Cotswold Archaeology

Avon Fire Authority HQ Site
Temple Back
Bristol

Archaeological Excavation and Watching Brief

for:
JLL

on behalf of:
Bruton (PCDF IV Bristol FS) LLP

CA Project: CR0508
CA Report: CR0508_1
OASIS ID: cotswold2-359245

May 2021

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LIST OF ILLUSTRATIONS

SUMMARY

Project name:	Avon Fire Authority HQ Site
Location:	Temple Back, Bristol
NGR:	359281 172841
Type:	Excavation
Date:	31 July–05 September 2019
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Between July and September 2019, Cotswold Archaeology carried out an archaeological excavation of land at Avon Fire Authority HQ Site, Temple Back, Bristol. An area of 210m^2 was excavated within the site. A further area was subject to an archaeological watching brief.

The earliest feature to be excavated was a 12th to 13th century ditch cutting into the natural alluvium. A wooden paddle recovered from the upper fill of the ditch was most probably used for paddling a small watercraft.

The local environment during the medieval period appears to be one of rough grassland/waste land with damp areas alongside and within the ditch and occasional flooding, resulting in the formation of several alluvial layers sealing the ditch. Subsequent activity, including a number of small pits and a medieval wall, indicate that the area had stabilised enough to be utilised, most likely as gardens to the rear of tenement plots fronting onto Temple Street.

Numerous post-medieval and modern structural remains indicate that the whole site underwent continual redevelopment throughout the 16th to 20th centuries, as settlement and industrial activity in this area of Redcliffe expanded rapidly.

This report represents a full account of the findings and will be made available to the public via the internet hosted on the Cotswold Archaeology website and via the OASIS project hosted by the Archaeology Data Service (ADS).

1. INTRODUCTION

1.1. Between July and September 2019, Cotswold Archaeology (CA) carried out an archaeological excavation of land at Avon Fire Authority HQ Site, Temple Back, Bristol (centred at NGR: 359281 172841; Fig. 1). This excavation was undertaken for JLL, who were acting on behalf of Bruton (PCDF IV Bristol FS) LLP.

1.2. Bristol City Council (BCC) granted outline planning permission for the demolition of existing buildings to facilitate mixed use office and residential development with associated vehicular access, amenity space, public realm works and landscaping (BCC planning ref: 19/01255/F). A heritage assessment (CA 2019a) and trial-trench evaluation (CA 2019b; Fig. 2) were undertaken to accompany the planning application.

1.3. Following consultation between CA and Peter Insole (Principal Historic Environment Officer, BCC) it was determined that two areas of the site required further archaeological mitigation. This took the form of an area of archaeological excavation undertaken in advance of the proposed development and demolition of the existing buildings; with a further area subject to archaeological watching brief during groundworks associated with the development (Fig. 2). The archaeological works were carried out in accordance with a Written Scheme of Investigation (WSI) prepared by CA (2019c) and approved by Peter Insole.

1.4. The excavation was also in line with *Standard and guidance for archaeological excavation* (CIfA 2014; updated October 2020), *Management of Research Projects in the Historic Environment (MoRPHE) PPN 3: Archaeological Excavation* (Historic England 2015) and *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England 2015).

The site

1.5. The development site is approximately 0.53ha in extent and was occupied by the now redundant AFA HQ building and associated areas of tarmac and hardstanding. The site is bounded to the south-east by a recently constructed Fire Station and areas of associated hardstanding and to the north-west, north-east and south-west by three roads (Counterslip, Temple Back and Temple Street respectively). The majority of the southern and eastern parts of the site were known to contain a basement associated with the former AFA HQ building (Fig. 2), the presence of which was likely to have substantially truncated any archaeological

features/deposits in these areas. The site lies at approximately 9m AOD at its eastern extent, with ground level sloping gently down to 8.5m AOD at its western edge.

1.6. The underlying bedrock geology of the area comprises Redcliffe Sandstone Member of the Triassic Period, overlain by superficial Tidal Flat Deposits – Clay and Silt of the Quaternary Period (BGS 2019). Compact mid grey-blue alluvial clay was identified in Trench 1 (Fig. 2) of the preceding archaeological evaluation at a depth of 2.15m below present ground level (bpgl) (CA 2019b), and in the excavation area of the current works at a depth of approximately 2.5m bpgl. The natural alluvial clays were not reached during the watching brief phase of the current works.

2. ARCHAEOLOGICAL BACKGROUND

2.1. The site was subject to a heritage assessment (CA 2019a) and archaeological trial-trench evaluation (CA 2019b). The following is a summary of information contained within these assessments, along with any publicly available information pertinent to the site.

Prehistoric

2.2. No remains of prehistoric date are recorded within the site or the wider study area. However, the site is located within the floodplain of the River Avon and the Bristol Urban Archaeological Assessment (Baker *et al*. 2018) notes the presence of thick waterlogged deposits overlying the bedrock within the wider study area. This process of alluviation appears to have continued until the establishment of significant settlement and the construction of barriers/river defences during the 10th century in Bristol city centre (to the north of the River Avon) and in the 12th century within the wider study area. Two of these deposits; the Avon Formation, laid down during the late Pleistocene and early Holocene periods, and the Wentlooge Formation (Alluvium 1 and 3), laid down from the beginning of the Holocene period, have proven to be archaeologically rich elsewhere (outside of the wider study area).

2.3. In 2014 a programme of monitoring was undertaken during geotechnical site investigation immediately to the south of the current site. Sandstone bedrock was overlain by approximately three metres of Devensian gravel deposits. Two units of the Wentlooge Formations (Alluvium 1 and Alluvium 3) were also present (CA 2014; Fig. 2). Natural mid grey-blue alluvial clay and a deposit representing a potential reworked alluvial deposit, which sealed archaeological features, were identified in

Trench 1 of the preceding evaluation undertaken on the current site at 1.9m bpgl (7.35m AOD) and 2.15m bpgl (7.1m AOD) respectively (CA 2019b; Fig. 2).

Medieval

2.4. A considerable amount of archaeological evidence dating to the medieval period has been recorded within the wider study area, although no remains of early medieval date have been identified. Archaeological excavations undertaken at the former Courage Brewery (approximately 65m to the north of the site) identified features and deposits dating from the 11th century through to the post-medieval period, including 12th to 14th century buildings (Jackson 2006). Recent archaeological excavations undertaken at Redcliff Street approximately 350m to the south-west of the site, identified evidence for the original 12th century establishment of the suburb of Redcliff, including drainage ditches and property divisions (OCA, forthcoming). The 15th-century Temple Church, located approximately 125m to the south of the current site, occupies the site of an earlier 12th century Knights Templar circular church, which was demolished in 1390.

2.5. A possible medieval, albeit artefactually undated, ditch was identified cutting the natural alluvium in Trench 1 of the preceding archaeological evaluation (CA 2019b). A wall, considered to be of potential medieval date by virtue of its construction, was also identified within this trench. Both features were encountered during the current works and determined to be of 12th to 13th century and 14th to 15th century date respectively.

2.6. During the archaeological evaluation undertaken to the south of the current site, a possible trampled or re-deposited layer interpreted as overlying undisturbed riverine alluvium was identified (CA 2014, Trenches 1 and 2, Fig. 2). This deposit contained 12th to 13th-century AD pottery within its upper levels and soil horizons overlying this deposit contained 12th to 15th-century AD pottery, suggesting an initially undeveloped area (perhaps utilised as gardens within tenement plots to the rear of medieval properties fronting Water Lane). A stone wall footing and subsequent wall rebuild, of possible 14th to 15th-century AD date, was also identified and broadly correlated with the rear wall of medieval and/or later properties depicted on Millerd's 1673 plan of Bristol fronting onto Water Lane (Fig. 3).

Post-medieval and modern

2.7. Archaeological evaluation to the south of the current site (CA 2014) identified the construction and periodic adaptation of residential and/or commercial buildings

during the post-medieval and modern periods, represented by brick foundations and flagstone flooring of late 18th or 19th-century or later date.

2.8. Probable post-medieval structural remains, including a number of walls and a possible kiln, were identified in Trench 1 of the preceding archaeological evaluation.

(CA 2019b). The construction of these structures indicated that they were of postmedieval date, and they may therefore relate to structures shown on mapping from the 17th century onwards; although none could be categorically attributed to a specific building.

2.9. Braun and Hogenberg's map of 1563 and Hoefnagle's map of 1581 show a block of houses occupying the western parts of the site fronting onto Temple Street, Counterslip and Bear Lane (which ran parallel and to the north of Water Lane until it was built over in the mid to late 20th century). The eastern part of the site is shown as being enclosed by garden walls and bounded by water. The original course of the River Avon is shown, and an inlet appears to create a wide area of, presumably, waterlogged ground between the riverbank and the easternmost side of the properties.

2.10. Millerd's plan of 1673 (Fig.3) and subsequent map of 1715 depict a similar arrangement of buildings occupying the site, although further development appears to have occurred within the site's eastern reaches, in part, due to the River Avon having been recut and formalised by this date. A row of buildings labelled as 'Dr White's Almshouses', originally constructed in 1613, are shown to the north of Bear Lane within the southern part of the proposed development area. A glass cone (a conical building relating to the glass industry designed to channel air into the glass furnace) is also depicted immediately to the north of the Almshouses on Millerd's map of 1715. However, the precise location of this structure remains unclear as it is shown outside of the current site boundary on other available historic mapping (e.g. Donne's map of 1773).

2.11. The northern part of the site appears to have become increasingly developed by the mid-18th century and the 1887 Goad Insurance Map identifies a large Pantechnicon warehouse (for the construction of carriages) and a public house within this part of the site. The character of the area remined largely unchanged until the post-war demolition and redevelopment of the mid to late 20th century, which included the construction of the Avon Fire Headquarters and radical alternation of the street

layout to the north of the site with the buildings being demolished and the current Counterslip being laid down approximately 100m south of its original location (CA 2019a).

3. AIMS AND OBJECTIVES

3.1. The general objectives of the archaeological excavation and watching brief were to:

- record the nature of the main stratigraphic units encountered;
- assess the overall presence, survival and potential of structural and industrial;
- remains; and
- assess the overall presence, survival, condition, and potential of artefactual and ecofactual remains.

3.2. The specific aims of the archaeological work were considered in light of the South West Archaeological Research Framework (Webster 2008) and Bristol Urban Archaeological Assessment (Baker *et al* 2018) and were to:

- RA 1: Recover artefactual evidence with which to date and interpret the activity taking place on the site;
- RA 2: Record any evidence of past settlement or other land use, including any *in situ* structural evidence for industrial or domestic activity taking place;
- RA 3: Sample and analyse any environmental remains encountered, to create a better understanding of past land use and economy that may have the potential to inform as to the nature of any domestic or industrial activity taking place;
- RA 4: Examine the archaeological and documentary evidence to elucidate the social profile and economic status of the local population, and to identify any industries or activities which may have been present on site, but which are not documented;
- RA 5: Re-examine the possible 'kiln' structure identified during the evaluation and, if possible using the archaeological and mapping evidence, determine whether this relates to the glass cone shown on Millerd's map of 1715 or other, potentially later, industrial activity;
- RA 6: Attempt to further attribute any post-medieval structures to specific buildings etc. shown on available historic mapping; and

- RA 7: Examine the development, over time, of the site from its initial (medieval?) occupation to the form assumed on the First Edition Ordnance Survey map.

4. METHODOLOGY

4.1. Two areas within the site were subject to archaeological mitigation (Fig. 2):

- Excavation Area (210m^2);
- Watching Brief Area.

4.2. The areas were located to investigate features recorded by the previous trial trench evaluation (see *Archaeological background*, above).

4.3. The excavation area was set out on OS National Grid co-ordinates using Leica GPS. Overburden was stripped from the excavation areas by a mechanical excavator fitted with a toothless grading bucket. All machining was conducted under archaeological supervision to the top of archaeologically significant horizons.

4.4. The watching brief comprised the observation by a competent archaeologist of all intrusive groundworks within the designated area. Non-archaeologically significant deposits were removed by the contractors under archaeological supervision.

4.5. Archaeological features/deposits were investigated, planned and recorded in accordance with *CA Technical Manual 1: Fieldwork Recording Manual* (2017).

4.6. Deposits were assessed for their palaeoenvironmental potential and samples were taken in accordance with *CA Technical Manual 2: The Taking and Processing of Environmental and Other Samples from Archaeological Sites* (2012).

4.7. Artefacts were processed in accordance with *CA Technical Manual 3: Treatment of Finds Immediately after Excavation* (1995).

4.8. CA will make arrangements with Bristol's Museums, Galleries and Archives (BRSMG:2019.7) for the deposition of the project archive and, subject to agreement with the legal landowner(s), the artefact collection. The archive will be prepared and deposited in accordance with *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (CIfA 2014; updated October 2020).

4.9. A summary of information from this project, as set out in Appendix 16, will be entered onto the OASIS online database of archaeological projects in Britain.

5. RESULTS

5.1. This section provides an overview of the excavation results. Detailed summaries of the recorded contexts are given in Appendix 1. Details of the artefactual material recovered from the site are given in Section 6 and Appendices 2–8. Details of the environmental samples (palaeoenvironmental evidence) are given in Section 7 and Appendices 9–15.

5.2. Artefactual dating evidence indicates that the majority of the archaeological activity on the site dates to the medieval and post-medieval periods. Stratigraphic analysis of the features indicates four main periods of activity:

- Geology
- Period 1: Medieval (12th to 13th century)
- Period 2: Medieval (14th to 15th century)
- Period 3: Early to Mid Post-medieval (16th to 17th century)
- Period 4: Late Post-Medieval to Modern (18th to 19th century)
- Modern

Geology

5.3. The natural Wentlooge Formation alluvial geology was encountered at a depth of approximately 2.5m bpgl within the excavation area and was represented on site as bands of pale blue grey and pale grey blue clay (recorded as 10022, 10067, 10095 and 10098). Seven sherds of mid 12th to mid 13th century pottery were recovered from 10022/10067, including a sherd of Ham Green glazed ware (Fig. 13, no. 2), along with fragments of animal bone, suggesting that the earliest activity in the area originated in this period and the material was trampled into the natural alluvium. Where encountered at the base of the Period 1 Ditch 10092, the natural alluvium contained occasional amorphous and dark plant material and was homogenous and fine textured, suggesting deposition in a low energy environment (Appendix 13).

5.4. The natural geology was not encountered during the watching brief to the south-east of the excavation area.

Period 1: Medieval - 12th to 13th century (Fig. 5)

5.5. The earliest activity on the site, identified in the excavation area, comprised a substantial ditch to the west of the original course of the River Avon, and a series of overlying alluvial layers interspersed with some small-scale pitting. The relative lack of artefactual material, and environmental indicators from within the ditch and the alluvial layers suggests the area was prone to flooding. A small quantity of mid 12th to mid-13th century pottery recovered from the alluvial layers indicates that the area was being utilised during this period, although it was not subject to the development seen in the wider Redcliffe and Temple areas (such as at the former Courage Brewery site (Jackson 2006) and at Redcliffe Street to the south-west (OCA, forthcoming), presumably owing to the unsuitability of the waterlogged ground. A substantial ditch, 10092 (Section AA, Fig.10 and Section BB, Fig.11), was identified cutting into the natural alluvium within the excavation area. The ditch was recorded during the preceding evaluation (CA 2019b) where it was interpreted as medieval, albeit artefactually undated. Ditch 10092 was aligned north-west/south-east and had a steeply sloped southwestern side and concave base where visible. The ditch was not fully excavated so the full profile is unknown, but it measured at least 5m in length and at least 3.9m in width, with a depth of 1.92m.

5.6. Ditch 10092, truncated the natural alluvium 10067 and contained four fairly sterile clay silt fills. A monolith sequence of the fills (monoliths 4-8, Appendix 13) identified that they formed in a waterlogged environment. A shallow dark grey brown and black basal deposit (10096) suggested the presence of stagnant or slowly moving water at the base of the ditch, and was overlain by 10097, a compact black organic rich clay silt measuring 0.66m in thickness. The character of this fill implied permanently waterlogged conditions and the presence of a high water table within the ditch. Five fragments of animal bone were recovered from fill 10097. Although no dating material was recovered from the ditch itself, the mid 12th to mid 13th century pottery that had been trampled into the upper layer of the natural alluvium 10067 indicates the ditch was probably cut during this period.

5.7. Environmental samples of the waterlogged material from fills 10096 and 10097 (samples 9 and 2 respectively) identified moderate to large quantities of uncharred seeds and a small number of bracken fragments. Many of the seeds came from plants that are common in the shallows along a river's edge or on the side of permanently wet ditches, such as bur-reed, sedge, clustered docks and sow-thistles. This component decreased up the sequence, suggesting that the

environment within ditch 10092 was initially wet in nature, and slowly became drier (Appendix 11). This interpretation was supported by the nature of the sediments within the monolith samples (Appendix 13) and diatom analysis which tentatively indicates that tidal influence was present through the depositional history of contexts 10096and 10097 (Appendix 15). Pollen assemblages from the fills included cereal pollen and taxa commonly associated with arable settings, which are likely to represent dumps of small-scale crop processing waste (Appendices 11 and 14). A few waterlogged timber fragments may hint that wood working or other wood-related activities took place in the vicinity of the ditch, but the recovered wood may reflect largely natural accumulations of material, rather than dumping (Appendix 12).

5.8. Fill 10097 was overlain by a shallow red brown and black clay silt (10093) which contained no artefactual material and was indicative of formation in stagnant or slow-moving water (Appendix 13). The upper fill, 10094, a pale blue grey compact silt clay, was approximately 1m thick and was noticeably more clayey and contained less organic material than the underlying fills. A fragmentary wooden paddle was recovered from this fill (Fig. 15), but the relative lack of artefactual material indicates the fill could represent an alluvial deposit caused by over-bank flooding of the River Avon. However, it is also possible that it represents a deliberate backfill of redeposited alluvial clay (Appendix 13).

5.9. The wooden paddle (Ra. 1) was made of oak and probably carved with an axe or adze, although no evidence of original tooling remains. The trapezoidal shape of the blade suggests the morphology of a paddle for waterborne propulsion and the presence of this item in a ditch approximately 50m south-west of the River Avon would appear to support this interpretation. Other interpretations are possible including processing food and fibres, cleaning clothes or use as a digging tool (Fig. 15; Appendix 10).

5.10. A series of deposits, identified on site as reworked alluvial layers, sealed the infilled Ditch 10092 (layers 10062/10087 and 10061) During the formation of this sequence, a pit (10072, Section AA, Fig. 10) was excavated at the north-eastern extent of the excavation area, partially truncating the upper fill of Ditch 10092. Pit 10072 was not fully exposed but measured at least 1.36m by at least 0.62m, with a depth of 0.26m. The pit contained two fills (10073 and 10074). An iron nail was recovered from fill 10074. Similar carpentry nails are common from the medieval

period although later dating is possible (Appendix 4). Monolith samples of the fills (monoliths 3 and 4, Appendix 13) identified the presence of mortar suggesting debris from building material that had been dumped or trampled in. Although utilised for building waste the original function of the pit is unclear. During excavation it was identified as a potential cess pit, and although no evidence of this was present in the monolith samples it could be that the properties are simply not evident (Appendix 13). At 0.26m in depth, pit 10072 is rather shallow for a deliberately cut cess pit, although that does not preclude the possibility of the dumping of cess material in a disused feature. The upper 'reworked alluvial layers' in the sequence (10062 and 10061) were characterised by relatively high quantity of cultural material, including occasional charcoal flakes, ceramic building material and lime mortar fragments which may indicate the dumping of waste material combined with natural filling by alluviation (monolith 3, Appendix 13). The increase in cultural material in the later layers (much of which may have derived from building work) suggests that residential settlement was expanding into the area immediately surrounding the site and the waterlogged area to the west of the River Avon was gradually being reclaimed.

5.11. Layer 10062 was subsequently overlain by a possible dump of waste or construction material which included occasional charcoal and ceramic building material fragments (10052). The latest alluvial layer in the sequence, 10061 (which did not extent as far south as 10062 so was not sealed by 10052) was truncated by a small pit (10082). Pit 10082 (Section BB, Fig. 11) was exposed in the trench edge so was not excavated but measured at least 0.7m in width and 0.18m in depth. It contained a single silty clay fill with frequent inclusions of charcoal, chalk, and small stones. No artefactual material was recovered from the pit. A further small pit identified in the trench edge (10075) truncated dumped material 10052 (Section BB, Fig. 11) and measured at least 0.5m in width by 0.08m in depth. Pit 10075 contained a single fill of friable black silty sand from which no finds were recovered . The function of both pits is unclear, although they are possibly associated with the potential reclamation and habitation of the surrounding area.

Period 2: Medieval - 14th to 15th century (Fig. 6)

5.12. The reclamation subsequently extended into the site itself. Following on from the small-scale activity seen in Period 1 the site was likely to have been incorporated into a residential plot, most likely as the rear of tenement properties fronting onto Temple Street. The construction of a substantial north-east/south-west wall and

several levelling deposits and cut features are associated with this phase of activity. A small number of 13th to 15th century pottery sherds recovered from the deposits indicate this occurred during the later part of the medieval period. The formation of alluvial layers associated with flooding episodes which characterised Period 1 appear to have ceased by the 14th to 15th centuries although it is possible that flooding may have still occurred on a smaller less frequent scale.

5.13. The earliest activity during this period was the deliberate deposition of several possible make-up or levelling layers (10029, 10049 and 10051), which may have served as bedding deposits for subsequent masonry. The deposits were typically silty clays with inclusions of mortar and charcoal, although they varied in colour from dark black brown to mid green brown and light pink brown. The deposits varied between 0.14m and 0.4m in depth. Pottery dating to the mid 13th to 15th century was recovered from 10029.

5.14. A construction cut (10020/10070) for Wall 10018/10068 (Section BB, Fig. 11, and Fig. 12) truncated levelling material 10029 and 10051 as well as the fill of Pit 10082. The wall extended north-east/south-west for at least 2.5m and was approximately 0.7m wide, surviving to a maximum height of 0.32m. Wall 10018/10068 was constructed from irregularly coursed roughly hewn sandstone blocks and was built onto foundation 10085/10069. The central stretch of the wall had been completely truncated away by the construction of Wall 10003 during Period 3. A small posthole or stakehole, 10078 (Section BB, Fig. 11) cut into the upper construction backfill 10081 and was potentially associated with the construction of the wall (i.e., for scaffolding). No dating evidence was recovered from any of the structural elements or construction backfills (10019, 10071, 10080, 10081, 10086 and 10089). The wall was encountered in Trench 1 during the preceding evaluation (Wall 1011, CA 2019b) where it was also undated but was interpreted as being of probable medieval date. The function of the wall is unclear but the lack of other structural features in the immediate vicinity may suggest it served as a rear tenement or garden boundary wall.

5.15. Other features dating to this period comprised a small rectangular pit of unclear function (10063) abutting the north-western face of Wall 10068 and a levelling layer (10029) which sealed an earlier levelling deposit 10028 and the upper backfill of the construction cut for Wall 10018. A fragment of a ceramic ridge tile and five sherds of mid 13th to 15th century pottery were recovered from this layer.

Period 3: Early to Mid Post-medieval – 16th to 17th century (Fig. 7)

5.16. Redevelopment appears to have occurred on the site during the early to middle post-medieval period, commencing with the above ground demolition of the Period 2 Wall 10018/1006, as evidenced by demolition deposit 10084 which sealed the wall and the associated levelling material 10058/10088. Structural remains and cut features attest to renewed building activity on the site. Although the pottery assemblage recovered from these features comprised material dating from the 11th to 15th centuries it is possible this is largely residual in nature. Cartographic sources form the 16th and 17th centuries (Braun and Hogenberg 1563, Hoefnagle 1581 and Millerd 1673) indicate that the area to the east of the site was becoming increasingly developed, and the replacement of the Period 2 structural remains with the activity seen during this phase most probably dates to the 16th and 17th centuries.

5.17. Wall 10003, in construction cut 10004, crossed the excavated area on a roughly north to south alignment and truncated the remnants of the earlier medieval Wall 10018/10068 (Section AA, Fig. 10 and Fig. 12). Wall 10003 measured at least 5.3m in length, 1.12m in width and survived to a height of 0.94m and eleven courses. The wall was constructed from irregular sandstone blocks bonded with lime mortar and potentially represented a rear plot boundary wall.

5.18. A north-east/south-west stone lined and capped drain 10050 (Section BB, Fig. 11) and two possible robber cuts, 10053 and 10056, targeting the Period 2 wall 10018/10068 were identified to the east of Wall 10003. Artefactual material recovered from the robber cuts comprised a small quantity of 11th to 13th century and mid 13th to 15th century pottery sherds that are likely to represent residual material originating from the earlier layers and deposits the robber cuts truncated. Fragments of slate roofing tiles were also recovered from the fill of robber cut 10053 (Appendix 5).

5.19. The north-eastern part of the site was sealed by shallow demolition rubble 10027, which also contained residual 11th to 15th century pottery, including a sherd from a Cotswold oolitic limestone-tempered ware vessel of 11th to 13th century date, which represents the earliest fabric identified on the site (Fig. 13, no. 1) and a sherd from a Bristol (Redcliff) glazed jug (Fig. 13, no. 3). It is unclear if this demolition material originated from structural remains just outside the site limits or if it was

dumped from the surrounding area. The demolition material appears to represent the latest activity on the site, prior to substantial redevelopment which occurred during the late post-medieval period.

Period 4: Late Post-Medieval to Modern - 18th to 19th century (Figs 8 and 9)

5.20. Substantial structural remains were identified across the excavation and watching brief areas. It is evident from cartographic sources (Millerd 1715, Rocque 1743, Donne 1817, Ashmead 1828 and 1855 and the first edition Ordnance Survey map) that the site was heavily developed from the mid-18th century onwards and was likely occupied by a mix of industrial and residential properties.

5.21. Features within the excavation area included a north-east/south-west stone-built wall 10008 and a brick and stone drain 10006/10007 on the same alignment slightly to the north of the wall (Section BB, Fig. 11). Wall 10008 measured at least 1.7m in length, 0.55m in width and 0.23m in depth, truncated the backfill of one of the Period 3 robber cuts and probably originally abutted the Period 3 wall 10003 although any relationship had been removed by a modern truncation. Wall 10003 continued to be used into the late post-medieval period and Wall 10008 may have served as a divisional wall at the rear of adjacent properties.

5.22. An unusual structure (10009) was identified abutting the corner between walls 10003 and 10008 and was interpreted as a possible coal scuttle/storage. Structure 10009 was rectangular with steep convex sides and a flat base and was constructed from limestone slabs and yellow bricks. It measured 2m in length and 1.16m in width and only survived to one course. A light yellowish brown sandy mortar 10035 potentially served as a floor surface to the structure and was overlain by an ash fill (10034). A copper alloy wire ring and a small button as well as a large fragment of whetstone and a possible glass counter were recovered from the fill. The function of the ring is unknown. The button was machine-made and dates no earlier than the mid 19th century (Appendix 4). The whetstone displayed evidence of use for sharpening and as a miniature anvil and is suggestive of industrial activity nearby (Appendix 5, Fig. 14).

5.23. No evidence for the possible kiln identified at the north-eastern extent of Trench 1 during the preceding evaluation (CA 2019b) was forthcoming and it appears probable that drain 10006/10007 and wall 10008 may have been interpreted as the structural elements of this kiln. Disturbed material from the possible coal

scuttle/store 10009, including ash fill 10034, may also have contributed to this initial interpretation.

5.24. Other features of this date included an oval pit of unclear function 10047 and a broadly north/south gully 10026 containing a charcoal rich fill. The gully was associated with a ceramic pot 10015 set within a pit 10014 that had been deliberately backfilled with clay to stabilise the pot. The position of the pot in relation to gully 10026 indicates it probably functioned as a water collection system. An environmental sample (sample 1) from the fill of the pot contained no charred plant remains or charcoal. A single fragment of mussel shell and two further marine shells recovered from the assemblage most likely originated from the River Avon during flooding events as opposed to representing a dump of shell, locally sourced to augment diet (Appendix 11). Artefactual material from the fill of the pot included pottery of late 18th to 19th century date (Appendix 2), a fragment of glass from a wine or spirits bottle of post-medieval/modern date (Appendix 7), and two joining fragments of wall plaster (Appendix 6).

5.25. A large number of structural features and deposits were identified within the watching brief area, the earliest of which, a dark black-brown clay silt 11020, appears to pre-date any construction and may represent a make-up or levelling deposit. The only certain continental import of post-medieval date (a rimsherd from a tankard in Frechen stoneware) was recovered from this deposit (Appendix 2).

5.26. An east/west cobbled path 11006, with a maximum width of 2.85m, was abutted by a broadly north/south aligned wall 11007/11012 constructed from roughly hewn limestone blocks bonded with a white lime mortar. Wall 11007/11012 measured 2.5m in length and 0.5m in width. Other walls comprised stone-built 11017 and 11029 and brick-built 11032 and 11042, the latter of which truncated a clay made-ground deposit (11043). Pottery from this deposit included a rimsherd of a possible Spanish coarseware vessel, in use from the 14th to 17th centuries and infrequently exported to Britain (Appendix 2, Fig. 13, no 4).

5.27. Also identified were a brick settling tank 11037, drain 11034 and a structure of unclear function constructed from unfrogged red bricks and small flagstones (11011). A light orange brown silt clay with abundant stone fragments (11022/11025) was identified as a potential cellar infill and as such may represent the latest activity during the 19th century, potentially extending into the 20th century.

Modern (Figs 8 and 9)

5.28. A large number of 20th century structural remains, including a flagstone floor surface and several drains, were identified across the excavation and watching brief areas. These remains were associated with the Period 4 properties which still occupied the site during the early part of the 20th century and indicate that they were still in use and being maintained. Early 20th century photographs show that the Temple area retained its Victorian character right up until the Second World War when bombing during the Blitz destroyed large parts of it (CA 2019a). Post-war demolition and building work included the construction of the AFA HQ building in the early 1970s and a number of associated deposits were recorded across the excavation and watching brief areas.

6. THE FINDS

6.1. Finds recovered are listed in the table below. Details are to be found in Appendices 2 to 8.

Type	Category	Count	Weight (g)
Pottery	All	60	1169
CBM		3	97
Painted wall plaster		2	293
Glass	All	5	38
Clay Tobacco Pipe		12	28
Metals	Iron	2	15
	Copper alloy	2	2
Stone	Objects	4	278

7. THE BIOLOGICAL EVIDENCE

7.1. Biological evidence recovered is listed in the table below. Details are to be found in Appendices 9 to 16. Material examined from the samples includes charred and waterlogged plant remains, marine shell, charcoal and waterlogged wood, pollen and diatoms

Type	Category	Count
Animal bone	Fragments	50
Wood	Object	1
Samples	Bulk Waterlogged Monoliths	1 2 6

8. DISCUSSION

8.1. The results of the excavation and watching brief and subsequent programmes of analysis have enabled the characterisation of the development and usage of the site throughout the medieval to modern periods.

Medieval (12th to 13th centuries)

8.2. The reclamation and colonisation of marshland to the south of the River Avon is known to have begun in the second quarter of the 12th century. The extra-mural suburbs (known as fees) of Temple, where the site is located, and the adjacent Redcliffe, were established on land granted to the Knights Templar by Robert Earl of Gloucester between 1128 and 1148, and in part of Robert Fitzharding's manor of Bedminster respectively (Baker *et al.* 2018). Previous archaeological investigations across the fees have identified that those areas of Redcliffe in closer proximity to the River Avon were the earliest parts to be developed (Davenport *et al*. 2011). Initial development within the Temple fee comprised the construction of the Temple Church and its preceptory, following which, Temple Street and its burgage plots were laid out (Baker *et al.* 2018). Excavations at Victoria Street, approximately 160m to the south-west of the site, showed that by the later 12th century, individual property boundaries close to the preceptor had begun to be defined (CA 2019a). The area between Temple Street and the original course of the River Avon (subsequently altered by the creation of the floating harbour in *c*. 1809), contains some of the thickest waterlogged natural deposits within Bristol, totalling approximately 8m in depth (Baker *et al.* 2018). Early cartographic sources (Braun and Hogenberg 1563, Hoefnagle 1581) depict an inlet to the west of the site, and a wide area of waterlogged ground in between the riverbank and the easternmost side of the Temple Street burgage plots was probably present throughout the preceding centuries.

8.3. Across both fees, evidence of early drainage of the floodplain, in an effort to prepare the burgage plots for occupation, was identified, including at 26–28 St Thomas Street (Watts 2011a) and at the Aspire site (Cook and Sworn, forthcoming) both approximately 300m to the south. Substantial administrative and property boundary 'Law Ditches' which ran to the rear of tenements fronting Redcliff Street and St Thomas Street, and St Thomas Street and Temple Street respectively, served as communal drainage ditches and were probably amongst some of the earliest attempts at draining the land. The burgage plots fronting onto the eastern

side of Temple Street would have extended towards the River Avon and it is tempting to assume that with no 'Law Ditch' demarcating the rear of the plots, an alternative boundary and drainage ditch may have been required. Substantial Ditch 10092 contained no dating evidence but truncated an alluvial layer (representing the trampled upper layer of the natural alluvium) from which a small quantity of mid 12th to mid-13th century pottery was recovered. The ditch was aligned north-west/south-east and was broadly parallel with Temple Street. The date, size and location of the ditch are compelling factors to suggest that it functioned as an early drainage and boundary feature between the rear of the Temple Street plots and the waterlogged floodplain to the west of the River Avon and its inlet.

8.4. The earliest detailed depiction of the inlet is Millerd's plan of 1673, although by this time it appeared to have been channelled and an adjacent slipway between the river and Water Lane constructed (Fig. 3; Dinwiddy *et al.* 2011, 111). By the time of his revised plan of 1715, it had become known as 'Dung Wharf', probably due to being infilled with domestic and/or industrial waste material (*ibid*, 82). The inlet has been identified during previous archaeological investigations approximately 150m to the south-east of the site (BaRAS 1999; Dinwiddy *et al.* 2011). Borehole profiling and hand excavation indicate it was a natural feature, with later remodelling by human intervention, and environmental evidence suggested a post-Bronze Age date for the formation of the basal sediments (Dinwiddy *et al.* 2011, 110).

8.5. The environmental profile of the fills within Ditch 10092 identified formation in a waterlogged environment, with the character of the lower fills implying permanently waterlogged conditions and the presence of a high water table and a tidal influence. The uncharred plant remains assemblage primarily derived from plants commonly situated on river edges or the side of permanently wet ditches. The environmental analysis suggested that due to the similarity in results from Ditch 10092 with the inlet, that it was likely to represent a continuation of this feature. However, evidence from the borehole survey (*ibid*) and contemporary cartographic sources indicate that the inlet remained in use until it was completely infilled and reclaimed during the late 17th to early 18th century, whereas on the current site, evidence of continued land use from the mid 12th to mid-13th century onwards was identified. Despite the similarity in environmental profiles, it is more likely that the ditch represented a formal boundary between the area of Temple undergoing development to the west, and the River Avon floodplain to the east. Additionally, the ditch had a drainage function and would have aided with the draining of the burgage plots on the eastern

side of Temple Street. A wooden paddle recovered from the upper fill of the ditch was possibly used with a small craft on the nearby river. Evidence that over-bank flooding of the river was likely to be responsible for the formation of this fill, coupled with a notable decrease in the presence of those plant remains indicative of a waterlogged environment, indicates that the site was slowly becoming drier.

8.6. The sequence of alluvial layers overlying the infilled ditch, attest to the fact that the area was still subject to flooding from the River Avon throughout the late 12th and 13th centuries, although this was probably episodic. Cultural material present in the latter part of this sequence, and a small number of discrete features of unclear function, indicate that as the land became drier it was beginning to be utilised, principally for the disposal of waste material associated with construction. Although there is no evidence for the source of this material, it is plausible that it originated from the vicinity of the site and suggests that as the floodplain retracted towards the river, the reclaimed land was being developed.

Medieval (14th to 15th centuries)

8.7. Development expanded into the site during the 14th to 15th centuries, when several levelling deposits were laid down and a substantial north-east/south-west wall 10018/10068 was constructed. The relative lack of other features (limited to a small pit of unclear function, 10063) and the distance of the wall from the Temple Street frontages would suggest it formed a rear plot boundary. Braun and Hogenberg's 1563 map depicts garden walls bounded by water occupying the area at the east of the site and it seems probable that Wall 10018/10068 represented an earlier iteration of one of these rear plot boundary walls.

8.8. Excavations at Finzel's Reach to the immediate north of the site identified that within the wider area properties were being constructed from stone by the 14th century (Ford *et al*. 2017, 38) and a building possibly of this date was identified approximately 40m to the south-west of the site during trenching in Temple Street in 1970 (Fowler 1972). There are no cartographic sources covering this period although the medieval burgage plots laid out during the 12th century were retained throughout successive centuries so the block of houses fronting onto Temple Street, Counterslip and Bear Lane depicted on 16th and 17th century mapping (Braun and Hogenberg 1563; Hoefnagle 1581 and Millerd 1673, Fig. 3) is likely to be a fairly accurate representation of the site during this period. It is unclear how much of the former floodplain to the east of the site had been reclaimed by this

time, although it is possible that development had yet to extend as far as that depicted on the later maps. Artefactual material from this period was limited to a small quantity of 13th to 15th century pottery and a fragment of a ceramic ridge tile. The pottery assemblage included a sherd from a Continental import (late 13th to early 14th century Saintonge ware from southwest France) although this was recovered from a make-up/levelling deposit so could well have originated from outside of the site.

Early to mid post-medieval (16th to 17th centuries)

8.9. Redevelopment appeared to occur on the site from the 16th century onwards, with the earlier wall being demolished and replaced by Wall 10003 on the same alignment as Temple Street. Other features dating to this period were limited and it is likely that the site was still occupied by the rear gardens of the burgage plots, with Wall 10003 representing a rear plot boundary.

8.10. From the late 16th century onwards there appears to have been some rebuilding of the earlier properties in parts of the city, including Redcliff (CA 2012). Possible evidence for such activity near the site was identified at 150 Temple Street, approximately 50m to the south-west where a late medieval property was found to have been altered in the 16th to 17th century (BaRAS 2003). At Nos. 10–22 Victoria Street approximately 100m to the west of the site the rebuilding of some medieval walls and alterations to others was identified (BaRAS 2009). Although Wall 10003 is likely to relate to the garden of a property, the rebuilding seen on the site appears to be broadly contemporary with the more substantial rebuilding phase seen across the wider area and it is feasible that such activity may have been occurring in the immediate vicinity of the site.

8.11. Dr White's Almshouses were constructed in 1613 on the northern side of Bear Lane (Fig. 3). The Almshouses were to provide housing, food and moral guidance in perpetuity, for ten poor 'brethren and sisters' and they remained in use until the 20th century, although the original buildings were demolished and rebuilt by 1826 (CA 2019a).

8.12. In contrast to his earlier map of 1673, Millerd's revised 1715 map depicts a glass cone situated just behind the Almshouses (although it is also depicted as being on the other side of Temple Street on other maps, such as Donne 1773 and Mathews 1815). It is not clear when the glass cone was constructed but its possible presence in the vicinity of the site by 1715 suggests that alongside the residential

redevelopment of the late 16th century onwards, the area was potentially becoming increasingly industrial. A large 17th century warehouse for the Venus glassworks was identified approximately 350m south-east of the site during excavations at the medieval Spicer's Almshouse (Williams 1988) and it possible that some buildings depicted on later mapping, may also have originally been constructed during the late 17th century when this area of Bristol underwent a rapid industrial development (Cook and Sworn, forthcoming).

Late post-medieval (18th to 19th centuries) and modern

8.13. The bulk of the remains encountered across the excavation and watching brief areas date to the 18th to 20th centuries and cartographic sources indicate that the site and the wider area were heavily developed from the mid-18th century onwards. By the time of Rocque's map of 1743, what was to become Temple Back had been laid out/formalised between the site and the River Avon and development appeared to extend all the way along the riverbank. Properties that were depicted on Millerd's plans of 1673 and 1715 as fronting onto the area of land to the east of the River Avon would now have fronted onto the more formalised street layout. The identified structural remains on the site included features such as drains, a coal store, a cobbled path, a flagstone surface, a settling tank, a gully and water collection system and deposits possibly representing the infilling of a cellar. The remains appear to be primarily of a domestic origin although could potentially also relate to small-scale industry in yard areas to the rear of industrial properties and warehouses. The earlier rear plot wall 10003 continued to be used into the 18th century and the area to the east was possibly sub-divided into two plots.

8.14. This activity may have been broadly contemporary with the development seen to the east on Temple Back. The 18th and 19th century buildings continued to be used into the 20th century and photographs show that the character of the area remained largely unchanged until the destruction caused by the Section World War bombing raids and the subsequent post-war demolition and redevelopment (CA 2019a).

8.15. During the preceding evaluation (CA 2019b) a possible kiln was identified at the north-eastern extent of Trench 1 (Fig. 2). Given its location and the uncertainty of the position of the glass cone first depicted on Millerd's plan of 1715 one of the project aims was to re-examine this structure and attempt to determine if it related to the glass cone. No evidence for the kiln was forthcoming and it appears probable

that the walls, drains, and coal store identified within the excavation area may have originally been misinterpreted as a possible kiln.

8.16. Whilst the remains uncovered on the site appear likely to be domestic in origin, evidence of industrial activity in the surrounding area has been identified in previous investigations (most notably at the former Courage Brewery and Sugar Refinery at the Finzel's Reach site to the north, Jackson 2006; OA 2009) and within the site itself from contemporary cartographic sources. Goad's Insurance Plan of 1887–1902, the earliest map to detail property usage, depicts warehouses of the London South Western Railway and Pantechnicon companies occupying the north of the site and a ham curing warehouse to the south of Bear Lane towards the southern limit of the site. The Almshouses, shops, a public house, and residential dwellings as well as yard spaces are also depicted across the site. The excavation area was located within a yard to the south of the Pantechnicon warehouse, although earlier plans (such as Ashmead's 1855 and 1874) indicate that the warehouse occupied several smaller buildings, potentially representing domestic dwellings. It is unclear which phase of use the uncovered remains are associated with, although based on the finds assemblage and lack of any identifiable industrial activity the former seems more likely. The watching brief area was located to the south of Bear Lane, adjacent to a narrow lane or yard known as Slee's Buildings and Slee's Court. The remains observed during the works are likely to relate to the properties to the south of the lane/yard which are denoted as dwellings on Goad's Insurance Plan.

8.17. Although the artefactual assemblage from the 18th to 20th centuries is fairly small, it is overwhelmingly domestic in nature, comprising pottery, a copper alloy button, clay tobacco pipe stems, painted wall plaster and glass items including a marble and a possible counter. A whetstone recovered from the fill of the coal store suggests industrial activity in the vicinity, although it is unclear if this item is medieval in date and has been redeposited in the later context. The limited size of the assemblage means that relatively few conclusions can be made about the socio-economic status of the inhabitants, although it is notable for its lack of high-status items and very small number of imported pottery vessels (only one sherd from a tankard in Frechen stoneware has been certainly dated to the post-medieval period). The animal bone assemblage included remains from the major domesticates across all periods but no evidence of butchery or any industrial processes was identified.

8.18. The material from the earlier periods indicates a similar low status throughout the preceding centuries. Much of this material was recovered from dumped deposits and levelling layers brought onto the site so the origins are unclear, although it probably derived from the surrounding area. The results of the programme of works suggest that this part of the Temple parish was predominantly a low-class working area, initially likely to be primarily residential but becoming increasingly industrial from the 18th century onwards.

9. CA PROJECT TEAM

9.1. Fieldwork was undertaken by Luke Brannlund, Sian Reynish and Daniel Sausins, assisted by Anthony Beechey, Gary Baddeley, Kinga Werner, Neus Esparza Nogues, Richard Scurr and Susan Walker. This report was written by Jessica Cook. The finds reports were written by Ed McSloy, Jacky Sommerville and Ruth Shaffrey. The biological evidence reports were written by Matilda Holmes, Emma Aitken, Sarah F Wyles, Sheila Boardman, Mike Bamforth, Dr Tom Hill, Dr Michael Grant and Agata Kowalska. The report illustrations were prepared by Amy Wright and Krissy Moore. The project archive has been compiled and prepared for deposition by Hazel O'Neill. The fieldwork was managed for CA by Steve Sheldon and the post-excavation by Mary Alexander.

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APPENDIX 1: CONTEXT DESCRIPTIONS

Context No.	Type	Fill of	Interpretation	Description	Period	Spot-date
10000	layer		External surface	Tarmac Layer. Overlies pink grey hardcore as seen in trench 2. 0.12m thick. Modern	modern	
10001	layer		Make-up/levelling	Modern hardcore levelling. Pink grey. Underneath 10000	modern	
10002				VOID		
10003	masonry		Wall/pier/postpad/steps etc	Post medieval wall. Stone and lime mortar. Irregular size of materials, regular courses. NE-SW direction of faces. Light pinkish yellow lime mortar. Length 5.3m, width 1.12m, height 0.94m	3	
10004	cut		Wall/pier/postpad/steps etc	Construction cut of wall 10003. Linear shape, squared corners, vertical sides. Flat base. NW-SE orientation. 5.3m long, 1.12m wide, 0.94m deep.	3	
10005	deposit		Make-up/levelling	Make up layer. Dark grey to black silty clay matrix. Frequent flecks of charcoal, brick dust and mortar. Possibly part of kiln structure. 2m long, 0.6m thick	modern	
10006	masonry		Structural cut	Drain constructed in cut. Brick stone mortar materials. Regular finish, English brick bond. NE-SW orientation. Light grey bonding with charcoal flecks. 1.7m long, 0.76m wide, 0.2m deep	4	
10007	masonry		Structural cut	Same as 10006 1.7m long, 0.76m wide, 0.2m deep	4	
10008	masonry		Wall/pier/postpad/steps etc	Wall. Stone and lime mortar. Irregular size of materials. Regular courses. NW-SE orientation. Light Lomite (sp) cream lime mortar. 1.7m long,, 0.55m wide, 0.23m deep.	4	
10009	masonry		Wall/pier/postpad/steps etc	Unusual structure which would have butted the corner between stone walls 10003 and 1008. Back garden wall? Limestone slabs or blocks and yellow brick. 1 course survives. External face to the NE. Mid grey ash mortar.	4	
10010				VOID		
10011	masonry		Structural cut	Brick built manhole within drain cut. Brick and cement, regular courses, N-S-E-W direction of face. Grey cement. 0.94m long, 0.7m wide	modern	
10012	deposit		Make-up/levelling	Mixed make up layer. Light grey brown, yellow tinge. Sand mortar with mid grey ash mortar. Inclusions- rubble, cbm and occasional charcoal. 1.4m long, 1.08m wide, 0.02m deep	modern	MC16-C18
10013	fill		Destruction debris	Fill of possible bomb crater. Dark brown black clay silt and building rubble including limestone fragments, brick and mortar. 4m long, 2m wide, 0.4m deep. Could be rubble created by explosions, or deliberate backfill and consolidation post WW2	modern	Modern
10014	cut		pot	Cut for fitting pot 10015. Irregular shape- circular on top and squared on the base. Rounded corners, steep sides and flat base. 1.2m long, 1.8m wide, 0.56m deep. Contemporary with 10026 gully pipe- collect water?	4	
10015	fill		pot	Pot with unknown function. Orange pottery. Fitted in with 10014 rubble 10016 clay layer. Gully leads to it, possibly used as a collection system.	4	
10016	fill	10014	pot	Layer of clay intentional backfill to stabilise the pot. Clay lining of pit. Light greenish grey with a yellow hue. Silty clay with moderate inclusions of charcoal. 0.13m wide, 0.36m deep.	4	
10017				VOID		
10018	masonry		Wall/pier/postpad/steps etc	Rough hewn limestone blocks arranged in irregular courses. NW-Se direction of faces.	2	

Context No.	Type	Fill of	Interpretation	Description	Period	Spot-date
				Red silt sand mortar. 0.74m wide, 0.3m deep		
10019	fill	10020	Wall/pier/postpad/steps etc	Reworked alluvial fill of construction cut containing medieval wall 10018. Mid brown silt clay with inclusions of common stones. 2m long, 1m wide, 0.68m deep	2	
10020	cut		Wall/pier/postpad/steps etc	Construction cut for wall 10018. Linear with steep concave sides and flat base. NE-SW orientation. 2m long, 1m wide, 0.68m deep	2	
10021				VOID		
10022	deposit		alluvium	bands of alluvium. Mid-light brown with reddish-orange mottling and yellow grey hue and mid-light bigeye (sp). Silty clay. Occasional stone inclusions and manganese staining. 3m long, 2.5m wide, 0.64m deep	1	MC12-MC13
10023				VOID		
10024				VOID		
10025	fill	10026	Ditch/other linear	Gully. Yellowish grey clay with inclusions of charcoal. 0.5m long, 0.16m wide. Possible clay lining of pit 10014	4	
10026	cut		Ditch/other linear	Cut of gully. Linear shape, steep sides, concave base. 0.5m long, 0.16m wide. Contemporary with the cut for pot 10014	4	
10027	deposit		Destruction debris	Compacted layer of demolition rubble. Dark brown grey ash rubble silt. Rubble (brick stone). 2.5m long, 4m wide, 0.2m deep.	3	MC13-C15
10028	layer		Make-up/levelling	Make up or levelling deposit truncated by bomb crater. Mid orange brown silt clay with common inclusions of stone fragments and mortar. 2m long, 1m wide, 0.2m deep	2	MC13-C15
10029	deposit		Make-up/levelling	Medieval make up deposit/levelling layer. Dark black brown clay with stone fragments and mortar. 1.2m long, 0.4m deep.	2	MC14-C15
10030	cut		bomb	Cut feature possibly created by bomb during WW2. Possibly sub circular with concave sides and base. 2m wide, 0.4m deep	modern	
10031	fill	10014	pot	Backfill from demolition layer or surroundings into the pot .Dark brown (nearly black) silty sand with frequent inclusions of stone rubble from demolition layer and degraded plaster. 0.53m wide, 0.26m deep	modern	LC18-C19
10032	cut		Structural cut	Cut of modern drain. Linear, with vertical sides, flat base. NE-SW orientation. 2.5m long, 0.7m wide, 0.6m deep	modern	
10033	fill	10032	Structural cut	Fill of drain. Dark black brown silt clay with abundant building rubble. 2.5m long, 0.7m wide, 0.6m deep	modern	
10034	deposit		Disuse deposit	Small ash deposit in filling structure 10009 over possible surface 10035. Possibly laid down before or after demolition of the building. Possible use/disuse of possible coal store. Light grey ash. 0.74m long, 0.28m wide, 0.07m deep	4	
10035	deposit	10036	Floor	Light yellowish brown sand mortar mixed with black silty deposits. Occasional inclusions of stones. Possible floor surface of coal scuttle/storage.	4	
10036	cut		Structural cut	Construction cut for structure 10009. Possible coal scuttle/storage. Rectangular shape with steep convex sides and flat base. NW-SE orientation. 2.01m long, 1.16m wide, 0.22m deep.	4	
10037	fill	10036	Structural cut	Construction cut backfill. Mixed black soot, green clay, dark brown grey, silty clay, re d brick rubble. 2.01m long, 1.16m wide, 0.11m deep	4	
10038	cut		Structural cut	Construction cut for drain. Linear shape, vertical sides, flat base, NE-SW orientation. 1.7m long, 0.76m wide, 0.2m deep.	4	
10039	cut		Pit	Rectangular cut of possible trial pit truncating	modern	

Context No.	Type	Fill of	Interpretation	Description	Period	Spot-date
				earlier features. Modern truncation. Post WW2 but pre fire station. 1.2m long, 0.7m wide, 0.45m deep		
10040	fill	10039	Pit	Fill of post WW2 demo/pre fire station pit. Modern truncation. Dark black brown clay silt. Common inclusions of angular stone fragments. 1.2m long, 0.7m wide, 0.45m deep	modern	
10041	deposit		Dump	Deposit of black soot. Possible dump deposit. Dark brownish black soot with occasional sub angular stone. 0.9m long, 0.75m wide, 0.12m deep	4	
10042	fill	10065	Structural cut	Backfill of drain cut. Mid pinkish brown sandy clay with rubble inclusions. 1.03m long, 1.08m wide, 0.09m deep	3	
10043	fill	10036	Structural cut	Fill of construction cut. Dark greyish brown silty sand with mortar inclusions. 0.25m long, 0.18m wide, 0.03m deep. Possible trample or levelling for floor for coal scuttle/store	4	
10044				VOID		
10045	fill	10047	Pit	2nd fill of pit. Dark grey brown silt clay. Inclusions of CBM, charcoal, sub ang limestone fragments. Deliberate backfill. 0.98m long, 1m wide, 0.16m deep	4	
10046	fill	10047	Pit	1st fill of pit. Mid grey brown silty clay with inclusions of small cbm fragments and frequent charcoal.	4	
10047	cut		Pit	Cut of pit. Oval shape, steep sides, flattish base. NE-SW orientation. 0.98m long, 1m wide, 0.3m deep	4	
10048	fill	10050	Structural cut	Fill of stone drain. Mis brown with orange hue. Silty clay. Very rare inclusions of charcoal. Natural silting. 2.23m long, 0.33m wide, 0.11m deep	3	
10049	deposit		Make-up/levelling	Possible make up/levelling layer prior to construction of medieval walls. Light pinkish brown silt clay with very rare inclusions of charcoal. 0.45m long, 0.31m wide 0.2m deep	2	
10050	masonry	10065	Drain	Stone lined drain running alongside medieval wall. Limestone. NE-SW orientation. 2.2m long, 0.63m wide, 0.39m deep.	3	
10051	deposit		Make-up/levelling	Mid green brown silt clay. Inclusions of small lime mortar and charcoal. 1.54m wide, 0.14m deep	2	
10052	deposit		Unknown/unspecified	Possible deliberate deposition of unknown function. Pale greenish grey, silty clay. Occasional inclusions of charcoal and small CBM fragments.2.3m long, 2.2m wide, 0.16m deep	1	
10053	cut		Pit	Cut of pit. Sub rectangular shape with rounded corners, convex sides and flat base. NE-SW orientation. 1.15m long, 1m wide, 0.34m deep.	3	
10054	fill	10053	robber cut	Single fill of possible robber cut. Backfill. Mid brown red, mix of limestone rubble within silty clay matrix. Occasional ash/charcoal inclusions. 1.15m long, 1m wide, 0.34m deep	3	MC13-C15
10055				Number not used		
10056	cut		Pit	Sub rectangular in shape, concave sides. 1.86m long, 0.4m wide, 0.72m deep.	3	MC13-C15
10057	fill	10056	robber cut	Single fill of possible robber cut. Mid grey brown clay silt. Frequent charcoal inclusions, limestone, cbm and mortar flecks. 1.86m long, 0.4m wide, 0.72m deep	3	
10058	layer		Make-up/levelling	Levelling the group. Dark greenish grey sandy clay. Frequent stones, charcoal and cbm inclusions. 1.7m long, 1.12m wide, 0.25m deep	3	
10059				VOID		
10060				VOID		
10061	layer		alluvial	reworked alluvial. Dark yellowish grey clay with	1	

Context No.	Type	Fill of	Interpretation	Description	Period	Spot-date
				rare inclusions of stones and cbm, frequent inclusions of charcoal and occasional inclusions of wood. 1.7m long, 0.26m deep.		
10062	layer		alluvial	reworked alluvial. Mid blueish grey clay with rare inclusions of charcoal. 1.7m long, 1.6m wide, 0.27m deep	1	
10063	cut		Pit	Cut of pit. Sub rectangular shape, rounded corners, concave steep sides and flat base. 0.87m long, 0.47m wide, 0.16m deep	2	
10064	fill	10063	Pit	Single fill. Mid grey-brown silty clay with occasional inclusions of charcoal. 0.87m long, 0.47m wide, 0.16m deep	2	
10065	cut		Structural cut	Cut of drain. Linear shape, angular corners, steep sides, flat base. NE-SW orientation. 1.7m long, 0.84m wide, 0.66m deep	3	
10066				VOID		
10067	deposit		alluvium	Alluvium deposit. Alternating bands of mid pinkish/greyish brown and mid bluey grey clay. 1.76m long, 0.6m wide, 0.4m deep	1	MC12-MC13
10068	masonry	10070	Wall/pier/postpad/steps etc	Medieval wall. Limestone roughly squared. 1.7m long, 0.7m wide, 0.32m deep	2	
10069	masonry	10070	Wall/pier/postpad/steps etc	Foundation of wall, Limestone, roughly squared. SE direction of faces	2	
10070	cut		Wall/pier/postpad/steps etc	Construction cut for wall. Linear, vertical sides, flat base. NE-SW orientation. 1.7m long, 1.6m wide, 0.9m deep	2	
10071	fill	10070	Wall/pier/postpad/steps etc	Backfill of construction cut for wall. Mid blue brown silty clay with rare inclusions of charcoal. 1.7m long, 0.62m wide, 0.36m deep	2	
10072	cut		Pit	Cut of pit. Possible circular or subcircular shape. Rounded corners, gradual sides, flat-concave base. 0.62m long, 1.36m wide, 0.26m deep	1	
10073	fill	10072	Pit	1st fill of pit. Dark greenish grey/blue silty clay. 1.36m long, 0.4m wide, 0.12m deep	1	
10074	fill	10072	Pit	2nd fill of pit. Dark grey green. Silt clay. Cess deposit. 1.2m long, 0.4m wide, 0.14m deep	1	
10075	cut		Pit	Gradual sides, concave base. 0.5m wide, 0.08m deep.	1	
10076	fill	10075	Pit	Single fill of pit. Black silty sand. 0.5m wide, 0.08m deep	1	
10077				VOID		
10078	cut		Posthole	Cut of possible posthole/stakehole. Circular in section, vertical sides, V shaped base. 0.22m wide, 0.38m deep.	2	
10079	fill	10078	Posthole	Single fill of possible posthole. Pale green brown clay silt. Inclusions of charcoal and small sub angular limestone. 0.22m wide, 0.38m deep	2	
10080	fill	10070	Structural cut	1st Deliberate backfill of construction cut. Dark grey brown silty clay. Very rare inclusions of charcoal. 1.7m long, 0.91m wide, 0.23m deep	2	
10081	fill	10070	Structural cut	2nd fill of construction cut. Mid green grey silty cla with charcoal and angular limestone fragment inclusions. 1.7m long, 0.92m wide, 0.45m deep	2	
10082	cut		Pit	Cut of possible pit. Gradual sides, concave base. 0.7m wide, 0.18m deep	1	
10083	fill	10082	Pit	Single fill of pit. Mid yellowish green silty clay with frequent inclusions of flecks of charcoal, chalk and small stones. 0.7m wide, 0.18m deep. Natural infill	1	
10084	deposit		Make-up/levelling	Mid brown silty clay and rubble. 0.46m wide, 0.3m deep	3	
10085	masonry	10020	Wall/pier/postpad/steps etc	Foundations of wall 10018. Limestone, roughly squared. 2.3m long, 0.75m wide, 0.52m deep. SE direction of face.	2	
10086	fill	10070	Structural cut	1st fill of construction cut. Mid greenish brown silty clay.	2	

Context No.	Type	Fill of	Interpretation	Description	Period	Spot-date
10087	deposit		allluvial	Possible alluvial/ reworked alluvial layer. Same as 10062	1	
10088	deposit		Make-up/levelling	same as 10058	3	
10089	fill	10020	Structural cut	1st fill of construction cut. Mid yellowish greenish brown silty clay. 2.15m long, 0.5m wide, 0.9m deep.	2	
10090	cut		Unknown/unspecified	Modern truncation cutting fills 10093, 10094 from ditch 10092. Also cuts post med make up layer 10028. Not fully excavated. 0.7m wide, 0.55m deep	modern	
10091	fill	10090	Unknown/unspecified	Mix of colours and materials. Backfilled. 0.7m wide, 0.55m deep		
10093	fill	10092	Ditch/other linear	3rd t fill of ditch. Black clay. 2.6m long, 1.72m wide, 0.16m deep	1	
10094	fill	10092	Ditch/other linear	4th and upper fill of ditch. Pale blueish grey clay. Natural infill. 5.2m long, 3.9m wide, 0.98m deep	1	
10095	deposit		alluvial	Natural deposition of alluvial creating bands of pale greyish blue and pale blueish grey. Rare inclusions of charcoal. 3.31m long, 1.3m wide, 1.52m deep	geology	
10096	fill	10092	Ditch/other linear	1st fill of ditch. Dark grey with bands of black, mid grey and brown. Clay. Alluvial.	1	
10097	fill	10092	Ditch/other linear	2nd fill of ditch. Black clay with inclusions of twigs and branches and occasional sub angular limestone. 2.6m long, 1.36m wide, 0.66m deep. Natural infill from alluvial deposits	1	
10098	deposit		alluvial	pale brownish grey clay. 0.8m long, 0.86m wide, 0.34m deep	geology	
11000	layer		External surface	Tarmac 0.1m thick	modern	
11001	layer		Consolidation	Consolidation layer. Type I gravel. 0.23m	modern	
11002				Number not used		
11003	layer		Demolition	Mixed black soil (sandy silt) with abundant brick and stone fragments. 0.7m	modern	
11004	layer		Unknown/unspecified	Dark clayey silt brown black seen in SW corner of WB area only. 0.07m	modern	
11005	layer		Unknown/unspecified	Mid white-grey lime mortar and limestone fragment crush. 0.01m	modern	
11006	structure		pathway	Cobbled pathway. Aligned broadly E/W. single course of cobble stones placed N/S. No bonding natural with edging along southern and northern sides. Well worn. Covered by 11005. Butted by 11018. 2.85m wide at max.	4	
11007	structure		Wall/pier/postpad/steps etc	Wall. Aligned broadly N/S. At least 3 courses of roughly hewn limestone blocks with a white lime mortar. Sam wall as 11012. 2.5m long x 0.5m wide	4	
11008	cut		Wall/pier/postpad/steps etc	Construction cut containing wall 11007 and 11012. Unexcavated. Length 2.2m x width 0.23	4	
11009	fill	11008	Wall/pier/postpad/steps etc	Fill of construction cut. Mid-dull white grey gritty sand silt with abundant limestone flecking. Length 2.2m x width 0.23	4	
11010	deposit		Unknown/unspecified	Dark blackish grey-brown with mortar (limestone) flecking throughout. Unexcavated. 2.05m long, 1.27m wide	modern	
11011	structure		brick & flagstones	Unfrogged red brick and small flagstones. Heavily truncated surface sealing backfill of wall 11012. Construction cut. Length 1.2m x width 1.15m	4	
11012	structure		Wall/pier/postpad/steps etc	Wall. Same as 11007 with red brick and some tile within the construction. Broadly aligned E/W with eastern end turning towards the north. 2.8m long, 0.6m wide, 0.3m deep	4	
11013	structure		Wall/pier/postpad/steps etc	Modern. Red brick post-pad? Pillar base? 0.8m long, 0.8m wide	modern	
11014	fill	11015	construction	Backfill of construction cut. \mid grey brown	modern	

Context No.	Type	Fill of	Interpretation	Description	Period	Spot-date
				gritty sandy silt		
11015	cut		construction	sub rectangular in plan. Not excavated	modern	
11016	wall	11024	Wall/pier/postpad/steps etc	Wall. Broadly aligned E/W. poorly constructed from irregular courses of unhewn limestone slabs and pink-orange mortar. Evidence of repair to southern face with white lime mortar.	modern	
11017	structure		Wall/pier/postpad/steps etc	Wall? Broadly aligned N/S only western face identified. Possibly as retaining wall. Single course visible of unhewn sandstone? No construction cut identified	4	
11018	deposit		Destruction debris	Demolition disturbance. Loose mid grey silty clay with abundant stone and CBM rubble	4	LC16-LC19
11019	deposit		Floor	Compact white lime mortar with occasional cobbles. Likely represents heavily disturbed (by demolition) floor surface and bedding lateral bordered by 11017 to west.	modern	
11020	deposit		Pre-building soil	Pre building soil? Dark brown-black clayey silt	4	MC16-C17
11021	cut		Unknown/unspecified	Modern irregular cut	modern	
11022	deposit		Unknown/unspecified	Light orange brown silt clay with abundance stone fragments. Possible cellar backfill prior to demolition? Unexcavated	4	
11023	cut		Wall/pier/postpad/steps etc	Construction cut for 11016- unexcavated	modern	
11024	fill	11023	Wall/pier/postpad/steps etc	Mid-dark white-grey silty sand	modern	
11025	deposit		Unknown/unspecified	Same as 11022?	4	
11026	cut		Wall/pier/postpad/steps etc	Construction cut for basement wall	modern	
11027	fill	11026		Modern brick and stone rubble	modern	
11028	cut		Wall/pier/postpad/steps etc	Construction cut. Unexcavated	modern	
11029	structure		Wall/pier/postpad/steps etc	Wall. Aligned broadly N/S. Constructed from at least four courses of limestone, unhewn blocks with off white lime mortar	4	
11030	structure		Floor	Flag floor same as Eval tr 3. 4.8m x2.1mx0.05m	modern	
11031	deposit		Floor	Base for floor 11030	modern	C19-C20
11032	structure		Wall/pier/postpad/steps etc	Wall aligned N/S. Brick face on W side. 1.7m x 0.56m	4	
11033	deposit		Unknown/unspecified	Dark brown black silty clay. 1.7m x0.6m	modern	
11034	structure		Drain	Drain 0.6m x0.3m	4	
11035	fill	11021	Tree hole/bowl	Mixed modern natural. Grey silt and rubble	modern	
11036	fill	11028	construction	Mid white grey gritty silt	modern	
11037	structure		settling tank	Brick built settling tank. Under 11031. 1.8mx1.8m	4	
11038	cut		settling tank	Construction cut for settling tank. Yellow unfrogged bricks with grey mortar, heavily flecked with -(cant read)-	4	
11039	fill	11037	settling tank	Dark brown-black sandy silt	modern	MC18-LC18
11040	deposit		Destruction debris	Under 11031. Cut by 11038. Orange-red gritty brick rubble. Building demolition from previous phase?	modern	
11041	deposit		Unknown/unspecified	Mid blackish brown sandy silt clay	modern	C18-C19
11042	structure		Wall/pier/postpad/steps etc	Wall. Brick built. Length 3.2m, width 0.6m	4	
11043	deposit			Heavily truncated clay made ground, cut by 11042	4	Post-medieval

APPENDIX 2: POTTERY

By Jacky Sommerville

A small assemblage of 60 sherds (1169g) was recovered from the hand-excavation of 13 separate deposits and as unstratified finds, and from the bulk soil sampling of one deposit. The majority (42 sherds) was retrieved from layers (demolition, bedding, make-up/levelling and alluvium). The pottery was sorted by fabric (within context), and quantified according to sherd count/weight and rim EVEs. Vessel form/rim morphology was recorded, where identifiable. The fabric coding system used has been adapted from the Bristol pottery type series (in Ponsford 1988; Ponsford 1998). The simplified coding system is based on recommendations made by Alan Vince for the amalgamation of duplicate fabric types (Vince 2004).

Medieval

A total of 33 sherds (476g) of medieval pottery was retrieved, with a total EVEs value of 0.41 (Table 2.1). Earliest in date are Cotswold oolitic limestone-tempered ware (BPT 18, 11th to 13th century), 'Bath A' type (BPT 46, 12th to 13th century) and Ham Green glazed and unglazed wares (BPT 26 and BPT 32 respectively; both mid 12th to mid 13th century). Identifiable forms in these fabrics are a jar with an everted, centrally thickened rim in fabric BPT 18 from Period 3 (16th to 17th century) demolition layer 10027 (Fig. 13, no. 1), two jugs in fabric BPT 26 from demolition layer 10027 and Period 3 fill 10054 of robber cut 10053, and a jar with an everted, externally expanded rim in fabric BPT 32 from Period 1 (12th to 13th century) alluvium layer 10067 (Fig. 13, no. 2). The most common ware type, with 21 sherds, is Bristol (Redcliff) glazed ware (BPT 118, mid 13th to 15th century). The three rimsherds derive from jugs – two collared from Period 3 demolition layer 10027 and Period 2 (14th to 15th century) make-up/levelling deposit 10028 – and one with a straight neck from demolition layer 10027 (Fig. 13, no. 3). Continental imports (from southwest France) are restricted to single bodysherds of Saintonge polychrome (BPT 39, late 13th to early 14th century [Ponsford 1998, 137]) from Period 2 make-up/levelling deposit 10029 and probable Saintonge green-glazed ware (gritty) (BPT 40a) from fill 10057 of Period 3 robber cut 10056.

Post-medieval/modern

The post-medieval/modern pottery totals 27 sherds (693g), with a total EVEs value of 1.24 (Table 2.1). Most of the fabrics represented are common finds in Bristol, dating across the mid 16th to mid 20th centuries. The only certain continental import is a rimsherd from a tankard in Frechen stoneware (BPT 286) from Period 4 (18th to 19th century) pre-building

soil 11020. This ware type was manufactured in the Cologne region and imported to Britain during the mid 16th to 17th centuries (Jarrett 2013, 183). Of note are six sherds in a wheelthrown, rock-tempered unglazed oxidised fabric with a cream external slip (URE) from Period 4 (18th to 19th century) made ground deposit 11043. Included is a rimsherd which indicates the vessel is globular with an incurving rim (Fig. 13, no. 4). This may represent a continental import, potentially an *orza* (small storage jar), which is a Spanish coarseware form in use from the 14th to 17th centuries and infrequently exported to Britain (Gutierrez 2000, 53–8, Fig. 2.36).

Illustration catalogue (Fig. 13),

13.1 Period 3 demolition layer 10027, jar in fabric BPT 18.

13.2 Period 1 alluvium layer 10067, jar in fabric BPT 32.

13.3 Period 3 demolition layer 10027, jug in fabric BPT 118.

13.4 Period 4 made ground deposit 11043, jar in fabric URE.

References

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Table 2.1 Summary of pottery by fabric

Period	Description	Fabric code	Count	Weight	EVEs
Medieval	Bath 'A'	BPT 46	1	33	
	Cotswold oolitic limestone-tempered ware	BPT 18	2	55	0.08
	Bristol (Redcliff) glazed ware	BPT 118	21	223	0.22
	Ham Green glazed ware	BPT 26	4	65	0.01
	Ham Green unglazed ware	BPT 32	3	95	0.10
	Saintonge Green-glazed ware (gritty)	BPT 40a	1	2	
	Saintonge Polychrome	BPT 39	1	3	
Subtotal			***33***	***476***	***0.41***
Post-medieval/ Modern	Black-glazed earthenware	BGE	1	32	
	Creamware	BPT 326	1	23	0.16
	Frechen stoneware	BPT 286	1	87	0.06
	Glazed red earthenware (unsourced)	BPT 218	1	12	
	'Late' English stoneware	BPT 200b	6	226	0.82
	Porcelain (English)	BPT 203	6	10	
	Refined whiteware	BPT 202b	4	68	
	South Somerset (Donyatt) glazed earthenware	BPT 268	1	11	
	Unglazed red earthenware	URE	6	224	0.20
Subtotal			***27***	***693***	***1.24***
Total			**60**	**1169**	**1.65**

APPENDIX 3: CERAMIC BUILDING MATERIAL

By Jacky Sommerville

The ceramic building material was quantified and assigned to fabric type, according to the Bristol Type Series established in Williams and Ponsford (1988).

Three fragments (97g), all presenting in Bristol Fabric 2, were recorded from three deposits (make-up/levelling deposit 10028, robber cut 10053 and possible pre-building soil deposit 11020). The only fragment featuring a crest (from deposit 11020) has been stabbed using a pointed tool, which is typical in this fabric. The locally-made, lead glazed Fabric 2 is thought to date to the 14th century (Williams and Ponsford 1988, 145).

References

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APPENDIX 4: METALWORK

By E.R. McSloy

Four metal items (two of copper alloy and two of iron) were recorded, all of which were recovered by hand. Full recording was direct to the Ms Access database, which will form part of the project archive. X-radiography was undertaken for all items (Plate XRK20/263) as an additional record and to clarify details of form/construction. The condition of the objects was mostly good, with only the iron nail from deposit 10074 exhibiting significant corrosion.

Iron

Two iron nails were recorded. That from Period 1 pit 10073 (fill 10074) was complete and in good condition with minimal corrosion. It is of forged type, with T-shaped head measures 55mm in length. Similar carpentry nails are common from the medieval period (Goodall 2011, 164), although later dating is possible. The second nail was recorded from the fill of a pottery vessel (Period 4 deposit 10016). It was heavily corroded and fragmentary, its head probably flat.

Copper alloy

A wire ring and a button of this material were both recorded from Period 4 ashy deposit 10034. The function of the ring, which has butted terminals and measures 12mm in diameter internally, is unknown. The button is small, measuring 11.4mm in diameter. It was machine-made, of hollow construction with a domed front with a pressed design of dimples and ridged triangles. Its back is flat with a central wire loop. It dates no earlier than the mid 19th century, approximating to South's Type 27 (Noël Hume 1969, 90–91).

References

Goodall, I.H. 2011 *Ironwork in Medieval Britain* London, Society for Medieval Archaeology Monog. 31

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APPENDIX 5: WORKED STONE

By Ruth Shaffrey

The worked stone was examined with the aid of a x10 magnification hand lens and fully recorded. Details of all the stone can be found in the project archive.

One large fragment of grey-green slate roofing material with a circular perforation, was retained from a number of similar fragments from fill 10054 of Period 3 (16th to 17th century) robber cut 10053. Slate was in widespread use for roofing in medieval and post-medieval Bristol, and slates imported in their thousands in the late 16th and early 17th centuries (Carus Wilson 1933, 212). Further fragments of slabby stone were found in unphased levelling layer 10012. These are not diagnostic but are of a type of stone (Old Red Sandstone) known to have been used for roofing in medieval Bristol.

A large fragment of flat rectilinear whetstone (Fig. 14) was found in Period 4 (18th to 19th century) disuse deposit 10034. This has been used across the long sides and one end for sharpening and these angles are facetted as a result. The one surviving long face has also been used as a miniature anvil with extensive fine percussion damage across the surface. Whetstones and other metalworking tools are common finds in medieval urban contexts and this is suggestive of industrial activity nearby.

Catalogue of worked stone

Whetstone (Fig. 14). Large portion of flat rectilinear whetstone with straight flat sides and faces. One surviving end is rounded and facetted and one long edge is also facetted. The second face is missing where the stone has split naturally along the bedding plane. The surviving long face has extensive percussion damage from the battering of small objects. Measures >90mm long x 28-31mm wide x >12mm thick. Weighs 69g. Grey slate. Period 4 Disuse deposit 10034.

References

Carus Wilson, E. M. 1933 'The overseas trade of Bristol' in Power, E. and Postan, M. M. (eds) 1933, 183–246

Power, E. and Postan, M. M. (eds) 1933 *Studies in English Trade in the Fifteenth Century.* London. Routledge

APPENDIX 6: PAINTED WALL PLASTER

By Jacky Sommerville

Two joining fragments of wall plaster (293g) were recorded from fill 10030 of "fitting pot" 10015. The plaster is white and relatively fine with occasional inclusions of quartz and organic material. The fragments measure 28–33mm in thickness. The plaster was recovered in association with pottery of late 18th to 19th century date and there is no indication that it is earlier than post-medieval in date.

APPENDIX 7: GLASS

By Jacky Sommerville

A total of five fragments/objects of glass (38g)was recorded from four deposits. All recovered material was datable to the post-medieval or modern periods.

A fragment of dark green glass, from a wine or spirits bottle of post-medieval/modern date, was retrieved from fill 10031 of "fitting pot" 10015. Of 20th century date are a fragment of window glass of wire-meshed safety glass type from possible bomb crater fill 10013 and a colourless marble with red and blue glass inside from dump deposit 10041.

A plano-convex object in colourless glass was recovered from ash deposit 10034 in structure 10009. It is circular in plan, measuring 15mm in diameter, and may be a counter. An annular bead made of dark green coloured glass was retrieved from dump deposit 10041. It is 11mm in external diameter and 2mm thick.

APPENDIX 8: CLAY TOBACCO PIPE

By Jacky Sommerville

A total of 12 fragments of clay tobacco pipe stem (28g) was retrieved from four deposits. None of the fragments feature a maker's mark and only broad dating is possible – to the late 16th to late 19th centuries.

APPENDIX 9: ANIMAL BONE

By Matilda Holmes

Methods

All bones and teeth were recorded, although for some elements a restricted count was employed to reduce fragmentation bias: vertebrae were recorded when the vertebral body was present, and maxilla, zygomatic arch and occipital areas of the skull were identified from skull fragments. A basic recording method was employed to assess the potential of the animal bone assemblage. The number of bones and teeth that could be identified to taxa were noted, as well as those used to age the major domesticates (tooth wear and bone fusion). The quantity of bones likely to be useful for metrical data were also recorded. Other information included condition and the incidence of burning, gnawing and butchery marks. All fragments were recorded by context including those that could not be identified to taxa. Recording methods and analysis are based on guidelines from Baker and Worley (2014).

Summary of Findings

The animal remains were in good condition. A few contexts contained gnawed bones indicating that they were not always buried immediately following discard. The assemblage was very small, coming from the 12–13th century ditch and alluvial deposit, 14–15th century wall and post-medieval demolition and levelling deposits (Table 9.1). A few remains of cattle, sheep/ goats, pigs and birds including domestic fowl and goose were present.

Bibliography

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Table 9.1: Number of fragments recorded for the major domesticates, birds and other taxa

Feature	Phase	Unidentified	Cattle	Sheep	Pig	Bird	Total identified
Demolition layer 10031	Unphased				1		1
Ditch 10092	12-13th C	3	1	1	1		3
Alluvial deposit 10067	12-13th C	8	4	10	1	5	20
Wall 10068	14-15th C		1				1
Levelling 10058	16-17th C	2	4	2		1	7
Demolition layer 10027	16-17th C	3					
Robber trench 10056	18-19th C	4	1		1		2

APPENDIX 10: WATERLOGGED WOOD ARTEFACT

By Michael Bamforth

Introduction

A single paddle-shaped wooden artefact was submitted for recording from ditch fill 10094, dated to the 12th to 13th centuries and assigned to Period 1: Medieval 12th to 13th centuries Fig. 15). The wood was situated in waterlogged deposits which created the anaerobic conditions necessary for organic preservation.

Methodology

This document has been produced in accordance with Historic England guidelines for the treatment of waterlogged wood (Brunning and Watson 2010). The system of categorisation and interrogation developed by Taylor (1998; 2001) and the condition scale developed by the Humber Wetlands project (Van de Noort *et. al.* 1995: Table 15.1.) have been adopted within this report. The artefact has been identified as oak (*Quercus* spp.) based on characteristics visible with a hand lens, following Schweingruber (1982).

Condition

The artefact is in good condition with relatively clear surface data visible over much of the original surfaces. Although the blade section of this paddle shaped artefact is complete, the handle is broken and the item is in five large fragments. Based on morphology, and with the exception of the relatively fresh break at the end of the handle, it seems likely that the remainder of the fragmentation occurred whilst the artefact was in the burial environment.

Results

The artefact has been fashioned from straight grained, knot free, good quality, oak heartwood derived from a parent timber with a diameter in excess of 350mm and a moderate growth rate of 3–5mm per annual ring. The artefact is radially aligned, with neither pith nor sapwood present. Some 125mm of handle remains, with the surfaces appearing relatively smooth and well-worn, probably from use. The handle has an elliptical cross section with a maximum size of 30 x 42mm.

The handle gives way to the blade via a moderate shoulder. The blade is relatively symmetrical around the central axis and somewhat trapezoidal, the end being slightly wider than the section closest to the handle. Both faces of the blade are relatively flat. Both edges

and the end of the blade are rounded and appear well worn with one edge of the blade having an indent that may be the result of wear from use. There is no evidence remaining of the original tooling, any such traces having been obscured by the original finishing of the artefact and general wear. Although no traces of the tooling remain, it seems likely that the artefact was carved with an axe or adze, reduced down from a thin *c*. 1/24 radial billet. The blade measures 240 x 108 x 32mm. The maximum dimensions of the artefact as a whole are 365 x 108 x 32mm.

Discussion and Conclusion

Paddle-shaped artefacts have a surprisingly broad range of uses, from propelling watercraft, through processing food and fibres, to cleaning clothes and even digging (Earwood 1993; Morris 2000; Tabor 2000). The presence of this item in a waterlogged ditch, *c*. 50m south-west of the River Avon does strengthen the possibility that this item is a paddle to propel a watercraft. Furthermore, the trapezoidal shape of the blade lends itself towards the morphology of a paddle for waterborne propulsion.

Although of a slightly earlier *c*.11th century date, the blade and part of the shaft of an oak paddle or oar recovered from a ditch at Hibernia Wharf, London, provides an interesting parallel. It too was fashioned from radially aligned, oak heartwood, although this was knotty and of moderate quality (Marsden 1994: 159). Although degraded, the blade was probably originally an oval shape measuring around 515 mm long, at least 135mm wide and with a surviving thickness of 22 mm. The surviving shaft was oval, verging on the rectangular and measured 42 x 21 mm. Although the blade is somewhat longer than that of the paddle considered herein, it is of a similar width and thickness and the handle is of similar proportions. Marsden (1994: 159) cautions that although probably for propelling a watercraft, the Hibernia Wharf object could conceivably be a shovel or for use in a bread oven.

Another possible parallel is provided by a degraded and broken fragment of a radially aligned ash artefact that may have been part of the junction of handle and blade of a paddle / oar or perhaps part of a wooden beater that was recovered from a palaeochannel during excavations at WYNG Gardens in Cambridge (Bamforth 2016; Cessford forthcoming). It is unclear if the artefact dates to the Romano-British or Medieval period

If the artefact considered herein is indeed for propelling a craft through water, which seems the most likely function, then the relatively small blade size suggests the item might be termed a paddle: “a small, spade like implement with a long handle for propelling a canoe,

etc." (Corkhill 1979: 381) as opposed to an oar, that would generally be larger and used in conjunction with a rowlock, to serve as a fulcrum (Corkhill 1979).

The artefact has been identified as oak – a tree that grows in stands and mixed woodland and will also tolerate damp soils. It is a ubiquitous tree that would have been growing in the hinterland of the city. Oak is an easily worked timber that can be split readily in both planes and occurs ubiquitously throughout the Prehistoric and Historic period as an excellent hard-wearing timber that has incredibly wide-ranging uses, including the manufacture of a broad range of artefacts (Wilson and White 1986; Gale and Cutler 2000). The good quality, radially aligned oak the artefact considered herein is fashioned from would be well suited for use as either a paddle or perhaps a spade, with numerous examples of both types of artefact constructed from oak (Gale and Cutler 2000; Wilde 1857).

Other contemporary assemblages of worked wood recorded from Bristol show the traditions of 'treewrighting' (as opposed to carpentry) continuing through the 12th and early 13th centuries in the city (Allen 2017; Goodburn 2015: 86). The use of splitting and basic axe carving to produce the haft is certainly in keeping with the treewrighting tradition, although both of these ancient techniques remain in use throughout the Historic period. The paddle is relatively rough and ready, suggesting it may have been fashioned by a non-specialist woodworker.

This artefact is of local and regional significance. The artefact has been photographed (Fig. 15) to record the cross section and conversion of the blade and the handle. Given that the artefact shows little evidence of tooling and is incomplete, it not advised for conservation and retention. It is suggested that this report and the photography represent a complete record, the wood can be discarded and that this report, alongside the site records, forms the physical archive.

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APPENDIX 11: PLANT REMAINS AND SHELL

By Emma Aitken and Sarah F Wyles

A single bulk soil sample (20 litres of soil) was processed from pit 10014. Two additional environmental samples (four litres of soil) were processed from waterlogged deposits in ditch 10092. The bulk sample was processed following standard flotation procedures (CA Technical Manual No. 2), using a 250µm mesh sieve for the recovery of the flot and a 0.5mm mesh sieve for the collection of the residue. The two waterlogged samples were processed by wet sieving (250µm mesh size) (CA Technical Manual No. 2). The results are recorded in Table 11.1 and follow nomenclature of Stace (1997).

For the purposes of this report, items such as marine shells were recorded qualitatively. Where items cannot be easily quantified, these have been scored for abundance + = 1–49 items; ++ = 50–100 items; +++ = >100 items.

A total of three marine shell fragments, representing a minimum number of three individuals, were recorded from the bulk soil sample processed from pit 10031. The shells have been tabulated by species and the results are summarised in Table 11.2. The species and habitat information follow that of Barrett and Younge (1958).

Medieval (12th-13th century) ditch 10092

Two environmental samples were analysed from ditch 10092 and moderate to large quantities of uncharred seeds were recorded from fills 10097 and 10096 (samples 2 and 9 respectively). The assemblages include remains of species such as crowfoot (*Ranunculus Batrachium*), birch (*Betula pendula*), goosefoot (*Chenopodium* sp.), oraches (*Atriplex* sp.), stitchworts (*Stellaria* sp.), corncockle (*Agrostemma githago*), persicaria (*Persicaria* sp.), docks (*Rumex* sp.), sheep's sorrel (*Rumex acetosella*), curled dock (*Rumex crispus*), clustered dock (*Rumex conglomeratus*), black mustard (*Brassica nigra*), runch (*Raphanus raphanistrum*), vetch/wild pea (*Vicia/Lathyrus* sp.), hedge-parsley (*Torilis* sp.), thistles (*Carduus/Cirsium* sp.), nipplewort (*Lapsana communis*), oxtongues (*Picris* sp.), sow-thistle (*Sonchus* sp.), hawk's-beard (*Crepis* sp.), stinking chamomile (*Anthemis cotula*), sedge (*Carex* sp.), meadow grass/cat's-tails (*Poa/Phleum* sp.), and bur-reed (*Sparganium* sp.). Alongside the uncharred seeds, a small number of bracken fragments were also noted from both assemblages.

The uncharred plant remains indicate a variety of plants deriving from the local environment and the general landscape. Many of the seeds come from those plants that are commonly growing in the shallows along a river's edge or on the side of permanently wet ditches, such as bur-reed, sedge, clustered docks and sow-thistles. As this component decreased up the sequence, this suggests that the environment within ditch 10092 was initially wet in nature, and slowly became drier. This is also suggested by the nature of the sediments within the ditch (Appendix 13). Some of the species present are more reflective of more wild/coastal areas such as black-mustard. Other habitats that are represented in the plant remains are those of rough grassland, as indicated by the presence of crowfoot, docks, vetch/wild pea, and thistles, and disturbed soils and waste ground, as indicated by the occurrence of goosefoot, oraches, nipplewort, oxtongue and runch. There is also evidence to suggest that there may have been some field margins/arable environments in the wider area due to the inclusion within the assemblages of seeds of corncockle and stinking chamomile, species often associated with crops during this period (Greig 1991). As corncockle prefers lighter dry soils and stinking chamomile favours heavier clay soils, it could be suggested that a number of different areas may have been being used to grow crops. The pollen assemblages from this sequence also include cereal pollen and taxa commonly associated with arable settings (Appendix 14). However, it seems more likely that this material has come from dumps of small-scale local crop processing waste, rather than arable fields being very close by.

Modern (19th-20th century) pit 10014

Sample 1 (fill 10031) from pit 10014 contained no charred plant remains or charcoal. A single fragment of mussel shell (*Mytilus edulis*), a species found commonly on rocky shores, was recovered in the assemblage. Two further marine shells were noted and belong to the species *Tellina/Scrobicularia* sp.

The small quantity of the marine shells retrieved from this assemblage suggests that the assemblage was not representative of a dump of shell, locally sourced to augment the diet but rather it was all material likely to have been incorporated into the deposit from the river during flooding events.

Summary

A previous nearby archaeological excavation close by Wessex Archaeology (Dinwiddy *et al.* 2011) provided similar environmental results and ditch 10092 is likely to be the continuation of the inlet of the River Avon identified by Wessex Archaeology. The local environment during the medieval period appears to be one of rough grassland/waste land with damp

areas along side and within the ditch and occasional flooding. There was an indication of material being dumped in the inlet during this period from the pollen evidence (Dinwiddy *et al.* 2011) and it may be that small amounts of locally processed crop waste may have also been dumped on this site.

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Table 11.1 Waterlogged plant remains

Feature Type		Ditch	
Feature		10092	
Context		10097	10096
Sample		2	9
Processed vol (L)		2	2
Waterlogged material			
Ranunculus Batrachium	crowfoot	+	+
Betula pendula	silver birch	-	+
Chenopodium sp.	goosefoot	++	+
Atriplex sp. L.	oraches	+	+
Stellaria sp. L.	stitchwort	-	+
Agrostemma githago L.	corncockle	+	+
Persicaria sp.	persicaria	+	+
Rumex acetosella group Raf.	sheep's sorrel	+	-
Rumex crispus L. Type	curled dock	+	+
Rumex cf. *conglomeratus* with fruit and exocarp	clustered dock	+	+
Rumex with fruit and exocarp	dock	-	+
Brassica nigra	black mustard	+	-
Raphanus raphanistrum	runch	+	-
Vicia/Lathyrus sp.	vetch/wild pea	-	+
Torilis sp. Adans	hedge-parsley	+	+
Carduus/Cirsium sp.	thistle	++	-
Carduus crispus	welted thistle	+	+
Cirsium sp.	thistle	+	+
Lapsana communis	nipplewort	+	+
Picris sp.	oxtongue	+	+
Sonchus sp.	sow-thistle	+	+
Crepis sp. L.	hawk's-beard	+	+
Anthemis cotula L. (seeds)	stinking mayweed	+	+
Carex sp.	sedge	-	+
Poa sp./ *Phleum* sp.	meadow grass/cat's-tails	-	+
Sparganium sp. L.	bur-reed	+	+
Woody stems/twigs frags > 4mm		+	+
Woody stems/twigs frags > 2mm		++	++
Leaf frags		+	+
Moss		+	+
Bud		-	+
cf. Catkin		+	-
Bracken frags		+	+
Other			
Insect remains		+++	+++

Key: + = 1–49 items; ++ = 50–100 items; +++ = >100 items

Table 11.2 Marine shell and other Remains

Feature type	Pit
Feature	10014
Context	10031
Sample	1
Vol (L)	20
Flot size	12
%Roots	<1
Other	
Industrial waste	***
Shell	
Mussel shell	1
Tellina/Scrobicularia sp.	2

Key: * = 1–4 items; ** = 4–20 items; *** = 21–49 items; **** = 50–99 items; ***** = >100 items

APPENDIX 12: WOOD CHARCOAL AND WATERLOGGED WOOD

By Shelia Boardman

Introduction

One sample was investigated for wood charcoal and two samples for waterlogged wood remains from the site. Sample 1 came from fill 10031 of modern pit 10015, which appeared to include material from the surrounding demolition/backfill layer. This produced wood charcoal and some coke, coal and/or clinker, suggesting the fill possibly incorporated industrial fuel debris. Samples 2 and 9 came from two medieval fills (10097 and 10096 respectively) of ditch 10092 possibly associated with an old meander of the River Avon, formed before the river was diverted into the New Cut in the early 19th century (Appendix 13). Previous archaeological work by Wessex Archaeology (Dinwiddy *et al.* 2011), *c*. 70m north west of the current site, revealed a broad, shallow inlet of the Avon running NE-SW, with associated alluvial and infill deposits. These were sampled for waterlogged plant remains, wood charcoal, pollen and diatoms, which in turn revealed evidence for the tidal nature of the inlet, the infilling sediments, characteristics of the surrounding woodlands and some uses of the area prior to re-channelling work in the 17th century (Dinwiddy *et al.* 2011). The area investigated for the current report appears to lie on or adjacent to the same inlet. The aims of the wood charcoal investigation were to obtain further evidence for fuels used at the site, and hopefully for the nature and use of the surrounding area. It was hoped that the waterlogged wood would provide some direct evidence for the woody vegetation growing around the ditch, on the inlet, and if this was used to dump material, for the types of activities taking place in the immediate area.

Methods

The wood charcoal sample was processed by standard flotation (CA Technical Manual No. 2) and the greater than 2mm fragments for identification were extracted from the pre-sorted flot and residue charcoal fractions. The samples with waterlogged wood were processed in the manner described by Aitken and Wyles (Appendix 11), and the material for identification came from the greater than 2 mm wet-sieved fractions. The charcoal and wood fragments were prepared and identified following methods and keys in Hather (2000), Gale and Cutler (2000) and Schweingruber (1990). A low power binocular microscope (Leica GZ6) with x10-40 magnifications was initially used, followed by a LOMO Biolam-Metam metallurgical microscope (for the wood charcoal) or a LOMO Biolam microscope (for the waterlogged wood), both with up to x400 magnifications. The wood charcoal results are listed as fragment

counts and the waterlogged wood as scores in Tables 12.1 and 12.2. Plant nomenclature follows Stace (2010).

Results

Waterlogged wood

The timber fragments were mostly oak (heartwood and sapwood) and there were a couple of fragments of hazel (*Corylus avellana*) and ash (*Fraxinus excelsior*). One hazel fragment had curved growth rings. No roundwood of a size or maturity which might point to coppiced woodland (natural or managed) was seen. The taxa encompassed by the small twig wood were more varied, but this was often difficult to identify conclusively. Most of this material had only one or two (sometimes partial) growth rings. The remains here included gorse/ broom (*Ulex*/*Cytisus*), hawthorn group (Pomoideae), hawthorn (*Crataegus*), probable buckthorn (cf. *Rhamnus cathartica*), elm (cf. *Ulmus*), oak and birch (cf. *Betula*), plus alder (*Alnus glutinosa*), hazel, alder/hazel and willow poplar (*Salix/Populus*). Macroscopic details, such as thorns (plus leaf buds and bark) were sometimes helpful, for example, in identifying the hawthorn fragments in sample 2. Fewer than five fragments were identified for any of the taxa represented by small twig wood in samples 2 and 9.

Wood charcoal

While just 22 fragments were identified, these included six woody taxa from four families (see Table 12.2). The majority were oak (*Quercus*) heartwood fragments, and the other remains included elm, alder, beech (*Fagus sylvatica*), hawthorn group and hazel timber fragments. There was a single, crumbly, indeterminate softwood fragment.

Discussion

It is difficult to directly compare the waterlogged wood remains in the ditch 10092 samples (2 and 9) with the charcoal remains from the previous excavation on the inlet (Barnett in Dinwiddy *et al.* 2011: 104 –5). Fifty plus items per sample were identified in three samples from the latter site. They included timber, roundwood and/or twig wood of oak, ash, beech (*Fagus sylvatica*), field maple (*Acer campestre),* alder, blackthorn (*Prunus spinosa),* birch*,* elm and probable hornbeam (cf. *Carpinus betulus*). Two samples had substantial quantities of coke and some of the charcoal was fissured and vitrified. Barnett interpreted these deposits as containing predominantly industrial fuel debris. The other sample had more remains (including branch wood) of edible fruit bearing taxa (particularly the Pomoideae), so a predominantly (but not solely) domestic source for the dumped material was suggested (*ibid*: 104–5).

On this site, a few waterlogged timber fragments may hint that wood working or other wood-related activities took place in the vicinity of the ditch, but the twig wood may reflect largely natural accumulations of material, rather than dumping, as may also be the case with some of the waterlogged macrofossil remains (Appendix 11). Oak, hazel, birch and ash all appear to part of the regional woodland flora, so may have grown slightly further from the ditch, higher up the banks of the inlet. Alder and willow are associated with wetlands and their fringes, so are more likely to have grown close to the river (and ditch) (cf. Scaife in Dinwiddy *et al.* 2011: 105–107). Most of the other woody taxa fall one group or both, but the legume wood, gorse/broom, may have come from further away. Both shrubs can be found growing today on Troopers Hill and other high slopes around Bristol, but it is unclear how close to the site these would have grown in the past. Traditionally, gorse (*Ulex*) was a favoured fuel for bread ovens, as this produces good heat, burns rapidly and leaves very little ash (Gale and Cutler 2000), so there may have been good reasons for bringing this from some distance away. The pollen assemblages (Appendix 14) suggest some arable component and this may be reflecting dumps of local crop processing/food production waste material and the potential gorse may also be linked to this local activity.

There were relatively few identifiable charcoal fragments in sample 1, but this may largely reflect the limited quantity and small size of material that was able to filter into the pit. There was a mix of taxa so this may include fuel waste from different activities and fires. The presence of coke, coal or clinker, and some poorly preserved, vesicular charcoal, hints that high temperatures may have been reached, so this deposit may have had predominantly industrial rather than domestic fuel origin.

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Table 12.1 Waterlogged wood remains

Site Code		AFAH19	AFAH19
Period		Medieval	
Feature Type		Ditch	
Feature		10092	
Context		10097	10096
Sample		2	9
Vol (L)		2	2
Timber remains			
Quercus L.	oak	++hs	+hs
Corylus avellana L.	hazel	+	
Fraxinus excelsior L.	ash		+
Indet.			+
Twig wood (with 1-2 growth rings)			
Ulex/*Cytisus*	gorse/broom	+	
Pomoideae (see below*)	hawthorn group	+	+
- including *Crataegus* L.	inc. hawthorn	+	
cf. *Rhamnus cathartica* L.	cf. buckthorn	+	
cf. *Ulmus* L.	cf. elm	+	
Quercus L.	oak	+	
cf. *Betula* L.	cf. birch		+
Alnus glutinosa (L.) Gaertn.	alder	+	
Corylus avellana L.	hazel	+	+
Alnus glutinosa/Corylus avellana	alder/hazel	+	+
Salix L./*Populus* L.	willow/poplar	+	+
Indet. twigwood		+	+
Monocot culm			+

KEY: + 1-5 frags; ++ 6-10 frags. h - heartwood; s - sapwood. *Pomoideae may include: *Malus* (apple), *Pyrus* (pear), *Crataegus* (hawthorn) & *Sorbus (rowan, service, whitebeam) species.*

Table 12.2 Charcoal remains

Site Code		AFAH19
Period		Modern
Feature type		Pit fill
Cut		10015
Context		10031
Sample		1
Sample vol. (L.)		20
Identifed taxa		
Rosaceae		
Pomoideae (see below*)	hawthorn group	1
Ulmaceae		
Ulmus L.	elm	4
Fagaceae		
Fagus sylvatica L.	beech	2
Quercus L.	oak	11h
Betulaceae		
Alnus glutinosa (L.) Gaertn.	alder	3
Corylus avellana L.	hazel	1
Indet. softwood		1
Indet. charcoal		4
Total charcoal		27
Non charcoal (coke/coal/clinker)		9
KEY: h - includes heartwood. *Pomoideae includes: *Malus* (apple), *Pyrus* (pear), *Crataegus* (hawthorn) & *Sorbus* (rowan, service, whitebeam).		

APPENDIX 13: GEOARCHEOLOGICAL ASSESSMENT

By Agata Kowalska

Introduction

This report presents the results of the geoarchaeological analysis of six monolith samples recovered from the archaeological excavation at AFA HQ, Temple Back in central Bristol (henceforth the site). A possible medieval ditch 10092, pit 10072, and medieval wall 1003 were identified within the excavated area. Ditch 10092 was not fully excavated; thus, the full cross section and size remains unknown. No archeological material was recovered from the lower fills of the ditch and finds from the pit indicate a medieval date for the feature. The monolith sequence was taken from the section encompassing fills of both features (Fig. 13.1).

Figure 13.1 Section showing monolith samples taken from ditch 10092 and pit 10072.

The main aims of the report are:

- To describe and interpret sediments in order to characterize the depositional processes within the sampled features;

- To assess the palaeoenvironmental potential of the sediments for any palaeoenvironmental evidence that would provide information regarding the nature of the environment in which the deposit accumulated and human activities on the site, and to pursue this aim by submitting sub-samples of material for palaeoenvironmental analysis to the appropriate specialists (pollen and diatoms).

Geoarchaeological background

The site lies on an old meander of the River Avon that had formed before the river`s diversion into the New Cut in the early 19th century (Watson *et al.* 2020). The site lies at approximately 9m AOD at its eastern extent, with ground level sloping gently down to 8.5m AOD at its western edge.

The British Geological Survey (BGS) map the bedrock geology of the site as the Redcliffe Sandstone Member, which was laid down in the Triassic Period (251.9-201.3Ma). The lithology of the bedrock is purple red sandstone that is ferruginous and calcareous. The bedrock geology is overlain by superficial clay and silt of Tidal Flat Deposits of the Quaternary Period (BGS 2020).

Pleistocene

Previous analysis of the geological record provided records for late Pleistocene and Holocene deposits in the central area of Bristol. Overlying the Mercia Mudstone Group is the Avon Formation composed of channel gravel strata laid down by the River Severn and its tributaries during the Pleistocene. The Avon Formation lies between -3mOD and 8mOD in Bristol and is thought to represent two possible terrace deposits with the youngest gravel dated to late Mid Pleistocene lying at *c.* 9m OD and the older gravels at *c*. -3m OD dated to the Late Pleistocene and from the valley floor (Watson *et al.* 2020, 40).

Holocene

The gravel deposits are overlain by re-worked periglacial deposit and deposits associated with alluviation and weathering of the bedrock outcrops. The deposits are Early Holocene in date and covered by Wentlooge Formation which consist of Alluvium 3, 2, and 1. The Wentlooge Formation is comprised of intertidal and freshwater strata of the Severn Estuary (both mineral and organic), and dates to the beginning of the Holocene to the Roman period (Stastney 2014). Alluvium 3 represents the point bar deposits of the evolving meander and consists of interbedded fine to medium sands fining upwards into overbank clays. Alluvium 2 is overlain by peat that dates to *c*. 4000 cal. BC and it is probably an intertidal mudflat

deposit. Alluvium 1 overlies the peat and is primarily a mineral floodplain and/or intertidal stratum. It is often affected by post depositional oxidation and modification or truncation by human action (Wilkinson *et al.* 2020, 40).

Previous archeological excavation carried out *c*. 70m north-west to the site by Wessex Archaeology (Dinwiddy *et al.* 2011) provided detailed information regarding the environmental conditions in the close vicinity to the site. A broad, shallow inlet of the River Avon was discovered running NE-SW. The inlet was estuarine in nature with evidence for constant presence of shallow and slow-moving water. The earliest sediments provided pollen suggesting trees in the drylands and tidal landscape at the site, closer to the River. Alluviation and infilling of the inlet resulted in occurrence of standing water and the formation of fine sediments infilling this feature. Pollen analysis shows that from the 12th century, there was increase in pollen associated with grasslands and waste ground and from the mid-13th century a waste material has been deliberately deposited within the inlet. In the 17th century the inlet was rechanneled, and post-medieval activity and buildings occurred (Dinwiddy *et al.* 2011).

Methodology

A total of six monolith samples were retained in steel tins measuring 100 x 100 x 500mm and were then wrapped and labelled following standard sampling procedures (CA 2017).

The monoliths were opened, and the deposits cleaned, photographed and recorded. The lithostratigraphy of the samples was described according to standard geological criteria provided by Jones *et al.* 1999; Munsell Color 2018; and Tucker 2011. All observations were summarised in Tables 13.3–13.8.

Results

The text description is in stratigraphic order with the earliest unit described first.

The lowermost **Unit 8**, context 10098 was *c*. 0.20m thick and consisted of a (GLEY 2 6/5BG) greenish grey silt/clay with oxidized pockets of (5YR 5/1) grey silt/clay. Occasional amorphous and dark plant material was recorded within the Unit. The homogenous and fine texture suggests deposition in a low energy environment. The fine sediments could have been settled as a result of flooding and represent the alluvial clays of the Wentlooge

Formation. Very fine laminations suggest gradual deposition, possibly in standing water or shallow and slowly moving water (Karkanas and Goldberg 2018). The decayed organic material and oxidation features may imply a lack of permanently waterlogged conditions and are post-depositional features.

A sharp contact boundary separated Unit 8 from **Unit 7**, context 10096, the lowest fill of ditch 10092. This Unit consisted of a firm and homogenous (10YR 5/2) greyish brown silt/clay. Unit 7 was *c.* 0.19m thick. The fine-grained sediments were laid down in a low energy deposition environment. The sediments could have been washed in by flooding possibly combined with erosion of the ditch sides. The colour and occasional yellowish red mottling suggest oxidation of these sediments.

Unit 7 was overlain by **Unit 6**, context 10097, a *c*. 0.50m thick, deposit of a firm, (7.5YR 2.5/1) black organic silt. Unit 6 was separated by a sharp contact boundary with Unit 7. Pockets of (5YR 5/1) grey silt/clay were recorded throughout. According to context sheet, context 10097 contained twigs, branches and occasional subangular limestone. The well-preserved plant material suggests vegetation and waterlogged condition within the ditch. The Unit is homogenous with no evidence for bioturbation, re-working or cultural material that could indicate any human activity or provide dating evidence. The limestone could be derived from the Avon Formation.

Unit 5, context 10093, was a (5Y 5/3 reddish brown) clayey silt with (5Y 4/4) reddish brown iron oxides mottling throughout the Unit. A sharp and possibly bioturbated contact boundary separated Unit 5 and Unit 6. The unit was firm and homogenous with very fine planar laminations. The fine and homogenous texture suggests a continuous slow energy depositional environment. The fine silt/clay were washed in and settled down in stagnant or slow-moving water. Occasional amorphous and dark plant material was encountered in monolith sample 6 and indicates vegetation within the ditch. As shown in Figures 13.1 and 13.2, bands of black and organic material are visible and separated by greyish silt/clay. The post-depositional oxidation of these organic clays can be related with changes in water table. The banding and laminations suggest cyclical washing in sediments.

Overlying Unit 5 was **Unit 4**, context 10094. The Unit was *c*. 1m thick and consisted of (GLEY 1 6/10Y) greenish grey to (5YR 5/2) reddish grey silt/clay with reddish brown iron oxides accumulations and dark manganese nodules. A sharp contact boundary separated Unit 4 and Unit 5. In this case the sharp boundary can indicate change in mode or source of deposition. The Unit is much more clayey rather than silty like the lower Units and the content of organic matter is low. There are only occasional amorphous and dark plant

material and manganese nodules that may represent decayed plants. Also, the Unit seems to be more porous and no lamination were noted. Rare iron oxides accumulations along root channels were noted suggesting presence or penetrations by plants` roots.

The general fine, homogenous and reduced texture with redox features indicates that the sediments were accumulated due to natural processes as no cultural material was recorded within the context. The clayey sediments could represent an alluvial deposit caused by over-bank flooding of the River Avon. However, the possibility of deliberate backfill with redisposed alluvial clay cannot be excluded. The rare charcoal flecks could be redeposited from activity areas.

Unit 3, context 10073, consisted of a (7.5YR 3/2) dark brown silt/clay mixed with lime mortar. The Unit was *c.* 0,08m thick and friable. A sharp boundary separated the Unit with Unit 4 and represents the cut of pit 10072. The abundance of mortar suggests debris from building material that had been dumped or trampled in.

Unit 2, context 10074 was separated by a sharp contact boundary with Unit 3. Unit 2 was *c.* 0.14m thick and consisted of a firm, (5YR 5/2) reddish grey silt/clay with occasional charcoal flakes and lime mortar fragments. According to context sheet 10074, the unit represents the upper fill of pit 10072 and was interpreted as a possible cess deposit. The presence of mortar suggests a debris from building material rather than organic night soil common for cess deposits (Macphail and Goldberg 2018, 333–334). However, the properties characteristic for a cess deposit may not be evident in the monolith samples.

The uppermost **Unit 1**, contexts 10061/10062, consisted of a (5YR 5/2) reddish grey to (10YR 5/1) grey silt/clay, traces of fine sand and very rare (<1%) sandstones. Common (5Y 6/6) olive yellow mottling was recorded throughout the Unit. The Unit is characterised by relatively high quantity of cultural material, including occasional charcoal flakes, CBM and lime mortar fragments. The contact boundary dividing Unit 1 and Unit 2 was diffuse. The diffuse contact can be related to gradual silting or to a blurring of the contact by post-depositional processes. The mixed nature may indicate dumping of waste material combined with natural filling by alluviation.

Discussion

The sedimentary sequence found in the monolith samples was divided into eight stratigraphic units. Units 7 to 3 are associated with ditch 10092. The ditch was preliminarily dated to the medieval period and was cut into natural alluvial deposits of the Wentlooge

Formation, possibly the Alluvium 1 recorded at Redcliffe which is at a similar elevation (Stastney 2014; Watson *et al*. 2020)

The lowermost Unit 8 is more likely the natural alluvial clay. Overlain Unit 7 represent sediments accumulated in the low energy environment with the upper unit being more oxidated due to cyclical drying. The fine sediments could have been washed into the ditch as a result of alluviation or/and washed in from the clayey slopes. The presence of stagnant or slowly moving water at the base of the ditch is demonstrated by the fine lamination indicating gradual settling of the sediments. The redox features and poorly preserved plant material indicate fluctuating water table. As shown in Figures 13.1 and 13.2, context 10098 contained black patches of organic silts which may suggest post-depositional oxidation of organic matter.

Overlaying Unit 8 and 7 was a thick organic silt with well-preserved plant material - Unit 6. The character of this deposit implies permanently waterlogged conditions and the presence of a high water table within the ditch. The ditch could be permanently flooded by the River Avon – tidewaters and area would be associated with estuarine/brackish type of environment. The preservational conditions were better than in the lower units.

The alluviation in stagnant or slow-moving water continued and the top of the organic unit grades into organic mud – Unit 5. There are no changes in particle size distribution, thus the sharp boundary can be a result of oxidation of the upper sediments. Unit 5 was sealed by thick Unit 4 that mainly consisted of reduced clay with occasional amorphous plant material. The clay sediments could be laid down by flooding of the River Avon. In central Bristol the River Avon, and its tributary the River Frome, were tidal up until the 19th century when a series of locks and artificial channels were constructed to control the river levels. Geoarchaeological assessment of ditches fills at the Redcliffe Quarter, that is situated *c*. 650m to south-west, also revealed thick alluvial-like deposits accumulated in upper part of the boundary ditches (Kowalska and Stafford 2020).

The upper part of the sequence encompasses Units 3, 2, and 1 and represents fills of a pit that was dug into the lower alluvium 10097 – Unit 4. The sharp contact between Unit 4 and Unit 3 suggests erosional contact. The lowest fill of the pit is much coarser in texture due to abundance of lime mortar. Unit 2 and Unit 1 represent a natural silting combine with deliberate backfilling with domestic waste deposit.

Figure 13.2 Section showing the ditch 10092 and pit 1007 profile with associated medieval debris at the top.

Archaeological research at Redcliffe Quarter and Finzel's Reach provided evidence for an early medieval large boundary ditch (the Law Ditch) and associated drainage features. The ditch recorded at Temple Black could also be interpreted as an early medieval boundary or drainage ditch separating the settlement from the floodplains of River Avon. The investigation of an early recut of the Law Ditch at Finzel's Reach, by Oxford Archeology, revealed organic silts, minerogenic clays and sandy clays consistent with low-energy deposition and it was radiocarbon dated to AD1020–1155 (962+/-25BP, NZA 30143). The base of the ditch would have been submerged during high spring tides, but dry during mean high water neap tide. Smaller drainage ditches dating to the mid-late 12th century included a roadside ditch that, based on pollen evidence, may have initially channelled slow-moving freshwater towards the Avon, although latterly became flooded/inundated with saltwater (Champness 2017)

It should be noted that the palaeoenvironmental research at Temple Black carried out by Wessex Archaeology revealed the existence of a possible inlet of the River Avon and provided a similar geoarchaeological sequence comprised of organic silts and clays followed

by flooding (Dinwiddy *et al.* 2011). The feature was often flooded by seawater with regular stagnant or slow moving water present within the inlet during the early medieval period. Furthermore, some evidence for over-bank flooding leading to accumulations of alluvium and the presence of a tidal/brackish environment was recorded at the Aspire site, *c*. 337m to the south-west from Temple Back (Grant forthcoming; Watson *et a*l. forthcoming).

Conclusions

The sediments recorded within the ditch show similarities to those recorded in boundary ditches and the Law Ditch on the Redcliffe Quarters site and to the inlet from the other Temple Back site. The assessment and comparison with other sites has shown the likely possibility of floodplain/wetland environments covered by sediments associated with medieval activity.

The potential for pollen and diatom preservation is high, although the upper sediments seems to be more oxidized and can be associated with dumping activities, thus may affected preservation and interpretation of pollen and diatom data.

Pollen and diatom analysis was undertaken to provide a better understanding of the landscape development and a comparison with other sides within the central Bristol area during the medieval period (Appendices 14 and 15). Eight pollen and four diatom sub-samples have been taken from the paleoenvironmental sequence (Table 13.1 and 13.2).

Table 13.1 Pollen samples

Monolith	Context	Depth
3	10061	0.10-0.11
5	10094	0.11-0.12
6	10094	0.21-0.22
6	10093	0.40-0.41
7	10097	0.13-0.14
8	10097	0.05-0.06
8	10097	0.23-0.24
8	10098	0.40-0.41

Table 13.2 Diatom samples.

Monolith	Context	Depth
7	10097	0.13-0.14
8	10097	0.05-0.06
8	10097	0.23-0.24
8	10098	0.40-0.41

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Table 13.3 Monolith sample 3.

Monolith	Unit	Context	Depth [m]	Description
	1	10061/ 10062	0-0.42	5YR 5/2 reddish grey to 10YR 5/1 grey silt/clay, traces of fine sand. Firm. Very rare (<1%) sandstones (<10mm). 5Y 6/6 olive yellow mottling. Occasional charcoal flakes, CBM and lime mortar fragments. Diffuse contact with:
	2	10074	0.42-0.50	5YR 5/2 reddish grey silt/clay and grayish patches. Firm. Occasional charcoal flakes, CBM and lime mortar fragments.

Table 13.4 Monolith sample 4.

Monolith	Unit	Context	Depth [m]	Description
	1	10061/ 10062	0-0.17	*c. 0.25m overlap with monolith 3.* 5YR 5/2 reddish grey to 10YR 5/1 grey silt/clay, traces of fine sand. Firm. Very rare (<1%) sandstones (<10mm). 5Y 6/6 olive yellow mottling. Diffuse contact with:
	2	10074	0.17-0.25	5YR 5/2 reddish grey silt/clay. Firm. Occasional charcoal flakes and lime mortar fragments. Sharp contact with:
	3	10073	0.25-0.33	7.5YR 3/2 dark brown silt/clay mixed with lime mortar. Friable. Sharp contact with:
	4	10094	0.33-0.50	Gley 1 6/10Y greenish grey to 5YR 5/2 reddish grey silt/clay. Firm. Occasional 5YR 5/8 yellowish red iron oxides concentrations. Occasional amorphous organic inclusions. Very rare charcoal flecks.

Table 13.5 Monolith sample 5.

Monolith	Unit	Context	Depth [m]	Description
	4	10094	0-0.50	*c. 0.10m overlap with monolith 4.* Gley 1 6/10Y greenish grey to 5YR 5/2 reddish grey silt/clay. 5Y 4/4 reddish brown iron oxides accumulations. Dark manganese nodules (<1mm). Occasional amorphous and dark plant material. Very rare (<1%) chalk inclusions.

Table 13.6 Monolith sample 6.

Monolith	Unit	Context	Depth [m]	Description
	4	10094	0-0.29	*c. 0.10m overlap with monolith 5.* Gley 1 6/10Y greenish grey to 5YR 5/2 reddish grey silt/clay. 5Y 4/4 reddish brown iron oxides accumulations. Occasional amorphous and dark plant material. Sharp contact with:
	5	10093	0.29-0.50	5Y 5/3 reddish brown clayey silt. Firm and homogenous. 5Y 4/4 reddish brown iron oxides mottling. Occasional amorphous and dark plant material. Very fine lamination recorded (<1mm).

Table 13.7 Monolith sample 7.

Monolith	Unit	Context	Depth [m]	Description
	5	10093	0-0.08	*c. 0.10m overlap with monolith 6.* 5Y 5/3 reddish brown clayey silt. Firm and homogenous. Sharp contact with:
	6	10097	0.08-0.44	7.5YR 2.5/1 black silt. Firm and homogenous. Pockets of 5YR 5/1 grey silt/clay. Sharp contact with:

Table 13.8 Monolith sample 8.

Monolith	Unit	Context	Depth [m]	Description
	6	100097	0-0.11	*c. 0.10m overlap with monolith 7.* 7.5YR 2.5/1black silt. Firm and homogenous. Pockets of 5YR 5/1 grey silt/clay. Sharp contact with:
	7	100096	0.11-0.30	10YR 5/2 greyish brown silt/clay. Firm and homogenous. Occasional yellowish red concentrations. Sharp contact with:
	8	10098	0.30-0.50	Gley 2 6/5BG greenish grey silt/clay. Pockets of 5YR 5/1 grey silt/clay. Firm. Very fine lighter laminations (<1mm). Occasional amorphous and dark plant material.

APPENDIX 14: POLLEN

By Dr Michael Grant

Introduction

Pollen assessment was undertaken of eight samples from a monolith sequence though a medieval ditch 10092 on the site and geoarchaeological recording of the monolith sequence is provided by Kowalska (this report).

The pollen assessment has been undertaken with the following aims:

- Ascertain whether pollen is preserved within the samples submitted for assessment; and
- Provide an interpretation of the local environment based upon the pollen assemblage

If pollen was preserved in suitable quantities, full analysis counts were to be undertaken if further analysis was likely to be informative.

Methodology

Standard preparation procedures were used (Moore *et al*. 1991). A total of eight samples were selected for preparation (see Table 14.). 2cm^3 of sediment was processed from each sample. To each sample a *Lycopodium* spike added (two tablets from batch 3862) to allow the calculation of pollen concentrations (Stockmarr 1971). All samples received the following treatment: 20 mls of 10% KOH (80°C for 30 minutes); 20mls of 60% HF (80°C for 120 minutes); 15 mls of acetolysis mix (80°C for 3 minutes); stained in 0.2% aqueous solution of safranin and mounted in silicone oil following dehydration with tert-butyl alcohol. Due to the highly minerogenic nature of these samples additional sieving and decanting was undertaken between the KOH and HF stages.

Pollen counting was undertaken at a magnification of x400 using a Nikon transmitted light microscope. Determinable pollen and spore types were identified to the lowest possible taxonomic level with the aid of a reference collection kept at COARS, University of Southampton. The pollen and spore types used are those defined by Bennett (1994; Bennett *et al*. 1994), with the exception of Poaceae which follow the classification given by Küster (1988), with Cerealia-type grains further classified using Andersen (1979) with plant nomenclature ordered according to Stace (2010). A total land pollen (TLP) sum of 100 grains

was sought for the pollen assessment but was only achieved for samples from context 10097 (Pol_5-7).

Table 14.1: List of pollen samples assessed from Ditch 10092

Sample Number	Monolith Number	Context Number	Depth from top of monolith (m)
Pol_1	3	10061	0.1
Pol_2	5	10094	0.11
Pol_3	6	10094	0.21
Pol_4	6	10093	0.4
Pol_5	7	10097	0.13
Pol_6	8	10097	0.05
Pol_7	8	10097	0.23
Pol_8	8	10098	0.4

Results

The pollen identified and their respective counts are shown in 14.2. Pollen concentrations were 2000-3700 grains cm^{-3}, increasing to 30300 grains cm^{-3} in Pol_6. Pollen preservation was poor in the samples with low counts, with corroded and broken grains prominent. Such degradation of pollen wasn't present in the context 10097 samples. This context consisted of a firm and homogenous (10YR 5/2) greyish brown silt/clay laid down in a low energy deposition environment (Kowalska this report).

The sequence, of medieval age, shows similarities to the sequences investigated at Finzel's Reach (Druce 2017) and Aspire/Albert House (Grant forthcoming), which also show a predominantly treeless environment. The local vegetation is dominated by Poaceae (grasses). *Ranunculus acris*-type (buttercup), *Heracleum sphondylium* (hogweed) and *Anthyllis vulneraria* (kidney vetch) may also be associated with such grassland. *Cichorium intybus*-type (dandelions and chicory), *Urtica dioica* (nettle) and Brassicaceae (cabbage family) may be indicative of areas of waste ground. *Plantago lanceolata* (ribwort plantain) and *Pteridium aquilinum* (bracken) may indicate disturbed ground, with both of these often found on floodplain soils. The high Chenopodiaceae (goosefoots) is likely to reflect local brackish estuarine communities, with *A. vulneraria* and *Echium* (viper's-buglosses) also commonly associated with coastal grassland. Foraminifera test lining were also common in

these samples. Dinwiddy *et al.* (2011), working immediately northwest of the site, showed the presence of a broad, shallow estuarine inlet of the River Avon in this area.

The presence of *Centaurea cyanus* (cornflower), *Ranunculus arvensis* (corn buttercup) and Avena-Triticum (Oat-Wheat) indicates the local presence of arable activity. This could suggest a local proximity of field margins/arable environments within the wider area, or simply the incorporation of arable waste products into the base of the ditch. A single grain of *Humulus lupulus* (hop) was also present, which could represent industrial waste. At Aspire/Albert House, Grant (forthcoming) differentiated large Poaceae grains between cultivated or wild-types types, with only the latter present. Druce (2017) did not undertake such a differentiation, opening up the possibility that cultivates were present, but stated that cultivation of crops within the industrial part of medieval Bristol was unlikely, and grain for human consumption was grown away from the city and milled elsewhere (Druce 2017, 6). Pollen analysis in Dinwiddy *et al.* (2011) showed that from the mid-13th century waste material had been deliberately deposited within the inlet. Deposition / in wash of waste into the ditch from a local processing source of arable crops at Temple Back is therefore also possible.

Summary

The sequence from ditch 10092 had variable pollen preservation, with viable concentrations limited to context 10097. The pollen assemblage, showing a largely treeless grassland floodplain, compliments previous pollen investigations in the local area from medieval contexts. The presence of indicators of brackish communities, including probable in wash of foraminifera into the ditch, suggest periodic flooding of this area by the river. An arable signal was prevalent in the pollen, represented by the presence of cereal pollen and associated taxa commonly found in arable settings. This may be related to local crop processing rather than actual arable agriculture on the floodplain that is periodically being flooded.

Although pollen analysis would have been viable upon one sample from context 10097, the pollen sequence is similar to those previously obtained from the local area so is unlikely to offer much in the way of additional new information beyond what has be gleaned from the assessment results as they stand (open landscape, local grassland, brackish communities and periodic flooding, and indicators of arable activity), so was not undertaken.

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Table 14.2: Pollen counts from ditch 10092

Sample	Pol_1	Pol_2	Pol_3	Pol_4	Pol_5	Pol_6	Pol_7	Pol_8
Monolith	3	5	6	6	7	8	8	8
Context	10061	10094	10094	10093	10097	10097	10097	10098
Depth in monolith (m)	0.1	0.11	0.21	0.4	0.13	0.05	0.23	0.4
Pinus sylvestris				1				1
Quercus		1		1	2	1	6	
Alnus glutinosa			2	1			1	
Populus		2		1	3			
Corylus avellana-type		1		3	8	1	3	
Salix					1			
Ranunculus acris-type			1	3	8		2	
Ranunculus arvensis		1				1	1	
Humulus lupulus							1	
Urtica dioica							2	
Chenopodiaceae	2	1	1	1	8	12	4	
Polygonum					1			
Brassicaceae		1		1	3	3	3	
Sedum			1			1	2	
Rosaceae undif.						2		
Anthyllis vulneraria						1	2	
Fabaceae undif.								1
Heracleum sphondylium						1		
Apiaceae undif.						2	3	
Gentianella campestris-type							1	
Echium					1			
Stachys-type							2	
Plantago lanceolata					2		3	
Valeriana officinalis							1	
Cirsium-type			1		1			
Centaurea cyanus						2	3	
Cichorium intybus-type	1	1	1			2	2	
Solidago virgaurea-type				1	1	3	4	
Artemisia-type							1	
Cyperaceae undiff.	1		1	2	2	1	10	
Poaceae undiff.	2	9	17	11	54	58	38	3
Cerealia-type (Avena-Triticum group)	5		3	1	5	9	7	
Typha latifolia	1							
Pteridium aquilinum				5			3	3
Polypodium	1	6	3	6		1	7	3
Pteropsida (monolete) indet.	4	2	3	5	13	4	8	5
PQS							1	
Total Pollen Sum	17	25	34	43	113	105	120	16
Total Land Pollen Sum	11	17	28	27	100	100	102	5
Pollen Concentration	2370.598	3595.117	2018.832	3698.603	9369.329	30282.48	3718.586	2300.875

APPENDIX 15: DIATOM ASSESSMENT

By Dr Tom Hill

Introduction

A total of four samples were submitted for diatom assessment from sedimentary sequences extracted during ground investigations at AFA HQ Temple Back, Bristol. The samples derived from monolith tins (n. 2) obtained from a proposed medieval ditch fill 10092. The samples are from the lower most units within this sequence (units 8, 7 and 6), spanning contexts 10096 and 10097 and are typified by silts and clays with varying humified organic content.

A summary of the samples under investigation is provided below.

Table 15.1: summary of samples submitted for diatom assessment

	Monolith	Depth	Context
Sample	Monolith 7	0.13-0.14	10097
	Monolith 8	0.05-0.06	10097
	Monolith 8	0.23-0.24	10097
	Monolith 8	0.40-0.41	10096

Methodology

Four spot samples were prepared for diatom assessment from the sedimentary sequence. 0.5g of sediment was required for the diatom assessment preparation. Due to the high silt and clay content of most samples, all samples chosen for assessment were first treated with sodium hexametaphosphate and left overnight, to assist in minerogenic deflocculation. Samples were then treated with hydrogen peroxide (30% solution) and/or weak ammonia (1% solution) depending on organic and/or calcium carbonate content, respectively. Samples were finally sieved using a 10µm mesh to remove fine minerogenic sediments. The residue was transferred to a plastic vial, from which a slide was prepared for subsequent assessment.

A minimum of 100 diatoms were to be identified for each sample depth to undertake a complete assessment of potential. When present, diatom species were identified with

reference to van der Werff and Huls (1958–74), Hendy (1964) and Krammer and Lange-Bertalot (1986–1991). Ecological classifications for the observed taxa were then achieved with reference to Vos and deWolf (1988; 1993), Van Dam *et al*. (1994), Denys (1991–92; 1994) and Round *et al*. (2007). If preservation was found to be low, ten slide traverses were completed in an attempt to extract the diatom data available from the sample under assessment.

Results and Discussion

Table 15.2 provides a summary of the taxa observed the samples under assessment. In the majority of cases, unfortunately it became apparent that diatom preservation was found to be low, with limited floral abundance and diversity encountered. When present, taxa were most often identifiable to species level, but in some instances, identifications were only possible to genera level, due to frustule fragmentation or poor preservation.

To assist in the subsequent assessment of palaeoenvironmental potential, simplified ecological and lifeform classifications for each species will be referred to within the report. Ecology will be divided into those diatoms encountered in marine, brackish, fresh (brackish-marine etc.) waters. Lifeform can be divided into planktonic, tychoplanktonic and benthic species. Planktonic taxa live floating within the water column, whereas benthic taxa are those that live either attached to or within the substrate. Tychoplanktonic taxa are diatoms that readily occur in plankton but are primarily derived from other habitats, such as attached to substrates. Additional lifeform classifications can also be applied to diatom species (epiphytic, epipelic, epipsammic, aerophilous etc.), but for the purposes of an assessment level study, these will only be referred to if/when relevant in subsequent discussions. A qualitative assessment of species abundance and diversity is also provided. If abundance is stated to be low, this infers that it was not possible to count 100 diatom frustules during the assessment. Similarly, if diversity is high, over 15 taxa were encountered during assessment; medium = 5-15 taxa; low = <5 taxa.

It was noted that some of the samples displayed iron staining during microscope assessment. This was particularly relevant within the lowermost sample (Monolith 8: 0.40-0.41m) where diatoms were almost wholly absent. The diatom frustules, when present, were also found to display evidence of dissolution (the outside of the biogenic silica frustules were either absent or poorly preserved). This indicates the likely impact of post-depositional silica dissolution on the preservation of the diatoms. Studies have found that sedimentary contexts containing high levels of precipitated iron oxides have the potential to dissolve diatoms over

time (Mayer *et al.* 1991). Such iron oxides are often deposited in locations undergoing repeated water table fluctuations.

Due to the overall poor preservation and inability to obtain full assessment counts in all four samples, any palaeoenvironmental interpretations must be treated with caution. This is due to the potential for the diatoms present not to be entirely representative of the depositional setting that prevailed at the time of sedimentation. Low counts can often infer that post-depositional silica dissolution has resulted in the more robust diatoms remaining, with the weaker silicious frustules having been destroyed over time.

Table 15.2: Summary of diatoms encountered during assessment

		Sample			
		Monolith 7	Monolith 8	Monolith 8	Monolith 8
		0.13-0.14	0.05-0.06	0.23-0.24	0.40-0.41
Planktonic Taxa	*Actinoptychus senarius*	3	2	10	1
	Paralia sulcata	7		8	1
	Pseudomelosira westii	2			
	Pseudopodosira stelligera		1	1	
	Triceratum favus				
Tychoplanktonic Taxa	*Delphineus surirella*		1	4	
	Rhaphoneis amphiceros	1			
	Campylodiscus echeneis	1			
	Gomphonema gracile		1		
	Gyrosigma sp.		2		
	Gyrosigma acuminatum			21	
	Hantzschia amphioxys		7		
	Nitzschia sp.		2		
	Nitzschia navicularis	3		1	
	Nitzschia punctata	1			
	Nitzschia sigma	2			
	Pinnularia microstauron	2	7		
	Surirella brebissoni	1	3		
	Synedra pulchella		17		
Abundance		low	low	low	low
Diversity		low	low	low	low

The basal sample (Monolith 8: 0.40-0.41m) yielded only two frustules, both of which were marine planktonic taxa (*Paralia sulcata, Actinoptychus senarius*). Overlying this, (Monolith 8: 0.23-0.24m) the limited assemblage is also typified by these two taxa, although in higher numbers. Additional taxa include the tychoplanktonic marine-brackish species *Delphineis surirella*, and a relative abundance of the benthic marine-brackish epipelon taxa *Gyrosigma acuminatum*. Such marine-brackish epipelic taxa are often most typically to be found on muddy substrates in tidally influenced or estuarine settings. The uppermost sample from Monolith 8: (0.05-0.06m) yielded a slightly different assemblage. Whilst marine plankton were again encountered, it was in much lower numbers. Similarly, marine-brackish benthic

taxa were less common, replaced by species more often associated with lower salinity settings (*Pinnularia sp., Synedra sp., Hantzschia sp.*). Species from these diatom groups can be encountered in estuarine contexts, but a reduction in saline influence could be indicated. This is particularly possible in light of the aerophilous nature of the brackish-freshwater taxa *Hantzschia amphioxys*, which infers the species is adapted to irregular periods of flooding. The final sample (Monolith 7: 0.13-0.14m) sees a return to the overall dominance of planktonic taxa most often associated with marine waters (*A. senarius, P. sulcata*), whilst the benthos are also typified by diatoms most often associated with marine-brackish muddy substrates (*Nitzschia navicularis, N. punctata, N. sigma*).

It must again be stressed that any palaeoenvironmental interpretations must be seen as tentative due to the overall limited assemblage size encountered in each sample. However, it is evident that tidal influence was present through the depositional history of contexts 10096 and 10097, with the potential for a brief reduction in saline conditions in sample M8 0.05-0.06m, positioned towards the middle of context 10097. Additional proxy analysis would therefore be needed to support/query such interpretations.

References

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Vos, P.C. and de Wolf, H. 1988 'Methodological aspects of palaeo-ecological diatom research in coastal areas of the Netherlands'. *Geologie en Mijnbouw*, 67, 31-40.

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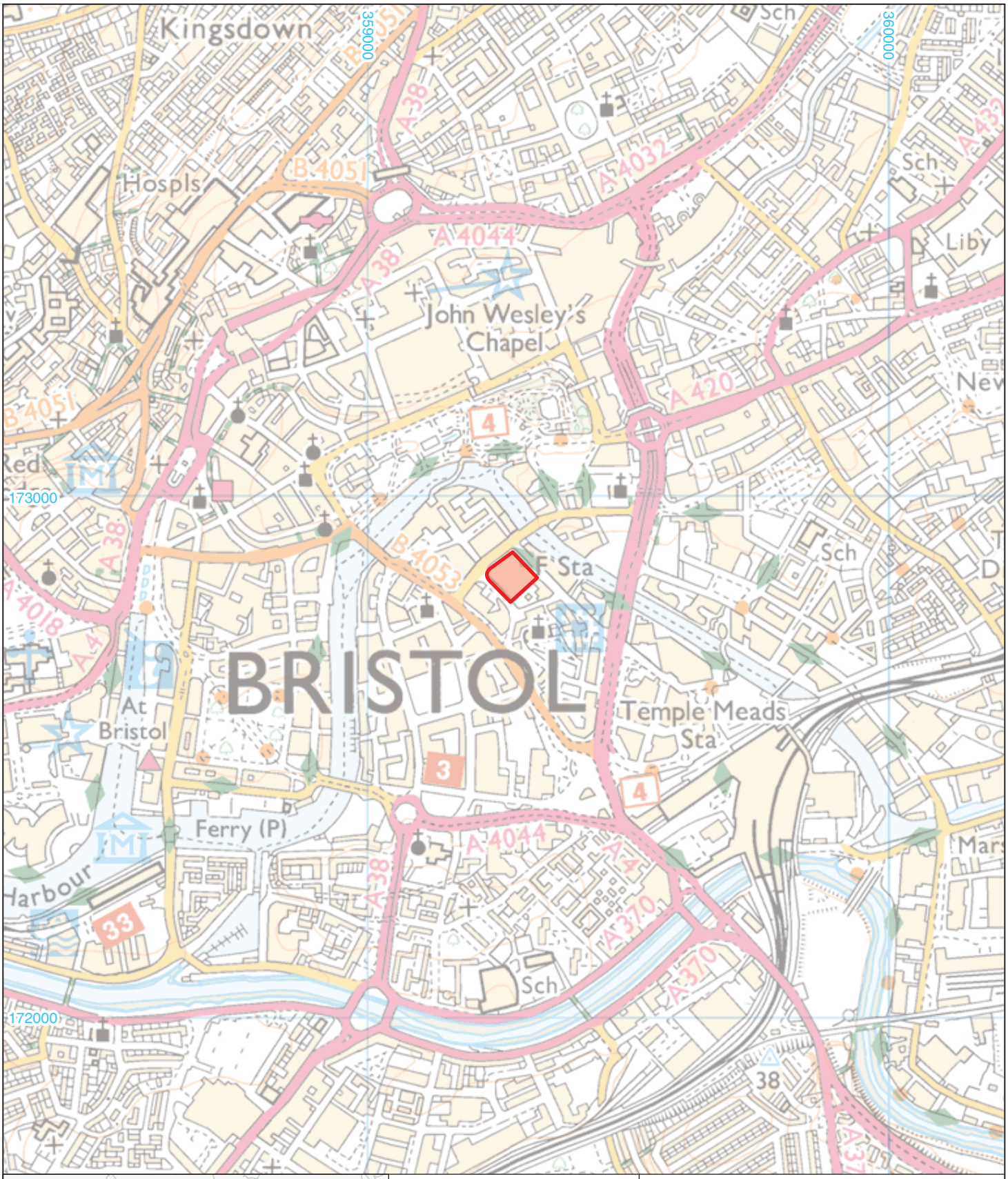
APPENDIX 16: OASIS REPORT FORM

PROJECT DETAILS		
Project name	Avon Fire Authority HQ Site, Temple Back, Bristol	
Short description	The earliest feature was a 12th to 13th century ditch cutting into the natural alluvium. A wooden paddle recovered from the upper fill of the ditch was most probably used for paddling a small watercraft. The local environment during the medieval period appears to be one of rough grassland/waste land with damp areas alongside and within the ditch and occasional flooding, resulting in the formation of several alluvial layers sealing the ditch. Subsequent activity, including a number of small pits and a medieval wall, indicate that the area had stabilised enough to be utilised, most likely as gardens to the rear of tenement plots fronting onto Temple Street. Numerous post-medieval and modern structural remains indicate that the whole site underwent continual redevelopment throughout the 16th to 20th centuries, as settlement and industrial activity in this area of Redcliffe expanded rapidly.	
Project dates	31 July–05 September 2019	
Project type	Excavation and watching brief	
Previous work	Heritage Assessment (CA 2019) Field evaluation (CA 2019)	
Future work	Unknown	
PROJECT LOCATION		
Site location	Avon Fire Authority HQ Site, Temple Back, Bristol, BS1 6EU	
Study area (m^2/ha)	0.53ha. An area of 210m^2 was excavated within the site. A further area was subject to an archaeological watching brief.	
Site co-ordinates	359281 172841	
PROJECT CREATORS		
Name of organisation	Cotswold Archaeology	
Project brief originator	N/A	
Project design (WSI) originator	Cotswold Archaeology	
Project Manager	Steve Sheldon	
Project Supervisor	Luke Brannlund and Sian Reynish	
MONUMENT TYPE	Ditch – medieval Wall – medieval Domestic structures – post-medieval	
SIGNIFICANT FINDS	Wooden paddle – undated Pottery – medieval Pottery – post-medieval Whetstone – undated Wall plaster - post-medieval	
PROJECT ARCHIVES	**Intended final location of archive** **Bristol's Museums, Galleries and Archives (BRSMG:2019.7)**	**Content (e.g. pottery, animal bone etc)**
Physical		Ceramics, worked stone
Paper		Context records, plans, sections, drawing records, photographic records, report

Digital		Database, digital photos, report
BIBLIOGRAPHY		
Cotswold Archaeology 2021 *Avon Fire Authority HQ Site, Temple Back, Bristol: Archaeological Excavation and Watching Brief* CA typescript report **CR0508_1**		



N

Site boundary

0 400m

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Andover 01264 347630
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PROJECT TITLE

Avon Fire Authority HQ Site, Temple Back, Bristol

FIGURE TITLE

Site location plan

DRAWN BY	**AW**	*PROJECT NO.*	**CR0508**	*FIGURE NO.*
CHECKED BY	**DJB**	*DATE*	**15.03.21**	**1**
APPROVED BY	**JC**	*SCALE@A4*	**1:10,000**	

359250

359300

359350

172900

172850

172800

Counterslip

Temple Back

Temple Street

Water Lane

Fire Station

T1

see figures 5 to 8

T2

T3

T1

T2

see figures 9 and 10

N

Site boundary

Excavation area

Watching brief area

Structure

Surface

Deposit

Previous evaluation trench (CA 2014)

Previous evaluation trench (CA 2019)

Standing building exclusion zone

Extent of existing buildings and basements

0 1:500 25m

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PROJECT TITLE

Avon Fire Authority HQ Site, Temple Back, Bristol

FIGURE TITLE

Site plan, showing excavation and observation areas, existing building footprint and previous archaeological works

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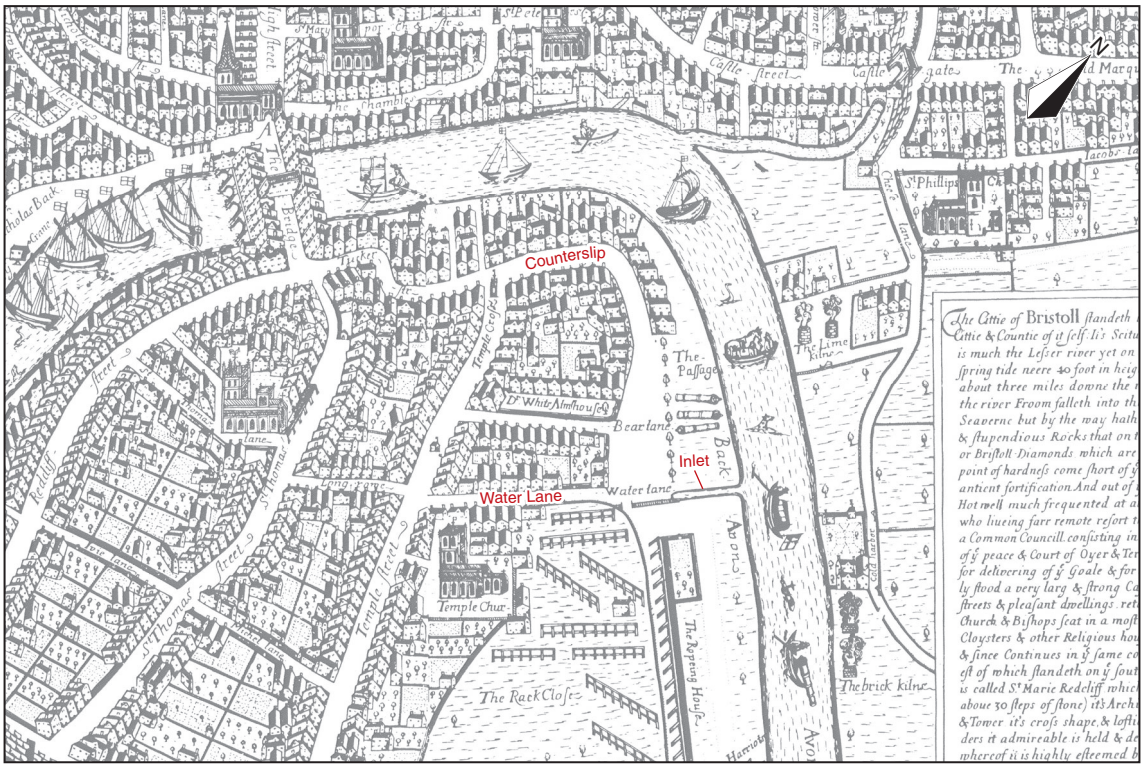
APPROVED BY	JC	SCALE@A3	1:500	



Millerd's 1673 plan of Bristol, showing Counterslip and Water Lane (not to scale - used with the permission of the Bristol Record Office)

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PROJECT TITLE

Avon Fire Authority HQ Site, Temple Back, Bristol

FIGURE TITLE

Historic map

DRAWN BY	**AW**	*PROJECT NO.*	**CR0508**	*FIGURE NO.*
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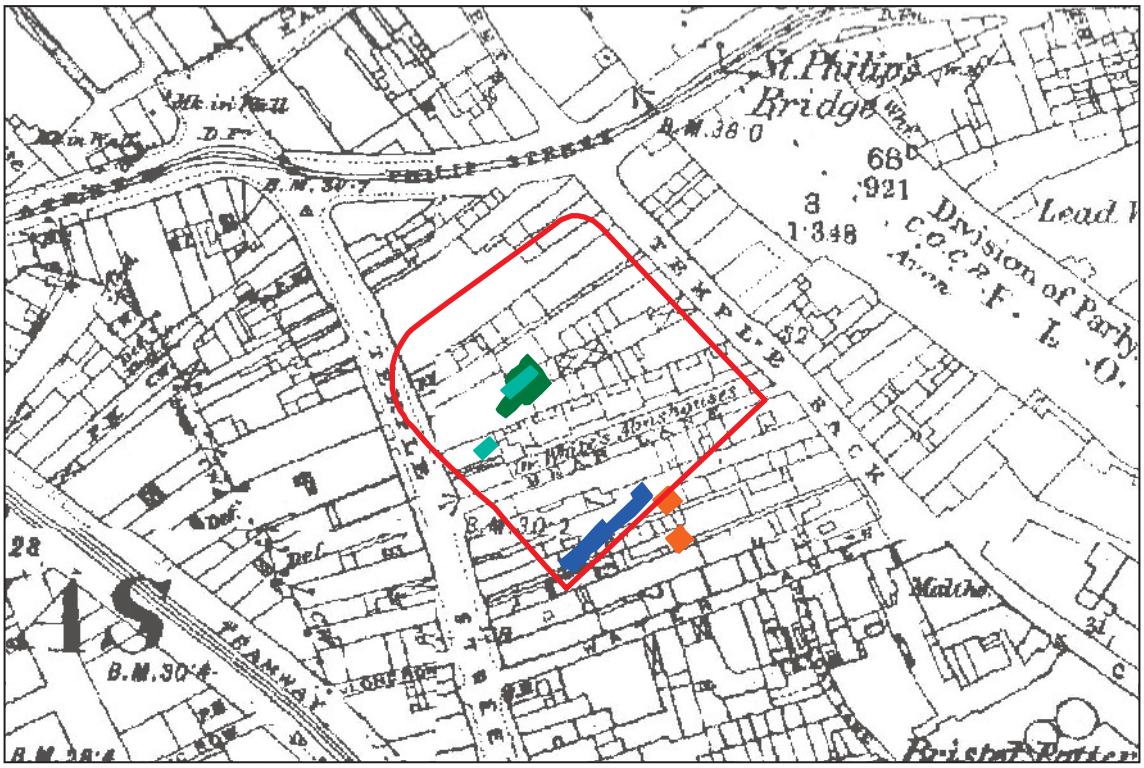
APPROVED BY	**JC**	*SCALE@A4*	**NA**	



Site plan on extract of 1884 - 1886 OS Map at 1:2000 (mapping © Landmark Information Group, purchased from www.promap.co.uk)

Site boundary

Excavation area

Watching brief area

Previous evaluation trench (CA 2014)

Previous evaluation trench (CA 2019)

0 1:2000 400m

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PROJECT TITLE

Avon Fire Authority HQ Site, Temple Back, Bristol

FIGURE TITLE

Historic map

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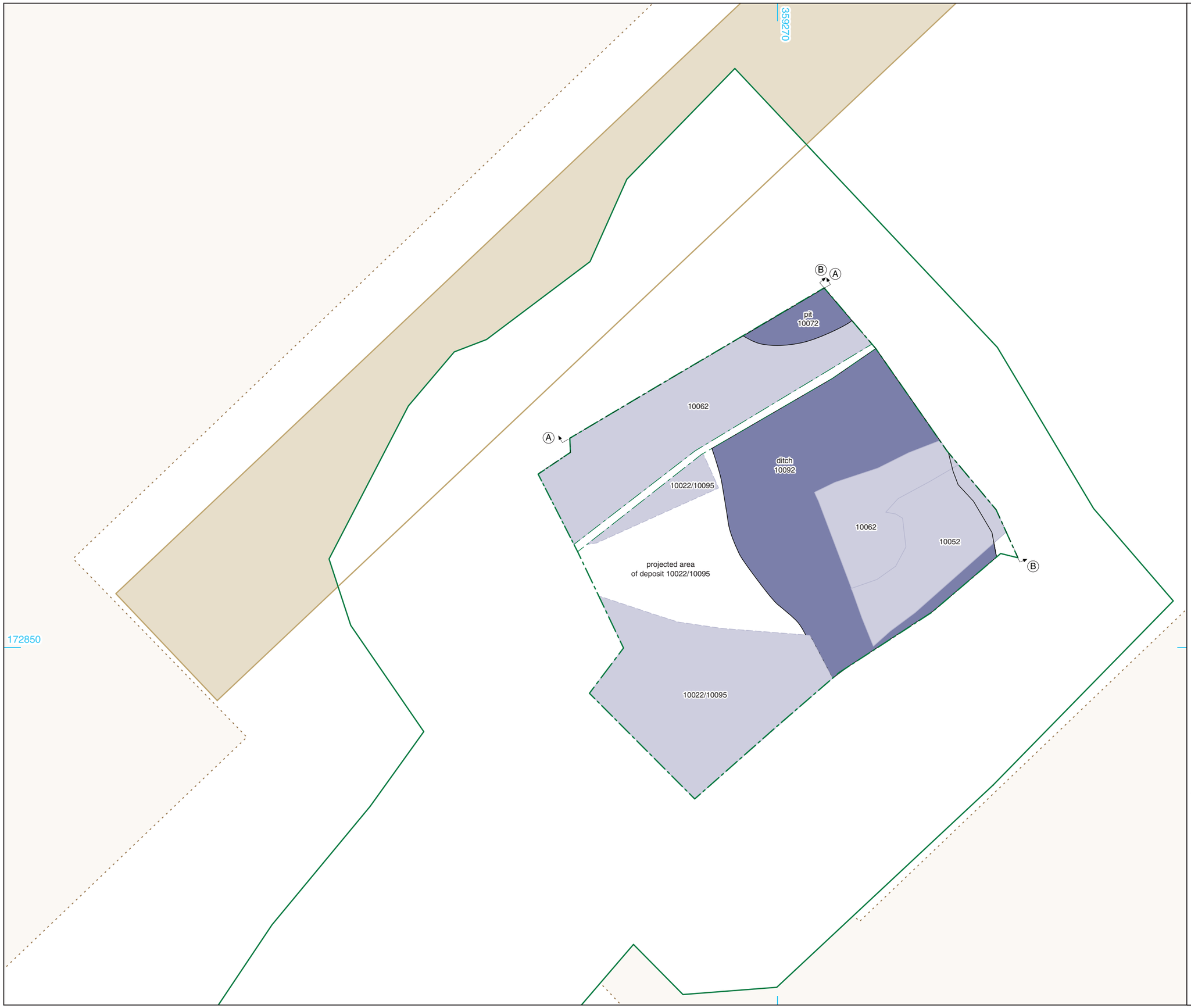

N

Site boundary
Excavation area (top)
Excavation area (bottom)
Excavation area (stepping)

Period 1: Medieval, 12th to13th centuries
Deposit
Feature

Standing building exclusion zone
Extent of existing buildings and basements
A A Section location

0 1:50 2m

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PROJECT TITLE
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FIGURE TITLE
Plan of Excavation Area: Period 1

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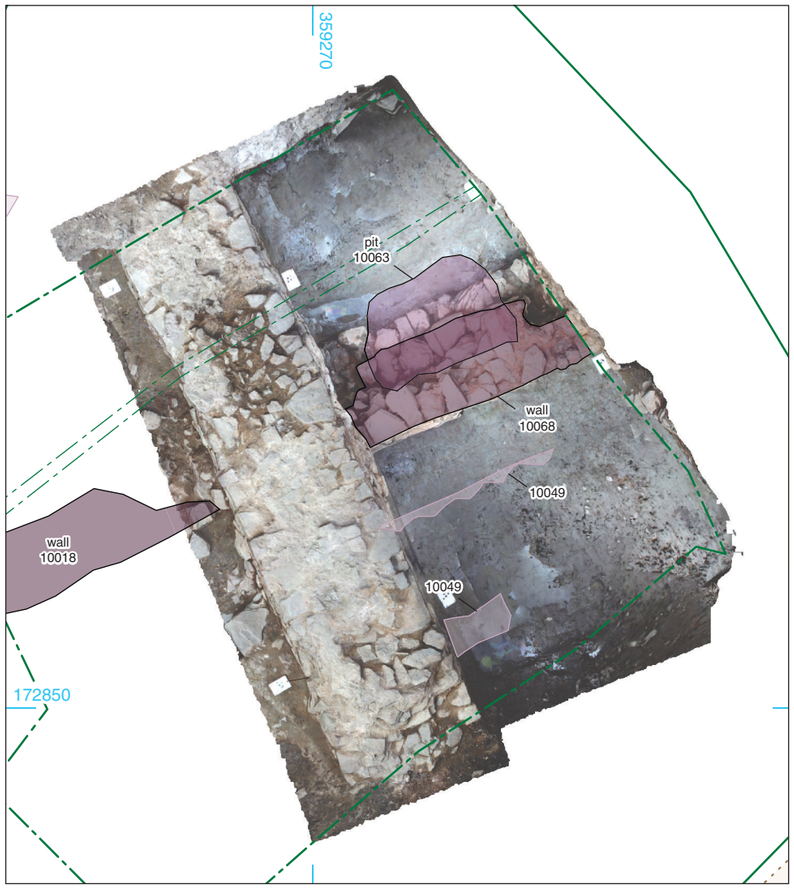
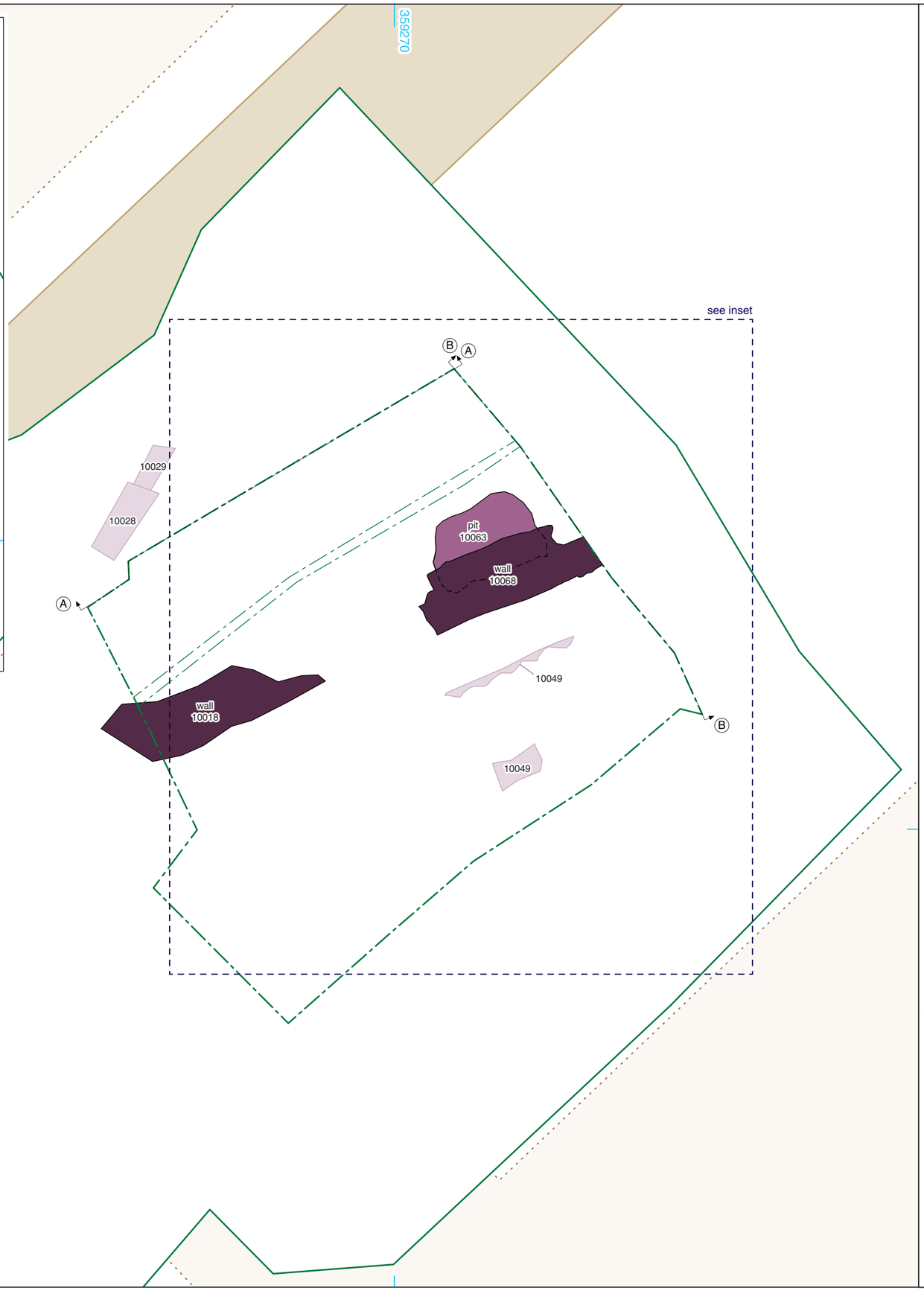
APPROVED BY	**JC**	*SCALE@A3*	**1:50**	





N

Site boundary
Excavation area (top)
Excavation area (bottom)
Excavation area (stepping)

Period 2: Medieval, 14th to 15th centuries
Structure
Deposit
Feature

Standing building exclusion zone
Extent of existing buildings and basements
A A Section location

0 1:50 2m

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FIGURE TITLE
Plan and Orthophotograph of Excavation Area: Period 2

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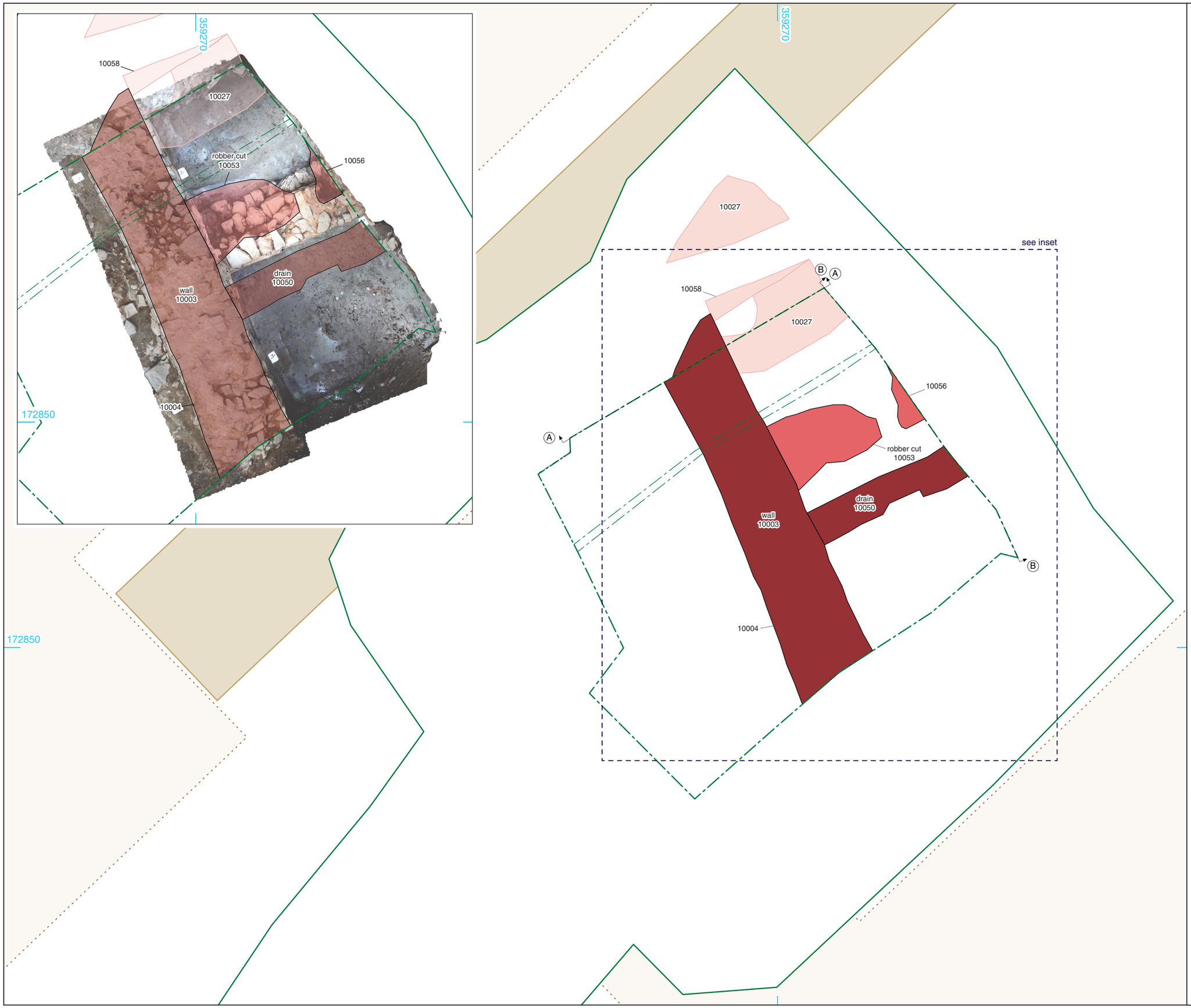

N

Site boundary
Excavation area (top)
Excavation area (bottom)
Excavation area (stepping)

Period 3: Early to mid post-medieval, 16th to 17th centuries
Structure
Deposit
Feature

Standing building exclusion zone
Extent of existing buildings and basements
A A Section location

0 1:50 2m

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FIGURE TITLE
Plan and Orthophotograph of Excavation Area: Period 3

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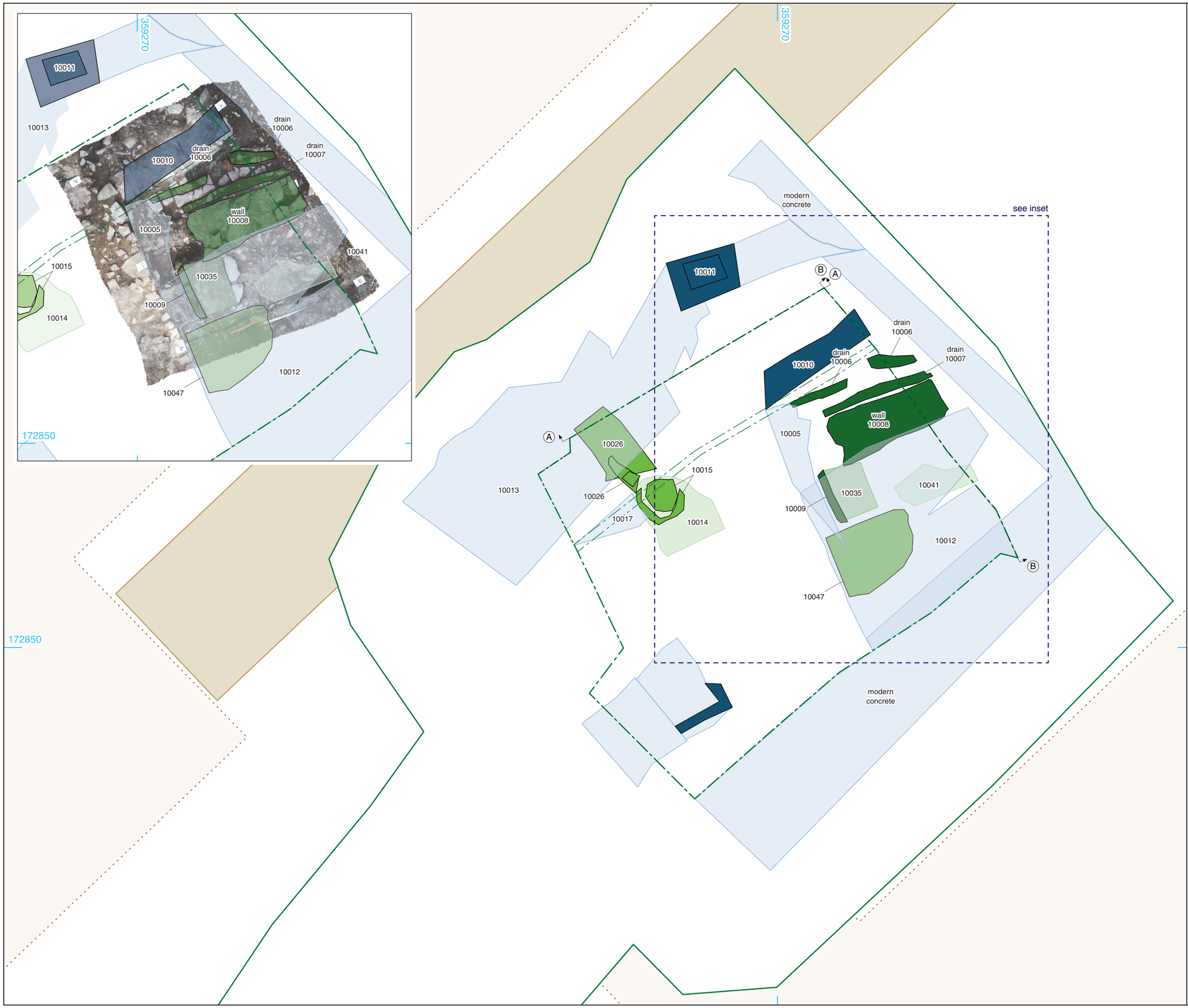

N

Site boundary
Excavation area (top)
Excavation area (bottom)
Excavation area (stepping)

Period 4: Late post-medieval, 18th to 19th centuries
Structure
Surface
Deposit
Feature

Modern:
Structure
Deposit

Standing building exclusion zone
Extent of existing buildings and basements
Section location

0 1:50 2m

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FIGURE TITLE
Plan and Orthophotograph of Excavation Area: Period 4 and modern

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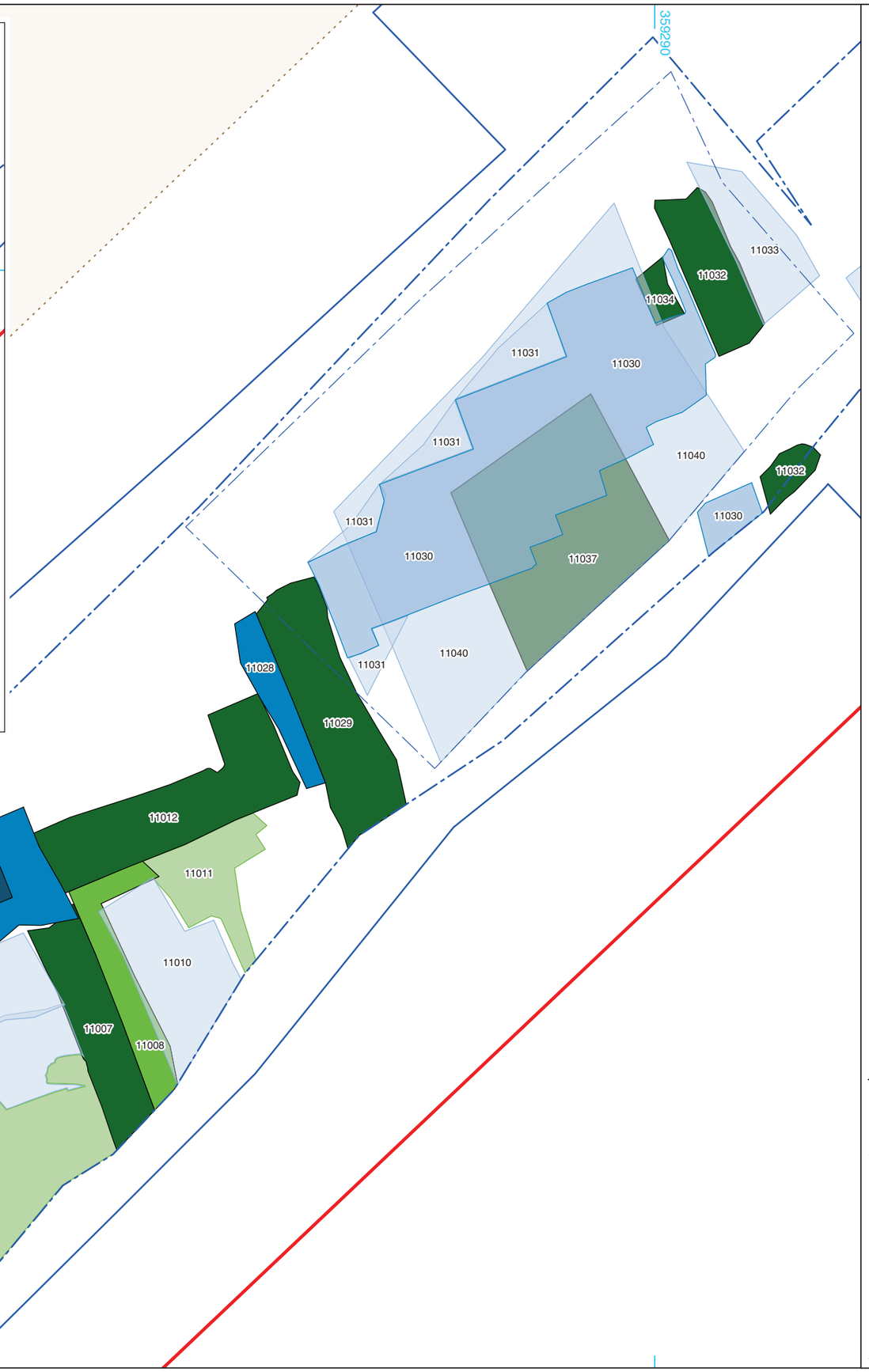

N

Site boundary
Watching brief area (top)
Watching brief area (bottom)
Watching brief area (stepping)

Period 4: Late post-medieval, 18th to 19th centuries
- Structure
- Surface
- Deposit
- Feature

Modern:
- Structure
- Surface
- Deposit
- Feature

Extent of existing buildings and basements

0 1:50 2m

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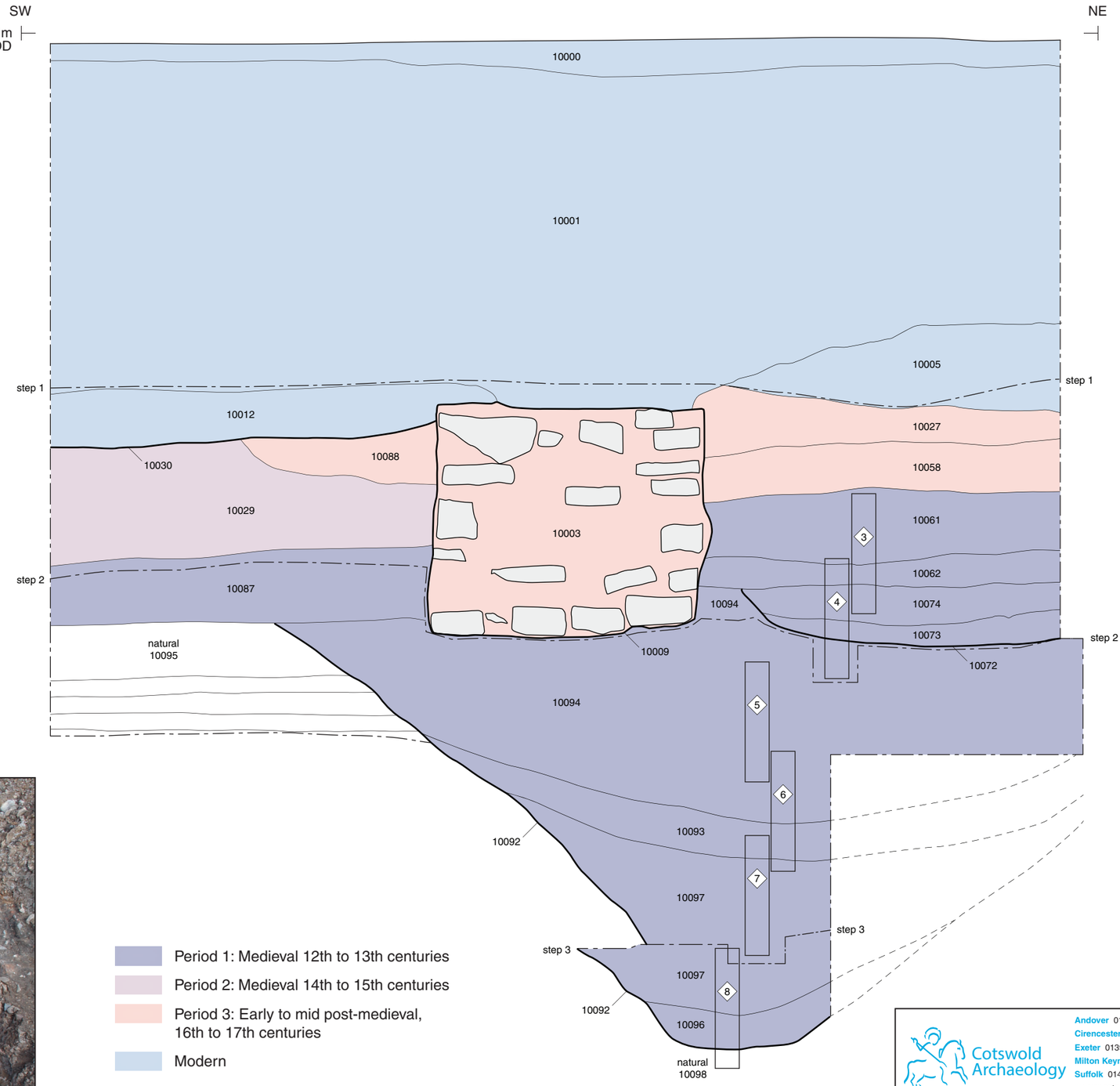
FIGURE TITLE
Plan and Orthophotograph of Watching Brief Area: Period 4 and modern

DRAWN BY	**AW**	*PROJECT NO.*	**CR0508**	*FIGURE NO.*
CHECKED BY	**DJB**	*DATE*	**15.03.21**	**9**
APPROVED BY	**JC**	*SCALE@A3*	**1:50; 1:100**	

Section AA



Section AA containing ditch 10092, looking north-west (1m scale)

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Avon Fire Authority HQ Site, Temple Back, Bristol

FIGURE TITLE

Section AA and photograph

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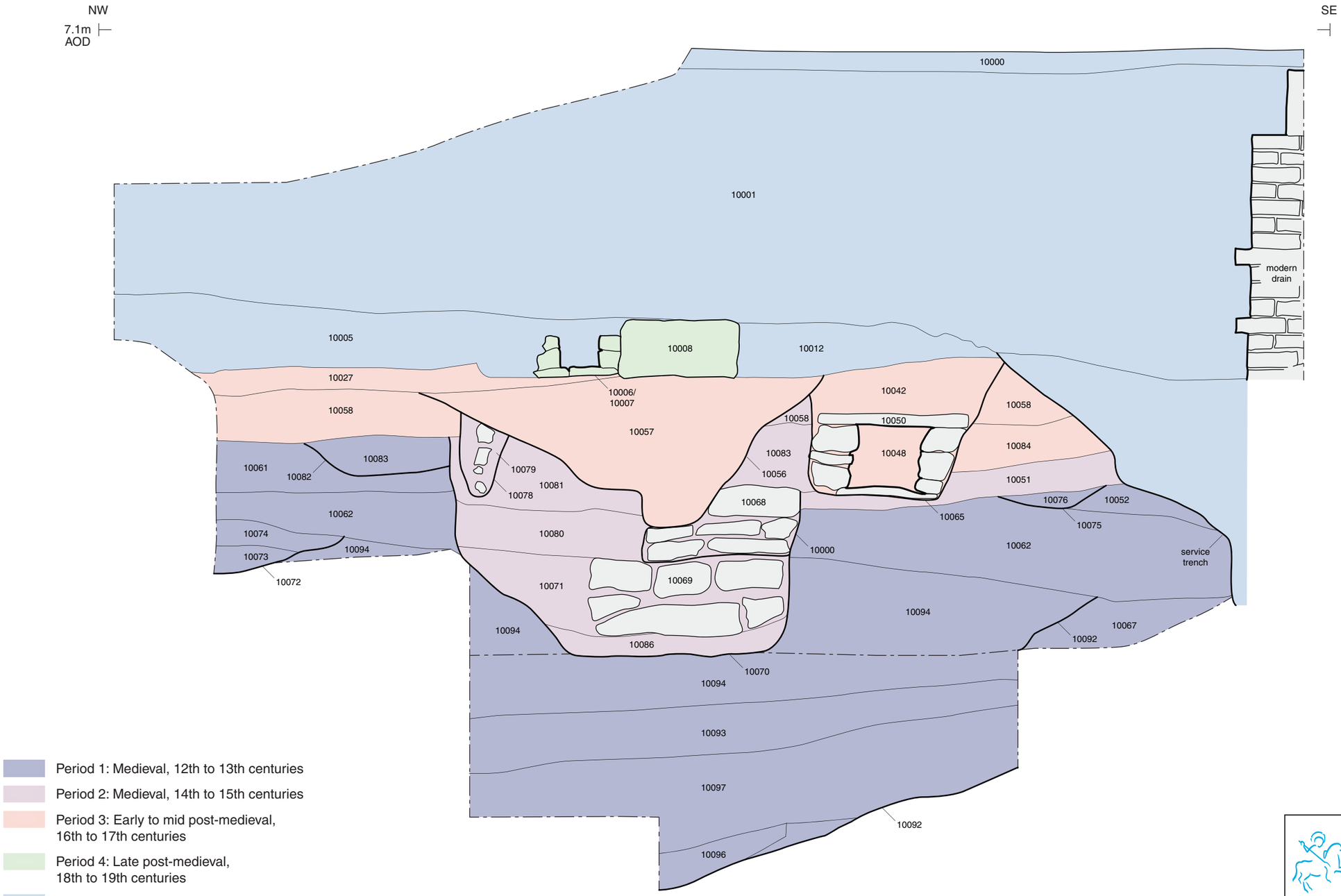
APPROVED BY	**JC**	*SCALE@A3*	**1:20**	

Section BB



Period 1: Medieval, 12th to 13th centuries

Period 2: Medieval, 14th to 15th centuries

Period 3: Early to mid post-medieval, 16th to 17th centuries

Period 4: Late post-medieval, 18th to 19th centuries

Modern

0 1:20 1m

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PROJECT TITLE

Avon Fire Authority HQ Site, Temple Back, Bristol

FIGURE TITLE

Section BB

DRAWN BY	AW	PROJECT NO.	CR0508	FIGURE NO.
CHECKED BY	DJB	DATE	15.03.21	11
APPROVED BY	JC	SCALE@A3	1:20	

Period 2 wall 10068 and Period 3 wall 10003, looking north-west (1m scales)

Period 2 wall 10068 and Period 3 wall 10003 following removal of Period 2 and Period 3 deposits and layers, looking north-west (1m scales)

Extent of modern truncation at western side of Excavation Area

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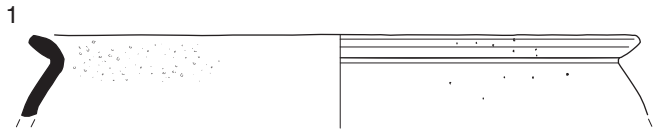
PROJECT TITLE

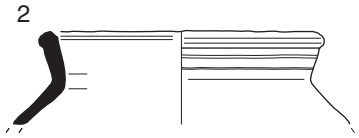
Avon Fire Authority HQ Site,
Temple Back, Bristol

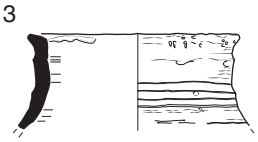
FIGURE TITLE

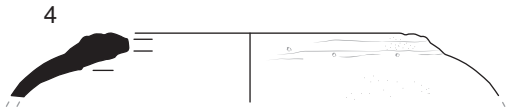
Photographs

DRAWN BY	**AW**	*PROJECT NO.*	**CR0508**	*FIGURE NO.*
CHECKED BY	**DJB**	*DATE*	**15.03.21**	**12**
APPROVED BY	**JC**	*SCALE@A3*	**NA**	









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PROJECT TITLE

AFA HQ Scheme, Temple Back, Bristol further works

FIGURE TITLE

Pottery: medieval (1-3) and post-medieval (4)

DRAWN BY	**KM**	*PROJECT NO.*	**CR0508**
CHECKED BY	**DJB**	*DATE*	**29/3/2021**
APPROVED BY	**JS**	*SCALE@A4*	**1:4**

FIGURE NO.

13

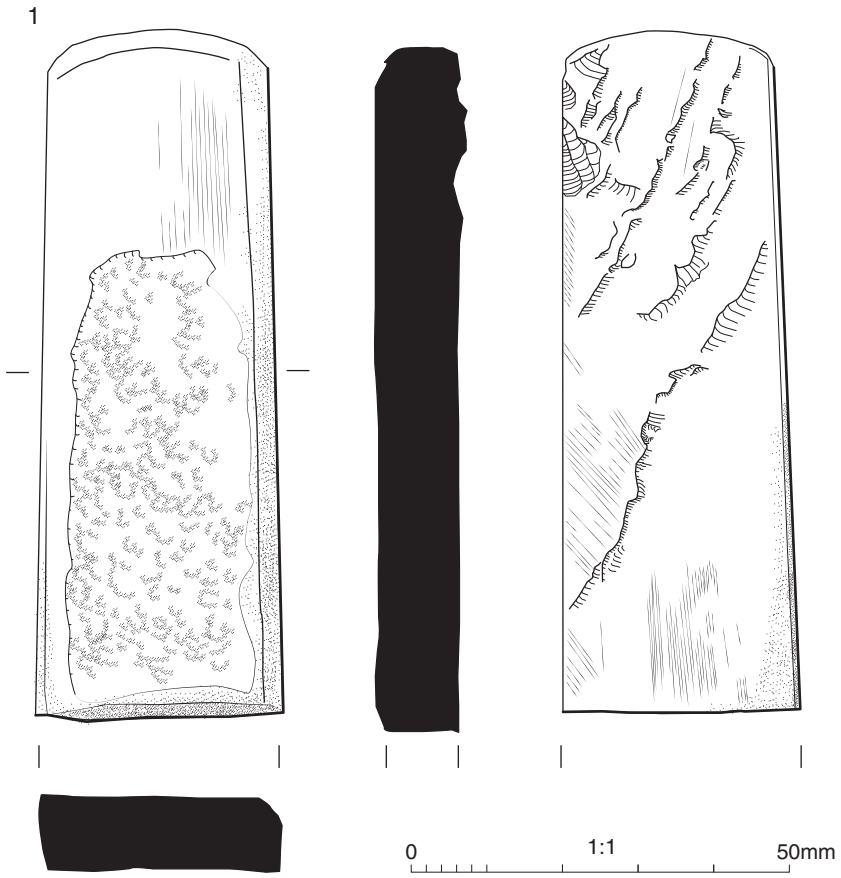

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FIGURE TITLE

Worked stone

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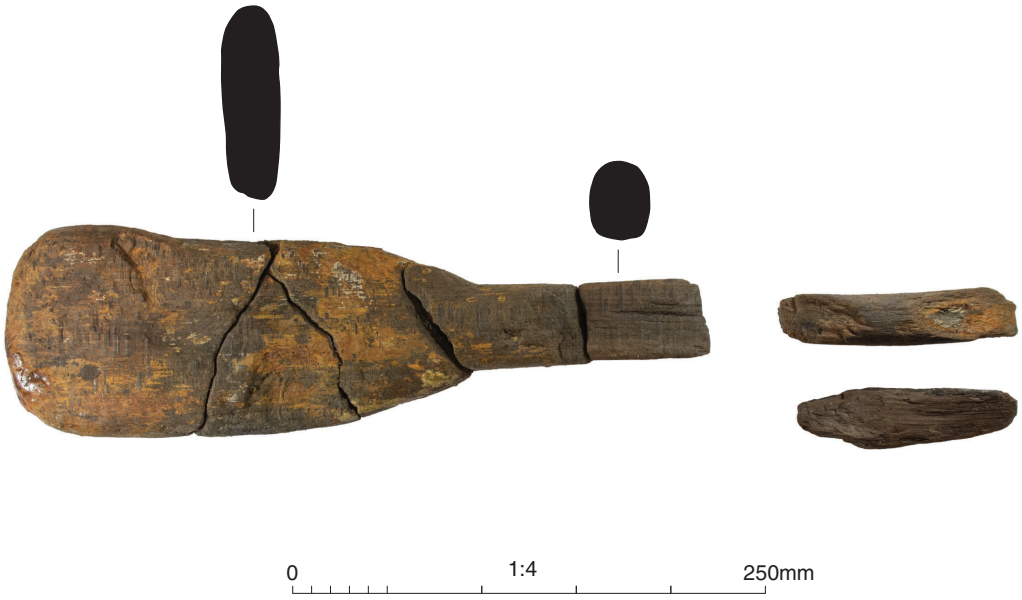

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PROJECT TITLE

AFA HQ Scheme, Temple Back, Bristol further works

FIGURE TITLE

Wooden paddle

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