



C261 EARLY EAST SECTION Method Statement for an Archaeological Evaluation and Watching Briefs at Limmo Peninsula Shaft (C123)

Document Number: C261-MLA-T1-GMS-CR094-00001

Document History:

| Revision: | Date: | Prepared by: | Checked by: | Approved by: | Reason for Issue: |
|-----------|----------|-------------------|--------------|-----------------|--|
| 1.0 | 5/11/10 | Elaine Eastbury | Ian Grainger | George Dennis | To PDP/H&S Advisor For Approval |
| 2.0 | 10/11/10 | Elaine Eastbury | Ian Grainger | George Dennis | To PDP/H & S Advisor – Incorporating revised comments as per document review sheet (C261-PDP-W-SXCS-CRG03-00002) |
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Fig 1 Location of evaluation trenches

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, June 2010, Document No C123-JUL-T1-TPL-CR086_SH003_Z-00001, Revisions 4.0 and 7.0) and the addendum to the SS-WSI. Document No C123-JUL-T1-RGN-CR144_SH011_Z_00002, Revision 2.0).

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 Brief is 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).

If the project design or scope/method of working is subject to 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 5.7).

1.1 Site Description

The Crossrail worksite at Limmo is situated in Canning Town on the eastern bank of the lower course of the River Lea, within the London Borough of Newham. The site is situated in low lying area, very close to the confluence of the Lea and the Thames. Therefore, the site lies within both the historic floodplains of both the Lea and the Thames. The site is bounded to the west by the River Lea, to the south by the Lower Lea Crossing and to the east by the DLR.

1.2 Geological and Topographical setting

The geological and topographical setting was covered in detail in the WSI Crossrail, June 2010, Document No C123-JUL-T1-TPL-CR086_SH003_Z-00001 Revision 7.0 and is summarised below.

The drift geology consists of Holocene Floodplain/Shepperton gravels, which have been located in boreholes at c 96 to 97m ATD (Above Tunnel Datum or -100m OD), above which lay alluvial deposits, most or all of which are thought to represent prehistoric fills of channels of the River Lea. The early prehistoric alluvial sequence was previously thought to have been removed across the site by river scour from later meandering of the River Lea. More recent boreholes suggest that areas of uneroded prehistoric sequences, eg *in situ* peat, survive towards the eastern margins of area, but their extent is not known. The surface of the alluvium in Crossrail boreholes at the Limmo Peninsula shaft was generally consistent at 102m to 102.5m ATD.

Five Crossrail boreholes have been monitored archaeologically within the southern part of the Limmo Peninsula shaft site, c 50 to 70m north of the Lower Lea Crossing (Crossrail 2008b). Of particular geoarchaeological interest was an undated peat

deposit and associated channel deposits (total thickness c 0.4m thick) at c 94.6 m ATD. Below these deposits at c 94.2m ATD were the Shepperton gravels, which extended down to Eocene London Clay at c 92.9m ATD. This peat and associated channel deposits are provisionally interpreted as evidence of the Allerod interstadial, a warm interglacial period dating to c 14,000-13,000 BC.

The early post-glacial period was represented on site by a build-up of flood plain sands, gravels and sandy silts or alluvial (recorded between c 101 and 95m ATD). These deposits locally are normally sealed by prehistoric peats or marsh deposits, but these deposits appear to be absent on site due to scouring. Made ground sealed the Holocene alluvial deposits in the boreholes (see 1.3). This probably represents a combination of remains of the Thames Ironworks and modern dumping to raise the ground level. It is estimated that the ironworks ground surfaces would generally have sat at least c 0.5m to 1.0m above the level of the alluvium seen in the boreholes, ie approximately 102.5 to 103.5m ATD.

It should be noted that Instone Wharf to the south currently lies at 105.0 to 105.4m ATD. This suggests that the river frontage has been raised above the general ground level of c 102m ATD seen further to the east of both parts of the site. It is therefore possible that the construction of the ironworks was linked with dumping to raise the ground level. Test pit 558 revealed part of a brickwall and a floor constructed of fire bricks at 101.8m ATD (3.1m below present ground level), interpreted part of the 19th-century ironworks (see 1.3).

Modern ground level varies across the site with the depth of modern land raised with spoil from the DLR tunnelling on the Limmo Peninsula. However, a 1952 Ordnance Survey map shows a combination of some mounding with extensive cleared areas. This suggests that some of the made ground may represent clearance of bombed buildings etc after the Second World War.

The Crossrail boreholes recorded made ground varying from c 8 to 9.5m deep, below ground levels of c 110.4 to 110.7m ATD. However, as the elevated Lower Lea Crossing lies at only c 106m ATD, it is possible that the borehole records may be misleading. It is estimated that at least the lower 0.5 to 1m of the made ground consists of remains of the Thames Ironworks.

1.3 Archaeological and Historic Background

The archaeological potential of the Limmo Peninsula site is summarised below, and covered in detail in the WSI (Crossrail 2010) C123-JUL-T1-TPL-CR094_SH005_Z-00001 Revision 7.0 (Draft).

The following summary is mainly drawn from Technical Report 'Assessment of Archaeology Impacts, Part 4 South-East Route Section, February 2005', which should be consulted as it contains extensive further details. In the 'Crossrail MDC4 Archaeology Updated Baseline Assessment, January 2008, there were no changes in designation or new baseline data.

The site lies within an Archaeological Priority Area designated by the London Borough of Newham. It does not include any Scheduled Monuments, Listed Buildings or other designations.

The lowest deposits of Geoarchaeological interest present on site are the Shepperton gravels, which accumulated during the late Devensian (25,000 -12,000

BP). Following the end of the last glaciation (c 12,000 BP), the Thames and the Lower Lea formed a network migrating and meandering braided channels, which infilled their courses with sediments as they fell into disuse. The local environment would have consisted of marshlands and shallow watercourses flowing around higher islands areas of sands and gravels. The Mesolithic hunter-gatherers would have exploited the area for food and other resources. The water levels gradually rose through the Neolithic and Bronze Ages and this formed marshes along the Thames and lower Lea valley. Permanent settlement was centred upon the higher ground on the gravel terraces to the north of the site.

The site probably remained estuarine marsh land during both the Roman and medieval periods. However, by the 17th century these marshes were being reclaimed and drained, so they could be used as pasture. This reclamation process involved the construction of embankments and drainage ditches.

In 1846 the Thames Ironworks and Shipbuilding Company established their premises here. After the closure of the shipyard in 1912, its buildings and slipways were used for repairing ships. The 1920 Ordnance Survey map shows that the site remained occupied by large ship repair yards, including extensive buildings, a dock and slipways and an internal railway system. Remains of the ironworks are known to survive on site and they are sealed by dumps of demolition debris, including foundry ash.

2 Interfaces and Communication Plan

2.1 Interface with Project Archaeologist

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

2.2 Interface with C261 Contract Administrator

MOLA shall submit costings and timesheet reports in accordance with the C261 Contract to the Contract Administrator.

2.3 Interface with C252 Principal Contractor

MOLA shall liaise with the Principal Contractor 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 (eg names of staff for inductions), health and safety planning; and (if required) to support the Principal Contractor's Permit to Dig. The majority of this information will be contained in this Method Statement. MOLA will liaise with the Principal Contractor regarding access, order of works, programme and commencement date. The Principal Contractor shall give MOLA 4 weeks notice of start date(s) for each work area or phase.

2.4 Interface with C123 Design Team

MOLA shall liaise with FDC representative, Adam Brossler to implement the correct archaeological design specification WSI (Crossrail 2010) C123-JUL-T1-TPL-CR086_SH003_Z-00001 Revision 7.0 (Draft). C123 shall liaise with English Heritage GLAAS.

2.5 Interface with External consultees

MOLA are not responsible for inviting consultees (see 2.4).

3 Scope of Works

3.1 Planned Fieldwork Events

This Method Statement sets out the methodology and health and safety requirements to archaeological work on the site as follows in advance of construction of the Limmo Peninsula Shaft.

- Excavation of archaeological evaluation trenches
- General watching brief tasks
- Targeted watching brief tasks
- Geoarchaeological investigation

The mitigation strategy for the site will be preservation by record.

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-CR086_SH003_Z-00001, Version 7, and Addendum C123-JUL-T1-TPL-CR144_SH011_Z-00002, Version 3).
- 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 general aims of the investigations at Limmo Peninsula are:

- To gain an understanding of the development of the landscape from Pleistocene to medieval periods.
- To gain an understanding of the development of the site of the former Thames Ironworks and Ship Building Company Ltd.

Specifically, the archaeological and geoarchaeological investigations have the potential to recover:

- What is the development of the local landscape and topography of the junction of the Lea and Thames floodplains from prehistory to the medieval period? Are any peat deposits present? If so, at what level(s) and when did they form? In particular are any late Glacial Allerod deposits present, and if they are present, what is their analytical potential? Is there evidence for river scour removing prehistoric alluvial deposits, or conversely, do they survive?
- Is there any evidence for prehistoric activity that has survived later river scouring? If prehistoric remains are present, what is their character and what can be learned about the exploitation of the floodplain by prehistoric groups? In particular, is there any evidence for Mesolithic activity at the base of the alluvium/surface of the sands? Is there any evidence for timber track ways or other structures of later prehistoric date?
- Is there any evidence for Roman activity, in particular for reclamation or flood defences, and marine transgression and regression?
- Is there any evidence for the medieval manor of Covelees?
- What can be learned about the process of land reclamation and management of the area from the medieval period until the construction of the shipyards and wharves in the mid Nineteenth Century?
- What is the evidence for the development of the area in connection with the Thames Ironworks and other shipyards and wharves during the Nineteenth Century?
- Is there any below-ground or above-ground evidence for the Nineteenth Century Thames Ironworks, and other shipyards and wharves? In particular, is there evidence for the internal railway systems, dock structures, or slipways?

3.4 Event Codes

The event code is **XRW10**.

4 Site Management Plan

For health, safety and welfare aspects of site access see also Appendix 1.

4.1 Tools and Equipment

Tools and equipment appropriate for the archaeological works will be ordered by the Supervising Archaeologist and delivered to site by the MOLA Equipment Officer from the MOLA central store. 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 a General Watching Brief an Experienced Archaeologist (Grade 5) will be supervised by a MOLA Senior Archaeologist (Grade 3) 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 at all times on site.

4.3 Site Monitoring

This site will be monitored by the MOLA Contracts Manager (Elaine Eastbury, BSc) via site visits, as and when required, in order to provide advice and support to the MOLA Supervisor (Grade 5). MOLA Health & Safety 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

The general watching brief will be supervised by a MOLA Supervisor (Grade 5) assisted by members of the MOLA field team 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 c.v.s submitted to Crossrail for approval.

The named Supervisor will be confirmed to Crossrail and the Principal Contractor in advance, once the firm start date has been notified to MOLA.

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

4.6 Programme

The evaluation is expected to be carried out week commencing Monday 15/11/10.

The timing and overall duration of the general and targeted archaeological watching briefs will be determined by the Principal Contractor's programme and the nature and extent of any surviving remains.

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 to these hours in order to minimise disruption to local residents and the general environment.

5 Fieldwork Methodology

5.1 General Evaluation Methodology

The Principal Contractor will be responsible for maintaining a safe method of working as per the Permit to Dig. The following method is proposed, subject to review in the light of ground conditions encountered. In particular use of the benching-in method will depend on ground stability, water ingress etc:

The general area, approximately 50m square around the permanent work location of the shaft, will initially be reduced in level by the Principal Contractor to approximately 104.0m ATD as set out in the Crossrail SS-WSI (C123-JUL-T1-TPL-CR086_SH003_Z-00001, Version 7, and Addendum C123-JUL-T1-TPL-CR144_SH011_Z-00002, Version 3) (see Fig 1). Within this reduced area the Principal Contractor will set out two archaeological trial trenches and supply MOLA with the CAD grid co-ordinates for each corner.

The finished size of each trench will be 35m long x 2m wide at a maximum depth of approximately 2.0 - 2.4 metres (102.0m – 101.5m ATD). This will require the trenches to be set out as approximately 35m x 7m at 104.0m ATD in order to allow two benched-in steps; each step c 1.2m wide by 1.2m deep giving a maximum 2.4m depth.

The trenches will initially be machine cleared to the first benched-in step level (approximately 1.2m depth or 102.6m ATD). If the primary archaeological objective (the iron foundry) is located at this depth evaluation recording will commence. If not, the trench will be machine excavated to the second trench step level (101.6m ATD).

If structural remains of the iron foundry are encountered between 104m and 101.6m ATD:

- Rapid clean up, assessment and recording will take place to determine nature, extent, date and significance.
- All substantial and/or significant structural remains will be left *in situ* at the evaluation stage pending agreement of a mitigation strategy.
- Selective locations will be chosen for a deep access (if feasible), for example blank areas or modern intrusion.
- Machine sondage into those locations to test deeper levels (if safe to do so and if feasible for machine to gain access).
- Following recording, the structural levels locally refilled sufficient to gain access for the terrier rig. The aim would be to place borehole locations in one of the blank areas identified, as above.

If the iron foundry levels or structures are not present after machine excavation to 101.6m, the following method will be used:

- Selective machine sondage to test deeper levels (if safe to do so).

- Basic recording of modern infill sequence followed by re-filling of the trench to a safe level such that ramped access in the terrier rig is possible. Underlying deep deposits will then be sampled by boreholes.

5.2 Evaluation 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 evaluation 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.).

5.3 General Watching Brief Methodology

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

Generally, monitoring will only be undertaken when areas or trenches have been dug down the level of potential archaeological interest. For this reason, a flexible approach will be taken and kept under review. The monitoring presence may alternate between full and part-time depending upon the Principal Contractor's programme (eg the nature and intensity of ground works) and the archaeological results. For example, any areas where the Principal Contractor's works prove to be of insufficient depth to affect significant archaeological deposits will be scoped out of the Watching Brief. The MOLA Experienced or Senior Archaeologist undertaking the monitoring will make an appraisal inspection during the Principal Contractor's initial breaking out, removal of overburden etc. in order to determine at what depth the relevant deposits (if present) occur.

If potentially significant (but localised) remains are exposed, such that they cannot be recorded adequately under basic monitoring, then the status of the fieldwork event will be reviewed by Project Archaeologist and it may be redefined as a Targeted Watching Brief (see 5.4). This redefinition if authorised by the Project Archaeologist would permit additional resources in terms of staff and attendance to allow for more intensive recording.

5.3.1 General watching brief tasks

One general watching brief task the monitoring of excavations for the gas main diversion has already been completed. There is one remaining general watching brief task:

- Ground reduction to a level of c 105.0m ATD within the designated area will be conducted under archaeological supervision intermittently as a general watching brief, but any further ground reduction below that level will require a targeted watching brief (see 5.4).

5.4 Targeted Watching Brief Methodology

A targeted watching brief comprises the observation and recording of the Principal Contractor's or their sub-contractors' works with specific operations carried out under the supervision of either a MOLA Supervisor. Targeted watching briefs are carried out either in areas where the density of archaeological features or deposits are not

considered of sufficient significance to warrant investigation in advance of construction, or they may be carried out in areas where access prior to construction has been impossible and where, 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, eg 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; eg 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, 2009, section 7.A2 and section 8.2 of this document).

5.4.1 Targeted watching brief tasks

A targeted watching brief will be undertaken once the modern material has been reduced to 105.0m ATD, then the 50x 50m area which is being cleared will be further reduced down to significant surviving remains of the 19th-century ironworks, which may be encountered at any depth below c 104m ATD. In the event of significant remains of the ironwork not being encountered in certain localities, then these particular areas will be only reduced to a similar level as the surrounding area for safety reasons.

5.5 Geoarchaeological investigation methodology

Geoarchaeology is the study of soils and sediments in either a natural or anthropogenic context, that either contain human cultural material or are contemporary with human habitation within the region being studied (ie the

Pleistocene/ Lower Palaeolithic and later). It can include techniques of landscape reconstruction such as palaeobotany etc. Within the Crossrail project there is a Geoarchaeological work on a number of sites to investigate the history of the River Lea and its floodplain. In this instance it is planned to evaluate the Lea sediments by means of two boreholes drilled to a depth of c 8m, with a terrier rig (see 5.5.1), supplied by MOLA C261. It is proposed that the Geoarchaeological investigation take place within the footprint of the two evaluation trenches (see 5.5), after archaeological work has been completed. To create access for the terrier drilling rig and construct a level working platform for the rig, it may be necessary to partly backfill portions of one or both trenches. The location of the boreholes will be determined by the presence or absence of foundations and any other obstructions in the trenches and the need to get the best possible spatial coverage. The choice of borehole location will also be informed by previous work on site.

5.5.1 Terrier rig

- The Terrier rig is to be supplied by P J Drilling Ltd, 25 Barnfield Wood Road, Beckenham, Kent BR3 6SR and is operated by a two-man crew. The operatives are protected with hard hats, safety boots, gloves and protective glasses/goggles. The relevant sub-contractor Crossrail form will be submitted to the C261 Contract Administrator Patricia Rodriguez.
- The Drive Sampling Rig is a Dando Terrier 2002. The Rig is transported between sites in a fully enclosed long wheel-base transit type van. The rig is crawler mounted and is off loaded using a set of specially designed steel ramps.
- Overall length mast down: 2.70m, overall height mast assembled 2.4m – 2.85m, the whole mast and wheels can be detached from the main super structure for operation remotely in restricted access locations.
- The rig is tracked to each borehole position by the operative using a set of gearbox controls. To set up the rig ready for drilling, two front legs are slotted into the base of the mast and secured with locking pins. The mast is then mechanically raised into a vertical position.
- Boring is advanced by a drop hammer, which is completely enclosed within a steel cage.
- 1 metre long rods are extended with each metre until the required depth has been achieved.

5.6 Recording Methods

5.6.1 The archaeological remains will be recorded to the relevant professional standards as set out in Section 7.5.18 SS-WSI (C136-SWN-C2-JLT-M123-00001), Addendum (C136-SWN-T1-XAP-M123_WS098-00001)

5.6.2 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.

5.7 Deliverables and Submission Programme

MOLA shall provide the following reports in accordance with the Crossrail, 2009 Archaeology Specification for Evaluation & Mitigation including Watching Brief (CR-PN-LWS-EN-SP-0001, version 3) and SS-WSI (C136-SWN-C2-JLT-M123-00001), Addendum (C136-SWN-T1-XAP-M123_WS098-00001) and Contract requirements to the Project Archaeologist or as otherwise instructed by the Project Archaeologist:

- Organisation of site monitoring visits, as and when requested by the Project Archaeologist.
- A weekly illustrated progress report.
- A short illustrated interim statement within 1 week of the completion of fieldwork.
- A survey report within 2 weeks of the completion of fieldwork.
- A Fieldwork Report will be prepared within 6 weeks if required. This will include a log, description and preliminary interpretation of the geoarchaeological core samples. All levels cited in these reports should be Above Tunnel Datum (ATD), which is 100m OD. All co-ordinates cited in these reports should be based on the Crossrail survey grid, apart from archive copies which will use OS National Grid.

- MOLA will supply the Project Archaeologist with monthly progress photographs.
- MOLA will complete an SMR (OASIS) Summary Sheet for the works (ie one per fieldwork event). This Summary Sheet will be included in the Fieldwork Report if required.
- A Summary report of no more than 500 words for the works shall be prepared by MOLA for submission to the Project Archaeologist for subsequent publication within the London Archaeologist Annual Fieldwork Round-up.

5.8 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 5.7) 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.

5.9 Artefact Recovery and Conservation

At the evaluation stage, the objective is to establish what range and quality of finds and environmental evidence is present and then to develop a sampling regime appropriate to the potential of each category of material. Sampling strategies are developed on a site specific basis to meet the evaluation objectives stated in the Crossrail Site-specific WSI; and the following professional standards, in consultation with appropriate specialists:

- MOL Archaeological Finds Procedure Manual (2006)
- Relevant English Heritage Centre for Archaeology Guidelines eg on Environmental Archaeology (English Heritage 2002)
- Guidelines of the Society of Museum Archaeologists for the Selection, Retention and Dispersal of Archaeological Collections (SMA 1993).
- IFA Guidelines to the standards for recording human remains (2004)
- Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics produced by the Medieval Pottery Research Group 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.

5.10 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).

5.11 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.

5.12 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.

5.13 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.

5.14 Excavation and Recording of Human Remains

The required methodology for human remains is set out in detail in the SS-WSI (C136-SWN-C2-JLT-M123-00001) and Addendum (C136-SWN-T1-XAP-M123_WS098-00001) 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* 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 also be obtained by MOLA if required.

5.15 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 and the MOLA Framework Method Statement (Technical Submission 2.4, sections 4.10 and 4.11) and is not repeated here.

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

6 Survey

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.
- For evaluations 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 this site at Limmo Peninsula the Principal Contractor will be setting out the evaluation trenches for the Archaeological Contractor.

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

MOLA will provide:

- A current health and safety policy, including defined operational procedures and managerial responsibilities, risk assessment/control, and measures to ensure that a safe method of working is implemented by the archaeological team on site, including appropriate advice and support from office-based managers.
- Adequate safety information in the MOLA site accommodation including the WSI, current Health and Safety Policy, Health and Safety at Law Poster, Data Protection Compliant Accident Book, and copies of Public and Employers Liability Insurance. The Supervisory Archaeologist is responsible for ensuring that this information is made available.
- Compliance with current legislation and HSE guidance; including the Construction Design and Management Regulations (CDM) 2007 as a Designer; and the Principal Contractor's Health and Safety Policy, safety inductions and fire and emergency procedures.
- Field staff qualified to operative level (or higher) of the CITB Health and Safety test and therefore eligible to carry a Construction Related Organisation (CRO) White Card for Archaeological Technician (Code 5363).
- Services of a Contract Manager, 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 for the excavation of trenches and other equipment such as handrails, shoring and ladders. These requirements are listed in detail in separate documents.

The CDM Co-ordinator will provide:

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

8.2 Rail Sites

This is not a designated rail site.

8.3 Highway Sites

This is not a designated highway site.

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

An Emergency Preparedness/Continuity Plan is currently being prepared by MOLA and will be submitted to Crossrail for approval.

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

9.2 Training

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

The MOLA Experienced Archaeologist 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 evaluation a first aid box will be located in the archaeological office on site.

- It expected that the Principal Contractor will also provide basic first aid facilities on site.

9.4 Monitoring & Testing

MOLA staff will comply with Crossrail requirements.

9.5 Emergency & Accident Incident Reporting

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

9.5.2 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
- Raymond Davies, CDM Advisor, Crossrail Central, Crossrail Ltd, 25 Canada Square, London E14 5LQ
DD 0203 197 5416 Int 5416
- 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. If any remedial action is needed, eg controls for dust, water, noise or controlled waste, this will be agreed with and undertaken by the Principal Contractor as part of the required attendances (see 8.1). In addition an updated MOLA corporate Environmental Management Plan is currently being prepared for submission to Crossrail.

10.1 Site Waste Management Plan

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

10.2 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.

10.3 Other Requirements

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

11 Quality Assurance Plan

An updated Quality Assurance Plan is currently being prepared for submission to Crossrail. 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.

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 –C123 JUL-T1-TPL-CR086_SH003_Z-00001, Version 6.0 Draft.

1.2. Scope of Document

This Method Statement sets out the specific MOLA safe methods of working to be applied to:

- an archaeological evaluation
- general watching brief tasks
- targeted watching brief tasks
- geoarchaeological investigation

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.

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 Method Statement are required and agreed these should be appended to the site master copy by the MOLA Supervisor.

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

An evaluation consisting of the excavation of two trenches incorporating a geoarchaeological investigation (terrier rig drilling), plus various general and targeted watching brief tasks are to be carried out at Limmo Peninsula.

3.2. Methodology, Programme and Sequence

The timetable, length of programme and sequence of tasks are to be confirmed by the Principal Contractor, but a provisional start date is 15th November 2010.

3.3. Permit to Dig

The Archaeological Contractor (MOLA) will not commence work until the Principal Contractor has confirmed issue of a Permit to Dig. The MOLA Supervisor will ensure that this Method Statement is handed to the Principal Contractor’s Site Manager and that all MOLA staff have read and signed a copy before work commences.

4. Risk Assessments

Three risk assessments are listed for each of the different site activities:

4.1. MOLA Risk Assessment – Evaluation

| Site- Limmo Peninsula | | Type of Work | | Evaluation Trenches |
|-----------------------|---------|-----------------|----|---------------------|
| Persons Affected | No | Classification | No | |
| Employees | Up to 6 | 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 | | 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.

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 | | | | 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

Competent Person(s) appointed to take action:

MOLA Supervisor (TBC)

Report seen by (initials)

| |
|--------------|
| PM GD/EE |
| SA(s) |
| Client JC/RD |
| Contractor |
| Other |

Archaeologists

13.1.1 MOLA Site Specific Risk Assessment – Evaluation

| MOLA RISK ASSESSMENT | | UNDERGROUND SERVICES | | | |
|--|--|----------------------|-----|--------|------|
| Significant Hazards | | Assessment of Risk | | | |
| | | Insignif | Low | Medium | High |
| 1 | Contact with electricity or gas supplies | • | | | |
| 2 | Contact with sewage | • | | | |
| 3 | Flooding from water services | • | | | |
| 4 | Explosion or asphyxia from gas leaks | • | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| ACTIONS ALREADY TAKEN TO REDUCE RISKS | | | | | |
| <p>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.</p> | | | | | |
| <p>Planning: All work to be planned in advance, taking account of the above. Full details of underground services must be obtained in advance from the relevant authority, including Television Cable Companies, BT and other telephone companies, and private property owners.</p> | | | | | |
| <p>Physical: Plans and cable location equipment to be available before work starts. Plans must not be assumed to be accurate, and location devices to be used in addition. Trial holes to be dug, using hand digging to confirm locations, taking account of physical indications such as junction boxes and manholes. The lines of services to be marked, using paint, wooden pegs, etc. All services to be assumed to be live until proven otherwise. Services crossing excavations to be supported. Services in concrete to be isolated before breaking operations begin.</p> | | | | | |
| <p>Management: Site supervisors or the person in charge to ensure that services are located and marked before further work begins. Full consultation to be held with relevant authorities to agree precautions to be carried out before work begins. All personnel, machine operators and subcontractors to be fully briefed before they begin work. All temporary services to be properly marked.</p> | | | | | |

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

| | |
|----------------------------|-----------------|
| Site/Location/Task: | Limmo Peninsula |
|----------------------------|-----------------|

| | | | |
|--|------------------------------|----------------------------------|----------------|
| Frequency and Duration of Task: | Daily – up to 2 weeks | Number of Staff Involved: | Up to 6 |
|--|------------------------------|----------------------------------|----------------|

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
 Contamination Report issued by the Principal Contractor to MOLA had results from tests from 110mATD to 105mATD which were low level. It is unknown about contamination below 105mATD therefore MOLA staff will wear PPE (safety glasses, gloves, etc). The situation will be reviewed on site by the MOLA supervisor and MOLA H & S consultant with guidance from the Principal Contractor.

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 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 | |

| | | | |
|---|--|-----------------------------|------------------|
| <p>What Emergency Action Required? 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: Newham General Hospital Glen Road, London Area, London E13 8SL 020 7476 4000</p> <p>Emergencies: MOLA EA to call 999 in absence of McNicholas Site Manager or deputy</p> | | | |
| <p>Circumstances Requiring Additional Assessment?</p> | | | |
| <p>Competent Persons Appointed to Take Action Principal Contractor Manager: David Barrett McNicholas MOLA Site Supervisor: TBC</p> | | | |
| <p>Circulation of Risk Assessment</p> | | | |
| Employees and Volunteers | | x | |
| Principal Contractor | | x | |
| Client | | x | |
| Sub Contractor | | | |
| Public/Visitors | | | |
| Other Occupier | | | |
| | | Name: Elaine Eastbury | Date: 5/11/10 |

13.1.2 Mechanical Excavators - Evaluation

| 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 | | ● | | |
| <p>ACTIONS ALREADY TAKEN TO REDUCE RISKS</p> | | | | | |

Compliance with:

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 & maintenance of earthmoving machinery

Planning:

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.

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: | | Limmo Peninsula | |
| Frequency and Duration of Task: | Daily - up to 2 weeks | Number of Staff Involved: | Up to 6 |
| Specific Hazards Identified? Persons struck by machine Fall of material from bucket | | | |
| Control Measures Required? | | | |

All mini excavators and similar plant to be operated and controlled by trained and CPCS (DO) certified operatives under the overall supervision of the McNicholas 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 McNicholas permit to work
 Archaeological supervision to be by MOLA Experienced/Senior Archaeologist 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
 Machine to operate within the McNicholas Method Statement (ref D/B2 rev 1)

| | | | |
|---------------------------------------|------|--------|-----|
| Assessment of Remaining Risks: | High | Medium | Low |
|---------------------------------------|------|--------|-----|

| | | |
|--|-----|----|
| Serious and Imminent Danger Identified: | Yes | No |
|--|-----|----|

What Emergency Action Required?

MOLA Experienced/Senior Archaeologist to report all accidents/incidents to McNicholas 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 & E:

Newham General Hospital
 Glen Road, London Area, London E13 8SL
 020 7476 4000

Emergencies: MOLA EA to call 999 in absence of McNicholas Site Manager or deputy

Circumstances Requiring Additional Assessment?

Competent Persons Appointed to Take Action
 Principal Contractor Manager: David Barrett McNicholas
 MOLA Supervisor: TBC

Circulation of Risk Assessment

| | |
|--------------------------|---|
| 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: 5/11/10 |
|------------------------------------|------------------|--------------------------------------|--------------------------|

4.2. MOLA Risk Assessment – General Watching Brief

| | | | |
|------------------------------|-------------------------|---|-----------------------|
| Site- Limmo Peninsula | | Type of Work- General Watching Brief | |
| | Persons Affected | No | Classification |
| | Employees | 1 | Experienced |
| | 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 | X | 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.

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 | | | | 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

| | | |
|---|----------------------------------|----------------|
| Competent Person(s) appointed to take action: MOLA Supervisor (TBC) | Report seen by (initials) | |
| | PM GD | Archaeologists |
| | SA(s) | |
| | Client JC/RD | |
| | Contractor | |
| Other | | |

13.1.3 MOLA Site Specific Risk Assessment – General Watching Brief

| MOLA RISK ASSESSMENT | | UNDERGROUND SERVICES | | | |
|---|--|-----------------------------|------------|---------------|-------------|
| Significant Hazards | | Assessment of Risk | | | |
| | | Insignif | Low | Medium | High |
| 1 | Contact with electricity or gas supplies | | | • | |
| 2 | Contact with sewage | | • | | |
| 3 | Flooding from water services | | • | | |
| 4 | Explosion or asphyxia from gas leaks | | • | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| ACTIONS ALREADY TAKEN TO REDUCE RISKS | | | | | |
| <p>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.</p> | | | | | |
| <p>Planning: All work to be planned in advance, taking account of the above. Full details of underground services must be obtained in advance from the relevant authority, including Television Cable Companies, BT and other telephone companies, and private property owners.</p> | | | | | |

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

| | | | |
|--|--------------------|----------------------------------|----------|
| Site/Location/Task: | Limmo Peninsula | | |
| Frequency and Duration of Task: | Daily – TBC | Number of Staff Involved: | 1 |

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.
 Electrocutation
 Explosion, fire
 Sewage and Flooding
 Asphyxiation

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 | |
| What Emergency Action Required? MOLA supervisor to report all accidents/incidents to Principal Contractor's Manager or specified deputy in his absence Ensure all serious none emergency casualties not treatable by First Aid are accompanied to the nearest A & E: Newham General Hospital Glen Road, London Area, London E13 8SL 020 7476 4000 Emergencies: MOLA EA to call 999 in absence of McNicholas Site Manager or deputy | | | | | | |
| Circumstances Requiring Additional Assessment? | | | | | | |
| Competent Persons Appointed to Take Action Principal Contractor Manager MOLA Site Supervisor | | | | | | |
| Circulation of Risk Assessment | | | | | | |
| 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: 5/11/10 |

13.1.4 Mechanical Excavators – General Watching Brief

| 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 | | • | | |
| 7 | | | | | |
| ACTIONS ALREADY TAKEN TO REDUCE RISKS | | | | | |
| <p>Compliance with: 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 & maintenance of earthmoving machinery</p> | | | | | |
| <p>Planning: 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>Physical: <u>180 degree machines</u> - When using the backhoe the front bucket must be lowered to the ground <u>360 degree machines</u> - At least 600mm clearance to be allowed for tail swing. No persons are allowed to stand or work within operating radius without the operator's permission. Loads must not be slewed over personnel, vehicle cabins or huts. Overhangs are not to be created on high workfaces. Wheels/tracks are to be at 90 degrees to the workface. Travel and operations on a gradient must be controlled to ensure machine stability. A banksman is to be used where driver's vision is impaired or operating in congested areas.</p> | | | | | |
| <p>Management: Certification of drivers must be checked. Drivers must be over 18 years old. 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>Training: Driver training to CITB/CSCS (or equivalent) standard is required; also to comply with BS 6264: Operator training for earthmoving machinery. Excavator driving by uncertificated operatives is not permitted; this also applies to our subcontractors and the self-employed.</p> | | | | | |
| MOLA SITE/TASK SPECIFIC RISK ASSESSMENT | | | | | |
| <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> | | | | | |
| Site/Location/Task: | | Limmo Shaft | | | |
| Frequency and Duration of Task: | | Daily | Number of Staff Involved: | | 1 |
| | | TBC | | | |
| Specific Hazards Identified? | | | | | |
| 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 McNicholas operatives under the overall supervision of McNicholas 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 McNicholas permit to work 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 Machine to operate within McNicholas Method Statement and Risk Assessments | | | | |
| Assessment of Remaining Risks: | | High | Medium | Low |
| Serious and Imminent Danger Identified: | | Yes | No | |
| What Emergency Action Required? MOLA Supervisor to report all accidents/incidents to McNicholas 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 & E: 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 McNicholas Site Manager or deputy | | | | |
| Circumstances Requiring Additional Assessment? | | | | |
| Competent Persons Appointed to Take Action Principal Contractor Site Manager: David Barrett McNicholas MOLA Site Supervisor: TBC | | | | |
| Circulation of Risk Assessment | | | | |
| 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: 5/11/10 |
|------------------------------------|-------------------|------------------------------|----------------------|

4.3. MOLA Risk Assessment – Targeted Watching Brief

| | | | |
|------------------------------|-----------|---|-----------|
| Site- Limmo Peninsula | | Type of Work- General Watching Brief | |
| Persons Affected | No | Classification | No |
| Employees | 1 | Experienced | 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 | | 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.

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 | | | | 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

| | | | |
|---|----------------------------------|----------------|--|
| Competent Person(s) appointed to take action: MOLA Supervisor | Report seen by (initials) | | |
| | PM GD | Archaeologists | |
| | SA(s) | | |
| | Client JC/RD | | |
| | Contractor | | |
| Other | | | |

13.1.5 MOLA Site Specific Risk Assessment- Targeted Watching Brief

| MOLA RISK ASSESSMENT | | UNDERGROUND SERVICES | | | |
|---|--|----------------------|-----|--------|------|
| Significant Hazards | | Assessment of Risk | | | |
| | | Insignif | Low | Medium | High |
| 1 | Contact with electricity or gas supplies | | | • | |
| 2 | Contact with sewage | | • | | |
| 3 | Flooding from water services | | • | | |
| 4 | Explosion or asphyxia from gas leaks | | • | | |
| 5 | | | | | |
| ACTIONS ALREADY TAKEN TO REDUCE RISKS | | | | | |
| <p>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.</p> | | | | | |
| <p>Planning: All work to be planned in advance, taking account of the above. Full details of underground services must be obtained in advance from the relevant authority, including Television Cable Companies, BT and other telephone companies, and private property owners.</p> | | | | | |

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

| | | | |
|--|--------------------|----------------------------------|----------|
| Site/Location/Task: | Limmo Peninsula | | |
| Frequency and Duration of Task: | Daily – TBC | Number of Staff Involved: | 1 |

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.
 Electrocutation
 Explosion, fire
 Sewage and Flooding
 Asphyxiation

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 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 | |
| What Emergency Action Required? 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: Location of Hospital to be confirmed by Principal Contractor: Newham General Hospital Glen Road, London Area, London E13 8SL 020 7476 4000 Emergencies: MOLA EA to call 999 in absence of McNicholas Site Manager or deputy | | | |
| Circumstances Requiring Additional Assessment? | | | |
| Competent Persons Appointed to Take Action Principal Contractor Site Manager: David Barrett, McNicholas MOLA Site Supervisor: TBC | | | |
| Circulation of Risk Assessment | | | |
| 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: 5/11/10 |

13.1.6 Mechanical Excavators – Targeted Watching Brief

| 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 | Hydrolic fluid spray | | • | | |
| 7 | Adjacent to ruined wall | | | | |
| ACTIONS ALREADY TAKEN TO REDUCE RISKS | | | | | |

Compliance with:

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 & maintenance of earthmoving machinery

.Planning:

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.

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: | | Limmo Shaft | |
| Frequency and Duration of Task: | Daily-TBC | Number of Staff Involved: | 1 |
| Specific Hazards Identified? | | | |
| Persons struck by machine Fall of material from bucket Overturning of machine Hydraulic fluid spray Fire/explosion | | | |

| | | | |
|--|-------------------|--------------------------------------|--------------------------|
| Control Measures Required? | | | |
| <p>All mini excavators and similar plant to be operated and controlled by trained and CPSP certified McNicholas operatives under the overall supervision of BAM Nuttall 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 work 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 Machine to operate within Principal Contractor's Method Statement and Risk Assessments</p> | | | |
| Assessment of Remaining Risks: | High | Medium | Low |
| Serious and Imminent Danger Identified: | Yes | No | |
| What Emergency Action Required? | | | |
| <p>MOLA Experienced/Senior Archaeologist to report all accidents/incidents to TBC 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 & E: Location of hospital to be confirmed by Principal Contractor: Newham General Hospital Glen Road, London Area, London E13 8SL 020 7476 4000</p> | | | |
| Circumstances Requiring Additional Assessment? | | | |
| <p>Competent Persons Appointed to Take Action Principal Contractor Site Manager: David Barrett MOLA Senior Archaeologist: TBC</p> | | | |
| Circulation of Risk Assessment | | | |
| 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: 5/11/10 |

4.4. Risk Assessment - Geoarchaeological investigation

13.1.7 Preliminary Overall Site Risk Assessment

The MOLA Site Supervisor will be responsible during the progress of the site work for monitoring whether (and what) *additional* updates, modifications or Specific Risk Assessments may be required.

| |
|----------------------|
| MOLA Site Supervisor |
|----------------------|

| | | | | | |
|----------------------------------|--|----------------------------------|-----------------------|---------------------------------------|--|
| Site name Limmo Peninsula | | Type Terrier rig drilling | | November 2010 for up to 2 days | |
| Persons Affected | | No | Classification | No | |
| Employees | | 1-2 | Experienced | 1-2 | |
| Other workers | | | Inexperienced | | |
| Public | | | Disabled | | |

| Known and Suspected Hazards on site (tick as appropriate) | | | | | |
|--|---|-----------------------|---|---------------------|---|
| Mobile Plant | ✓ | Power Auger | | Ionising radiation | |
| Moving Machine Parts | ✓ | Access equipment | | Lasers | |
| Moving objects | ✓ | Giant hogweed | ✓ | Ultraviolet | |
| Falls from height | | Contamination | ✓ | Temperature | |
| Falls on level | ✓ | Micro organisms | | Noise | ✓ |
| Manual Handling | ✓ | Vermin/Weil's Disease | ✓ | Vibration | |
| Buried services | ✓ | Fumes/Gas | | Weather | |
| Electrical | | Lone working | ✓ | Hot/cold objects | |
| LPG etc | | Welfare | | Physical attack etc | |
| Fire/Explosion | | Confined spaces | | Vehicles | ✓ |
| Chainsaw | | Hand Tools | ✓ | Human remains | |

Control Measures Required

Compliance with H&S at Work Act 1974, Management of H&S at Work Act 1999, Construction (HSW) Regulations 1996, and MOL Archaeology H&S Policy 2009

To avoid mobile plant, moving object, vehicles and moving machine part hazards: Wear PPE (hi-visibility clothing, boots and hard hat) at all times. Only stand in designated safe areas, do not step out of marked safety zone. Specifically by the trench and during the watching brief be in contact with the banksman and be vigilant at all time. Ensure Principal Contractor monitors reversing of all vehicles on site by use of a banksman. No access to trench will take place until a Safe Plan of Action has been developed, agreed and signed off by Principal Contractor.

To avoid falls on a level: Walk on designated walking routes and footways, avoid walking on uneven surfaces and in poorly lit areas. Report housekeeping deficiencies to the Principal Contractor immediately. Wear suitable safety footwear, boots with toe and mid-sole protection and adequate ankle support.

To avoid manual handling hazards: Use vehicles, plant, wheelbarrows to move samples and equipment across the site wherever possible.

To avoid buried services (during the terrier rig probing): Ensure the Principal Contractor has examined service drawings and undertake a CAT / Genny scan of the probe locations; dig starter pits.

To avoid diseases and skin irritation spread by rats, polluted watercourses and giant hogweed: Wear gloves, wash hands prior to eating or drinking or smoking. Cover open wounds and broken skin with waterproof plasters. Avoid dealing with contaminated material. Wash hands after handling contaminated material or clothing
Avoid contact with rats. Take antibacterial hand wipes to site. Wear latex gloves when examining soil.

To avoid noise (breaking / cutting concrete; terrier rig drilling) Ear defenders to be worn at all times when in the vicinity of noisy operations.

Personnel Injuries preventive measures to be adopted during use of Terrier Rig

- Full PPE will be worn at all times comprising shoes or boots, overalls, glasses or goggles, hard hats and PVC gloves. These will protect the operators from flying particles and exposure to contaminated materials.
- To prevent hand injury during changing of the rods, the lead operator will ensure that the drop hammer has been disengaged and the brake is on.
- Starter pits can be completed by hand digging prior to boring to clear underground services if necessary.
- When refuelling the engine spill kits and drip trays will be used.

Assessment of Remaining risk (Low, Medium, High)

| | L | M | H | | L | M | H | | L | M | H |
|-------------------|---|---|---|-----------------------|---|---|---|---------------------|---|---|---|
| Mobile Plant | ✓ | | | Power Auger | | | | Ionising radiation | | | |
| Machine Parts | ✓ | | | Access equipment | | | | Lasers | | | |
| Moving objects | ✓ | | | Giant Hogweed | ✓ | | | Ultraviolet | | | |
| Falls from height | | | | Contamination | ✓ | | | Temperature | | | |
| Falls on level | ✓ | | | Micro organisms | | | | Noise | ✓ | | |
| Manual Handling | ✓ | | | Vermin/Weil's Disease | ✓ | | | Vibration | | | |
| Buried services | ✓ | | | Fumes/Gas | | | | Weather | | | |
| Electrical | | | | Lone working | ✓ | | | Hot/cold objects | | | |
| LPG etc | | | | Welfare | | | | Physical attack etc | | | |
| Fire/Explosion | | | | Confined spaces | | | | Vehicles | ✓ | | |
| Chainsaw | | | | Hand Tools | ✓ | | | Human remains | | | |

What Emergency Action Required?

MOLA Geoarchaeologist/Senior Archaeologist to report all accidents/incidents to the McNicholas 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 & E:

**Newham General Hospital
Glen Road, London Area, London E13 8SL
020 7476 4000**

Circumstances Requiring Additional Assessment?

**Competent Persons Appointed to Take Action
Principal Contractor Site Manager: David Barrett
MOLA Supervisor: TBC**

Circulation of Risk Assessment

| | | | | |
|------------------------------------|---|----------------------|------------------------------|----------------------|
| Employees and Volunteers | x | | | |
| Principal Contractor | x | | | |
| Client | x | | | |
| Sub Contractor | | | | |
| Public/Visitors | | | | |
| Other Occupier | | | | |
| Risk Assessment Prepared by | <table border="1"> <tr> <td>Signed: EE</td> <td>Name: Elaine Eastbury</td> <td>Date: 5/11/10</td> </tr> </table> | Signed: EE | Name: Elaine Eastbury | Date: 5/11/10 |
| Signed: EE | Name: Elaine Eastbury | Date: 5/11/10 | | |

5. Health and Safety Control Measures

5.1. 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.

5.2. Services and Ground Hazards

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

6. Safety of Excavations

6.1. Entering the Trench during General or Targeted Watching Briefs

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

6.2. Entering the Trench during Evaluations

- MOLA staff will not enter any excavation until the Principal Contractor has issued a Clearance to Enter Permit confirming that it is safe to do so and that there is safe access/ingress to the archaeological investigation areas. The Principal Contractor will also ensure that the excavations are maintained in safe condition for the duration of the archaeological investigation. The Principal Contractor will supply attendances as required in 7.1.

6.3. 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.

6.4. Machine Excavation during Evaluation

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

6.5. Hand Excavation during Evaluation 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.

6.6. 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.

6.7. Ordnance

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

6.8. 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).

7. Planning and Resources

7.1. 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.
- **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.

7.2. Equipment

Equipment will be supplied by the MOLA equipment central store:

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

Any specialised equipment such as power auguers will have certification of maintenance kept at MOLA headquarters.

7.3. PPE

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

Safety Helmets (EN397)

Ear Defenders (EN 352-3)

Safety spectacles (EN166)

Dust masks plain and valved (EN149 2001)

Hi-visibility vests (EN471)

Gloves Nitrile and latex disposable, PVC, EN374

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

Flame retardant overalls

8. Briefing Arrangements

8.1. 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 Experienced Archaeologist 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 Experienced/Senior Archaeologist will be responsible for briefing any other MOLA staff on site before they commence work on all aspects of the work and documents.

8.2. 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 Senior Archaeologist 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.

9. First Aid

9.1. Trained First-Aid Personnel

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

9.2. 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.

9.3. 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.

10. Accident, Incident, Near Miss and Environmental Incident Reporting

10.1. 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).

10.2. 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.

10.3. 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.

10.4. Key Project Personnel

- George Dennis, Senior Contracts Manager, MOLA
- Elaine Eastbury, Contracts Manager, MOLA

11. Emergency Procedures – Site General

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

12. Emergency Services Contact Details

The Principal Contractor will confirm the hospital location:

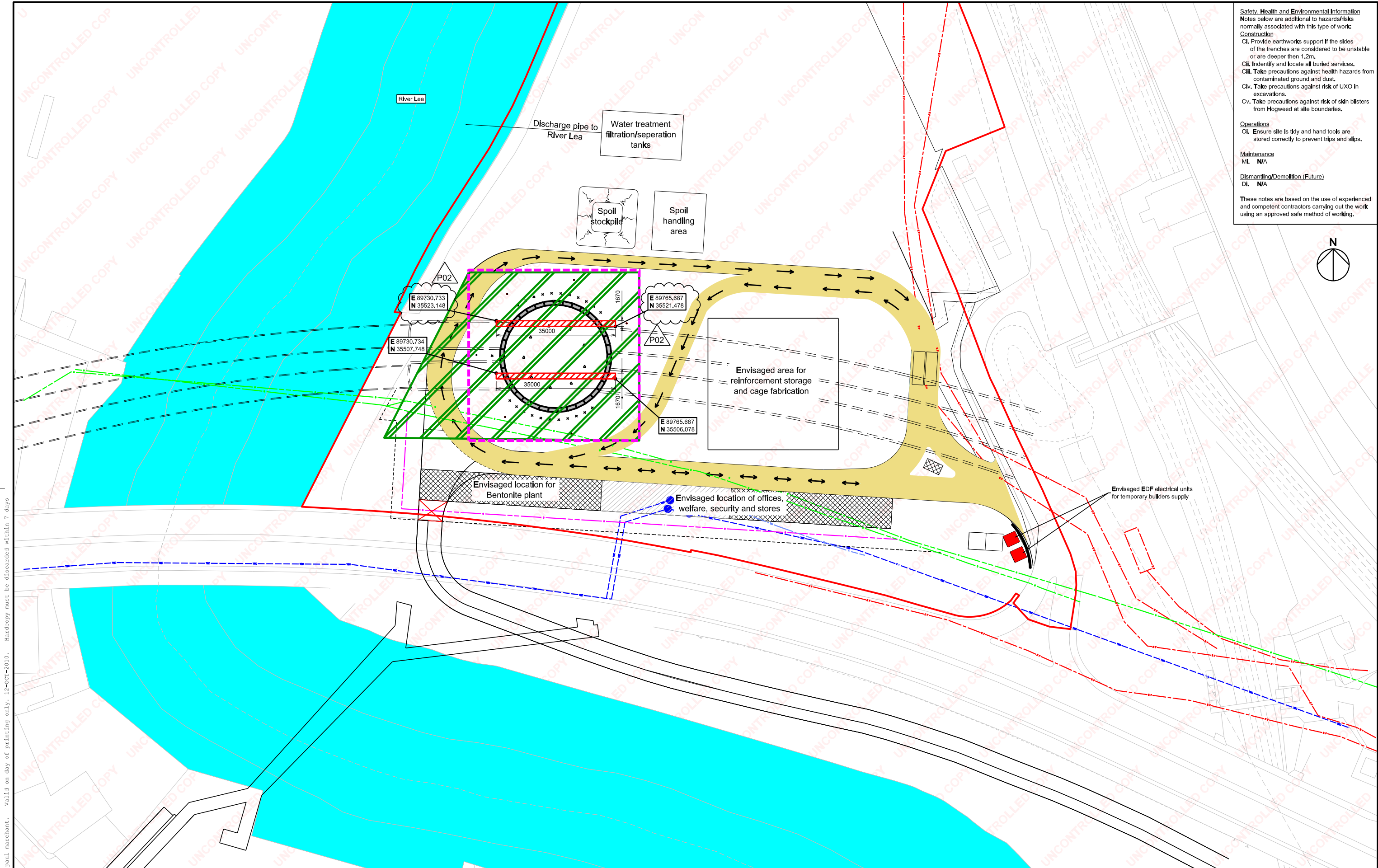
**Newham General Hospital
Glen Road, London Area, London E13 8SL**

020 7476 4000

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

13. Route to Hospital

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



Safety, Health and Environmental Information
 Notes below are additional to hazards/risks normally associated with this type of work:

Construction

- Ci. Provide earthworks support if the sides of the trenches are considered to be unstable or are deeper than 1.2m.
- Cii. Identify and locate all buried services.
- Ciii. Take precautions against health hazards from contaminated ground and dust.
- Civ. Take precautions against risk of UXO in excavations.
- Cv. Take precautions against risk of skin blisters from Hogweed at site boundaries.

Operations

- Oi. Ensure site is tidy and hand tools are stored correctly to prevent trips and slips.

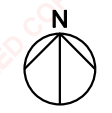
Maintenance

- Mi. N/A

Dismantling/Demolition (Future)

- Di. N/A

These notes are based on the use of experienced and competent contractors carrying out the work using an approved safe method of working.



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| Rev. | Date | Description | By | Chkd | App | Auth |
|------|------------|--|----|------|-----|------|
| P01 | 16/09/2010 | Issued for Inclusion in Document No. C123-JUL-T1-RGN-CR144_SH011_Z-00002 | TE | RS | RS | |
| P02 | 11/10/2010 | Trench Location Revised | PM | RS | RA | |

Notes

- This drawing to be used in conjunction with information contained in the following report: Addendum to SSWS: Trial Trench Evaluation and Detailed Excavation Limmo Peninsula Shaft (Document Reference: C123-JUL-T1-RGN-CR144_SH011_Z-00002).
- Dimensions are in millimeters unless noted otherwise.
- Dimensions should not be scaled from this drawing.
- The coordinate system relates to London Survey Grid.
- Instone Wharf and the shaft adit is not included due to a lack of sufficiently detailed design information at this stage.

Key

| | |
|--|------------------------------|
| | Worksite Boundary |
| | DLR overburden to be removed |
| | Archeological Trial Trench |
| | Potential Excavation Area |

| | |
|--|--------------------------|
| | EDF services |
| | Thames Water services |
| | Gas Main |
| | Gas Main diversion |
| | Construction access road |

10m 0 10m 20m 30m 40m 50m

Crossrail Limited
 25 Canada Square
 Canary Wharf
 London
 E14 5LQ

Contract: Intermediate Shaft Design
 Originator: Jacobs UK Limited
 Location: Limmo Peninsula Shaft
 Title: Archaeological Location of Archaeological Investigations Figure 1

By: P.MARCHANT
 Chk: R.SPALDING
 App: R.ANDREWS
 Auth: ...

Scale: 1:500 @ A1
 Drawing and CAD file No: C123-JUL-T1-DDL-CR144_SH011-00060
 Rev: P02
 Subst: S4

RESTRICTED