Appendix D Archaeology Desk Based Assessment
Local Planning Authority:
London Borough of Brent

Site centred at:
TQ19350 83801

Author:
Peter Reeves BA (Jt Hons) MCIfA

Approved by:
Duncan Hawkins BA FSA MSc MCIfA

Report Status:
Final

Issue Date:
JULY 2017

CgMs Ref:
PR/21793
CONTENTS

Executive Summary
1.0 Introduction and Scope of Study
2.0 Development Plan Framework
3.0 Geology and Topography
4.0 Archaeological and Historical Background, with Assessment of Significance
   (Including map regression exercise)
5.0 Site Conditions and the Proposed Development
   (Review of Potential Impact on Heritage Assets)
6.0 Summary and Conclusions

Sources Consulted

Appendix 1 – Delta Simmons Site Investigation Report

LIST OF ILLUSTRATIONS

Fig. 1 Site location
Fig. 2 Summary of cultural heritage designations (data from GLHER)
Fig. 3 1766 John Rocque’s Map of London
Fig. 4 1807 Ordnance Survey Drawing
Fig. 5 1818 Harrow & Pinner Parishes (Open and Common Fields)
Fig. 6 1864 Ordnance Survey
Fig. 7 1896 Ordnance Survey
Fig. 8 1914 Ordnance Survey
Fig. 9 1936 Ordnance Survey
Fig. 10 1937 Aerial View (Britain from Above)
Fig. 11 1950 Ordnance Survey
Fig. 12 1955-57 Ordnance Survey
Fig. 13 1976 Ordnance Survey
Fig. 14 2008 Aerial View (Google Earth)
Fig. 15 2010 Aerial View (Google Earth)
Fig. 16 2015 Aerial View (Google Earth)
Fig. 17 Indicative Masterplan
LIST OF PLATES

Plate 1  View east along Beresford Avenue
Plate 2  View west of Grand Union Canal
Plate 3  View south along Grand Union Canal
Plate 4  View north along sites western boundary
Plate 5  General view of sites south-west quarter
Plate 6  General view across southern part of the site facing east
Plate 7  View from centre of the site toward the north-east (Wembley Arch in the background)
Plate 8  View across central area facing east
Plate 9  Sunken road through centre of the site viewed from west to east
Plate 10  View east along sites northern boundary showing remnant of original ground surface
Plate 11  View south-west across the cleared north-east quadrant of site showing superficial gravels
Plate 12  The River Brent viewed from the east
EXECUTIVE SUMMARY

The site at Northfields, Alperton has been assessed to establish the presence/absence of any designated archaeological assets, to establish the significance of any non-designated archaeological assets on the site and to clarify the site’s archaeological potential.

The site is not located within an Archaeological Priority Area as defined by the London Borough of Brent. The site does not contain any designated or non-designated heritage assets.

Within the 1km search radius four designated assets, all listed buildings, are recorded. It is concluded that, due to intervening development, the proposed development will have no impact on the settings of three of the designated heritage assets within a 1 km buffer of the site boundary.

It is concluded that the proposed development will have a minor/negligible impact on the setting of the Brent Viaduct however, mitigation comprising design, tree and hedge planting would eliminate these impacts.

It is stated within Historic England’s guidance on ‘The Setting of Heritage Assets’ that the protection of the setting of a heritage asset need not prevent change and that decisions relating to such issues need to be based on the nature, extent and level of the significance of a heritage asset, further weighing up the potential public benefits associated with the proposals.

The site can be considered to have a generally low archaeological potential for all past periods of human activity.

Past post depositional impacts are considered severe as a result of previous development and land raise with, particularly in the south-west of the site, made ground is recorded to a depth between 5m and 12m below ground level.

The Proposed Development will comprise 12 buildings (referred to as Buildings A, B, C, D, E, F, G, H, J, K, L and N) ranging in height from 5 storeys to 25 storeys. The buildings will be set within publicly accessible open landscaped areas, including public squares and gardens. Courtyard gardens and balconies will provide private and semi-private amenity space for residents. The Proposed Development will provide up to 2,750 homes (a proportion of which will be affordable homes) and a proportion of commercial/employment floorspace (including A1-A5, B, D1 and D2 uses). Under croft car parking will serve residents of each building and it
is anticipated that an energy centre will be provided as part of the proposals. Phase 1 of the Proposed Development will be submitted in detail and will comprise the provision of circa 375 homes, a proportion of commercial/employment floorspace and a community centre. The remainder of the Proposed Development will be subject to an outline planning consent. Highway works will be required to accommodate traffic associated with the Proposed Development e.g. to Beresford Avenue and the North Circular along with works to upgrade utilities infrastructure as required.

On the basis of the available information no further archaeological mitigation measures are recommended in this particular instance.
1.0 INTRODUCTION AND SCOPE OF STUDY

1.1 This archaeological desk-based assessment has been researched by Ashley Bryant and prepared by Peter Reeves of CgMs Consulting on behalf of SEGRO.

1.2 The subject of this Assessment comprises the site of Northfields, Alperton. The proposed development will be known as Grand Union Place. The site is centred at TQ19350 83801 within the London Borough of Brent (Figures 1 and 2).

1.3 The site is not located within an Archaeological Priority Area as defined by the London Borough of Brent (Figure 2).

1.4 SEGRO have commissioned CgMs Consulting to establish the archaeological potential of the site, and to provide guidance on ways to accommodate any archaeological constraints identified.

1.5 In line with national, regional and local policy and guidance, this desk-based assessment comprises an examination of evidence on the Greater London Historic Environment Record (GLHER) and other sources, including Brent Archives. The report also includes the results of a comprehensive map regression exercise.

1.6 The assessment thus enables relevant parties to assess the archaeological potential of various parts of the site and to consider the need for design, civil engineering, and archaeological solutions to the archaeological potential identified.
2.0 DEVELOPMENT PLAN FRAMEWORK

2.1 Legislation regarding archaeology, including scheduled ancient monuments, is contained in the Ancient Monuments and Archaeological Areas Act 1979, amended by the National Heritage Act 1983 and 2002.

2.2 In March 2012, the government published the National Planning Policy Framework (NPPF), which replaced previous national policy relating to heritage and archaeology (PPS5: Planning Policy Statement 5: Planning for the Historic Environment). The National Planning Practice Guidance (NPPG) was published online 6th March 2014 and updated 10 April 2014 (http://planningguidance.planningportal.gov.uk).

2.3 The Planning Practice Guide previously issued in support of PPS5, together with accompanying English Heritage documentation, was cancelled 25 March 2015, to be replaced by three Good Practice Advice (GPA) documents published by Historic England: GPA 1: The Historic Environment in Local Plans; GPA 2: Managing Significance in Decision-Taking in the Historic Environment, and GPA 3: The Setting of Heritage Assets.

2.4 Section 12 of the NPPF, entitled Conserving and Enhancing the Historic Environment provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Section 12 of the NPPF can be summarised as seeking the:

- Delivery of sustainable development
- Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment
- Conservation of England’s heritage assets in a manner appropriate to their significance, and
- Recognition of the contribution that heritage assets make to our understanding of the past.

2.5 Section 12 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. Paragraph 128 states that planning decisions should be based on the significance of the heritage asset, and that level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset.
2.6 *Heritage Assets* are defined in Annex 2 of the NPPF as: a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. They include designated heritage assets (as defined in the NPPF) and assets identified by the local planning authority during the process of decision-making or through the plan-making process.

2.7 Annex 2 also defines *Archaeological Interest* as a heritage asset which holds or potentially could hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.

2.8 A *Designated Heritage Asset* comprises a: World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.

2.9 *Significance* is defined as: The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence, but also from its setting.

2.10 In short, government policy provides a framework which:

- Protects nationally important designated Heritage Assets (which include World Heritage Sites, Scheduled Ancient Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas)
- Protects the settings of such designations
- In appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions
- Provides for the excavation and investigation of sites not significant enough to merit *in-situ* preservation.

2.11 In considering any planning application for development, the planning authority will be mindful of the framework set by government policy, in this instance the NPPF, by current Development Plan Policy and by other material considerations.

2.12 The NPPG reiterates that the conservation of heritage assets in a manner appropriate to their significance is a core planning principle, requiring a flexible and thoughtful
approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation. Importantly, the guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset’s significance, and make the interpretation publically available. Key elements of the guidance relate to assessing harm. An important consideration should be whether the proposed works adversely affect a key element of the heritage asset’s special architectural or historic interest. Additionally, it is the degree of harm, rather than the scale of development, that is to be assessed. The level of ‘substantial harm’ is considered to be a high bar that may not arise in many cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the NPPF. Importantly, harm may arise from works to the asset or from development within its setting. Setting is defined as the surroundings in which an asset is experienced, and may be more extensive than the curtilage. A thorough assessment of the impact of proposals upon setting needs to take into account, and be proportionate to, the significance of the heritage asset and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

2.13 The relevant Strategic Development Plan framework is provided by the London Plan published 22 July 2011 (Revised in 2013 and adopted in 2015). Policy relevant to archaeology at the site includes:

**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 ASSET OR MEMORIAL CANNOT BE PRESERVED OR MANAGED ON-SITE, PROVISION MUST BE MADE FOR THE INVESTIGATION, UNDERSTANDING, RECORDING, DISSEMINATION AND ARCHIVING OF THAT ASSET.

LDF PREPARATION

F. BOROUGHS SHOULD, IN LDF POLICIES, SEEK TO MAINTAIN AND ENHANCE THE CONTRIBUTION OF BUILT, LANDSCAPED AND BURIED HERITAGE TO LONDON’S ENVIRONMENTAL QUALITY, CULTURAL IDENTITY AND ECONOMY AS PART OF MANAGING LONDON’S ABILITY TO ACCOMMODATE CHANGE AND REGENERATION.

G. BOROUGHS, IN CONSULTATION WITH ENGLISH HERITAGE, NATURAL ENGLAND AND OTHER RELEVANT STATUTORY ORGANISATIONS, SHOULD INCLUDE APPROPRIATE POLICIES IN THEIR LDFS FOR IDENTIFYING, PROTECTING, ENHANCING AND IMPROVING ACCESS TO THE HISTORIC ENVIRONMENT AND HERITAGE ASSETS AND THEIR SETTINGS WHERE APPROPRIATE, AND TO ARCHAEOLOGICAL ASSETS, MEMORIALS AND HISTORIC AND NATURAL LANDSCAPE CHARACTER WITHIN THEIR AREA.

2.14 Revised early minor alterations to the London Plan were published in October 2013, which includes amendments to paragraph 7.31 in support of Policy 7.8 above.

2.15 Draft Further Alterations to the London Plan were published in January 2014. No changes to Policy 7.8 have been proposed; amendments are proposed to the wording of Policy 7.10 World Heritage Sites, cross referencing this policy with the Supplementary Planning Guidance document for the setting of World Heritage Sites prepared in 2012.

2.16 Brent’s Core Strategy document, adopted 12 July 2010, does not contain policy specifically relating to archaeology. Policy BE31 of the saved 2004 Brent UDP states that:

**BE31 SITES OF ARCHAEOLOGICAL INTEREST**

FOR DEVELOPMENTS INVOLVING GROUNDWORK ON SITES OF ARCHAEOLOGICAL IMPORTANCE OR IN ARCHAEOLOGICAL PRIORITY AREAS, THE FOLLOWING IS REQUIRED:
(A) THAT APPLICANTS HAVE THE ARCHAEOLOGICAL IMPLICATIONS OF THEIR PROPOSALS ASSESSED BY MEANS OF A RECOGNISED ARCHAEOLOGICAL GROUP (IF NECESSARY BY A PRELIMINARY SITE INVESTIGATION);
(B) NATIONALLY IMPORTANT ARCHAEOLOGICAL REMAINS AND THEIR SETTINGS ARE PERMANENTLY PRESERVED IN SITU, AND WHERE PRACTICABLE, MADE AVAILABLE FOR PUBLIC DISPLAY AND ACCESS;
(C) FOR ARCHAEOLOGICAL REMAINS OF REGIONAL IMPORTANCE, THE DESIRABILITY OF THIS WILL BE WEIGHED AGAINST OTHER FACTORS SUCH AS THE NEED FOR THE PROPOSED DEVELOPMENT;
(D) OTHERWISE PROVISION IS MADE SO THAT SITES ARE PROPERLY INVESTIGATED AND EXCAVATED BEFORE DEVELOPMENT BEGINS; AND
(E) LANDOWNERS AND DEVELOPERS WORK IN ACCORDANCE WITH THE BRITISH ARCHAEOLOGISTS' AND DEVELOPERS' CODE OF PRACTICE.
2.17 Policy DMP 13 (Heritage) of Brent’s Draft Development Management Policies document (June 2014 draft) contains the following related to archaeology:

**SITES OF ARCHAEOLOGICAL INTEREST**

H. THE COUNCIL WILL PROTECT REMAINS OF ARCHAEOLOGICAL IMPORTANCE BY ENSURING ACCEPTABLE MEASURES ARE TAKEN TO PRESERVE THEM AND THEIR SETTING, INCLUDING PHYSICAL PRESERVATION, WHERE APPROPRIATE. THE COUNCIL MAY REQUIRE A DESKTOP ANALYSIS/SURVEY AND A SUBSEQUENT WATCHING BRIEF ON SITES THAT DO NOT HAVE A FORMAL DESIGNATION AS A HERITAGE ASSET.

2.18 In terms of designated heritage assets as defined above and as shown on Figure 2, no nationally designated Scheduled Ancient Monuments, Historic Battlefield sites, Historic Wreck sites or Historic Parks and Gardens lie within the vicinity of the study site. In addition, the site does not lie within an Archaeological Priority Area as designated by the London Borough of Brent.

2.19 Four Grade II listed buildings are noted within the 1km search radius. Three of these assets, comprising Twyford Abbey (national reference, 1079383), St Mary’s Church (1079450) and part of the Garden Wall associated with Twyford Abbey (1189519), are located between 500 and 700m to the south-west of the study site. There is no intervisibility between these three assets and the study site due to intervening development.

2.20 The fourth listed building comprises the Brent Viaduct (national reference 1078890) and is located 200m east of the study site.

2.21 In line with existing national, strategic and local planning policy and guidance, this desk based assessment seeks to clarify the site’s archaeological potential and the need or otherwise for additional mitigation measures.
3.0 GEOLOGY AND TOPOGRAPHY

3.1 Geology

3.1.1 The solid geology of the study site is shown by the Institute of Geological Sciences (IGS 1979) as London Clay Formation comprising clay, silt and sand forming the London Basin. Overlying the London Clay is a series of gravel terraces deposited during periods of glacial and inter-glacial conditions (Bridgland 1996).

3.1.2 Further detail is provided by British Geological Survey Sheet 256 (North London: 1994) which shows the site to be underlain by superficial deposits of Alluvium comprising clay, silt, sand and gravel underlying the southern part of the site and following the course of the River Brent, with Taplow Gravel (comprising gravel and sand) underlying the northern area of the site.

3.1.3 No site-specific geotechnical data is currently available. The site visit established that in the area that had been cleared gravel and sand were the only superficial deposits observed (Plate 11).

3.2 Topography

3.2.1 The study site comprises an irregularly shaped parcel of land extending to a total area of 9.15ha the site is generally level at c.27m AOD but it is expected to have been artificially raised along the canal edge (prior to the canals construction).

3.2.2 Significant historical remodelling of the site has resulted in the complete removal of the natural topography of the surrounding area. Across the site the topsoil and underlying sub-soil have been removed and recycled as a result of cycles of development, demolition and re-development. This is clearly demonstrated in the recently cleared north-east quadrant of the site (Plate 11). The site itself has an almost imperceptible slope southward towards the Grand Union Canal and the River Brent however, historical site investigations has identified made ground to a depth of 11m BGL (below ground level).

3.2.3 The Grand Union Canal, which opened as the Grand Junction Canal in 1801, runs along the site’s western boundary (Plates 2 and 3). The River Brent forms the southern boundary of the site (Plate 12). The Brent does not follow its original course
and has been heavily canalised. Historical mapping identifies significant land raising on the site prior to construction of the canal and the later canalisation of the River Brent.
4.0 **ARCHAEOLOGICAL AND HISTORICAL BACKGROUND, WITH ASSESSMENT OF SIGNIFICANCE**  
(Including Historic Map Regression exercise)

4.1 Timescales used in this report:

**Prehistoric**
- Palaeolithic: 450,000 - 12,000 BC
- Mesolithic: 12,000 - 4,000 BC
- Neolithic: 4,000 - 1,800 BC
- Bronze Age: 1,800 - 600 BC
- Iron Age: 600 - AD 43

**Historic**
- Roman: AD 43 - 410
- Anglo Saxon/Early Medieval: AD 410 - 1066
- Medieval: AD 1066 - 1485
- Post Medieval: AD 1486 - 1749
- Modern: AD 1750 - Present

4.2 **Introduction**

4.2.1 What follows comprises a review of archaeological findspots within a 1 km radius of the study site, also referred to as the study area, held on the Greater London Historic Environment Record (GLHER), together with a historic map regression exercise charting the development of the study area from the eighteenth century onwards until the present day.

4.2.2 In terms of designated heritage assets, as defined above in paragraph 2.6 and as shown on Figure 2, no nationally designated Scheduled Ancient Monuments, Historic Battlefield sites, Historic Wreck sites or Historic Parks and Gardens lie within the vicinity of the study site. In addition, the site does not lie within an Archaeological Priority Area as designated by the London Borough of Brent.

4.2.3 In general there are few GLHER findspots within the study site, with the bulk of the entries comprising documentary references relating to Medieval settlement. The map regression demonstrates that the site remained open land until the construction of the
industrial estate across the site during the middle and later parts of the twentieth century.

4.2.4 Several recent archaeological interventions have revealed negative or neutral archaeological information. Evaluation to the south-east of the site revealed Post Medieval and Modern remains (ELO3029), as did evaluations south-west of the study site (ELO14223). Evaluations at the Park Royal Guinness site to the south-west revealed modern truncation and residual earlier material (ELO3109, TQ1903 8270). Evaluation at Abbeyfields, to the south, revealed no archaeological remains (ELO732, TQ1926 8295). Modern remains were also identified during evaluations at Twyford Abbey Road to the south-west (ELO7474, TQ18957 82951).

4.3 **Prehistoric - Palaeolithic, Mesolithic, Neolithic, Bronze Age and Iron Age**

4.3.1 The sole asset of early prehistoric date identified on the GLHER within the 1 km study area search radius comprises a prehistoric flint identified near Littleton Avenue c. 900m to the north-east of the study site (MLO305 at NGR TQ 1980 8450). However, the GLHER notes that as this find was made on an allotment it is highly probable that the flint was brought into the area in imported soil.

4.3.2 From around 4000 BC the mobile hunter-gathering economy of the Mesolithic gradually gave way to a more settled agriculture-based subsistence. The pace of woodland clearance to create arable and pasture-based agricultural land varied regionally and locally, depending on a wide variety of climatic, topographic, social and other factors. The trend was one of a slow, but gradually increasing pace of forest clearance.

4.3.3 By the 1st millennium, i.e. 1000 BC, the landscape was probably a mix of extensive tracts of open farmland, punctuated by earthwork burial and ceremonial monuments from distant generations, with settlements, ritual areas and defended locations reflecting an increasingly hierarchical society.

4.3.4 It is highly probable that the valley of the River Brent was exploited throughout the prehistoric period on a seasonal basis (hunting, fishing and foraging) however, no artefacts relating to these practices are recorded in the GLHER.
4.3.5 No finds of later prehistoric date have been identified within the 1 km study area search radius. The potential of the study site for these periods can therefore be categorised as low.

4.4 **Roman**

4.4.1 There are no finds of Roman material recorded from a 1km radius of the study site. During this period the study site is thought to have lain in a sparsely populated area predominantly comprising of pastureland.

4.4.2 Throughout the Roman period it is highly likely that the proposed development site comprised a low lying poorly drained area liable to seasonal flooding. The area would not have been suitable for arable agriculture or for permanent settlement.

4.4.3 Overall the archaeological potential of the study site for this period can be defined as very low.

4.5 **Anglo Saxon & Medieval**

4.5.1 Settlement at West Twyford to the north-west of the 1km search radius is believed to have been established by the Saxon period (MLO73249; TQ1832 8290 not shown on Figure 2). A small chapel is mentioned in 1181 however it disappears from the record in the 16th century.

4.5.2 Archaeological discoveries within the 1 km search radius include residual pottery of possible Saxon date at Twyford Abbey to the south-west (ELO4762, TQ18998 83225).

4.5.3 The site of the Medieval Moated Manor, 500m to the south-west of the study site is located within an archaeological priority area (APA). It is considered that a small hamlet was depopulated in 1086 prior to the foundation of the manor. However, there is no archaeological evidence to support this theory. The APA, reference DLO35867, is not affected by the proposed development.

4.5.4 During the Anglo-Saxon period the study site probably lay in an area of pastureland and overall its archaeological potential for this period can be defined as low. However, Domesday (dated 1086) makes reference to extensive tracts of woodland and an unusually high number of pigs. The latter are indicative of largely wooded areas where tenant farmers enjoy the right of ‘pannage’ (pigs grazing beneath trees).
4.5.5 Alperton never attained village status in the Later Medieval or Post-Medieval periods, instead the settlement comprised a nucleation of farmsteads. In 1199 the name was spelt ‘Alprinton’ translating as a farm or estate in Ealhbeorht’s Territory. In 1316 the settlement retains its small size and is not tithed.

4.5.6 The site’s archaeological potential for the Medieval period can be identified as low. Evidence of agricultural activity and land division could conceivably be present and would be of minimal interest only.

4.6 **Post Medieval and Modern (including map regression exercise)**

4.6.1 John Rocque’s Map of London (Figure 3 dated 1766) shows the site lying within meadows south-east of the settlement of ‘Apperton’. No change is shown on the 1807 Ordnance Survey Drawing (Figure 4).

4.6.2 The Grand Junction Canal opened in 1801 forming the study site’s western boundary. The map of the Harrow & Pinner Parishes (Figure 5, dated 1818) shows the presence of the River Brent along the sites southern boundary but not the canal. At this time it is believed that the study site was largely owned by the Grand Junction Canal Company. During the nineteenth century the Alperton area became known for brick and tile production (Weinreb, Hibbert & Keay 2008: 21-2) and the products were transported into London using the canal network.

4.6.3 Despite the increasing amount of industry throughout the 19th century as late as 1845 Alperton is described as a ‘straggling place’ (Victoria County History), and in 1848 is described as a hamlet of 242 inhabitants (Lewis).

4.6.4 The First Edition Ordnance Survey (Figure 6 dated 1864) shows the site remaining within open fields. Two small buildings that are probably related to the recently constructed canal are shown in the north-west corner of the site the River Brent retains its natural course.

4.6.5 The site remains unchanged and undeveloped in the Second Edition Ordnance Survey (Figure 7, dated 1896). The two buildings in the north-west corner of the site are identified as Canal Cottages. The south-west corner of the site shows evidence for landraise.
4.6.6 Significant changes have occurred on the site in the Third Edition Ordnance Survey (Figure 8, dated 1914). Extensive areas of the site, equating to 60% of the site area has been raised presumably with material from canalisation of the River Brent and the excavation for the water main (now owned by Thames Water) passing below the site from north-east to south-west. The original course of the River Brent has been replaced by its current canalised course and forms the site’s southern boundary. The ‘sunken’ road (Plate 9) following the route of the water main may date to this period of activity. Geotechnical investigation of the site has identified 11m depth of made ground in this area. At this time Beresford Avenue is a footpath.

4.6.7 The Revised Ordnance Survey (Figure 9 dated 1936) shows the rapid residential development of the Alperton area following construction of the railways. The line of the original North Circular road is set out to the south of the site. Aside from additional material dumped within the central and southern areas of the study site no further changes are indicated. The Grand Junction Canal along the western boundary had merged in 1927 with the Regents Canal and the Warwick Canal to form the Grand Union Canal.

4.6.8 Figure 10, an aerial view dated 1937, shows the level of site disturbance across the site. A new building appears to be under construction in the north-east corner of the site (the Knitted Fabric Works annotated on Figure 12).

4.6.9 The 1950 Ordnance Survey (Figure 11) shows significant development at the west and east ends of the site with the central area relatively undeveloped. The 1955-57 Ordnance Survey (Figure 12) shows the site fully developed. Minor amendments to the buildings are shown on the 1976 Ordnance Survey (Figure 13).

4.6.10 The site remained relatively unchanged until 2008 (Figure 14, Google Earth View) however, by 2010 (Figure 15, Google Earth View) most of the buildings on the site have been demolished. The 2015 aerial view (Figure 16, Google Earth View) shows the study site largely in its current form although all the buildings in the north-east quadrant have subsequently been demolished (Plate 11).

4.6.11 The potential of the study site for the Post Medieval and Modern periods can be identified as low.

4.7 Assessment of Significance
4.7.1 Existing national policy guidance for archaeology (the NPPF as referenced in section 2) enshrines the concept of the ‘significance’ of heritage assets. Significance as defined in the NPPF centres on the value of an archaeological or historic asset for its ‘heritage interest’ to this or future generations.

4.7.2 No archaeological designated heritage assets as defined in the NPPF are recorded on or in close proximity to the study site.

4.7.3 Overall it would appear that while it is possible that archaeological remains may be present within the study site boundary, the balance of probability is that these will purely be of local (low) importance.
5.0 SITE CONDITIONS AND THE PROPOSED DEVELOPMENT
(Review of potential impact upon Heritage Assets)

5.1 Site Conditions

5.1.1 The site is currently occupied by an industrial estate comprised primarily of enclosed areas with either no buildings or temporary structures (Plates 5, 6 and 7). Elsewhere on the site the buildings range from very modern two storey masonry buildings (Plate 4, built on the site of the Plating Works) adjacent to the western edge of the site and in its centre (Plate 8). The older buildings at the eastern end of the site have been demolished (Plate 11).

5.1.2 The cycle of construction and demolition of the buildings occupying the study site between 1950 and the present day can be considered likely to have had a severe, negative archaeological impact through the cutting of foundations and services, grubbing up of the foundations and relaying of new foundations and services.

5.1.3 The cutting of the deep water main would have had a considerable impact through the centre of the site and the canalisation of the River Brent (sides and base are of concrete construction) would have removed all archaeological assets within these areas if ever present.

5.1.4 The 11m depth of made ground, particularly in the south-west quadrant and central areas of the site, has buried any archaeological assets, if ever present (Appendix 1).

5.2 The Proposed Development

5.2.1 The Proposed Development will comprise 12 buildings (referred to as Buildings A, B, C, D, E, F, G, H, J, K, L and N) ranging in height from 5 storeys to 25 storeys. The buildings will be set within publicly accessible open landscaped areas, including public squares and gardens. Courtyard gardens and balconies will provide private and semi-private amenity space for residents. The Proposed Development will provide up to 2,750 homes (a proportion of which will be affordable homes) and a proportion of commercial/employment floorspace (including A1-A5, B, D1 and D2 uses). Undercroft car parking will serve residents of each building and it is anticipated that an energy centre will be provided as part of the proposals. Phase 1 of the Proposed Development will be submitted in detail and will comprise the provision of circa 375 homes, a proportion of commercial/employment floorspace and a community centre. The
remainder of the Proposed Development will be subject to an outline planning consent. Highway works will be required to accommodate traffic associated with the Proposed Development e.g. to Beresford Avenue and the North Circular along with works to upgrade utilities infrastructure as required (Figure 17).

5.3 **Review of potential development impacts upon Heritage Assets**

5.3.1 In view of the study site’s archaeological potential, combined with the potential for past depositional impacts, the redevelopment proposals are considered unlikely to have a significant or widespread negative archaeological impact.
6.0 SUMMARY AND CONCLUSIONS

6.1 Land at Northfields, Alperton, London Borough of Brent has been reviewed for its below ground archaeological potential.

6.2 In accordance with central, regional and local government planning policy and guidance, a desk based assessment has been undertaken to clarify the archaeological potential of the study area.

6.3 The site is not located within an Archaeological Priority Area as defined by the London Borough of Brent.

6.4 The study site can be considered to have a generally low archaeological potential for all past periods of human activity.

6.5 Past-post depositional impacts within the study site are considered to have had a severe negative archaeological impact. Past post depositional impacts are considered severe as a result of previous development and land raise with, particularly in the south-west of the site, made ground recorded to a depth of between 5m and 12m below ground level.

6.6 It is concluded that the proposed development will have a minor/negligible impact on the setting of the Brent Viaduct, a Grade II listed building, located 200m to the east of the site boundary.

6.7 It is proposed and considered that this minor/negligible impact will is acceptable in terms of National and local planning policy and that the designated heritage assets surrounding the site should not be a constraint to the development proposals.

6.8 It is stated within Historic England’s guidance on ‘The Setting of Heritage Assets’ that the protection of the setting of a heritage asset need not prevent change and that decisions relating to such issues need to be based on the nature, extent and level of the significance of a heritage asset, further weighing up the potential public benefits associated with the proposals.

6.9 On the basis of the available information we do not recommend any further archaeological mitigation measures in this particular instance.
SOURCES CONSULTED

1. **General**
   British Library
   Greater London Historic Environment Record
   Brent Archives

2. **Internet**
   http://www.british-history.ac.uk/
   http://list.english-heritage.org.uk/
   http://planningguidance.planningportal.gov.uk
   http://www.canalmuseum.org.uk/history/grandjun.htm
   http://gerald-massey.org.uk/Canal/c_chapter_10.htm
   http://www.brent-heritage.co.uk/alperton.htm

3. **Bibliographic**
   Brent Council *Places in Brent Alperton u/d*
   Bridgland Quaternary River terrace deposits as a framework for the Lower Palaeolithic record in Gamble & Lawson (eds.) *The English Palaeolithic Reviewed* 1996
   Department of Communities and Local Government *National Planning Policy Framework* 2012
   Department of Communities and Local Government/Department of Culture Media and Sport/English Heritage *PPS5 Planning for the Historic Environment: Historic Environment Planning Practice Guide* 2010
   English Heritage *Comparison of PPS5 Policies with Historic Environment-Related Policies in the NPPF – Part 1* 5 April 2012 unpublished document
   English Heritage *Comparison of PPS5 Policies with Historic Environment-Related Policies in the NPPF – Part 2* 5 April 2012 unpublished document
   Gibbard *The Pleistocene History of the Lower Thames Valley* 1994
   Greater London Archaeological Advisory Service *Standards for Archaeological Work* June 2009 consultation draft (unpublished document)
   Institute for Archaeologists *Standard & Guidance for archaeological desk based assessment* November 2012 unpublished document
   Lewis, S A *Topographical Dictionary of England* 1848
London County Council *Names and Streets and Places in the Administrative County of London* 1955


Victoria County History *Middlesex Volume 4* 1971

Weinreb, Hibbert & Keay (eds.) *The London Encyclopaedia* 2008

Wymer *The Lower Palaeolithic Occupation of Britain* 2 volumes 1999

3. **Cartographic**

1754 John Rocque’s Map of Middlesex

1807 Ordnance Survey Drawing

1818 Harrow Inclosure Map

1864 Ordnance Survey

1896 Ordnance Survey

1914 Ordnance Survey

1936 Ordnance Survey

1956 Ordnance Survey

1974 Ordnance Survey

2013 Ordnance Survey

1994 British Geological Survey Sheet 256 (North London)
Figure 2: Summary of cultural heritage designations (data from GLHER)
Figure 3: 1766 John Rocque’s Map of London
Figure 5: 1818 Harrow & Pinner Parishes (open and common fields)
Figure 8:
1914 Ordnance Survey
Figure 9: 1936 Ordnance Survey
Figure 10: 1937 Aerial View

Not to Scale: Illustrative Only

© Ordnance Survey maps reproduced with the sanction of the controller of HM Stationery Office Licence No: AL 100014723
Contains OS data © Crown copyright [and database right] 2015

www.cgms.co.uk
Figure 11: 1950 Ordnance Survey

Site Boundary

Not to Scale: Illustrative Only

© Ordnance Survey maps reproduced with the sanction of the controller of HM Stationery Office Licence No: AL 100014723
Contains OS data © Crown copyright [and database right] 2015

www.cgms.co.uk Planning • Heritage
Figure 15: 2010 Aerial View
Figure 16: 2015 Aerial View
Figure 17: Indicative Masterplan

Not to Scale: Illustrative Only

Site Boundary
Plate 1: View east along Beresford Avenue

Plate 2: View west of Grand Union Canal
Plate 3: View south along Grand Union Canal

Plate 4: View north along sites western boundary
Plate 5: General view of sites south-west quarter

Plate 6: General view across southern part of the site facing east
Plate 7: View from centre of the site toward the north-east (Wembley Arch in the background)

Plate 8: View across central area facing east
Plate 9: Sunken road through centre of the site viewed from west to east

Plate 10: View east along sites northern boundary showing remnant of original ground surface
Plate 11: View south-west across the cleared north-east quadrant of site showing superficial gravels.

Plate 12: The River Brent viewed from the east.
Geo-Environmental Review
Northfields Industrial Estate, Wembley, London
For Brixton Northfields (Wembley 1) Limited
Delta-Simons Project No. 16-0122.02
Issued: April 2016
# TABLE OF CONTENTS

1.0 Context & Purpose......................................................................................................... 1
2.0 Environmental Setting..................................................................................................... 1
3.0 Site History & Regulatory Information............................................................................ 3
4.0 Geo-Environmental Conditions from Third Party Reports ............................................. 5
5.0 Development Implications Based on Expected Masterplan Proposals.......................... 6
6.0 Further Action ................................................................................................................ 7
7.0 Limitations...................................................................................................................... 7

## Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Site Location Map</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Site Layout Plan</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Combined Previous Investigation Layout</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Previously Identified Contamination Summary Plan</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Foundation Schedule Summary Plan</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Area Considered for Further Investigation</td>
</tr>
</tbody>
</table>

## Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix I</td>
<td>Information Sources</td>
</tr>
<tr>
<td>Appendix II</td>
<td>Historical Maps</td>
</tr>
<tr>
<td>Appendix III</td>
<td>Zetica Regional Unexploded Bomb Risk Map</td>
</tr>
<tr>
<td>Appendix IV</td>
<td>Planning Information</td>
</tr>
<tr>
<td>Appendix V</td>
<td>Petroleum Licencing Information</td>
</tr>
</tbody>
</table>
1.0 Context & Purpose

Delta-Simons Environmental Consultants Limited (“Delta-Simons”) was instructed by Brixton Northfields (Wembley 1) Limited (the “Client”) to carry out a desk based geo-environmental review of the Northfields Industrial Estate, Wembley, London (hereafter referred to as the “Site”).

Delta-Simons holds several historical third party documents for the Site relating to geo-environmental desk based assessments and intrusive ground investigations. The purpose of this document is to review the available and readily available information for the Site with respect to the proposed divestment for the Site for residential apartment redevelopment.

The information sources used to compile this assessment are listed as Appendix I.

2.0 Environmental Setting

<table>
<thead>
<tr>
<th>Site &amp; Surrounding Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Site is located adjacent to the west of the A406 North Circular, in Wembley, north-west London. The Site is approximately centred at National Grid Reference (NGR) 601500, 229770. A Site location map is provided as Figure 1.</td>
</tr>
<tr>
<td>The Site is roughly triangular in shape, occupying an approximate area of approximately 8.24 ha. The Site comprises a former industrial estate which has been partially demolished and is currently predominantly leased to EuroStorage for external storage by various small businesses. The channelised River Brent crosses the south of the Site and light industrial units remain, in part, at the southern boundary. A Site layout plan is provided as Figure 2. It is noted that the former industrial estate unit references are denoted on the plan, which are used throughout this report as points of reference.</td>
</tr>
<tr>
<td>A medium pressure water main is understood to run below the former Northfields Industrial Estate Building in a south-west to north-east direction (building denoted L51 in Figure 3); running between Abbey Works and between Wycombe Road and 8 Beresford Avenue in the east of the Site.</td>
</tr>
<tr>
<td>The Site is situated within a mixed commercial/light industrial and residential setting: with Beresford Avenue adjacent to the north with residential properties beyond; the Union Canal adjacent to the west with light industrial / commercial properties beyond; and the A406 North Circular adjacent to the south and east with light industrial/commercial properties beyond.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Invasive Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>BWB tentatively identified both Japanese Knotweed and Giant Hogweed in 2009 at the Site, predominantly along the River Brent and the eastern extent of Units 23 and 24. Delta-Simons have been commissioned to provide an ecological assessment for the Site which will be issued under separate cover.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geology</th>
</tr>
</thead>
<tbody>
<tr>
<td>From British Geological Survey (BGS) data provided within an Envirocheck Report (not provided here but will be reproduced in future assessment reports), an area of Made Ground is shown in the central and western areas of the Site. The drift geology is shown to comprise Alluvial Deposits in the south of the Site, over Taplow Gravels which are shown to extend to the central area of the Site, underlain by London Clay which is shown to outcrop in the north-western area of the Site. The Lambeth Group and Chalk are expected to underlie the Site at depth.</td>
</tr>
</tbody>
</table>
The previous third party ground investigations report hardstanding comprising asphalt and concrete over the majority of the Site (up to 0.6 m thick), over Made Ground comprising reworked alluvium interspersed with domestic waste and granular deposits. The materials were found to be generally shallow along the northern boundary of the Site (with minimum depths of 0.45 m below ground level (bgl)), increasing in thickness towards the River Brent, with a maximum depth of 11.8 m in the southern corner of the Site. Made Ground to the south of the River Brent was found to a maximum depth if 3.4 m bgl.

A potential basement was encountered beneath a yard area (formerly occupied by a unit) in the north-west of the Site (which was found to be up to depths between 3.3 m and 4.2 m bgl). A smaller void space was also noted below a former unit in the north-east of the Site (identified up to 2.5 m bgl).

Sporadic alluvial deposits comprising very soft to firm slightly gravelly organic clay were reported upon Taplow Gravel deposits (from a minimum depth of 0.4 m bgl to a maximum depth of 9.5 m bgl).

The Taplow Gravel were identified predominantly in the south and east of the Site from a minimum depth of 1.0 m bgl to a maximum depth of 12.0 m bgl (depth reflecting the original relief of the land to the River Brent); with the average thickness where encountered in the order of 2.0 m bgl.

London Clay was reported across the Site (where boreholes penetrated to sufficient depth) from a minimum depth of 1.0 m bgl to a maximum of 12.0 m bgl.

### Hydrogeology

According to the Envirocheck® Report and current Environment Agency (EA) mapping, the Alluvial Deposits and Taplow Gravels are classified as Secondary A Aquifers and the London Clay an Unproductive Strata.

The Site is not located within a groundwater Source Protection Zone (SPZ) and there are no groundwater abstractions reported within a 1 km radius of the Site.

Groundwater strikes were reported at depths of between 1.0 m bgl and 11.0 m bgl, with resting water levels between 1.148 m bgl and 8.8 m bgl. The results were reported to have indicated a continuous water body to be present in the Taplow Gravels with perched water also located in the Made Ground. Groundwater in the Taplow Gravels was considered to be flowing in a south easterly direction towards the River Brent with an overall gradient of 0.023.

### Surface Water Features

The Grand Union Canal is located along the western boundary of the Site (constructed of sheet piles adjacent to the Site) and passes through an aqueduct over the River Brent adjacent to the south-western boundary of the Site. The River Brent is located in the southern area of the Site, flowing in a south-westerly direction in an open culvert.

There are no surface water abstractions or discharge consents reported within a 500 m radius of the Site.

Previous investigations suggest that continuity between groundwater at the Site and the surface waters is unlikely to exist due to the variation in the elevation of the aforementioned. However, it is considered feasible that groundwater from the Site may slowly discharge into the River Brent via weep holes in the river wall. It is understood from current property management that Site surface waters are also discharged via Site drainage to the Grand Union Canal under a permit with the British Waterways Board.

Results of surface water analysis conducted in 2009 indicated generally low concentrations of contaminants in ‘up’ and ‘down’ gradient samples of the Grand Union Canal and the River Brent.

Four pollution incidents to controlled waters are reported on Site as follows:

- A minor incident involving the release of oils in 1992 at the former Abbey Works Unit in the east of the Site;
- A minor incident involving the release of an unknown chemical at the location of the former Units 23 to 24 in the east of the Site in 1993;
- A significant incident involving the release of oils at a former works in the far eastern
corner of the Site in 1995; and
\[ \Delta \] A minor incident involving a ‘general’ pollutant at the above former works in 1999.

### Sensitive Land Use

The Envirocheck® Report does not list any designated sensitive land use within 1 km of the Site.

### Coal Mining

The Envirocheck® Report indicates that the Site is not situated within an area associated with coal mining legacy.

No potential hazards are reported within the Envirocheck® Report with regards to other ‘non-coal’ mining activities.

### Stability Hazards

The Envirocheck indicates that the Site is not generally indicated to be associated with significant collapsible, dissolution, landslide and running sand hazards but is associated with moderate compressible and shrinking/swelling clay stability hazards. Notwithstanding previous reports have indicated potentially unstable ground associated with the embankment to the River Brent in the south western area of the Site.

### Radon

The Envirocheck® Report indicates that the property is in an area where less than 1% of properties are above the action level for radon. No radon protective measures are reported to be necessary in the construction of new buildings or extensions.

### 3.0 Site History & Regulatory Information

#### Site History

**Site**

Historical Ordnance Survey maps of the Site dating from 1874 to 2016, obtained from Landmark as part of the Envirocheck® Report, have been reviewed and extracts of pertinent plans reproduced as Appendix II.

On the earliest available map of 1874, the Site comprises predominantly what appears to be agricultural land with a small wooded area in the west. The River Brent runs through the south of Site generally from northeast to south-west. Embankments are shown in the west of the Site adjacent to the canal. 1896 mapping shows a dwelling in the north-west of the Site, which is denoted Canal Cottage.

By 1914 mapping, earthworks are shown on-site that appear to have created two plateaus in preparation for development. Posts are labelled running through the middle of the plateaus in an east/west direction (which are in the approximate line of the known water main).

By 1946, the Site is shown on aerial photography to have been significantly developed with industrial units. These features are denoted on 1954/1957 mapping as a fibre board works adjacent to the western boundary with several tanks shown; a cleaning works and warehouses in the central area of the Site; a diesel engineering works, Abbey plating works, a leather goods works and a knitted fabric works in the east; an engineering works in the north; and a casting foundry, garage, warehouses and an earthworks mound the south of the Site. The River Brent is shown to be channelised at this time. Tennis courts are shown in the north-west and north-east at this time.

By 1970s mapping, the fibre board works appears to have been partially demolished and redeveloped as large subdivided units, with the northern unit denoted as an unspecified works. Additional unspecified units are shown in the far west of the Site and the cleaning works has been removed and redeveloped as two new units.

The Site remains relatively unchanged with the exception of the labelling of the units (being referred to as unspecified works and warehousing over the mapping period suggesting various occupancies) until current mapping where several of the units are shown to have been cleared resembling the contemporary Site layout.

A review or aerial photography provided by Google Earth indicates that the main demolition works at the Site were conducted late 2008 / early 2009; and the demolition of the most eastern unit conducted late 2015 early 2016.

#### Surrounding Area

Pertinent off-Site features identified in the surrounding area (within 100 m) on historical maps include:

\[ \Delta \] Industrial units shown to the west of the Site from 1946 aerial photography to current mapping, many of which are shown to change use over the period to other light industrial uses including: an adhesive factory; several engineering works; refrigerant...
equipment works; ventilating equipment works; musical instrument factory; and electrical engineering works;

- Railway line shown 80 m to the north-east of the Site from the earliest available to current mapping;
- Cigarette papers factory shown 20 m to the north from 1946 to 1974 mapping;
- Three industrial units shown adjacent to the north of the Site from 1946 aerial photography to current mapping, including: a joinery works (later denoted unspecified works) and two warehouses;
- Several works shown adjacent to the southern boundary of the Site from 1946 aerial photography to current mapping; and
- A refuse tip shown approximately 50 m to the south of the Site.

**Envirocheck® Report**

The following entries are listed for the Site its self within the Envirocheck® Report:

- A local authority pollution control associated with waste oil burners (less than 0.4MW net rated thermal input) operated by Lees BMW at Abbey works; and
- 34 active and inactive contemporary trade directory entries associated with tyre dealers; car dealers; clothing & fabrics – manufacturers; metal products – fabricated; garage services; printers; car customisation & conversion specialists; record, tape & cd manufacturers & wholesalers; freight forwarders; packaging & wrapping equipment & supplies; ice cream manufacturers & suppliers; car engine tuning & diagnostic services; road haulage services; refrigeration equipment – commercial; gate manufacturers; car dealers; and pharmaceutical manufacturers & distributors.

Several similar contemporary trade directory entries are listed within the surrounding area of the Site.

A historical landfill is reported 66 m to the south of the Site which is reported to have accepted inert, industrial, commercial and household waste. The former Twyford Tip is reported to be located 23 m to the south-east of the Site at the Junction of Abbey Road and the North Circular; which is reported to have accepted domestic and gully waste.

**Potential for Unexploded Ordnance (UXO)**

A review of Zetica UXO mapping (reproduced as Appendix III) indicates that the Site is situated within a lower bomb risk area (approximately 30 – 40 bombs per km²) of Greater London. A review of bombsight.org interactive mapping indicates that two high explosive bombs were recorded to have been dropped on Site (one at Abbey works and the other at the Tile City building). Six further bombs are shown to have been dropped within 100 m of the Site.

Based on Table 5.2 of CIRIA C681, the Site’s development history is considered to place the Site as having a ‘moderate post war development’ status, as while a development plateau appears to have been created in the 1930’s, the Site is not shown to be developed until 1946 and aerial photographs indicate cranes to be evident in the west of the Site. It is, therefore, assumed that at least 50% of the Site was developed following the war. The Site is regionally local to a former industrial centre associated with Greater London; and there is recorded bombing on Site and the surrounding area. Reference to Table 5.1 (C681) would place the Site to the right (i.e. increased risk for aerial delivered UXO to be present).

Following the risk assessment process discussed above; it is considered that there would be a low risk that UXO will be encountered during proposed intrusive investigation works involving borehole drilling; but that a moderate to high risk may apply in a development context (assuming ‘shallow excavations over an extended area’ or ‘high density piles’ respectively).

On the basis that the risk of encountering UXO is sensitive to the degree of earthworks and foundation solution predicted for the development, it is considered that a detailed UXO assessment would be best commissioned with an appreciation of the likely levels of cut/ fill demands of the Site alongside a likely development scheme and foundation approach (once understood) where possible. Notwithstanding this it is recommended any contractor involved in below ground activities review their methods and undertakes appropriate Health and Safety assessment to consider whether detailed specialist UXO assessment should be undertaken. As a minimum, it is recommended Site staff should be made aware of the potential for UXO hazards to be present and that discussion and responses to these risks be included in the Site Health & Safety programme for the duration of the project.

**Planning Information**

A review of the London Borough of Brent Council’s online planning database has identified several application associated with minor alterations and change in commercial / light industrial
use at the Site.

Application 15/1988 relates to the demolition of the far eastern plot (not previously investigated). While the Council objected to the proposals, a demolition strategy document is available online to review. The document includes the requirement for methods for the safe removal of asbestos and the removal of any encountered underground tanks to be completed in liaison and excavations inspected by an engineer. The Decision Notice and Demolition document are reproduced as Appendix IV.

Local Authority Information
Delta-Simons has contacted the London Borough of Brent Council to obtain details of the Site with regards to their inspection strategy under Part 2a of the Environmental Protection Act (EPA) 1990. At the time of writing a response was awaited.

Given the known historical use of the Site, it is considered likely that the Site would have been identified as potentially contaminated land, however, given the current use it is considered that the Site would have been assigned a low priority.

Petroleum Licencing Information
Previous assessments indicate that several vent pipes were noted in the north west corner of 10/12 Beresford Avenue and southern corner of United Patents Building. Both of these areas of vent pipes were considered by BWB to correspond to covers in the ground, which were considered indicative of Underground Storage Tanks (UST).

Delta-Simons has contacted the London Fire and Emergency Planning Authority to obtain details on current and historical petroleum licensing details for the Site. Two separate responses were received dated 16 and 17 March 2016. In summary, the Authority indicates that following a thorough search of current and historical files and databases, no petroleum tank information for the Site has been identified. The responses are reproduced as Appendix V.

4.0 Geo-Environmental Conditions from Third Party Reports

Scope of Ground Investigations
Between 1995 and 2009, the Site has been subject to several intrusive investigation phases, comprising over 130 intrusive investigation points (c 16 investigation locations per hectare), including boreholes and trial pits; surface water, groundwater and soil sampling and analysis; ground gas monitoring, internal gas monitoring; and groundwater monitoring. A list of the known investigation phases are summarised below:

1. Quaife Paper – 1995. Comprising the drilling of 4 boreholes (locations unconfirmed);
2. AEG – 1995. Comprising the drilling of 27 boreholes;
4. BWB – 2003. Comprising the drilling of 4 boreholes; and
5. BWB – 2009. Comprising the drilling of 40 boreholes and 34 trial pits.

A combined exploratory hole location plan is provided as Figure 3.

Identified Soil Contamination Conditions
Visual and olfactory evidence of contamination from the phases of investigation works included localised hydrocarbon staining and odours; and a potential asbestos pipe. Areas highlighted with visual/olfactory evidence of contamination are highlighted on Figure 4.

Low to moderate concentrations of heavy metals and PAH were identified across the Site associated with the Made Ground. One sample out of 14 analysed as part of the BWB 2009 investigation contained asbestos fibres.

Three isolated areas of relatively elevated hydrocarbon contamination were identified (coinciding with those identified as potentially impacted based on visual/olfactory observations recorded during the investigations): one in the north (at 10 to 12 Bereford Avenue in an area of a suspected former UST (i.e. locations TP914 & TP939); one in the south (Tile City Building; locations WS914 & WS915); and an area in the west adjacent to the area of a historical above ground tanks (i.e. to the south of Units 10 to 16; location WS907).

Soil leachate analysis indicated that the only potential leachable metals (which exceeded the conservative screening criteria) at the Site comprised: copper, selenium and sulphide.

A summary of the locations of the pertinent soil contamination information is provided as Figure 4.

Identified Gas monitoring conducted on nineteen occasions between 1995 and 2009 indicated elevated
### Ground Gas Conditions

Concentrations of methane and carbon dioxide, with negligible flow rates. Laboratory analysis conducted by BWB indicated that the gas generation potential (carbon reservoir) of the Made Ground was limited. Internal monitoring of buildings for flammable gasses in the central area of the Site conducted by BWB in 2004, identified generally ambient gas concentrations within the buildings. Elevated concentrations were reported in two locations including a gas meter cupboard and a gas pipe access cover within the external roadway to the front of Unit 17 (indicating compromised natural gas supply infrastructure).

Gas vent trenches were installed in the concrete slabs in the west for the Site following demolition to allow the venting of ground gas to atmosphere.

### Identified Groundwater Contamination Conditions

Groundwater analysis indicated that relatively localised or generally low concentrations of contaminants were present within the groundwater. Results of note are as follows:

- Marginally elevated copper and PAH concentrations across the Site; with more significantly elevated PAH concentrations within the former Abbey Works area and adjacent to the suspected UST at the United Patients building;
- Elevated heavy metals within the former Abbey Works area; and
- Elevated hydrocarbon contamination within the former Abbey Works area and in the west of the Site, to the south of Unit 10 to 16.

Given the expected low continuity between the Site's shallow groundwater and the local surface waters; and the Site's setting, the isolated and generally low recorded groundwater contaminant concentrations were not considered of significant concern. However, it is considered prudent to conduct further limited intrusive investigations of the three areas discussed above, to confirm the nature and extent of any remediation / mitigation, if required; so an appropriate strategy can be presented to the Local Authority. The locations of the pertinent groundwater contaminant concentrations discussed above are summarised on Figure 4.

### 5.0 Development Implications Based on Expected Masterplan Proposals

#### Contamination Issues

In the event of the proposed residential apartment redevelopment, it is considered likely that the Local Authority would stipulate contaminated land conditions as part of any planning consent. However, given the extent of available information, in conjunction with the proposed further ground investigation works (to confirm whether any significant risk to controlled waters receptors are present (i.e. to groundwater and nearby surface waters)), it is considered that these conditions could be negotiated to relate to an agreed strategy for the Site development. Previous assessments have considered these should likely include the following key points:

- The risks to the proposed residential apartment end users from soil contamination should be mitigated by the placement of 500 mm of chemically suitable topsoil in proposed soft landscaped areas.

- Based upon the BWB 2009 gas monitoring results, CIRIA characteristic situation 2 applied to the Site, which is classified as low risk. In the scenario of the proposed residential apartments, basic gas protection measures should be deemed necessary (such as a passively ventilated floor slab; and a lapped and taped damp proof membrane).

#### Foundation Solutions

Where the London Clay formation is within 2.5 m below the final formation level (expected to be within the north-west and south-east of the Site), shallow spread foundations may be a suitable founding solution dependent upon loadings. Based upon available information, the firm becoming stiff with depth orange brown clay was considered likely to provide a shear strength of 45 kPa.

Where Made Ground is expected to be less than 5.0 m thickness below final formation levels, consideration could be given to ground improvement techniques dependent upon loadings. Potential options could include dynamic compaction, vibro stone columns (may provide bearing capacities in the order of 100 kPa to 150 kPa); and vibro concrete columns. It should be noted that dynamic compaction is not usually suitable within 30-50 m of sensitive structures; and vibro columns would not be expected to be suitable within 10-15 m of sensitive structures.

Where Made Ground is in excess of 5.0 m bgl, consideration should be given to a piled foundation solution. Several options are available dependent upon loadings and locations of
potentially sensitive structures. A plan showing the zoning of potential foundation solutions is presented as Figure 5.

**Floor Slabs**
Given the nature of the proposed development, it is considered likely that the majority of the Site would incorporate suspended floor slabs. Any ground bearing floor slab across the medium pressure water mains will require additional analysis as part of the design, due to the requirement to prevent construction within the specified easement. It is possible that piles may be required to support the floor slab in these areas, to transmit the floor loadings beneath the zone of influence of the water main.

**Chemical Attack on Buried Concrete**
Design class of DS4 and aggressive Chemical Environment for Concrete AC-4 was considered appropriate for concrete design at the Site. However, these results are considered to be conservative and as part of the future development, it may be possible to undertake further chemical analysis on a plot by plot basis which may result in reducing the concrete design requirements to DS3.

**Voids and Obstructions**
A potential basement was encountered beneath units 8 and 9 which was found to be 4.2 m deep at the northern end of the building footprint reducing to 3.3m and partially filled with water towards the south of the floor slab. A significantly smaller void space was also noted in the northern end of 8 Beresford Avenue proven to a depth of 2.5 m bgl.

Several concrete obstructions were encountered across the entire Site typically beneath building slabs. These obstructions are likely, due to the presence of concrete footings beneath buildings and buried floor slabs in these areas around.

It was recommended that these structures are removed to a minimum of 2.0 m bgl with the resulting void backfilled with engineered granular fill.

The areas of identified voids and obstructions are presented as Figure 5.

**Retaining Walls**
BWB reported in 2009 that the wall adjacent to the embankment to the River Brent and Northfields Estate was noted to have partially failed resulting in a gap between the wall and hardstanding. An anecdotal conversation held on Site between BWB and their client's structural engineer, indicated that BWB’s client was aware of the issue and that continued monitoring of the wall movement was being undertaken. The area along the length of the affected wall had also been covered by asphalt in order to reduce rainwater ingress.

A retaining wall was noted to run along the western and northern boundary of Wycombe Road and 10/12 Beresford Avenue permitting a height change of up to 2.0 m across this part of the Site. It was recommended that as part of any future development, that a structural assessment of this wall and the River Brent embankment is undertaken to ascertain the structural integrity of these features and the likely impact, if any, of future development at the Site.

### 6.0 Further Action
Based upon extensive previous information for the Site, further intrusive investigation will be completed to verify contemporary ground conditions in the vicinity of areas previously identified with visual/olfactory evidence of contamination and also in the vicinity of areas of the Site not previously investigated (i.e. north-eastern plot) as suggested on Figure 6.

Following completion a combined Phase I & Phase II Geo-Environmental Report will be prepared for the Site and an Outline Remediation Strategy then devised around the expected master plan prepared for the Site.

### 7.0 Limitations
Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons’ conclusions, opinions and recommendations have been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions that Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.0 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report,
other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all
claims, losses and damages (of whatsoever nature and howsoever or whenssoever arising), arising out of or resulting
from the performance of the work by Delta-Simons.
Ground Gas Results 2009

13 Carbon dioxide above 5% v/v
14 Methane above 1% v/v

Previously Identified Contamination Summary Plan
Made Ground less than 2.5 m - possible shallow spread foundations (depending upon loading).

Made Ground less than 5.0 m - possible ground improvement (subject to loading requirements & protection of buried services/structures); alternatively piled solution.

Made Ground in excess of 5.0 m - anticipated piled foundation solution.

Area of potential former basements/voids.

Area not previously investigated.
Area of previous hydrocarbon contamination but no groundwater testing
Tars/Creosote/hydrocarbon contamination. Further delineation and assessment considered prudent.
Areas of elevated ground gas. Contemporary ground gas data considered prudent to obtain.

<table>
<thead>
<tr>
<th>Ref #</th>
<th>Area Requireing Further Investigation / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Area of suspected underground storage tank and identified soil contamination. Further delineation and assessment considered prudent.</td>
</tr>
<tr>
<td>2</td>
<td>Previous un-investigated area occupied by former leather goods works, knitted fabric works; and reported pollution incidents (minor and significant).</td>
</tr>
<tr>
<td>3</td>
<td>Area of former Abbey Works. Previously identified hydrocarbon, PAH contamination and reported pollution incidents adjacent to the river. Further delineation and assessment considered prudent.</td>
</tr>
<tr>
<td>4</td>
<td>Area of previous hydrocarbon contamination but no groundwater testing</td>
</tr>
<tr>
<td>5</td>
<td>Tars/Creosote/hydrocarbon contamination. Further delineation and assessment considered prudent.</td>
</tr>
<tr>
<td>6</td>
<td>Areas of elevated ground gas. Contemporary ground gas data considered prudent to obtain.</td>
</tr>
</tbody>
</table>