

New Museums Site, Cambridge Central Range (Phase 3)

Archaeological Monitoring of Boreholes and Window Samples



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With graphics by Bryan Crossan

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Division of Archaeology

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INTRODUCTION

This report details the results of archaeological monitoring that was undertaken by the Cambridge Archaeological Unit (CAU) during the insertion of four machine-dug window samples (WS1, WS2, WSA and WSB) and three boreholes (BH1-3) at the New Museums site, Cambridge, in advance of Phase 3 of the development of the site. Monitoring occurred between the 14th and 28th of September 2016, with the proposed development area centred on TL 4496 5825 (Figure 1). The sitcode for this project is CRN16 and the event number is ECB 4821.

Geologically, the site is situated upon second terrace river gravels overlying Gault clay (British Geological Survey, sheet 188). Across the investigated area the present surface height lay at a consistent average of 9.70m AOD. Methodologically, the window samples were extracted using a Competitor soil-sampling rig, which retains a plastic-sheathed soil core for above-ground examination. Although intended for geotechnical analysis, the nature of the window samples also allowed a basic stratigraphic record to be compiled. Due to the percussive hammer technique employed by the rig, however, a level of compaction was observable within each recovered sample, potentially distorting original sequence; the degree of compaction varied in direct relation to the consistency, or relative plasticity, of the deposits being sampled. The borehole investigations, in contrast, were conducted using a conventional 'A-framed' rig (pictured on the cover of this report), in which the cored sample is ejected as a loose deposit after each stage of excavation. Although penetrating to a greater depth than the window samples, the lack of cohesion within the extracted material when using this latter technique means that a less accurate sedimentological record can be obtained.

Historical and archaeological background

The historical and archaeological background of the New Museums site has been discussed in detail in a previous desk-based assessment (Appleby & Dickens 2013). Consequently, only a brief summary is presented here.

One of the earliest events recorded at the site is the establishment of an Augustinian Friary in the late 13th century (Duckworth & Innes Pocock 1910; Cranage & Stokes 1921). This was located a short distance to the north of the present area of investigation, in the vicinity of the Phase 2 North Range (Figure 1), and the southern portion of the monastic precinct may well have extended into the northern half of the proposed Phase 3 development area. The friary was situated on the northern (townward) side of the medieval boundary known as the King's Ditch, which acted as the perimeter of Cambridge's urban core. A portion of this ditch – the projected course of which extends through the proposed Phase 4 development area to the south – has been investigated at the nearby Grand Arcade site, where it was found to measure around 9.0m wide and at least 3.2m deep (Cessford & Dickens in prep.). Material evidence allied with radiocarbon dates suggest that it was most probably constructed during the Anarchy period of the mid-12th century, when it encircled and defended the southern portion of the town.

Aside from limited evidence of Late Prehistoric and Roman agricultural activity, the Grand Arcade excavations also established that the earliest occupation in the area commenced during the 11th century (Cessford & Dickens in prep.). Initially lying on the outer fringe of the expanding town, the plots at this site were subsequently separated from the urban core by the establishment of the King's Ditch, thereby leading to the creation of an extramural suburb. It is presently unclear to what extent settlement occurred within the proposed Phase 3 and Phase 4 development areas prior to the friary's establishment, although as the site lies within the town circuit this space is unlikely to have been entirely unoccupied. The Augustinian Friary itself was dissolved in the mid-16th century and the area was then divided into a number of smaller plots until, in 1762, a portion of the area was donated to the university. A Botanic Garden was then established, which remained extant until the 1860s. At this time, the university having purchased the remainder of the site, construction work began on a series of teaching, research and museum buildings that continue to occupy the site today.

RESULTS

The results obtained from the monitoring of the various window samples and boreholes (located in Figure 2) have been detailed in tabular form. A composite transect profile has also been compiled (Figure 3), representing in graphic form the depth of surviving archaeological stratigraphy and the extent of probable modern truncation.

| Window Sample 1 | | |
|-----------------|--|--|
| Methodology | Depth | Deposit |
| Machine-drilled | 0m-0.10m | Tarmac |
| | 0.1m-0.18m | Compact, very dark grey clay |
| | 0.18m-0.26m | Firm, light grey clay with frequent small angular gravel inclusions |
| | 0.26m-0.38m | Firm, dark grey clay with frequent ceramic building material (CBM) inclusions (up to 4cm) |
| | 0.38m-0.60m | Firm, grey, clay with occasional small angular gravel inclusions |
| | 0.60m-0.82m | Firm, dark grey silty clay with occasional small angular gravel and charcoal fleck inclusions |
| | 0.82m-1.28m | Firm, dark grey silty clay with moderate small angular gravel, charcoal and CBM fleck inclusions |
| | 1.28m-1.36m | Firm, mottled dark grey and orangey brown silty clay with occasional small angular gravel inclusions |
| | 1.36m-1.52m | Firm, dark grey silty clay with frequent small angular gravel and CBM fleck inclusions |
| | 1.52m-1.58m | Firm, light brown clay |
| | 1.58m-2.44m | Firm, dark grey silty clay with occasional small angular gravel and charcoal fleck inclusions |
| | 2.44m-2.59m | Firm, grey sandy clay with occasional angular gravel and charcoal fleck inclusions |
| | 2.59m-2.67m | Loose, yellow sand |
| 2.67m-2.77m | Friable, grey brown clayey sand with occasional angular gravel inclusions | |
| 2.77m-4.0m | Natural sand and gravel | |
| Summary: | Modern made-ground deposits occur to a depth of at least 0.6m and potentially up to 1.5m. Beneath this are a series of archaeological deposits of unknown date, which are likely to represent a series of layers and/or cut features | |

| Window Sample 2 | | |
|-----------------|---|---|
| Methodology | Depth | Deposit |
| Machine-drilled | 0m-0.09m | Tarmac |
| | 0.09m-0.17m | Compact, very dark grey clay |
| | 0.17m-0.25m | Loose, light grey sand and gravel |
| | 0.25m-0.48m | Friable, dark grey clay sand with frequent small angular gravel inclusions |
| | 0.48m-0.69m | Firm, dark grey clay |
| | 0.69m-0.80m | Loose, CBM fragments (up to 20cm) |
| | 0.8m-1.22m | Friable, grey brown clay silt with occasional small angular gravel, chalk and charcoal fleck inclusions |
| | 1.22m-1.46m | Firm, light grey clay with occasional medium gravel and chalk fleck inclusions |
| | 1.46m-1.84m | Firm, very dark grey clay with occasional small angular gravel, chalk and charcoal fleck inclusions |
| | 1.84m-1.96m | Friable, orangey brown clay sand |
| | 1.96m-2.15m | Firm, light orangey brown sandy clay |
| | 2.15m-2.21m | Firm, white marl. |
| 2.21m-4.0m | Natural sand and gravel | |
| Summary: | Modern made-ground deposits occur to a depth of at least 0.8m and potentially up to 1.22m. Beneath this are a series of archaeological deposits of unknown date, which are likely to represent a series of layers and/or cut features | |

| Window Sample A | | |
|-----------------|--|---|
| Methodology | Depth | Deposit |
| Machine-drilled | 0m-0.20m | Tarmac |
| | 0.20m-0.30m | Loose, yellow sand with moderate CBM fragment inclusions (up to 15cm) |
| | 0.30m-0.65m | Firm, grey sandy clay with patches of grey sand and moderate small angular gravel and ceramic building material (CBM) fragment inclusions |
| | 0.65m-0.85m | Loose, yellow sand and gravel |
| | 0.85m-0.95m | Firm, grey brown, silty clay with frequent small angular gravel inclusions |
| | 0.95m-1.85m | Firm, grey clay with moderate small angular gravel and CBM fragment inclusions |
| | 1.85m-1.93m | Loose, yellow sand and gravel |
| | 1.93m-2.48m | Firm, grey clay with occasional small angular gravel, charcoal fleck and CBM fragment inclusions |
| | 2.48m-4.0m | Natural sand and gravel |
| Summary: | Modern made-ground deposits occur to a depth of at least 0.65m and potentially up to 1.85m. Beneath this are a series of archaeological deposits of unknown date, which are likely to represent a series of layers and/or cut features | |

| Window Sample B | | |
|-----------------|--|---|
| Methodology | Depth | Deposit |
| Machine-drilled | 0m-0.12m | Tarmac |
| | 0.12m-0.37m | Loose, grey sand with frequent CBM inclusions (up to 15cm) |
| | 0.37m-1.88m | Firm, dark grey clay with occasional small CBM fragment and charcoal fleck inclusions |
| | 1.88m-2.3m | Firm, dark grey sandy clay with moderate angular gravel inclusions |
| | 2.3m-2.44m | Loose angular gravel |
| | 2.44m-2.6m | Firm, grey sandy clay |
| | 2.6m-2.77m | Friable, orangey brown clayey sand |
| | 2.77m-4.0m | Natural sand and gravel |
| Summary: | Modern made-ground deposits occur to a depth of at least 1.88m. Beneath this are a series of archaeological deposits of unknown date, which are likely to represent a series of layers and/or cut features | |

| Borehole 1 (40m) | | |
|------------------|--|---|
| Methodology | Depth | Deposit |
| Hand-dug | 0m-0.17m | Concrete |
| | 0.17m-0.56m | Friable, dark grey sandy clay with occasional small angular gravel and small CBM fragment inclusions |
| | 0.56-0.9m | Friable, dark grey sandy clay with frequent large CBM fragment inclusions (up to whole bricks) |
| | 0.90m-1.25m | Friable, light grey sandy clay with occasional small angular gravel and CBM fleck inclusions |
| Machine-drilled | 1.25m-1.30m | Compact, grey brown clay |
| | 1.30m-2.30m | Friable, pale grey clay with frequent yellow sandy mortar and clunch fragment inclusions, as well as glazed tile fragments and Collyweston roof slate ([001], probable demolition debris) |
| | 2.30m-3.40m | Continuation of same deposit as above, but below standing water level |
| | 3.40m-4.80m | Natural sand and gravel |
| | 4.80m | Gault clay |
| Summary: | Modern made-ground deposits occur to a depth of at least 0.90m and probably up to 1.25m. Beneath this lies a substantial, homogenous deposit of medieval/post-medieval demolition debris that appears to have been backfilled into a large, partially water-filled feature. The nature of the building materials represented indicate that this rubble may well have been derived from the nearby Augustinian Friary | |

| Borehole 2 (25m) | | |
|------------------|---|---|
| Methodology | Depth | Deposit |
| Machine-drilled | 0m-2.20m | Made ground (bore hole dug without archaeological attendance) |
| | 2.20m- | Natural sand and gravel |
| | 4.90m | Gault clay |
| Summary: | Bore hole dug without archaeological attendance | |

| Borehole 3 (25m) | | |
|------------------|---|---|
| Methodology | Depth | Deposit |
| Machine-drilled | 0m-1.90m | Made ground (bore hole dug without archaeological attendance) |
| | 1.90m-5.20m | Natural sand and gravel |
| | 5.20m | Gault clay |
| Summary: | Bore hole dug without archaeological attendance | |

Overall, as the above data and composite transect (Figure 3) make clear, the degree of archaeological survival at the site appears to be relatively high. The irregular depths of the various investigations indicate the presence of below-ground cut features such as pits and wells – one of which, encountered within Borehole 4, appears to contain a relatively substantial quantity of demolition debris that may have been derived from the nearby Augustinian Friary – overlying which a number of layers may also remain extant. The depth of the underlying Gault clay, at 4.50m-4.90m AOD, suggests that water-related features such as wells and tanks may have been of necessity over 5m deep, thereby aiding their survival. Modern truncation, primarily associated with the construction of the present standing buildings from the mid-19th century onwards, was also widely encountered. In general, the uppermost 1.0m-1.5m of the sequence appears to have been disturbed in this manner; certain areas, however, particularly in close proximity to standing buildings, are likely to be more heavily affected.

MATERIAL CULTURE

The only finds to be recovered comprised two fragments of glazed floor tile, weighing 172g, which were derived from the substantial rubble-filled feature encountered in Borehole 4 ([001]).

Although both were of a similar hard red fabric, two different glazes were present on these tile fragments. The smaller piece (9g) had a mottled brown glaze while the larger fragment (163g) bore the well-worn remnants of a dark green glaze. Neither showed traces of encaustic decoration, indicating that they are both most probably late medieval in date. Their context, in association with numerous fragments of building stone, mortar and Collyweston slate roof tile, suggests that they were derived from a building of some size and pretension (potentially the nearby Augustinian Friary).

DISCUSSION

Borehole data provides at best a very crude indication of the nature of archaeological deposits; little subtlety or nuance can be discerned. Consequently, aside from a strong indication of the presence of archaeological strata, little else can be determined of date and or extent of this material without further, more detailed investigation. The location of the current site within the medieval urban boundary of Cambridge, however, allied with its proximity to an Augustinian Friary (the grounds of which may have partially extended into the proposed development area), suggests that a relatively intensive array of features may potentially be encountered. This can be contrasted with the

adjacent area lying outside the King's Ditch, to the south and east of the medieval suburb, where a series of open fields were established (Hesse 2007).

Previous investigations conducted to the south of the David Attenborough Building (Newman 2016) and at the nearby McDonald Institute site (Gdaniec 1992), both located outside the ditch's circuit, have encountered only a limited number of dispersed features associated with this rural landscape. Within the Phase 3 development area, in contrast, it is likely that medieval and post-medieval activity was more intensive and potentially more urban in character. Whilst modern truncation is likely to have substantially impacted upon the upper 1.0m-1.5m of this sequence, and in isolated areas potentially much deeper, below this horizon preservation generally appears good. Even in areas of intensive truncation, such as cellars, the bases of deep features like wells are likely to remain at least partially extant.

In sum, the results of this monitoring project suggest that the pattern of relatively high archaeological survival previously identified to the north, in association with the Phase 2 North Range development area, also extends southwards into the Phase 3 zone. It is anticipated that archaeological deposits would potentially be encountered should works occur approximately 1.0m or deeper below the present ground surface in this area.

Acknowledgements

This project was commissioned by AECOM on behalf of the University of Cambridge in advance of Phase 3 of an extensive program of refurbishment. It was managed for the CAU by Alison Dickens and the fieldwork was conducted by Matt Wood and Richard Newman. The graphics for this report were prepared by Bryan Crossan. We are grateful to James Kitchin of AECOM and James French and his team from Soil Technics for their friendly and helpful assistance throughout.

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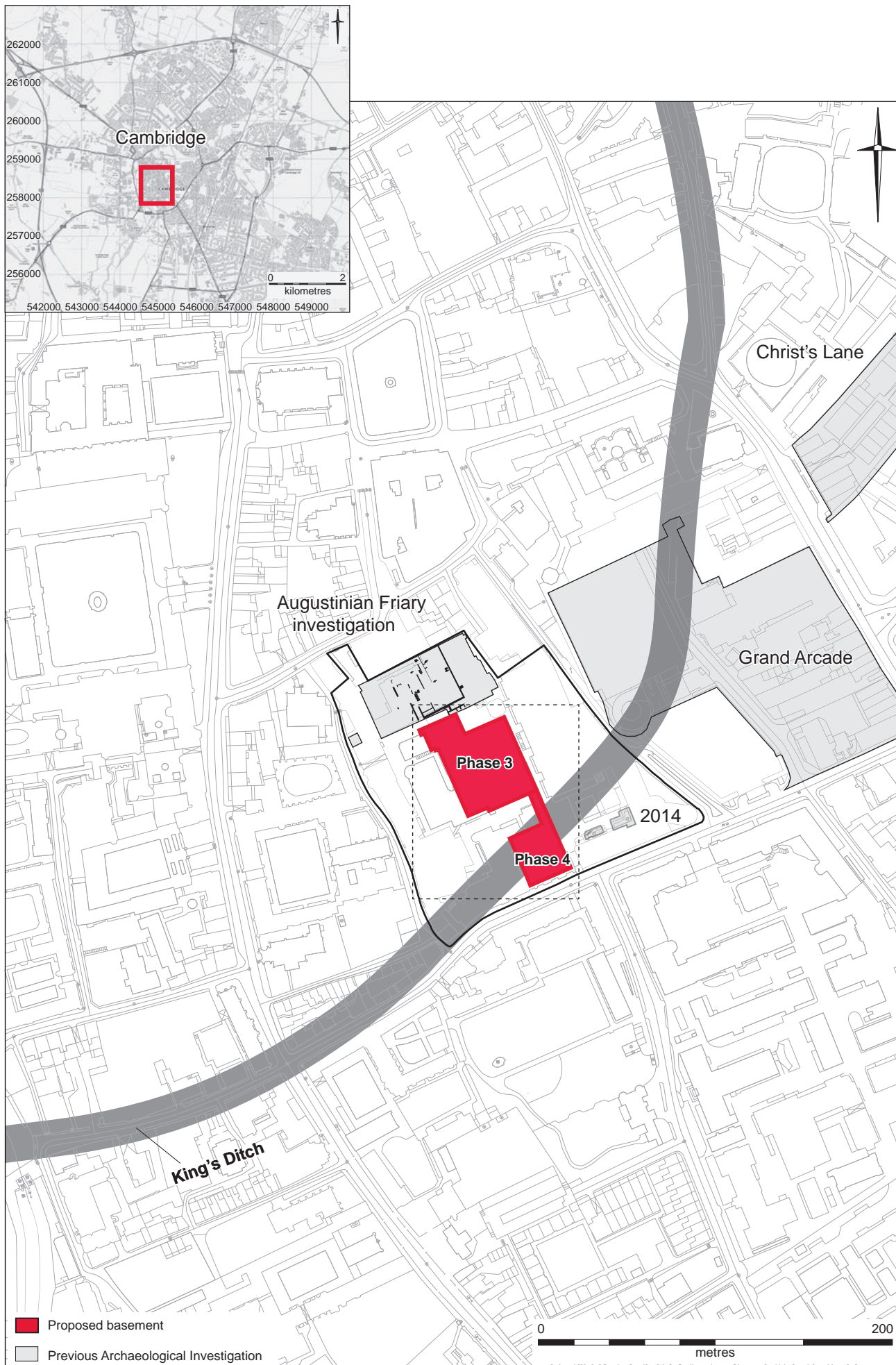


Figure 1. Site Location

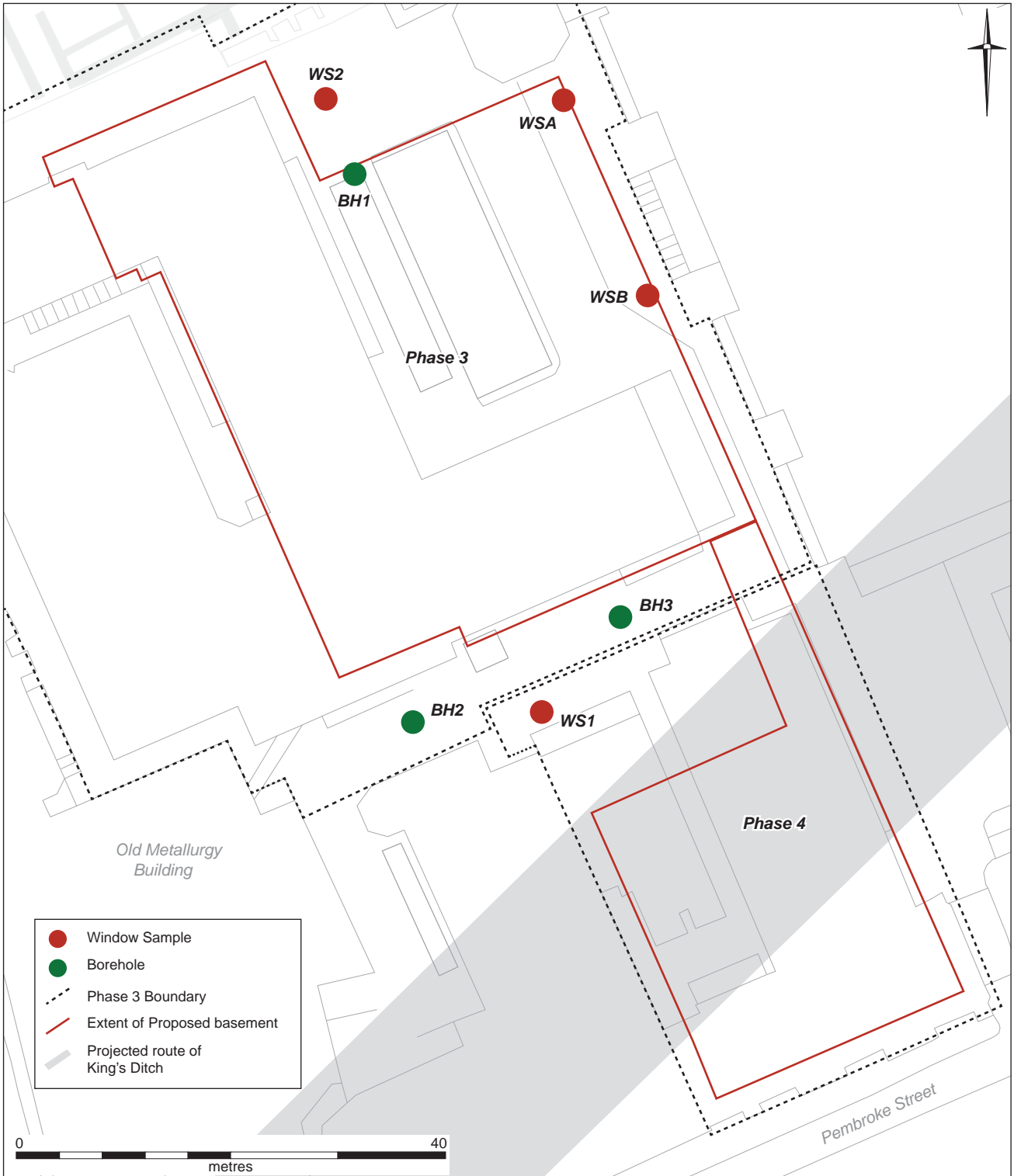


Figure 2. Location of monitored boreholes and window samples (as excavated) in relation to proposed Phase 3 and Phase 4 basements

NNW

SSE

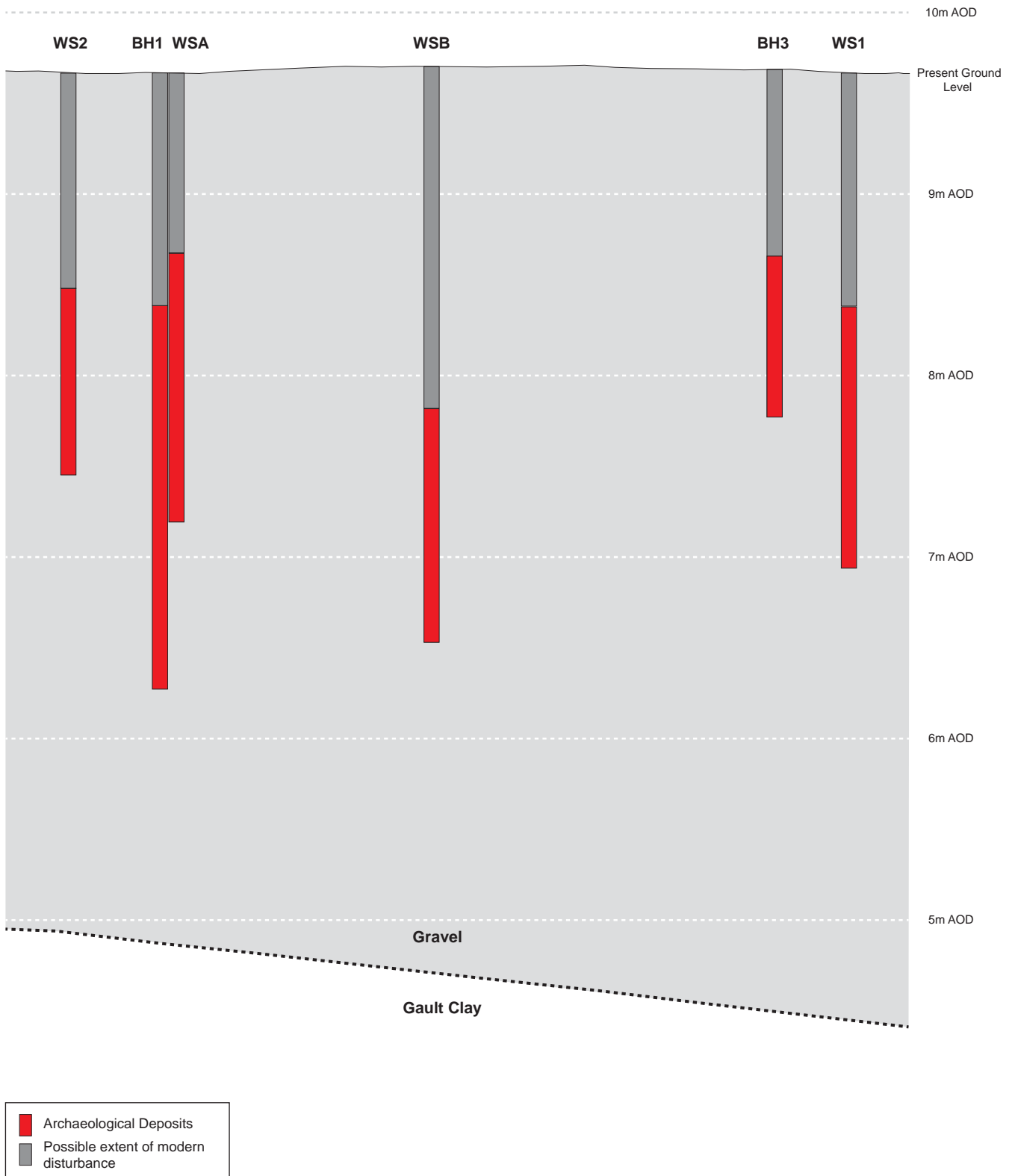


Figure 3. Composite north-south transect across proposed Phase 3 development area showing depth of archaeological deposits and potential extent of modern disturbance (exaggerated vertical scale @ 14:1)

OASIS FORM

| OASIS ID: cambridg3-264584 | |
|--|--|
| Project details | |
| Project name | Central Range, New Museums site, Cambridge |
| Short description of the project | Archaeological monitoring of four window samples and three boreholes was undertaken in advance of Phase 3 of redevelopment at the New Museums site, Cambridge. A range of archaeological deposits were encountered during the course of this work, including a substantial masonry rubble and mortar deposit that contained several fragments of glazed floor tile. This material is likely to have been derived from an adjacent Augustinian Friary that was partially excavated in the early 20th century. |
| Project dates | Start: 14-09-2016 End: 28-09-2016 |
| Previous/future work | Yes / Not known |
| Any associated project reference codes | ECB 4821 - HER event no. |
| Any associated project reference codes | CRN16 - Sitecode |
| Type of project | Recording project |
| Site status | Conservation Area |
| Current Land use | Other 2 - In use as a building |
| Monument type | PIT Uncertain |
| Significant Finds | GLAZED FLOOR TILE Medieval |
| Investigation type | "Watching Brief" |
| Prompt | Direction from Local Planning Authority - PPS |
| Project location | |
| Country | England |
| Site location | CAMBRIDGESHIRE CAMBRIDGE CAMBRIDGE Central Range, New Museums site, Cambridge |
| Postcode | CB2 3QH |
| Study area | 1 Square metres |
| Site coordinates | TL 4496 5825 52.202962351924 0.121496168077 52 12 10 N 000 07 17 E Point |
| Height OD / Depth | Min: 6.35m Max: 7.85m |
| Project creators | |
| Name of Organisation | Cambridge Archaeological Unit |
| Project brief originator | Local Authority Archaeologist and/or Planning Authority/advisory body |
| Project design originator | Alison Dickens |
| Project director/manager | Alison Dickens |
| Project supervisor | Richard Newman |
| Type of sponsor/funding body | Developer |

| | |
|-------------------------------|---|
| Name of sponsor/funding body | University of Cambridge |
| Project archives | |
| Physical Archive recipient | Cambridgeshire County Archaeology Store |
| Physical Archive ID | CRN16 |
| Physical Contents | "other" |
| Digital Archive recipient | Cambridgeshire County Archaeology Store |
| Digital Archive ID | CRN16 |
| Digital Contents | "Survey" |
| Digital Media available | "Survey" |
| Paper Archive recipient | Cambridgeshire County Archaeology Store |
| Paper Archive ID | CRN16 |
| Paper Contents | "other" |
| Paper Media available | "Plan", "Section" |
| Project bibliography | |
| Publication type | Grey literature (unpublished document/manuscript) |
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