



LIVERPOOL STREET STATION

ADDENDUM TO WSI: WATCHING BRIEF &
DETAILED EXCAVATION –(XTB12) BLOMFIELD
BOX

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1 Introduction

- 1.1.1 This document supercedes C138-MMD-T1-RST-C101-00005 that was issued with the C502 works information. It provides revised details of the programme of archaeological investigation required to mitigate the impact of construction on archaeological deposits at the Blomfield Worksite during the main works phases.
- 1.1.2 This document is an addendum to the Written Scheme of Investigation (C138-MMD-T1-RST-C101-00001) and should be read in conjunction with that document.
- 1.1.3 This document outlines the requirements for the Principal Contractor (C502) that will be undertaking civils works on the site in liaison with the Crossrail Project Archaeologist and the C257 Archaeology Contractor (Museum of London Archaeology - MoLA).

2 Scope of Works

2.1 Aims and objectives of the investigation

- 2.1.1 The aim of archaeological mitigation is to investigate and report on surviving archaeological deposits within the Blomfield worksite which have been positively identified in the Crossrail archaeological evaluation (XSL10) as relating to the Roman period and the former river Walbrook.
- 2.1.2 Mitigation will be achieved through a programme of archaeological investigation to be conducted by the C257 Archaeology Contractor in liaison with the C502 Principal Contractor.
- 2.1.3 The overall objective of the archaeological investigation is to mitigate the impact of Crossrail construction through a programme of archaeological works carried out in accordance with the Crossrail Generic WSI (document number CR-PN-LWS-EN-SY-00001) and the standards listed therein.
- 2.1.4 A summary of the archaeological work carried out to date and the scope of further work is set out in Table 1 below:

Table 1 Summary of archaeological events at the Blomfield worksite

Event Type	Event Code	Progress	Principal Contractor	C257 report Reference
<i>Non-listed built heritage recording of 11-12 Blomfield Street.</i>	<i>XSB10</i>	<i>Complete.</i>	<i>C257</i>	<i>C257-MLA-X-RGN-CRG03-50001</i>
<i>Trial Trench Evaluation (3 trenches).</i>	<i>XSL10</i>	<i>Complete.</i>	<i>C212</i>	Report in preparation.
General watching brief at obstruction removal.	XTB12	Not started.	C502	Report to be delivered on completion of works.
General watching brief at site wide ground reduction to 106.74mATD.	XTB12	Not started.	C502	Report to be delivered on completion of works.
Detailed excavation in grout shaft.	XTB12	Not started.	C502	Report to be delivered on completion of works.
Detailed excavation in main box.	XTB12	Not started.	C502	Report to be delivered on completion of works.

2.2 Summary of results from Trial Trench Evaluation

2.2.1 The trial trench evaluation at the Blomfield worksite was completed in June 2011.

2.2.2 Three trial trenches were excavated in the Blomfield worksite, beneath the basements of former buildings at 11-12 Blomfield Street 2. Refer to drawing CRL1-XRL-U-DDA-C101-00182 (Appendix A) for the location of trial trenches.

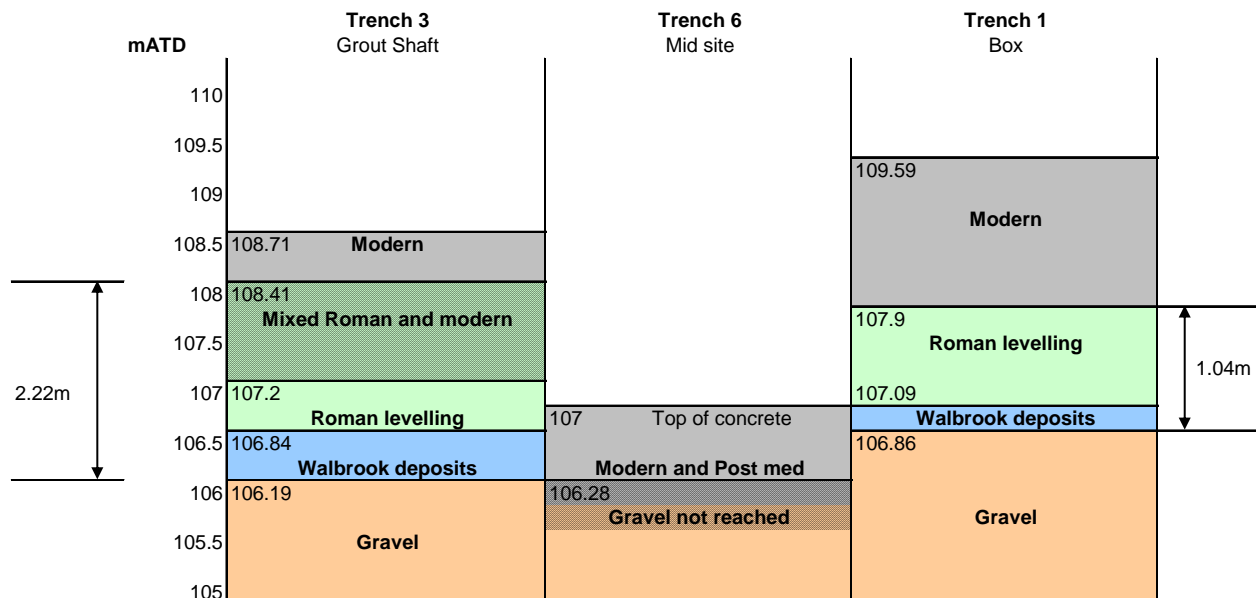
2.2.3 The ground level varied across the site according to the depths of the basements of former buildings. The northern area of the site was significantly truncated to track level - 106.9m ATD (street level is approximately 112m ATD), however, shallower basements across the rest of the site resulted in truncation to between 108m and 108.5m ATD. Deeper truncation was also present in areas of the site from the concrete and brick foundations of 11-12 Blomfield Street.

2.2.4 Trenches 1 and 3 contained Roman levelling deposits between 108.41m to 107.20m ATD with varying levels of modern truncation.

2.2.5 Beneath the Roman deposits Trenches 1 and 3 also demonstrated deposits relating to the River Walbrook from between 107.09m and 106.19m ATD. The Walbrook flowed approximately on the alignment of Blomfield Street, consequently the Walbrook deposits were deeper in the western extent of the site.

2.2.6 Trench 6 was truncated by 19th century brickwork and modern foundations to at least 106.28m ATD, which was the maximum extent of the excavation.

Figure 1 Archaeological sequence facing north



nb. The above diagram is intended to be a simplified visual reference of the archaeological sequence based on the levels from the trial trench evaluation. The diagram is not to scale and the locations of deposits are approximated.



3 General requirements for the Principal Contractor (C502)

- 3.1.1 In addition to the Specific Requirements set out in section 4 the Principal Contractor must provide and maintain the following attendances and facilities at all times (including additional working hours if necessary) for the duration of and in relation to the specialist archaeological works.
- 3.1.2 Identify all live underground services that exist in areas of excavation.
- 3.1.3 Use of excavators or other plant within the area and depths shown on drawing CRL1-XRL-U-DDA-C101-00182 (Appendix A) shall only be undertaken with the agreement and under the observation of the C257 Archaeology Contractor.
- 3.1.4 Design and provide temporary works to support excavations for personnel access to the investigation by all operatives as required.
- 3.1.5 Provide appropriate plant and trained operatives to remove hand excavated spoil from the excavation area (e.g. a hoist, conveyor or other appropriate method) and ensure that all equipment is regularly inspected.
- 3.1.6 Provide drainage in excavations where required.
- 3.1.7 Provide the following services and facilities to the C257 Archaeology Contractor.
- Lighting (in deep excavations and if night working is required);
 - Small plant and tools for C502 use, as required to complete the works.
- 3.1.8 Provide further technical advice to the C257 Archaeology Contractor as maybe required to safely complete the works.
- 3.1.9 Manage safety and inter alia provide regular toolbox talks to all site staff including the C257 Archaeology Contractor.
- 3.1.10 Provide any traffic management measures that may be required for the works.
- 3.1.11 Manage the storage and removal of spoil from the site.
- 3.1.12 Provide the following site accommodation and welfare facilities for the use of archaeological operatives, inclusive of any hardstanding and services required:
- Changing and mess areas for male and female staff
 - Toilets for both male and female staff, with drying and washing facilities;
 - First Aid;
 - Temporary office space (single desk); and
 - Secure storage for tools and soil samples.



4 Specific Requirements for Main Works Contractor (C502)

4.1.1 The Principal Contractor will be responsible for facilitating the following archaeological works at the Blomfield Street worksite:

- General watching brief at obstruction removal.
- General watching brief at site wide ground reduction to 106.74mATD.
- Detailed archaeological excavation in grout shaft between approximately 108.41m and 106.19mATD.
- Detailed archaeological excavation of the southern section of the main box between approximately 107.9m and 106.86mATD.

4.1.2 Refer to section 3 for general attendances and facilities to be provided by the Principal Contractor to achieve the above objectives.

4.1.3 Refer to drawing CRL1-XRL-U-DDA-C101-00182 (Appendix A) for the locations of the above archaeological activities.

4.2 Interfaces

4.2.1 The Principal Contractor will have the following additional interfaces for the specialist archaeological works:

C257 Archaeology Contractor: Museum of London Archaeology (MoLA)

Elaine Eastbury - Contract Manager

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Nick Elsdon - Assistant Contract Manager

M: 07872 127296 | E: nelsden@museumoflondon.org.uk

Employers Archaeologist: Crossrail Ltd

Jay Carver – Project Archaeologist

M: 07870 191705 | E: jaycarver@crossrail.co.uk

Mike Court – Assistant Project Archaeologist

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4.2.2 The Principal Contractor will ensure that a clear communication mechanism is in place with the C257 Archaeology Contractor.

4.3 C502 Procedure for detailed archaeological excavation

4.3.1 The Principal Contractor will allow for up to 10 No. archaeologists to be on site during detailed excavation.



- 4.3.2 Upon completion of the archaeological excavation areas the C257 Archaeology Contractor will issue a signed completion form countersigned by the Employers Archaeologist to the Principal Contractor to allow C502 to continue work.

Western grout shaft

- 4.3.3 The Principal Contractor will remove modern overburden and post-medieval deposits of low significance in spits of 200mm by machine using a flat bladed ditching bucket under archaeological supervision by the C257 Archaeology Contractor to the surface level of archaeological deposits - to be advised by the attending C257 Archaeology Contractor (the surface depth of archaeology varies within the excavation area, but is expected at approximately 108.41mATD).
- 4.3.4 Archaeological trial trench evaluation in 2011 identified a mixed modern/Roman layer from approximately 108.41m to 107.2mATD (Figure 1). The Principal Contractor will also remove this layer in spits of 200mm by machine using a flat bladed ditching bucket under archaeological supervision by the C257 Archaeology Contractor to a depth of approximately 107.2mATD or until the attending C257 Archaeologist advises that in-situ archaeological deposits have been reached.
- 4.3.5 The Principal Contractor will then facilitate the detailed excavation of archaeological deposits by the C257 Archaeology Contractor until the full sequence of deposits has been excavated in accordance with the method statement. Detailed excavation will comprise hand excavation by the C257 Archaeology Contractor and possibly the use of a small machine with a graded ditching bucket (Principal Contractor under archaeological supervision). The base of archaeological deposits was observed at 106.19mATD in the footprint of the piled grout.

Main Box

- 4.3.6 The Principal Contractor will remove remaining base slabs, modern overburden and post-medieval deposits of low significance in spits of 200mm by machine using a flat bladed ditching bucket under archaeological supervision by the C257 Archaeology Contractor to the surface level of in-situ archaeological deposits - to be advised by the attending C257 Archaeology Contractor (the surface depth of archaeology varies within the excavation area, but is expected at approximately 107.9mATD).
- 4.3.7 The Principal Contractor will then facilitate the detailed excavation of archaeological deposits by the C257 Archaeology Contractor until the full sequence of deposits has been excavated in accordance with the method statement. Detailed excavation will comprise hand excavation by the C257 Archaeology Contractor and possibly the use of a small machine with a graded ditching bucket (Principal Contractor under archaeological supervision). The base of archaeological deposits was observed at 106.86mATD in the footprint of the main box.

4.4 C502 Procedure for archaeological general watching brief

- 4.4.1 The Principal Contractor will allow the C257 Archaeology Contractor to rapidly record significant archaeological/historical/architectural deposits and features which may be encountered during obstructions removal and ground reduction.
- 4.4.2 The Principal Contractor will allow for 2 archaeologists to be on site during each of the above activities.



5 Instructions to C257 Archaeological Contractor and Specification

5.1 Detailed excavation and general watching brief

- 5.1.1 A programme of archaeological investigation comprising detailed archaeological excavation and general watching brief will be carried out at the Blomfield Street worksite.
- 5.1.2 Further details on the required standards for the Archaeological Contractor are to be found in the Site Specific WSI: C136-SWN-C2-JLT-M123-00001.
- 5.1.3 The C257 Archaeology Contractor will provide a team of suitably qualified archaeologists, experienced in archaeological site investigation and the nature of archaeological deposits which are expected on this site.
- 5.1.4 The C257 Archaeology Contractor will shall provide a suitably qualified buildings archaeologist as required.
- 5.1.5 The C257 Archaeology Contractor will provide a Method Statement inclusive of risk assessment and safe method of working, prepared in liaison with the Principal Contractor and approved by Crossrail.
- 5.1.6 During detailed excavation, following the initial overall strip and clean, individual features are to be hand cleaned and defined by the C257 Archaeology Contractor, sufficient to determine type, plan form and relationships (e.g. for structures and rebuilds); and recorded. Sufficient archaeological features/structures are to be sample excavated either using a smaller machine with graded digging bucket (by the Principal Contractor under archaeological supervision) or hand dug if appropriate.
- 5.1.7 The C257 Archaeology Contractor will develop a strategy for archaeological science in liaison with EH Regional Science advisor and the CoL archaeologist as appropriate. The strategy will be presented in the Method Statement and approved by the Employers Archaeologist.
- 5.1.8 The Archaeology Contractor will ensure that all site staff attend the Principal Contractor's site induction a suitable period of time prior to the start of site works.

5.2 Deliverables

- 5.2.1 The following fieldwork activities will be incorporated into a single fieldwork report upon the completion of the works:
- Detailed archaeological excavation (in the piled grout shaft and main box).
 - General watching brief (obstructions removal and ground reduction).
- 5.2.2 Refer to the following sections of the Written Scheme of Investigation (C136-SWN-C2-JLT-M123-00001) for further information regarding the following report types:
- Weekly progress reports – WSI section 9.
 - Fieldwork report – WSI section 8.6.



5.3 Site Archives

5.3.1 Refer to section 8.2 in the Site Specific Written Scheme of Investigation, document reference number: C138-MMD-T1-RST-C101-00001.

5.4 Post-excavation

5.4.1 Refer to the detail set out within the CRL/Crossrail Central Archaeological Contract and the Written Scheme of Investigation for Liverpool Street Station (C138-MMD-T1-RST-C101-00001).



6 Provisional Timetable

Table 2 Provisional Timetable

Activity	Principal Contractor	Construction Phase	Duration
General watching brief. Obstruction removal.	C502	September 2012 – October 2012	As required throughout the works
Detailed archaeological excavation. Western grout shaft.	C502	January 2013	10 days (archaeology only)
General watching brief. Ground reduction (outside of the piled boxes)	C502	2013	As required throughout the works
Detailed archaeological excavation. Main box.	C502	March – July 2013	10 days (archaeology only)

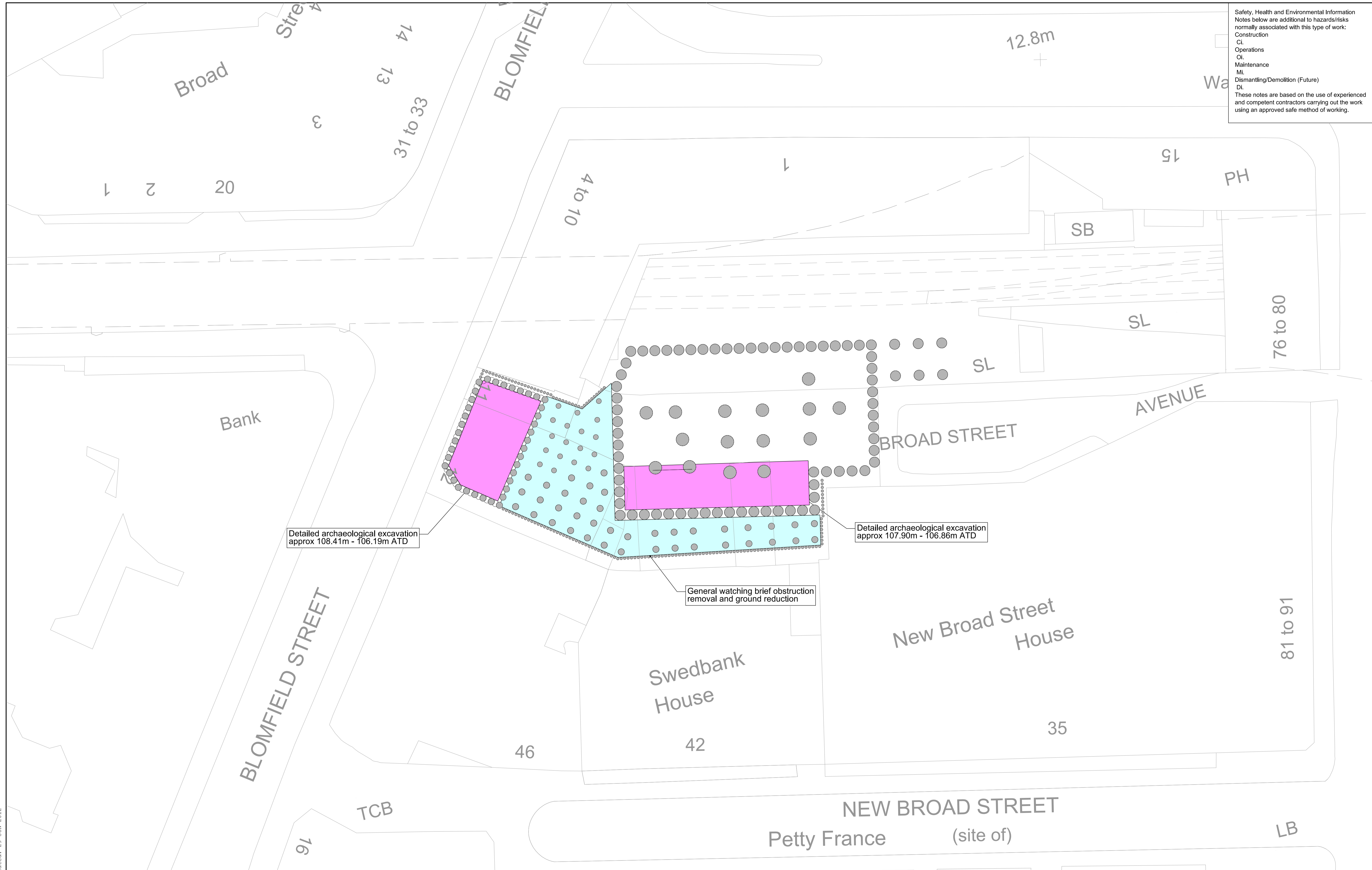
nb. The above durations were extracted from the C502 programme available at the time of writing.



Appendix A – Archaeological Mapping Information

Drawing Number	Title
CRL1-XRL-U-DDA-C101-00182	Blomfield Street worksite archaeological mitigation.

Safety, Health and Environmental Information
 Notes below are additional to hazards/risks normally associated with this type of work:
 Construction
 Ci.
 Operations
 Oi.
 Maintenance
 Mi.
 Dismantling/Demolition (Future)
 Di.
 These notes are based on the use of experienced and competent contractors carrying out the work using an approved safe method of working.



Detailed archaeological excavation
 approx 108.41m - 106.19m ATD

Detailed archaeological excavation
 approx 107.90m - 106.86m ATD

General watching brief obstruction
 removal and ground reduction

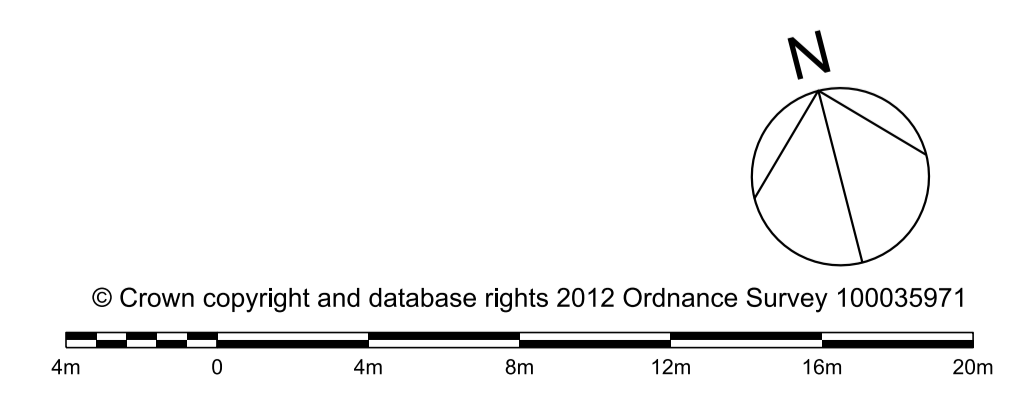
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Rev.	Date	Description	By	Chkd	App	Auth
P01	29/06/2012	First Issue	HC	MH	NS	-

Notes
 1. Confirmation of all survey data must be obtained from the Crossrail survey team.
 2. Coordinates to the London Survey Grid. All levels to Ordnance Datum Newlyn. See Crossrail standard CR-STD-010.
 3. All dimensions are in metres unless specified otherwise.

Works to be carried out by C502 & C257

- General watching brief
 - Obstruction removal
 - Ground reduction
- Detailed archeological excavation
 - Western piled grout shaft
 - Piled box (southern section)



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	<small>Originator:</small> Crossrail Ltd	
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