

URS

**Scott
Wilson**

91-101 Moorgate Over Site Development Archaeological Desk-based Assessment

Technical Report
September 2011



Revision Schedule

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Non-technical Summary

URS Scott Wilson Ltd were appointed by Mott MacDonald on behalf of Aviva Life and Pensions UK Ltd and Crossrail Ltd to prepare an archaeological desk-based assessment to support the planning application for the proposed over site development (OSD) at 91-101 Moorgate, City of London.

The purpose of the desk-based assessment is to identify known archaeological assets and accurately map their location in relation to the assessment site and a surrounding study area. The desk-based assessment has also determined the potential for as yet previously unknown archaeological remains within the assessment site.

There are no World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens or Registered Battlefields within the assessment site or the wider 50m study area. The remains of the Roman city wall, a conduit, medieval city wall and postern gate (the Moor Gate) are the nearest Scheduled Monument to the site (National Heritage List No. 1002051), located some 85m to the south of the assessment site.

The assessment site is situated within the City of London the area of which is considered to be equivalent to an Area of Archaeological Priority and an area defined as being of archaeological potential by the City of London Unitary Development Plan 2002. A total of 8 non-designated archaeological and historical assets have been identified within the study area, one of which is located within the assessment site itself.

This desk-based assessment has identified a High potential for encountering Roman remains of Low to Medium significance, a Moderate to High potential for encountering early medieval remains of Low or Medium significance, a Low potential for encountering prehistoric remains of all periods and a negligible potential for encountering late medieval and post-medieval remains of Low significance.

Archaeological excavation, trial trench evaluation and watching briefs will be undertaken to mitigate the impact of the Crossrail Moorgate shaft which encompasses the majority of the OSD site. The specification of these works is set out in the Crossrail C138 Liverpool Street Station Addendum to WSI: Trial Trench Evaluation, Watching Brief and Detailed Excavation – Moorgate Worksite (XSJ10), Crossrail Document No. C138-MMD-T1-TCP-C101-00001.

In order to mitigate the construction impacts of the OSD scheme on the surviving archaeological resource within the assessment site it is recommended that a phased programme of archaeological surveys and investigations is undertaken in advance of ground reduction activities.

An appropriate phased programme of archaeological investigation and mitigation measures would include:

- Stage 1 - archaeological monitoring and recording during any future geotechnical investigations to confirm the finding of this desk-based assessment and inform later stages of archaeological investigation;
- Stage 2 – archaeological trial pit evaluation would be necessary if no future geotechnical investigations are planned or if further clarity is required to establish the extent, depth, character and significance of the archaeological resource within the assessment site; and
- Stage 3 – archaeological mitigation. Mitigation measures are likely to comprise either conservation of the archaeological resource through a foundation design that avoids impacts to significant archaeological remains or the conservation of archaeological remains through the excavation, recording in advance of construction, followed by the interpretation, publication and dissemination of the results.

1 Introduction

- 1.1.1 URS Scott Wilson Ltd were appointed by Mott MacDonald on behalf of Aviva Life and Pensions UK Ltd and Crossrail Ltd to prepare an archaeological desk-based assessment to support the planning application for the proposed over site development (OSD) at 91-101 Moorgate, City of London.
- 1.1.2 The purpose of the desk-based assessment is to identify known archaeological assets and accurately map their location in relation to the assessment site and its surrounding area. The desk-based assessment will also determine the potential for as yet previously unknown archaeological remains, assess the significance of the archaeological assets and the impacts of the OSD. The desk-based assessment will also, following consultation with the City of London Archaeologist make recommendations for possible archaeological surveys or appropriate mitigation measures.
- 1.1.3 The majority of the below ground construction impacts within the OSD site have already been assessed as part of the design for the new Crossrail Liverpool Street Station's western ticket hall and are being mitigated by archaeological investigations within the Crossrail Moorgate worksite.
- 1.1.4 The information presented in this desk-based assessment will establish the current baseline conditions for the northern block of 101 Moorgate OSD site which falls outside the Crossrail worksite and will inform the planning application to the City of London Corporation.

1.2 The Site

- 1.2.1 The OSD site is located at 101 Moorgate, towards the northern boundary of the City of London (centred on NGR 532721, 181658; Figure 1).
- 1.2.2 101 Moorgate is situated on the western side of Moorgate and is bounded by Moor Place to the north; the buildings of the Finsbury Circus Conservation Area to the east. To the south the OSD site is bounded by 83 to 87 Moorgate and the A1211 London Wall and to the west by Moorfields and Moorgate Station. To the southwest lies the Moor House 20 storey office development designed by Foster and Partners (Plates 1 and 2).



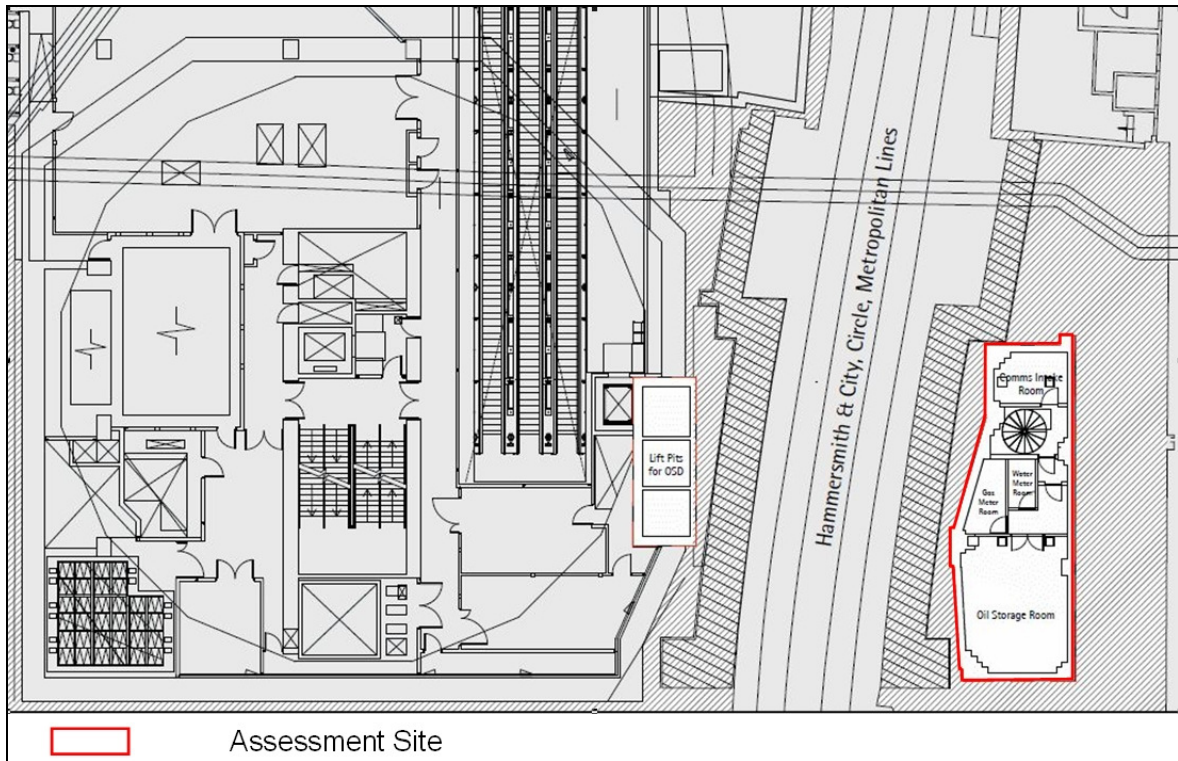
Plate 1: View of the former frontage of 101 Moorgate building looking northwest

- 1.2.3 The OSD site was until recently the site of the former Amro Bank headquarters building at 91 to 109 Moorgate. This building comprised a six storey office building with central atrium designed by Trehearne, Norman, Preston and Partners and was constructed over the London Underground Circle and Metropolitan Lines. The Circle and Metropolitan Lines run under the northern part of the OSD site aligned east to west and were constructed within a 'cut and cover tunnel'.
- 1.2.4 The site of 91 to 109 Moorgate (including 101 Moorgate) will form part of the Crossrail Scheme's new Liverpool Street Station, which will extend from Liverpool Street in the east, under Finsbury Circus westwards to a new entrance and western ticket hall at 7 to 31 Moorfields, opposite the OSD site.



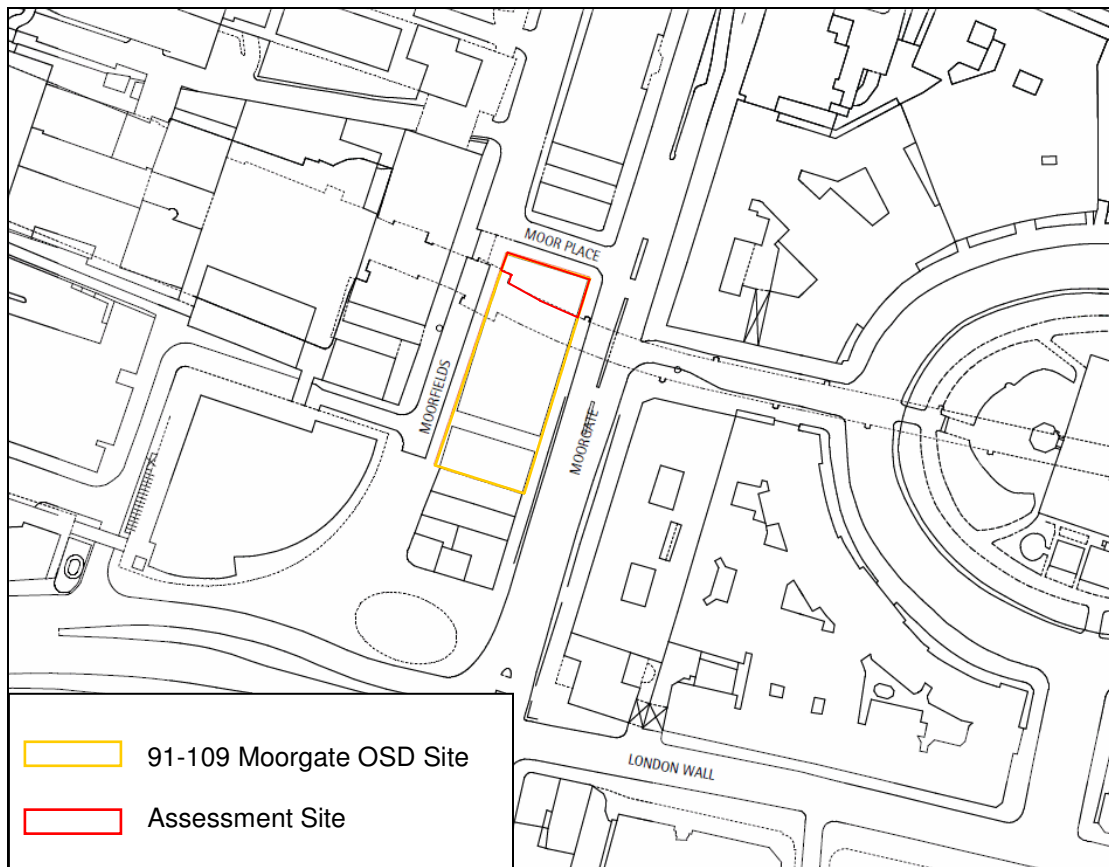
Plate 2: View of the assessment site and the former 101-109 Moorgate building from Moorfields looking southeast towards Moor Place

- 1.2.5 The majority of the OSD site forms part of Crossrail's Moorgate worksite. Here Crossrail will construct a new western ticket hall and Moorgate Shaft combined ticket hall, the Moorgate Shaft, provision of a replacement access to the Highwalk, an escalator to Crossrail platforms, the northern line link subway, works to the Moor House draught relief shaft and diversion of the Moorgate Station Sewer (Plate 3).



**Plate 3 Assessment site and the wider Crossrail Moorgate Shaft works
(Based on John Robertson Architects Drawing No. P01/002)**

- 1.2.6 This desk-based assessment will focus on the northern most part of the OSD site comprising the area of 107-109 Moorgate which is defined by the course of the Circle and Metropolitan line to the south and Moor Place immediately to the north (Plate 4).



**Plate 4 Location of the assessment site and proposed OSD development
(Based on John Robertson Design and Access Statement)**

1.2.7 Geology and Topography

- 1.2.8 The British Geological Survey (BGS) mapping (BGS 1:50,000 Map Sheet 256 – North London; Plate 5) records the underlying solid geology of the assessment site as Eocene London Clay of the Thames Group, comprising fine, sandy, silty clay/silty clay becoming Glauconitic at the base of the sequence (www.bgs.ac.uk/lexicon/lexicon).
- 1.2.9 The superficial geology of the assessment site is comprised of the Taplow Gravel Formation (formerly the Taplow Terrace). These sands and gravels are recorded as having local lenses of silt, clay or peat (www.bgs.ac.uk/lexicon/lexicon).
- 1.2.10 The topography of the assessment site is essentially flat with the modern ground surface rising gently northwards from approximately 112.8m Above Tunnel Datum (ATD) at the junction of Moorgate and the London Wall, some 100m to the south and 114.0m ATD on Moorgate immediately to the northeast of the assessment site.

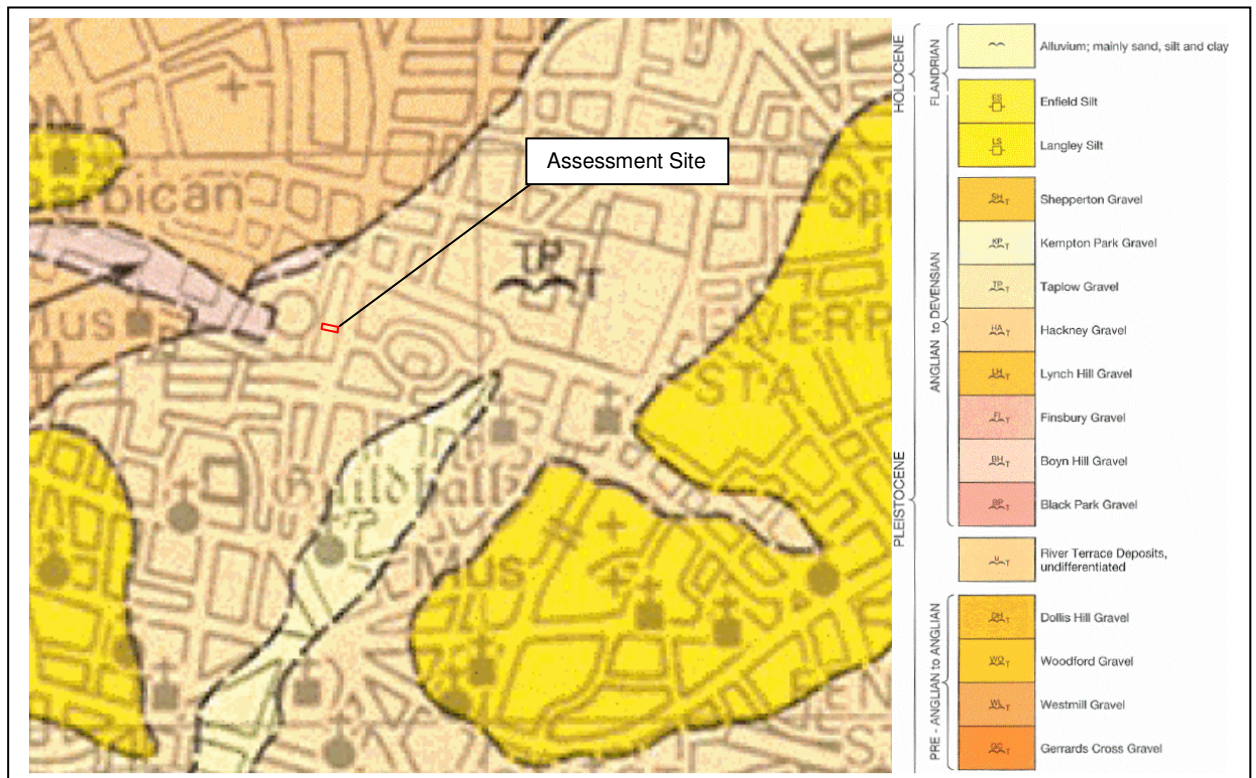


Plate 5 Extract from the BGS Map Sheet 256 – North London (BGS 2006)

1.3 The Proposed Development

- 1.3.1 The proposed OSD will require the construction of a new office building above ground floor retail units and technical areas associated with the operation of the western ticket hall of the new Liverpool Street Crossrail station. The new OSD will comprise a basement plant room, ground floor plus six storeys of office space which will be constructed around the Crossrail emergency/ventilation shaft. A mezzanine level will house plant serving both the OSD and Crossrail shaft (Mott MacDonald 2011a).
- 1.3.2 Due to the constraints of the existing London Underground cut and cover Circle and Metropolitan Line tunnels and the proposed Crossrail Moorgate shaft the basement space available to the OSD will be limited to the northern end of the 101-109 Moorgate site. The existing basement slab/pile cap will be broken out and reduced by approximately 1.00 to 1.50m to create a 3.00m head room. In this area 13 No. 900mm diameter bored piles will be constructed within the basement of 101-109 Moorgate amongst the extant piles for the recently demolished building (Plate 6). The new plies will extend approximately 35-40m into the underlying London Clay and Lambeth Group deposits (Mott MacDonald 2011a).

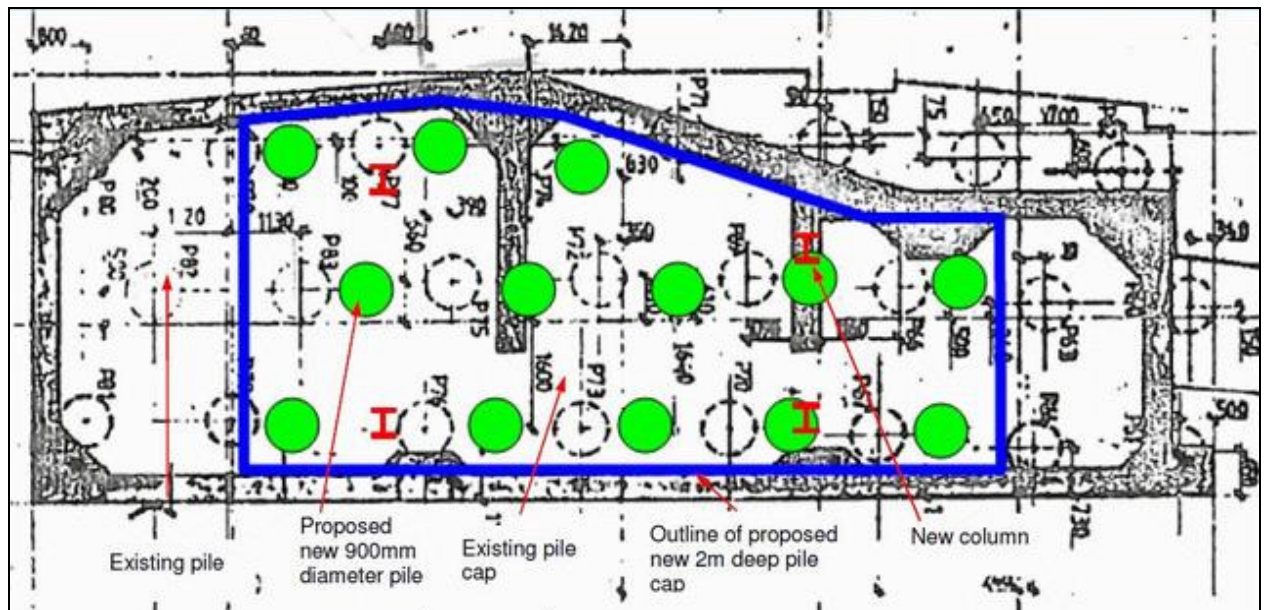


Plate 6 Proposed OSD basement design and pile layout (Mott MacDonald 2011)

1.4 Objectives of this Report

1.4.1 The objectives of the desk-based assessment are to establish the baseline conditions for cultural heritage and the importance and sensitivity of heritage remains within the assessment site and its adjacent study area. The aims of the study are:

- to identify known Scheduled Monuments, archaeological priority areas, archaeological sites and find spots within the assessment site and its surrounding study area;
- to identify areas with the potential to contain any unrecorded archaeological or historical remains;
- to identify the location, extent and severity of modern ground disturbance and previous construction impacts;
- to establish the significance of the heritage assets identified within the study area as set out in PPS 5;
- Assess the impact of construction of the proposed OSD on known and potential archaeological remains;
- Following consultation with the City of London Archaeologist make recommendations for further archaeological surveys or any appropriate mitigation measures; and
- Undertake liaison with the Crossrail Design team for the Moorgate Shaft works to ensure a consistent approach to archaeological investigation and mitigation measures across the OSD site.

1.5 Scope and Structure of the Document

- 1.5.1 This document presents the baseline evidence for archaeological remains within the assessment site. The report and appendices present the baseline conditions as informed through detailed desk study conducted by URS Scott Wilson's heritage team.
- 1.5.2 The document is structured in seven sections providing: an introduction to the assessment and assessment site (Section 1), a description of the survey methods (Section 2); a section summarising the relevant planning policy and guidance (Section 3); the archaeological baseline conditions (Section 4); assessment of the archaeological potential within the assessment site (Section 5); recommendations for further investigation (Section 6) and finally, detailed references (Section 7).
- 1.5.3 Two appendices support the main document. Appendix 1 provides a full catalogue of archaeological and historical assets. Appendix 2 contains the report figures referenced throughout the text.

2 Survey Methodology

2.1 Study Area

2.1.1 Baseline conditions for the majority of the OSD site and the surrounding area have previously been assessed in the Crossrail Assessment of Archaeology Impacts, Technical Report, Part 2 of 6, Central Section (Crossrail 2005; Document No. 1E0318-C1E00-00001), the Crossrail MDC3 Archaeology Updated Baseline Assessment (Crossrail 2008a) and the Crossrail MDC3 Archaeology Detailed Desk-based Assessment Liverpool Street Station (Crossrail 2008b; Document No. CR-SD-LIV-EN-SR-00001).

2.1.2 In light of the earlier Crossrail studies, the study area for this assessment was closely defined as the assessment site and its immediate surroundings comprising a 50m radius from the site centre (NGR 532721, 181658; Figure 2).

2.1.3 All known archaeological sites, features and find spots within the study area are referred to in the text below as numbers in parentheses in bold **[A1]** and can be cross referenced to the catalogue in Appendix 1 and located on Figure 2.

2.2 Data Sources

2.2.1 This desk-based assessment has been carried out in accordance with Planning Policy Statement 5 (PPS 5); the Planning Advice Note 3 Archaeology in the City of London – Archaeological Guidance (Corporation of London), the Greater London Archaeology Advisory Service Standards for Archaeological Work – Paper 1 Desk-based Assessment (English Heritage 2009), the published Standard and Guidance for Desk-based Assessment (IfA 2008) and the Code of Conduct (IfA 2010) of the Institute for Archaeologists. In summary the work has involved:

- the identification of key data sources;
- the collation of existing data held by the Greater London Historic Environment Record (GLHER);
- the collation of data held by English Heritage on the National Monuments List dataset;
- a review and assessment of documentary and historic map sources;
- a review and assessment of Crossrail work carried out to date (ES, detailed desk-based assessment, site-specific WSI and WSI addendum for the Moorgate Shaft, and MoLA reports for geotechnical investigations and archaeological investigations undertaken to date);
- a review of archaeological investigation summaries and archive data held by the London Archaeological Archive Resource centre (LAARC);
- the review and collation of available geotechnical data resulting from ground investigation surveys undertaken for the Crossrail scheme;
- a visual assessment of the heritage assets of the site and its immediate surroundings;
- the presentation of key heritage assets in map form; and
- the interpretation of results and preparation of a written report.

2.2.2 The heritage baseline information presented informs the determination of the significance of heritage assets. The desk-based assessment also provides the evidence base to support the determination of the planning application for the proposed development of the OSD site.

2.3 Analysis tools

2.3.1 The data sets gathered have been collated and the results of the desk-based assessment processed in ArcView GIS and plotted on Ordnance Survey base mapping. The resultant plots are presented as Figures 2.

2.3.2 An historic map regression exercise was undertaken to assess the historic development of the site since the 19th century and to identify where any potential archaeological features might survive within the study area (Figures 3 to 6).

2.3.3 Assessment criteria

2.3.4 The potential for an area to contain archaeological remains is rated High, Medium, Low, Negligible or Unknown. This rating is based on an understanding of the archaeological resource as a whole and its national, regional and local context. This includes the number, proximity and significance of known and predicted archaeological/historical sites or finds spots within the application site and its surrounding study area, and is guided by statutory and non-statutory designations, national, regional and local policies, archaeological research frameworks and professional judgement.

2.3.5 The significance of archaeological assets (Table 1) is described as Very High (Internationally or Universally significant), High, Medium, Low or Negligible. Very High significance is afforded to assets such as World Heritage Sites and some archaeological sites of international importance. High significance is accorded to scheduled or protected assets or nationally important undesignated assets suitable for scheduling based upon the Secretary of State's modified criteria for scheduling monuments (DCMS 2010). Such assets are likely to be relatively rare at a national level. Highly significant assets would require evaluation prior to, or as a condition of, planning permission, in order that design measures to preserve them in-situ or other appropriate mitigation could be agreed prior to finalising development designs. Assets of Medium significance are likely to be fairly common at a national level but would nonetheless require an evaluation and mitigation design to be agreed prior to finalising development designs. Assets of Low significance are common at a national level and judged to be locally important, although they may require evaluation and recording prior to or during construction. Remains of Negligible significance would not require any specific mitigation measures.

Table 1 Significance of Archaeological Assets

Significance	Examples
Very High	World Heritage Sites, internationally important archaeological sites or undesignated assets that meet the requirements for protection under UNESCO and UK government legislation but are as yet undesignated.
High	Scheduled and protected sites such as Scheduled Monuments, Grade I or II* registered parks and gardens, registered battlefields and undesignated assets that meet the criteria for statutory protection, but are as yet undesignated.

Significance	Examples
Medium	Archaeological remains important at a regional research level.
Low	Archaeological remains important at a local research level.
Negligible	Archaeological remains with no significant research potential.
Unknown	Archaeological remains whose importance has not been ascertained.

2.4 Consultation

- 2.4.1 During the preparation of this desk-based assessment consultation regarding archaeological remains was undertaken with Kathryn Stubbs, Senior Archaeological Officer for the City of London, to establish the scope and content of this desk-based assessment. The archaeological potential of the assessment site was discussed in relation to known archaeological sites in the vicinity, as was the level of possible modern disturbance relating to the construction of the former 101 Moorgate building.
- 2.4.2 The possible requirements for any future archaeological investigation or mitigation will be the subject of further consultation with Kathryn Stubbs and the results of those discussions considered when preparing the written scheme of investigation for the archaeological works.

3 Planning Policy and Guidance

3.1 Legislative Context

3.1.1 Ancient Monuments and Archaeological Areas Act 1979

3.1.2 The Ancient Monuments and Archaeological Areas Act 1979 sets out the requirement for Scheduled Ancient Monument Consent for any works of demolition, repair, and alteration that might affect a Scheduled Ancient Monument. For archaeological sites that are not covered by the above Act, protection is afforded through development control, the Town and Country Planning Act 1990 and Planning Policy Statement 5 - Planning for the Historic Environment (PPS 5).

3.2 National Policy

3.2.1 PPS5 – ‘Planning for the Historic Environment’ was published in March 2010 and replaces former Planning Policy Guidance 15 and 16. It sets out a series of policies which are a material consideration to be taken into account in development management decisions and in relation to heritage consent regimes established in the Planning (Listed Buildings and Conservation Areas) Act 1990. The PPS is intended as a single policy statement for all heritage assets, which are taken to be all those parts of the historic environment ‘that have significance because of their historic, archaeological, architectural or artistic interest’ (PPS5, paragraph 5).

3.2.2 The PPS sets out the importance of being able to identify and assess the significance of heritage assets and the emphasis of the PPS is on ensuring that planning decisions are based on an understanding of the nature, extent and significance of a heritage asset. The assessment of significance should take account of any designation records, information in the historic environment record and similar sources of information, the heritage assets themselves, the outcome of consultation with interested parties and, where appropriate, expert advice from relevant specialists (PPS5, Policy HE7).

3.2.3 The PPS also clearly states that the effect of an application for development upon the significance of a heritage asset or its setting is a material consideration in determining that application (PPS5, Policy HE8). It is further stated that there should be a presumption in favour of the conservation of designated heritage assets. The more significant the designated heritage asset, the greater the presumption in favour of its conservation should be.

3.2.4 The PPS recognises the balance that needs to be struck between enhancing the significance of an asset and delivering public benefit. Policy HE9 sets out considerations to be taken into account when determining an application which has a negative impact upon the significance of a heritage asset. It states that the local planning authority should weigh the public benefits of the proposed development against any harm, and to recognise that the greater the harm to the significance of the heritage asset the greater the justification will be needed for any loss (PPS5, Policy HE9).

3.2.5 Policy HE9.6 recognises that there are many heritage assets of archaeological interest not currently protected by designation as a scheduled monument which are of equivalent significance. HE9.6 further notes that the absence of designation does not denote a lower significance and states that such assets should be considered subject to the policies set out within HE9 and HE10 (PPS 5, Policy HE9.6).

3.2.6 Consideration of development affecting the setting of heritage assets is outlined in HE10. It is stated that in considering applications for development within the setting of a heritage asset, local authorities should be favourable toward applications that preserve those elements of the setting that enhance the significance of the asset. Opportunities for changes in the setting to enhance or better reveal the significance of a heritage asset should also be identified by local planning authorities and taking such opportunities should be seen as a public benefit and part of the process of place-shaping (PPS5, policy HE10).

3.2.7 The recording of information relating to heritage assets is considered by Policy HE12. This recognises that a record of our past is not as valuable as retaining heritage assets. The policy sets out the need to record, to advance the understanding of the significance of heritage assets before they are lost, but recognises that the extent of the recording requirement should be proportionate to an asset's level of significance. It also establishes the requirement for developers to publish the evidence recorded and for local authorities to make the information publicly available, notably through the relevant historic environment record (PPS 5, Policy HE12).

3.3 Regional Policy

3.3.1 Regional planning policy is set by The London Plan July 2011 and is the responsibility of the Mayor of London. The current version of the plan was published in July 2011 and replaces the previous London Plan (consolidated with alterations since 2004) published in 2008. The London Plan is the strategic plan setting out an integrated social, economic, environmental and transport framework for the future development of London for the next 20 years until 2031. The London Plan 2011 forms part of the development plan for Greater London and requires that the local plans prepared by individual London boroughs conform to its policies.

3.3.2 Policy relating to the historic environment and landscapes at a strategic, planning and within the LDF is set out in Policy 7.8 Heritage Assets and Archaeology.

3.3.3 Policy 7.8 Heritage Assets and Archaeology

Strategic

A *London's heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.*

B *Development should incorporate measures that identify, record, interpret, protect and where appropriate, present the site's archaeology.*

Planning Decisions

C *Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.*

D *Development affecting heritage assets and their settings should conserve their significance by being sympathetic to their form, scale, materials and architectural detail.*

E New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological assets or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of the asset.

- 3.3.4 Policy 7.8 notes the significant contribution made by heritage assets and the historic environment to the city's culture. With reference to archaeology the policy sets out the need for archaeological sites and memorials uncovered by new development to be preserved and managed on-site. It also states that where this is not possible "*provision should be made for the investigation, understanding dissemination and archiving of the assets*".
- 3.3.5 The policy also identifies the role of the GLHER, character appraisals, conservation plans and local lists as being essential to the process of the identification and recording of heritage assets.
- 3.3.6 In parts F and G the policy also sets out the requirement for London boroughs to seek to maintain and enhance the contribution of built, landscaped and buried heritage. It also identifies the need for London Boroughs (in consultation with English Heritage and other statutory organisations) to include appropriate policies within their LDFs which identify, protect, enhance and improve access to the "*historic environment and heritage assets and their setting where appropriate, and to archaeological assets, memorials and historic and natural landscape character within their area*".

3.4 Local Policy

- 3.4.1 Local planning policy is provided by the saved policies of the City of London Unitary Development Plan (UDP) 2002 which sets out the Corporations strategy and policies for development control and enhancing the environment of the Square mile (www.cityoflondon.gov.uk).
- 3.4.2 The UPD sets out a strategic policy STRAT 11A which defines the London wide context of the three local policies that relate to archaeology (City of London 2002).

3.4.3 Strategic Policy STRAT 11A

To recognise the archaeological importance of the City as the historic centre of the capital and to seek the adequate safeguarding and investigation of ancient monuments and archaeological remains.

- 3.4.4 The strategic policy establishes the finite and often irreplaceable nature of the archaeological resource and the desirability to preserve archaeological remains in situ. The supporting guidance notes that there should be a presumption in favour of physical preservation for both designated or non-designated archaeological remains of national importance (ibid; p178).
- 3.4.5 The policy also sets out the need where appropriate for development schemes to be designed to include the preservation of important archaeological remains and monuments and to "*respect and enhance their settings*" (ibid; p178).
- 3.4.6 Finally policy STRAT 11A sets out the Corporations position for archaeological remains of lesser importance. For such remains the policy states that preservation in situ will not be appropriate and that preservation by record comprising investigation, recording and publication will be required (ibid; p179).

3.4.7 Three local policies are set out in the UDP. The first Policy ARC 1 sets out the requirement for assessing and evaluating sites of archaeological potential.

3.4.8 Policy ARC 1

To require planning applications which involve excavation or groundworks on sites of archaeological potential to be accompanied by an archaeological assessment and evaluation of the site including the impact of the proposed development.

3.4.9 Policy ARC 1 established that the whole City is considered to have archaeological potential unless it can be proven that previous ground disturbance or basement construction has removed potential archaeological remains. The policy further sets out the role of the Corporation in advising developers of the potential of a site, its relative importance and likely impacts at an early stage.

3.4.10 The policy also sets out the requirement for the preparation and submission for archaeological assessments; and where appropriate supported by archaeological evaluation or reconnaissance surveys, to accompany planning applications for the development of sites which have archaeological potential (ibid; p179).

3.4.11 Two policies ARC 2 and ARC 3 cover the requirements for preservation in situ and recording of Scheduled Monuments and archaeological remains.

3.4.12 Policy ARC 2

To require development proposals to preserve in situ, protect and safeguard important ancient monuments and important archaeological remains and their settings, and where appropriate, to require the permanent public display and/or interpretation of the monument or remains.

3.4.13 Policy ARC 3

To ensure the proper investigation, recording of sites, and publication of the results, by an approved organisation as an integral part of a development programme where a development incorporates archaeological remains or where it is considered that preservation in situ is not appropriate.

3.4.14 For sites where important monuments or archaeological remains are known to exist, the policies set out the need for development proposals and designs to fully consider the enhancement or physical preservation of archaeological remains. Where appropriate and possible this should include the interpretation and presentation of visible or subsurface remains to the public.

3.4.15 The supporting text for the policies also clearly set out that the Corporation will consider refusing development proposals that are not supported by adequate assessment of a site's archaeological potential or that fail to include provision for "safeguarding or preservation in situ of nationally or locally important monuments or remains" (ibid; p180).

3.4.16 These policies set out a requirement for the recording of archaeological remains deemed not to be of significance to warrant preservation in situ and establishes the framework for a programme of archaeological investigation, excavation, recording, and publication, to be approved by the Corporation prior to development. The policies also establish the control of programmes of archaeological work through the use of planning conditions (ibid; p180).

4 Archaeological Remains

4.1 Archaeological Baseline Conditions

4.1.1 Designated Assets

4.1.2 There are no World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens or Registered Battlefields within the assessment site or the wider 50m study area.

4.1.3 The remains of the Roman city wall, a conduit, medieval city wall and postern gate (the Moor Gate) are the nearest Scheduled Monument to the site (National Heritage List No. 1002051), located some 85m to the south of the assessment site.

4.1.4 Areas of Archaeological Potential

4.1.5 The assessment site is situated within the City of London the area of which is considered to be equivalent to an Area of Archaeological Priority.

4.1.6 The assessment site is also located within an area of archaeological potential as defined by the City of London Unitary Development Plan 2002 (see Figure 2).

4.1.7 Non-Designated Assets

4.1.8 A total of 8 non-designated archaeological and historical assets have been identified within the study area, one of which is located within the assessment site itself.

4.2 Archaeological and Historical Baseline

4.2.1 Archaeological baseline conditions for the Crossrail Western Ticket Hall and Moorgate Shaft have been comprehensively assessed and reported in the previous Crossrail studies listed at section 2.1.1 above. The baseline conditions below have been established specifically for the assessment site and are set out chronologically by period.

Palaeolithic (c.500,000 – 10,000 BC)

4.2.2 Evidence of in situ Palaeolithic remains are nationally rare, with findspots of isolated flint artefacts providing the slightly more frequent evidence for an early human presence in the landscape. No remains of Palaeolithic date have been recorded within the study area.

Mesolithic (c.10,000 – 4,000 BC)

4.2.3 Mesolithic activity is better represented especially along the former tributaries of the Thames most notably beyond the study area along the Lea to the east and Colne to the west. Within the City the Fleet and Walbrook would have provided a rich environment exploited by mobile hunter-gatherer groups. Further Mesolithic remains may be associated with or sealed by alluvial deposits within these valleys.

4.2.4 The GLHER records a single Mesolithic 'stag horn' adze or hoe with perforated handle [A1], apparently showing signs of wear from use, was found to the north of the assessment site.

Neolithic (4,000– 2,500 BC)

- 4.2.5 During the Neolithic period the temperate deciduous woodland that covered the Thames terraces underwent widespread clearance for agriculture. In contrast to West London, where extensive monumental landscapes dating to the Neolithic period have been excavated and recorded, there is limited evidence for Neolithic activity within the City itself. It is possible that this lack of evidence is a result of the extensive truncation of Neolithic remains by later occupation activity from the Roman period onwards.
- 4.2.6 There are no archaeological remains of Neolithic date recorded within the assessment site or 50m study area. In the wider area four residual Neolithic worked flints were recovered during archaeological excavations at Moor House (MRL98), approximately 50m to the southwest of the OSD site.

Bronze Age (c 2500 – 700 BC)

- 4.2.7 The third marine transgression (Tilbury III, some times combined with Tilbury II) occurred in the Early-Middle Bronze Age and resulted in the submergence of a fringe of land all around the coast. During this time settlement continued to be focussed in the lighter soils of the Thames gravel terraces.
- 4.2.8 Recent discoveries along the Thames estuary to the east of London indicate that, in conjunction with settlement on the terrace, the inter-tidal zone of the floodplain was being utilised for different activities including salt making, seasonal grazing of livestock on the marshes, water fowling, fish trapping and the use of the River Thames as a major transport link.
- 4.2.9 Evidence for Early Bronze Age within the area now encompassed by the City of London is limited. Evidence for Middle Bronze Age activity suggests that the City was occupied and funerary activity has been recorded at a number of sites. The best evidence of Late Bronze Age settlement has been identified on the higher ground afforded by the Thames terraces.
- 4.2.10 Nineteenth and twentieth century dredging activity has recovered a relatively high number of metal artefacts from the Thames suggesting that there was significant ceremonial or ritual activity throughout the period.
- 4.2.11 No remains of Bronze Age date have been recorded within the assessment site or the wider study area. Several worked flints of possible Neolithic or Bronze Age date were recovered during excavations at Moor House 50m to the southwest.

Iron Age (700 BC – AD 43)

- 4.2.12 Evidence for extensive Iron Age settlement of the London area is by contrast to the proceeding Roman period limited. Settlement is likely to have been dispersed and rural in nature, with unenclosed farmsteads distributed along the gravel terraces between larger defended enclosures. Artefactual evidence again largely recovered from the River Thames suggests that the London area was on the edge of the 'contact zone' of continental import for both prestige items and cultural influences. However, there is no evidence to date for an oppidum or proto-urban settlement which was to develop into the Roman urban centre in the City of London (MoLAS 2000).
- 4.2.13 Excavation of an archaeological test pit through the basement of 101 Moorgate immediately south of the assessment site [A7] as part of the Crossrail Moorgate Shaft works recovered a

single residual sherd of flint tempered Late Iron Age pottery was recovered from a Roman horizon (Crossrail 2010).

- 4.2.14 Residual Iron Age pottery has also been recovered during archaeological excavations in the wider area from Moor House (MRL98, (Butler 2006) southwest of the assessment site and Late Iron Age pottery was recovered at River Plate House (RIB87) to the northeast (Crossrail 2008).

Roman Period (AD 43 to 410)

- 4.2.15 The Roman town of *Londinium* was by AD55 established on the north bank of the Thames on two low hills separated by the Walbrook valley. By AD 60 *Londinium* had flourished into a trading centre and although destroyed during the Boudican revolt was within two years rebuilt and expanded (MoLAS 2000).
- 4.2.16 The assessment site is situated just to the north of the Roman walled city. The Roman city wall had been constructed by c. AD200 with the section between the main gateways at Cripplegate and Bishopsgate broadly being shadowed by the modern carriageway of the A1211 London Wall some 85m to the south of the assessment site. Moorgate itself is likely to have been the location of a postern gate allowing access northwards along the circuit of the wall (MoLAS 2000).
- 4.2.17 The area beyond the city wall was subject to extra-mural settlement and associated activities including the burial of the dead which was forbidden within the city limits under Roman law. The large northern cemetery that served the city was located to the east of the assessment site flanking Bishopsgate and extending south-eastwards to link with the eastern cemetery at Whitechapel Road. A small area of inhumation burials has also been identified just to the north of Finsbury Circus although it is uncertain whether these formed part of the northern cemetery (MoLA 2011).
- 4.2.18 Further evidence for extra-mural activity has been recorded in a number of excavations beyond the study area. These have identified the course of a Roman road aligned approximately northwest-southeast, running across the northern side of Finsbury Circus beyond the assessment site.
- 4.2.19 To the north of the assessment site at Moorgate Hall (MOH88) recorded a small number of cut features and a single inhumation burial of Roman date, although this did not appear to form part of the main extra-mural cemetery (LAARC).
- 4.2.20 Immediately southwest of the study area archaeological investigations at Moor House revealed evidence for extra-mural activity of a type that may have extended across the assessment site. The Moor House site lies just 20m north of the Roman city wall and the defensive ditch at the foot of the wall was recorded extending across the southern part of that site. The site was also crossed by several stream channels, tributaries of the Walbrook. Several phases of Roman activity were recorded comprising quarrying for brickearth or gravels. The earlier quarry pits being sealed by a layer of redeposited brickearth. The excavations also identified a number of boundary ditches, fence lines, several small structures of unknown function and a grave cut containing a partial human skeleton, suggesting extra-mural burials extended beyond the known limits of the main northern cemetery to the east (Butler 2006).
- 4.2.21 By the third century AD the construction of the city wall appears to have affected the drainage pattern of the Walbrook and its tributaries and the land to the north of the city became waterlogged resulting in the creation of the marshland that would later become known as Moorfields Marsh.

- 4.2.22 Within the assessment site evidence for Roman activity is recorded on the GLHER in the form of a grey-ware urn containing burnt bone [A2] attributed to an unspecified location in Moorgate.
- 4.2.23 As part of the Crossrail Moorgate Shaft works several archaeological investigations have been undertaken within the OSD site immediately south of the assessment site.
- 4.2.24 A single archaeological test pit was excavated through the basement of 101 Moorgate (Site Code XSP10; [A7]). The test pit measured 2.0m (L) x 2.0m (W) x 1.84m deep and was excavated in advance of the main post-demolition archaeological evaluation.
- 4.2.25 The test pit revealed natural brickearth deposits at 108.65m ATD (1.40m below ground level (bgl)). The natural brickearth deposits were sealed by a mixed clay/brickearth levelling layer from which Roman pottery dated to AD 150 – 200 and animal bone were recovered. This layer was truncated by a rectangular cut feature of unknown function. The fill of this feature did not contain any datable artefacts although it has been interpreted as dating to the AD 100-200 based on its stratigraphic relationship to overlying and underlying deposits (Crossrail 2010).
- 4.2.26 The levelling layer and rectangular cut feature were sealed by a second mixed clay/brickearth levelling layer, which contained sherds of Roman pottery, including black burnished wares and samian dated to AD 150 – 200. Other artefacts included fragments of ceramic building material and animal bone. A single residual sherd of flint tempered Late Iron Age pottery was also recovered (ibid; p4).
- 4.2.27 Archaeological monitoring and recording has also been undertaken during the recovery of six window samples (Site Code XRQ1; [A8]) in the basement of 101 Moorgate as part of the Crossrail Moorgate Shaft works. Natural Taplow gravels were recorded at c.108.6m ATD (2.50m below ground level (bgl)) overlain by natural brickearths. The brickearths were encountered at depths between 108.65m ATD and 107.84m ATD with a thickness of 0.40 to 0.90m. The results from several boreholes (TP411 and TP413) identified brickearth deposits which displayed evidence of reworking and trampling. A redeposited brickearth recorded in TP413 produced a fragment of Roman pottery and ceramic building material (Crossrail 2011). The Roman horizons are likely to represent evidence for extra-mural activity, although the limited nature of the window samples does not allow for a more comprehensive interpretation of their character.

Anglo-Saxon Period (AD 410 to 1066)

- 4.2.28 Following the end of the Roman administration at the start of the fifth century AD the Roman city appears to have been largely abandoned and the busy Early to Middle Saxon port and trading settlement *Lundenwic* established in the area now occupied by the Strand, Aldwych and Covent Garden 2.3km to the southwest of the assessment site.
- 4.2.29 Documentary records indicate the development of a royal or religious centre and until c. AD 597 London was the capital of the East Saxon kingdom. The re-occupation of the City within the Roman walls is also documented with St Paul's Cathedral being consecrated in AD604 and a fortified settlement or burgh called Lundenburh was established by King Alfred around AD886.
- 4.2.30 No archaeological remains of clearly identifiable Anglo-Saxon date have been recorded within the assessment site or its immediate study area. Archaeological investigations in the basement of the OSD site at 101 Moorgate and at Moor House have identified marsh deposits (see below) that appear to date from the Late Roman to early medieval period.

Medieval Period (AD 1066 to 1540)

- 4.2.31 The assessment site lies within the medieval extra-mural parish of St Giles Cripplegate. The earliest documentary evidence for the area records the land being granted by William the Conqueror to the college of St. Martin le Grand in AD1068 (Butler 2006).
- 4.2.32 After the Norman Conquest the City defences were renewed and subsequently maintained throughout the medieval period. By the 11th century suburbs had emerged along the main roads into the city.
- 4.2.33 Continuing urban expansion and limited space within the city walls led to the establishment of religious houses outside the City Wall. This included St Mary of Bethlehem, founded in 1247 to the east of Moor Fields between the Walbrook and the road leading north from the Bishop's Gate (Crossrail 2008).
- 4.2.34 To the north of the assessment site the remains of the medieval Moorfields Marsh were identified at Moor House (MOH88). This comprised a sequence of waterlaid clays and silts, which were truncated by several large east-west aligned ditches which are likely to represent an attempt to drain the marsh (LAARC).
- 4.2.35 Archaeological investigations at Moor House (MRL98) identified a probable marsh deposit overlying the Roman layers. The marsh deposits were cut by a network of drainage ditches, the medieval City Ditch, was also revealed. Evidence that the marsh flooded and froze during winter was indicated by the recovery of several bone skates. By the late medieval period attempts to reclaim area of Moorfields Marsh were being made. At Moor House large dump deposits of late medieval rubbish were recorded (Butler 2006).
- 4.2.36 The excavation of an archaeological test pit in the basement of 101 Moorgate as part of the Crossrail Moorgate Shaft works (Site Code XSP10) [A7] identified a dark brown, organic silt, from which no dating evidence was recovered sealing the Roman levelling deposits. Although this deposit exhibited evidence of partial water logging it has not formed under fully waterlogged marsh conditions and was interpreted as being deposits during the early formation of the Moorfields Marsh during the late Roman or early medieval periods (Crossrail 2010).
- 4.2.37 The sequence of archaeological horizons was sealed by the modern concrete basement floor slab and was partially truncated by concrete pile cap. The concrete slab measured a minimum of 0.60 – 0.80m thick. The construction of the basement of 101 Moorgate appears to have removed any late medieval or post-medieval deposits (ibid; p4).
- 4.2.38 The archaeological monitoring of window samples (Site Code XRQ11)[A8] in the basement of 101 Moorgate also revealed that the Roman horizons were overlain by humic or peaty clay silts which survived between 108.80m ATD and 109.71m ATD. These deposits appear to have formed as soils under partially waterlogged conditions and are likely to form part of the sequence of Moorfields Marsh deposits (ibid; p11). The partially waterlogged nature of the humic horizons suggests that these deposits may have formed early in the sequence of Moorfields Marsh deposits, and were subject to seasonal flooding. The Crossrail report concludes that as observed in the test pit (above) late medieval and post-medieval marsh deposits and features have been truncated (Crossrail 2011).
- 4.2.39 Documentary evidence (Mayor's Court Rolls of AD 1301) state that Moorfield was either water meadow or was intersected by trenches deep enough to carry a boat [A3]. It was mentioned again in 1411 when it is noted that the moor was covered with trees, gardens and hedges. The

moor was drained in 1527 but continued as wasteland, traversed by open sewers and subsequently became a rubbish dump.

Post-medieval (AD 1540 to 1900)

- 4.2.40 The medieval layout of the city did not change significantly during the Tudor period. In his survey of London published in 1603 John Snow recorded that throughout the medieval period the Moorfields Marsh or fen stretched from “*the wall of the City betwixt Bishopsgate and the postern called Cripplesgate, to Finsbury, and to Holywell*” and continued to be “*a waste and unprofitable ground*” (Thornbury 1878).
- 4.2.41 The marsh covering the Moorfields and Finsbury area was first drained towards the end of the medieval period in 1527 and had by the reign of James I been laid out with pleasant walks (Thornbury 1878).
- 4.2.42 The historic development of the assessment site throughout the post-medieval period has been assessed using historic maps dating to the 16th century onwards and is summarised below.
- 4.2.43 Agas map of 1562 (Figure 3) depicts the area of the assessment site with open fenced fields on the western side of the road (modern Moorgate) leading north from the Moor Gate. Moorfield (*More Fyeld*) to the east of the assessment site has by this time been drained and is depicted crossed by diagonal paths.
- 4.2.44 A century later Faithorne and Newcourt’s map of 1658 (Figure 3) shows that urban expansion had extended beyond the City Wall with the open fields to the west of the assessment site having been built over with numerous houses. The assessment site itself appears to still have been located in an open area with an avenue of trees running along the Moor Gate street frontage. To the east Moore Fields has been formally laid out as a park or garden crossed by regular tree lined paths.
- 4.2.45 Following the Great Fire of London Ogilby and Morgan’s map of 1676 (Figure 3) shows a similar level of development. The assessment site would have lain within an open corridor of land called *Little Moor Fields* which ran along the western side of Moorgate. The west relatively densely packed housing extends from the City wall northwards between *Little Moor Fields* and *Moor Lane*. To the south of Moor Fields the New Bethlehem London Hospital is depicted for the first time.
- 4.2.46 By the publication of John Roque’s survey of London in 1746 (Figure 3) the assessment site had been developed and is depicted as forming part of a row of buildings that occupy the former open ground of *Little Moor Fields*, which survives as a north-south aligned street running along the western side of the new buildings. The building plots occupying the assessment site and its surrounding road layout appear to change little over the following centuries. Horwood’s plan of 1799 (Figure 4) shows essentially the same level of detail as Roque’s map although the assessment site is depicted as a row of approximately eight individual buildings rather than a single block of development.
- 4.2.47 Greenwood’s 1827 and Stanford’s 1862 maps (Figure 4) of the early to mid 19th century show the same level of detail, and little change in the building and street layout of the assessment site. Both depict Finsbury Circus to the east which had been laid out on the site of the former Moor Field in 1815-17 as one of London’s first public parks.
- 4.2.48 The first edition Ordnance Survey map of 1873 (Figure 4) is the first to show Moorgate Street Station. The cut and cover Metropolitan Line from Paddington to Farringdon Street Station,

- opened in 1863 and was extended eastwards via Aldersgate Street (Barbican) as far as Moorgate Street Station (Moorgate) in 1865. The assessment site at this time formed part of two buildings with *Short Street* (Moor Place) to the north. Within the OSD site to the south several buildings had been demolished to make way for a Cab Stand serving the station.
- 4.2.49 The 1894 to 1951 Ordnance Survey maps (Figure 5) show little change within the assessment site which continues to be depicted as forming part of two buildings at the northern end of the 91-109 Moorgate block. To the south of the assessment site the 1894 map shows the line of the 1875 cut and cover Metropolitan Railway tunnel extension which bisects the OSD site. The Cab Stand shown on the earlier Ordnance Survey edition had by this time been redeveloped and was occupied by several new buildings and Keats Passage was established.
- 4.2.50 The 1938 Ordnance Survey map (Figure 5) depicts some remodelling within the Finsbury Circus which was re-planned in 1909, when the layout of entrances was changed and the central bowling green was added in 1925.
- 4.2.51 The later 20th century Ordnance Survey maps (Figure 6) show that the assessment site remained unchanged, occupying its location at the end of the block of buildings fronting Moorgate (formerly Finsbury Pavement). Moor Place lies immediately to the north and Moorfields (formerly Little Moor Fields) to the west beyond which lies Moorgate Station. The 1988 Ordnance Survey map shows Moorgate Station in its current form having been remodelled to create an open pedestrian plaza at street level. The OSD site immediately to the south of the assessment site was depicted as being occupied by the buildings for Moorgate Station until the 1988 edition when the former Amro Bank is shown on the 101 Moorgate site.
- 4.2.52 Evidence for Post-medieval activity in the wider Moorgate area was identified during the archaeological investigations at Moor House (MRL98). Here post-medieval activity dating to the 16th and 17th centuries comprised a series of barrel- and brick-lined wells, brick-lined and timber-lined cesspits and rubbish pits and a large rectangular pit containing a number of antlers. These remains appear to be related to the backland activity to the rear of the first buildings constructed in the area of the former Moorfields Marsh in the later 17th century. Evidence for the local 17th century pottery industry was recovered in the form of a large number of pottery wasters recovered from one of the barrel wells. A 19th century brick culvert was also recorded (Butler 2006).
- 4.2.53 At Moor House to the north of the assessment site late medieval and early post-medieval deposits were recorded during archaeological investigations (MOH88). The area appeared to have been used for the extensive dumping of domestic refuse. These dumped deposits included a high percentage of animal bone, leather waste and pottery and appeared to be either contemporary with or seal the drainage features and are likely to represent attempts to in fill and reclaim the marsh (LAARC).
- 4.2.54 The GLHER records a north-south aligned drain, formed from a semi-circular vault constructed from unfrogged red bricks with a sandy mortar [A4]. The drain was recorded during monitoring of test pits (Site Code XRD92). The base of the drain had slumped to the west and it was blocked by a black organic silt, interpreted as a residue of its last use.
- 4.2.55 The GLHER also records that unspecified post-medieval structures [A5] were recorded in a single test pit during monitoring of the same test pits undertaken by MoLAS (Site Code XRD92).

4.2.56 An archaeological watching brief undertaken by PCA in 2003 (Site Code BFY03) recorded a made ground deposit dated to the 19th century [A6], overlying a series of undated peat and alluvial deposits.

4.3 Deposit Model

4.3.1 Several ground investigations have been undertaken to provide engineering and ground condition data for the Crossrail Scheme including geotechnical investigations undertaken on behalf of London Underground c.1994 and Crossrail Ground Investigation Packages 13 and 29A (Crossrail 2010). Packages 13 and 29A were subject to archaeological monitoring, the results of which are discussed above.

4.3.2 Table 2 below summarises the strata recorded by these investigations in the immediate vicinity of the assessment site.

	Borehole Number							
	L23	L24	L25	TP6	WS411	WS413	WS414	WS415
Location	SW of Assessment Site	S of Assessment Site	N of Assessment Site	Basement of 101 Moorgate				
Ground Level m ATD	113.73	113.26	113.85	-	-	-	-	-
Basement Level m ATD	-	-	-	110.05	110.36	110.34	110.05	110.04
Surface of Concrete m ATD (thickness)	(0.50m)	(1.00m)	(0.40m)	(0.60m)	(0.65m)	(0.72m)	(0.34m)	(1.00m)
Surface of Made Ground m ATD (thickness)	113.23 (3.10m)	112.66	113.45	109.45 (0.20m)	-	109.62 (0.68m)	-	-
Surface of Marsh Deposits m ATD (thickness)	110.13	109.76	110.35	109.25 (0.60m)	109.71 (0.90m)	108.94 (0.14m)	109.71 (0.86m)	109.04 (0.35m)
Surface of Roman Horizons/ Brickearth m ATD (thickness)	108.33 (2.90m)	108.76 (8.23m)	108.65 (2.80m)	108.65	108.81 (0.70m)	108.80 (1.26m)	108.85 (1.15m)	108.69 (0.40m)
Surface of Taplow Gravel Terrace Deposits m ATD (thickness)	105.43	100.53	105.85	-	108.11	107.54	107.7	108.29

Table 2 Summary Deposit Model

4.3.3 Within the OSD site Test Pit 6 and window samples WS411 to WS415 confirm that the basement of the former 101 -109 Moorgate building has removed all modern made ground, post-medieval deposits and in all likelihood late medieval alluvial deposits relating to the formation and drainage of Moorfields Marsh. This is almost certainly the case within the basemented area of the assessment site itself.

4.3.4 Directly beneath the concrete slab and where present modern construction debris, alluvial deposits associated with the early formation of Moorfields Marsh have been recorded between 108.94 and 109.71m ATD. These deposits survive with a variable thickness of 0.14m to 0.90m.

- 4.3.5 The marsh deposits seal Roman horizons or surface of the natural brickearths at an average depth of 108.76m ATD. The Roman horizons have typically comprised one or more layer of dirty, trampled or redeposited brickearth which overlie the clean natural brickearth deposits. A single cut feature was recorded in Test Pit 6.
- 4.3.6 The terrace gravels where present are encountered at varying levels. In the OSD site (WS411 to WS415) they are encountered at an average depth of 107.91m ATD. This variation in depth may result from natural undulations or erosion of the surface of the gravel terrace, but it is also possible that quarrying or occupation activity have caused localised truncation of the Taplow gravels.

4.4 Previous Disturbance to Archaeological Horizons

- 4.4.1 To the immediate south of the assessment site construction of the cut and cover Metropolitan underground line in the 1870s will have removed all archaeological deposits within its alignment. The extent to which this truncation extends towards the basement of the assessment site is unknown. The Crossrail Liverpool Street Detailed Desk-based Assessment makes the assumption that the extent of truncation extends for a distance of 1m either side of the existing tunnel retaining walls (Crossrail 2008).
- 4.4.2 The former Amro bank building at 101-109 Moorgate which encompasses the proposed OSD and assessment sites was constructed with a single level basement approximately 2.30m depth, with the surface of the basement slab known to exist at approximately 110.0m ATD. As discussed in the deposit model above the construction of the basement has removed all post-medieval and late medieval archaeological deposits to a depth of approximately 109.33m ATD.
- 4.4.3 In addition to the concrete slab the basement of the former Amro bank building was constructed on a series of 900mm and 1050mm bored piles, the layout of which can be seen in Plate 5 above. All archaeological deposits will have been removed at the location of each one of these piles. In addition each pile may have caused secondary impacts in the form of truncation, warping, compaction and dewatering of the adjacent deposits.

5 Assessment

5.1 Archaeological Potential

- 5.1.1 The desk-based assessment of baseline archaeological conditions has identified no known evidence for archaeological remains dating from the Palaeolithic, Neolithic or Bronze Age periods within the assessment site. Evidence for prehistoric activity within the study area is in fact limited to single isolated findspot of a Mesolithic date found to the north of the assessment site and a residual fragment of Iron Age pottery found with the OSD site during archaeological investigations for the Crossrail Moorgate Shaft site.
- 5.1.2 The assessment site is known to be located with an area of Roman extra-mural activity and the GLHER records the discovery of a Roman grey ware urn containing burnt bone (possibly a cremation burial) within the assessment site. Archaeological investigations and monitoring undertaken for the Crossrail scheme within the OSD site have identified layers redeposited brickearth containing fragments of Roman pottery and animal bone and a single cut feature of unknown function which suggest clearance of the area and occupation activity extend into the assessment site.
- 5.1.3 The same Crossrail archaeological investigations have identified partially waterlogged soil horizons associated with the early formation of the Moorfield Marsh and probably dating from the later Roman to early medieval periods. Late medieval and post-medieval marsh and dump deposits associated with the marsh and its reclamation will have been removed when the basement of the former 101-109 Moorgate building was constructed.
- 5.1.4 The archaeological potential of the application site has been assessed for all archaeological periods and summarised below:
- 5.1.5 **Palaeolithic** – Palaeolithic remains are rare nationally and although often found within the Taplow terrace gravels and sediment sequences of ancient river valleys (such as the Walbrook), no remains dating to this period have been identified within the study area. The assessment site is therefore considered to have a Low potential for the recovery of Palaeolithic remains (including isolated finds of stone tools) of Low or Medium significance.
- 5.1.6 **Mesolithic** – The remains of *in situ* occupation are also rare nationally although finds of Mesolithic flint work are much more common. A single isolated findspot of Mesolithic date indicates a human presence within the study area and suggests that there is a Low potential for the recovery of archaeological remains dating to the Mesolithic period of Low or Medium significance.
- 5.1.7 **Neolithic** – There are no known remains dating to the Neolithic period identified within the study area suggesting that the site has a Low potential for the recovery of Neolithic artefacts or *in situ* occupation evidence of Low or Medium significance.
- 5.1.8 **Bronze Age** – There are no known remains dating to the Bronze Age identified within the study area suggesting that the site has a Low potential for the recovery of Bronze Age artefacts or *in situ* occupation evidence of Low or Medium significance.
- 5.1.9 **Iron Age** - A single residual fragment of Iron Age pottery found within the OSD site provided some indication of Iron Age settlement activity on the area. The assessment site is therefore considered to have a Low potential for the discovery of Iron Age remains of Low significance.

- 5.1.10 **Roman** – Roman levelling deposits and a single cut feature of unknown function recorded beneath the basement slab of the former Amro Bank building at 101 Moorgate suggest that Roman extra-mural settlement activity almost certainly extends into the assessment site. The GLHER record of a possible cremation burial in the vicinity of the assessment site is likely to represent a scattered burial at the edge of the main extra-mural settlement, rather than providing evidence that the main cemetery extends westwards into OSD site. The application site is therefore considered to have a High potential for the discovery of Roman remains of Low or Medium significance.
- 5.1.11 **Anglo-Saxon** – Archaeological investigations within the basement of the former Amro Bank building at 101 Moorgate have identified partially waterlogged soil horizons associated with the early formation of the Moorfields Marsh. Although no archaeological remains of Anglo-Saxon date have been recorded within the study area it is possible that the formation of early marsh deposits may span this period. The assessment site is therefore considered to have a Low potential for Anglo-Saxon remains of Low significance.
- 5.1.12 **Medieval** – The early marsh deposits recorded beneath the basement of the former Amro Bank building at 101 Moorgate are interpreted as possibly being deposited into the early part of the medieval period. It is likely that these deposits survive within the assessment site beneath the basement slab of the former building. It is also possible that cut features and artefacts of an early medieval date may survive within these deposits. The assessment site is therefore considered to have a Moderate to High potential for early medieval remains of Low or Medium significance.
- 5.1.13 The archaeological investigations within the OSD site immediately to the south of the assessment site have confirmed that late medieval horizons including deposits associated with the Moorfields Marsh have been removed by construction of the basement of the building that formerly occupied 101-109 Moorgate. Consequently the assessment site is considered to have a Negligible potential for later medieval remains of Low significance.
- 5.1.14 **Post-medieval** – As with archaeological remains of a later medieval date the desk based assessment has concluded that the basement of the Amro Bank building at 101-109 Moorgate has removed all horizons of post-medieval date. The assessment site is therefore considered to have a Negligible potential for post-medieval remains of Low significance.
- 5.1.15 **Unknown** - This desk-based assessment has identified the known archaeological resource within the study area and has attempted to predict the potential of the assessment site to contain archaeological remains. There is, however, still a risk that unexpected archaeological remains of all periods may be discovered within the application site. This risk is inherent with any development project.

5.2 Potential Impacts on the Archaeological Resource

- 5.2.1 Construction of the OSD will impact on any archaeological remains that survive within the assessment site. The breaking out and reduction of the existing basement slab/pile cap to a depth of 1.00-1.50m beneath the existing slab level of 110m ATD will remove the partially waterlogged marsh deposits of Roman or early medieval date and may truncate the underlying Roman horizons that seal the natural brickearths known to exist under the basement slab of 101 Moorgate at an average depth of 108.76m ATD.
- 5.2.2 The excavation of 13 No. 900mm diameter bored piles within the proposed new basement structure will also remove all surviving archaeological remains at each new pile location.

6 Recommendations

6.1 Archaeological Remains

- 6.1.1 This desk-based assessment has identified a High potential for encountering Roman remains of Low to Medium significance, a Moderate to High potential for encountering early medieval remains of Low or Medium significance, a Low potential for encountering prehistoric remains of all periods and a negligible potential for encountering late medieval and post-medieval remains of Low significance.
- 6.1.2 Archaeological excavation, trial trench evaluation and watching briefs will be undertaken to mitigate the impact of the Crossrail Moorgate shaft which encompasses the majority of the OSD site. The specification of these works is set out in the Crossrail C138 Liverpool Street Station Addendum to WSI: Trial Trench Evaluation, Watching Brief and Detailed Excavation – Moorgate Worksite (XSJ10), Crossrail Document No. C138-MMD-T1-TCP-C101-00001.
- 6.1.3 In order to mitigate the construction impacts of the OSD scheme on the surviving archaeological resource within the assessment site it is recommended that a phased programme of archaeological surveys and investigations is undertaken in advance of ground reduction activities.
- 6.1.4 A phased programme of archaeological investigation will be appropriate to mitigate the archaeological risk resulting from the OSD scheme. Such a programme of work will be dependant on and will need to be carefully coordinated with Crossrail's programme of work and the emerging construction sequence for the OSD scheme
- 6.1.5 A phased programme of archaeological investigation and mitigation measures would include the stages summarised below.
- 6.1.6 Stage 1 - archaeological monitoring and recording during any future geotechnical investigations undertaken within the former basement of the assessment site. The purpose of the archaeological monitoring would be to:
- identify the magnitude, depth and extent of previous modern disturbance;
 - confirm the presence/absence location, depth, extent and significance of any surviving archaeological remains, notably those associated with Roman extra-mural occupation and the early formation of the Moorfields Marsh;
 - inform the design of an archaeological mitigation strategy if appropriate; and
 - through close liaison with the Crossrail design team inform the archaeological works for both the Crossrail and OSD schemes.
- 6.1.7 Stage 2 – the event that no future geotechnical investigations are planned, archaeological trial pit evaluation would be necessary to establish the extent, depth, character and significance of the archaeological resource within the assessment site. Owing to the size of the proposed new basement two or more trial pits measuring 2.0m (L) x 2.0m (W) to a maximum depth of 2.0m should provide the necessary results to enable the requirements of any archaeological mitigation to be assessed. The purpose of the trial pit evaluation would be as set out above for Stage 1.

- 6.1.8 Stage 3 – archaeological mitigation. Mitigation measures are likely to comprise the conservation of archaeological remains through the excavation, recording in advance of construction, followed by the interpretation, publication and dissemination with the results of the wider OSD development.
- 6.1.9 Mitigation measures are likely to comprise either detailed archaeological excavation or targeted watching brief (or a combination of the two methods) in advance of or during construction of the new basement plant room. The archaeological design and specification for these mitigation measures would be informed by Stages 1 and 2.
- 6.1.10 All archaeological surveys or investigations should be undertaken in accordance with an archaeological design/strategy prepared in consultation with the City of London Archaeologist and Crossrail Project Archaeologist and set out in a written scheme of investigation approved by the City of London Archaeologist.
- 6.1.11 The phased programme of archaeological investigation and mitigation has the potential to contribute to the following selected research themes derived from A Research Framework for London Archaeology 2002 (Nixon et al, 2003) set out below:
- Understanding London’s hydrology, river systems and tributaries and the relationship between rivers and floodplains;
 - Understanding how water supply and drainage provision were installed and managed;
 - Refining our understanding of the chronology and function of the landward and riverside defences and extramural evidence of defensive or military structures in the Roman period;
 - Understanding the relationships between urban settlements and royal villas or religious estates;
 - The end of the Roman occupation: developing explanatory models to explain socio-political change and considering the influence of surviving Roman structures on Saxon development; and
 - Examining the use in any one period of materials from an earlier period (e.g. Saxon use of surviving Roman fabric) and the influence on craftsmanship, manufacture and building techniques.
- 6.1.12 The programme of archaeological work and research aims has been recommended to compliment those set out for the adjacent Crossrail scheme for the Moorgate Shaft site in the remainder of the OSD site. It is hoped that the parity between the two programmes of work will enable the close integration of the results and project archives in order to achieve a comprehensive understanding of past human activity within the proposed OSD site as a whole.

7 References

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Mott MacDonald. 2011b. 91-101 Moorgate Over Site Development Environmental Statement Volume II – Technical Appendices (Unpublished Report).

Mott MacDonald. 2011c. 101 Moorgate Over Site Development Structural Engineering Stage C+ 241037/STR/RT/01 (Unpublished Report).

Nixon, T, McAdam, E, Tomber, R, and Swain, H. 2003. A Research Framework for London Archaeology 2002, Museum of London Archaeology Service.

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7.2 Cartographic Sources

Agas Map of London c.1562

Faithorne and Newcourt's Map of the Cities of London and Westminster 1658
Ogilby & Morgan 1676

John Roque's Exact Survey of the Cities of London and Westminster 1746

Horwood's Plan of the Cities of London and Westminster 1799

Greenwood's Map of London 1827

Stanford's Map of London 1862

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Ordnance Survey 1894 Edition

Ordnance Survey 1913 Edition

Ordnance Survey 1938 Edition

Ordnance Survey 1951 Edition

Ordnance Survey 1959 Edition

Ordnance Survey 1971 Edition

Ordnance Survey 1988 Edition

7.3 Electronic Sources

<http://www.british-history.ac.uk>

<http://www.cityoflondon.gov.uk>

<http://www.museumoflondon.org.uk/laarc> (LAARC)

<http://list.english-heritage.org.uk>

<http://www.magic.gov.uk>

Appendix 1

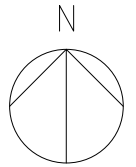
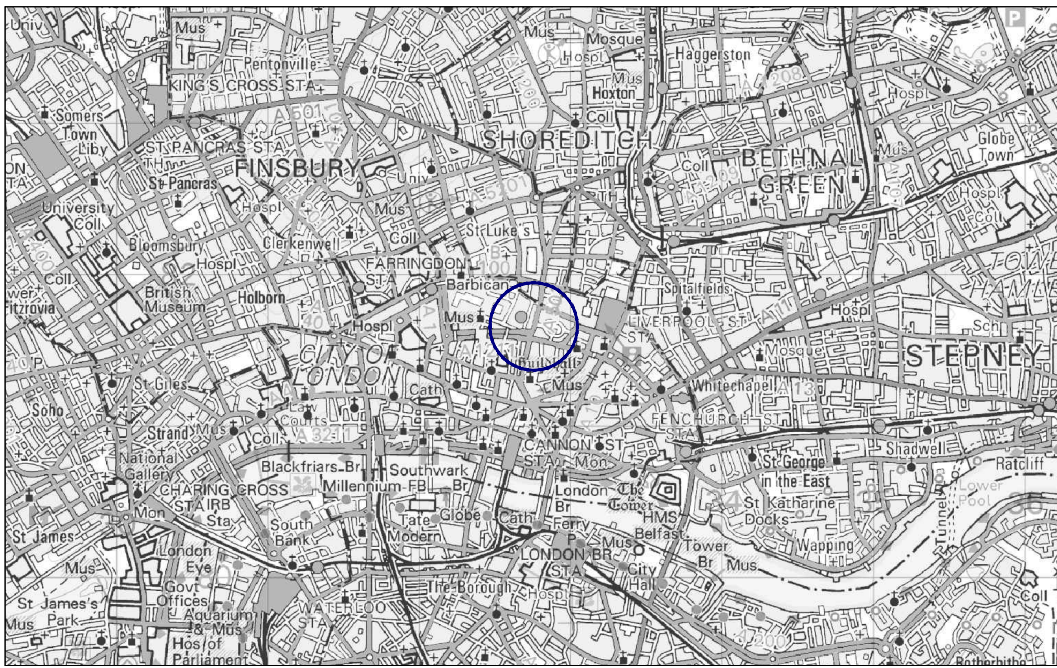
Catalogue of Archaeological and Historical Assets

SW No.	HER Ref.	NGR	Site Name	Type	Description	Period	Source
A1	MLO15552	TQ 53271 18169	Moorfields EC2	Antler Tool	Mesolithic 'stag horn' adze or hoe with perforated handle, apparently showing signs of wear from use.	Mesolithic	Find spot
A2	MLO11139	TQ 53272 18166	Moorgate EC2	Cremation burial	A grey-ware urn containing burnt bone was found at an unspecified location.	Roman	Documentary Evidence
A3	MLO71856	TQ 53276 18165	Finsbury Circus	Marsh	Documentary evidence (Mayor's Court Rolls of AD 1301) state that Moorfield was either water meadow or was intersected by trenches deep enough to carry a boat. It was mentioned again in 1411 when it is noted that the moor was covered with trees, gardens and hedges. The moor was drained in 1527 but continued as wasteland, traversed by open sewers and subsequently became a rubbish dump.	Medieval	Documentary Evidence
A4	MLO67033	TQ 53269 18163	6-8 Moorfields Close	Drain	A north-south aligned drain, formed from a semi-circular vault constructed from unfrogged red bricks with a sandy mortar. The drain was recorded during monitoring of test pits (Site Code XRD92). The base of the drain had slumped to the west and it was blocked by a black organic silt, interpreted as a residue of its last use.	Medieval & Post-medieval	Previous Investigation
A5	MLO65869	TQ 53270 18161	Moorfields	Structure	Unspecified post-medieval structures were recorded in a single test pit during monitoring of test pits undertaken by MoLAS (Site Code XRD92).	Post-medieval	Previous Investigation
A6	-	TQ 53277 18165	Britannic House, Finsbury Circus, Broadgate, EC2	Alluvial Deposits	An archaeological watching brief undertaken by PCA in 2003 (Site Code BFY03) recorded a made ground deposit dated to the 19th century, overlying a series of undated peat and alluvial deposits.	Post-medieval	Previous Investigation

SW No.	HER Ref.	NGR	Site Name	Type	Description	Period	Source
A7	-	532711 181628	101 Moorgate	Possible occupation activity & marsh deposit	The excavation of an archaeological test pit in the basement of 101 Moorgate as part of the Crossrail Moorgate Shaft works (Site Code XSP10) identified natural brickearth deposits at 108.65m ATD. The brickearth was overlain by Roman levelling layers, one of which was truncated by a rectangular cut feature possibly associated with extra-mural activity. Fragments of Roman pottery dated AD 100-200, CBM and animal bone were recovered from the levelling layers. The levelling deposits were sealed by a dark organic silt, formed in partially waterlogged conditions, which may represent the early formation of the Moorfields Marsh.	Roman & Medieval	Previous Investigation
A8	-	532710 181624	101 Moorgate	Possible occupation activity & marsh deposit	Archaeological monitoring of six window samples (Site Code XRQ11) in the basement of 101 Moorgate as part of the Crossrail Moorgate Shaft works recorded natural Taplow gravels at c. 108.6m ATD overlain by brickearth. The natural deposits were overlain by a redeposited brickearth possibly a levelling layer from which a fragment of Roman pottery and CBM were recovered. This levelling layer has been interpreted as being evidence for extra-mural activity. This deposit was sealed by humic peaty clay silts between c. 108.96m ATD and 109.71m ATD. These peaty clay silts probably developed in partially waterlogged condition and may represent the early formation of the Moorgate Marsh.	Roman & Medieval	Previous Investigation

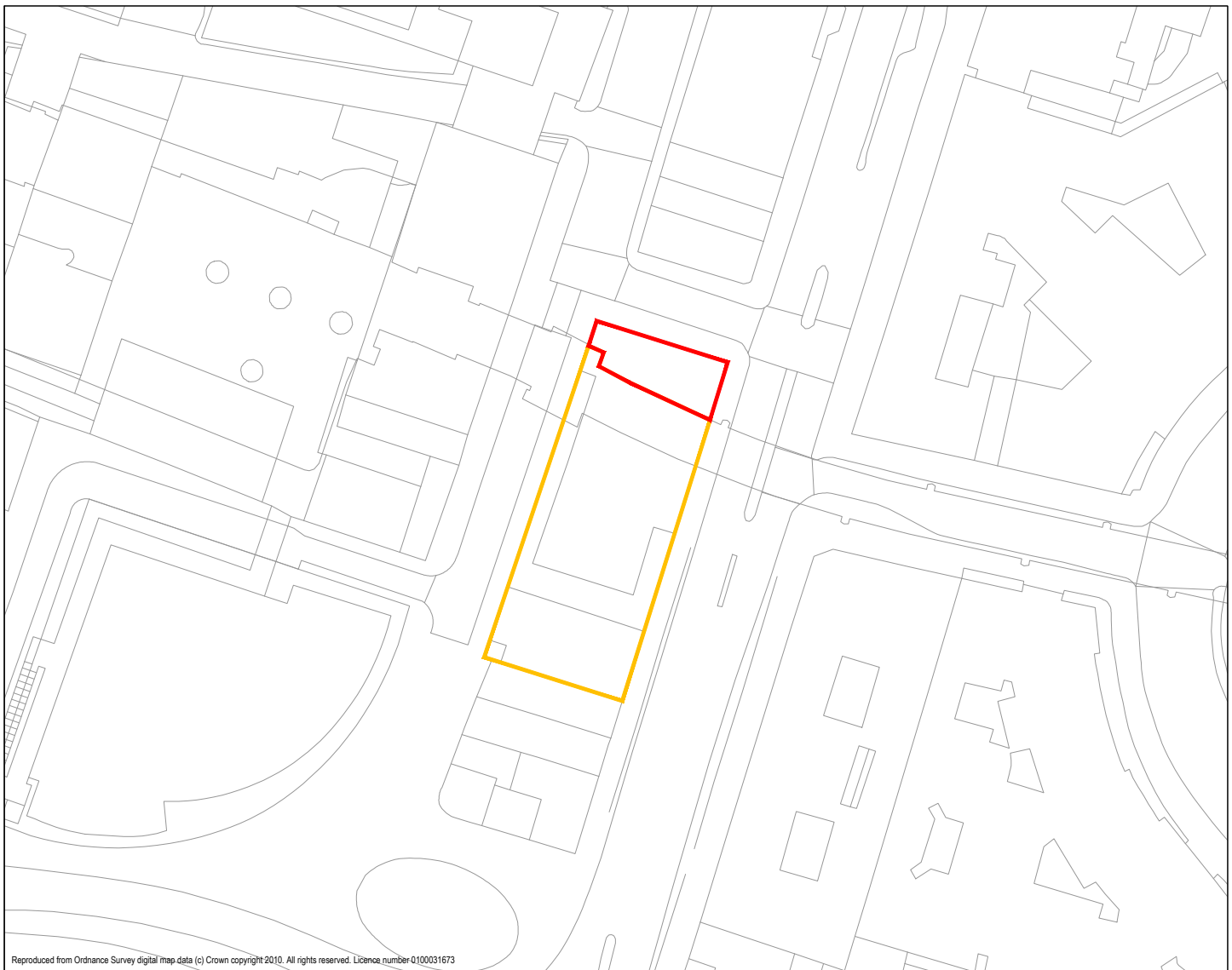
Appendix 2

Figures



Key

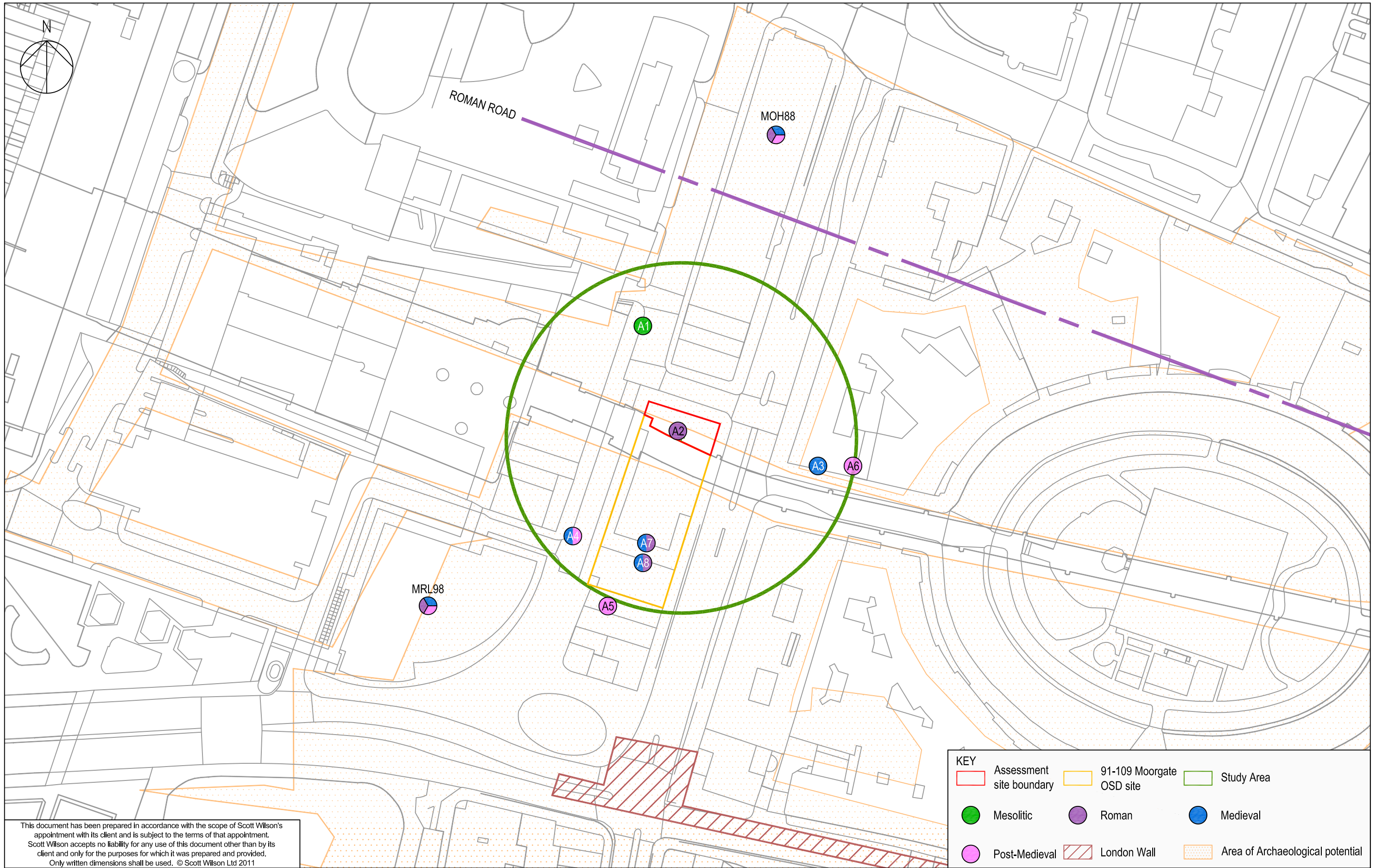
- Assessment site boundary
- 91-109 Moorgate OSD site
- Site location



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<p>Job Title</p> <p style="text-align: center;">91-101 Moorgate Over Site Development</p>	<p>Dwg Ref Number</p> <p style="text-align: center;">FIGURE 1</p>	<p>URS Scott Wilson WESTONE Leeds LS1 1BA Telephone (0113) 204 5000 Fax (0113) 204 5001</p>
<p>Drawing Title</p> <p style="text-align: center;">Site Location Plan</p>	<p>Scale(s) @ A4</p> <p style="text-align: center;">1:50,000 & 1:1,000</p>	
<p>Dm</p> <p style="text-align: center;">GB</p>	<p>Chk</p> <p style="text-align: center;">/</p>	<p>Date</p> <p style="text-align: center;">31.08.11</p>
<p>Figure Number</p> <p style="text-align: center;">Figure 1</p>		



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	Mesolithic		Roman		Medieval
	Post-Medieval		London Wall		Area of Archaeological potential

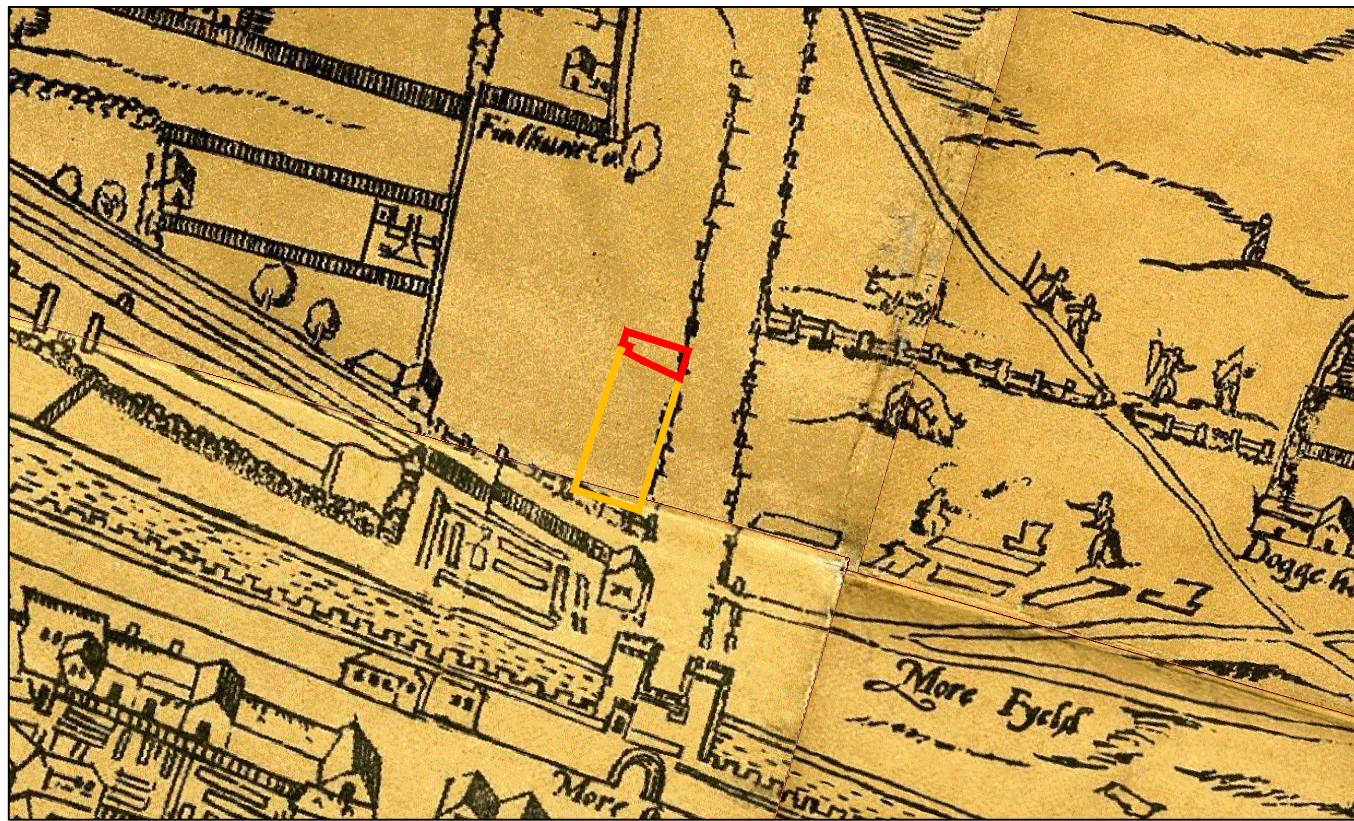
Drawing Title

91-101 Moorgate Over Site Development Location of Archaeological and Historic Assets

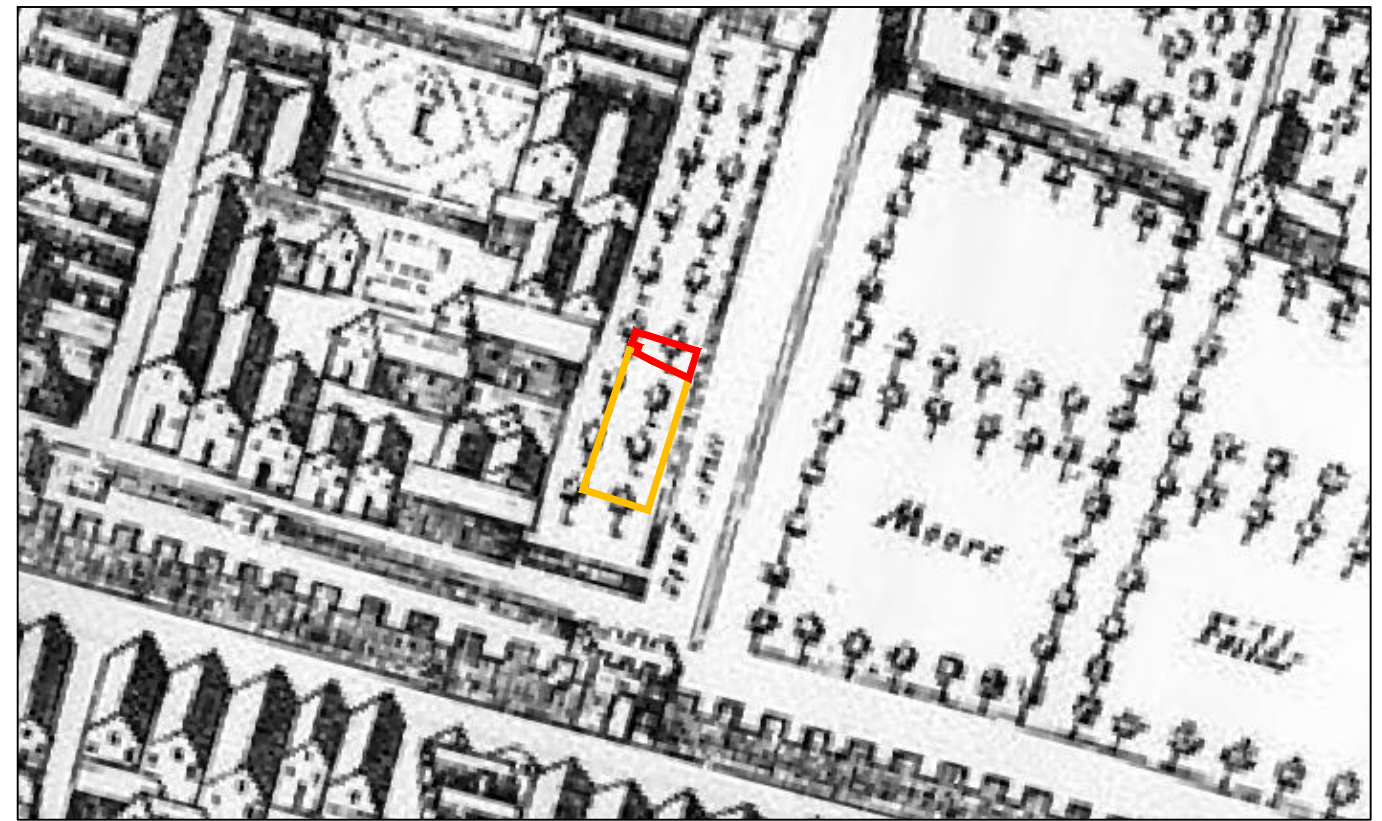
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Chk IW	Date 26.08.11	Date



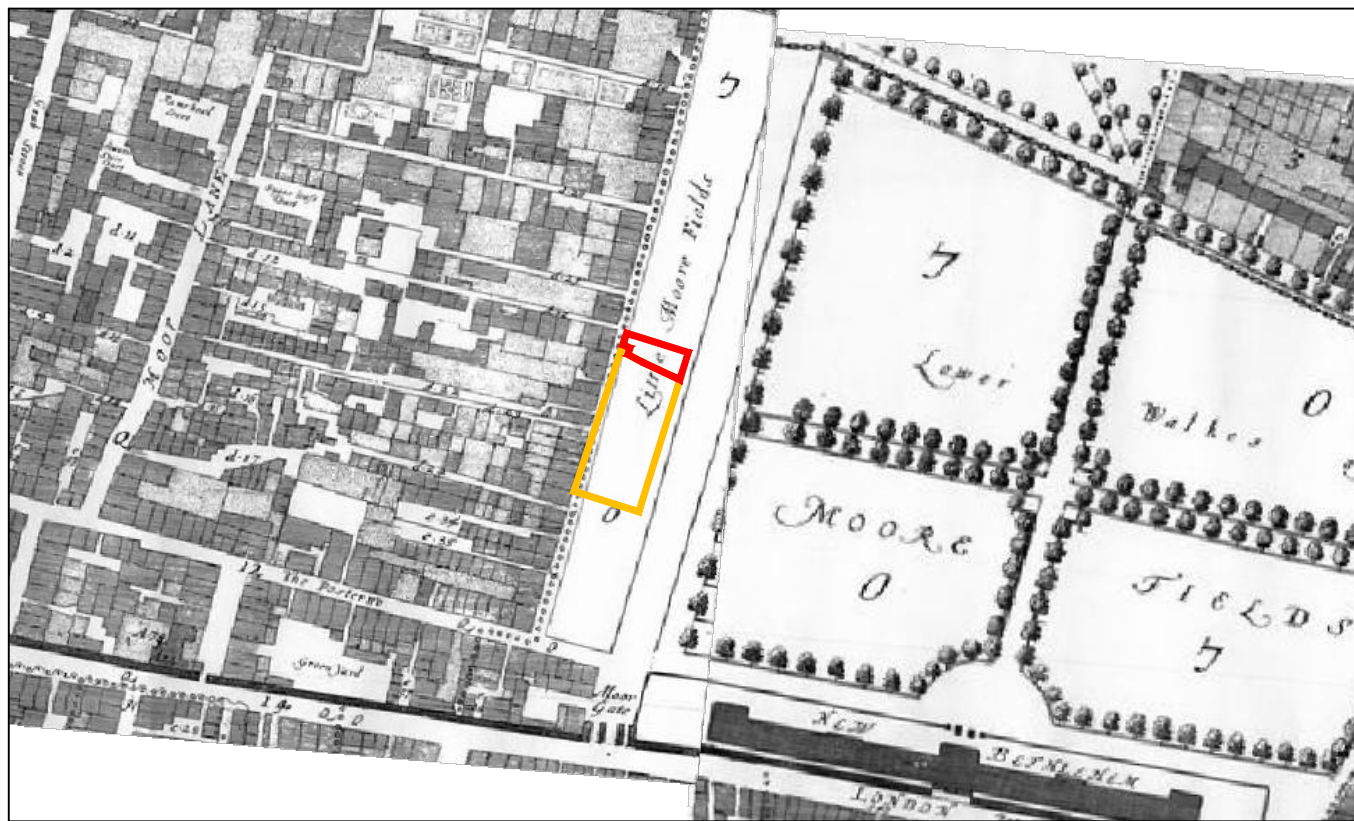
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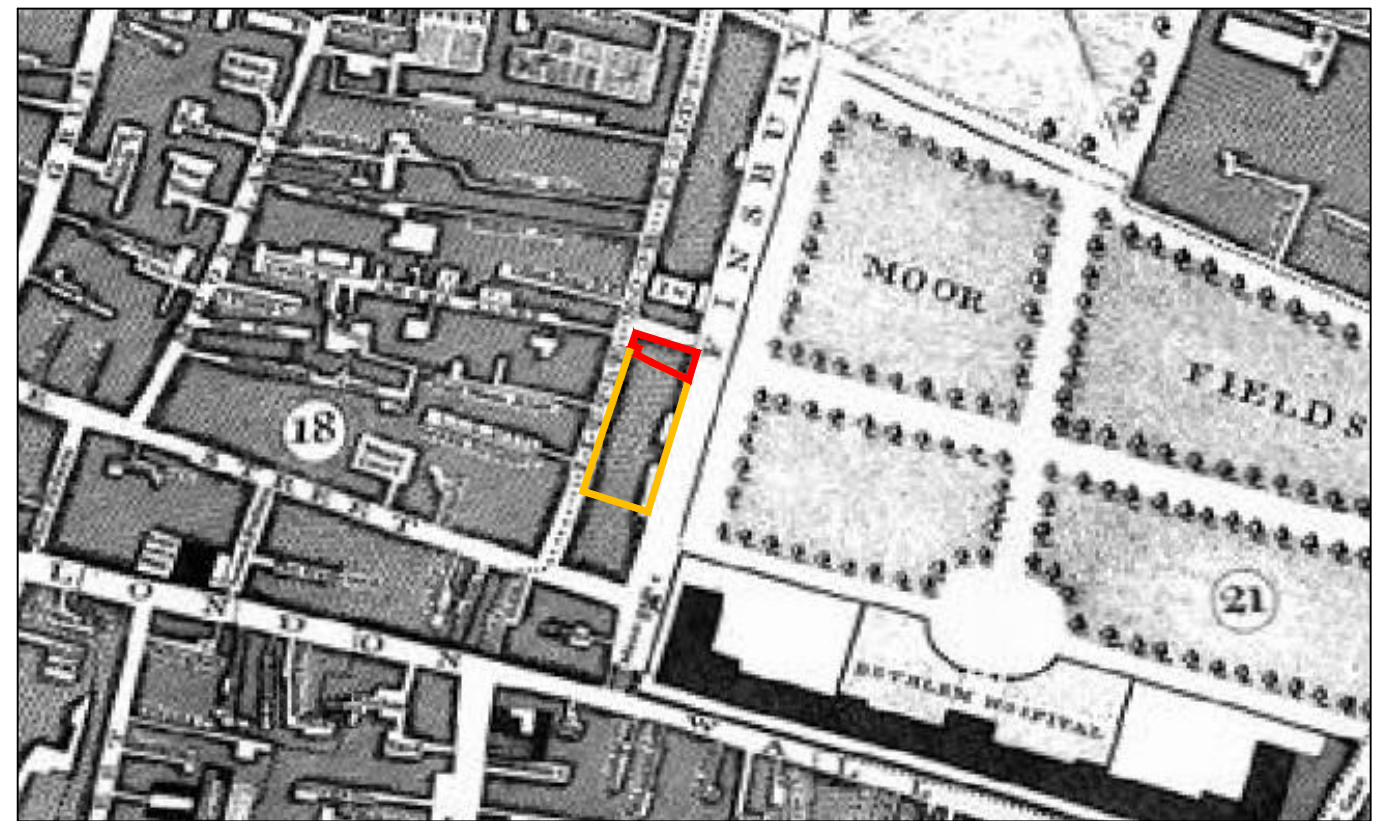
Agas Map of London c.1562



Faithorne and Newcourt's Map of the Cities of London and Westminster 1658



Ogilby & Morgan 1676



John Roque's Exact Survey of the Cities of London and Westminster 1746

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Drawing Title

91-101 Moorgate Over Site Development Historic Map Regression Sheet 1

KEY	
	Assessment site boundary
	91-109 Moorgate OSD site

FIGURE 3

Scale at A3 : 1:2500 (Approx)

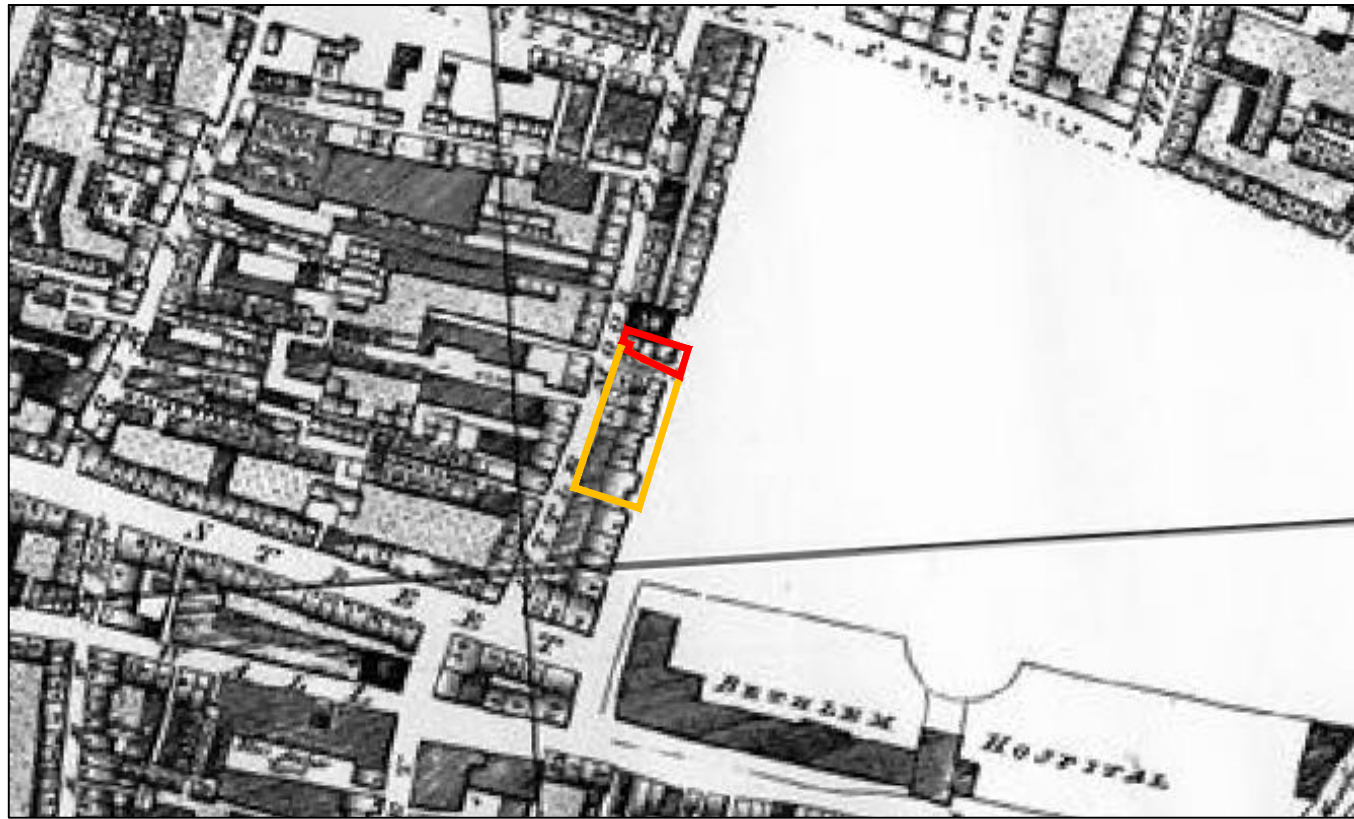
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URS

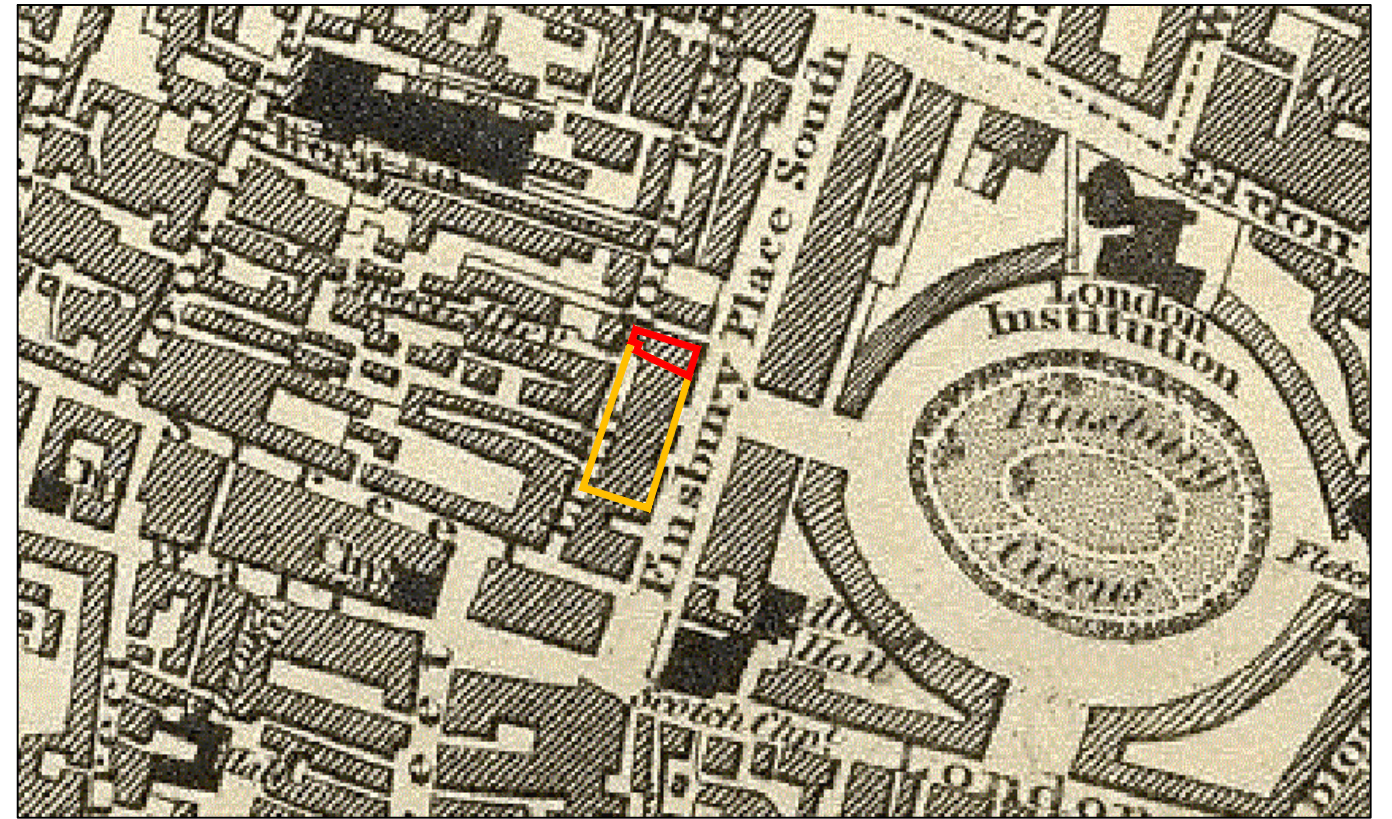
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AVIVA

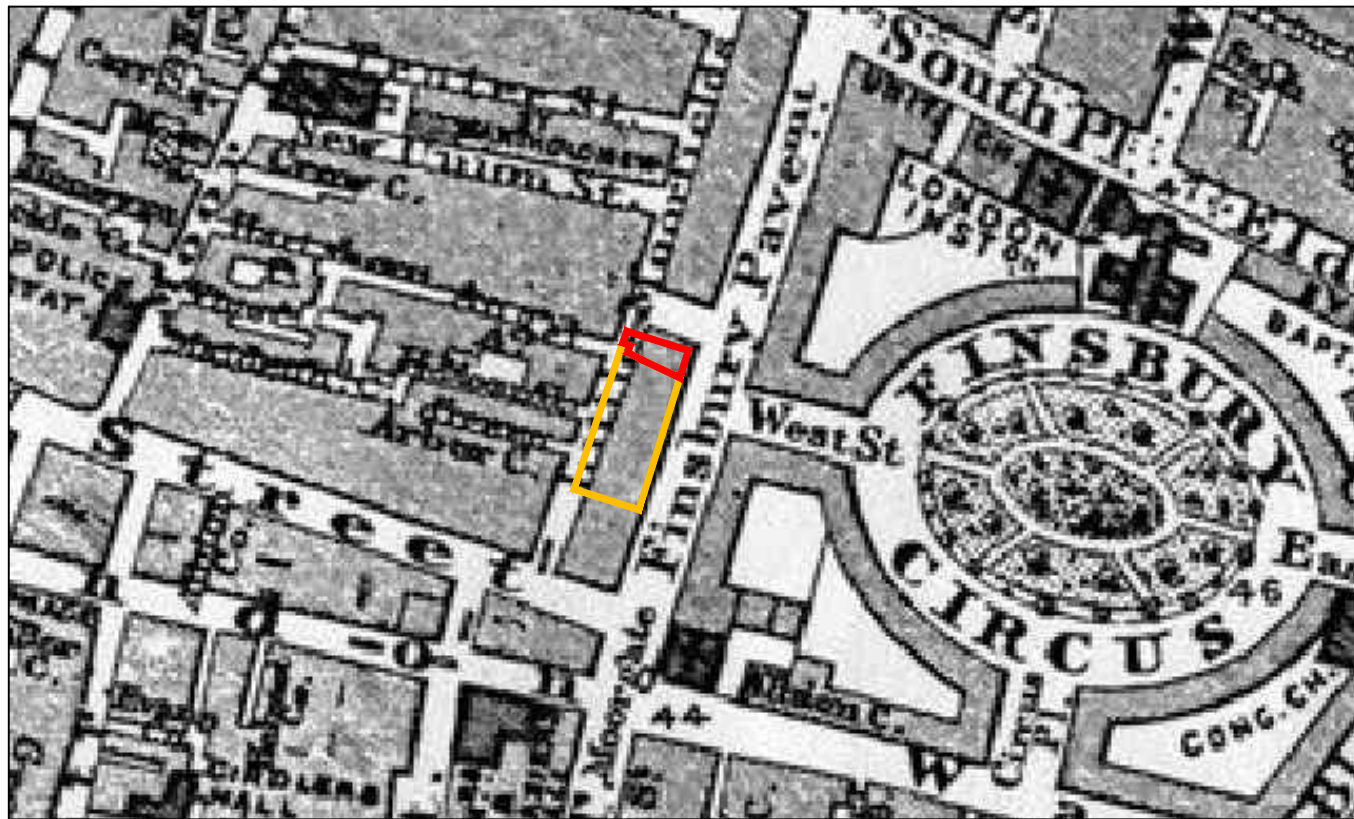
Crossrail



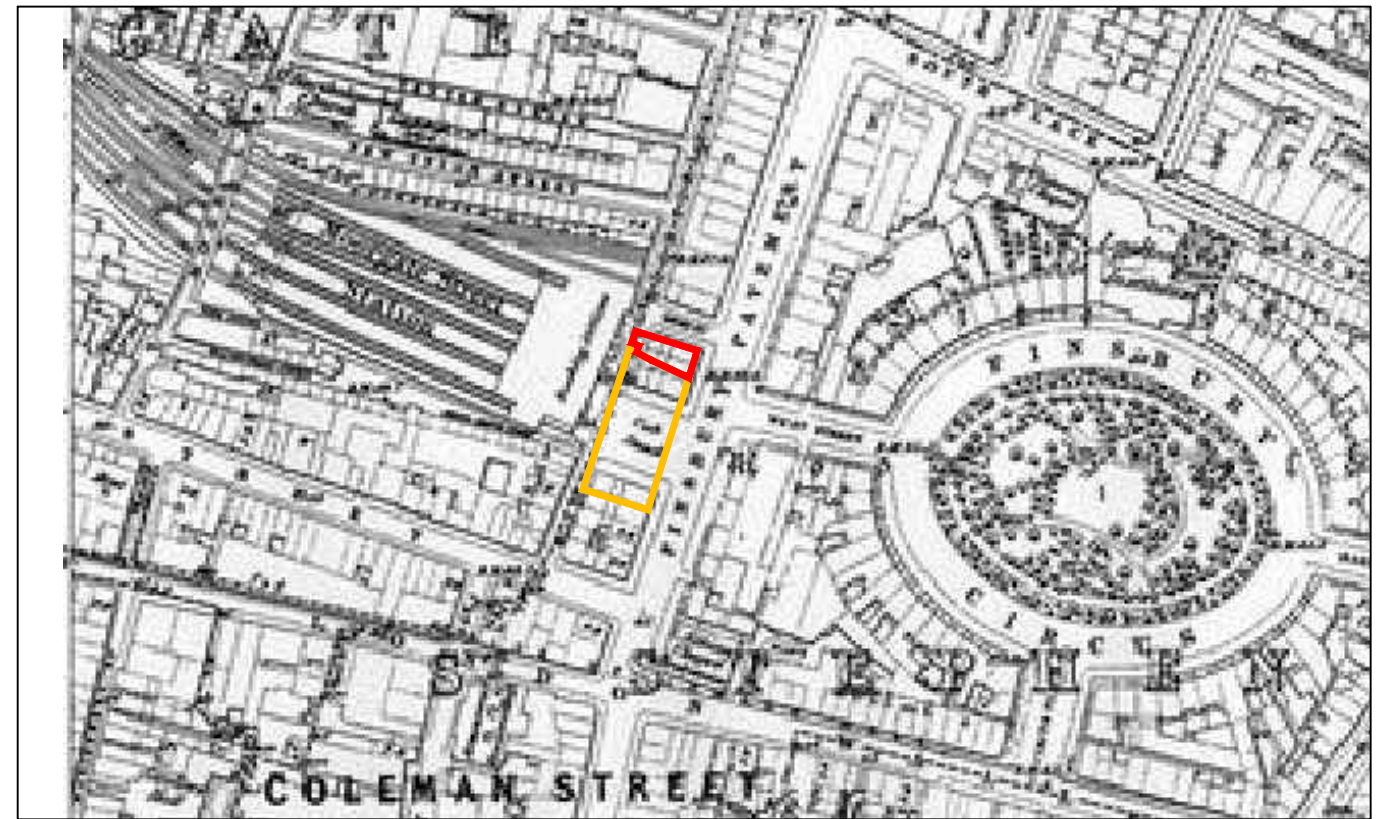
Horwood's Plan of the Cities of London and Westminster 1799



Greenwood's Map of London 1827



Stanford's Map of London 1862



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Drawing Title

91-101 Moorgate Over Site Development Historic Map Regression Sheet 2

KEY	
	Assessment site boundary
	91-109 Moorgate OSD site

FIGURE 4

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Chk IW	Date 26.08.11	Date

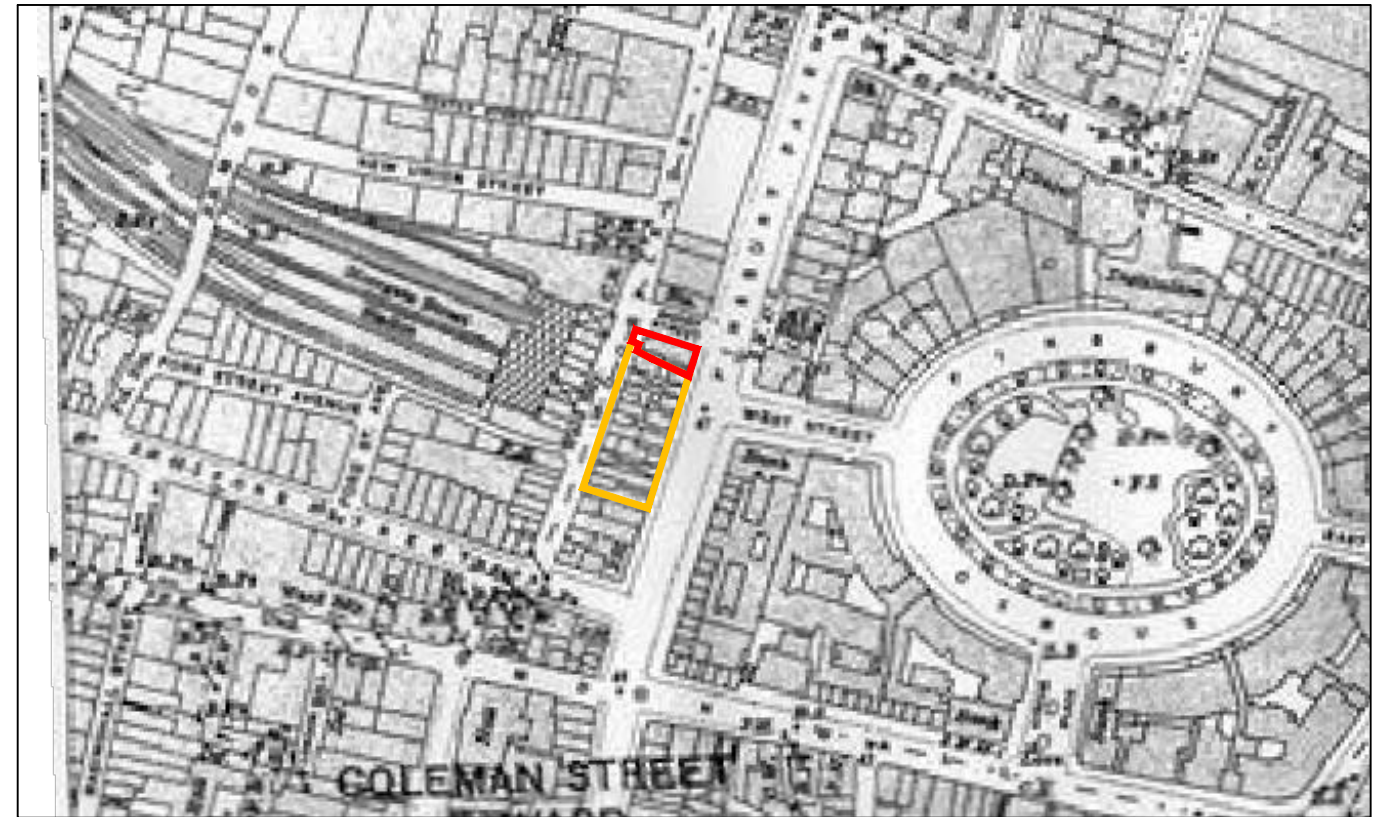
URS

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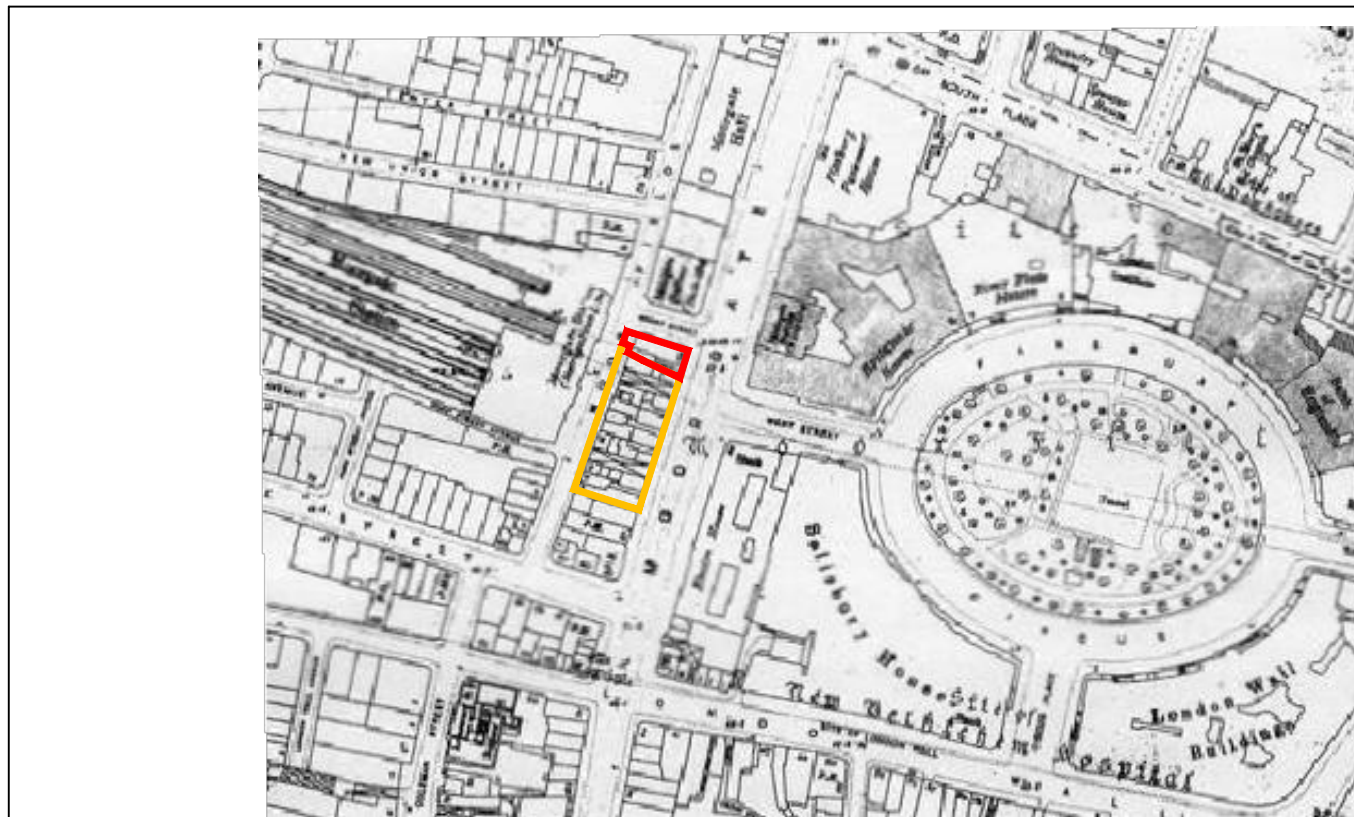




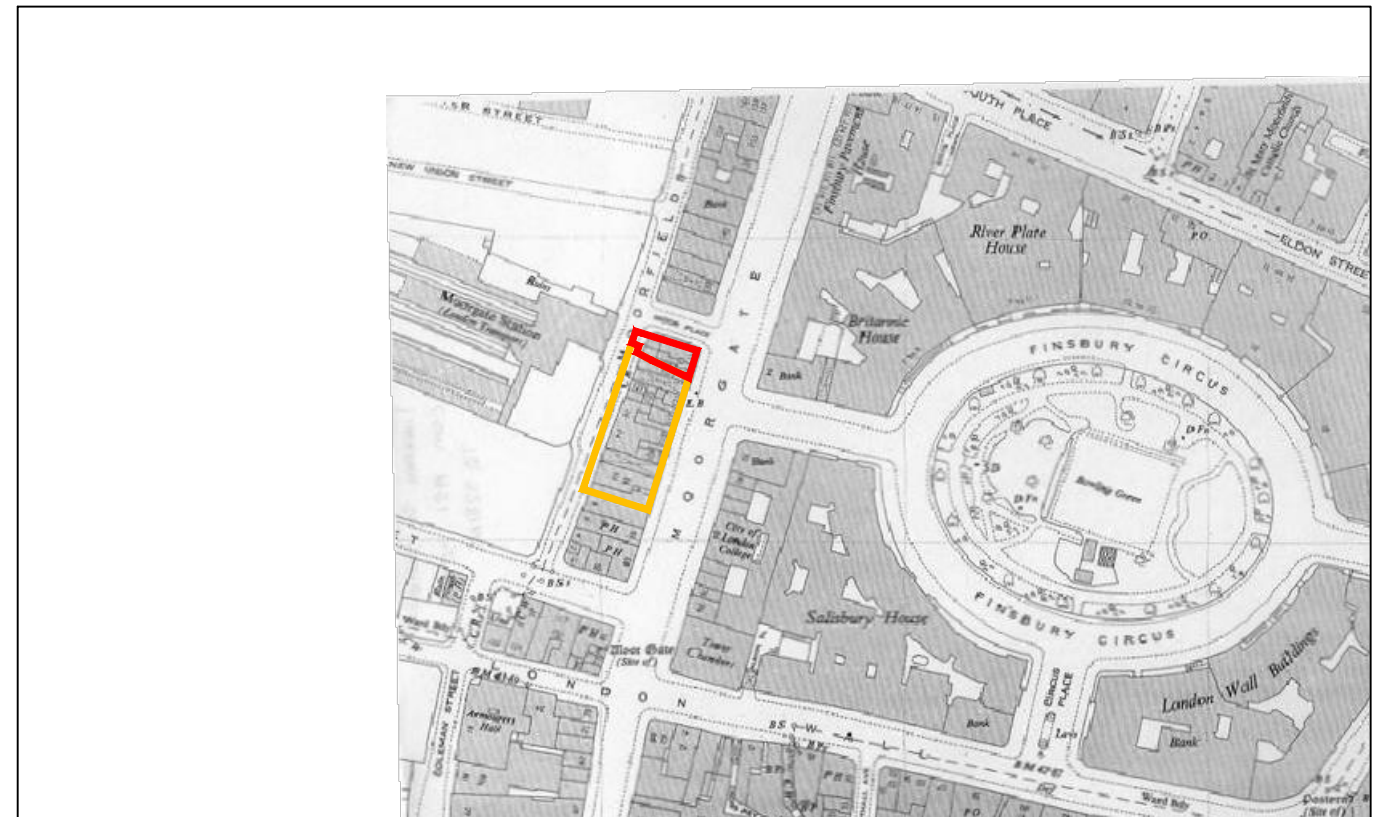
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Drawing Title

91-101 Moorgate Over Site Development Historic Map Regression Sheet 3



KEY	
	Assessment site boundary
	91-109 Moorgate OSD site

FIGURE 5

Scale at A3 : 1:2500

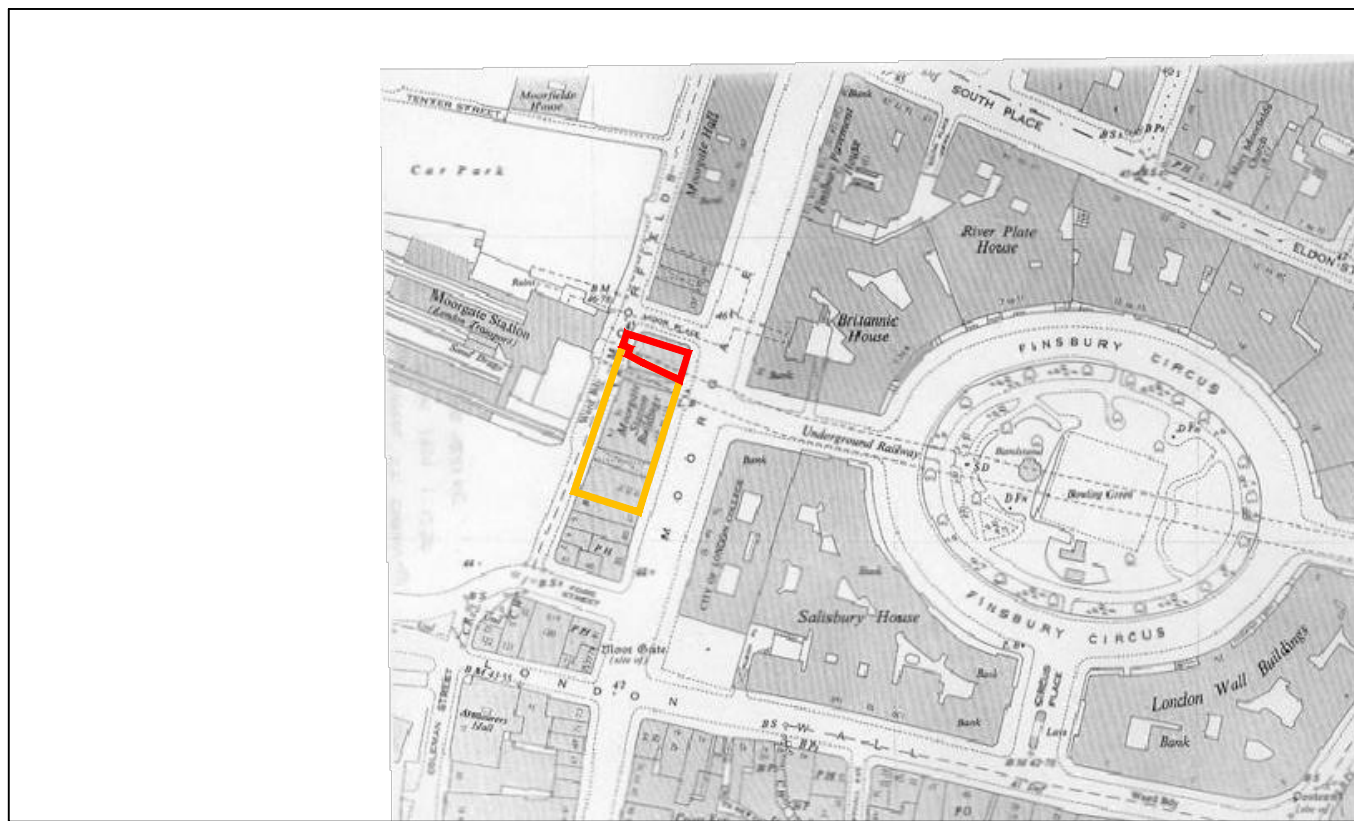
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Chk IW	Date 26.08.11	Date

URS

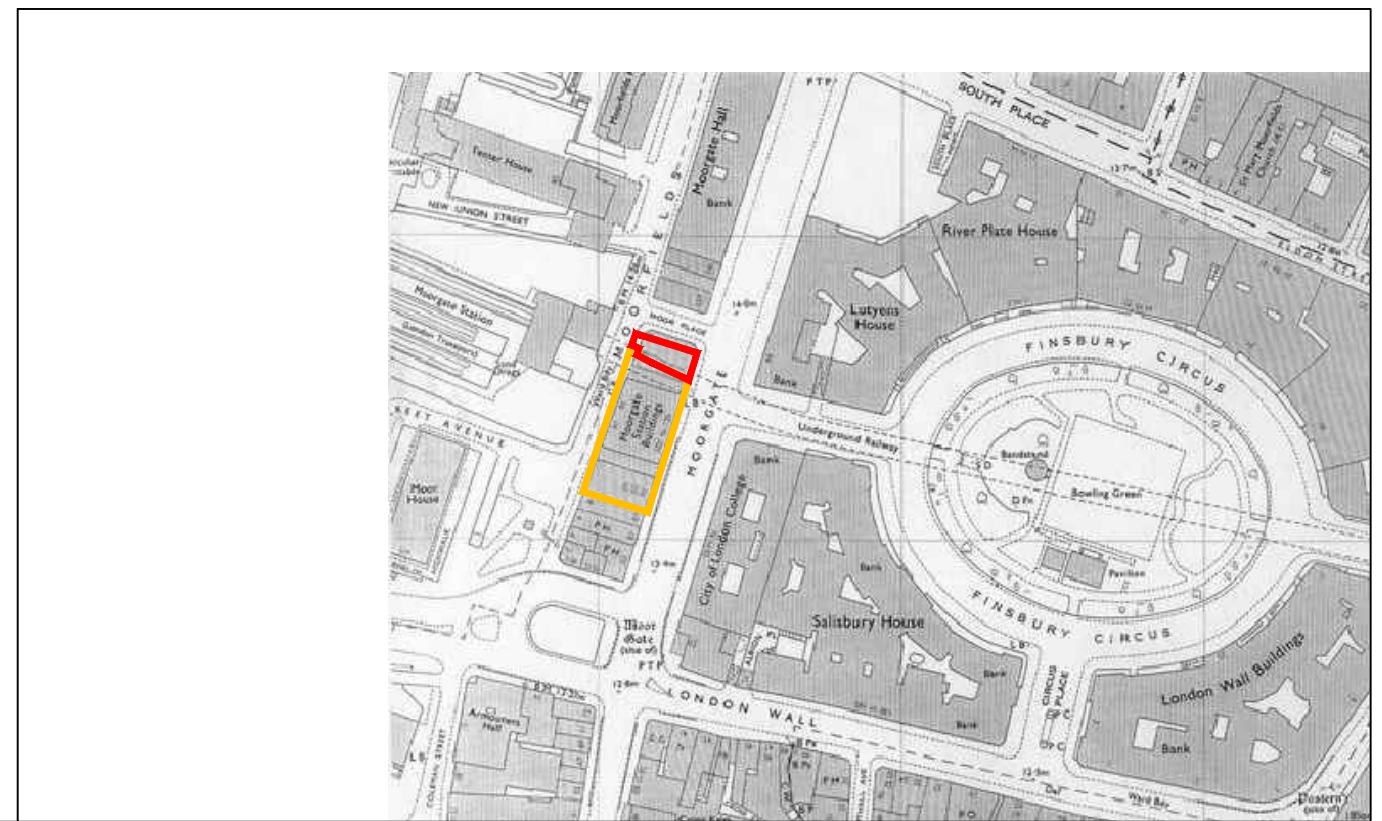
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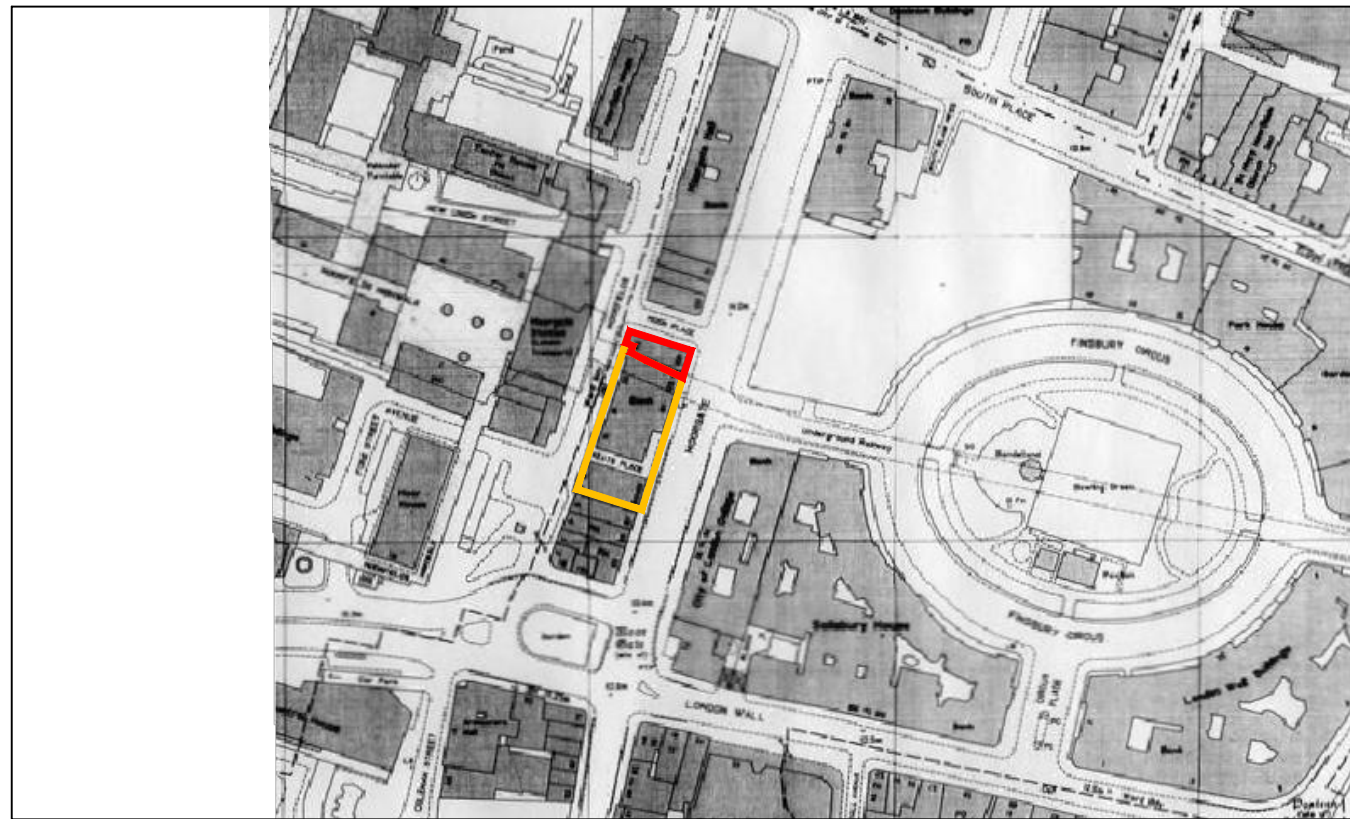
Crossrail



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Drawing Title

91-101 Moorgate Over Site Development Historic Map Regression Sheet 4



KEY	
	Assessment site boundary
	91-109 Moorgate OSD site

FIGURE 6

Scale at A3 : 1:2500

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Chk IW	Date 26.08.11	Date

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