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Archaeology West - Contract No.C254

Archaeological Works at Paddington Eastbourne Terrace

Report on an Archaeological Trench Evaluation

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SUMMARY

In September 2012 Oxford Archaeology/Ramboll (OAR) carried out an archaeological field evaluation in Eastbourne Terrace, Paddington, City of Westminster, London W2. The fieldwork was undertaken on behalf of Crossrail Ltd during works related to the expansion of the present Paddington Station to incorporate a new ticket hall, platforms and entrance for the Crossrail Line. The evaluation, consisting of two machine dug test pits, identified substantial "made ground" deposits overlying layers of alluvium and brickearth. Layers of Pleistocene gravel and sands, parts of the River Terrace Gravel formation were uncovered at the base of both test pits. "Tufa" rich clay deposits of probable Pleistocene date were identified in Test Pit 2. No artefacts or ecofacts were visible in any of these deposits.

1. INTRODUCTION

1.1 Scope of Work

1.1.1 Oxford Archaeology/Ramboll (OA/R) were commissioned by Crossrail Ltd to carry out an archaeological evaluation on the site of the future Crossrail Paddington Station in Eastbourne Terrace, City of Westminster, London W2. Centred on TQ 266 811 (Figure: 1).

1.1.2 The work comprised two machine dug archaeological test pits (Test Pits 1-2) which took place on the 14th and 21st September 2012.

1.1.3 This document sets out the results of this fieldwork and follows on from an Interim Report (C254-OXF-T1-RGN-CRG03-50098) issued on 8-11-2012. This report is a full Fieldwork Report in line with Section 8F of the Specification for Evaluation and Mitigation (CR-PN_LWS_EN_SP_0001), produced following the completion of on-site works in order to disseminate the results of the investigations.

1.2 Location

1.2.1 The two archaeological test pits were situated to the south of Paddington Station on the northern side of Eastbourne Terrace. Test Pit 1 was close to the junction of Eastbourne Terrace with Chilworth Street and Test Pit 2 was situated outside number 40 Eastbourne Terrace (Figure: 1).

2. PLANNING BACKGROUND

2.1.1 The overall framework within which the archaeological work took place is set out in the Environmental Minimum Requirements (EMR) for Crossrail (http://www.crossrail.co.uk/the-railway/getting-approval/parliamentary-Bill/environmentalminimum-requirements-including-crossrail-construction-code).

2.1.2 Accordingly:

"The nominated undertaker or any contractors will be required to implement certain control measures in relation to archaeology before construction work begins".

2.1.3 The strategy for archaeological works is set out in the Crossrail Generic Written Scheme Investigation (WSI) (Document No. CR-PN-LWS-EN-SY-00001). The Generic WSI presents the strategy for archaeology design, evaluation, mitigation, analysis, dissemination and archive deposition that will be adopted for the design and construction of Crossrail and provides a general statement of objectives, standards, and structure for the planning and implementation of archaeological works.

2.1.4 A Site Specific Written Scheme of Investigation (SSWSI) for the work at Paddington was produced by Crossrail (Document No: C130-SWN-Z-RSI-B071-00001 (VER. 9.0, 05 Sept 11)). In response OA/Ramboll produced an Archaeology Method Statement (C254-OXF-W-GMS-CRG01-00003 rev 4 – 04/09/12) which was approved by Jay Carver, the Crossrail Project Archaeologist and the principle contractor, Costain Skanska Joint Venture (CSJV).

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1.1 The archaeological and historical development of the Paddington worksites has been set out in the Detailed Desk-based Assessment (DDBA) (Document reference: CR-SD-BOS-EN-SR-00001). This study, which included a historic map regression exercise, is summarised below.

3.1.2 There is limited evidence or human activity in the area from the Prehistoric, Roman and Medieval periods and the area appears to have been essentially rural in character.

Prehistoric

3.1.3 Research has not located any evidence of prehistoric deposits recovered to date within the location of Paddington Station. However, the landscape of the area during the prehistoric period would have been dominated by the valley of the River Westbourne, which ran to the west of the Site. This would have provided a background for hunter-gatherer activity and occupation during this period. Most of the evidence for such activity will be masked by later fluvial deposition.

3.1.4 Isolated finds of Palaeolithic axes (c. 450,000-12,000 B.C) have been recovered from River Terrace Gravel deposits elsewhere in London. Whilst an assemblage of worked flint, Levallois type flakes and cores, were recovered next to a former course of the River Westbourne in Hyde Park in 1925.

3.1.5 Little evidence for early farming and land use dating to the late Prehistoric period has been found in the area, and what has been recovered is piecemeal in nature.

Roman

3.1.6 The Roman city of *Londinium* lay approximately 6 km to the east of the Site. *Londinium* was served by a series of roads, two of which are in the vicinity of the site. Bayswater Road is aligned on Roman Stane Street, approaching London from Chichester (*Noviomagus Reginorum*) in the southwest (MLO14883; MLO11208). The Paddington Station is located to the north west of the *Via Trinobantia* which ran from London to the town of Silchester (*Calleva Atrebatum*) along what is now Oxford Street.

3.1.7 Previous archaeological field work and research has determined that there are no known Roman remains in the immediate locality of the Paddington Station. During this period it seems that area would have been an open agricultural landscape. However, Roman occupation sites were often located at the intersection of roads and bridging points (i.e. Marble Arch or Bayswater).

Anglo-Saxon & Medieval

3.1.8 No Saxon or Medieval remains have been found close to the Site. The trading port of Saxon *Lundenwic* (the successor to Roman *Londinium*) was located around the Strand and Aldwych c. 4 km to the east of the site.

3.1.9 The earliest evidence of settlement in the area comes from the name itself; *Padintune* or *Padda's tun* (farm), seen in a charter of Westminster Abbey compiled after the Norman Conquest. Paddington is not mentioned in Domesday Book.

3.1.10 The land of Hyde Park and surrounding regions, including the River Westbourne, formed the Saxon agricultural lands of Eia, which was bequeathed by Geoffrey de Mandeville to Westminster Abbey in 1086. The land to the north of the former Eia estates was owned by the Bishops of London. At this time Paddington appears to have been a small settlement around a central green (Paddington Green). Neither courts nor a manor house were recorded in the area during the Middle Ages.

Post-Medieval

3.1.11 Land use in the area changed in the Post-Medieval period with urbanisation spreading out from the City of London and Westminster. The Paddington area was not immune from this and gradually evolved from a rural medieval village into a suburb of London.

3.1.12 During the 17th century it was still a small settlement centred on a village green. With 70 people assessed for hearth tax in 1664, 52 being listed in Paddington and the rest in Westbourne Green. However, during the 18th century the area became increasingly built up with the addition of a number of large houses, including Westbourne Manor and Westbourne Park, set in large grounds. The infra-structure of the area also underwent an evolution with an upgrade in the road system, including a number of toll roads.

3.1.13 In the 1740s the main settlement in the area was still mainly around Paddington Green and along the nearby Edgware Road with smaller collections of dwellings around Westbourne Green and at Bayswatering, where the Westbourne was crossed by the Uxbridge road (Bayswater Road).

3.1.14 Apart from some building next to St. George's burial ground at Paddington Green, little further change took place until the 1790s, there were estimated to be only 340 houses in the parish in 1795. Most of the area was given over to grassland, providing grass and hay for the dairy farmers who supplied London with milk.

Modern

3.1.15 More rapid development occurred in the 19th century with housing spreading into the area from the already built up areas to the south and east. Development of the area was further speeded up with the construction of the Grand Union Canal between 1801 and 1805.

3.1.16 The development of River Westbourne (called the Bayswater Rivulet or Bayswatering until the 19th century) began in the 1439 with the building of a conduit to take water to City of London (MLO 56870, 52002), in the vicinity of Craven Terrace (formally Conduit Street) and Gloucester Terrace. The Westbourne, which is still shown as open in Crutchley's 1829 map (not shown), supplied the Bayswater area with water until 1844.

3.1.17 The construction of the Grand Junction Canal (Regent Canal) was followed by the construction of the Great Western Railway (GWR) from the late 1830s; both of these had a considerable impact on the area. The final canalisation of the Westbourne into the Ranelagh Sewer in the 1870s was also a significant event at the time.

3.1.18 The completion of the GWR in around 1840 completed the development of the area (MLO 97446). This work was authorised by the Great Western Railway Companies Act of Incorporation in 1835. 'By agreement with the Bishop and his lessees, work began on the easternmost stretch from Acton to Paddington, running through clay cuttings south of the canal, in 1836, although the eastern end and terminus were delayed until an Act of 1837 permitted the alteration of public roads.' (VCH 1989:176).

3.1.19 The first Paddington Station was first opened for the GWR in 1838 as a temporary terminus immediately to the west of Bishop's Bridge. This station was largely constructed of timber and used the arches of the bridge as the entrances. Roads were made leading down from London Street and Conduit Street (Praed Street). These lead into a large irregularly shaped yard on the site now occupied by the present station (Brindle, 2004, p21). A timber built goods depot and offices was built into the southern edge of this yard that appears to have been left empty.

3.1.20 The first Paddington station was demolished in c.1853 and was replaced by the present station built on the site of the former entrance yard and goods depot.

3.1.21 The new station was built on land belonging to the Church Commission in "a shallow depression or bowl"(Brindle 2004, 17) a quarter of a mile east of the old one in 1851-4. This station, which Brindle states was built below street level on the insistence of the former landowner (Brindle Ibid) to the designs of the Company Engineer, Isambard Kingdom Brunel, with architectural assistance from M.D Wyatt and for the decoration from Owen Jones. The Station was inspired by a forerunner at Munich and by the Crystal Palace. '…It had one of England's first large station roofs in metal, spanning an area 700 ft. by 238 ft. and at the height of its curves reaching 55 ft. above the platforms.' (VCH 1989:176).

3.1.22 Trains began running (on Brunel's broad gauge tracks) in 1861. The last broad gauge one left it in 1892.

3.1.23 Paddington had its first major addition in the 1860s when the World's first underground railway opened in 1863. Initially running from a station at Bishop's Road built at the northeast end of the Bishop's Bridge to the north of Paddington Station. A second station, originally called Praed Street Station, was built opposite the Great Western Royal Hotel when the Metropolitan Railway was extended from Paddington to South Kensington in 1867.

3.1.24 Eastbourne Terrace is not shown on Crutchley's 1829 map of the area but is shown on the Lucas 1849 Paddington parish map. Most of the Terrace appears to be empty land but short rows of buildings are shown at the junctions with Praed Street, Chilworth Street and Cleveland Terrace. A row of four, 5 storey, houses and the Prince of Wales Hotel are shown on a c.1840 drawing of the early station (Brindle 2004, 24 fig. 2.12) as standing between Cleveland Terrace and the junction of Bishops Bridge Road/Eastbourne Terrace. The picture also shows a c. 3-4 m drop between the level of Eastbourne Terrace and the station entrance yard. This appears to have a brick built terrace, abutment wall topped by railings. By the 1860s the entire Terrace appears to have been built upon. With a terrace of buildings and housing which are described as being "*well to do*"in the Victorian County History (VCH 1989, 204-212). A photograph of Paddington Station and Eastbourne Terrace taken in c.1910 shows the slope down into Departures Road, the brick terrace retaining wall between Departures Road and Eastbourne Terrace and a row of 4 storey houses running along the southern side of Eastbourne Terrace. The roadway appears to be much narrower than now (Brindle 2004, 111, fig. 7.12). These building, most of which were used by the GWR for offices, appear to have stood until the complete redevelopment of the area from the late 1950s.

3.1.25 The underground railway itself was constructed using a cut and cover method, which would have resulted in the removal of considerable areas of possible archaeological deposits. Further sub-surface construction work had included the construction of basements and connections to the Underground tube platforms.

3.1.26 Increase in rail traffic led to the quadrupling of the GWR mainline track out to Slough in 1879. In 1880 Paddington was lit by electricity for the first time, the first major London public building to be so illuminated, and this was permanent from 1886 using the GWR's own power station at Park Royal. A major programme of improvements of 1906-16 included rebuilding all ten of the approach over-bridges with large steel spans. That was finished in 1914, and meanwhile the fourth roof span was added to the north side of the station 1912-6.

3.1.27 Following this the cast-iron columns supporting Brunel's roof were replaced with the present steel ones in 1922-4; those in the north cab-road (Departures Road) had already gone in 1916. This work was designed by Company Engineer W.W Grierson and erected by the Cleveland Bridge Company. A second major rebuilding programme of 1930-34 followed the Development (Loan Guarantees and Grants) Act of 1929, designed to alleviate unemployment. The works included the extension of the platforms, the construction of 'The Lawn' as a passenger concourse (now redeveloped) and the building of two new office blocks and the extension of the Great Western Hotel (now the Paddington Hilton). The station was badly damaged by bombing during World War II and not all this damage was made good.

3.1.28 With the end of steam traction in the 1960s the station was cleaned up, and the concourse was enlarged in 1968-9 and again in the 1970s. The approach tracks were again re-laid and re-signalled in 1992-4 and at the same time the Brunel roof was progressively repaired and decorated.

3.1.29 Finally 'The Lawn' building was demolished in 1999 and has been replaced by a larger and more attractive version designed by Nicholas Grimshaw and Partners (which also supervised the restoration of the end screens of the Brunel shed).

3.2 Map Regression

3.2.1 A historic map regression exercise was undertaken as part of the DDBA for Paddington Station. This is summarised below.

3.2.2 Rocque's map of 1746 (not illustrated) shows the study area located within a field system south of Westbourne Green Village. The valley associated with the line of the Westbourne valley is defined as a shaded to the west of what is now Paddington Station. A pest house (Lord Craven's Pest House) is shown at Craven Hill to the west of the Westbourne. A lane named the Green Lane runs to the north of the study area. No structures are shown in the area of Crossrail construction activity.

3.2.3 Greenwood's map of 1824 (not illustrated) shows the early development of the area. Westbourne Road (now Westbourne Terrace) and London Street are in place as is a Praed Street (also called Conduit Street). A lane or footpath, called Bishop's Walk, is shown running along the line of the present Bishop's Bridge Road before crossing the Grand Junction Canal (Regents Canal) with a bridge. The area between London Street and Westbourne Street is shown as open fields surrounded by hedges and crossed by footpaths. Two unnamed, possibly unbuilt, streets are shown on the area now covered by the station, one runs from the Westbourne Street to South Wharf Road to the south of Paddington Basin another is shown running north from the junction of London Street and South Wharf Road to the Harrow Road. The Grand Junction Canal is shown running to the north of the site with the Paddington Canal Basin to the east. The River Westbourne still evident although a culvert has been constructed to divert it under the Canal. A number of reservoirs and water works are shown to the immediate south of Praed Street /Conduit Street and in the area now covered by St. Mary's Hospital. Although the areas to the east of the Paddington Basin and along Westbourne Street are built up, no structures are illustrated within the Crossrail works area.

3.2.4 Lucas's 1842 plan (not shown) of Paddington parish shows a large area set-aside for the rail line and all the major road links. The area shown here is that acquired for the construction of the original Great Western Station built in 1838. The present Paddington Station building was not built until 1854. Eastbourne Terrace is shown and named, as are Chilworth Street (then called Charles Street) and Cleveland Terrace (then called James Street). Rows of buildings are shown at the junctions of Eastbourne Terrace with Praed Street, Cleveland Terrace (James Street), Chilworth Street (Charles Street) and Bishops Bridge Road (The Bishops Road viaduct).

3.2.5 Less than 40 years after Lucas, Stanford's 1862 map (not illustrated) shows the extensive development across the entire Paddington Station area, with road construction and housing surrounding the site. The railway station, its tracks and goods yard has been constructed between Eastbourne Terrace and the Grand Junction Canal. The street layout, which remains today, has been established.

3.2.6 The Ordnance Survey map of 1872 (not illustrated) shows further development of the railway in the area, with the construction of additional lines, bridges and goods yards to the west of Bishops Bridge. As well as the opening of Praed Street Metropolitan Railway's station (opened in 1867) and the Royal Oak Station (opened in 1871). The Ordnance Survey map shows dense housing surrounding Paddington Station. Across the Station area the 'greyed out' expanses indicate perhaps an overhead structure or canopy. Spot height markers on the plan indicate a gradual slope to the south along Eastbourne Terrace.

3.2.7 There is no great difference between the 1872 and 1914 (not shown) Ordnance Survey maps in terms of changes to street layouts and the physical structure of Paddington Station. Eastbourne Terrace and Praed Street remain unchanged.

3.2.8 The street pattern appears to have changed little since 1914, although the railway goods yards to the northwest of the Bishop's Bridge are no more.

3.3 Previous Archaeological Work

1990 to 2000:

3.3.1 A number of investigations occurred throughout this period: Two investigations in 1990 and 2000, within Paddington Goods Yard/London Street, 290 m to the north of the Site, encountered London Clay just beneath modern road/pavement at heights of 122 m aTD and 127 m aTD respectively (archaeological site codes PGY90, PYD00). The 1990 results also revealed that the London Clay had been severely truncated by the GWR railway cutting.

3.3.2 In 1998, at 12-20 Praed Street, 550 m to the east of the Site, works revealed the overlying Lynch Hill Gravels at 130 m aTD (site code PRA98).

2009-2010:

3.3.3 A number of utilities trenches were subject to archaeological observation work around the Paddington Station area during initial Crossrail works. The most relevant trenches are shown in Figure 7 of the Paddington SSWSI report.

3.3.4 In Trench PAD 3 on Praed Street the upper 0.58 m consisted of modern disturbance and reworked material. Below this geology comprised clean, firm silty, clayey, sand which was consistent with the Langley Silt Complex Brickearth of the British Geological Survey.

3.3.5 In the base of Trench PAD 11 was a layer of compact, dark brown, green silty clay with very occasional 19th century pottery fragments recorded. The overlying deposit was a layer of hard silty sand with moderate red brick fragments.

3.3.6 Trenches PAD 21 and PAD 22 situated in Chilworth Road revealed that brick arched coal cellars extended 1 m into the road and over 3 m depth from surface. These were cut through post-medieval fills and coal ash present to a depth of 1.1 m BGL (below Ground Level). A stiff brown clay seen at a depth of 1.2 m in PAD 21 and 1.4 m BGL in PAD 22 was probably the natural weathered surface of London Clay. The variation seemed to suggest a natural slope from east down to west, reflecting the valley of the now buried Westbourne River.

3.3.7 The findings from the archaeological watching brief provide more detailed information about the likely archaeology to be located in the Paddington Station worksite. For the most part natural surfaces appeared to have been truncated by activity in the Post-Medieval period. Trenches 21 and 22 in Cleveland Terrace and Chilworth Street respectively exposed what appeared to be the natural slope of the Westbourne river valley.

3.3.8 An archaeological watching brief (XRK09) during ground investigation surveys in Departures Road (under works package PAD-0122) identified a 0.10 m thick, possible Pleistocene horizon, comprising silty sand and gravel at c.120.58 m ATD in a single trial pit (Trial Pit 1). The horizon was sealed by a layer of colluvium or made ground *c.*1m thick of probable Post –Medieval date which was in turn overlain by *c* .2 m of Post-Medieval and Modern made ground.

3.3.9 Interim results from the archaeological watching brief undertaken during the EDF utility diversion works on Eastbourne Terrace (XSD10) identified a sequence of modern fills and road make up, overlying 0.5 m of redeposited Natural Clay. This deposit has been interpreted as upcast and landscaping material associated with Brunel's cutting for the Present Paddington Station.

4. TOPOGRAPHY AND GEOLOGY

4.1.1 In general the site has a south trending slope towards the River Thames. With heights dropping from 128 m aTD (above Tunnel Datum where the Tunnel Datum is calculated as being 100 m above Ordnance Datum e.g. 1 m aOD = 101 m aTD) at the Bishop's Bridge end of Eastbourne Terrace down to 125.4 m aTD at the junction of Praed Street/Craven Street. The height at the centre of the Site, in the area of the two test pits, was c. 126.6 m aTD.

4.1.2 The British Geology Society Drift edition map of the area (Sheet 256, North London) shows that Lynch Hill River Terrace Gravel's overlie much of the Paddington area including the site.

4.1.3 The main River Terrace sequences in Paddington are however more complex where they are crossed by tributaries of the Thames. These include the River Westbourne, which flowed south towards the Thames. This river is of considerable antiquity and together with its associated alluvial fills may have originally developed in conjunction with the glacial phases of the Thames. The course of the former River Westbourne lies beneath Westbourne Terrace / Gloucester Terrace some 150 m to the west of the Site.

4.1.4 The following is summarised from the Archaeological SSWSI (Document No. C130-SWN-Z-RSI-B071-00001). The various investigations have shown a sequence of multiple "made ground" layers overlying River Terrace deposits that in turn overly deposits of Eocene London Clay. These were observed at a height of c.123 m aTD in Eastbourne Terrace and 123.5 m aTD in Praed Street. The River Terrace deposits appear to be thickest towards the east. In places the River Terrace deposits were overlain by a layer of, what their excavator's called brickearth or alluvial clay.

4.1.5 The SSWSI noted that; "a layer of dark grey alluvial clay at a height of 122.21 m aTD, probably relating to either a tributary of the Westbourne channel or an adjacent pond", was recorded in Package 17a Test Pit 208 (Document No. C130-SWN-Z-RSI-B071-00001 Section 2.55).

5. AIMS AND OBJECTIVES

5.1.1 The project generic aims and objectives are set out in the AMS C254-OXF-W-GMS-CRG01-0003 rev. 4 and are not reproduced here.

5.1.2 Specifically the works aimed to:

> "Identify the presence or absence of potential Pleistocene deposits and the presence or absence of artefacts or ecofacts with in any such deposits if present."

6. METHODOLOGY

6.1 Methodological Standards

6.1.1 All archaeological work, including the preparation of this report, was conducted according to current best practice and accepted professional standards (see OA Fieldwork Manual 1992, Museum of London Archaeological Site Manual 1990), and as outlined in:

- Paddington Station – Contract No. C130, Archaeological Site Specific Written Scheme of Investigation. Document No. SWN-Z-RSI-BO71-0001 (October 2010)
- Archaeological Generic Written Scheme of Investigation, Document No: CR-PN-LWS-EN-SY-00001, 7 July 2009 (AWSI)
- Archaeology Specification for Evaluation and Mitigation (including Watching Brief) Document No: CR-PN-LWS-EN-SP-00001, 26 June 2009, (ASEM)
- Works Information (Volume 1 - General), Document No: CR-SD-PRW-X-RT-00151, 5 June 2009 (WIV1)
- Works Information (Volume 2 - Particular), Document No: CR-SD-PRW-X-ITT-00001, 13 July 2009 (WIV2)
- Crossrail standards and specifications
- Institute for Archaeologists – Standard and Guidance for archaeological excavation, 2008 (revised)
- Institute for Archaeologists – Standard and Guidance for an archaeological watching brief, 2008 (revised)
- Museum of London collections and archive policies and guidance
- English Heritage – Geoarchaeology, 2007
- English Heritage - Archaeological Science at PPG16 interventions: Best Practice Guidance for Curators and Commissioning Archaeologists, 2003
- GLAAS Archaeological Guidance Papers 1999
- Corporation of London archaeology guidance – Planning Advice Note 3, 2004
- Museum of London Archaeology Service site recording manual (MOLA 1994)

6.2 Fieldwork

6.2.1 The fieldwork methodology was agreed in advance with the Crossrail Project Archaeologist and an AMS (OA/R 2012) was produced by OA/R prior to commencement of the work.

6.2.2 The fieldwork strategy is described in detail in the WSI (OA/R 2013) but in summary; The two test pits (Test Pit 1 and Test Pit 2), each measuring 4 x 2 m, were machine excavated to a depth of c. 5 m below existing ground surface.

6.2.3 Health and Safety considerations were of paramount importance in conducting the fieldwork. Which was carried out in accordance with the revenant Health and Safety legislation, regulations and codes of practice in force. Safe working practises overrode archaeological considerations at all times.

6.2.4 After removal of the modern tarmac roadway, the trenches were excavated by the main contractor (Bryne Brothers for CSJV) in 200 mm thick spits using a tracked machine with a toothless bucket.

6.2.5 All work took place under continuous archaeological supervision.

6.2.6 All spoil and upcastings from the excavations were scanned visually for artefacts and ecofacts.

6.2.7 In the absence of artefacts or ecofacts, manual access was not carried out and strata sections were produced from ground level.

6.2.8 At the end of the excavations, and with the agreement of the Crossrail Project Archaeologist, the trenches were backfilled and levelled.

6.3 Recording

6.3.1 All observations were undertaken against a unique Event Site Code (XSD10). A continuous unique numbering system was used.

6.3.2 All archaeological deposits and features were recorded by means of Oxford Archaeology pro-forma recording sheets.

6.3.3 A complete drawn record, which incorporated, plans and section, was made of the deposits and features uncovered on site. These were drawn at scales of 1:50 or 1:20 for plans and 1:10 for sections.

6.3.4 A full photographic record was maintained using 35 mm monochrome and colour, as well as digital formats. The photographic record included photographs and transparencies of all archaeological features and deposits as well as any quaternary deposits, as encountered and shot to illustrate work in progress.

6.3.5 All heights in this report are quoted in metres above Tunnel Datum (m aTD). Tunnel Datum is calculated as being 100 m above Ordnance Datum e.g. 1 m aOD = 101 m aTD.

6.4 Site Survey and Spatial Recording

6.4.1 All setting out of interventions was under the control of the Principal Contractor's approved surveyor. The location, position and depth of the test pits was predetermined and in accordance with the current design drawings.

6.4.2 The set outs were usually conducted using a Total Station Theodolite (TST) or other suitable automated equipment referenced from approved Crossrail Permanent Ground Marker (PGM) data. Any archaeological drawing points and baselines were surveyed in by the on-site surveyor. In this instance the survey was done using approved and calibrated equipment.

6.4.3 The positions of the test pits and survey points were verified by the OA/R on site archaeologists through discussion and observation. In this way it was possible to ensure that all trench or excavation limits, and significant archaeology detail were surveyed 'as dug', before leaving the site. A repetition of surveying the interventions was deemed redundant. This therefore meant that data management of raw survey was not necessary.

6.4.4 A comprehensive, to scale, digital site plan was provided by the contractor for use by OA/R.

6.4.5 All levels recorded were taken from known points provided by the principal contractor and recorded as meters above Tunnel Datum (m aTD).

6.4.6 Any deposits of archaeological significance were hand drawn using tapes and offsetting.

6.4.7 Upon project completion all drawings were digital captured comprising of closed polygons, polylines or points and incorporated within the plan provided by the contractor. This was undertaken in accordance with the requirements of GIS construction and OA Geomatics protocols.

6.4.8 In all instances, CAD work has, and will follow the guidelines set out in Crossrail's CAD Standards (CR-STD-005 CAD Standards v.2) and Crossrail's; *Archaeology Specification for Evaluation and Mitigation (including watching Brief*) (CR-PN-LWS-EN-SP-00001).

7. RESULTS

7.1.1 Detailed contextual information is presented in tabulated form in Appendix 1 at the rear of this report. The following provides a brief summary of the findings and an outline narrative of the depositional sequence encountered.

Test Pit 1 (Figure: 2)

7.1.2 Test Pit 1 measured 4 x 2 m and was excavated to a depth of 5 m bgl.

7.1.3 The earliest deposits observed in this trench were seen at 122.77 m aTD, these comprised River Terrace Gravels (6465). These deposits, whose base was not found, were exposed and excavated to a depth of 121.77 m aTD.

7.1.4 A 0.7 m thick layer of mid yellowish brown, coarse sandy clay (6464) overlay these Pleistocene fluvial deposits. This deposit of brickearth was observed to a height of 123.47 m aTD.

7.1.5 The upper 3 m of strata comprised modern overburden/ "made ground" including re-deposited natural and the existing hardstanding deposits (6463).

Test Pit 2 (Figure: 2)

7.1.6 Test Pit 2 measured 4 x 2 m and was excavated to a depth of 5 m bgl.

7.1.7 In Test Pit 2 the earliest deposit observed comprised fine sands (6470) whose base was not found at the excavation limit depth of c 121.45 m aTD. A deposit of sandy gravel (6469) overlay this. These Pleistocene fluvial deposits, whose upper surface was seen at 122.67 m aTD, were overlain by a deposit of mid brown clay (6468) which was itself sealed by a 0.5 m thick layer of stiff, brown alluvial clay (6467) which contained frequent fragments of white calcareous gypsum or "tufa".

7.1.8 This deposit, which was observed at a height of 123.47 m aTD was in turn overlain by a c. 2.7 m thick deposit of modern "made ground" / embankment material (6466).

Plate: 1. Test Pit 2. "Tufa" rich layer (6467) at base

7.2 Finds

7.2.1 No artefact or ecofacts were uncovered during the excavations.

7.3 Environmental Sampling

7.3.1 Due to the absence of suitable deposits, no environmental samples were taken.

8. ASSESSMENT OF RESULTS IN RELATION TO INVESTGATION AIMS

8.1 Assessment Criteria

8.1.1 The evaluation produced a body of data that can be gauged using the criteria for assessing national importance, outlined in documents such as MoRPHE (Management of Research Projects in the Historic Environment) and DCMS Scheduling (Department for Culture, Media and Sport), the NPPF (and its predecessors PPS5, PPG16). And in accordance with the Method Statement (C254-OXF-W-GMS-CRG01-00003 rev 4 – 04/09/12).

8.1.2 Within the Method Statement the main aim of the work was to recover data to address the following research objective:

"Identify the presence or absence of potential Pleistocene deposits and the presence or absence of artefacts or ecofacts with in any such deposits if present."

8.1.3 The evaluation did produce a series of Pleistocene deposits and a possible warm climate deposit of brickearth, which in Test Pit 1 contained fragments of calcareous "tufa". In neither of the test pits were artefacts uncovered.

8.2 Relative Completeness

8.2.1 The lowest deposits of the Site appear to have survived intact. The uppermost sequence appears to have been truncated during the construction of the embankment, which comprised Eastbourne Terrace. Which is currently c. 3 m above the level of the Departures Road entrance to Paddington Station. This terracing appears to have removed between 2-3 m of potential Holocene and any pre-modern deposits from the top of the archaeological sequence.

8.3 Condition

8.3.1 The surviving deposits encountered were all in a reasonable state of preservation. The upper part of the archaeological sequence was incomplete (see above) but the deposits were not so fragmentary as to obscure their form.

8.4 Rarity, Value and potential

8.4.1 Tufa forms as a precipate of carbonate minerals, derived from gently moving, ambient temperature water and deposited onto an extant surface. Therefore where located *insitu* (where formed) tufa is indicative of a land surface horizon. It is also conducive to the survival of fossil/ecofactual remains. This type of strata dating to the Pleistocene period is rare and its value is that any faunal remains, ecofacts or artefactual evidence of human activity would have increased chance of survival in the environment where tufa is formed and the indication of a land surface increases the possibility of retrieving artefacts or ecofacts from their primary deposition location. .

9. CONCLUSIONS AND RECOMMENDATIONS

9.1.1 Pleistocene deposits comprising gravels and sands were seen in the base of both test pits. These deposits started at 122.77 m aTD (Test Pit 1) and 122.67 m aTD (Test Pit 2) their full depth was not found at the limit of excavation at 121.45 m aTD.

9.1.2 Similar deposits, which have been interpreted as being part of part of the Lynch Hill River Terrace Gravels, have been seen elsewhere in the area. These include:

- Deposits of silty sands and gravel noted in a Museum of London Archaeology (MoLA) watching brief in Departures Road in 2010 (Figure: 1). At between 120.58 m aTD and 121.58 m aTD.

- Similar gravel and sand deposits have been noted during the present OA/R General Watching Brief. These were observed at c. 1.5 m below the present ground level at the eastern end and central section of the Departures Road Diaphragm Wall Trench. Whilst a 4-5 m thick sequence of laminated sands and silty gravels were recorded in the Basement Clash Trench to the west of MacMillan House (Figure: 1).

- Deposits of clay calcareous tufa (6467) were observed in Test Pit 2 at a height of 123.47 m ATD. The origin of the clay and tufa rich deposit is at the present unknown and it is likely the tufa is reworked from another (possibly nearby) location rather than formed insitu as seen within the test pits. They are possibly part of the Langley Silt brickearth deposits, which are intermittently present across much of central London, although much denuded by later quarrying. However, they could well be part of a sequence of deposits associated with the River Westbourne which still runs below ground to the west of the Site. Or they could be part of an earlier “channel”, which contained important collection fauna remains, at the Crossrail Royal Oak Tunnel Portal site to the north west of the Site.

9.1.3 In both test pits, a c. 3 m thick series of “made ground” deposits were uncovered above these brickearth deposits. These modern deposits appear to be associated with the construction of the embankment, which comprised present day Eastbourne Terrace in the 19th century.

10. PUBLICATION AND DISSEMINATION

10.1.1 The remains uncovered during the project are not of sufficient significance to warrant further publication.

11. THE ARCHIVE

11.1.1 The complete project archive includes paper context records and indices, permatrace drawings, both black and white and colour photographs, digital plans and photographs.

11.1.2 These will be prepared following the guidelines set out in: *Guidelines for the preparation of excavation archive for long-term storage* (Walker, 1990).

11.1.3 The digital data will be temporarily stored on the server at Oxford Archaeology South offices, which is backed up on a daily basis. For long term storage of the digital data CDs/DVDs will be used and will include the reports, plans scanned images and digital photographs. Each disk will be fully indexed and accompanied by the relevant metadata as provenance.

11.1.4 The archive is currently held at;

Oxford Archaeology
Janus House
Osney Mead
Oxford OX2 0ES

11.1.5 And will be deposited with the Museum of London in due course.

Museum of London Archaeology
Mortimer Wheeler House
46 Eagle Wharf Road
London N1 7ED
Tel: 020 7410 2200
http://www.museumoflondonarchaeology.org.uk

APPENDIX 1: TRENCH SUMMARY TABLE

Test Pit 1

(+) Indicates base not reached

Context Number	Interpretative Keyword	Type	Description	Height m aTD
6463	Made Ground	Layer	Mixed Modern Made Ground	Top-126.77 Base-123.47
6464	Brick Earth	Layer	Mid yellow brown, coarse sandy clay	Top-123.47 Base-122.77
6465	River Terrace Deposits	Layer	Sandy gravel	Top-122.77 Base- 121.77(+)

Test Pit 2

(+) Indicates base not reached

Context Number	Interpretative Keyword	Type	Description	Height m aTD
6466	Made Ground	Layer	Mixed Modern Made Ground	Top-126.15 Base-123.47
6467	Brick Earth	Layer	Mid brown, sandy clay, flecks and fragments of “tufa”	Top-123.47 Base-122.97
6468	Alluvium	Layer	Mid brown sandy clay	Top-122.97 Base-122.67
6469	River Terrace Deposits	Layer	Sandy gravel	Top-122.67 Base-122.59
6470	River Terrace Deposits	Layer	Mid yellow fine sand	Top-122.59 Base-121.45 (+)

APPENDIX 2: BIBLIOGRAPHY AND REFERENCES

Bates, M. *et al*	2012	Early Devensian sediments and paleo enviromental evidence from the excavations at the Royal Oak Portal, Paddington West London, UK. *Proc. Geol Association*
Barker, T. F.T (Ed.) Bolton, D. K. and Coot, P. E. C.	1989	Victoria County History (VCH): A History of the County of Middlesex. Vol.9. Hampstead and Paddington
Brindle, S.	2004	Paddington Station: Its History and Architecture (Swindon)
British Geological Survey	1998	1:50000 series Sheet 256 North London
Crossrail	2010	Paddington Station Archaeological site specific written scheme of Investigation, C130SWN-Z-RSI-BO71_0001
Crossrail	2010	Archaeological monitoring of ground investigations Enabling Works, Departures Road, Paddington Station, PAD-0122 Report on the watching brief.
OA/R	2012	Archaeological Works at Paddington Eastbourne Terrace. Evaluation Trenches. Archaeology Method Statement C254-OXF-W-GMS-CRG01_00003. rev 4
OA/R	2012	Archaeological Works at Paddington Eastbourne Terrace. Interim Report on Evaluation Trenches Document C254-OXF-T1-RGN-CRG03-50116

APPENDIX 3: SUMMARY OF SITE DETAILS

Client name: Crossrail Ltd
Site name: Archaeology West - Contract No.C254 Archaeological Works at Paddington Eastbourne Terrace
Site code: XSD10
Type of evaluation: Trench Evaluation
Date of project: September 2012
Location of archive: The archive is currently held at Oxford Archaeology, Janus House, Osney Mead, Oxford, OX2 0ES, and will be deposited with LAARC in due course.

APPENDIX 4: OASIS ENTRY

OASIS ID: oxfordar1-177228
Project details

Project name Archaeological Works at Paddington Eastbourne Terrace Report on an Archaeological Trench Evaluation

Short description of the project:

In September 2012 Oxford Archaeology/Ramboll (OAR) carried out an archaeological field evaluation in Eastbourne Terrace, Paddington, City of Westminster, London W2. The fieldwork was undertaken on behalf of Crossrail Ltd during works related to the expansion of the present Paddington Station to incorporate a new ticket hall, platforms and entrance for the Crossrail Line. The evaluation, consisting of two machine dug test pits, identified substantial modern overburden overlying Pleistocene clay with tufa.

Project dates Start: 14-09-2012 End: 21-09-2012
Previous/future work
No / Not known
Any associated project reference codes: XSD10 - Sitecode
Any associated project reference codes: XSD10 - Museum accession ID
Type of project: Field evaluation
Site status: None
Monument type: TUFA DEPOSIT Palaeolithic
Monument type: MADE GROUND Post Medieval
Significant Finds: None
Methods & techniques: "Test Pits"
Development type Rail links/railway-related infrastructure (including Channel Tunnel)
Prompt National Planning Policy Framework - NPPF
Position in the planning process: After full determination (eg. as a condition)

Project location

Country: England
Site location: GREATER LONDON CITY OF WESTMINSTER PADDINGTON BAYSWATER AND KNIGHTSBRIDGE Paddington Eastbourne Terrace
Postcode: W2
Study area: 16.00 Square metres
OASIS FORM - Print view http://oasis.ac.uk/form/print.cfm
1 of 3 15/04/2014 15:27
Site coordinates TQ 266 811 51.5141255293 -0.175317846098 51 30 50 N 000 10 31 W Point

Project creators
Name of
Organisation: Oxford Archaeology/Ramboll (OAR)
Project brief originator: Crossrail Ltd
Project design originator: Oxford Archaeology/Ramboll (OAR)
Project director/manager: R. Brown
Project supervisor: G Evans
Type of sponsor/funding body: Developer
Name of sponsor/funding body: Crossrail Ltd

Project archives

Physical Archive Exists?: No
Digital Archive recipient: Museum of London
Digital Archive ID: XSD10
Digital Contents "other"
Digital Media available
"GIS","Images raster / digital photography","Text"
Paper Archive recipient: Museum of London
Paper Archive ID XSD10
Paper Contents "Stratigraphic","other"
Paper Media available
"Context sheet","Photograph","Plan","Report","Unpublished Text"

Project bibliography 1

Publication type: Grey literature (unpublished document/manuscript)
Title Archaeological Works at Paddington Eastbourne Terrace Report on an Archaeological Trench Evaluation
Author(s)/Editor(s): Evans G
Date 2014
Issuer or publisher: Oxford Archaeology/Ramboll (OAR)
Place of issue or publication: Oxford
Description: Client report
Entered by: Nicola Scott (n.scott@oxfordarch.co.uk)
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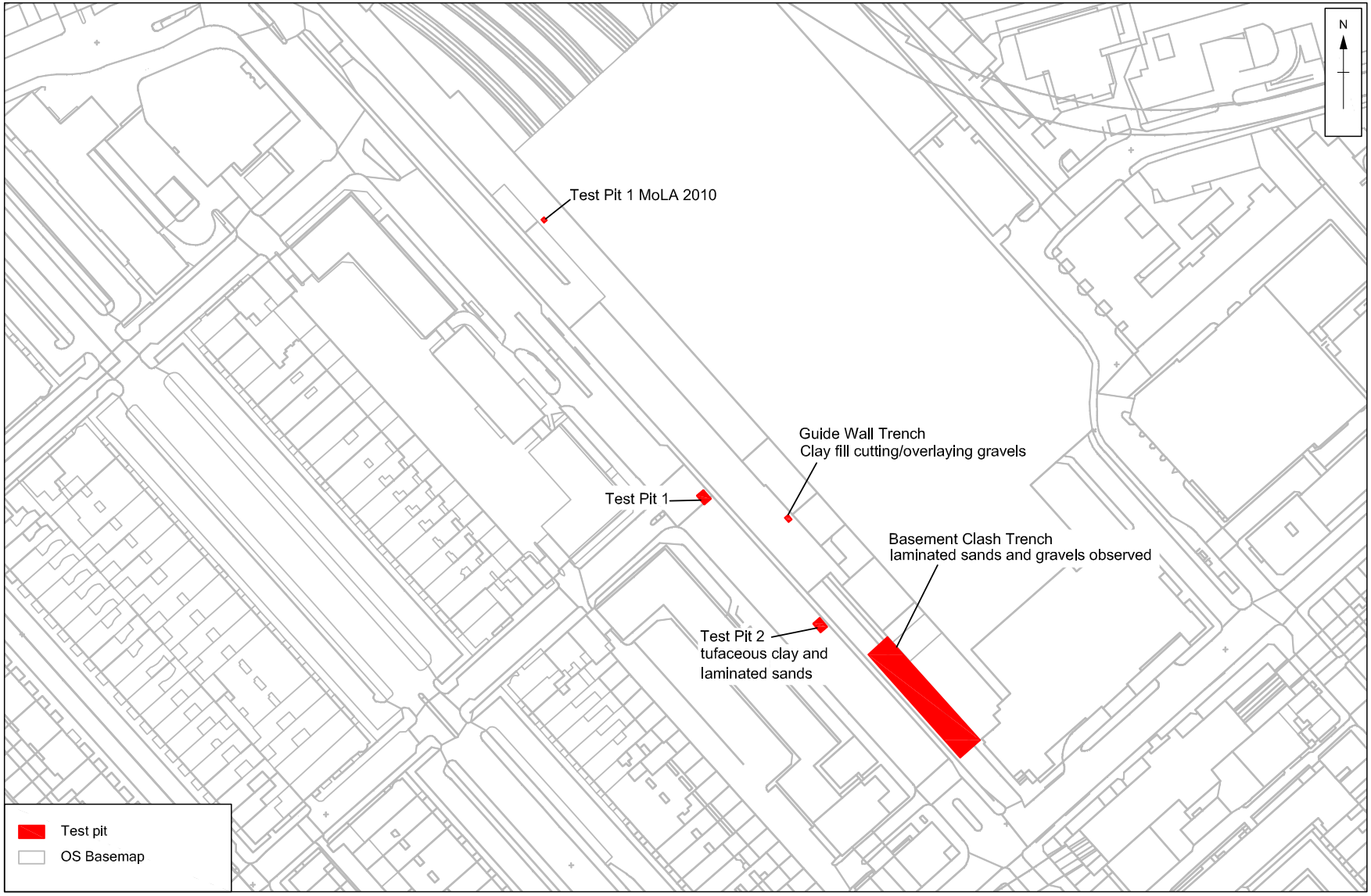
X:\CrossRail\Reporting\XRAIL_Watching_Briefs\XSD10_WB\Test Pit Evaluation\Paddington Trenches\Fig information for Matt\XSD10_Figure 1.dwg(A4 landscape)*XSDWB*XSD10*Paddington WB trenching*jane.smallridge* 17 Oct 2012



Survey Data supplied by :
Crossrail Limited

0 100 m

Scale at A4 1:2000

Figure 1: Trench location plan and location of observations of potential pleistocene deposits

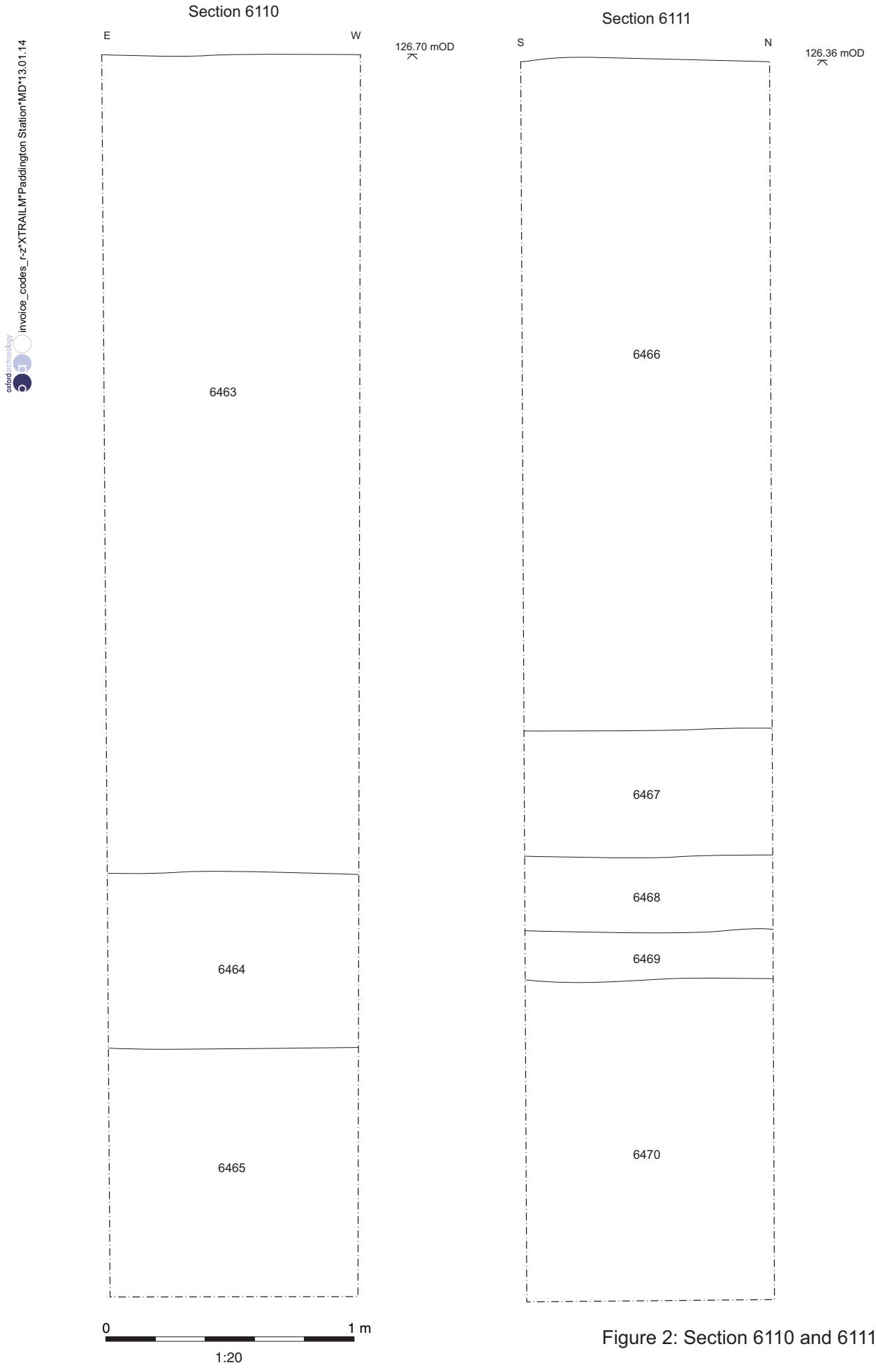


Figure 2: Section 6110 and 6111