



# C261 EARLY EAST SECTION Method Statement for Archaeological Targeted Watching Briefs and Excavation at Stepney Green Shaft (Phase 2)

**Document Number:** C261-MLA-X-GMS-CRG03-50002

**Document History:**

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
1.0	08/06/11	Robert Hartle	Ian Grainger	Elaine Eastbury	To PDP/H&S Advisor For Approval
2.0	15/06/11	Robert Hartle	Ian Grainger	Elaine Eastbury	Revision post site meeting 14/06/11 re: change of scope of works and comments from PA
3.0	20/06/11	<i>R Hartle</i>	<i>I Grainger</i>	<i>E Eastbury</i>	Revised after comments received by J Carver 17/06/11 re Section 5.1

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<input type="checkbox"/>	Code 4. Received for information only. Receipt is confirmed
Reviewed/Accepted by:(signature)	<i>J Carver</i>
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*Fig 1 Location of Excavation*

*Fig 2 Location of targeted watching briefs*

## 1 Introduction

Archaeological investigations are to be carried out on this site by the Museum of London Archaeology (MOLA). The requirements are set out in a Crossrail Site-specific Written Scheme of Investigation (SS-WSI – Crossrail, April 2011, Document No C123-JUL-T1-TPL-CR094\_SH005\_Z-00001, Rev. 4.1).

A programme of trial trenching and watching brief has been undertaken at the site. A General Watching Brief was undertaken on a water pipe trench in July 2010 and on works around the farm in August 2010. Neither identified significant archaeological remains. Archaeological trial trenching was undertaken in November and December 2010 and comprised nine trenches (Plate 1). The earliest archaeological remains were identified in Trench 7 and comprised a small number of amorphous depressions containing undecorated prehistoric pottery. No evidence for Roman or early medieval activity was noted. Late medieval or Tudor activity was found in Trenches 1, 2 and 3 in the form of substantial brick foundations for St John's Tower, a fortified gatehouse, and its associated outbuildings. The remains of a possible octagonal wall was noted in Trench 5. Later 17<sup>th</sup> and 18<sup>th</sup> century remains were noted in Trenches 1, 2 and 8 and were associated with the transition of the site to a seminary. The 19<sup>th</sup> century was represented by back-to-back terrace slum housing.

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. The purpose of the Watching Briefs are to mitigate the impact of the development works upon archaeological remains; by making an adequate record of them in advance of and during the specified construction ground works (a mitigation strategy of *preservation by record* in line with Crossrail requirements). The purpose of the excavation is to provide information on the presence or absence, character, extent, date, preservation, and importance of the potential archaeological remains currently predicted on the site, in particular those form Tudor Worcester House, in order to inform the mitigation design, which will *preservation-by-record* (e.g. archaeological excavation and/or additional watching briefs) and *preservation-in-situ* (e.g. protective measures for buried remains relating to Worcester House).

If the project design or scope/method of working is subject to substantial changes during the works, the Method Statement will be updated and re-issued to the Project Archaeologist and CDM Advisor for approval, in accordance with the specified document control procedures (see 5.5).

### 1.1 Site Description

The Crossrail worksite at Stepney Green is located in the London Borough of Tower Hamlets. The site is currently bisected by Garden Street. The land to the east of that street is currently part of Stepping Stones Urban Farm and allotments. The area to the west of Garden Street is part of Stepney Green public park and sports pitch. The site is bounded to the east by King John Street, to the north by Stepney Green Road and to the south by Stepney Way. The centre of the site lies at London Survey Grid 86119 / 36266 (NGR 535780 181640).

## 1.2 Geological and Topographical setting

The geological and topographical setting was covered in detail in the WSI (Crossrail, April 2011, Document No C123-JUL-T1-TPL-CR094\_SH005\_Z-00001 Rev. 4.1) and is summarised below.

The drift geology of the site consist of Pleistocene River Thames Terrace gravels (top c 106.0m ATD), overlain by a build-up of alluvium (to c 107.5m ATD). Modern ground level in the northern part of the site is c 109.5m ATD, and within the southern part of the site it is c 110.0m ATD. A borehole survey indicates that the average depth of made ground across site is c 2.0m, and there is at least 0.6m depth of modern material sealing archaeological deposits.

## 1.3 Archaeological and Historic Background

The archaeological potential of the Stepney Green site is summarised below, and covered in detail in the WSI (Crossrail 2011, C123-JUL-T1-TPL-CR094\_SH005\_Z-00001 Revision 4.1).

The earliest evidence for archaeological activity around the site was the recovery of two sherds of Late Bronze Age/Early Iron storage jars, interpreted as possible urns for cremations, 50m to the east of the site (MOL 1982). The evaluation in 2010 identified a small number of depressions that may be small pits or features associated with animal activity/tree-throw holes. Undecorated pottery was recovered from the fills of some of the features. Roman (43 – 450 AD) activity in the area is represented by the recovery of pottery and glass in the south-east corner of the site (MLO 23051/23318). The pottery comprised red ware pottery (likely to date to the Late Roman period). The glass consisted of *unguentaria*, blue-green glass flasks. The presence of oyster shells in Made Ground (Borehole SG17) has also been interpreted as evidence of Roman or later activity in the scheme footprint. There is little evidence for medieval activity within the scheme footprint, however, there is in the greater area. St Dunstan's church is located 130m from the site and was constructed in 925 AD.

Stepney is referred to as *Stybbanhyp* in 1000 AD in the List of St Paul's Manors; the name is believed to mean Stybba's landing place. The Domesday survey refers to Stepney as being held by the Bishop of London and measuring 32 hides; the area was occupied by 60 villagers and 46 cottagers suggesting it covered a large area. Archaeological interventions in the site and in the vicinity (WOR85 and SHS79) have encountered much evidence for Post-medieval urbanisation around the site. There is a high potential for evidence of 16th to 19th century buildings, in particular relating to Worcester House and associated gardens, to yards and related structures including the non-conformist chapel, the Baptist Chapel; the Congregation Church; the early 19th century Sunday school; and other Post-medieval occupation features surviving, particularly if there are no modern cellars.

Worcester House, the London home of the Marquess of Worcester, was constructed in the late 16th century. The house is noted to have had a semi-octagonal tower at the gatehouse. An engraving by John Thomas Smith of the gatehouse was published in 1791. The engraving depicts the gate with a diaper patterned brick façade. This particular style is commonly associated with Tudor buildings; Tudor country houses also favoured a quadrangular ground plan with a gatehouse. Excavations by the Department of Greater London Archaeology in 1985 recorded a series of wall elements that they interpreted as the site of Worcester House, in particular the semi-

octagonal tower was identified. Based on the mapping evidence (Drawing C123-JUL-T1-DDL-CR094\_SH005-00061) and Smith's engraving it appears that King John's Court, identified on Roque's map of 1746, was built over the site of Worcester House incorporating the gatehouse into its overall ground plan (Drawing C123-JUL-T1-DDL-CR094\_SH005-00061). Areas that were covered by the 1985 excavation were included in the 2010 evaluation. Substantial brick foundations were identified in Trench 1).

The remains of some earlier buildings on the site are still upstanding include the entrance to a c.1811 Baptist Chapel (or Academy), with associated gate piers, at the north eastern corner of Garden Street and the northern wall of the 1862-3 Congregational Church south of King John Street (Drawing C123-JUL-T1-DDL-CR094\_SH005-00062) . An arched doorway attached to the church wall and a gate pier formed parts of an open passageway adjacent to the church. Historic maps show that the extent of development on the site until the early 20th century was in the form of individual buildings running along the northern boundary and along both sides of Garden Street. The site had also been used for small scale kitchen gardens. The 1914 map shows that back-to-back terraced housing occupied the majority of the site and continued to do so until at least the late 1960's. The extent and location of services running to these former houses or whether any of the buildings had cellars is unknown. Although the geotechnical data indicates that the depth of Made Ground is relatively uniform across the site it is not extensive enough to isolate individual instances of truncation that may be associated with basement structures. An early 19th century Sunday school was located immediately north-west of the Congregational Church. There are no buildings currently occupying the site, although ruins of former buildings are still upstanding in the north and south-east of the site. The area to the west of Garden Street is currently in use as an all-weather sports ground. The extent to which landscaping for the sports ground truncated archaeological remains is unknown.



## **2 Interfaces and Communication Plan**

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

The Method Statement has been developed jointly with the Principal Contractors who have been appointed and then submitted to the Project Archaeologist and Crossrail Safety/CDM Advisor for approval. Any comments have been incorporated. Weekly 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 C261 Contract Administrator**

MOLA shall submit relevant documentation in accordance with the C261 Contract to the Contract Administrator.

### **2.3 Interface with C305 Principal Contractors**

MOLA shall liaise with the C305 Principal Contractors to prepare the Method Statement. The archaeological investigations will take place 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 (e.g. names of staff for inductions), health and safety planning; and (if required) to support the Principal Contractors' Permits to Dig. 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 phase.

The Principal Contractor for Stepney Green is:

- C305 Stepping Stones Farm –Dragados Sisk JV

### **2.4 Interface with Crossrail Design Team**

MOLA shall liaise with Jay Carver, Crossrail Project Archaeologist, to implement the correct archaeological design specification WSI (Crossrail 2011) C123-JUL-T1-TPL-CR094\_SH005\_Z-00001 Revision 4.1.

### **2.5 Interface with External consultees**

Jay Carver shall liaise with Kim Stabler, English Heritage GLAAS to inform them of the archaeological works.

## 3 Scope of Works

### 3.1 Planned Fieldwork Events

This Method Statement sets out the methodology and health and safety requirements for archaeological works on the site in advance of construction of the Stepney Green Shaft as follows:

- Excavation of the imprint of the Shaft area at Stepping Stones Farm (Fig 1).
- Targeted watching brief during the protection of the standing remains of the Baptist Chapel and Congregational Church with hoardings (Fig 2).
- Targeted watching brief monitoring ground reduction to create the working area including excavation for the bentonite tank (location to be confirmed) (Fig 2).

### 3.2 Confirmation of Methods and Standards

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

- Crossrail Environmental Minimum Requirements (Crossrail 2008).
- Crossrail Archaeology Generic Written Scheme of Investigation (draft July 2009).
- Crossrail SS-WSI (C123-JUL-T1-TPL-CR094\_SH005\_Z-00001), Revision 4.1, April 2011
- Crossrail Archaeology Specification for Evaluation & Mitigation (including Watching Brief) (CR-PN-LWS-EN-SP-00001)
- Crossrail Code of Construction Practice
- English Heritage, July 2009, Standards for Archaeological Work, London Region, External Consultation Draft.
- English Heritage Centre for Archaeology Guidelines, Environmental archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation (2002).
- English Heritage, 2004, Geoarchaeology: using earth sciences to understand the archaeological record.
- 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

The overall objectives of the investigation are to establish the nature, extent and state of preservation of any surviving archaeological remains that will be impacted upon by the development. Specifically, archaeological investigations have the potential to:

- Recover archaeological remains of prehistoric date relating to occupation of the area;
- Recover archaeological remains of medieval date relating to the expansion of Stepney Green;
- Recover archaeological remains of Post-medieval, or earlier date relating to Worcester House or its predecessor;
- To establish the presence or absence of archaeological remains surviving below the foundations of building shown on the 19th century Ordnance Survey map;
- Record the character and extent of archaeological remains identified during trial trenching. Preserve *in situ* any archaeological remains identified by the evaluation and covers the footprint of the working area.

### 3.4 Event Codes

The site code is **XRV10**.

## **4 Site Management Plan**

For health, safety and welfare aspects of site access see also Appendix – Health & Safety Method Statement.

### **4.1 Tools and Equipment**

Tools and equipment appropriate for the watching brief will be ordered by the MOLA Supervising Archaeologist and delivered to site by the MOLA Equipment Officer from the MOLA central store. These are normally basic hand tools, maintained and checked regularly for fitness for purpose by the Equipment Officer. If any additional specialist equipment is hired in by MOLA the inspection certification will be confirmed by the MOLA Supervisor or Specialist Manager as appropriate on delivery.

### **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.

In the case of the General Watching Briefs and Targeted Watching Briefs a MOLA Supervisor (Grade 5)/Senior Archaeologist (Grade 4) will be supervised by a MOLA Senior Archaeologist (Grade 3) or Contracts Manager/Assistant Contracts Manager via regular site visits, advice and mentoring.

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, Chainsaw use, Confined Spaces and Power Auger use. However, it is not anticipated that this will be required on this site.

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

### **4.3 Site Monitoring**

The site will be monitored by the MOLA Contracts Manager (Elaine Eastbury, BSc) or Assistant Contracts Manager (Nick Elsdon, BSc) via site visits, as and when required, in order to provide advice and support to the MOLA Supervisor. MOLA H & S Advisor (Hascom) will also regularly monitor the site, see 8.4.

## 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.

## 4.5 Resource Plan

Targeted Watching Briefs:

- The targeted watching briefs will be supervised by a MOLA Supervisor (Grade 4 or 5) assisted by members of the MOLA field team (Grade 6) with support from MOLA Geomatics and Photographic team members when required. Other archaeological specialists (Grade 8) may be called in if necessary.

Excavation:

- The excavation will be supervised by a MOLA Supervisor (Grade 4) assisted by members of the MOLA field team (Grade 6) with support from MOLA Geomatics and Photographic team members when required. Other archaeological specialists (Grade 8) may be called in if necessary.

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

The named Supervisor for the archaeological works is as below:

Person	Role	Responsibility	Qualifications
David Sankey <a href="mailto:dsankey@museumoflondon.org.uk">dsankey@museumoflondon.org.uk</a> , 020 7410 2280; m 07730 646055	Supervisor	Overall site supervision	BA (Hons) Prehistory and Archaeology

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 Programme

The archaeological excavation is expected to provisionally start commencing week beginning 20th June 2011 (dates to be confirmed) as follows:

- Principal Contractor to hand dig trial pits to locate Street lighting and mark out location of cables.
- Principal Contractor to ensure the street lights are disconnected. If not a suitable safe method of working to protect the cables to be enforced by the Principal Contractor whilst digging the trench.

- Principal Contractor to locate the live EDF cable in Garden Street and to mark out on the ground. The Principal Contractor to ensure that excavation is kept at least 1m away from live cable and that the cable is protected if exposed.
- Live EDF cable is due to be disconnected w/c 20th June by Murphys contractor. If this is achieved the area of excavation will include Garden Street.
- Principal Contractor to mark out the limits of the area to be excavated during w/c 20th June.
- Principal Contractor to prepare the marked out area (Fig 1) by removing up to 0.5m of overburden under supervision by the MOLA Supervisor.
- Principal Contractor to remove further overburden down to the first significant archaeological horizon under MOLA supervision and to remove low grade fill from 19th cellars using a suitable sized machine with ditching bucket.
- Archaeological excavation to commence w/c 27th June with MOLA providing adequate resources of field staff for the next 3-4 weeks.

At present the programme is scheduled as above but dates still have to be confirmed by the Principal Contractor.

Predicted duration for the excavation is 4 weeks, but this is dependent on the Principal Contractors programme.

Programmes for the below targeted watching briefs are dependent on the Principal Contractors schedule of works:

- Targeted watching brief during the protection of the standing remains of the Baptist Chapel and Congregational Church with hoardings.
- Targeted watching brief monitoring ground reduction to create the working area.

#### **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.

## **5 Fieldwork Methodology**

### **5.1 Excavation Methodology**

Under archaeological supervision, the Principal Contractor (C305) will excavate the trench (see Fig 1) down to the first significant archaeological horizon using a mechanical excavator fitted with a toothless ditching bucket. At the first significant horizon, MOLA archaeologists will enter each trench to access, clean, investigate and record archaeological deposits and features. Any low grade dumped deposits, less significant layers, 19th-century building foundations or modern intrusive features etc may then be selectively removed to expose archaeological deposits below, in order to more firmly establish the character of the archaeological sequence and the nature of the underlying drift geological deposits.

- The trenches will be stepped-in after a depth of 1.2m.

The trenches will be fully excavated down to natural geology to achieve the stated objectives (see 3.3) or to the maximum feasible depth (anticipated as c 2.5m below ground level using the stepped trench methodology outlined below).

#### **5.1.1 Survey and setting out method**

The location of the excavation trench has been redesigned since the SS-WSI – Crossrail, April 2011, Document No C123-JUL-T1-TPL-CR094\_SH005\_Z-00001, Rev. 4.1 has been issued: Re: Site meeting with Elaine Eastbury, Bruno Guillaume, Samuel Palomo and Jay Carver on 14th June 2011. It will now cover the imprint of the shaft area (See Fig 1):

- The Principal Contractor will set out the trench for excavation and supply MOLA with the co-ordinates. MOLA will then additionally survey in the trenches where necessary (e.g. when archaeological features are present).

#### **5.1.2 Objectives of excavation**

The first significant archaeological horizon (5.1) will be 19th-century house foundations, overlying earlier archaeology, for example, structural remains related to Worcester House and associated uses as a place of worship.

The following outlines the potential archaeology likely to be encountered:

- To establish the presence or absence of the remains of the southern range of Worcester House and St John's Court.
- To establish the presence or absence of archaeological remains pre-dating the houses shown on the 1870 Ordnance Survey map (probably 6–10 Garden Street).

### **5.1.3 Safe Method of Excavating Trenches**

The proposed safe method of working for opening trenches by machine is to use benching-in to maintain a safe angle of repose (45°). This should avoid the requirement for trench shoring, although this option will be kept under review with the Principal Contractor depending on factors such as ground stability, rain/groundwater and the volume of spoil generated (it is understood that spoil will be retained and mounded adjacent, a safe distant from trenches prior to backfilling).

Each trench will first be opened to the stated dimensions at ground level and reduced to the first bench-step level (1.2m depth). If the first significant archaeological horizon (as defined above) is not reached at this depth, the trench width will be reduced in order to allow a second bench-in step to c 2.4m depth. If localised investigation to a greater depth than c 2.4m is required, this will be done selectively from the trench base using:

- Machine dug test pits.
- Power auger boreholes.
- Removing low-grade deposits as described at 5.1 above.

### **5.1.4 Excavation 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.
- The location of all trenches, temporary grids and baselines will be electronically surveyed by MOLA Geomatics staff. After fieldwork a digital trench location plan will be produced.
- Other appropriate drawn and written records will be produced (for environmental sampling etc).



## 5.2 Targeted Watching Brief Methodology

A targeted watching brief comprises the observation and recording of the Principal Contractor's or their sub-contractor's works with specific operations carried out under the supervision of either a MOLA Experienced or Senior Archaeologist. Targeted watching briefs are carried out in areas where either the density of archaeological features or deposits are not considered of sufficient significance to warrant investigation in advance of construction, or where access prior to construction has been impossible and as a result, there is a possibility of unexpected discoveries (Crossrail 2009 Archaeology Specification for Evaluation & Mitigation (including Watching Brief) CR-PN-LWS-EN-SP-0001, version 3).

It should be noted that during a targeted watching brief, the Archaeological Contractor may impose constraints on, or require changes to, the Principal Contractor's or his sub-contractor's method of working to enable the archaeological investigation to take place alongside construction works. These constraints may include restrictions on the type of equipment used, the methodology employed, stopping excavation works to allow time for recording and the installation of temporary works or other attendances such as pumping out, in order that the archaeologists may enter the works excavations safely. In addition to man-made deposits, some assessment and basic recording of any naturally deposited levels will be necessary, e.g. alluvial deposits. This may require the attendance of a MOLA Geoarchaeology specialist to take samples of such deposits. Normally, if the remains are localised, the Principal Contractor's works may continue in other areas (subject to a safe method of working and monitoring. It is expected that the Principal Contractor will make allowance in their work programme to take account of the delays that a targeted watching brief may cause.

During a targeted watching brief MOLA staff will compile a basic record consisting of notes, measurements, drawings and photographs consistent with an observation role; e.g. depth, character, date and survival/truncation of deposit sequence, height of natural geology.

If potentially very significant (but localised) remains are exposed, such that they cannot be recorded adequately under the scope of the targeted watching brief, then subject to the Project Archaeologist's approval, additional archaeological resources and time may be required at that location (to allow for more detailed follow-up recording and perhaps limited excavation). Such work would be considered separately to the procedure for unexpected archaeological discoveries that fall outside the scope of the SS-WSI (Crossrail 2011, section 7.A2 and section 7.2 of this document).

### 5.2.1 Targeted Watching Brief Tasks

- Targeted watching brief during the protection of the standing remains of the Baptist Chapel and Congregational Church with hoardings.
- Targeted watching brief monitoring ground reduction to create the working area.

## 5.3 Targeted Watching Brief Recording Methods

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

The recording will include as a minimum:

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

## 5.4 Deliverables and Submission Programme

MOLA shall provide the following reports to the Project Archaeologist in accordance with the Crossrail, 2009 Archaeology Specification for Evaluation & Mitigation including Watching Brief CR-PN-LWS-EN-SP-0001, version 3 and Crossrail 2011, WSI C123-JUL-T1-TPL-CR094\_SH005\_Z-00001 or as otherwise instructed by the Project Archaeologist:

- Organisation of site monitoring visits, as and when requested by the Principal Archaeologist.
- A weekly illustrated progress report to the Project Archaeologist.
- A short illustrated interim statement within 1 week of the completion of fieldwork, if required.
- A survey report within 2 weeks of the completion of fieldwork.
- A Fieldwork Report will be prepared within 6 weeks if required. All levels cited in these reports should be recorded both at OS and Above Tunnel Datum (ATD = OD +100m). All Co-ordinates cited in these reports should be based on the London Survey Grid (LSG), apart from archive copies which will use OS National Grid.
- MOLA will supply the Principal Contractor with the production of monthly progress photographs of archaeological work.
- MOLA will complete an SMR (OASIS) Summary Sheet for the works (i.e. 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.

## 5.5 Document Control and Record Keeping

MOLA will access the Crossrail Documentum control system for transmitting reports and other deliverables. The primary report deliverables (as per 5.4) will be submitted to the Project Archaeologist (and Crossrail CDM Advisor in the case of Method Statements) in draft form (Version 1.0). Any tracked changes or comments added by the Project Archaeologist and/or Crossrail CDM Advisor will then be incorporated and future dated versions (2.0 etc) will be returned via Documentum accompanied with the appropriate Checklist with Contractor's responses.

## 5.6 Artefact Recovery and Conservation

At the excavation 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 excavation 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 Occasional Paper 2, (Slowikowski, A, Nenk, 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, eg 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.

## 5.7 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 5.9).

## 5.8 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.

## 5.9 Archaeological Science Strategy

Where necessary, the strategy for sampling archaeological and environmental 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.

If necessary, samples for absolute dating such as C14 or timber samples for dendrochronology will be submitted to nominated MOLA external laboratories. This will only be done with the prior approval of the Project Archaeologist where there are particular research objectives to be addressed by such dating.

## 5.10 Specialist Strategy

An appropriate programme of ceramic dating and study of other excavated artefactual and environmental materials (including deposits of Geoarchaeological significance) will be undertaken by MOLA Specialists as their contribution to the Fieldwork Report.

## 5.11 Excavation and Recording of Human Remains

The required methodology for human remains is set out in detail in the SS-WSI and the MOLA Framework Method Statement (Technical Submission 2.4, section 4.6) and is not repeated here.

It is not anticipated that human remains will be present on this site. If human remains are present, any complete or semi-complete, articulated burials will be left *in situ*, suitably covered and protected, at the exploratory or enabling works stage of Crossrail works. Protective measures may include covering with Terram and sand before the trench is backfilled (to be provided by the Principal Contractor). Any *in situ*

human remains will be recorded to watching brief standard (basically cleaned, location recorded and photographed). Any re-deposited, disarticulated human bones will be collected, bagged, labelled and returned to the trench in which they were found, before it is backfilled. Similarly, if any of the contractor's excavated spoil may also contain further disarticulated human bone it must not be removed from site but should be re-filled by the Principal Contractor into the trenches on completion.

If this proposed method for retaining human remains is not feasible, eg where the Principal Contractor may be under instruction to reach a certain depth and that can only be achieved by removing *in situ* remains, then further resources would be needed for a more detailed prior investigation and record, as per *additional follow up recording* (see 5.1) and the Crossrail, 2009 Archaeology Specification for Evaluation & Mitigation including Watching Brief CR-PN-LWS-EN-SP-0001, version 3. A Ministry of Justice licence would be obtained by MOLA if required.

## 5.12 Archiving and Dissemination Method

The required methodology for off-work including specialist method statements, assessment, analysis, publication and archive is set out in detail in the SS-WSI.

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).

## 6 Surveying

The required methodology for IT (including site survey) will be carried out in accordance with the C261 Contract and project standard survey requirements.

- For dispersed watching briefs occurring on large sites the Principal Contractor's survey controls may not yet have been installed (eg for service diversions etc at the early enabling works stage). Here the primary aim will be to use digital techniques (such as direct survey capture of works locations and archaeological features) to speed recording and data handling and so minimise any risk of delay to the Principal Contractor.
- The trenches may be manually marked out on site in relation to existing real world features by MOLA staff in the locations specified by the Project Archaeologist on a suitable hardcopy site plan. If trench locations are required to be set out on Crossrail London Survey Grid co-ordinates, then Crossrail surveyors will need to supply MOLA Geomatics with the relevant survey control and mapping sufficiently in advance of the site visit to allow for survey preparation. In the event of MOLA Geomatics staff setting out trenches 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.
- In the case of the excavation at Stepping Stones Farm, MOLA will be setting out the trenches once co-ordinates of the trenches are supplied by the Crossrail Survey section.

## 7 Additional Details

### 7.1 Standards and Guidance

See Section 3.2.

### 7.2 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.

### 7.3 Management of Consents

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

Prior to commencement, the Principal Contractor will confirm to MOLA that these consents have been obtained.

In general separate archaeological consents are unlikely to be required, the exception being human remains. In the event of the unexpected discovery of human remains on site a Burial Licence will be obtained by MOLA from the Ministry of Justice if required.

## 8 Health and Safety

### 8.1 CDM Responsibilities and Reporting

- MOLA will be supporting and reporting to the Principal Contractors and to the Crossrail Project Archaeologist and CDM Co-ordinator (see 2):
- MOLA will be implementing archaeological designs in the SS-WSI prepared by the appropriate FDC consultant, 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 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 required. These services may include providing, site accommodation, plant or the excavation of trenches and other equipment such as handrails, shoring and ladders. These requirements are listed in detail in Appendix 1.

***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: e.g. services and contamination reports; any relevant requirements regarding rights of way, noise, hours of operation, etc.

## **8.2 Rail Sites**

This is not a designated rail site.

## **8.3 Highway Sites**

Part of the site is a designated as highway. MOLA will comply with the Principal Contractor's Highway plan.

## **8.4 Health and Safety Reporting**

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 site manager and included with the weekly reports to the Project Archaeologist. 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.

## **8.5 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 Fieldwork Director and project management team as needed.

## **8.6 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/is 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 Advisor (see 4.3).

# **9 Emergency Response**

## **9.1 Emergency Preparedness & Response Plan**

Site-specific issues are as follows:

- For the both the Targeted Watching Briefs and Excavation, MOLA staff will comply with the Principal Contractor's (Dragados JV) Emergency Plan.



Employers Incident Response Contact	Crossrail helpdesk 0345 602 3813
Principal Contractor (Dragados JV) Incident Response Contact	Dragados JV Site Manager: Samuel Palomo 07585 667 661
MOLA Incident Response Contact	<ul style="list-style-type: none"> <li>• Elaine Eastbury, Contracts Manager  <a href="mailto:eeastbury@museumoflondon.org.uk">eeastbury@museumoflondon.org.uk</a>                      Direct Line: 020 7410 2237                      Mobile: 07730 646063</li> <li>or</li> <li>• Nicholas Elsdon, Assistant Contracts Manager  <a href="mailto:nelsden@museumoflondon.org.uk">nelsden@museumoflondon.org.uk</a>                      Direct Line: 020 7410 2282</li> </ul>
Local A&E location	<p><i>Full A &amp; E at:</i>                      The Royal London Hospital, Whitechapel Road, E1 1BB                      Telephone 0207 377 7781                      Tube: The hospital is located opposite Whitechapel underground station. It is served by the Hammersmith and City and District lines as well as the London Overground (formerly the East London line).</p>

See Also Annex 1, sections 12 to 14.

## 9.2 Training

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

The MOLA Supervisor will attend all emergency training/inductions on Preparedness/Response Plan provided by the Principal Contractor.

## 9.3 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 the excavation a first aid box will be located in the archaeological office on site with accident book.
- It is expected that the Principal Contractor will also provide basic first aid facilities on site.

## 9.4 Monitoring & Testing

MOLA staff will comply with Crossrail requirements.

## 9.5 Emergency & Accident Incident Reporting

All accidents and emergencies must be reported to the Crossrail Helpdesk (24 hour helpline) Call: 0345 602 3813 or [helpdesk@crossrail.co.uk](mailto:helpdesk@crossrail.co.uk)

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
- Nick Dyball, CDM Advisor, Crossrail Central, Crossrail Ltd, 25 Canada Square, London E14 5LQ  
Mobile 07718 861941
- George Dennis, Senior Contracts Manager, Museum of London Archaeology, Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED  
DD 0207 410 2200, Int 2256
- Ian Grainger, Field Manager, Museum of London Archaeology, Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED  
DD 0207 410 2200, Int 2271

## 10 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, controlled waste, members of the public or farm animals this will be agreed with and undertaken by the Principal Contractor as part of the required attendances (see 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.

### 10.1 Contamination

MOLA have recommended to the Principal Contractor that any topsoil containing animal excrement should be removed before commencement of the excavation, as it is a possible health risk. Staff to wear gloves for protection, and to wash their hands on a regular basis, including before breaks and leaving the site. Staff to carry Weil's Disease information cards (for GPs).

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 licensed contractor.

### 10.2 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.

### 10.3 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.

### 10.4 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:

- Ford Silver Transit (Medium Wheelbase) – EA55 NBJ – Harry Matthews, Equipment Officer, 07730 646063.
- 1.7 Turbo Diesel Astra Estate – KC54 XTZ – Sarah Jones, Geomatics Manager, 0207 410 2200 Int 2287.

## **10.5 Other Requirements**

MOLA staff will follow the Principal Contractor's site rules regarding the safety and well being of the livestock on Stepping Stones Farm. MOLA staff working at Stepney Green will always be courteous to any members of the public with whom they have dealings.

## **11 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 C261 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.

## **12 Community Relations**

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.

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

## **13 Responsible Procurement**

An updated Responsible Procurement document was submitted to Alison Jackson, Crossrail on 6th August 2010.

## **APPENDIX 1**

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

#### **1. Introduction and Purpose**

##### **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 a Crossrail Site-specific Written Scheme of Investigation: SS-WSI – Crossrail, April 2011, Document No C123-JUL-T1-TPL-CR094\_SH005\_Z-00001, Revision 4.1).

##### **1.2. Scope of Document**

This Method Statement sets out the specific MOLA safe methods of working to be applied to archaeological works (see 3.1) and has been developed in conjunction with the Principal Contractors who have been appointed, who will be responsible for ensuring that the archaeological works may be carried out as specified.

#### **2. Responsible Persons and Site Management**

##### **2.1. Site Management**

The MOLA 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 Supervisor.

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

The Principal Contractor shall supply MOLA with the relevant CPP covering the works and shall confirm that it has been approved by the PM. MOLA will then incorporate any relevant aspects of the CPP into this Method Statement.

#### **3. Scope of Works**

##### **3.1. Proposed archaeological works**

- Targeted watching brief during the protection of the standing remains of the Baptist Chapel and Congregational Church with hoardings (Fig 2).
- Targeted watching brief monitoring ground reduction to create the working area (Fig 2)
- Excavation of limits of the Shaft at Stepping Stones Farm (Fig 1).

#### **4. Methodology, Programme and Sequence**

The archaeological excavation is expected to be conducted commencing week beginning 20th June 2011 (dates to be confirmed). Please see Section 4.6.

The targeted watching briefs are subject to the Principal Contractors schedule of works (dates to be confirmed).

#### **5. Risk Assessments**

Three risk assessment are listed for each of the different archaeological activities

5.1. MOLA Risk Assessment – Excavation

Site- Stepney Green Shaft		Type of Work		Excavation Trenches
Persons Affected	No	Classification	No	
Employees	Up to 7	Site Supervisor	1	
Other workers		Inexperienced		
Public		Disabled		

**Known and Suspected Hazards on site (tick as appropriate)**

Mobile Plant	x	Power Auger		Ionising radiation	
Moving Machine Parts		Access equipment		Lasers	
Moving objects		Hazardous Substances		Ultraviolet	x
Falls from height	x	Contamination	x	Temperature	
Falls on level	x	Micro organisms	x	Noise	x
Manual Handling		Vermin/Weil's Disease	x	Vibration	
Buried services	x	Fumes/Gas		Weather	x
Electrical		Lone working		Hot/cold objects	
LPG etc		Welfare		Physical attack etc	
Fire/Explosion		Confined spaces		Vehicles	
Chainsaw		Hand Tools	x	Human Remains	
UXO	x			On/Near Water	

**Control Measures Required**

Compliance with H&S at Work Act 1974, Construction(Design and Management) Regulations 2007 and MOLA H&S Policy

Compliance with MOLA Generic or Site Specific Risk Assessment(s) for the Hazards marked above  
Compliance with Principal Contractor's safety policy, site specific method statement, permits to work, instructions.

Attendance of Principal Contractor's induction on first day at work

Implementation and attendance of tool box talks by Principal Contractor and MOLA

MOLA supervisors to be trained and competent.

Certified First Aider on site.

MOLA have recommended to the Principal Contractor that the layer of topsoil containing animal excrement should be removed before commencement of the excavation, as it is a possible health risk.

MOLA has also recommended that the Principal Contractor should provide a disinfectant boot-wash at the exit to the excavation area.

Staff to wear gloves for protection, and to wash their hands on a regular basis, including before breaks and leaving the site.

Staff to carry Weil's Disease information cards (for GPs).

**Assessment of Remaining risk (Low, Medium, High) (see notes on reverse)**

	L	M	H		L	M	H		L	M	H
Mobile Plant		x		Power Auger				Ionising radiation			
Machine Parts				Access equipment				Lasers			
Moving objects				Hazardous Substances				Ultraviolet	x		
Falls from height	x			Contamination		x		Temperature			
Falls on level	x			Micro organisms	x			Noise	x		
Manual Handling				Vermin/Weil's Disease	x			Vibration			
Buried services		x		Fumes/Gas				Weather	x		

Electrical			Lone working			Hot/cold objects		
LPG etc			Welfare			Physical attack etc		
Fire/Explosion			Confined spaces			Vehicles		
Chainsaw			Hand Tools	x		Human Remains		
UXO		x				On/Near Water		

**Emergency action/additional assessment required for remaining medium/high risk**

See Site Specific Risk Assessment for Buried Services

<b>Competent Person(s) appointed to take action:</b>  MOLA Supervisor (TBC)	<b>Report seen by (initials)</b>	
	<b>PM EE</b>	<b>Archaeologists</b>
	<b>SA(s)</b>	
	<b>Client</b>	
	<b>Contractor</b>	
	<b>Other</b>	

**13.1.1 MOLA Site Specific Risk Assessment - Excavation**

<b>MOLA RISK ASSESSMENT</b>		<b>UNDERGROUND SERVICES</b>			
<b>Significant Hazards</b>		<b>Assessment of Risk</b>			
		<b>Insignif</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>1</b>	Contact with electricity or gas supplies			•	
<b>2</b>	Contact with sewage		•		
<b>3</b>	Flooding from water services		•		
<b>4</b>	Explosion or asphyxia from gas leaks		•		
<b>5</b>					
<b>6</b>					
<b>7</b>					

**ACTIONS ALREADY TAKEN TO REDUCE RISKS**

**Compliance with:**

MOLA Health and Safety Policy Operational Procedures (September 2010)  
 Electricity at Work Regs.1989  
 Construction(Design and Management) Regulations 2007  
 DSEAR 2002  
 Regulatory Reform (Fire Safety) Order 2005  
 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.



**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.

**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.

**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.

**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

**MOLA 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

<b>Site/Location/Task:</b>	Stepney Green		
<b>Frequency and Duration of Task:</b>	<b>Daily – TBC</b>	<b>Number of Staff Involved:</b>	<b>Up to 7</b>

**Specific Hazards Identified?**

Contact with existing services –during initial breaking out and machine clearance of trenches under archaeological supervision, but also risk of encounter during subsequent hand digging.  
 Electrocution  
 Explosion, fire  
 Sewage and Flooding  
 Asphyxiation  
 Asbestos and un-exploded WW2 bombs

**Control Measures Required?**  
**Compliance with Principal Contractor’s permits to work system.**  
**Principal Contractor operative to check trench location with CAT scanner for live electrical services before commencement of breaking out operations and again before each new level of machining thereafter.**  
**Discovery of a buried services (live or otherwise) will be reported to the Principal Contractor’s Manager immediately and work shall cease on the trench until the Principal Contractor Manager or designated deputy declares it safe to resume.**

All staff to attend induction and toolbox talks			
All staff to wear required PPE (includes flame retardant overalls)			
First Aider and First Aid box present			
Assessment of Remaining Risks:	High	Medium	Low
Serious and Imminent Danger Identified:	Yes	No	
<b>What Emergency Action Required?</b> MOLA supervisor to report all accidents/incidents to Principal Contractor's Manager of specified deputy in his absence Ensure all serious none emergency casualties not treatable by First Aid are accompanied to the nearest A & E: <p style="margin-left: 40px;">Royal London Hospital, Whitechapel, London, E11BB</p> <p style="margin-left: 40px;">Tel: 020 7 7377 7000</p>			
Circumstances Requiring Additional Assessment?			
<b>Competent Persons Appointed to Take Action</b> Principal Contractor Manager: Samuel Palomo MOLA Site Supervisor			
<b>Circulation of Risk Assessment</b>			
Employees and Volunteers	x		
Principal Contractor	x		
Client	x		
Sub Contractor			
Public/Visitors			
Other Occupier			
Risk Assessment Prepared by	Signed: EE	Name: Elaine Eastbury	Date: 08/06/10

### 13.1.2 Mechanical Excavators

MOLA 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		•		
<b>ACTIONS ALREADY TAKEN TO REDUCE RISKS</b>					

<p><b>Compliance with:</b>                  MOLA Health and Safety Policy Operational Procedures (September 2010)                  Construction(Design and Management) Regulations 2007                  Control of noise at Work regulations 2005                  Control of Vibrations at Work Regulations 2005                  British or European Standards including:                  5228: Noise on construction sites.                  6912: Safety in earthmoving machinery                  6913: Operation &amp; maintenance of earthmoving machinery</p>			
<p><b>Planning:</b>                  MOLA Staff will not operate Mechanical excavators.                  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><b>Physical:</b>  <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><b>Management:</b>                  Certification of drivers must be checked.                  Drivers must be over 18 years old.                  MOLA 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><b>Training:</b>                  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>			
<p><b>MOLA SITE/TASK SPECIFIC RISK ASSESSMENT</b></p>			
<p>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</p>			
<p><b>Site/Location/Task:</b></p>		<p><b>Stepney Green</b></p>	
<p><b>Frequency and Duration of Task:</b></p>		<p><b>Daily TBC</b></p>	<p><b>Number of Staff Involved: Up to 8</b></p>
<p><b>Specific Hazards Identified?</b>                  Discovery of asbestos in demolition debris,                  Persons struck by machine                  Fall of material from bucket</p>			
<p><b>Control Measures Required?</b></p>			

<p><b>All mini excavators and similar plant to be operated and controlled by trained and CPSP certified Dragados Sisk JV operatives under the overall supervision of Dragados Sisk JV supervisor or designated deputy</b>  <b>No MOLA staff to operate any plant</b>  <b>No MOLA staff to supervise or direct machine operations except for archaeological work as specified in the MS</b>  <b>Compliance with Dragados Sisk JV permit to work</b>  <b>Archaeological supervision to be by MOLA Supervisor only</b>  <b>No staff to stand/move within operating circle of active plant</b>  <b>All staff to attend induction and toolbox talks</b>  <b>All staff to wear required PPE</b>  <b>First Aider and First Aid Box present</b>  <b>No staff to stand next to ruined wall</b>  <b>Machine to operate within the Dragados Sisk JV Method Statement and Risk Assessments</b></p>			
<b>Assessment of Remaining Risks:</b>	High	Medium	Low
<b>Serious and Imminent Danger Identified:</b>	Yes	No	
<p><b>What Emergency Action Required?</b></p> <p>MOLA Supervisor to report all accidents/incidents to the Dragados Sisk JV Site Manager or specified deputy in his absence                  Ensure all serious none emergency casualties not treatable by First Aid are accompanied to the nearest A &amp; E:                  Royal London Hospital, Whitechapel, London, E11BB                  Tel: 020 7 7377 7000                  Tube: Whitechapel                  Emergencies: MOLA staff to call 999 in absence of Dragados Sisk JV Site Manager or deputy</p>			
<b>Circumstances Requiring Additional Assessment?</b>			
<p><b>Competent Persons Appointed to Take Action</b>                  Dragados Sisk JV Site Manager: Samuel Palomo                  MOLA Supervisor: TBC</p>			
<b>Circulation of Risk Assessment</b>			
<b>Employees and Volunteers</b>	x		
<b>Principal Contractor</b>	x		
<b>Client</b>	x		
<b>Sub Contractor</b>			
<b>Public/Visitors</b>			
<b>Other Occupier</b>			
<b>Risk Assessment Prepared by</b>	Signed: EE	Name: Elaine Eastbury	Date: 08/06/10

**13.1.3 MOLA Site Specific Risk Assessment- Targeted Watching Brief**

<b>MOLA RISK ASSESSMENT</b>		<b>UNDERGROUND SERVICES</b>			
<b>Significant Hazards</b>		<b>Assessment of Risk</b>			
		<b>Insignif</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>1</b>	Contact with electricity or gas supplies			•	
<b>2</b>	Contact with sewage		•		
<b>3</b>	Flooding from water services		•		
<b>4</b>	Explosion or asphyxia from gas leaks		•		
<b>5</b>					
<b>ACTIONS ALREADY TAKEN TO REDUCE RISKS</b>					
<p><b>Compliance with:</b>                      MOLA Health and Safety Policy Operational Procedures (September 2010)                      Electricity at Work Regs.1989                      Construction(Design and Management) Regulations 2007                      DSEAR 2002                      Regulatory Reform (Fire Safety) Order 2005                      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 &amp; 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><b>Planning:</b>                      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><b>Physical:</b>                      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><b>Management:</b>                      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><b>Training:</b>                      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>					

**MOLA 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**

<b>ensure that your assessment is both appropriate and complete</b>			
<b>Site/Location/Task:</b>		Stepney Green	
<b>Frequency and Duration of Task:</b>		<b>Daily – TBC</b>	<b>Number of Staff Involved: 1-2</b>
<p><b>Specific Hazards Identified?</b>                  Street lighting to west of site.                  EDF live cable located in Garden Street.                  Contact with existing services –during initial breaking out and machine clearance of trenches under archaeological supervision, but also risk of encounter during subsequent hand digging.                  Electrocution                  Explosion, fire                  Sewage and Flooding                  Asphyxiation</p>			
<p><b>Control Measures Required?</b>  <b>Compliance with Principal Contractor’s permits to work system.</b></p> <p><b>Principal Contractor operative to check trench location with CAT scanner for live electrical services before commencement of breaking out operations and again before each new level of machining thereafter.</b></p> <p><b>Discovery of a buried services (live or otherwise) will be reported to the Principal Contractor’s Manager immediately and work shall cease on the trench until the Principal Contractor Manager or designated deputy declares it safe to resume.</b></p> <p><b>Principal Contractor to supply a safe method of working (including protection of live cables) during excavation works.</b></p> <p><b>All staff to attend induction and toolbox talks</b>  <b>All staff to wear required PPE (includes flame retardant overalls)</b>  <b>First Aider and First Aid box present</b></p>			
<b>Assessment of Remaining Risks:</b>		High	Medium
<b>Serious and Imminent Danger Identified:</b>		Yes	No
<p><b>What Emergency Action Required?</b>                  MOLA supervisor to report all accidents/incidents to Principal Contractor’s Manager of specified deputy in his absence                  Ensure all serious none emergency casualties not treatable by First Aid are accompanied to the nearest A &amp; E:                  Royal London Hospital, Whitechapel, London, E11BB                  Tel: 020 7 7377 7000</p>			
<b>Circumstances Requiring Additional Assessment?</b>			
<p><b>Competent Persons Appointed to Take Action</b>                  Principal Contractor Manager: Samuel Palomo                  MOLA Site Supervisor</p>			
<b>Circulation of Risk Assessment</b>			

<b>Employees and Volunteers</b>	<b>x</b>		
<b>Principal Contractor</b>	<b>x</b>		
<b>Client</b>	<b>x</b>		
<b>Sub Contractor</b>			
<b>Public/Visitors</b>			
<b>Other Occupier</b>			
<b>Risk Assessment Prepared by</b>	<b>Signed:</b> EE	<b>Name:</b> Elaine Eastbury	<b>Date:</b> 16/06/10

### 13.1.4 Mechanical Excavators – Targeted Watching Brief

<b>MOLA RISK ASSESSMENT</b>		<b>MECHANICAL EXCAVATORS</b>			
<b>Significant Hazards</b>		<b>Assessment of Risk</b>			
		<b>Insignif</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>1</b>	Shovel or load dropping inadvertently		•		
<b>2</b>	Overturning of machine		•		
<b>3</b>	Materials dropping from shovel or bucket			•	
<b>4</b>	Persons struck by machine			•	
<b>5</b>	Restriction of driver's vision.			•	
<b>6</b>	Hydraulic fluid spray		•		
<b>7</b>	Adjacent to ruined wall				
<b>ACTIONS ALREADY TAKEN TO REDUCE RISKS</b>					
<p><b>Compliance with:</b>                      MOLA Health and Safety Policy Operational Procedures (September 2010)                      Construction(Design and Management) Regulations 2007                      Control of noise at Work regulations 2005                      Control of Vibrations at Work Regulations 2005                      British or European Standards including:                      5228: Noise on construction sites.                      6912: Safety in earthmoving machinery                      6913: Operation &amp; maintenance of earthmoving machinery</p>					
<p><b>Planning:</b>                      MOLA Staff will not operate Mechanical excavators.                      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>					

**Physical:**

180 degree machines - When using the backhoe the front bucket must be lowered to the ground

360 degree machines - 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.

**Management:**

Certification of drivers must be checked.

Drivers must be over 18 years old.

MOLA 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.

**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.

**MOLA 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:

Stepney Green

Frequency and Duration of Task:

Daily

Number of Staff Involved:

1

**Specific Hazards Identified?**

Ruined wall to be struck by machine

Persons struck by machine

Fall of material from bucket

Overturning of machine

Hydraulic fluid spray

Fire/explosion

**Control Measures Required?**

All mini excavators and similar plant to be operated and controlled by trained and CPSP certified Principal Contractors' operatives under the overall supervision of the Principal Contractor's supervisor or designated deputy

No MOLA staff to operate any plant

No MOLA staff to supervise or direct machine operations except for archaeological work as specified in the MS

Compliance with Principal Contractor's permit to dig

Archaeological supervision to be by MOLA Supervisor only

No staff to stand/move within operating circle of active plant

All staff to attend induction and toolbox talks

All staff to wear required PPE

First Aider and First Aid Box present

No staff to stand next to ruined wall



<b>Machine to operate within Principal Contractor's Method Statement and Risk Assessments</b>			
<b>Assessment of Remaining Risks:</b>	High	Medium	Low
<b>Serious and Imminent Danger Identified:</b>	Yes	No	
<b>What Emergency Action Required?</b>			
<p>MOLA Supervisor to report all accidents/incidents to Principal Contractor's Site Manager or specified deputy in his absence                      Ensure all serious none emergency casualties not treatable by First Aid are accompanied to the nearest A &amp; E:</p> <p>The Royal London Hospital                      Royal Hospitals NHS Trust Whitechapel Rd, Whitechapel, London E1 1BB - 020 7377 7000                      Tube: Whitechapel                      Emergencies: MOLA Supervisor to call 999 in absence of the Principal Contractor's Site Manager or deputy</p>			
<b>Circumstances Requiring Additional Assessment?</b>			
<p><b>Competent Persons Appointed to Take Action</b>                      Principal Contractor's Site Manager: Samuel Palomo                      MOLA Supervisor: TBC</p>			
<b>Circulation of Risk Assessment</b>			
<b>Employees and Volunteers</b>	x		
<b>Principal Contractor</b>	x		
<b>Client</b>	x		
<b>Sub Contractor</b>			
<b>Public/Visitors</b>			
<b>Other Occupier</b>			
<b>Risk Assessment Prepared by</b>	<b>Signed: EE</b>	<b>Name: Elaine Eastbury</b>	<b>Date: 16/06/10</b>

## 6. Health and Safety Control Measures

### 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.

### 6.2. Services and Ground Hazards

The location and making safe of live services before or during archaeological works is the primary responsibility of the relevant Principal Contractor in

control of the site (8.1). 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.

## **7. Safety of Excavations**

### **7.1. General**

- Where required during a Targeted Watching Brief and excavation trenches will be shored in a suitable manner by the Principal Contractor and safe access arranged.

### **7.2. Entering the Trench during General or Targeted Watching Briefs**

- The MOLA Supervisor will not enter the trench if it is declared unsafe by the Principal Contractor.

### **7.3. Confined Spaces**

- At the time of writing no areas have been defined by MOLA or the Principal Contractor as Confined Spaces. This will be kept under constant review.

### **7.4. Machine Excavation during Excavation**

- The machined trench will be monitored by the MOLA Supervisor, but will at all times be under the control of the Principal Contractor.

### **7.5. Hand Excavation during Excavation or Targeted Watching Brief**

- Hand excavation will be limited to selected times/areas defined by the MOLA Senior Archaeologist/ Site Supervisor, with the agreement of the Principal Contractor, and will be properly fenced, demarcated and signed.

### **7.6. Contamination**

- MOLA shall be issued with all relevant contamination test results for above and below ground hazards by the Principal Contractor prior to commencement. Any necessary remedial action will then be agreed with the Principal Contractor as part of the H & S Plan and supplied as an attendance item (8.1). Wherever possible such action must be undertaken by the Principal Contractor prior to MOLA commencement on site. If this is not done there may be operational constraints on the MOLA safe method of working that could restrict achievement of the archaeological scope of works set out in the SS-WSI.

### **7.7. Ordnance**

- In the event of MOLA not having been issued with an Ordnance Report from the Principal Contractor the MOLA Supervisor shall comply with the PC's rules. If Ordnance is unexpectedly found the MOLA Experienced Archaeologist shall inform the PC immediately and withdraw to a safe place outside the area designated by the PC.

#### 7.8. 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).

### 8. Planning and Resources

#### 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 below. Those items in **bold will be required** for this site – others may be required, depending on site conditions, which will be reviewed on site by the MOLA Supervisor in conjunction with the Principal Contractor's nominated Site Manager:

- **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 vehicles and plant operating nearby eg via a robust physical barrier.
- 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 (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.
- **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 secure storage of MOLA PPE, equipment, camera and paperwork and finds. For the basic monitoring component of a small watching brief, these facilities would

normally be shared with the Principal Contractor's site establishment and separate work space is not normally required. Welfare facilities to be provided for up to 8 archaeological staff.

- **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 (eg clearing individual obstructions or removing spoil from investigation 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 qualified banksmen/supervisors to control plant movements and adequate certification for plant and operatives.
- **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.
- **other safety measures in deep excavations** monitoring of air quality and provision of rescue facilities and equipment in any areas defined by the Principal Contractor as a confined space. Where hoists are used in shored shafts less than 4m x 4m size MOLA staff will leave the shaft before hoisting of buckets takes place. Beyond a depth of 3m within such shafts gas monitoring equipment will be required to ensure appropriate air quality for those working there. Where mechanical or electrical hoists are in use in larger excavation trenches, the area in which the hoist is in use must be clearly demarcated and no staff will enter this area while the hoist is being raised or lowered.
- **pumping-out :** a suitable method to keep the trenches dry, eg pumping into a previously investigated trench, to create a sump.
- **temporary roofing (not required)** to archaeological excavations (eg 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 (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
- **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.

- **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.

## 8.2. Equipment

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

## 8.3. PPE

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

Safety Helmets (EN397)

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

Hi-visibility vests (EN471)

Ear Defenders (EN 352-3)

Safety spectacles (EN166)

Gloves Nitrile and latex disposable, PVC, EN374

Dust masks plain and valved (EN149 2001)

Flame retardant overalls

## 9. Briefing Arrangements

### 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 Officer/Senior Contract Manager on all relevant aspects of work before work commences. This briefing will include all SS-WSI, Method Statements (PC's and including 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.

## **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 2-3 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 1-2 times per week and be of 10-15 minutes duration.

## **10. First Aid**

### **10.1. Trained First-Aid Personnel**

During the excavation there will be at least one MOLA Archaeologist who is a qualified First Aider (ie 3 day FA at work course) on site.

### **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 Book 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.

### **10.3. First Aid Equipment**

A MOLA First Aid kit, of an appropriate size for the site, will be located in the site office/mess hut/canteen or in the case of this site a 'bum bag' will be carried by the MOLA Experienced Archaeologist at all times.

## **11. Accident, Incident, Near Miss and Environmental Incident Reporting**

### **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 9.5 (main document).

### **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 officer
- MOLA Senior/Contracts Manager
- Crossrail Project Archaeologist
- Crossrail Helpdesk.

The site accident book for both the Principal Contractor and MOLA should be filled in giving details of the incident.

### **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/Field Manager.
- Riddors investigated and reported on to Senior Management Consultant by MOLA H & S Consultants.

### **11.4. Key Project Personnel at MOLA**

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

## **12. Emergency Procedures – Site General**

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

### **13. Emergency Services Contact Details**

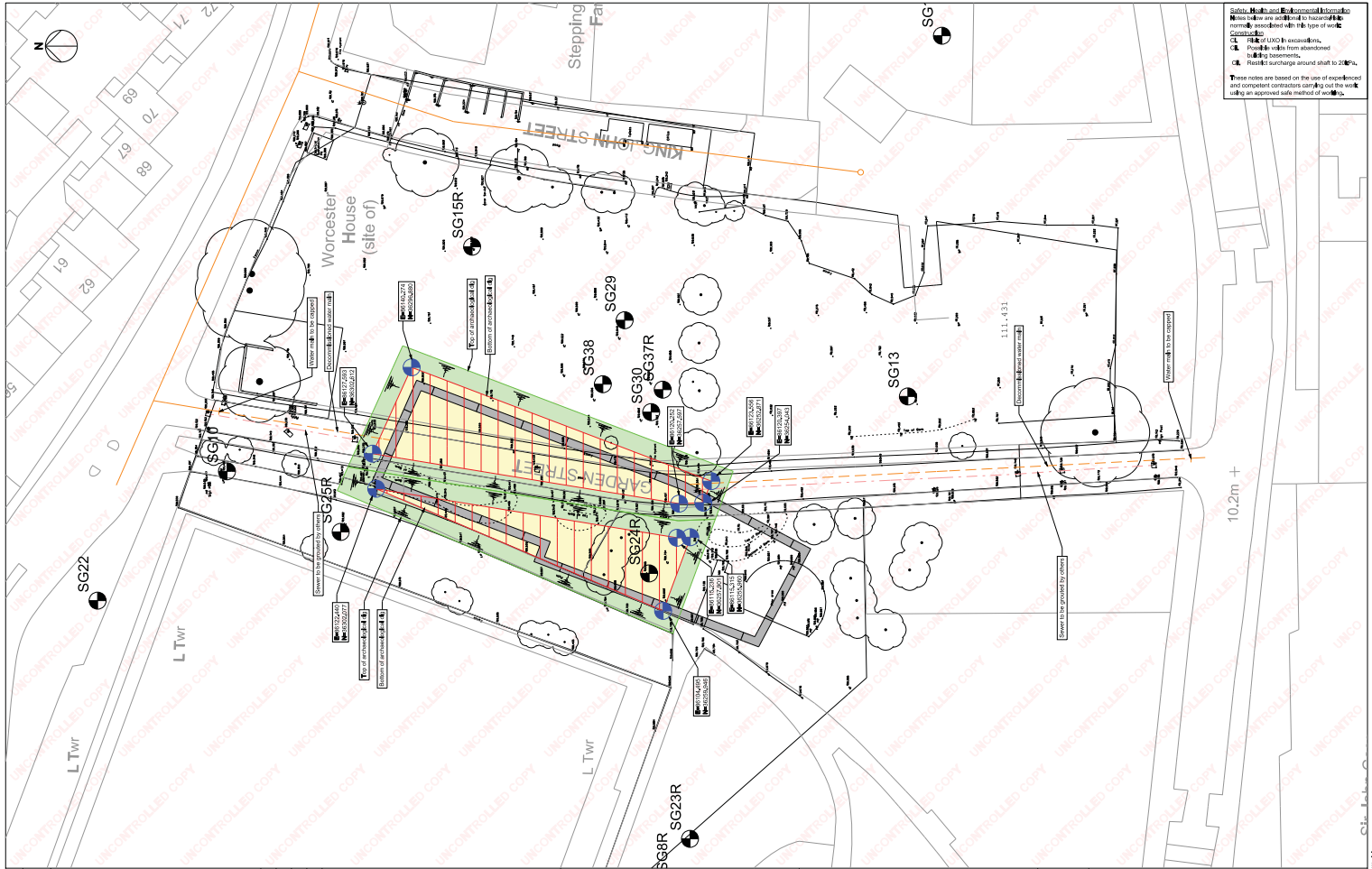
The Royal London Hospital  
Royal Hospitals NHS Trust Whitechapel Rd, Whitechapel, London E1 1BB  
020 7377 7000

The MOLA Supervisor shall ring 999 for fire, ambulance and police in case of an emergency if the Principal Contractor's Site Manager or Deputy is not on site.

### **14. Route to Hospital**

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



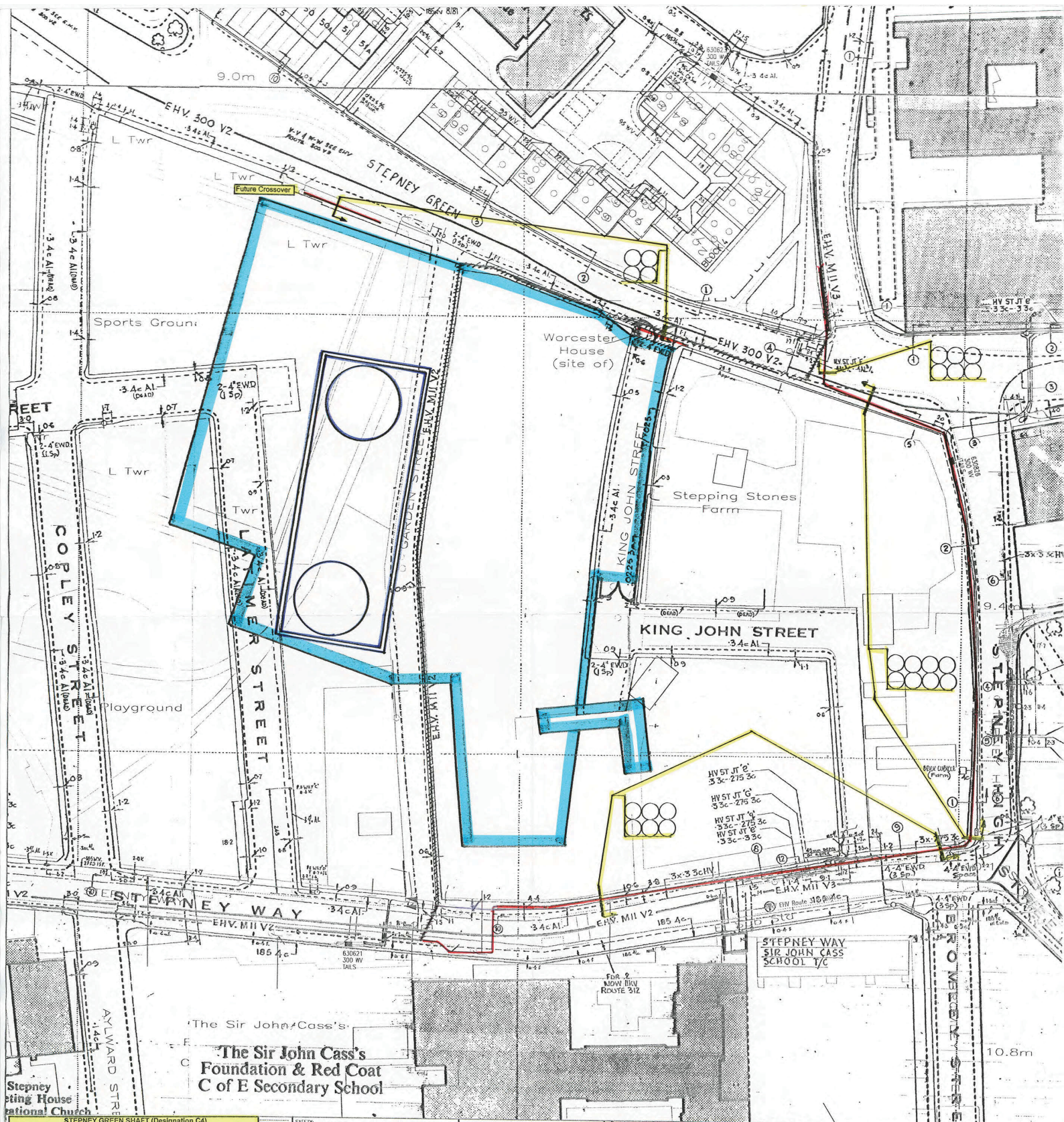


Notes:  
 1. Excavations shall be in accordance with the type of work to be undertaken.  
 2. Excavations shall be in accordance with the type of work to be undertaken.  
 3. Excavations shall be in accordance with the type of work to be undertaken.  
 4. Excavations shall be in accordance with the type of work to be undertaken.  
 5. Excavations shall be in accordance with the type of work to be undertaken.

Rev	Date	By	App	Notes

Work in progress

 Crossrail	Title: East - Drive Y Lift to FAR & Drive Z SGJ to PAL & Drive G Client: Transport for London Project: Crossrail Location: Canary Wharf Design: Working Layout Date: 12/20/17
Scale: 1:100 Date: 12/20/17 Drawing No: C305-GS-000A-CR094_SH005_L-40107	Page: 1 of 1 Sheet: PD1.1 Status: SO



**STEPNEY GREEN SHAFT (Designation C4)**  
 Garden Street, London, E1 (EW/STE01201) Diversions  
 Indicative Overlay (Do Not Scale) based on Crossfall Drawings  
 No. P30103-CTM15-C00-D-50100 Rev. B01 (Date 22/09/2008)  
 Received 19/08/2009  
 EDF Energy Ref: 40094744

JWW 29/03/2010

Distribution LB		Ways	
LV	Mains	ON	ON
ON	ON	ON	ON

EDF Energy  
 Only if Line Profile shown

**SAFETY:**  
 The position of the apparatus shown on this drawing is believed to be correct but the original contractor may have been altered since the date of issue.  
 The exact position of the apparatus should be verified by the use of a suitable cable location device prior to excavation using suitable hand tools.  
 A separate record is kept for each service cable but this route is not necessarily correct in all respects.  
 It shall be assumed that there is a service cable into each property, long column All cables must be buried as being live unless proved otherwise by EDF Energy. The protective period must be given to all people working near EDF Energy plant & apparatus.  
 Please be aware that electric cables/buses belonging to other owners of licensed electricity distribution systems may be present and it is your responsibility to identify these locations.  
 This plan has been issued for public access in relation to the Electricity Network. It is not to be used for other purposes without the prior written consent of EDF Energy.

**NOTE:** Maps produced at 1:2500 scale use LV Gen Schematics which show LV mains cables and overhead lines (in some cases all voltages). Prior to carrying out excavations you must refer to the 1:500 records to determine the location of all known underground plants and equipment.  
 For Details of EHV Cable records contact EDF Energy Ltd.  
 Plotted By: snc-gms  
 Scale: 1:500  
 (New Point as of 22/03/2010)  
 Plotted On: 22/03/2010

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Roster Worksheet:

Comp	HV	LV	Mains	Ways
ON	ON	ON	ON	ON

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