watching Brief**  
**London Wall (junction with Moorgate**  
**and Copthall Avenue) installation of**  
**TW monitoring equipment (XSZ11)**

**Document Number: C257-MLA-X-GMS-C101-50003**

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2a. Stakeholder (Principal Contractor: C295 Costain-Skanska JV) review required? YES ☒ NO ☐

(If NO, strike out sections 2a & 2b and go to section 3)

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Sign: [Signature]

Name: D. Asser

Date: 20/06/13

2b. Review by Stakeholder (if required):

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## Note for Readers

Various readers of this method statement and risk assessment are likely to be directly interested in different parts of the document. The following table is intended to help readers identify which sections cover their main interests.

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<b>Contractual</b>	1.1 2 4 7 8 10 14 18 19 20
<b>Archaeological methodology</b>	1 3 5 6 9 10 11 12 13

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*(At back of document)*

*Fig 1 Location of TM01F*

*Fig 2 Reconstruction of the line of the City Wall in the area of the TW sewer monitoring equipment works (MOLA for Crossrail 2008)*

# 1 Introduction

Archaeological investigations are to be carried out on this site by the Museum of London Archaeology (MOLA).

Crossrail has instructed MOLA to conduct a general watching brief on excavations to install monitoring equipment on the existing Thames Water (TW) sewer in London Wall, in the City of London, near the junctions with Coleman Street and Moorgate. Following changes to the scope, only one pit, TM01F remains within the vicinity of the City Wall. Although this pit is outside the scheduled areas, and also the MOLA reconstruction of the route of the wall (MOLA 2008), these predictions are uncertain. Therefore this watching brief is required in case remains of the wall do fall within the areas to be excavated, in order to identify and protect any remains that may be present of the Roman and later City Wall.

The requirements are set out in:

- C257\_PMI\_00047, General Watching Brief on utilities works on London Wall, *Doc. No. C257-XRL-W-AIE-CRG03-50032, 04.06.13*
- Email from Mike Court, (Crossrail), to Kathryn Stubbs (Assistant Director, Historic Environment, Department of Planning & Transportation, City of London), 29th May 2013.
- A Crossrail **Site-specific Written Scheme of Investigation** (SS-WSI): *Liverpool Street Station, Site-specific Written Scheme of Investigation, Doc. No. C138-MMD-T1-RST-C101-00001 Version 2, 29.04.10*

The task which this method statement covers is:

Task	Principal Contractor	Provisional Programme
<ul style="list-style-type: none"><li>• <b>General Watching Brief, Installation of Thames Water Monitoring equipment, London Wall</b> (Trench TM01F, others de-scoped).</li></ul>	C295 CSjv	24th June 2013 Duration: <i>up to 5 days</i>

See Fig 1 for location.

(Note that other Thames Water works previously planned for London Wall have been de-scoped: TM01D has been relocated c 70m south of the City Wall, and UTM03 and UTM05 removed from the scope.)

The purpose of the Watching Brief is to mitigate the impact of the development works upon archaeological remains; in the case of the City Wall, to prevent damage to the Scheduled Monument, if it survives in this location, in order for it to be *preserved in situ*. Work will stop if scheduled remains or possible remains are uncovered. In the case of other archaeological remains, by making an adequate record of them in advance of and during the specified construction ground works (part of a mitigation strategy of *preservation by record* in line with Crossrail requirements).

At the start of the work, the monitoring archaeologist will also give a toolbox-talk/briefing to the contractors, and monitor the installation of protective materials if the City Wall should be present (see 5.1).

This Method Statement has been developed in conjunction with the Principal Contractor, C295 Costain Skanska jv (CSjv), who will be responsible for ensuring that the archaeological works may be carried out as specified. It has included assessing their method statement:

- Costain Skanska, 2013, C295 – TWUL Asset Monitoring, Method Statement, Installation of Monitoring Equipment, CRL Doc. No. C295-SKC-U-GMS-CRG03-50001 v 3.0 06.06.13.

If the project design or scope/method of working are subject to changes during the works, the method statement will be updated and re-issued to the Project Archaeologist for approval, in accordance with the specified document control procedures (see 9).

## 1.1 Site Description

The worksite consists of an area of the southern carriageway of London Wall roadway that will be fenced off for this work, lying just east of its junction with Moorgate (Fig 1). The location of the proposed works is predicted to lie c 2 to 3m south of Scheduled Monument L026P, and also the area of the MOLA/Crossrail 2008 DDBA reconstruction of the City Wall (Fig 2).

The Roman and medieval City Wall is often referred to as London Wall; but since this is also a modern road name, the historic structure is referred to in this report as the City Wall, reserving 'London Wall' for the road.

## 1.2 Previous work on the site

London Wall has been the subject of a desk-based study and three previous phases of archaeological watching brief/evaluation trenches and pits for Crossrail. The results are included in the following sections, and are reported on in:

- MOLA for Crossrail, 2008 Crossrail, Utilities diversions: London Wall, Moorgate, Blomfield Street, Old Broad Street, Bishopsgate, Past observations of city wall, v2 03.11.08 [DDBA].
- MOLA for Crossrail, 2010 Archaeological Watching Brief & Evaluation, Utilities trial trenches, Liverpool Street and London Wall, November 2009, Revision 2.0, 10.03.10. [Fieldwork report].
- MOLA for Crossrail 2012a Archaeological Watching Brief, Verizon Utility Trench, Old Broad Street and London Wall (XSZ11), Revision 2.0. Museum of London Archaeology. Doc. No. C257-MLA-X-RGN-C101-50001 [Fieldwork report].
- MOLA for Crossrail, 2012b *C257 Archaeology Central, Fieldwork Report, Archaeological Watching Brief, Gas Main Trial Trenches, London Wall (XSZ11)*, Document Number: C257-MLA-X-RGN-CRG02-50131 v2, 22.08.12

## 1.3 Geological and Topographical setting

The geological and topographical setting was covered in detail in the SS-WSI – Liverpool Street Station Design Package 138, Crossrail, April 2010, Document No C138-MMD-T1-RST-C101-00001, Revision 2.0 summarised below. The natural geology lie too deep to be reached by these works.

The area around the site lies on Taplow terrace gravels (c 109m ATD), generally c 3.5 to 6m below modern ground levels, which forms the base of the archaeological sequence. The river terrace deposits are overlaid by a layer of alluvium probably associated with the River Walbrook and the formation of Moorfields Marsh. Sporadic deposits of brickearth have been known to occur in areas of the site, as recorded at MOLA site LNA99, overlying the river terrace gravels and sealed by the alluvium. The alluvium also seals stream channels of tributaries of the River Walbrook.



## 1.4 Archaeological and Historic Background

The archaeological potential of the site is summarised below, and covered in detail in the WSI SS-WSI – *Liverpool Street Station Design Package 138*, Crossrail, April 2010, Document No C138-MMD-T1-RST-C101-00001, Revision 2.0.

The following summary of the archaeological background concentrates on those elements likely to be affected by the trial pit, ie those likely to survive within c 1.5m of modern ground level in the area of the trench (the expected maximum depth).

### 1.4.1 Roman Period (AD 50 to 450)

There is limited evidence for prehistoric activity in the Liverpool Street area, however, this area is situated immediately north of the Roman city of *Londinium*. When the city boundary was formally marked by a wall in c AD 200, this ran approximately east–west either along the line of the road named London Wall, or a short distance to the north (see the reconstructed line of the wall in Fig 2). The wall divided the urban area of the city to the south, from extra-mural areas to the north, where various activities, possibly including some occupation, took place. Roman cemeteries were placed outside the city boundaries, in particular along roads leading out of the city such as Ermine Street, modern Bishopsgate. The wall itself was constructed of Kentish ragstone with tile courses around a rubble and mortar core.

#### 1.4.1.1 The City Wall

Remains of Roman and medieval wall along London Wall (road), from Moorgate to Blomfield, have been designated a Scheduled Monument (LO26P). The Roman and medieval City Wall was identified during the Crossrail EIA as being a resource of high importance. The need to avoid or minimise potential impacts on the City Wall has been taken into consideration by Crossrail.

The current proposed pit TM01F lies south (albeit within approximately 2 to 3 metres) of this Scheduled Monument (LO26P), which at this point coincides with the 2008 MOLA reconstruction of the route of the wall.

The location of pit TM01F is likely to lie over an intra-mural road (running parallel to the city wall) at this time.

The extent of survival of the buried parts of the wall is uncertain. The wall has been observed surviving up to 0.3m to 0.4m below ground level in a number of places, but in others severely truncated remains only survived at widely varying levels, depending on the extent of later damage. At points this was as much as 3.25m below ground level, possibly 3.7m in one unreliable record. Of the three trenches dug at the junction of Blomfield Street and London Wall during a Crossrail watching brief and evaluation in 2009 (XRF09)(LIV16, 25 and 26), two contained sections of the City Wall (LIV16 and 26) (MOLA 2010). The top of the wall survived to 11.78m OD (0.8m bGL). Sections of the City Wall were also exposed at the eastern side of the junction of Blomfield Street and London Wall, during an excavation at Blomfield House (BLM87) in 1988, and recorded by Compass Archaeology in a watching brief for Thames Water in 2008 (WBH06).

#### 1.4.2 Medieval Period (AD 450 to 1540)

Whilst the Moorfields Marsh would have inhibited human activity in much of the area north of the wall during the medieval period, repairs and reconstruction of the wall included the addition of new exits from the City at Moorgate (The Moor Gate).

The location of pit TM01F is likely to remain over the intra-mural road in this period.

A radar anomaly considered in the 2008 reconstruction *might* represent an extension of the medieval gatehouse to the south of the wall, as no similar southern extension is seen on post-medieval maps (Fig 2 'anomaly No 2'). However, if this does represent surviving masonry, it too is unlikely to extend to pit TM01F.

#### 1.4.3 Post-medieval (AD 1540 to 1900)

The area north of the City wall, around Moorgate, gradually filled in with buildings between the 16th and 18th centuries, with the exception of the open Moor Field lying between Moorgate (road) and Blomfield Street, which survived as open ground until drainage schemes were carried out, which allowed this area of wasteland to be utilised.

The Copperplate map of c 1553, shows the area of the pits within a wide intra-mural road, lined by houses to the south.

Parts of the City Wall, notably the gates at Moorgate and Bishopsgate, were rebuilt or refaced in brick during the 17th-century, including Moorgate. Historic maps suggest that the enlarged gatehouse lay to the north of the wall (reflected by the scheduled area), and did not extend south towards pit TMF01F.

From the mid 18th-century onwards, large portions of the wall, and eventually the gates, were demolished to ground level.

### 1.5 Archaeological Potential within 1.5m of ground level

Archaeological potential within the depth of the up to 1.5m-deep trial pit, located in the roadway of London Wall, is extremely limited.

Truncation from existing services (not least the TW sewer) and other modern disturbance is extensive, however, it is clear from past observations and fieldwork that, despite later damage, sections of the Scheduled City Wall (both known and unknown) survive beneath London Wall. **The wall is currently predicted to run c 2 to 3m to the north of (outside) the current works.**

Any such remains would be of high importance, although the majority would be present only at a greater depth, there is potential for structural remains of the City Wall to be present from 0.3m below ground level (bGL).

In addition, the pit may also affect the upper parts of low-grade late post-medieval deposits, mostly road surfaces, or dump layers or levelling deposits associated with late post-medieval construction. Such deposits are likely to be of low importance.

## **2 Interfaces and Communication Plan**

### **2.1 Interface with Project Archaeologist**

The Method Statement has been developed jointly with the Principal Contractor and then submitted to the Project Archaeologist for approval. Any comments have been incorporated. Regular progress reports will be submitted to the Project Archaeologist and will be augmented by progress meetings and site visits when required, in order to optimise communications and feedback.

### **2.2 Interface with C257 Contract Administrator**

MOLA shall submit costings and timesheet reports in accordance with the C257 Contract to the Contract Administrator.

### **2.3 Interface with Principal Contractor**

MOLA has liaised with the Principal Contractor to prepare the Method Statement. The archaeological investigations will be undertaken under the auspices and supervision of the Principal Contractor. This interface extends to joint Health and Safety planning under CDM requirements. MOLA will provide the Principal Contractor with all necessary information to support site start-up (eg names of staff for inductions), health and safety planning; and (if required) to support the Principal Contractors' Permits to Dig/Penetrates. The majority of this information will be contained in this Method Statement. MOLA will liaise with the Principal Contractors regarding access, order of works, programme and commencement date. The Principal Contractors shall give MOLA 4 weeks notice of start date(s) for each work area or task.

### **2.4 Interface with Crossrail Archaeologist**

MOLA shall liaise with Crossrail Archaeologist to implement the correct archaeological design specification, described in the SS-WSI (Section 1 above).

### **2.5 Interface with External Consultees**

The Crossrail Archaeologist shall liaise with the City of London and English Heritage to inform them of the archaeological works. In particular, the Crossrail Project Archaeologist shall be informed if any part of the City Wall is revealed. He shall contact English Heritage to offer them the opportunity to inspect the remains prior to their reinstatement (unless traffic management consents require the remains to be immediately reinstated).

In particular:

English Heritage and CoL will be informed by the Employer's Archaeologist [The Crossrail Archaeologist] two weeks prior to the start of works to allow a site visit to be organised if the monument is exposed (email, Mike court to Kathryn Stubbs, 29.05.13).

### 3 Scope of Works

#### 3.1 Planned Fieldwork Events

This Method Statement sets out the methodology and health and safety requirements for archaeological work on the site in advance of construction in the Liverpool Street area. This currently comprises the watching brief described in section 1.

C295 Costain Skanska joint venture together with their sub-contractors, will be excavating two pits (expected to be approx. 1.5m x 2m x up to 1.5m deep) on London Wall to install monitoring equipment.

#### 3.2 Confirmation of Methods and Standards

The archaeological fieldwork and reporting will be conducted in accordance with the following guidance and standards:

- Corporation of London Department of Planning and Transportation, 2004 Planning Advice Note 3: Archaeology in the City of London, Archaeology Guidance
- Crossrail Environmental Minimum Requirements (Crossrail 2008)
- Crossrail Archaeology Generic Written Scheme of Investigation (draft July 2009)
- Crossrail Archaeology Specification for Evaluation & Mitigation (including Watching Brief) (CR-PN-LWS-EN-SP-00001)
- Crossrail Code of Construction Practice
- Crossrail SS-WSI – Liverpool Street Station, Site-specific Written Scheme of Investigation, Crossrail April 2010, Doc. No. C138-MMD-T1-RST-C101-00001 Version 2
- English Heritage, July 2009, Standards for Archaeological Work, London Region, External Consultation Draft
- Institute for Archaeologists (IFA) Standards and guidance for watching briefs and field evaluation (IFA 2001a and 2001b)
- Museum of London Archaeological Site Manual (1994)
- Museum of London General Standards for the preparation of archaeological archives deposited with the Museum of London (1998)
- United Kingdom Institute for Conservation's Conservation Guidelines No. 2

#### 3.3 Aims and Objectives

##### 3.3.1 Fieldwork Objectives

**The prime purpose of the watching brief is to prevent damage to the Scheduled Monument, if it survives in this location, in order for it to be preserved *in situ*.**

This includes giving a toolbox-talk/briefing to the contractors at the start of the work, and supervising the installation of protection measures (see 5.1) should the wall be identified during the works. Secondly, archaeological recording is to provide information on the presence, absence, and survival quality of the City Wall (within the limited area and depth of the trench) or other archaeological deposits.

### 3.3.2 Research Aims

The original aims and objectives were listed in the WSI (Crossrail 2010) and stated that Should sections of the London Wall be uncovered the following research themes may be relevant:

- Understanding the cultural and symbolic roles played by London's defences through the ages as reflections of power and political security or imposition and dominance.

### 3.4 Event Codes

The site code is **XSZ11**.

## **4 Site Management Plan**

### **4.1 Tools and Equipment**

Tools and equipment appropriate for the archaeological works will be ordered by the Supervising Archaeologist and delivered to site by the MOLA Equipment Officer from the MOLA central store. See 20.8.2 for details.

### **4.2 Training and Certification**

MOLA provides Safety Training for its staff as follows:

- Induction Training for all staff (undertaken on joining MOLA, and as appropriate on individual projects).
- General H&S Training for supervisory staff (an H&S awareness course targeted at Field and Support Staff).
- Specialist H&S Training (designed to cover specialist areas and to update professional knowledge; as appropriate to deployment)

All MOLA staff on site will be competent to carry out their archaeological work. On site all staff will be supervised by a competent person.

For certain specific aspects of MOLA work only those members of staff with the relevant training and certification will be allowed to undertake them. These include Cable and Pipe/Underground Service Location, Chainsaws, Confined Spaces (see 20.7.3). However, these are unlikely to be required on this site.

All MOLA staff have passed a CITB Health and Safety Test to operative level and will carry the CSCS card on site at all times (CSCS, Construction Related Organisation CRO White Card for Archaeological Technician, Code 5363; other cards are available for site visitors etc).

All staff will have their MOLA ID cards with them (see 20.6.1).

### **4.3 Site Monitoring**

The site will be monitored by the MOLA Project Manager (Elaine Eastbury, BSc) or Assistant Project Manager (Nicholas Elsdon, BSc) via site visits, as and when required, in order to provide advice and support to the MOLA Supervisor. The MOLA H & S Compliance Manager, Ian Grainger, and if required their Advisor (AgilityUK, formerly Hascom) will also regularly monitor the site, see 14.4.

### **4.4 Progress Reporting**

MOLA has agreed a programme of weekly written progress reports and progress meetings (If appropriate) with the Project Archaeologist. MOLA shall provide information describing progress on-site to date, the processing of samples and artefacts and feedback from initial assessment, and a BMOS report (see 14.6).

#### 4.5 Resource Plan

- The watching brief will be conducted, by a MOLA Supervisor (Grade 4 or 5) with support from MOLA field team (Archaeologist, Grade 6), Geomatics, Geoarchaeology, and Photographic team members, and other specialists (Grade 8), *as necessary*.

Staff will be drawn from the pool of CVs submitted to Crossrail for approval.

The named Supervisor will be confirmed to Crossrail and the Principal Contractor in advance, and added to subsequent versions of this method statement, once the firm start date has been notified to MOLA. Other staff to be assigned when required

*Provisionally:*

- Robert Hartle, BA (Hons), MA, Senior Archaeologist, overall responsibility for site supervision and conduct of the fieldwork.

Direct Line (office): 020 7410 2238

Mobile: 07730 646060

Other staff and specialists are to be determined when required.

All archaeological staff are direct MOLA employees, ordinarily full time. The working hours are set out in 4.7 below.

#### 4.6 Provisional Programme

The predicted overall start dates and durations for the work are included in section 1.

#### 4.7 Working Hours

Work on site shall only take place within the core Crossrail working hours, which are between 0800 to 1800 on weekdays and 0800 to 1300 on Saturdays as specified in the Environment Requirements (Section 4 of Works Information Vol 2). Operations anticipated to cause disturbance are limited to these hours (or as specified within a Section 61 consent obtained by the Principal Contractor), in order to minimise disruption to local residents and the general environment.

Any extensions to these hours will require further dispensations to be approved by CoL.

MOLA will provide a site attendance when required during these specified periods, so that all the relevant Principal Contractor's ground works defined in this method statement are monitored and recorded.

## 5 Fieldwork Methodology

*Prior to commencement of the works, the monitoring archaeologist will give a toolbox-talk/briefing to the contractors, advising them of the types of remains that may be expected, in particular the forms of remains of the City Wall (including mortar and ragstone infill, dressed stone facing, culverts through the wall, and later brick reconstruction or repairs).*

### 5.1 General Watching Brief (GWB) Methodology

#### 5.1.1 Generic General Watching Brief (GWB) Methodology

A general watching brief consists of a basic monitoring presence to observe the works carried out either by the Principal Contractor or their sub-contractor [*normally*] without constraint on their working methods (Crossrail 2009 Archaeology Specification for Evaluation & Mitigation (including Watching Brief) CR-PN-LWS-EN-SP-0001, version 3). This includes making a basic record of notes, measurements, drawings and photographs consistent with an observation role: eg depth, character, date and survival/truncation of deposit sequence, height of natural geology. Monitoring and recording during a general watching brief will generally be made by observation from ground level. During a general watching brief MOLA staff will only enter the trench or area of excavation by agreement with the Principal Contractor or their sub-contractor (providing that there is proper access and that it is safe to do).

The work will be conducted with hand tools, such as trowels, shovels, mattocks, hoes, and dumpy level.

#### 5.1.2 Site-specific methodology

Although outside the scheduled area (ie English Heritage's mapping of the Scheduled Monument) and the more recent predicted line of the alignment of the City Wall (MOLA 2008), Pit TMF01F lies within 2 to 3m of it.

Suitable care is to be taken throughout the process of excavation and other works to avoid damage to the City Wall (if present). **A continuous archaeological watching brief will be in place during excavation works.** The contractors will remove the modern road surface and the concrete sub-base using machines. Excavation beneath the sub-base and the removal of modern material will be conducted carefully by the contractor with hand tools under close archaeological supervision and inspection, in this case by an experienced Senior Archaeologist.

**Should the Scheduled Monument be encountered, the Principal Contractor will stop works immediately. Under no circumstances shall the works impact the Scheduled Monument.** If any section of the Scheduled Monument is exposed it shall be:

- **Avoided** by the works;
- **Recorded and surveyed** in full by the attending Archaeological Contractor (MOLA);
- **Protected** by a **geotextile membrane and layer of sand** (see specification below) during reinstatement to the satisfaction of the Archaeological Contractor, Employer's Archaeologist and English Heritage.

The specification for protective materials for preservation *in situ* of the City Wall (Scheduled Monument) were supplied by the English Heritage Inspector of Ancient Monuments (Jane Sidell) to MOLA in advance of the evaluation fieldwork in 2009. The same specification shall be applied as follows:



- Geotextile: water-porous geotextile
- Sand: effectively iron free, pale coloured (in the 7.5 YR, 10YR and 2.5 YR Munsell chart colour bracket), non-calcareous, relatively clay free, with particle size of no less than 98% below 63 microns and no more than 2% above 2mm, Loss on ignition value to be no more than 2%, e.g. 'Kingsley No 1'.

Should the City wall be encountered, both the City of London Assistant Director, Historic Environment, Kathryn Stubbs, and the English Heritage Inspector of Ancient Monument, Jane Sidell, will be informed arrange visits to inspect the remains.

## 5.2 Recording Methods

The archaeological remains will be recorded to best practice standards, in order to achieve archaeological objectives. The site recording will include as a minimum:

- The written record of individual context descriptions on appropriate pro-forma sheets.
- The drawn record: including, plans and section drawings of appropriate features, structures and individual contexts (1:10 1:20 or 1:50). 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.
- A stratigraphic matrix of the sequence of deposits and structures encountered in each trench will be produced.
- The photographic record: photographs taken with a digital camera of resolution of 12 megapixel or greater, providing similar resolution to a conventional 35mm SLR. The photographic record will include photographs of archaeological features, appropriate groups of features, structures, and quaternary deposits. Each photograph will be recorded on site using a proforma photographic record sheet, showing image number, area/test pit, context number(s), subject/description, direction of view, and date. In addition, appropriate record photographs will be undertaken to illustrate work in progress.
- Levels on plans, sections and other fieldwork records shall be related to OS datum.
- Other appropriate drawn and written records will be produced (for environmental sampling etc).

## 5.3 Survey and setting out method

MOLA will obtain from either the Principal Contractor or Crossrail's survey department the locations and values of the project datums in the area of the site.

MOLA surveyors will normally survey to LSG grid MOLA's local baselines, or the features, as appropriate to the remains encountered. If Crossrail survey control is not available, then they will reference locations to OSGB36 co-ordinates, using GPS/GNSS, and these will then be converted to LSG. See also section 12.

*The following will only be appropriate if remains of the City Wall are NOT found:* in some circumstances, such as watching briefs, it may be appropriate and more efficient for the Principal Contractor's surveyors (if they are available) to survey any MOLA temporary baselines. This will be determined by liaison between MOLA and the Principal Contractor.

MOLA will also obtain from the Principal Contractor or Project Archaeologist CAD plans to London Survey Grid of the area as-dug.

## **6 Environmental archaeology and Archaeological Science Strategy**

It is not predicted that any environmental or archaeological science methods will be required for this watching brief.

If necessary, the strategy for sampling such deposits and structures (which can include soils, timbers, animal bone and human burials) will be developed by MOLA in accordance with English Heritage and IFA guidelines. Advice will be sought from appropriate MOLA specialists and if additionally required from English Heritage. Subsequent on-site work and assessment of the processed samples and remains will be undertaken by MOLA Specialists.

## **7 Artefact Recovery and Conservation**

Sampling strategies are developed on a site specific basis to meet the evaluation objectives stated in the Crossrail Site-specific WSI; and the following professional standards, in consultation with appropriate specialists;

- MOL Archaeological Finds Procedure Manual (2006)
- Relevant English Heritage Centre for Archaeology Guidelines eg on Environmental Archaeology (English Heritage 2011)
- Guidelines of the Society of Museum Archaeologists for the Selection, Retention and Dispersal of Archaeological Collections (SMA 1993).
- IFA Guidelines to the standards for recording human remains (2004)
- Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics produced by the Medieval Pottery Research Group Occasional Paper 2, (Slowikowski, A, Nenck, B. and Pearce, J 2001)

In general all material from stratified archaeological deposits is retained unless it is clearly residual or part of a large but routine assemblage, in which case samples of both typical and diagnostic items are retained.

Due allowance will be made for occasional specialist attendances which may be needed on and off-site to complete the investigation to the appropriate specified standard. These would only be called upon on a case-by-case basis, if significant structures or strata are revealed. Such attendances may include artefact conservation, photography, surveying, environmental sampling, finds assessment, geoarchaeology and scientific dating. MOLA has a full range of in-house specialists and can therefore deploy such resources at short notice, if needed, e.g. to advise on sampling strategies.

All finds and samples will be treated in a proper manner and to Museum of London standards. They will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in the United Kingdom Institute for Conservation's Conservation Guidelines No. 2 and the Museum of London's Standards for the Preparation of Finds to be permanently retained by the Museum of London. Metal objects will be x-rayed and appropriate objects then selected for conservation.

## 7.1 Retention and Disposal

The finds retrieval policies of the Museum of London will be adopted. An adequate and representative sample of finds and deposits as advised by appropriate MOLA specialists who will be available to attend site as required (see 7.1).

## 8 Treasure

All finds falling within the definitions of treasure (Treasure Act 1996) 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.

To protect the finds from theft, MOLA 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, MOLA shall ensure, on liaison with the Project Archaeologist that adequate site security is provided by the Principal Contractor.

## 9 Deliverables and Submission Programme

MOLA shall provide the following reports in accordance with the C257 Contract and the Site Specific Written Scheme of Investigation (C136-SWN-C2-JLT-M123-00001) and Addendum (C136-SWN-T1-XAP-M123\_WS098-00001) to the Project Archaeologist, *or as otherwise instructed by the Project Archaeologist*:

- Organisation of site monitoring visits, as and when requested by the Project Archaeologist.
- A weekly illustrated progress report to the Project Archaeologist containing the information required at part 5.10 of the C257 Contract.
- A short illustrated interim statement
- A survey report within 2 weeks of the completion of fieldwork (only where MOLA have conducted the surveying).
- A Fieldwork Report will be prepared within 6 weeks if required. All levels cited in these reports should be Above Tunnel Datum (ATD = OD +100m). All Co-ordinates cited in these reports should be based on the London Survey Grid, apart from archive copies which will use OS National Grid.

- All levels cited in these reports should be Above Tunnel Datum (TD = OD +100m). All Co-ordinates cited in these reports should be based on the Crossrail survey grid, apart from archive copies which will use OS National Grid.
- MOLA will produce monthly progress photographs of archaeological work on the sites in this method statement to contribute to the 30 per month required across the whole of the C257 contract (see 13.3).
- MOLA will complete an SMR (OASIS) Summary Sheet for the works (ie one per fieldwork event). This Summary Sheet will be included in the Fieldwork Report if required.
- A Summary Report of no more than 500 words for the works shall be prepared by MOLA for submission to the Project Archaeologist for subsequent publication within the London Archaeologist Annual Fieldwork Round-up.

## **10 Document Control and Record Keeping**

MOLA will access the Crossrail eB control system for transmitting reports and other deliverables. The primary report deliverables (as per 9) will be submitted to the Project Archaeologist in draft form (Version 1.0). Any tracked changes or comments added by the Project Archaeologist will then be incorporated and future dated versions (2.0 etc) will be returned via eB accompanied with the appropriate Checklist with Contractor's responses.

## **11 Archiving and Dissemination Method**

The required methodology for off-site work including specialist method statements, assessment, analysis, publication and archive is set out in the SS-WSI and is not repeated here.

The site-specific publication and archive requirements will be agreed in conjunction with the Project Archaeologist in the light of the overall approach being developed for the Crossrail project (eg publication format and the extent to which individual sites may be grouped spatially or thematically; and degree to which the archive will be systematised and deposited as a single whole).

## **12 IT Capability – Digital Survey Recording, Data Capture and Curation**

The required methodology for IT (including site survey) will be carried out in accordance with the C257 Contract and project standard survey requirements.

- For the GWB on the utilities corridor, it is assumed that the Principal Contractor will survey the as-dug location of the corridor, and that the plans will be passed to MOLA.
- Targeted Watching Briefs: the Principal Contractor's surveys, *if available*, may be requested to assist with the location of temporary base lines and the plotting of significant archaeological features where appropriate.
- Otherwise, in the excavation, and if required the targeted watching brief, MOLA Geomatics staff will survey MOLA's local baselines to Crossrail London Survey Grid co-ordinates, using Crossrail survey control (where available).
- In the event of MOLA Geomatics staff surveying without Crossrail survey control, then they will reference locations to OSGB36 co-ordinates, through using GPS/GNSS.
- It is expected that the survey methodology employed will vary depending on the individual circumstances of each site, and the availability or suitability of using London Survey Grid control and co-ordinates.
- Upon completion of the fieldwork a Site Survey Report will be compiled for any surveying conducted by MOLA.

## **13 Additional Details**

### **13.1 Standards and Guidance**

See Section 3.2.

### **13.2 Unexpected and Nationally-important remains**

In cases where unexpected discoveries cannot be preserved in situ, the response plan would revert to the normal Crossrail mitigation strategy of further archaeological investigation (preservation by record). The aim would be a rapid and commensurate response, targeted to just those remains unavoidably affected by the works. Recording and sampling methods would also be proportionate to the significance of the remains. Additional archaeological resources would be deployed to achieve this, in order to minimise any delay to the Principal Contractor's works. With flexibility and good communication it is often possible for the development works to continue in other areas while localised discoveries are recorded.

### **13.3 Progress Photographs**

In addition to the archaeological photography specified in the SS-WSI and this Method Statement MOLA will submit a monthly professional photographic record of the progress of the archaeological scope of works. The photographs from the sites in this method statement will form part of the 30 required each month across the whole of the C257 contract.

### **13.4 Management of Consents**

MOLA will liaise with the Employer and Principal Contractor regarding supply of any necessary information in support of required consents, eg road closures, Permit to Work, Permit to Dig.

## **14 Health and Safety**

### **14.1 CDM Responsibilities and Reporting**

- MOLA will be supporting and reporting to the Principal Contractor and to the Crossrail Project Archaeologist and CDM Co-ordinator:
- MOLA will be implementing archaeological designs in the SS-WSI prepared by the appropriate FDC consultant or the Project Archaeologist, therefore not acting as CDM Designer under the Construction (Design and Management) Regulations 2007.

MOLA will provide:

- A current health and safety policy, including defined operational procedures and managerial responsibilities, risk assessment/control, and measures to ensure that a safe method of working is implemented by the archaeological team on site, including appropriate advice and support from office-based managers.
- Adequate safety information in the MOLA site accommodation including the WSI, current Health and Safety Policy, Health and Safety at Law Poster, Data Protection Compliant Accident Book, and copies of Public and Employers Liability Insurance. The Supervisory Archaeologist is responsible for ensuring that this information is made available.
- Compliance with current legislation and HSE guidance; including the Construction Design and Management Regulations (CDM) 2007 as a Designer; and the Principal Contractor's Health and Safety Policy, safety inductions and fire and emergency procedures.
- Field staff qualified to operative level (or higher) of the CITB Health and Safety test and therefore eligible to carry a Construction Related Organisation (CRO) White Card for Archaeological Technician (Code 5363).
- Services of a Contract Manager and Supervisory Archaeologist to manage site investigations, including liaison with the Principal Contractor's Health and Safety Co-ordinator and Principal Contractor, attendance at site meetings etc. The Supervisory Archaeologist will act as principal liaison with the Principal Contractor.
- Services of the MOLA H&S Compliance Manager, and a professional health and safety consultant to attend site when required; reporting to the Supervisory Archaeologist, with any concerns or recommendations copied to the Principal Contractor's site manager
- A safety monitoring/reporting procedure. This should include accident reporting by the Supervisory Archaeologist to non RIDDOR and RIDDOR standard and any necessary liaison and follow-up of agreed safety actions with the Principal Contractor's site manager
- All necessary staff supervision, training and personal protective equipment (PPE) including tool box talks and safety inductions for new staff.
- Review and compliance with the Principal Contractor's Construction Phase Plan under the CDM Regulations 2007.
- Trained First Aiders, 'Where to get First Aid' poster and a First Aid kit (to be located in the MOLA site accommodation). The Principal Contractor will also have first aid facilities on site.

The Principal Contractor will provide:

- Overall control and supervision of the site and a safe working environment. The archaeological organisation will be unable to complete the specified works in any area where this is not provided.
- Technical services and attendances to the archaeologists as required. These services may include providing, site accommodation, plant for the excavation of trenches and other equipment such as handrails, shoring and ladders. These requirements are listed in detail in separate documents.
- Construction Phase Plan (CPP).

The CDM Co-ordinator will provide:

- Overall co-ordination of health and safety planning and management.
- A communications structure; including contact details for key personnel, meetings, reporting, etc.
- Supply of material information: eg services and contamination reports; any relevant requirements regarding rights of way, noise, hours of operation, etc.

## **14.2 Rail Sites**

This is not a designated rail site.

## **14.3 Highway Sites**

The majority of the works in Liverpool Street are on a highway, but in a closed-off worksite with the lane suspended. MOLA will comply with any Principal Contractors regulations.

## **14.4 Health and Safety Reporting**

Adherence to health and safety procedures will be monitored by the MOLA Health and Safety Compliance Manager, Contract Manager, and Site Supervisor. The H&S Compliance Manager will attend site for regular monitoring visits and, on each occasion, will supply a report on the archaeological work, containing any necessary health and safety recommendations. This will be forwarded to the Principal Contractor's site manager. Where appropriate to the scale of work, regular on-site progress meetings will be held between MOLA, the Project Archaeologist and the Principal Contractor at which any safety issues may be discussed, agreed and actioned.

## **14.5 Liaison with Principal Contractor**

The MOLA supervisory archaeologist will act as the principal point of contact with the Principal Contractor's site manager throughout the periods of site investigation. Contact details will be exchanged. The supervisory archaeologist will be supported and advised by the MOLA project management team as needed.

## **14.6 Behavioural Safety BMOS**

Mobile phones, personal CD players, i-pods and similar will not be used by MOLA staff in archaeological trenches or areas of work. Smoking and naked flames are not permitted in

the trenches or areas of work. Alcohol is not permitted on site. This aspect will be monitored by the MOLA Supervisor and H and S Compliance Manager and reported on in the progress report (see 4.3).



## 15 Emergency Response

### 15.1 Emergency Preparedness & Response Plan

MOLA staff will comply with the Principal Contractor's Emergency Plan.

An Emergency Preparedness/Continuity Plan is has been prepared by MOLA and submitted to Crossrail for approval.

A General Emergency Preparedness Plan (EPP) was prepared within the MOLA Health and Safety Plan for C257 – Document Number: C257-MLA-X-XWI-CRG02-50003 v2. This should be referred to for generic emergency and accident issues.

Site-specific issues are as follows:

Employers Incident Response Contact	Crossrail Incident Response Desk – 020 8197 5000
Principal Contractor Incident Response Contact	<ul style="list-style-type: none"> <li>Tony Iveson, CSjv Site Supervisor Mobile: 07 964 108 962</li> </ul>
MOLA Incident Response Contact	<ul style="list-style-type: none"> <li>Elaine Eastbury, Project Manager <a href="mailto:eeastbury@museumoflondon.org.uk">eeastbury@museumoflondon.org.uk</a> Direct Line: 020 7410 2237 Mobile: 07 730 646 063</li> <li>or</li> <li>Nicholas Elsdon, Assistant Project Manager <a href="mailto:nelsden@museumoflondon.org.uk">nelsden@museumoflondon.org.uk</a> Direct Line: 020 7410 2282 Mobile: 07 872 127 296</li> </ul>
Local A&E location	<p><i>Full A &amp; E at:</i></p> <p>The Royal London Hospital Whitechapel Road London E1 1BB Telephone 0207 377 7781 Tube: Whitechapel (Hammersmith and City and District Lines)</p> <p><i>Minor A&amp; E at:</i></p> <p>St Bartholomew's West Smithfield Street, EC1 Telephone 020 7377 7000 Tube: St Paul's (Central Line)</p>

### 15.2 Training

MOLA provides Safety Training for its staff as in Section 4.2.

The MOLA Senior Archaeologist will attend all emergency training/inductions required by the Principal Contractor.

### **15.3 Emergency & Accident Equipment**

- MOLA Archaeologists when working singly on the watching brief tasks will carry a single person First Aid Kit and mobile phone.
- During larger tasks a first aid box will be located in the archaeological office on site.
- It expected that the Principal Contractor will also provide basic first aid facilities on site.

### **15.4 Monitoring & Testing**

MOLA staff will comply with Crossrail requirements.

### **15.5 Emergency & Accident Incident Reporting**

All accidents and emergencies must be reported to the Principal Contractor, who will call the emergency services, if required (see 15.1).

They will also be reported to the Incident Report Desk, call: 020 3197 5000. In critical situations, MOLA staff will call for an ambulance immediately, and then inform the site manager.

All accidents and emergencies must be reported to the following personnel at Crossrail and MOLA:

- Jay Carver, Project Archaeologist, Crossrail Central, Crossrail Ltd, |25 Canada Square | London E14 5LQ  
DD 0203 229 9258, Int 2258  
Mobile 07870 191 705
- Projectwide CDM Co-ordinator, Crossrail Central, Crossrail Ltd, 25 Canada Square, London E14 5LQ  
Mobile 07718 861941
- George Dennis, Senior Project Manager, Museum of London Archaeology, Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED  
DD 0207 410 2200, Int 2256
- Ian Grainger, H&S Compliance Manager, Museum of London Archaeology, Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED  
DD 0207 410 2200, Int 2255

## 16 Environmental Management

The archaeological works will be carried out whilst the Principal Contractor is in possession of the site. MOLA will therefore request a copy of the Principal Contractor's Environmental Management Plan prior to commencement and will supply any necessary inputs with regard to MOLA works. MOLA will comply with the Principal Contractor's Environmental Management System as documented in their Environmental Management Plan, and contribute to their EMS reporting if required.

If any remedial action is needed, eg controls for dust, water, noise or controlled waste, this will be agreed with and undertaken by the Principal Contractor as part of the required attendances (see 14 and Appendix: 20.8.1). In addition an updated MOLA corporate Environmental Management Plan is currently being prepared for submission to Crossrail.

The nominated environmental person is: Alison Telfer, [atelfer@museumoflondon.org.uk](mailto:atelfer@museumoflondon.org.uk), 020 7410 2276.

### 16.1 Contamination

MOLA will comply with the Principal Contractor's requirements in relation to any contamination issues. MOLA staff will not disturb or damage asbestos, or undertake asbestos removal from a building, structure, or buried material. If asbestos is found the Principal Contractor will be responsible for having it dealt with by a licenced contractor.

### 16.2 Water Disposal

The Principal Contractor is responsible for disposal of any ground water pumped from the trenches or other excavations, in accordance with their environmental management plan, with which MOLA will comply.

### 16.3 Site Waste Management Plan

MOLA staff will adhere to the Principal Contractor's site waste management plan.

It is anticipated that very little waste will be removed from the site from the archaeological works, but any produced will be disposed of by the Principal Contractor in accordance with their Waste Management Plan.

### 16.4 Vehicles/Motorised Equipment

MOLA staff will liaise with the Principal Contractor to provide safe access and parking for MOLA vehicles if required to attend site. The vehicles are compliant with Crossrail requirements.

NAME	VEHICLE REG NO
M Cox	KC54 XTZ & DY59 YWB
A Chopping	KC54 XTZ & DY59 YWB
G Spurr	KC54 XTZ & DY59 YWB

W Reid	EA55 NBJ
S Jones	KC54 XTZ & DY59 YWB
C Drew	KC54 XTZ & DY59 YWB
M Burch	KC54 XTZ & DY59 YWB
V Yendell	KC54 XTZ & DY59 YWB
<b>CONTACT (All)</b>	<b>020 7410 2200</b>

## 16.5 Other Requirements

MOLA staff will always be courteous with any members of the public they have dealings with.

## 17 Quality Assurance Plan

An updated Quality Assurance Plan has been prepared for submission to Crossrail in accordance with the format specified at part 5.4 of the C257 contract. Records will be kept and supplied to Crossrail in accordance with procedures set out in Crossrail Specification CR-PN-LWS-EN-SP-00001, as amplified by the SS-WSI. The MOLA responsible procurement representative is Dawn Jackson, who is a member of the Senior Management Group.

## 18 Community Relations

### 18.1 General

MOLA will co-operate with the Principal Archaeologist and Principal Contractor regarding any notified community relations issues in relation to the Construction Community Relations Strategy Framework as defined in the Works Information.

### 18.2 Confidentiality

MOLA will in the first instance refer any media enquires or community relation issues to the Crossrail Helpdesk and the Project Archaeologist.

All MOLA staff working on Crossrail projects will be instructed before commencement to adhere to the confidentiality clause (Conditions of Contract 19.2, and Works Information vol. 2 – 9.7) that they **must not disclose information about any Crossrail project to the public, media or other parties (including social networking sites); either before, during or after working on a Crossrail project.** This instruction will be repeated at toolbox talks on a regular basis on site.

## **19 Responsible Procurement**

An updated Responsible Procurement document was submitted to Alison Jackson, Crossrail on 15th January 2013.

## **20 Health and Safety Method Statement**

### **20.1 Introduction and Purpose**

#### **20.1.1 Project Background**

Archaeological investigations are to be carried out on this site by Museum of London Archaeology (MOLA). The requirements are set out in the WSI and WSI Addendum (see section 1).

### **20.2 Scope of Document**

This Method Statement sets out the specific MOLA safe methods of working to be applied to the tasks listed in section 1 of the method statement, above.

This method statement has been developed in conjunction with the Principal Contractor, who will be responsible for ensuring that the archaeological works may be carried out as specified.

### **20.3 Responsible Persons and Site Management**

#### **20.3.1 Site Management**

The MOLA Senior Archaeologist/Site Supervisor will ensure that a copy of the MOLA Welfare, Health & Safety Method Statement is made available to the Principal Contractor at the site. Where further changes or additions to the WH&S Method Statement are required and agreed these should be appended to the site master copy by the MOLA Senior Archaeologist/Site Supervisor.

All changes to the WH&S Method Statement will be signed off by the Project Archaeologist, Crossrail H & S Advisor, MOLA Senior Contract Manager and MOLA H&S Compliance Manager.

### **20.4 Scope of Works**

#### **20.4.1 Proposed archaeological works**

The scope of archaeological works is set out in section 1 of the method statement, above.

### **20.5 Methodology, Programme and Sequence**

The overall programme is set out in section in the table in section 1 of the method statement, above, and a detailed programme in section 4.6.

The first task to start is currently expected to be:

- UTM03 & TM01F: 24th June 2013 (TBC).

### **20.6 Health and Safety Control Measures**

#### **20.6.1 Site Access/Vehicle Movements**

On arrival at the site, MOLA staff will sign in, establish contact with the nominated Site Manager (or equivalent) attend any inductions etc. in accordance with the required access procedure for the site (to be notified to MOLA in advance by the Principal Contractor). All MOLA staff working on site will carry identification and CSCS cards.

Safe access routes from the site gate to work Areas and any offices and/or facilities will be erected and maintained at all times throughout the course of the archaeological monitoring of the works by the Principal Contractor.

#### 20.6.2 Services

The location and making safe of live services before or during archaeological works is the responsibility of the relevant Principal Contractor in control of the site. MOLA staff will exercise care and due diligence and report any discovery of unexpected services or other ground hazards promptly to the Principal Contractor, Project Archaeologist and MOLA H & S Officer.

MOLA will comply with any **Permit to Work and Permit to Dig** procedure operated by the Principal Contractor.

### 20.7 Safety of Excavations

#### 20.7.1 Entering the trenches during Excavation and watching briefs

- MOLA staff will not enter any excavation until the Principal Contractor has confirmed that it is safe to do so, and that there is safe access/ingress to the archaeological investigation areas. The Principal Contractor will also ensure that the excavations are maintained in safe condition for the duration of the archaeological investigation. The Principal Contractor will supply attendances as required in 20.8.2.
- MOLA Staff will not enter a trench if it is declared unsafe by the Principal Contractor.

#### 20.7.2 Shoring

- Where required, a trench will be shored in a suitable manner by the Principal Contractor and safe access arranged.

#### 20.7.3 Confined Spaces

- The pit will **not** be a confined space.

#### 20.7.4 Machine Excavation

- Machining will be monitored and supervised by MOLA Senior Archaeologist/ Site Supervisor, but will at all times be under the control of the Principal Contractor.

#### 20.7.5 Hand Excavation during General Watching Briefs

- 20.7.6 Only limited and localised hand excavation is likely in a General Watching Brief. If required, it will be limited to selected times/areas defined by the MOLA Senior Archaeologist/ Site Supervisor, with the agreement of the Principal Contractor. The need for it to be properly fenced, demarcated and signed to allow safe working will be assessed and if required enacted by the Principal Contractor.

#### 20.7.7 Lone Working

- The monitoring MOLA Supervisor will complete the necessary signing in procedures for each site visit and will also notify the Principal Contractor's Site Manager of their presence, which works are to be monitored. The MOLA Supervisor will only be providing an attendance to observe, monitor and record the defined Principal Contractors works and therefore will not be working alone. In particular the MOLA Supervisor will not attend works or enter excavations when the Principal Contractor is not present.

#### 20.7.8 Contamination – General

- C295 have stated that the site is not believed to be contaminated.
- If suspected contaminated material is found, the MOLA Supervisor shall inform the PC immediately.

#### 20.7.9 Ordnance

- C295 have stated that the site is not believed to contain unexploded ordnance.
- If Ordnance is unexpectedly found the MOLA Supervisor shall inform the PC immediately and withdraw to a safe place outside the area designated by the PC.

#### 20.7.10 Site Rules

- All MOLA Staff will comply with the Principal Contractor's site rules and with the MOLA single person watching brief rules (when applicable).

### 20.8 Planning and Resources

#### 20.8.1 Principal Contractor's Supply of Attendances

The site specific requirements for services, facilities and attendances to be provided by the Principal Contractor, to enable MOLA to undertake the defined archaeological works are set out above.

In this general watching brief, site preparation, excavation, temporary support, and spoil management will be conducted by the Principal Contractor (in accordance with their own method statement) and only monitored by MOLA (with the exception of limited hand excavation if significant archaeological deposits are exposed).

Those items in **bold (20.8.1.1) are likely to be required** for these sites, site – others may be required (20.8.1.2), depending on site conditions, which will be reviewed on site by the MOLA Supervisor in conjunction with the Principal Contractor's nominated Site Manager (these requirements will be communicated to the Principal Contractor in the event that they are needed):

##### 20.8.1.1 Likely to be required

- **general site security** including hoardings, gateway, warning notices, etc; to create a secure site perimeter, sufficient to prevent unauthorised access. If the Principal Contractor has retained security guards, it is recommended that the archaeological investigation areas be added to their schedule for regular patrols, particularly out of hours.



- **specific site security:** it may be necessary to separately secure individual trenches via a physical barrier (such as Heras fencing) as the trenches are located in public areas. Secure storage (eg lockable tool store/hut) is required for finds, samples, and tools and equipment.
- **providing safe access** to the site and the specified archaeological investigation areas via separately identified pedestrian routes, signing, safety guard-rails, secure ladders etc. This includes segregating these areas from any vehicles and plant operating nearby eg via a robust physical barrier.
- **managerial services** – nominated points of contact for Principal Contractor and other key members of development team.
- **site accommodation and welfare facilities with electricity and water.** To include separate male/female (as required) changing areas, toilets and washing facilities; plus additional steel cabin for secure storage of MOLA PPE, equipment, camera and paperwork and finds. It is estimated that accommodation etc **for 1 person** will be required.
- **accreditation and supervision of operatives, plant and equipment,** including supply of sufficient qualified banksmen and slinger/signallers to control plant movements and lifting, and adequate certification for plant and all operatives.
- **locating and making safe any live services or hazardous substances** (above or below ground): preliminary services searches should be carried out by the Principal Contractor via the statutory undertakers etc, plus on-site inspection and testing where required. Where there is reason to believe from previous uses that the ground or adjacent buildings may be contaminated the Principal Contractor should make arrangements for advance inspection, sampling, testing and where necessary specialist remediation. The results of such surveys should be forwarded to MOLA *prior to commencement on site*. Any identified hazards will be addressed in the health and safety planning. Any unexpected hazards encountered during the investigations will also need to be made safe by the Principal Contractor before archaeological fieldwork may continue. In the event of the accidental disruption of a live service by archaeologists or sub-contractors under archaeological supervision the MOLA supervisor will inform both their project manager and the Principal Contractor and, when appropriate, call the relevant emergency number. Any remaining exposed services will be protected by the PC prior to the works starting. Any utilities remaining live in excavation areas will be clearly demarcated, safely segregated and suitably protected.
- **development of a safe method of working:** archaeologists will not be able to work within excavations whilst attendances (such as installing temporary support or removing spoil) are taking place, and when demolition, construction or heavy plant activity occurs adjacent or overhead.
- **First Aid:** provision of First Aid facilities, and an emergency plan. On watching briefs with small numbers of staff, MOLA may not be able to supply a first aider. In that case, the services of the Principal Contractor's qualified first aider(s) may be required.
- **technical advice** to be available if required (eg via client or Principal Contractor's consulting engineer) re protection of adjacent streets and buildings, removal of obstructions, depth of excavation, live services etc.

#### 20.8.1.2 Unlikely to be required

- **removal of spoil from trenches and lifting operations (specifically for archaeology).** Equipment (eg hoists/machine) will be operated by a suitably qualified person supplied by the Principal Contractor, and checked at the intervals specified in the

Principal Contractor's method statement/risk assessment for the use of the equipment. Should mechanical or electrical hoists be used, the area in which the hoist is in use must be clearly demarcated. **MOLA staff will leave the area before the bucket is raised or lowered (and in the interval between these operations) and not re-enter until completed (in accordance with MOLA H&S Policy).** The PC will supply a banksman to control plant at all times and an experienced slinger/signaller to control the lift to ensure that the bucket is not re-lowered or suspended over the trench while staff are working below in the trench. The PC will ensure the provision of only certified lifting equipment and implement an approved Lifting Plan.

- **transport/mounding/storage of spoil (specifically for archaeology).** This includes removal from site, if necessary.
- **site preparation and clearance (specifically for archaeology).** Removal of structures, vegetation, rubbish, spoil heaps, demolition materials, slab, modern obstructions, infill, made ground, etc. as required, prior to and during the archaeological investigation. The majority will be mechanical excavator, under archaeological supervision, but occasional hand work by labourers may be needed (eg clearing individual obstructions or removing spoil from investigation areas if the machine cannot re-enter).
- **supply of plant and equipment (specifically for archaeology).** supplied with driver, toothed digging bucket and toothless ditching blade. Other plant such as dumpers, compressor/breakers, and pumps may also be needed.
- **temporary support (specifically for archaeology):** design, installation and maintenance of appropriate temporary support to excavations, where deeper than c 1.2 m (or as required in unstable ground). This will be via benching/battering back and/or shoring (the sides of the utilities corridor are secant pile walls), depending on a depth and ground conditions.
- **other safety measures in deep excavations (specifically for archaeology).** Air quality will be monitored and rescue facilities and equipment will be provided in any areas defined by the Principal Contractor as a **confined space**. Beyond a depth of 1.2m within such areas gas monitoring equipment will be required to ensure appropriate air quality for those working there.
- **pumping-out:** a suitable method to keep the trenches dry.
- **adequate ventilation and protection from noise, fumes and dust where plant is in use, especially within confined spaces and standing buildings**
- **temporary roofing and side screening to excavations IF burials are exposed – (UNLIKELY)** (eg monoflex on scaffolding frame or similar) in order to screen any human remains from public view, including views from above – eg windows of buildings overlooking the site. This will need allow sufficient light through for archaeological work (eg translucent plastic sheeting/tarpaulin). The roof needs to have adequate water drainage and ventilation and temporary openings will need to be incorporated into the design to enable the safe removal of spoil from the trench. Any areas adjacent to the trench where spoil containing human remains may be visible from surrounding buildings should also be screened from the public gaze.
- **110v. site lighting** for access routes to excavations, plus individual task lighting within trenches (eg tripod-mounted spotlights) if required. The need for lighting depends on the depth, season and weather conditions or on ambient light level if working inside a standing building.

#### 20.8.2 Equipment

Equipment will be supplied by the MOLA equipment central store:

- First Aid Kit
- Hand tools, dumpy levels, stationary, grid pegs, digital camera, hand auger, etc.

Any specialised equipment such as power augers (not required at London Wall) will have certification of maintenance kept at MOLA headquarters.

#### 20.8.3 Basic PPE

All MOLA staff are supplied with and will wear or use the following PPE where required and as appropriate:

Safety Helmets (EN397)

Hi-visibility **long-sleeved** vest (EN471) - Crossrail's PPE requirements = **Yellow**

**Flame retardant overalls** - Crossrail's PPE requirements

Ear Defenders (EN 352-3)

Safety spectacles (EN166)

Dust masks plain and valved (EN149 2001)

Gloves Nitrile and latex disposable, PVC, EN374

Safety footwear - steel toecap and mid-sole boots and Wellingtons EN345-47 (No riggers are allowed)

#### 20.8.4 Additional PPE

The additional PPE listed below will also be required.

**This PPE in addition to that included in section 20.8.3 will need to be provided by the PC, rather than MOLA.**

- Hi-visibility **long-sleeved** jacket (EN471) - Crossrail's PPE requirements = **Yellow**  
**[Costain-Skanska have kindly offered the loan of long-sleeved Hi-Vis]**
- Confined spaces escape gear, eg harnesses, personal escape kits

#### 20.8.5 Staff

See detailed programme in section 4.6.

MOLA will notify the Principal Contractor if more staff are required.

### 20.9 Briefing Arrangements

#### 20.9.1 MOLA Staff Induction – New Starters

- All MOLA staff shall receive a full induction including Health and Safety on commencement of their first day of work with the organisation. A record of the induction is kept.
- The MOLA Supervisor will be briefed by MOLA Project Manager/Assistant Project Manager on all relevant aspects of work before work commences. This briefing will include all SS-WSI, Method Statements (PC's and this document).

- The MOLA Supervisor will be responsible for briefing any other MOLA staff on site before they commence work on all aspects of the work and documents.

#### 20.9.2 Site Specific Inductions, Weekly Briefings and Tool Box Talks

- Where a site is under the control of a Principal Contractor (as in this case), MOLA staff will attend all initial site inductions and subsequent toolbox talks as required and managed by the Principal Contractor.
- Irrespective of whether the site is controlled by MOLA or a Principal Contractor, on larger projects eg those with more than 2 to 3 staff and of a week or longer duration, regular toolbox talks will be given by the MOLA Supervisor or other suitable member of staff using the CITB: construction site safety tool box talks manual. As a minimum requirement these talks will occur 1 to 2 times per week and be of 10 to 15 minutes duration.

### 20.10 First Aid

#### 20.10.1 Trained First-Aid Personnel

Where possible with the small numbers of MOLA staff during watching briefs and small evaluations, there will be at least one MOLA Archaeologist who is a qualified First Aider (ie 3 day FA at work course) on site. If not, the Principal Contractor's first aider(s) responsible for the watching brief task(s) will be identified by MOLA at the Principal Contractor's Induction, and their services used if required.

#### 20.10.2 First Aid Documents

The MOLA site safety documents will be located with the first aid kit in the site office/mess hut/canteen. The safety documents will include a minimum of:

- Current Health and Safety at Law Poster for display where legislation requires
- Accident Reporting Forms compliant with the Data Protection Regulations.
- MOLA Public Liability Insurance & Employers Liability Insurance for display
- Where To Get First Aid poster – to be displayed if required.
- Current MOLA Health and Safety Policy
- A copy of the site Welfare, Health and Safety Method Statement, extracted from the Site WSI, and modified as agreed during the course of the site.

#### 20.10.3 First Aid Equipment

For 1 to 2 person watching briefs, a 'bum bag' will be carried by the MOLA Senior Archaeologist at all times. During larger scale work, a MOLA First Aid kit, of an appropriate size for the site, will be located in the site office/mess hut/canteen.

### 20.11 Accident, Incident, Near Miss and Environmental Incident Reporting

#### 20.11.1 Reporting of Accidents/Incidents and Dangerous Occurrences

The Reporting of Injuries, Diseases and Dangerous Occurrences (RIDDOR) Regulations, 1995 sets out requirements for the reporting of certain types of accidents. RIDDOR notifiable

accidents will be reported immediately by the MOLA site supervisor as specified in Section 15.5 of the method statement, above.

#### 20.11.2 Documentation

In order to identify quickly problem areas and allow corrective action to be taken all accidents, dangerous occurrences and near misses, including those that do not cause injury, will be reported immediately to:

Principal Contractor's Site Manager

MOLA supervisor

MOLA H&S Compliance Manager

MOLA Senior/Project Manager

Crossrail Project Archaeologist

Crossrail Incident Response Desk

The site accident books/reporting forms for *both the Principal Contractor and MOLA* should be filled in giving details of the incident.

#### 20.11.3 Investigation of Accidents and Dangerous Occurrences

MOLA will comply with the Principal Contractor's and Crossrail procedures.

MOLA will also initiate internal procedures as follows:

- Initial accident/incident report to MOLA Senior Contract Manager and Field Manager and action taken as appropriate.
- Non Riddors investigated by Senior Contract Manager/H&S Compliance Manager.
- Riddors investigated and reported on to Senior Management Consultant by MOLA H&S Compliance Manager.

#### 20.11.4 Key Project Personnel

- George Dennis, Senior Project Manager, MOLA
- Elaine Eastbury, Project Manager, MOLA
- Nicholas Elsdon, Assistant Project Manager, MOLA

### 20.12 Emergency Procedures – Site General

All MOLA staff will comply with the Principal Contractor's procedures as outlined at the Site Specific Induction.

### 20.13 Emergency Services Contact Details

The Principal Contractor will confirm the hospital location:

*Full A & E is at:*

The Royal London Hospital

Whitechapel Road  
London E1 1BB  
Telephone 0207 377 7781

Tube: Whitechapel (Hammersmith and City and District Lines)

*Minor A& E at:*

St Bartholomew's  
West Smithfield Street, EC1  
Telephone 020 7377 7000

Tube: St Paul's (Central Line)

The MOLA supervisor will dial 999 for fire, ambulance and police in the case of an emergency if the Principal Contractor's Site Manager or his deputy is not present on site.

#### **20.14 Route to Hospital**

The Principal Contractor will advise on route to hospital at their site specific induction.

## 21 Risk Assessments

MOLA RISK ASSESSMENT REGISTER												
For Site/Task: Crossrail, London Wall Watching Brief (XSZ11)						Type: Watching Brief						
Persons Affected			No	Classification			No					
Employees			1-3	Experienced			1-3					
Other workers			-	Inexperienced			-					
Public			-	Disabled			-					
Known and Suspected Hazards on site with Remaining Risk (mark as appropriate) and include numbered risk assessment in WSI												
	L	M	H		L	M	H		L	M	H	
1 Access	x			26 Dust				50 Glass Recording				
2 Ladders	x			27 Noise	x			51 COSHH: Stihl Lubricant				
3 Plant	x			28 Deep Excavations	x			52 COSHH: Stihl two stroke oil				
3a Plant (loading and unloading)				29 Power Tools				53 SHARPS (hypodermics)				
4 Dumpers	x			30 Vibration				54 Task Lighting (Ianiro etc)				
5 Scaffolding (inc Towers)				31 Vehicles (Driving)				55 Site Walk Over				
6 Excavations	x			31a Vehicles (Site)				56 Processing: Finds washing				
7 Work at height				31b Vehicles (loading/ unloading)				56a Processing: Environ samples				
7a Work at Height (Cherry Picker)				32 Lifting Equipment	x			56b Processing: Artefact marking				
8 Slips, Trips, falls	x			33 Plant (lifting)	x			56c Processing: Manual handling				
9 Underground services	x			34 Human Remains				56d Processing: Power hose				
10 Overhead Power Lines				35 Public Safety				56e COSHH: Paraffin (Processing)				
11 Electrical				36 Violence				57 Office Work				
12 Fire (inc LPG)				37 Chainsaw				58 DSE (Work Stations)				
13 Confined spaces				38 Power Auger (COBRA)				59 Young Person				
14 Breaking Out				38a Power Auger (Compressor)				60 Person Specific/Expectant Mother				
15 Hand Tools	x			38b Power Auger (Electric)				61 Light Duties				
16 COSHH: Spray paint				39 Hand Auger				62 Individual Stress				
17 Contaminated Land				40 Foreshore/water								
18 Weil's Disease	x			41 Adverse Weather	x							
19 Psittacosis				42 Spoil Mounding								
20 UXO				43 LPG(Butane)								
21 Asbestos				44 Waste								
22 Welfare	x			45 Storage								
23 Lone working				46 Animals								
23a Empty Premises				47 Non-ionising radiation								
24 Manual Handling	x			48 COSHH: Petrol								
25 Fumes/Gas				49 Spot Dating								

## General Controls

Contracts Manager in overall charge of project is: Elaine Eastbury Tel: 020 7410 2237, m. 07730 646063

Supervisor(s) in daily charge of project is: Robert Hartle (TBC) Tel: 02074102280, m. 07730646060

Number, training and experience of supervisors will be sufficient for the project

Supervisor(s) holds IOSH Supervising Safely Cert

All staff will comply with the: MOLA H&S policy, Principal Contractors site rules, all WSIs, Risk assessments, safe systems of work Permits to work.

All staff will have sufficient training and experience for the tasks they undertake or be under close supervision

All staff will be CITB H&S tested and hold a CSCS card appropriate to their profession

All staff will be fit to undertake their work

All staff will be inducted on first day of work, briefed on the WSI and the specific hazards and control measures attendant on their work on site.

**The full site induction will be undertaken by the MOLA supervisor if no Principal Contractor present.**

**All staff will sign the induction and WSI register to confirm that they have received, understood and will comply with both.**

Tool box talks/staff briefing will be conducted on the hazards and control measures on a regular basis (at least weekly or more frequently if circumstances dictate)

Appropriate PPE to be worn for each task.

**Minimum site PPE (unless otherwise stated by supervisor): Steel Toe-cap/midsole boots, Safety helmet, Safety spectacles, Gloves, high visibility LONG-SLEEVED jacket (yellow) and FIRE-RETARDANT OVERALLS**

First Aid kit on site, First aider/appointed person on site. Nearest accident and emergency unit located and contact numbers obtained

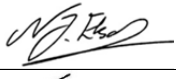
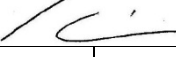
### Competent Person(s) appointed to take action:

MOLA Ian Grainger H&S Compliance Manager  
MOLA Project Manager: Elaine Eastbury  
MOLA Senior Archaeologist: Robert Hartle (TBC)  
Principal Contractor –  
CSjv Site Supervisor: Tony Iveson  
Crossrail Site Manager

### All Risk Assessments seen by (initials)

PM	Archaeologists
SA(s)	
Client	
Contractor	
Other	



<b>MOLA RISK ASSESSMENTS</b>					<b>SITE: Crossrail London Wall watching brief, (XSZ11)</b>			
<b>APPROVAL (Name and Title)</b>					<b>SIGNATURE</b>			<b>DATE</b>
<b>Prepared by:</b>		<b>N Elsdon</b>						<b>18/06/13</b>
<b>Approved by:</b>		<b>I Grainger</b>						
<b>RA N°</b>	<b>ACTIVITY</b>	<b>Hazards</b>	<b>RISK</b>	<b>Risk Class L/M/H</b>	<b>N° at Risk</b>	<b>Control Measures</b>	<b>Final Risk L/M/H</b>	<b>Action by</b>
<b>01</b>	<b>ACCESS</b> general site access routes	Fall of persons from height, Fall of objects from height, Vehicle/plant collisions, Slips Trips falls	<b>Personal Injury, Equipment Damage</b>	<b>M</b>	Staff Contractors Visitors	Obey warning signs, verbal and written PC and traffic marshal instructions. Use pedestrian access gate – <b>pavement side</b> . Keep to designated pedestrian routes. Be aware of plant and vehicle routes and movements. Do not obstruct pedestrian routes – be tidy. Report unsafe routes.	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
<b>02</b>	<b>LADDERS</b>	Fall of person from ladder, Fall of material from ladder, Collapse of ladder	<b>Personal Injury, Equipment Damage</b>	<b>M</b>	Staff Contractors Visitors	Use correct length and type, not painted. Daily inspection when in use, do not use if damaged. Must project at least 1.50m above stepping off point. Check/Fix securely at top and base. Check/Install at an angle of 75 degree (1:4 ratio over length). Three points of contact: make sure any load can be carried comfortably with one hand free for ladder. Arrange stair access if possible.	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
<b>03</b>	<b>PLANT</b> Mechanical Excavator	Persons Struck by Machine Shovel or load dropping Hydraulic fluid spray Overturning of machine Fire/explosion	<b>Personal Injury, Equipment Damage</b>	<b>M</b>	Staff Contractors Visitors	<b>MOLA staff will not operate plant.</b> Check operator trained and certificated and not permit uncertified operators to start work. Operator must inspect plant before work commences and before each shift. Defective plant must not be used. Service and repair by qualified contractor only. Operations supervised by MOLA staff (supervisor or deputy). Plant to be switched off and secured when not in use. No work with or near plant operator under influence of drugs/alcohol or behaving erratically. Operations to be under supervision of MOLA supervisor or deputy and trained banks person also where applicable. Staff working near machine to ensure that the operator has seen them and that they are at a safe distance. Staff briefed on plant operations and changes to them. High visibility clothing. Separate routes and work areas for	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr

						plant and pedestrians, warning signs to be displayed where practicable.		
04	DUMPERS	<p>Overturning or tipping.</p> <p>Falling into excavations.</p> <p>Falls of persons and load.</p> <p>Collision.</p>	Personal Injury, Equipment Damage	M	Staff Contractors Visitors	<p><b>MOLA will not drive dumpers</b></p> <p>Check training and certification of drivers and not permit uncertified drivers to commence work. Drivers must be over 18. Operator must inspect and certify dumper as fit to operate before use and carry out checks prior to each shift. Checks will include brake testing. A banksman will be used where driver's vision is impaired or operating in congested areas. Dumpers are not to be left unattended with engines running or keys in. Dump skips are to be kept clean. A site speed limit will be imposed. Separate pedestrian and vehicle routes and work areas will be established where practicable and warning signs will be displayed. No work with or near dumper driver operator under influence of drugs/alcohol or behaving erratically. Use designated pedestrian routes where available. Caution: be vigilant of dumper movements in work area, maintain safe distance. Staff to be briefed on dumper movements and changes to them.</p>	L	<p>MOLA SA and staff PM Elaine Eastbury APM Nick Elsden</p> <p>CSjv Supervisor Crossrail site mgr</p>
06	EXCAVATION	<p>Collapse of sides</p> <p>Fall of persons</p> <p>Falls of Plant, equipment, material</p> <p>Flooding</p>	Personal Injury, Equipment damage	M	Staff Contractors	<p><b>A Permit to Work (TW) and a Permit to Dig (CSjv) will operate.</b></p> <p>Determine the depth for the installation of shoring/ battering back as outlined in WSI. Shoring will be installed by competent sub-contractor and maintained by them. Shoring will be inspected by competent sub –contractor or MOLA supervisor instructed by them. If Netlon fencing or similar is erected it must be at least 1m back from trench edge and warning signs displayed. If Herras fencing is erected it must be at least 1m or more back from trench and warning signs displayed. Robust scaffolding edge protection will be erected and warning signs displayed. Inspect all excavations before each day/shift and record results. Supervisor will report unsafe excavations to principal contractor. Staff will not enter any excavation they consider unsafe until it is made safe. Staff will report unsafe excavation to supervisor. Shoring installed by contractor under direction of the principal contractor. Edge protection installed by contractor under direction of the principal contractor. Warning and information signs in</p>	L	<p>MOLA SA and staff PM Elaine Eastbury APM Nick Elsden</p> <p>CSjv Supervisor Crossrail site mgr</p>

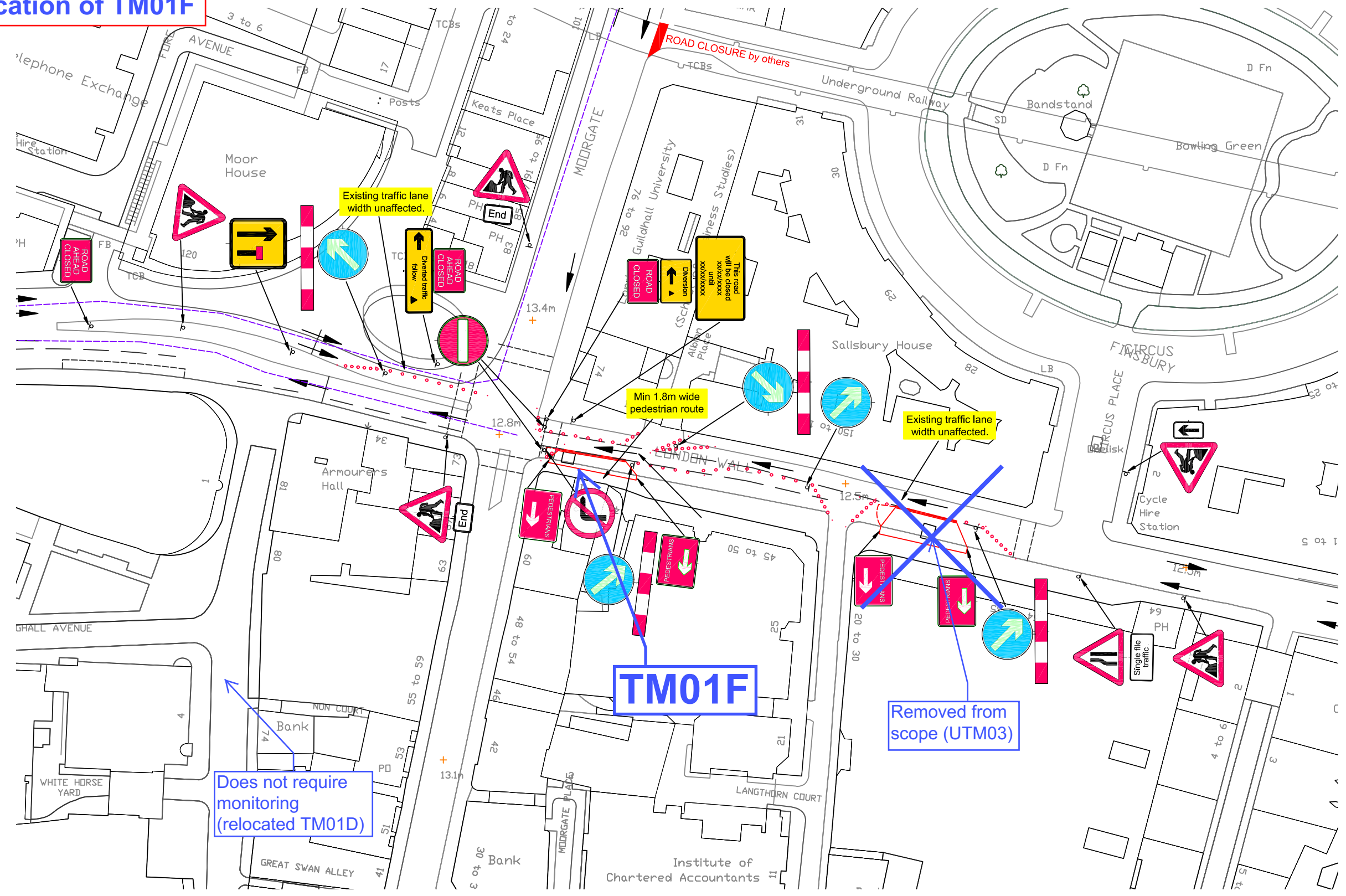
						MOLA excavations. Pumps if required inspected and certified.		
08	<b>SLIPS/TRIPS/ FALLS</b>	Falls of persons  Dropping of equipment/material	<b>Personal injury, Equipment damage</b>	<b>M</b>	Staff Contractors Visitors	Assess work in adverse weather and suspend if appropriate. Keep all surfaces level and dry where practicable. Keep all areas free of unnecessary obstruction and debris. Keep all areas well lit. All safe pedestrian routes to be sign posted. Staff to be physically fit for the conditions on site. No running or horseplay. Be cautious moving about site.	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
09	<b>UNDERGROUND SERVICES (UTILITIES)</b>  Works to be monitored are to install monitoring eqpt. on an existing TW sewer.  Other services may also be present	Electrocution  Flooding  Asphyxiation  Fire/explosion  Bacterial infection	<b>Personal injury, Equipment and environmental damage, Annoyance to public</b>	<b>M</b>	Staff Contractors	<b>A Permit to Work (TW) and a Permit to Dig (CSjv) will operate.</b> Briefing on live utilities to be given to all staff Competent C295 CSjv staff will use a cable location scanner calibrated within last 12 months to scan for live electrical services: before initial breaking out; before machine clearance of first level; and as excavation progresses. Once the road surface has been removed, only hand tools will be used. <b>No</b> sharp tools will be used: picks or forks. Any existing services that will be exposed will be protected prior to the works starting. Any utilities remaining live in excavation areas will be clearly demarcated and segregated. - 1m either side zone. All staff will wear <b>flame retardant overalls</b> in trenches. Work will stop immediately on discovery of unidentified service and not resume until confirmed/made safe. <b>Inform principal contractor and utilities company immediately of any contact with live utility.</b>	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
15	<b>HAND TOOLS</b>  Covers use of: Mattock, Shovel, spade, <del>pick axe</del> , trowel, draw hoe, <del>garden fork</del> , hand shovel, brush, lump hammer, sledge hammer, chisel, bolster and similar simple non mechanical tools	Manual handling  Impact from tool  Impact from flying debris	<b>Personal injury, property damage</b>	<b>M</b>	Staff	All hand tools to be to industry safety standard. Inspect tools on delivery. Discard tool if not fit for purpose. Assess staff fitness to use tools. Task briefing where applicable. Training and supervision for inexperienced staff. Adequate breaks/rest periods  <b>See RA 9 for sharp tools</b>	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
18	<b>WEILS DISEASE</b>  (Leptospirosis)  RATS	Rat (and Cattle) faeces and urine	<b>Personal injury illness</b>	<b>L</b>	Staff Contractors Visitors	Brief staff on hazard. Carry HSE G 406 instruction card Wear gloves. Clean and cover any cuts or abrasions promptly with a waterproof plaster. Wash hands before eating, drinking, smoking. No eating drinking and smoking outside designated areas. Keep Welfare facilities dry, tidy and secure. Keep food covered and secure. Basic surveillance of staff for flu like	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr

						symptoms. Report ill health.		
22	<b>WELFARE</b>  Welfare facilities being provided by the PC	Fire/explosion  Electrical  Filtth/bacteria  Cold/damp	Personal Injury and illness, property damage	<b>L</b>	Staff Contractors Visitors	Larger projects: toilets, office, canteen, tool storage, drying rooms, heating, hygiene facilities (hot & cold running water). Separate Male and female facilities. COSHH and DSEAR controlled substances will be not be stored in office/canteen. Welfare facilities to be kept clean and tidy. Cleaning Rota will be established where cabins not cleaned by contractor. No Smoking in welfare facilities. No eating or drinking in work areas.	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
24	<b>MANUAL HANDLING</b>	Too heavy, big, awkward load, Too prolonged Dropping load	Personal injury, Equipment damage	<b>M</b>	Staff Contractors	<b>General</b> Remove the need for manual handling where possible. Use mechanical aids where possible. Reduce horizontal and vertical distances. Reduce size and weight of individual load. Ensure team sufficient and fit for task. Ensure that route planned, well lit, obstruction free, and as dry as possible. Liaise with others to keep route safe, use lookouts. Brief and train staff. Rotate staff and/or sufficient breaks for prolonged tasks Use gloves <b>Personal</b> Assess weight before lifting, stay comfortably within personal lifting capacity. When picking up load: stand close with feet slightly apart, crouch do not bend at waist, keep head up and maintain natural curvature of spine, thrust/lift through hips, keep object close to body, maintain clear field of vision and do not run. <b>Use MOLA Manual handling check lists for all significant manual handling tasks 0024a-e :</b> Planks, ladders and boards Drums/round containers Bags and sacks Finds/irregular shaped objects on site Office work – boxes etc	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
27	<b>NOISE</b>  Plant and breaking out operations	Excessive, prolonged noise levels, Nuisance to public	Personal injury – temporary or permanent damage to hearing, loss of hearing Headache/nausea	<b>M</b>	Staff Contractors Visitors	Minimise exposure– rotate staff, plan work to avoid noisy times/work areas if possible. Wear appropriate ear protection. Report unwell symptoms immediately. Vacate area if headaches/nausea etc.	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
28	<b>DEEP EXCAVATIONS</b>	Collapse of sides  Fall of persons  Falls of Plant, equipment,	Personal injury, Equipment damage	<b>M</b>	Staff Contractors	Shoring to be installed by PC. Determine the depth for the installation of shoring/ battering back as outlined in WSI. Shoring installed and maintained by competent sub-contractor. Shoring inspected by competent	<b>L</b>	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon

		material  Flooding  Hazardous atmosphere				sub –contractor or MOLA supervisor instructed by them. Access ladders/scaffolding installed and inspected by competent contractor. Edge protection –fixed scaffolding barrier –installed around trench by a competent person 'Danger Deep Excavation' Warning signs displayed ie on site boundary/entrance, trench edge protection Where appropriate a fixed hoist to remove spoil rather than a crane or mechanical excavator. Hoist and plant operators will be briefed on MOLA works and operating procedures for deep trenches. The size and shape of the bucket or skip used for spoil disposal will be suitable for the size of trench, shoring, and other obstructions. Task specific briefing before commencement. Only staff physically fit and suitable. Basic visual health surveillance. report all unwell, symptom immediately. A mechanical pump(s) where necessary. Gas monitoring equipment where appropriate		CSjv Supervisor Crossrail site mgr
33	LIFTING EQUIPMENT (PLANT)	falling bucket, material, collapse, Striking overhead obstruction	Personal Injury, equipment or property damage	M	Staff Contractors	<b>MOLA staff will not operate plant</b> Only trained plant operatives will operate plant. Plant used as crane must be correctly fitted to do so. All loads/skips/buckets must be within the safe working load of the machine. A banksman will be present for all operations. Loads will not be slewed over staff below <b>Exclusion zone in area of lift operation while the skip/bucket is being raised or lowered or in the interval between if operations are ongoing. See MOLA H&amp;S Policy.</b>	L	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
41	ADVERSE WEATHER	Slips trips and falls  Snow, sleet, hail, rain, -  Frozen ground  Ice covered ponds holes  freezing temperatures,  high winds	Personal Injury, equipment damage, lost time	M	Staff Contractors Visitors	Monitor weather forecasts. Ensure staff can get to and from work safely in reasonable time – send home early if necessary. Cancel work in advance if necessary consider remote sites/ poor transport links. Ensure drying and heating in welfare facilities. Assess site conditions before commencement. Keep walk ways and pedestrian route clear of ice and snow, mud. Check barriers/warning signs in place around all deep holes. Rotate staff tasks. Do not use hand tools on heavily frozen ground or in heavy rain. Report unwell symptoms. Wear warm clothing.	L	MOLA SA and staff PM Elaine Eastbury APM Nick Elsdon  CSjv Supervisor Crossrail site mgr
<b>All persons affected by these hazards must be made aware of the contents of this Risk Assessment</b>								

## **22 Figures**

Fig 1 Location of TM01F



NOTES

- Safety zone provided at works locations
- Existing signs in conflict with this scheme to be covered/dropped.
- All signing to be in accordance with Chapter 8 tables A1.2
- Works access/exit locations to be agreed on site.
- Size & spacing of cones & rates of taper to Chapter 8 table A1.3

NB  
THIS REVISED DRAWING  
SUPERCEDES DRAWING 1756/13

See also drawing 1756/14  
for diversion routes.

Legend

Mass barrier with Heras fence.

Traffic cones

Heras fence

Pedestrian barrier

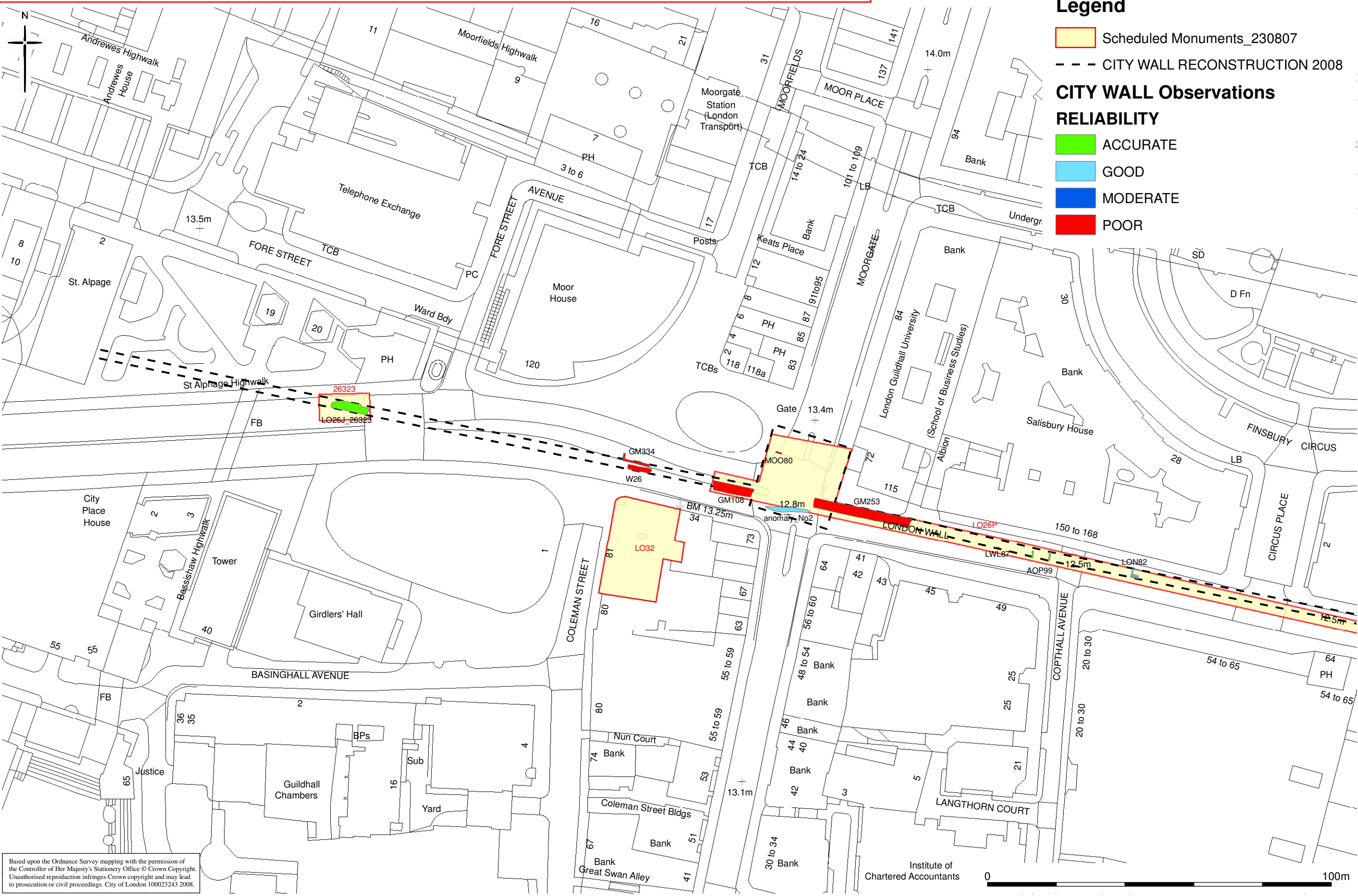
Public traffic route

GPRS scan area

Pedestrian route

B 05.06.2013 E/B SIGNING ALTERED AS REQUESTED GC ODDY A 20.05.2013 REVISED FOR COTHALL AVENUE ONE WAY S/B		Drawn	Steve Harrop	Approved
Project C295 THAMES WATER ASSET MONITORING		Checked		Date 13.05.2013
Contract No 1756		Scale NTS		
Title TRAFFIC MANAGEMENT LONDON WALL UTM03 & TM01F DETAILS		Drawing No 1756/44 B		
CONEMASTERS LIMITED ST HILARY WORKSHOPS TAIR ONEN COWBRIDGE VALE OF GLAMORGAN CF71 7AU		CONEMASTERS LIMITED		

Fig 2 Reconstruction of the line of the City Wall in the area of the TW sewer monitoring equipment works (MOLA for Crossrail 2008)



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City wall DDBA: west



## **23 Registers**

## HEALTH & SAFETY METHOD STATEMENT REGISTER

Date	Name of Inductee	Signature of inductee To: confirm that you have read this Method Statement and understood its contents and you will work in accordance with the method statement.	Confirmation Signature of Supervisor/Manager

## MOLA INDUCTION REGISTER

Date of Induction	Name of Inductee	Signature of inductee To confirm that you have attended the induction and understood its contents and that you will work in accordance with the induction content, MS, Risk assessments and resulting safe systems of work and all legal and reasonable safety requirements and instructions	Confirmation Signature of MOLA inductor

For further names append more pages