

**TOTTENHAM COURT ROAD
CROSSRAIL EASTERN TICKET HALL
12 GOSLETT YARD
London WC2**

City of Westminster

A method statement for an archaeological evaluation

November 2009

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Fig 1 Site location plan

Fig 2 Proposed development site showing areas of potential archaeological deposit survival, previous geotechnical and archaeological investigations and location of proposed trial pits

Fig 3 Proposed trench locations

Cover figure: Morgan's map of 1682

1 Introduction

1.1 Site background

This *Method Statement* has been commissioned from the Museum of London Archaeology Service (MOL Archaeology) by London Underground on behalf of Crossrail TCR. It supports and augments an existing Written Scheme of Investigation for proposed archaeological fieldwork at Tottenham Court Road station (*Crossrail, January 2009*). There are two elements of Crossrail-related station redevelopment at Tottenham Court Road:

- the Crossrail Eastern Ticket Hall at Goslett Yard (TCR)
- the London Underground Tottenham Court Road Station Upgrade (TCRSU).

The method statement defines the scope and methodology for a field evaluation, via test pits and trial trenches, to assess archaeological ground conditions in the area of the Eastern Ticket Hall (*Fig 1*). The evaluation results will contribute to a wider programme of predictive archaeological deposit modelling being carried out for both TCR and TCRSU. The data recovered regarding archaeological survival and potential will help determine whether a further mitigation strategy is needed in relation to any impact of this development upon the buried historic environment (although some parts of the wider TCR/TCRSU scheme also affect built heritage assets that is not the case at this site). This information will be used in future stages of building design and construction programming.

The evaluation defined in this method statement will be located at 12 Goslett Yard, London WC2 and will take place prior to the demolition of the existing buildings. The centre of the site lies at National Grid reference 529810 181260. Modern pavement level adjacent is at c 25m OD.

A previous *Archaeological deposit survival plan* (Miller/MOL Archaeology 2009) recommended the need for archaeological field evaluation as deposit survival in the site area is considered to be high (*fig 2*). This figure shows potential archaeological survival in areas associated with both TCR and TCRSU development works, using data from geotechnical investigations, surveys of existing basements etc.

This method statement details the activities being undertaken by MoLA. Attendance is being provided by the Principal Contractor McGee Group Ltd and all activities will be in accordance with their Construction Phase Plan, which has been provided to MoLA.

1.2 Planning and legislative framework

The TCR work will be carried out within the overall powers of the Crossrail Act 2008.

1.3 Archaeological background

The archaeological, historical and topographic development and potential of the site have been addressed in previous documents (*Crossrail January 2009, section 2.3; MOL Archaeology 2009, section 3*).

The earliest archaeologically significant deposits in the site vicinity have included peaty soils, alluvial clay/silts and reworked brickearth, recorded at Soho Square and nearby Falconberg Court, Falconberg Mews and Sutton Row. These deposits suggest a wet, marshy environment and reworked brickearth may be the result of early agricultural activity or later brickearth quarrying. This supports cartographic evidence and previous archaeological investigation in the area, which suggests the site remained as open, rural land prior to urbanisation in the 17th century. No dating evidence for prehistoric, Roman or medieval occupation was retrieved from recent watching briefs on utilities and evaluation although there is a background potential eg due to the proximity of the Roman road (Oxford Street).

The site lay on the western edge of St Giles medieval village and probably just outside the precinct of St Giles Hospital. Post-medieval buildings and development can be seen within the area of the site on historic maps from the later 17th to the 19th centuries. Recent monitoring of utility works in the area has recorded considerable evidence for 17th century urban development and helped identify areas of deposit survival that might provide evidence for earlier activity. There is high potential for evidence of post-medieval urbanisation of the area, and possibly earlier features, to be encountered during the evaluation.

1.4 Outline of proposed archaeological works

The following test pits and trial trenches are proposed (*fig 3*):

- Trial Pits 1 and 2 are located in the garage area at the west of the site. They will each be c 2m by 3m in size
- Trial Pits 3 and 4 are located in the centre of the site. They will each be c 1.5m by 2m in size
- Trial pit 5 is located at the south-west of the site and will be c 1.5m by 2m in size
- Trial Pit 6 is located in the centre of the site in the former Sainsbury's store. It will be dug as a trench c 2m by 6m
- Trial pits 7 and 8 located in the former Sainsbury's store at the south and north -east of the site (respectively). They will be c 1.5m by 2m in size
- All trial pits are up to 3m deep

The trial pits will be dug from ground floor slab level inside the standing building, to provide information on the extent of the present foundations and any other modern truncation, plus the nature and depth of surviving archaeological deposits.

1.5 Status of document

This method statement forms part of a suite of Crossrail scoping documents that collectively form a *Written Scheme of Investigation* specifying the scope of archaeological works to be carried out at Crossrail-related development sites. These include:

- *Generic Written Scheme of Investigation*: defines and explains the general procedures (on and off-site) for archaeological sites affected by Crossrail works and the different classes of archaeological response appropriate to such works (eg geophysical survey, field evaluation, excavation, Watching Brief) Crossrail, 2008, *Archaeology Generic Written Scheme of Investigation*, Document Number 14022008-44ES-P2Z1
- *Site Specific Archaeological Written Scheme of Investigation*: contains details of the archaeological strategies appropriate to an individual Crossrail site or work package e.g. Multi-Disciplinary Works Package 2 Tottenham Court Road Station (*Crossrail, January 2009*, document reference CR-SD-TCR-EN-OT-00001)
- *Method Statement (this document)*: developed from the SS-WSI to set out the specific methodologies for an agreed archaeological activity at an individual site such as TCR, including associated logistical aspects such as contractor's technical attendances to the archaeologists and health and safety planning
- *Archaeological deposit survival plan*: being prepared as part of predictive deposit survival mapping, in order to inform archaeological mitigation strategies for the wider TCR/TCRSU scheme (*MOL Archaeology 2009*). It will be updated with the results of this field evaluation.

2 Objectives

The overall objective of the evaluation is to obtain data on the extent, nature, depth, quality and significance of any archaeological deposits presently surviving beneath 12 Goslett Yard; as a contribution to predictive deposit modelling that will inform mitigation strategies for the TCR and TCRSU schemes. All such work is undertaken within the overall research framework for London archaeology (*Museum of London, 2002*).

Objectives relevant to the trial pit works at this site are included in the SS-WSI (*Crossrail January 2009*, section 4):

- To record the post medieval development of central London, including evidence for the absorption of the rural landscape into the urban one through domestic and industrial structures.
- To define if possible the western extent of St Giles village and its hinterland – what evidence survives if any of related structures, property/field boundaries or route ways.
- To verify and record the line of the Roman roads and surviving associated sequences.
- To define levels of truncation in relation to adjacent past archaeological investigations and geotechnical works providing a clear deposits model to inform further development works in the area.
- To determine the significance of the non-listed built heritage

Additional objectives for this method statement include:-

- Identifying the nature and level of natural topography. Is it truncated or does an original land surface survive, perhaps over a brickearth stratum?
- Conversely, if natural deposits are truncated does this indicate widespread quarrying for brickearth and/or gravel?
- Interpreting the sequence of urbanisation of the site between the 17th century and 20th centuries. Are there buried buildings that may correlate with historic maps, for example confirming that Gosletts Yard was not an original townscape feature but was created from a formerly built up area?
- Do any 18th century surfaces or features associated with Georges Yard, the precursor of Goslett Yard survive on the site?

3 Methodology

3.1 On-site work

The test pit locations will be marked out on site by MoLA and the ground slab of the existing building and any underlying modern overburden will be removed by machine, by the Principal Contractor, at those locations. This will be carried out as preliminary enabling works under a Watching Brief, with archaeological supervision and down to the first significant archaeological horizon. It may be necessary to adjust pit locations if foundations, services or other obstructions associated with the present building are encountered.

At the first significant horizon, MoLA archaeologists will enter each pit to clean, investigate, record and assess archaeological deposits and features. Investigation of archaeological levels will be by hand, using hand tools; with cleaning, examination and recording both in plan and section and with any necessary photography, surveying, deposit sampling etc. All archaeological features will be drawn in plan and recorded onto pro-forma context sheets. Relevant cross-sectional profiles through archaeological features and strata will also be drawn, as determined by the Site Supervisor.

The test pits will not necessarily be excavated totally, down to natural geology, but to sufficient depth to achieve the stated objectives (2, above) or to the maximum feasible depth (anticipated as c 3m below ground slab). Wherever possible, any significant archaeological strata and features will be left *in situ* at the field evaluation stage, pending a decision with regard to an appropriate mitigation strategy. However, the evaluation also aims to establish the overall depth and character of the archaeological sequence and the nature of the underlying geological deposits.

Therefore, following recording and assessment of the significance of the uppermost surviving archaeological horizon, opportunities will be sought to remove any low grade dumped deposits, less significant layers or modern intrusive features etc in order provide a window into underlying strata. Such deposits will again be removed by machine (fitted with a toothless grading bucket) under archaeological supervision, either locally or across the whole pit depending on the extent of the modern intrusions etc being removed.

If evaluation proceeds below the level of the first significant horizon, such grading down will be undertaken in individual spits not exceeding 300mm depth each (with attendant archaeological observation and recording) down to the next archaeological horizon or 1.2m total depth (whichever comes first). At that level MoLA archaeologists will again enter each pit and the process of investigation, recording and assessment will be repeated, pending a decision on whether to take the pit deeper. If this is required to achieve the evaluation objectives, the need for temporary support to the pit will be considered with the Principal Contractor, if the exposed deposits are unstable or more than 1.2m deep. Where required, steel sheet shoring is preferred, sequentially lowered, with walings set at 1.2m depth intervals (corresponding to four individual archaeological spit depths).

Where archaeological remains are to be retained *in situ* at the field evaluation stage they will be adequately protected from deterioration. Normally this involves covering or wrapping the deposits and features in a geo-textile such as Terram and sealing this with a layer of sand or other suitable soft materials.

There is a low, background potential for human remains, due to the proximity of the Roman road (Oxford Street). Any burials will be carefully exposed by hand excavation and recorded *in situ* using specialist recording sheets; supported by photography and environmental sampling, under the advice of the MoLA osteologist and palaeo-environmentalist. Complete or semi-complete, articulated human remains will be left *in situ*, covered and protected. Redeposited, disarticulated remains in later contexts will be recovered, bagged and labelled and returned into the reinstated pits at the field evaluation stage. If removal from site is essential (eg for security reasons) an appropriate Ministry of Justice licence will be obtained, in order to allow remains to be stored at The London Archaeological Archive and Research Centre.

Any finds of gold, silver, or other objects definable as treasure, will be removed to a safe place and reported to the local Coroner according to the procedures relating to Treasure Act 1996. Where removal cannot be effected on the same working day as the discovery suitable security measures will be put in place by the Principal Contractor.

MOL Archaeology is an IFA accredited Registered Archaeological Organisation. The field evaluation will be managed by a suitably qualified MoLA Contract Manager, Project Officer (primarily office-based) and Site Supervisor; supported by field archaeologists and appropriate MoLA specialists such as photographer, surveyor, geoarchaeologist.

All fieldwork recording will be carried out to the standards detailed in the *Archaeological Site Manual* (Museum of London, 1994) and to the appropriate professional standards (*English Heritage, 1998/99*). A unique-number site code (TCG09) has been agreed with the Museum of London Archaeological Resource Centre for this site. Archaeological deposits will be recorded using plans, sections, field notes and pro-forma context sheets and photographs. Observations will be transformed onto the Ordnance Survey National Grid Projection and heights measured in metres above Ordnance Datum, by direct measurement from verified Ordnance Survey control points. Masonry will be photographed in both black and white and colour media.

3.1.1 Survey method

Test pit positions will be set out on site by the MoLA Project Officer in conjunction with the Principal Contractor by measuring and offsetting known points within the standing building.

Subsequently the locations of the test pits will be surveyed by MoLA geomatics team using a total station using survey stations outside, which have already been installed by MoLA, which are related to the OS grid.

Archaeological levels within each test pit will be directly measured as depth below top of the adjacent ground slab and these locations will then be levelled to OS datum by the MoLA geomatics team when surveying in the pit locations.

3.2 Sampling strategies

3.2.1 Stratigraphy

Archaeological evaluation is similar to an engineer's geotechnical investigation: selective exploratory work to quantify and assess ground conditions for forward planning purposes. It is selective and targeted to achieving the objectives specified above and is hence different from full archaeological excavation. The objective is to investigate and record a representative sample of the site stratigraphy and so hand-cleaning and definition; half-sections of features and sampling are carried out to assess the significance of deposits. Each trial trench is not therefore routinely excavated to the natural geology throughout and opportunities would be taken to leave any significant structures (e.g. buildings) undisturbed in situ at this stage.

3.2.2 Artefacts and ecofacts

At the evaluation stage, the objective is to establish what range and quality of finds and environmental evidence is present and then to develop a sampling regime appropriate to the potential of each category of material. 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 2002)
- 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 (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. Museum of London Archaeology has a full range of in-house specialists and can therefore deploy such resources at short notice, if needed, eg to advise on sampling strategies

3.3 Off- site work

An archaeological investigation consists of both on-site recording and off-site work; including collating and archiving the records; assessing the data, finds and samples and (if justified from the assessment) an appropriate level of analysis leading to publication. The various stages of off-site work are explained in more detail in the relevant English Heritage guidelines (Management of Archaeological Projects 1991; London Region: Archaeological Guidance Paper 3, 1992), which may be regarded as the overall framework for this project.

3.3.1 Site data

During and upon completion of fieldwork all site records, finds and samples are checked, processed, packaged and stored. The objective is to produce an ordered and retrievable corpus of data that can subsequently be worked on when the post-excavation process begins. Finds and samples will therefore be kept stable, in a suitable environment and first-aid conservation of fragile, organic or complex objects may be necessary. On completion of fieldwork the Site Supervisor will be responsible for checking and digitising the site records, preparing a stratigraphic matrix and making security copies, as an initial quality control exercise prior to proceeding to assessment of the results and reporting.

3.3.2 Post-excavation assessment

All site data, finds and samples in the initial site archive are quantified, databased and assessed by appropriate specialists. The *post-excavation-assessment report* evaluates the quality and potential of the fieldwork results and reviews the extent to which the original project objectives were achieved, or new objectives have become apparent. This allows priorities to be set, so that only meaningful data that contributes to the revised research aims is worked on at the subsequent analysis and publication stage (the nature and extent of which is defined in an *updated project design*, included with the assessment report).

It is not envisaged that a separate post-excavation assessment will be necessary for a small field evaluation. Instead, this will be included with the off-site work for the wider Crossrail-related TCR/TCRSU project, following any further archaeological mitigation fieldwork that might prove necessary.

3.3.3 Reporting

Formats for report deliverables (Survey Report, Interim Statement, Summary Report, OASIS Summary Sheet and Fieldwork Report) are as specified in the Site-specific WSI (*Crossrail, January 2009*, section 8). The method for preparation of digital records, drawings and reports will also be as specified in the available Crossrail Written Scheme of Investigation (Generic and Site-specific, *as per 1.5, above*).

The fieldwork results will be used to augment the existing predictive model of archaeological deposit survival and potential currently being prepared for the TCR and TCRSU schemes. The data is not at present considered sufficient to warrant additional sub-surface topographic modelling (digital terrain mapping).

3.3.4 Site archive

The initial evaluation archive of data, finds and records (prepared as described above) will be stored at MoLA premises pending development of a specification for any further archaeological mitigation works at the TCR/TCRSU sites and of arrangements for final public archive deposition with relation to the wider Crossrail project. Deposition of the final public archive normally occurs after a suitable level of analysis and publication of the results of the archaeological project. At present the suggested location for curation of the archive from this project is the Museum of London Archaeological Archive and Resource Centre.

The site archive will be organised as to be compatible with other archaeological archives in the Museum of London. It will follow the Museum of London, *General Standards for the preparation of archaeological archives deposited with the Museum of London*, (1998). This requirement for archival compatibility extends to the use of computerised databases. The site archive shall also conform to guidelines referred to in the Written Scheme of Investigation (*Crossrail January 2009*, Section 8.5).

In order for the final project archive to be transferred to a public receiving body for long-term curation it will be necessary for the landowner to transfer ownership of the finds and any rights to the accompanying data to that body. If the Museum of London is to be the final archaeological archive location for the Crossrail project and related work, Deed of Transfer forms are available on request.

3.3.5 Programme

For this field evaluation, MoLA will be providing an archaeological attendance and supervision on the Principal Contractor's works. The timing and duration of the programme will therefore be agreed with the Principal Contractor and will be dependent on activities such as breaking out, removal of obstructions, removing spoil and installing temporary support. Since the archaeologists will not be able to work in the pits during attendances, the time taken will not form part of the archaeological programme. However, it may be possible to minimise such stand down time by sequential working ie opening several pits at once so that, for example, whilst shoring is being installed in one test pit archaeological work may continue in others.

MOL Archaeology will require at least one week's notice of commencement of the trial pits on site from the Principal Contractor

The programme for off-site work and the associated report deliverables will be as per the Site-specific WSI (*Crossrail, January 2009*).

3.3.6 Quality and Environmental Management Plans

The overall MoLA quality and environmental management plan for Crossrail were submitted as part of our application for accredited Framework panel status.

For this site, quality issues are primarily driven by clear advance specification and understanding of the works; a suitably experienced Site Supervisor able to work closely with the Principal Contractor; and corporate support via experienced managers and specialists able to attend site to advise where necessary (including health and safety advice via the MoLA consultant). A Post-excavation Project Manager will oversee off-site works and all report deliverables will be checked, edited and signed off by the Project Officer and Contract Manager.

Any site-specific environmental protection issues such as groundwater management, contamination or wildlife habitats will be discussed and developed with the Principal Contractor and risk assessments and remedial measures updated. The project planning prior to commencement has not identified any significant environmental issues specific to the archaeological works defined in this method statement.

4 Attendances, access and safety

This section constitutes the MoLA Welfare, Health and Safety Method Statement, as a contribution to the Principal Contractor's Construction Phase Plan. The emergency contact will be Frank Donohoe the McGee Project Manager, contact number 07903 183483.

4.1 Technical support and attendances to archaeologists

The Principal Contractor will be responsible for supplying the following support items, to be discussed and specified in more detail on site.

Those in **bold** will be required – others may not 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 archaeological trenches via a physical barrier (such as Heras fencing) eg if there are public areas nearby or human remains are encountered.
- **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 plant operating nearby e.g. via a robust physical barrier. Adequate ventilation from fumes and dust and adequate PPE provided.
- adequate ventilation and protection from noise, fumes and dust where plant is in use, especially within standing buildings
- **managerial services** – nominated points of contact for Principal Contractor and other key members of development team.
- **technical advice** to be available if required (e.g. via client or Principal Contractor's consulting engineer) re protection of adjacent streets and buildings, removal of obstructions, depth of excavation, live services etc.

- **site accommodation** and welfare facilities with electricity and water. To include furnished main base cabin as work space; separate male/female changing areas, toilets and washing facilities; plus additional steel cabin for storing tools and finds. Anticipated MoLA staff on site = c. 3
- **site preparation and clearance.** 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 (e.g. clearing individual obstructions or removing spoil from excavation areas if the machine cannot re-enter).
- **transport/mounding/storage of spoil** from archaeological investigation areas. This includes removal from site, if necessary.
- **filling back and reinstatement** upon completion (trenches are normally backfilled, for safety reasons, unless there are client instructions to the contrary).
- **supply of plant and equipment;** principally a 360 degree tracked mechanical excavator of minimum 12 ton size; supplied with driver, breaker, toothed digging bucket and toothless ditching blade. Other plant such as dumpers, compressor/breakers, hoist and pumps may also be needed.
- **accreditation and supervision of operatives, plant and equipment,** including supply of sufficient banks men to control plant movements
- **temporary support:** design, installation and maintenance of appropriate temporary support to excavations, where deeper than c 1.2 m. This will be via benching/battering back and/or shoring, depending on a depth and ground conditions.
- **pumping-out :** a suitable method to keep the trenches dry, e.g. pumping into a previously investigated trench, to create a sump.
- **temporary roofing (not required)** to archaeological excavations (e.g. clear plastic sheets on scaffolding frame). Needs to have adequate water drainage and ventilation. Local, portable frames would only be required if significant remains are present. There is no need for routine roofing of all excavation areas.
- **110v. site lighting** for access routes to excavations, plus individual task lighting within trenches (e.g. 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
- **locating and making safe any live services or hazardous substances (above or below ground):** preliminary services searches should be carried out 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.

- **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.

5 Health and Safety Planning

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, Project Officer 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 a professional health and safety consultant to attend site when required; reporting to the Supervisory Archaeologist and Project Officer, 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 set out above.
- *The Principal Contractor's Health and Safety 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: e.g. services and contamination reports; any relevant requirements regarding rights of way, noise, hours of operation, etc.

5.1 Monitoring safety performance

Adherence to health and safety procedures will be monitored by the MoLA Health and Safety Consultant, Contract Manager, Project Officer and Site Supervisor. The consultant 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 representative. Where appropriate to the scale of work, regular on-site progress meetings will be held between MoLA and the Principal Contractor at which any safety issues may be discussed, agreed and actioned.

6 Risk Assessment

A preliminary risk appraisal has been carried out on the basis of information supplied by the client (London Underground) and Principal Contractor (McGee Group Ltd) and via a site inspection:

- *live services* - the Principal Contractor is responsible for identifying and making safe any live services (see 4.1) and has informed MoLA that all - connections to the existing building have been disconnected, however services may be required to be reinstated for welfare areas and therefore CAT scanning of all test pits location will be necessary. A storm drain may be present in the garage area (test pit 2) and if located and still in use the preferred option will be to adjust the test pit location to avoid it.
- ground contamination – the Principal Contractor is responsible for identifying and making safe ground contamination.
- *noise, dust, vibration from mechanical plant* – breaking of slab will be conducted prior to commencement of evaluation and therefore this issue is not considered to pose a significant risk to archaeological staff. If this proves not to be the case archaeologists either withdraw from the whilst breaking out/removal of obstructions is under way or wear suitable protective equipment, e.g. ear defenders, face masks and goggles.
- *Ventilation* – fumes may occur from the operation of mechanical plant inside the standing building. However, this may be rectified by rolling up the large external shutters to the garage area and Sainsbury's ground floor and it is considered this will provide adequate ventilation to work areas. Also the Principal Contractor will be removing non load bearing internal walls prior to commencement in order to create a larger working space with better air circulation.
- *confined space* – in the light of the adequacy of the ventilation facilities inside the standing building and the means of access and egress into the

test pits it is our opinion the test pits are unlikely to be regarded as constituting a confined space.

- *asbestos*. An asbestos survey of the standing building within which the archaeological evaluation will take place (12 Goslett Yard) was undertaken for the Principal Contractor (McGhee Environmental Solutions October 2009). Bitumen adhesive patches containing chrysotile asbestos are present to the soffit above the suspended ceiling on the first floor and woven asbestos flash pads within the third floor stairwell. The archaeological evaluation will take place at ground floor level in advance of demolition and will not affect these areas, although if accommodation and welfare areas are located within the existing building appropriate safeguards may be necessary.

In the light of the initial appraisal, an overall risk assessment has been carried out, in advance of commencement and control measure defined below. More detailed advance assessments and control measure have then been produced for individual risks identified as potentially Medium or High. Finally, specific risks have been defined for which the advance assessments need to be reviewed and augmented on site, with other members of the development team.

The following Risk Assessments apply to activities being undertaken by McGee, who have confirmed they will comply with all actions required in the Risk Assessments:

Demolition/breaking out
 Contaminated waste materials
 Mechanical excavators
 Dumpers
 Spoil
 Excavation areas and trenches
 Ladders
 Underground services
 Contaminated land

6.1 Overall MOL Archaeology site risk assessment and procedures

	Persons Affected	No	Classification	No	
	Employees	c. 3	Experienced	All	
	Other workers		Inexperienced		
	Public		Disabled		
Known and Suspected Hazards on site (tick as appropriate)					
Mobile Plant	✓	Power Auger		Ionising radiation	✓
Moving Machine Parts	✓	Access equipment	✓	Lasers	
Moving objects		Hazardous Substances	✓	Ultraviolet	
Falls from height	✓	Contamination	✓	Temperature	
Falls on level	✓	Micro organisms	✓	Noise	✓
Manual Handling	✓	Vermin/Weil's Disease	✓	Vibration	✓
Buried services	✓	Fumes/Gas	✓	Weather	
Electrical	✓	Lone working		Hot/cold objects	
LPG etc		Welfare		Physical attack etc	
Fire/Explosion		Confined spaces		Vehicles	✓
Chainsaw		Hand Tools	✓	Human remains	
Control Measures Required					
Compliance with H&S at Work Act 1974, Management of H&S at Work Act 1999, CDM Regulations 2007, and MOL Archaeology (or archaeological contractor's) H&S Policy 2003 –					

Compliance with MOL Archaeology (or archaeological contractor's) Generic or Site Specific Risk Assessment(s) And: Induction for new staff as required and compliance with Primary Contractor's H&S policy.												
Assessment of Remaining risk (Low, Medium, High) (see notes on reverse)												
	L	M	H		L	M	H		L	M	H	
Mobile Plant		✓		Power Auger				Ionising radiation				
Machine Parts		✓		Access equipment		✓		Lasers				
Moving objects				Hazardous Substances		✓		Ultraviolet				
Falls from height	✓			Contamination		✓		Temperature				
Falls on level		✓		Micro organisms	✓			Noise	✓			
Manual Handling		✓		Vermin/Weil's Disease	✓			Vibration	✓			
Buried services		✓		Fumes/Gas	✓			Weather				
Electrical				Lone working				Hot/cold objects				
LPG etc				Welfare				Physical attack etc				
Fire/Explosion				Confined spaces				Vehicles	✓			
Chainsaw				Hand Tools	✓			Human remains				
Additional assessment required for remaining medium/high risk												
Competent Person(s) appointed to take action: Project Managers and Site Supervisor acting on the advice of the H&S consultant or equivalent				Report seen by (initials)								
				PM			Archaeologists					
				SA(s)								
				Client								
				Contractor								
				Other								

6.1.1 Notes

The risk a hazard may produce is calculated by multiplying the likelihood of exposure to the hazard by the severity of injury or illness the hazard is likely to cause.

Likelihood (how many people exposed, for how often and how long):

- 1 Very unlikely
- 2 Unlikely
- 3 Likely
- 4 Very likely
- 5 Almost certain

Severity:

- 1 First aid injury or illness
- 2 Minor injury or illness (less than 3 day)
- 3 3 day injury or illness (i.e. more than 3 days off work)
- 4 Major injury or illness (e.g. major bone broken)
- 5 Fatality or permanent disablement/illness

Risk

- 1-8 Low
- 9-11 Medium
- 12-25 High

The key word to remember is 'likely,' risk is not a calculation of the possible harm but of the likely harm.

Overall safety procedures for MOL Archaeology staff are outlined on the review sheet (*above*). Particular attention is drawn to the following:

- familiarity with WSI (copies to be available on site)
- familiarity with Advance Risk Assessments (below)
- safety induction for site staff

- toolbox talks by Supervisory Archaeologist

6.2 Advance Assessments and Control Measures

The following are the individual risk assessments for activities assessed as carrying significant (medium or high) risks on this site and the remedial measures proposed for each. They are based on current knowledge and predictions prior to the work commencing:

MOL Archaeology RISK ASSESSMENT		Walkover/Site-Visit			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Assault		•		
2	Entrapment/unable to summon help		•		
3	Animal attack/aggression		•		
4	Slips and Trips on level			•	
5	Fall from height (unsafe structures)		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy. The Management of Health and Safety at Work Regs 1999. HSE Information Sheet No 17 - Keeping cattle in fields with public access. HSE Information Sheet No 19 - Occupational health risks from cattle. CDM Regulations 2007, Electricity at Work Regulations 1989. HSE Guidance Booklet HS(G)85: Electricity at Work - Safe Working Practices. HSE leaflet IND(G)73(L): Working alone in safety. Work at Height Regulations 2005 HSE Guidance Note GS6 (Revised 1997) - Avoidance of danger, overhead electrical lines</p>					
<p>Planning: Consideration to be given to the need to send more than one person to the site/property – e.g. if in doubt do not send lone female. Arrange with client or others as applicable for access to the property at a specified time. If possible arrange to be escorted by client representative or similar. Check identity etc of escort if not MOL Archaeology staff. Provide suitable hire vehicle or agree use of own transport where applicable. Ensure that line manager/other suitable member of MOL Archaeology staff is aware of time and place of site visit if working alone. Provide fully charged work mobile phone and that the line manager is aware of the number Provide recent Ordnance Survey mapping of the site and general area at a reasonable scale (i.e. 1:2500/1:1250/Landline). Provide individual first aid kit as applicable. Carry work-related identification preferably with a letter indicating permission for visit and purpose. When working on sensitive/opposed development proposals simply indicate you are carrying out an archaeological assessment but do not discuss details, nature of development or client.</p>					
<p>Physical: Do not enter property without permission of owner/client. For rural sites stick to public rights of way – do not trespass. If threatened by anyone remove self immediately from property/vicinity if possible and report to project manager/ client. If assaulted call police immediately if practicable. Hand over valuables (i.e. camera, mobile) if threatened by physical violence – do not resist. Call police and report to manager/client. Carry either fully charged work or personal mobile. Check signal strength etc. Take a torch with charged batteries if entering disused buildings (see separate Risk Assessment for Standing Building Survey). Be vigilant (unsound floors, stairs, walls etc) Take high factor sun cream where necessary. Ensure you have suitable clothing to match weather conditions (waterproof, warm winter clothing, hat/sleeves for hot summer) Ensure you have suitable footwear (sturdy, waterproof). Be aware of dangers of deep mud and contamination when carrying out foreshore surveys (this should be subject to task-specific risk assessment)Make sure MOL Archaeology office knows where you are and for how long (estimate). Do not enter property where there are aggressive/unsecured dogs/other animals. Be aware of possible rodent infestations. Carry Leptospirosis card, wash hands before eating or smoking. Take individual first aid kit. If bitten etc, wash wound as soon as possible, report to nearest A&E. Ensure you have a tetanus jab if bitten by an animal or have a major cut. Do not enter any area that has no means of safe access/egress. On public property/highways etc be aware of vehicles/traffic. On farm land etc be aware of machinery.</p>					
<p>Management: Ensure that both above sections are complied with as required and applicable.</p>					
<p>Training:</p>					

MOL Archaeology RISK ASSESSMENT		DEMOLITION/BREAKING OUT			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Unplanned collapse of structures or part				•
2	Inhalation of dust		•		
3	Exposure to excessive noise		•		
4	Striking by falling objects		•		
5	Striking overhead or underground services			•	
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy. The Management of Health and Safety at Work Regs 1999 (Amended 2002). CDN Regulations 2007. COSHH Regs 2002 and Amendment 2003. Provision and Use of Work Equipment Regs. 1998.(amended 2002). Personnel Protective Equipment at Work Regs 1992,(amended 2002). Electricity at Work Regulations 1989. HSE Guidance Booklet HS(G)85: Electricity at Work - Safe Working Practices. Work at Height Regulations 2005. HSE Guidance Note GS6 (Revised 1997) - Avoidance of danger, overhead electrical lines. Environmental Protection Act 1990. British Standards - BS5228 : 1984, Code of Practice - noise control on construction and open sites. BS6187 : 1982 - Code of Practice for demolition. HSE Guidance note GS29 - Safety in Demolition, Parts 1 - 4.</p>					
<p>Planning: Notifications will be made to the Local Authority in relation to noise, disposal of waste and sealing of drains and sewers (if necessary). Large scale demolition will take place prior to archaeological investigation or in areas where archaeological investigation is not currently being undertaken. This assessment restricts demolition to non-loadbearing internal walls and external single-storey outbuildings. Pre-start survey will be made to establish hazards, adjacent to premises, structural stability, related affected services, presence of lead or asbestos. Assessments will be available on COSHH substances, noise, dust and foreseen contaminants from previous use of structure.</p>					
<p>Physical: Underground services will be located using plans etc. Work area will be fenced. Overhead power lines will be fenced, signed or preferably disconnected. Water, gas & electricity services will be disconnected prior to work. PPE required by assessments will be provided. Dust will be controlled by damping down, housekeeping and local exhaust ventilation if appropriate. For noise foreseen to be above action levels, noise zones, work rotation and barriers will be provided.</p>					
<p>Management: Work sequence will be planned and defined by management. Safe access and egress will be maintained. Suspect substances or contamination will be investigated before work continues. Monitoring will be continuous to ensure that all voids and open edges are covered and/or fenced off as appropriate. A fire emergency procedure will be published and practised.</p>					
<p>Training: Personnel will be trained in the operation of machinery used, and in demolition techniques. They will also be briefed on the findings of COSHH and other appropriate assessments including noise exposure. This also applies to subcontractor's employees. Site supervisors will be trained in general site safety management.</p>					

MOL Archaeology RISK ASSESSMENT		CONTAMINATED WASTE MATERIALS			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Building and demolition waste			•	
2	Asbestos and asbestos containing materials			•	
3	Flammable materials flashpoint >21°C		•		
4	Substance hazardous by ingestion		•		
5	Lead and lead compounds		•		
6	Organic halogen compounds		•		
7	Acids and alkalis		•		
8	Inorganic metallic and metallic compounds		•		
9	Human/animal remains		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy, COSHH Regs 2002 and Amendments 2003. Manual Handling Operations Regulations 1992 (amended 2002). Environmental Protection Act 1990. Environmental Protection Act (Duty of Care) Regulations 1991. Controlled Waste (Registration of Carriers & Seizure of Vehicles) Regulations 1991. Dept. of Environment Code of Practice: Waste Management - the Duty of Care. Management of Health & Safety at Work Regulations 1999</p>					
<p>Planning: Planning and contract documentation will include waste disposal procedures for items of controlled waste which are foreseen during the project. These may include any of the above categories, and also contaminated land and any broken or surplus material or substances. Collection and disposal of waste materials will only be contracted to authorised and registered contractors, who will be required to produce proof of this before being awarded the contract. Removal of asbestos and other contaminants will be undertaken prior to archaeological work by specialised companies under controlled conditions.</p>					
<p>Physical: Skips and containers will be clearly marked to indicate restrictions on the disposal of particular kinds of waste.</p>					
<p>Management: The Site Supervisor or the person in charge will ensure that building and other controlled waste is placed in suitable containers, so that transfer notes be completed accurately as regards the containers' contents. Disposal of waste into skips/containers will be monitored to ensure that unauthorised disposal is prevented. When in doubt the Local Authority's Waste Officer will be contacted. Waste material will only be passed to registered carriers. Transfer notes will be completed before its removal from site, and copies kept on site for record purposes until contract completion. Provide suitable PPE as required and ensure its correct use. COSHH assessments to be made of substances likely to be found or produced during the work.</p>					
<p>Training: Contractors will be briefed on arrival on site on the requirements for waste disposal. Site Supervisors and personnel in charge of sites and premises will receive training in the requirements of the above Regulations and Codes of Practice. Supervisors must have received training in COSHH appreciation.</p>					

MOL Archaeology RISK ASSESSMENT		MECHANICAL EXCAVATORS			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Shovel or load dropping inadvertently		•		
2	Overturning of machine		•		
3	Materials dropping from shovel or bucket			•	
4	Persons struck by machine			•	
5	Restriction of driver's vision.			•	
6	Hydraulic fluid spray		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy CDM Regulations 2007 British or European Standards including: 5228: Noise on construction sites. 6912: Safety in earthmoving machinery 6913: Operation & maintenance of earthmoving machinery</p>					
<p>Planning: Choice of hire equipment and requirements assessed with regards to ground conditions and local operational requirements. Choice of Excavators and driver/operator to be from sub-contractors competent to provide the machinery and service required.</p>					
<p>Physical: <u>180 degree machines</u> - When using the backhoe the front bucket must be lowered to the ground <u>360 degree machines</u> - At least 600mm clearance to be allowed for tail swing. No persons are allowed to stand or work within operating radius without the operator's permission. Loads must not be slewed over personnel, vehicle cabins or huts. Overhangs are not to be created on high workfaces. Wheels/tracks are to be at 90 degrees to the workface. Travel and operations on a gradient must be controlled to ensure machine stability. A banksman is to be used where driver's vision is impaired or operating in congested areas.</p>					
<p>Management: Certification of drivers must be checked. Drivers must be over 18 years old. MOL Archaeology Staff must not operate mechanical excavators All trenching and deep excavation work must be supervised to ensure the stability of machine and excavation, and that persons do not work within the swinging radius of a backhoe. Vehicles must be checked by drivers before use and secured afterwards. Management must ensure speed restrictions are enforced, and monitor use on sloping ground. Noise levels are to be monitored and assessed as may be necessary.</p>					
<p>Training: Driver training to CITB/CSCS (or equivalent) standard is required; also to comply with BS 6264: Operator training for earthmoving machinery. . Excavator driving by uncertificated operatives is not permitted; this also applies to our subcontractors and the self-employed.</p>					

MOL Archaeology RISK ASSESSMENT		DUMPERS			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Vehicle overturning		•		
2	Vehicle falling into excavations		•		
3	Noise emissions from vehicle		•		
4	Injury to pedestrians			•	
5	Persons falling from vehicle		•		
6	Unplanned movement of vehicle		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy. Health and Safety at Work Act 1974 The Management of Health and Safety at Work 1999 Provision and Use of Work Equipment Regulations 1998 (as amended 2002) CDM Regulations 2007 Highway Code HSE Guidance - Working with Small Dumpers and Driving At Work</p>					
<p>Planning: Small dumpers will be regularly maintained. Stop boards required at excavation sides where dumpers are unloading. Lighting required for work in poor visibility. Public and operatives access to vehicle routes should be A Type 3 asbestos survey was undertaken by McGee Environmental Solutions (McGee Environmental Solutions October 2009) and bitumen adhesive patches containing chrysotile asbestos are present to the soffit above the suspended ceiling on the 1st floor of 12 Goslett Yard. Woven asbestos flash pads are also present within the stairwell of 12 Goslett Yard (3rd floor). Excavation of trial pits will occur at ground level and it's not envisaged that this part of the archaeological programme will encounter asbestos, however if MOLA staff are required to use facilities in these areas appropriate safeguards will need to be instigated. limited where practicable.</p>					
<p>Physical: Handbrake to be applied when loading, tipping or parked. Even loading of dump skips to be achieved, no projecting materials. Drivers to wear safety helmets and dismount during loading. Passengers must not be carried unless additional seat is fitted. Dumpers are not to be left unattended with engines running. A banksman is to be used where driver's vision is impaired or operating in congested areas. Daily driver's checks must include brake testing. Vehicles must not be driven at excessive speeds; only in accordance with site conditions. Extra care must be taken when working on slopes, especially when crossing the gradient. Dump skips are to be kept clean, to facilitate unloading free-flowing materials.</p>					
<p>Management: Certification of drivers must be checked. Drivers must be over 18 years old. Vehicles must be checked by drivers before use and secured afterwards. Management must ensure speed restrictions are enforced, and monitor use on sloping ground. Hearing and head protection must be available for drivers.</p>					
<p>Training: Driver training to CITB/CSCS standards or equivalent is required. Dumper driving by uncertificated people is not permitted; this also applies to subcontractors and self-employed.</p>					

MOL Archaeology RISK ASSESSMENT		SPOIL			
		Assessment of Risk			
Significant Hazards		Insignif	Low	Medium	High
1	Plant and materials falling into excavation		•		
2	Presence of contaminated soil			•	
3	Fall of bucket onto persons in excavations		•		
4	Dust from spoil heaps		•		
5	Slippery barrow runs		•		
6	Overloaded barrows		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy, COSHH Regs 2002 and Amendment 2003 Management of Health & Safety at Work Regulations 1999, CDM Regulations 2007</p>					
<p>Planning: Compliance with British Standards including: 6031: Earthworks Information to be obtained on ground conditions and contamination. Where mechanical spoil removal is from shafts less than 3 metres wide then beam hoists should be used rather than a crane - smaller buckets should be used as these are more controllable. Electric hoists are preferred as would reduce fume hazard. Suitable areas for storing of removed spoil to be identified. Where possible all spoil should be removed mechanically down to the archaeological level</p>					
<p>Physical: Substantial barriers must be erected around excavation shafts greater than 2m deep. Where poor ventilation is identified, the atmosphere must be continually monitored. Stop barriers must be used to prevent vehicle entry. Spoil and materials must be stacked at least 1.5m from the edge of excavation shafts. Edge of excavations to be kept clear of loose rubble, spoil, materials etc. If the spoil is to be barrowed away from the top of an excavation, provisions must be made to ensure that plant or barrow does not over-run the excavation edge. This can be achieved by securing a stop block of timber or concrete at the edge to prevent plant or wheelbarrow from falling into excavation. Staff are not to be present in areas where buckets etc are being hoisted into or out of excavations.</p>					
<p>Management: Ensure safe system of work provided, taking account of prevailing conditions including weather, traffic and ensure edges of excavations are free from material and spoil. In dry weather consider covering spoil heaps with tarpaulin or damp down to prevent dust being blown about on site or on to public roads or areas. This will become a requirement if the removed spoil is contaminated. Wheelbarrow runs using Youngman boards to be cleaned frequently in wet weather to remove build up of mud which presents a slipping hazard. Also wheelbarrows not to be overfilled so that it becomes heavy to operate with possible spillage onto barrow run. Provide suitable PPE as required and ensure its correct use.</p>					
<p>Training: Supervisors must have received training in general site safety, theory and practice of excavation work. Where necessary operatives must be instructed not to overfill wheelbarrows and ensure barrow runs are clear.</p>					

MOL Archaeology RISK ASSESSMENT		EXCAVATION AREAS & TRENCHES			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Collapse of sides		•		
2	Striking existing services			•	
3	Persons falling into excavations			•	
4	Plant and materials falling into excavations		•		
5	Flooding of excavations		•		
6	Presence of hazardous atmosphere		•		
7	Presence of contaminated soil			•	
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy, COSHH Regs 2002. Management of Health & Safety at Work Regulations 1999 CDM Regulations 2007</p>					
<p>Planning: Compliance with British Standards including: 6031: Earthworks Sufficient numbers of trained operatives and competent supervision must be available before work starts. Sufficient and suitable plant must be available for trench support before work starts. Suitable monitoring equipment and personnel trained in its use will be required where known exposure to toxic substances or lack of oxygen may occur. Location of existing services must be complete before work starts, also information obtained on ground conditions.</p>					
<p>Physical: Sides of excavations greater than 1.2m in depth should be supported, battered or stepped. Where flooding risk exists, cofferdams/caissons must be installed with pumps of suitable capacity. Substantial barriers must be erected around excavations greater than 2m deep. Where poor ventilation is identified, the atmosphere must be continually monitored. Stop barriers must be used to prevent vehicle entry. Spoil and materials must be stacked at least 1.5m from the edge of excavations. Ladders must be provided for safe access/egress. Cable location devices and local authority drawings must be used to trace buried services prior to commencement of work. Suitable signs and barriers must be provided to warn of the work.</p>					
<p>Management: Ensure safe system of work provided, taking account of prevailing conditions including weather, traffic and existing structures. Provide suitable PPE as required and ensure its correct use. Inspect excavations daily, and record thorough examination weekly in F91. Ensure personnel selected to work in excavations are capable and fit, and experienced unless under direct supervision. COSHH assessments to be made of substances likely to be found or produced during the work.</p>					
<p>Training: Supervisors must have received training in COSHH appreciation, general site safety, theory and practice of excavation work. Operatives must have received training in excavation support procedures and use of cable location devices. This applies to subcontractors as well as Company employees.</p>					

MOL Archaeology RISK ASSESSMENT Significant Hazards		LADDERS			
		Assessment of Risk			
		Insignif	Low	Medium	High
1	Fall of persons from ladder			•	
2	Ladder slipping			•	
3	Injury to persons below ladder			•	
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy CDM Regulations 2007 Provision and Use of Work Equipment Regulations 1998 (amended 2002) HSE Guidance Note GS31 - Safe use of ladders, stepladders & trestles</p>					
<p>Planning: Ladders must be checked to ensure correct length, type and condition before use. Ladders must be subject to routine inspection. Ladder work must be restricted to that which can be carried out using one hand only.</p>					
<p>Physical: The ground base for ladder use must be firm and level. The ladder must be of sufficient length to extend 1.05m above the step-off point when used as access to a scaffold or other platform or floor. The correct angle of rest for a ladder is 75 degrees, or a base to height ratio of 1 : 4 Ladders must be secured against slipping, by tying at the top or at the bottom. Ladders may only be footed as a sole precaution against movement if less than 5m high. Over-reaching from ladders must be avoided</p>					
<p>Management: Monitor regularly, to ensure that operatives are not over-reaching, or using two hands to work. Damaged ladders must be broken up or removed from the workplace immediately. Painted ladders must not be accepted for use. Section heads must check method statements supplied by subcontractors and others to ensure that ladders will be used correctly and that safe access will be available.</p>					
<p>Training: All personnel must be trained in the safe use of ladders and the hazards which are to be avoided. This will normally be done at induction.</p>					

MOL Archaeology RISK ASSESSMENT		HAND TOOLS			
		Assessment of Risk			
Significant Hazards		Insignif	Low	Medium	High
1	Eye injury		•		
2	Injury to hands, feet and body			•	
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy Provision and Use of Work Equipment Regulations 1998 (amended 2002)</p>					
<p>Planning: Tools provided must be assessed to ensure that they are suitable, fit for the purpose, the environment in which they are to be used and are in good working condition.</p>					
<p>Physical: Eye protection is to be provided and used whenever work is done using cold chisels, drills, grinders or other tools where there is a risk of flying particles or pieces of the tool breaking off. Open-bladed knives, scalpels, screwdrivers and other sharp tools are to be carried and used so as not to cause injury to the user or others. Insulated tools must be used where there is a possibility of live electrical work.</p>					
<p>Management: Site Supervisors and those in charge of work must monitor hand tools which can deteriorate with use, to ensure they are sharpened or replaced as necessary, and to ensure that the correct tools are being used. Specific checks must be made as follows: Chisels for mushroom heads Hammer and file handles for deterioration and exposed tangs. Open-ended spanners for splayed jaws. Spade and digging tool handles for tightness and damage</p>					
<p>Training: Personnel must be instructed in the correct method of use and in maintenance requirements at induction, and before using special tools.</p>					

MOL Archaeology RISK ASSESSMENT		Manual Handling (Site and Irregular size and Shape Finds)			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Immediate Injury to back and body			•	
2	Musculoskeletal disorder etc		•		
3	Slips and Trips			•	

ACTIONS ALREADY TAKEN TO REDUCE RISKS

Compliance with:

MOL Archaeology Safety Policy
 Manual Handling Operations Regulations 1992 (amended 2002)
 Health and Safety at Work Act 1974
 COSHH Regulations 2002
 Provision and Use of Work Equipment Regulations 1998 (amended 2002)
 Management of Health and Safety at Work Regulations 1999

Planning:

The need for manual handling to be removed wherever possible
 The task or workplace to be structured to reduce the risk of injury wherever possible
 Suitable mechanical aids to be provided where possible
 Mechanical aids to be maintained in good working order
 All large or unusual manual handling tasks to be subject of a site/task specific Risk Assessment by a competent person

Physical and Management:

Fill in manual handling risk assessment record below.
 Where possible record large archaeological find e.g. moulded stone, in-situ and dispose of on site.
 Ensure object fully exposed and clean - free of soil etc. Negate 'suction' from underlying deposits. Get object on level ground, in the best possible position for lifting
 Delay lifting etc if weather/site too hot, wet, slippery, cold, frozen, windy
 Minimise, if possible, Specialised PPE (e.g. breathing apparatus) restriction on movement or posture.
 Assess the route for moving the object(s) Minimise obstacles, trip hazards, constrictions on space. Agree route and timing with other contractors on site to avoid collisions.
 Assess if possible object(s) for size and weight?
 Get contractors/sub contractors, to move objects using plant? E.g. crane, mechanical excavator, where possible. If not use mechanical aids: e.g., sack trolley, skate, wheel barrow, where possible Assess and instruct best way to pick the object up.
 Decide optimum number needed for task. Select staff most suitable for the task, specifically identify those who cannot perform the task for medical/physical reasons. Ensure that sufficient breaks/rests are taken.

Training: All staff to be trained in Manual Handling Techniques where practicable

MANUAL HANDLING RISK ASSESSMENT RECORD

Risk analysis	High	Medium	Low
The Task			
Does it involve holding the load away from the body?			
Does it involve lifting or lowering distances?			
Does it involve carrying over distances?			
Does it involve twisting or bending?			
Does it involve pushing or pulling?			
Does it involve frequent or prolonged physical effort?			
Does it involve static effort (e.g. holding positions)?			
Does it involve reaching up?			
Does it involve large vertical movement?			
Does it involve the unpredictable movement of Loads?			
Does it involve repetitive handling?			

Does it involve insufficient rest or recovery periods?			
The Load			
Does the object have to be moved, can it be recorded <i>in situ</i> and disposed of?			
Is it fully exposed, clean, and free of soil/mud?			
Will there be suction from underlying deposits?			
Does it necessitate the use of PPE (e.g. gloves, safety footwear, etc.)?			
Will on site PPE restrict movement etc?			
Could it be moved by other contractors more easily using plant?			
Are mechanical devices appropriate (sack trolley, skate, wheelbarrow)?			
Does it have sharp edges?			
Is it an awkward size or shape, difficult to grasp, unstable or unpredictable?			
Is it heavy? (Note over 25kg for men and 17kg. for women are HSE guidelines only –not weight limits)			
Does it restrict the operator's movement or vision?			
Does it involve team handling?			
Is it unstable with an awkward centre of gravity?			
Are the type and/or size of handholds inadequate			
The Working Environment			
Is the ground level, slippery or unstable?			
Is the lighting inadequate?			
Are there space restrictions or constraints on posture?			
Is there a temporary working platform (e.g. scaffold, hop-up etc)?			
What is the weather like (hot, cold, rain, wind), can the task be delayed for better conditions?			
Are the standards of housekeeping poor?			
Is the floor uneven, or vary in level, are there steps/stairs or obstructions?			
Has route been agreed with other contractors on site?			
The individual			
Does the task require unusual capability?			
Could the task be age restricted?			
Could it be limited to males only? (e.g. over 18kg in weight)			
Is there a need for specialist information or training			
Could the task be hazardous to those with a health problem?			
Should the task be prohibited for pregnant women?			
Is there a risk of injury or the development of one?		Yes	No
If yes what action is needed?			
Name:	Signature:	Position:	

MOL Archaeology RISK ASSESSMENT		UNDERGROUND SERVICES			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Contact with electricity or gas supplies			•	
2	Contact with sewage		•		
3	Flooding from water services		•		
4	Explosion or asphyxia from gas leaks		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy Electricity at Work Regs.1989 CDM Regulations 2007 HSE Guidance Booklet HS(G)47 - Avoiding danger from underground services. Highways Act 1980, New Roads and Streetworks Act 1991 DoT ACOP - Safety at Street Works & Roadworks Traffic Signs Manual, Chapter 8 National Joint Utilities Group publications : No.3 - Cable locating devices No.42 - Identification of small buried mains and services.</p>					
<p>Planning: All work to be planned in advance, taking account of the above. Full details of underground services must be obtained in advance from the relevant authority, including Television Cable Companies, BT and other telephone companies, and private property owners.</p>					
<p>Physical: Plans and cable location equipment to be available before work starts. Plans must not be assumed to be accurate, and location devices to be used in addition. Trial holes to be dug, using hand digging to confirm locations, taking account of physical indications such as junction boxes and manholes. The lines of services to be marked, using paint, wooden pegs, etc. All services to be assumed to be live until proven otherwise. Services crossing excavations to be supported. Services in concrete to be isolated before breaking operations begin.</p>					
<p>Management: Site supervisors or the person in charge to ensure that services are located and marked before further work begins. Full consultation to be held with relevant authorities to agree precautions to be carried out before work begins. All personnel, machine operators and subcontractors to be fully briefed before they begin work. All temporary services to be properly marked.</p>					
<p>Training: The person in charge must be trained in operation of cable locating equipment, and the requirements of HS(G)47. Personnel locating services must be similarly trained</p>					

MOL Archaeology RISK ASSESSMENT		CONTAMINATED LAND			
Significant Hazards		Assessment of Risk			
		Insignif	Low	Medium	High
1	Presence solid/liquid form of contaminants			•	
2	Gas/fumes/odour/airborne particles			•	
3	Ingestion, inhalation, dermal contact			•	
4	Pollution of water table, drains, water supply		•		
5	Pollution of atmosphere		•		
ACTIONS ALREADY TAKEN TO REDUCE RISKS					
<p>Compliance with: MOL Archaeology Safety Policy, Health and Safety at Work Act 1974, COSHH Regulations 2004 Provision and Use of Work Equipment Regulations 1998 (amended 2002), Control of Lead at Work Regulations(2002), Control of Asbestos at work Regulations 2002 and ACOP 2nd Edition Management of Health and Safety at Work Regulations 1999, HSG66 Protection of Workers and General Public During Development of Contaminated Land- HSE</p>					
<p>Planning: Obtain copy of contamination/ground conditions/environmental report before work commences/MS/WSI is prepared. Implement any site-specific recommendations Specific risk assessment under COSHH by competent person may be applicable Flexible approach to the location of test pits, trenches, excavation areas – i.e. avoid known contamination if possible. Allow for greater duration of project where exposure time to contaminants should be limited. Allow for extra staffing to reduce individual exposure time. Consider and negate/minimise impact of any excavations on water table/drainage etc: seek specialist advice - Environment Agency/ Environmental Health Consider negate/minimise how movement of spoil/mounding may affect locality/environment e.g. dust: seek specialist advice –Environment Agency/ Environmental Health Consider need to provide/demarcate ‘Clean’ and ‘Dirty’ areas of site and appropriate hygiene facilities Consider need to provide appropriate/specialised PPE e.g. Goggles Dust Masks, Half masks and filters, Disposable overalls and gloves, PVC Safety footwear Wellingtons, Escape Set and Breathing apparatus, full-face respirator PVC gauntlets, chemical overalls. Access to the site for representatives of the local Environmental Health Officer Provide clear instructions on what to do in an emergency – make sure staff know the right telephone numbers and where the nearest A&E department is Certain contaminants e.g. asbestos, will be removed prior to archaeological investigation by specialised companies under controlled conditions.</p>					
<p>Physical: All staff to observe rules regarding exposure limits. All staff to report obvious signs of contaminants – e.g. discarded containers, odd coloured deposits, and strange smells. All staff to wear the required PPE. At the end of each working day those items which cannot be cleaned and disinfected, i.e. overalls and dust masks, should be disposed of properly. Clear demarcation of contaminated areas. All staff to observe decontamination procedures with regards to dirty and clean areas of the site, especially with regards to eating and smoking</p>					
<p>Management: Monitoring of all staff and activity to ensure compliance with the above.</p>					
<p>Training: All staff to be given induction and regular tool box talks specific to the contaminants on site indicating nature, appearance, smell, method and required preventative procedures. Site specific/COSHH risk assessments for specific hazards to be communicated to all staff</p>					

6.3 On-site Assessments and Control Measures

Where necessary, the advance risk assessments (6.2) will be reviewed and revised with the MOL Archaeology Health and Safety consultant and Principal Contractor, in the light of conditions actually encountered on site. This may result in further risk topics being identified and/or the addition of further control measures to existing assessments.

The following topics of medium risk have been highlighted in the advance assessments for additional site-specific consideration:

- working with plant and machinery
- buried services
- contamination
- safe access to trenches
- manual handling
- use of hand tools

The following are assessment sheets for use when additional hazards have been identified on site:

MOL ARCHAEOLOGY SITE/TASK SPECIFIC RISK ASSESSMENT			
For each site, location, and task the appropriate generic assessment should be reviewed to ensure that all significant hazards and their risks are identified and controlled. Completion of this Risk Assessment will ensure that your assessment is both appropriate and complete			
Site/Location/Task:			
Frequency and Duration of Task:		Number of Staff Involved:	
Specific Hazards Identified?			
Control Measures Required?			
Assessment of Remaining Risks:		High	Medium
Serious and Imminent Danger Identified:		Yes	No
What Emergency Action Required?			
Circumstances Requiring Additional Assessment?			
Competent Persons Appointed to Take Action			
Circulation of Risk Assessment			
Employees and Volunteers			
Principal Contractor			
Client			

Sub Contractor			
Public/Visitors			
Other Occupier			
Risk Assessment Prepared by	Signed:	Name:	Date:

MOL Archaeology COSHH ASSESSMENT					Substance:		
SITE:					DATE:		INITIALS:
ACTIVITY: Hand and Mechanical excavation of contaminated deposits					STAFF AFFECTED		
SUBSTANCE PRESENT						MALE	FEMALE
Type	Nature	W/OEL	Exposure	Data	Routine		
	Solid, Dust Liquid Vapour		Skin absorption, Eyes, Ingestion, inhalation		Transient		
					Other		
					EXPOSURE TIME		
						Duration	Frequency
					Routine	8hr	Daily
					Transient	8hr	Occasional
					Other	8hr	Infrequent
CONTROL MEASURES							
MEASURE		YES/NO/NA			CONTROL		
Ventilation							
Partial enclosure with LEV							
Reduction in number of employees exposed							
Good housekeeping							
Safe storage and disposal of substance							
Spillage provisions							
Suitable PPE							
Prohibition of eating, drinking, smoking, etc in contaminated areas							
Provision of adequate hygiene facilities							
Provision of medical and first aid facilities							
Health surveillance							
Induction/Tool Box talks							
Air Monitoring etc							
RECOMMENDATIONS							
a) Site to be secured against unauthorised entry including children b) After contact with skin - wash immediately with plenty of water - this includes contact with dirty clothing or footwear. c) Wash hands before eating, drinking or smoking. d) Anyone feeling unwell must seek medical advice. e) Follow first aid precautions on data sheets.							

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Specimen

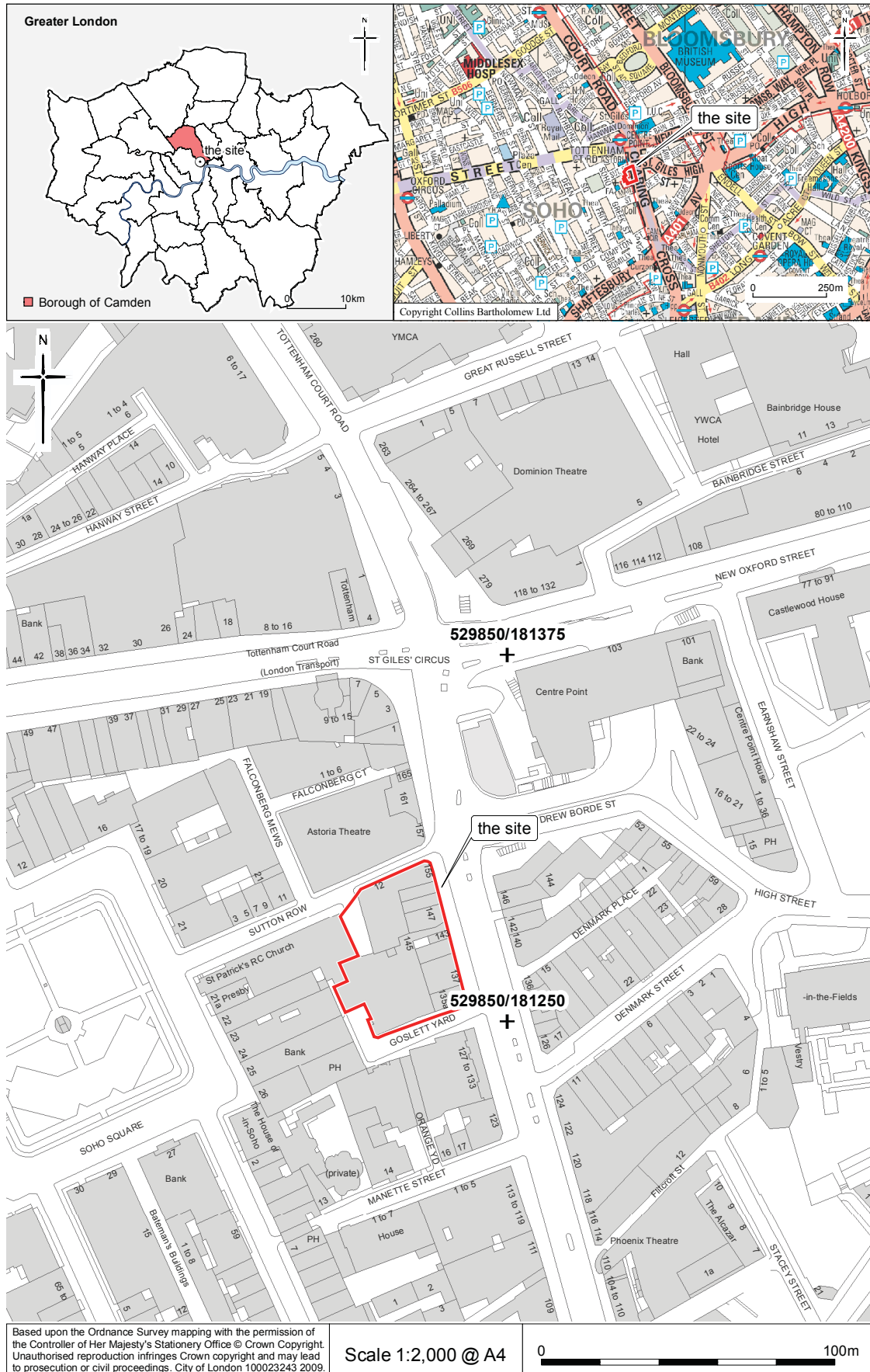


Fig 1 Site location



Fig 2 Areas of potential archaeological deposit survival, and location of geotechnical and archaeological investigations



Fig 3 Proposed trench location