



Lower Viaduct Estate, Carlisle Cumbria

Archaeological Evaluation



Oxford Archaeology North

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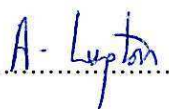
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CONTENTS

SUMMARY.....	3
ACKNOWLEDGEMENTS	4
1. INTRODUCTION.....	5
1.1 Circumstances of the Project.....	5
1.2 Site Location, Geology and Topography	5
2. METHODOLOGY	7
2.1 Project Design	7
2.2 Evaluation Trenches.....	7
2.3 Finds.....	7
2.4 Archive.....	7
3. BACKGROUND.....	9
3.1 Archaeological and Historical Background	9
3.2 Cartographic Development Of The Site	10
4. EVALUATION RESULTS	14
4.1 Introduction	14
4.2 Trench 1	14
4.3 Trench 2.....	16
4.4 Trench 3.....	17
4.5 Trench 4.....	20
5. FINDS	22
5.1 Introduction	22
5.2 Ceramic.....	22
5.3 Clay Tobacco Pipe	23
5.4 Industrial Residue	24
5.5 Ceramic Building Material.....	24
5.6 Glass.....	25
5.7 Wood.....	25
5.8 Animal Bone.....	25
5.9 Conclusion.....	25
6. DISCUSSION.....	26
6.1 Introduction	26
6.2 Phases of Development	26
6.3 Impact	27
7. BIBLIOGRAPHY.....	29
7.1 Primary and Cartographic Sources	29
7.2 Secondary Sources.....	29
7.3 Web Resources.....	30
APPENDIX 1: PROJECT BRIEF	31
APPENDIX 2: PROJECT DESIGN	35
APPENDIX 3: CONTEXT LIST.....	42

APPENDIX 4: FINDS CATALOGUE.....	44
ILLUSTRATIONS.....	46
List of Figures.....	46
List of Plates.....	46

SUMMARY

In November 2008, Oxford Archaeology North carried out a programme of archaeological evaluation across an area off Lower Viaduct Estate, Carlisle, Cumbria (centred on NGR NY 3995 5560). The evaluation was commissioned by Kier Scotland, acting on behalf of Tesco UK Ltd, and was intended to establish the presence or absence of any buried remains prior to a proposed supermarket development (planning application ref: 1/05/1333) as a condition of the planning permission, in accordance with a brief devised by Cumbria County Council's Historic Environment Service (CCCHES). However, information generated by geotechnical site investigation work, including borehole data, and underground utility mapping survey results, indicated areas of contamination and made ground, and showed numerous live services crossing the site. Based on this information the CCCHES brief was revised verbally from a minimum 5% sample evaluation to a targeted programme of trenching based on the results of an impact assessment (OA North 2008), and taking into account the details of the proposed construction. The evaluation comprised the excavation of four trenches each measuring 20-21m long and 1.6m wide, although Trench 3 was extended at its southern end to 5m wide. The trenches targeted those areas that were least likely to be contaminated, close to boreholes 11, 12, 13 and 15, within the footprint of the supermarket foodstore.

The proposed development site was identified as being in an area of high archaeological potential due to its proximity to the Roman fort and *vicus*, and lying just outside the medieval town walls. It was occupied more recently by nineteenth century buildings, such as a railway goods station and a grain shed. By the late twentieth century these buildings had been removed and replaced with a car showroom, council offices, recently demolished, and a public car park.

The low-lying nature of the site and its proximity to the river suggest that water management is likely to have been a continual problem. Clear indication of recent flooding is represented by the accumulation of silty-sand and modern debris along the northern bank of the River Caldew. Similar deposits of alluvial silts were encountered at varying depths within the evaluation trenches, demonstrating the extent of the flood plain that once stretched beyond the limits of the proposed development site. These were sealed with thick deposits of clay imported for levelling purposes in the late nineteenth century. The process of levelling and associated disturbance of the site for the construction of the goods station and yard appears to have largely removed the original topsoil from the site. As a result, only two trenches retained evidence of activity preceding the industrial development of the site in the later nineteenth century; a buried horticultural soil in Trench 2, which contained eighteenth and early nineteenth century pottery, and the remains of a similarly dated wall and field enclosure ditch in Trench 3. The evaluation demonstrated that, other than twentieth century metal working remains along the eastern part of the proposed development site, there was no significant archaeological deposits and/or features present in the evaluation trenches.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Ian Boyd and Fiona Lawson of Kier Scotland for commissioning and supporting the project.

The evaluation fieldwork was directed by Sean McPhillips, who was assisted by David Maron. The report was compiled by Sean McPhillips, who also assessed the finds. Ann Stewardson produced the drawings, and the report was edited by Emily Mercer, who was also responsible for project management.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 Following the submission of a planning application for a new Tesco supermarket on the Lower Viaduct Estate, Carlisle (planning application ref: 1/05/1333), permission has been granted with a condition to undertake a programme of archaeological investigation. The proposed development site was identified as having a high archaeological potential in a desk-based assessment previously undertaken (LUAU 2000) and in a more recent updated archaeological impact assessment (OA North 2008), due to its position close to the Roman fort and *vicus*, and just outside of the medieval town walls. In addition, by 1900, the site was extensively developed and contained a railway goods station and grain shed. Consequently, a brief was issued by Cumbria County Council's Historic Environment Service (CCCHES) for archaeological evaluation trenching of the site covering a minimum 5% random sample (*Appendix 1*).
- 1.1.2 However, subsequent information from geotechnical site investigation work, including borehole data, and the results of an underground utility mapping survey, indicated areas of contamination and made ground criss-crossed by live services. Therefore, CCCHES agreed to a more targeted programme of evaluation trenching based on the outcome of the updated impact assessment (*ibid*), taking into account the details of the proposed construction. Following this, CCCHES requested an area totalling 150m² to be trenched in the vicinity of boreholes 11, 12, 13 and 15.
- 1.1.3 In order to establish the nature and extent of any buried remains, and thereby inform any necessary mitigation for development of the site, Oxford Archaeology North (OA North) was commissioned by Kier Scotland, on behalf of Tesco UK Ltd, to undertake the archaeological evaluation, which was carried out in November 2008. This report sets out the results of this evaluation.

1.2 SITE LOCATION, GEOLOGY AND TOPOGRAPHY

- 1.2.1 The city of Carlisle developed on raised land between the rivers Caldew and Petteril, overlooking the Eden valley. The proposed development site lies within the centre of the city, on the Lower Viaduct Estate (NGR NY 3995 5560), on a thin spur of land with the raised West Coast Mainline railway to the north-east and River Caldew to the south-west (Fig 1). The site sits on the flood plain of the River Caldew, with underlying associated alluvial deposits (Young 1990, 2-4). It lies below a steep scarp, overlooked by the Roman city and medieval walled city, including Carlisle Castle and Cathedral. The land was recently occupied by former council offices, and a car showroom, both of which are now demolished. These buildings occupied the northern part of the site, with an extant car park spanning the southern and eastern areas.

- 1.2.2 The solid geology is primarily made up of red and grey Triassic sandstone of the Sherwood sandstone group (British Geological Survey 1982). This is for the most part overlain by stagnogleyic argillic brown earths (Ordnance Survey 1983); however, this is obscured by the urban nature of the site. Glacial processes played a large part in the formation of the landscape, and have resulted in the deposition of large amounts of boulder clay, in many cases totally obscuring the underlying solid geology (Countryside Commission 1998, 21).

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 OA North was requested to submit a project design (*Appendix 2*), in line with the CCCHES brief (*Appendix 1*), and the subsequent verbal revision by CCCHES. The project design was consistent with the relevant standards and procedures of the Institute of Field Archaeologists and English Heritage, as generally accepted best practice, and in line with PPG 16 (DoE 1990).

2.2 EVALUATION TRENCHES

- 2.2.1 Four trenches were excavated across the site (Fig 2); Trenches 1 and 4 measured 20m long by 1.6m wide, Trench 2 measured 21m by 1.6m wide, and Trench 3 measured 20m long by 5m at its southern end,. The uppermost levels of each trench were excavated by a machine fitted with a toothless ditching bucket. The same machine was then used to define carefully the extent of any surviving walls, foundations, deposits and other remains, after which all excavations were undertaken manually. All deposits were levelled and related to the Ordnance Datum and Ordnance Survey.
- 2.2.2 All information was recorded stratigraphically with accompanying documentation (plans, sections and both colour slide and black and white print photographs, both of individual contexts and overall site shots from standard view points). Photography was undertaken with 35mm cameras on archivable monochrome print film, as well as colour transparency, all frames including a visible, graduated metric scale. Digital photography was used extensively throughout the course of the fieldwork for presentation purposes. Photographic records were also maintained on special photographic *pro-forma* sheets.
- 2.2.3 The precise location of each trench was plotted prior to excavation using a Leica differential Global Positioning System (dGPS). Each trench was planned digitally by an experienced surveyor using dGPS to record structural remains and other buried features, locating them according to Ordnance Survey (OS) co-ordinates. The dGPS uses real-time corrections (RTK) using mobile SmartNet technology to achieve an accuracy of approximately $\pm 0.01\text{m}$.

2.3 FINDS

- 2.3.1 Finds' recovery and sampling programmes were carried out in accordance with best practice (following current Institute of Field Archaeologists guidelines), and subject to expert advice in order to minimise deterioration. All artefacts recovered from the evaluation trenches were retained.

2.4 ARCHIVE

- 2.4.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with English Heritage

guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). The original record archive of project will be deposited with Carlisle County Record Office.

- 2.4.2 The Arts and Humanities Data Service (AHDS) online database *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

3. BACKGROUND

3.1 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 3.1.1 **Introduction:** the following background allows the site to be considered within the wider historical and archaeological context when assessing the potential for archaeological remains, and has been taken from a desk-based assessment compiled by Lancaster University Archaeology Unit (LUAU 2000), and an impact assessment by OA North (OA North 2008).
- 3.1.2 Carlisle is situated on the fertile Solway Plain, an area characterised by a relatively large number of prehistoric settlement sites, many apparently dating to the Iron Age (Bewley 1994). The promontory on which Carlisle Castle stands has been used as a defended settlement probably since at least the Iron Age, and it is suggested that the castle site may have been a pre-Roman dun (Doubleday 1901). The topography of the city, being a naturally well-defined promontory between the rivers Eden and Caldew, was exploited by the establishment of a Roman fort in the early AD 70s (McCarthy *et al* 1990), and an associated *vicus* grew up to the south of the fort. Further excavations have revealed extra-mural settlement to the south-east of the site along Botchergate and to the north towards the fort at Stanwix, following Scotch Street and leading to a river crossing of the Eden. All the identified civilian settlement lay on the promontory with burials extending along Botchergate, outside of the settlement. By the late Roman period the settlement had been awarded the status of a *civitas* capital, known as *Civitas Carvetiorum*, indicating its importance (Charlesworth 1978). Occupation of the fort continued into the early fifth century, with evidence suggesting that the civilian settlement decayed during the late fourth to early fifth centuries (McCarthy 1982).
- 3.1.3 Evidence for early medieval activity within Carlisle is limited. Excavation at Blackfriars Street showed that Roman activity appeared to extend beyond the traditional end of Roman government, but that the rest of the town appears to have decayed (McCarthy 1990). Later activity was identified as Anglian but more precise dating is impossible (*ibid*). Documentary evidence suggests that some elements of urban life were still in existence in the seventh century when, according to Bede, St Cuthbert saw water systems in use (Colgrave 1940). In addition, Bede records a nunnery and monastery associated with the Church of St Cuthbert, which clearly precedes the twelfth century Cathedral precinct (McCarthy 1990). This is supported by evidence found during the excavation of trial pits excavated in 1985 at Carlisle Cathedral that uncovered a burial of Anglian date (pre *c* 850) which suggested the possibility of an early ecclesiastical site below the Cathedral precinct (Keevil 2008). Further evidence of such a predecessor is still limited to loose finds (*ibid*), including metalwork of this period found within the Cathedral precinct (Gaimster *et al* 1989) despite additional excavation in 1988 (Keevil 2008). Indeed, little is known of the town during the ninth and tenth centuries, although the Danes are recorded as having overrun the region in 875 (Earle and Plummer 1892).

- 3.1.4 In 1092 William Rufus captured the town and erected a castle (*ibid*). He also garrisoned the town and brought in labourers from the south to farm the surrounding lands (Whellan 1860). The visit of Henry I in 1122 prompted a major period of rebuilding within the Castle and the foundation of an Augustinian Priory in 1133 (McCarthy *et al* 1990). Between 1135 and the thirteenth century, Carlisle passed between English and Scottish hands several times, with the Pope decreeing in the mid thirteenth century that Cumberland and Northumberland were English property (McCarthy *et al* 1990). The thirteenth century saw the foundation of two monastic establishments by the Dominicans (Blackfriars) and Franciscans (Summerson 1993, 103). The Blackfriars monastery was located within the city walls adjacent to the site (*ibid*).
- 3.1.5 In the fourteenth century, Carlisle was subject to numerous raids and skirmishes during the Wars of Independence, and in 1391 was sacked and burnt by the Scots. The impact of these attacks had a lasting effect: a late seventeenth century writer recounted that the city '*was never able to recover itselfe from soe many desolations and even at this day the scars of those dreadful wounds are yet apparent for ye town is so thin and empty of inhabitants that it looks like a country village well walld [sic] about rather than a citty [sic]*' (Todd 1890, np).
- 3.1.6 In an attempt to control the area, march wardenship was established in three areas, and Carlisle was the seat of the Wardenry of the West. The march wardens were at their most influential during the late fifteenth and sixteenth centuries when a period of anarchy developed along the borders (Fraser 1971). After the unification of the country in 1603, the borders were calmed and Carlisle's influence waned. During the Civil War, Carlisle was held by the Royalists before being recaptured by Parliamentary forces in 1645 (McCarthy *et al* 1990). Carlisle was also affected by the Jacobite Rebellions in 1715 and 1745 (*ibid*).
- 3.1.7 During the late eighteenth and early nineteenth century Carlisle enjoyed a steady industrial growth, with the first textile mill built on English Damside in 1724, immediately to the east of the site (HER 18983). Textiles and biscuit manufacturers were important industries within the town (Whellan 1860). The construction of the railway in the mid-nineteenth century aided Carlisle's development as an industrial centre with good distribution links throughout the county. Within the actual development site, several railway sidings and goods yards were constructed in the late 1800s, along with a gas works on the plot immediately to the south-east of the site. The railway sidings were removed and later replaced with offices and a car showroom in the 1970s.

3.2 CARTOGRAPHIC DEVELOPMENT OF THE SITE

- 3.2.2 The cartographic sources used during the desk-based assessment (LUAU 2000) were re-examined as part of the impact assessment (OA North 2008), in order to identify the potential for archaeological remains that may be threatened by the proposed construction. Only those sources of relevance to

the evaluation are included below, showing the approximate position of the proposed development site boundary and location of the trenches.

- 3.2.3 **Smith's plan of Carlisle, 1746:** although the city has begun to develop beyond the medieval walls, the proposed development site still remains as open fields.
- 3.2.4 **Wood's plan of Carlisle, 1821:** the area to the east of the site is becoming more developed (Plate 1), but the site is still shown as open land, under the ownership of Lord Lonsdale.

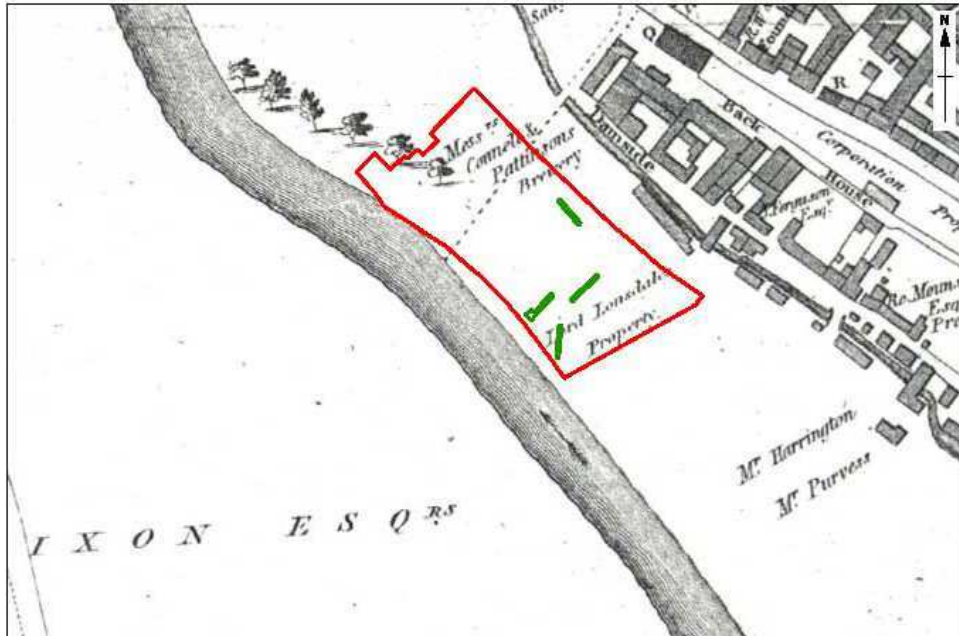


Plate 1: Wood's plan of the City of Carlisle dating to 1821

- 3.2.5 **Ordnance Survey, first edition map, 1865, 25":1 mile:** by the second half of the nineteenth century the area around the development site had become industrial (Plate 2). A gas works was situated immediately to the south-east of the outlined development area, and several surrounding factories, including the Denton Hill textile works, were located directly across the River Caldew. However, the site is still largely undeveloped with only some encroachment by the railway sidings in the north-east corner and several paths crossing the area.

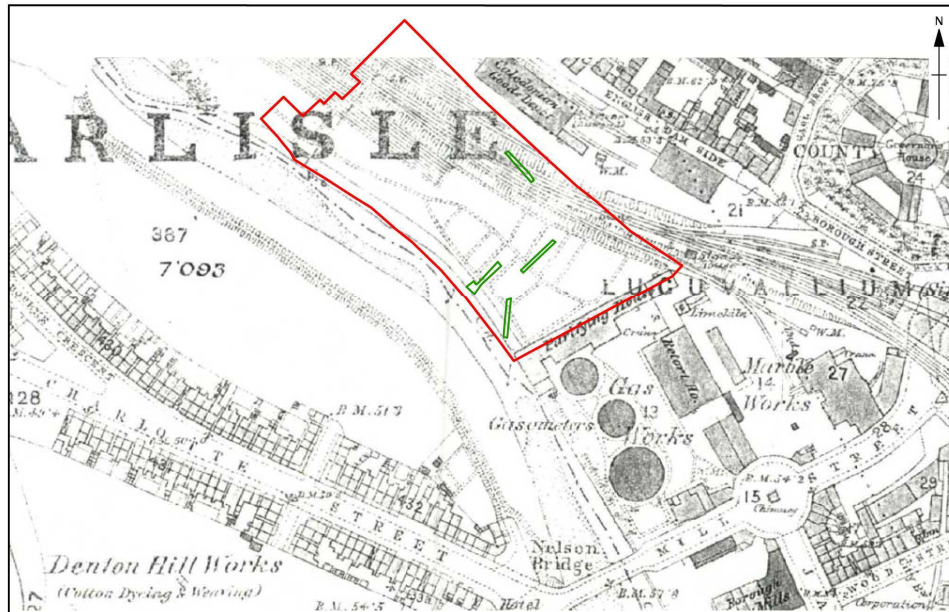


Plate 2: Ordnance Survey, first edition map, 1865

3.2.5 **Ordnance Survey, second edition map, 1901, 25"=1 mile:** by the end of the nineteenth century the site had been fully developed, into railway sidings and goods sheds (Plate 3). A grain shed also stands on the eastern edge of the site. All of the surrounding area has now been built on, either for factories or housing.

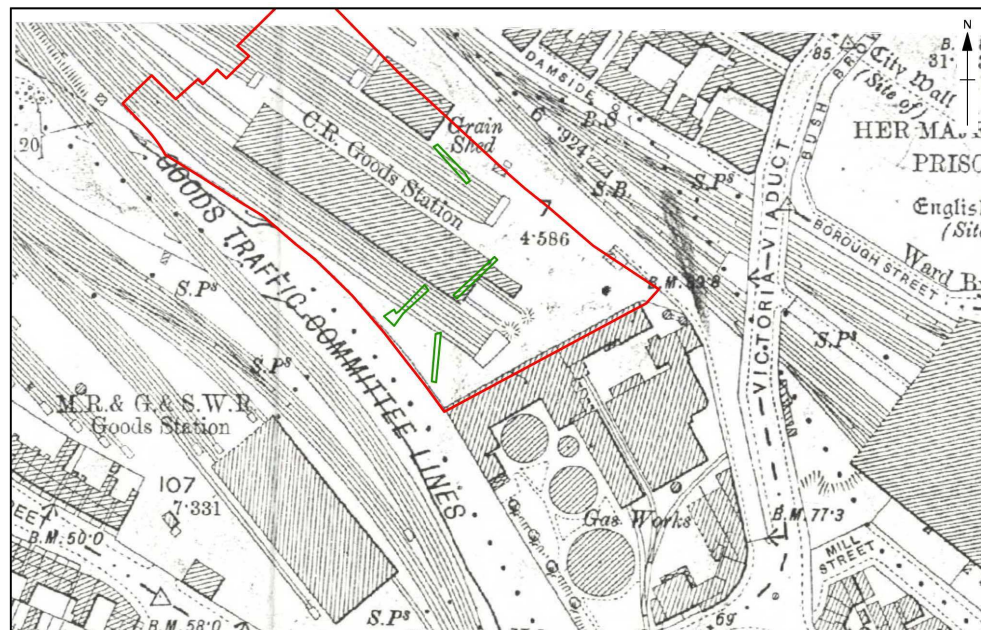


Plate 3: Ordnance Survey, second edition map, 1901

3.2.6 **Ordnance Survey, third edition map, 1925, 25"=1 mile:** the 1925 map (Plate 5) shows little change within the site or surrounding area since the previous Ordnance Survey (OS) map of 1901 (Plate 4), with the railway sidings and goods sheds still present.

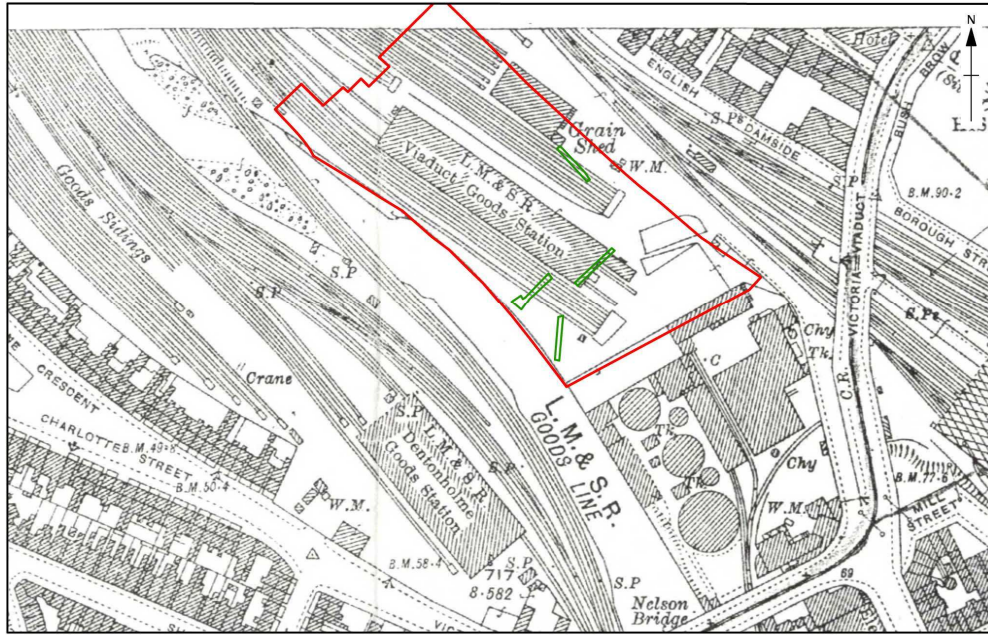


Plate 4: Ordnance Survey, third edition map, 1925, 25":1 mile

- 3.2.7 **Ordnance Survey map of 2006:** this map shows the site occupied by offices and a car showroom. The adjacent gas works is no longer extant and has been replaced with a public car park. The industrial buildings in the surrounding area are mainly extant but have been changed in use to offices. The area across the river is now in use as a small retail outlet. By 2008 the buildings on site had been removed to the level of the car park.

4. EVALUATION RESULTS

4.1 INTRODUCTION

- 4.1.1 In total, three trenches each measuring 20m long, and a fourth (Trench 2) measuring 21m long, were generally located across the southern and eastern parts of the site, and positioned in close proximity to boreholes 11, 12, 13 and 15 (Fig 2). Unlike other boreholes across the site, these four did not contain any contaminated deposits that would inhibit the investigation for archaeological potential of the deep alluvial deposits. Each trench varied in depth, between 1m and 3.5m, due to variation in the thickness of the made ground and levelling material. The excavation of deep deposits in Trench 3 required the trench sides to be stepped for safety purposes. For the most part, the deep alluvial layers were archaeologically sterile. A full list of excavated contexts is listed in *Appendix 3* and the finds are discussed in *Section 5* and listed in *Appendix 4*.
- 4.1.2 No archaeological features were recorded relating to any occupation of the site prior to the nineteenth century, other than its probable use as a water meadow. However, this lack of early features may be the result of regular flooding washing upper deposits away, and earlier occupation cannot be discounted. The evaluation did record four phases of activity during the post-medieval period, from the eighteenth to twentieth centuries. These phases are discussed in detail in *Section 6*, below.

4.2 TRENCH 1

- 4.2.1 The trench was aligned north-west/south-east (Fig 2), and was located at the eastern part of the site, parallel with Viaduct Estate Road. The trench was positioned in order to detect structural remains associated with the former grain shed or railway sidings shown on the 1901 and 1925 OS maps (Plates 3 and 4), and to investigate the potential for possible earlier activity. The trench was excavated to a depth of 1.6m above mid red sand (*17*), representing an alluvial deposit (Fig 3), although two sondages (Test pit 1 and Test pit 2) were machine-excavated to a maximum depth of 2.5m.
- 4.2.2 Test pit 1, located at the southern end of the trench, was excavated to a depth of 1m beneath the alluvial sand (*17*). This exposed a 0.5m thick deposit of grey silt, which in turn overlaid dense gravel. Test pit 2 was excavated to a similar depth, but the grey silt was not identified above the gravel. No archaeological remains or deposits of the pre-industrial period were found within the eastern area of the site.
- 4.2.3 Above the alluvial deposits, a small north-east/south-west aligned feature (*21*) was located in the northern part of the trench, possibly representing a relict drain. It was cut into yellow-red clay (*22*), which was observed over a 2m spread, which was stratigraphically sealed beneath a series of levelling layers (*20*). These levelling layers formed part of the made ground identified in the

borehole logs (OA North 2008), and they appeared to have been used as a foundation for structure **38**, which comprised two north-east/south-west aligned yellow brick walls (**18** and **23**) 2m apart (Plate 5, Fig 3). The northernmost wall (**23**) measured two brick skin in thickness and survived to a depth of two courses. The southern wall (**18**) measured one brick thickness in width, and was exposed to a similar depth of 0.2m. They comprised frogged Coltness brick, measuring an average of 240mm by 120mm by 100mm, which were married with dark grey-black ash-rich cement mortar. The walls were butted by layers of compacted slag and mortar (**19**), which had been levelled to resemble a floor surface (**24**). It measured up to 0.3m in thickness, and sealed levelling layers **20**. This continued northwards for a distance of 2m, bordered at the trench edge by a line of sandstone blocks aligned north-east/south-west (Fig 3), which were in turn butted by the foundation remains of a short north-east/south-west wall (**25**). Wall **25** comprised yellow brick and measured 1m long by 0.3m wide, cut into floor surface **24**. To the west of wall **25** was a firm mixture of slag, cinder and ash (**26**) resembling the type of waste material resulting from metal working, such as the rake-out from a furnace or a boiler. Collectively, the remains suggested the building's possible use for either metal working, a general workshop, or a boiler house.



Plate 5: View of the south-west-facing section through the southern end of the trench

- 4.2.4 Above the remains of structure **38**, evidence of a concrete floor survived to a depth of 1.1m beneath the modern ground surface. The remainder of the deposits across the trench below the tarmac surface comprised broken brick and rubble (**01**), probably derived from the demolition of the goods yard during the latter half of the twentieth century.

4.3 TRENCH 2

- 4.3.1 The trench was located within the central area of the site, aligned north-east/south-west, close to borehole 13 (Fig 2). It was excavated to a depth of 1.6m, to above the surface of alluvial sandy-clay (39). Three 2m² test pits were machine-excavated to depths ranging between 2.5m-3m beneath the tarmac car park surface at the eastern, central, and western parts of the trench in order to test the archaeological potential of these alluvial deposits. Dense river gravel (40) was located at the base of the test pits, which was overlain by oil-contaminated grey silt (41), measuring up to 1m in thickness. No archaeological features were observed within the silt, although fragments of unworked wood were observed, suggesting potential for further remains. The silt was overlain by alluvial sand (39) that measured up to 1.2m in thickness, which was, in turn, sealed beneath a slightly humic mid brown-grey clay-silt, 37, surviving at the south-western end of the trench up to 0.35m thick. A single rim sherd from a thin-walled Blackware cup dating to the late seventeenth or eighteenth century was recovered from the buried soil 37.



Plate 6: View of the trench, looking south-west

- 4.3.2 Walls 27, 28, 29, 30 and 31 (Fig 4) were aligned north-west/south-east, spaced at a distance of 3m apart, and survived to an average height ranging between 0.85m and 1.08m. They were constructed from roughly-hewn sandstone blocks, measuring between 0.25m to 0.4m long. The blocks were bonded with

dark grey-black ash-rich cement mortar, indicative of a type used during the late nineteenth century. The widths of walls **28**, **29**, **30** and **31** measured between 0.45m and 0.65m, demonstrating significant load bearing capacity. However, the westernmost wall, **27**, was recorded with a 0.5m gap at its northern edge, and was infilled with firm stony-clay. This gap suggests the wall possibly served a different purpose than the other walls, and it may have been the southern wall of the goods station shown on the OS mapping (Plates 3 and 4). Infilling in between the walls were 1m thick deposits of made ground (**33** and **34**) over much of the trench. The absence of floors between the walls suggests that they may have been used as sub-surface supports for an overlying structure. This is further enhanced by the presence of fuel waste/ballast (**32**) overlying deposits **33** and **34** and located between walls **27**, **28**, **29** and **30**. The top of the fuel waste/ballast deposit (**32**) was almost equal to the height of the upper surviving surface of each wall (Plate 6), which possibly formed part of the bedding layers (**33** and **34**) beneath a railway track as shown on the 1901 OS map (Plate 3), although no clear indication of the tracks or line gauge survived. The fuel waste was recorded at approximately 0.4m depth beneath the level of the car park.

- 4.3.3 Levelling layer **33** was cut by ceramic drains (**36**) which were probably installed during the late nineteenth to early twentieth century, contemporary with the goods yard. The drains were sealed by levelling layers (**01**) and hardcore bedding for the car park tarmac.

4.4 TRENCH 3

- 4.4.1 Trench 3 was aligned north-east/south-west and was positioned close to the perimeter wall on the western side of the site. It was excavated to a depth of 1.6m into the upper surface of alluvial sand (**08**). Three test pits, measuring between 2m and 3m wide, were machine-excavated to a maximum depth of 2.5m, at the western, central and eastern parts of the trench in order to detect possible remains within and beneath the alluvial deposits. However, these proved archaeologically sterile. The test pits largely contained water-diluted gravel (**42**), which measured between 0.1m-0.35m in thickness, which was sealed by an horizon of grey silt (**06**). In the eastern-most test pit, the silt (**06**) measured up to 1m thick. Above this was alluvial sand (**08**), which was recorded at a similar depth to the grey silt (**37**) exposed in the western end of Trench 2, which sloped gradually to the south-west (Plate 7) where it then dropped sharply beneath a later deposit of river gravel (**09**). The gravel (**09**) was recorded extending to a depth of 2.5m onto the surface of an earlier grey (riverine?) silt (**13**) exposed in the very south-western corner of the trench. Collectively, the slope resembled a former river bank.
- 4.4.2 At the south-western edge of the trench (Fig 5) the trench side was stepped out by 2m northwards (Figs 2 and 5), in order to investigate this deep silt deposit. The deposits appeared to represent part of an earlier river bank, bound to the north-east by traces of a fragmentary stone wall (**10**). Wall **10** can be seen on the OS map of 1865 (Plate 2), and existed prior to the levelling of the site in the later nineteenth century and construction of the extant perimeter wall to the south-west.



Plate 7: View of the north- east-facing section within the test pit at the western end of the trench, showing made ground, alluvial sand **08**, and river gravel **09** in the foreground

- 4.4.3 Wall **10**, which was cut into sand **08**, was aligned north-west/south-east aligned wall (**10**), measured 0.4m wide (Plate 8) and survived to a height of 0.35m. It comprised undressed roughly-hewn sandstone, that had been loosely coursed, resembling a dry-stone construction. Its indistinct coursing may be a result of disturbance caused during the later levelling of the site. A single green body sherd from an eighteenth or nineteenth century wine bottle was recovered from its dark grey sandy fill (**14**).
- 4.4.4 The wall was sealed by levelling layers comprising a deposit of black ash and clinker (**11**), measuring 0.32m thick, which were in turn sealed by compacted clay (**07**) measuring up to 0.5m thick. The clay layer contained a single piece of Roman amphora and several sherds of nineteenth century pottery. The presence of the amphora may be suggestive of activity on the site from at least the first century AD, although it is more than likely that the sherd had washed down river from another part of Carlisle or it has been imported with the levelling material from elsewhere. The clay layer was sealed by stone/hardcore bedding (**12**) for the car park.



Plate 8: View of wall **10**, looking south

- 4.4.5 The eastern end of the trench contained a substantial ditch (**16**) excavated through alluvial sand **08** into a layer of dense water-diluted gravel (**09**), which formed part of a natural geological horizon sloping gradually to the east, possibly belonging to an additional former river bank or palaeochannel. Ditch **16** was 0.42m deep and had near vertical steep-angled sides that sharply flattened onto a concave base that followed the natural slope. It was filled with damp grey silt-clay (**06**) that contained pottery and waste material dating to no earlier than the mid-nineteenth century. The feature possibly corresponds with the line of a field enclosure ditch, as shown on the 1865 OS map (Plate 2).



Plate 9: View of ditch **16** at the eastern end of the trench

4.5 TRENCH 4

- 4.5.1 Trench 4 was located in the south-western corner of the site, aligned north/south, close to borehole 15. The trench was excavated initially to a depth of 0.8m onto the surface of alluvial sand (**05**), the sharply sloping horizon of which was to the south to a depth of 1.8m (Plate 10). This slope is likely to have related to an earlier river bank, as seen on Wood's map of 1821 (Plate 1), approximately 5m east from the present perimeter wall. Two test pits were excavated within the centre and northern end of the trench in order to establish the potential of any horizons beneath the alluvial layers. The test pits were excavated to an average depth measuring 1.1m revealing a dense gravel (**43**), containing large water-worn cobbles and stone measuring between 0.1-0.3m in diameter, below sand **05**. The accumulation of alluvial sand (**05**) and gravel (**43**) was similar to the type of deposits seen elsewhere across the site. No significant archaeological deposits were encountered in the test pits.



Plate 10: View of Trench 4, looking north

- 4.5.2 The sand (**05**) was cut by the remains of two north-west/south-east aligned drains, together with a service cut, set a distance apart of 3m across the trench (Figs 6 and 7). The drains measured no more than 0.1m wide and led towards the Caldew. Their presence is likely to relate to an early use of the land as a water meadow, indicated by the field enclosures shown on the 1865 OS map (Plate 2).
- 4.5.3 At the southern end of the trench, overlying the former river bank (**05**), was a large dump deposit (**04**, Fig 7) measuring at least 5m in diameter and exposed to a depth of 1.8m. It comprised dark grey-black burnt material that was abundant with domestic debris, such as clay tobacco pipe, pottery and a variety of building material.
- 4.5.4 Overlying the dump, **04**, and the drains was a dark grey-black silty-clay (**02** and **03**) mixed with mortar, stones and broken brick, which measured up to 0.5m thick, and is likely to be nineteenth century levelling deposits seen elsewhere across the site. The purpose of levelling layers **02**, **03** and dump deposit **04** would have provided a larger area for the goods yard along the western side of the site. These layers butted the extant stone boundary wall on the west, and were in turn sealed by hardcore bedding (**01**) for the tarmac covering for the car park.

5. FINDS

5.1 INTRODUCTION

5.1.1 In total, 62 artefacts were recovered from the evaluation trenches. The assemblage was dominated by fragments of ceramic vessels and bottles (30), although clay tobacco pipe (10), industrial residue (9), ceramic building material (5), glass sherds (3), fragments of animal bone (2), iron (2), and a single piece of worked wood were also found. A single piece of Roman amphora was present, but generally the material dated to between the eighteenth and twentieth centuries. Quantification of the artefacts is given in Table 1, and a summary finds catalogue is presented in *Appendix 4*.

5.1.2 The material was largely recovered from dumping deposits at the western side of the site and, as such, was essentially unstratified. However, smaller amounts were recovered from stratified deposits, such as the backfill of a wall construction, and buried soil in Trench 3.

Material	Description	Totals
Clay tobacco pipe	Decorated, stamped bowls and stems	10
Ceramic building material	Brick. Complete wire-cut refractory type	1
	Fired clay	4
Glass	Bottles	2
	Vessels	1
Iron	Vessel	1
	Unidentifiable object	1
Animal bone	Sheep/bird	2
Ceramic	Vessels	21
	Bottles	9
Ceramic	Industrial vessel	1
Industrial residue	Smithing slag	6
	Smelting slag	2
	Hearth bottom	1
Wood	Fence stake	1
Total		62

Table 1: Quantification of the finds

5.2 CERAMIC

5.2.1 In total, 21 sherds of ceramic vessels, and nine stoneware bottles were recovered from Trenches 1, 2 and 3. The earliest pottery recovered comprised a single fragment of Spanish-type Roman amphora deriving from clay layer *07* in Trench 3. Dating of the amphora of this type can be broadly ascribed from the first to third century AD. The remainder of the vessels included a single rim fragment from a thin-walled seventeenth or eighteenth century Blackware

cup from soil horizon **37** in Trench 2, in addition to a variety of utilitarian late eighteenth and nineteenth century wares, such as a complete creamware jar, coarse and fine dark brown and yellow glazed red earthenware dishes, bowls and storage jars, willow and sponge-printed glazed white earthenware plates, bowls, and a chamber pot. A fragment of a dark red glazed red stoneware recovered from Trench 1, possibly had an architectural or furnishing function, such as part of a mantelpiece.

- 5.2.2 The bottles derived from dump deposit (**04**) in Trench 4, which also yielded a variety of material generally dating to the latter half of the nineteenth to early twentieth century. These included a light brown English-type bottle with a pouring spout, grey bodied porter bottle fragments, and an almost complete Robert Carruthers ginger beer bottle. Robert Carruthers was producing ginger beer and aerated water from his Aerated and Mineral Water factory based in Dumfries from the late nineteenth to late twentieth century (www.davehiddleston.com). The upper part of the bottle recovered from the site was missing, although the print detail suggests it was likely manufactured between 1905 and 1915.

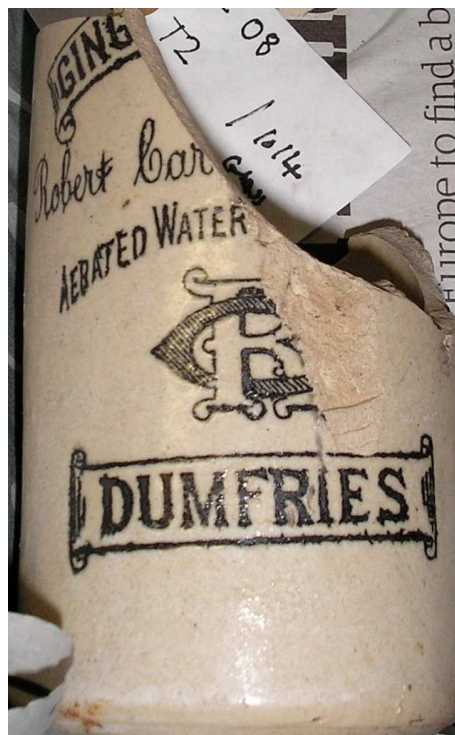


Plate 11: Robert Carruthers ginger beer bottle

5.3 CLAY TOBACCO PIPE

- 5.3.1 In total, 10 fragments of tobacco pipe were recovered from dumping layer **04** in Trench 4, and clay levelling layer **07** in Trench 3. The pipes were generally large bore types, commonly manufactured in the late nineteenth century, although the examples recovered from dump **04**, probably derived from more than one production centre. However, the ribbed decorated bowl from Trench

3 closely resembles a Napoleonic or Dutch-type pipe produced in the late eighteenth to early nineteenth century. The bowls included two bearing Dublin stamps, with a short spur, which are similar to the types produced for the English market from 1880 (Oswald 1975).

5.4 INDUSTRIAL RESIDUE

5.4.1 The material mainly derived from the eastern side of the site within Trench 1, although lesser amounts were collected from Trenches 2 and 3. The material is represented by vitreous waste products from metal working activity, which generally comprises iron smithing (2kg) and smelting (250g) slag, and possible kiln furniture. The smithing slag derived from a dump deposit **19** in Trench 1, and comprised four large dense vesicular lumps that were likely to have been the residue from an iron-producing furnace. The presence of a smithing hearth bottom in close proximity, and its provenance to structure **38**, possibly suggested that the building was associated with iron working. In addition, an iron slag-encrusted refractory brick was recovered from levelling layers within Trench 2. The smelting slag fragments were recovered from Trench 3, and although this is recorded some distance west of the smithing slag, its association with iron working cannot be discounted. The fabric components of structure **38** suggested that it was constructed in the early part of the twentieth century. These components included fire-brick walls and the remains of a compacted slag surface or working floor in Trench 1. Its location is suggested on the 1925 OS map (Plate 4), which shows a small rectangular extension along the south-western corner of the grain shed. Although features typically associated with a furnace structure, for example condensing chambers to collect residues and flues (Bayley, Crossley and Ponting 2008), were not encountered on the site, the material suggests that a metal working process was undertaken in the vicinity. It is therefore possible that structure **38** was used for this process.

5.4.2 **Iron:** two objects were recovered from a dump (**40**) in Trench 4 and ditch fill **06** in Trench 3. The base of a cast iron vessel or bucket was recovered from Trench 4, and was heavily encrusted with slag on its interior surface. It measured 0.4m in diameter with a square-shaped hole perforated in the centre. This possibly suggested that it may have had an industrial function, perhaps used to contain molten metal. The other object from Trench 3 was too heavily corroded to identify.

5.5 CERAMIC BUILDING MATERIAL

5.5.1 Four fragments of fired clay were recovered from ditch fill **06** in Trench 3, and a complete refractory yellow 'Coltness' firebrick was recovered from Trench 1, although was unstratified. The fired clay was incidentally formed and resembled the type of daub material commonly used as building application. The brick derived from the Carlisle brickworks in Lanarkshire, and was manufactured by the Coltness Iron Co Ltd in the first half of the twentieth century (Slaven and Checkland 1986).

5.6 GLASS

- 5.6.1 In total, three bottle fragments were recovered from the site. The earliest fragment derived from a light green wine bottle recovered from the back fill of wall **10 (14)**, which could be dated to the eighteenth century. The assemblage included the base of a Hamilton-type torpedo-shaped mineral water bottle, bearing stamped letters **.LEN**, and **.ISLE**, which possibly suggests it was manufactured by Phillips and Allen, a firm based at Lowthians Lane, Carlisle, producing aerated water from 1884 (Ferguson 1896). The remaining bottle comprised a blue-green octagonal medicine vessel. The bottle was not intended as a vessel for measured medicine as it lacked measuring lines and embossed lettering. Unembossed bottles of these types were frequently used for hair restoratives, such as cures for baldness (Stockton 1981).

5.7 WOOD

- 5.7.1 A single piece of worked wood was recovered from grey silt (**41**) in the base of the easternmost test pit in Trench 2. The fragment measured 0.3m long by 0.08m wide, and was chamfered to form three sides, resembling part of a chess pail fence stake. No other remains were recovered from the silt, which hinders accurate dating, although its presence within a deep stratified deposit suggested that it could be a relict of earlier activity.

5.8 ANIMAL BONE

- 5.8.1 A small collection of four animal and bird bone fragments was recovered from ditch fill **06** in Trench 3, and dump **04** in Trench 4. The animal bone was represented by a sheep mandible and radius, although these were fragmented, with less than half of the original bone being present, but with little or no erosion to its surface. None of the fragments showed evidence of butchery.

5.9 CONCLUSION

- 5.9.1 The small finds assemblage is of limited archaeological interest, although a Blackware sherd dated to the seventeenth or eighteenth centuries does provide some indication of pre-industrial activity on the site. The bulk of the assemblage, however, derived from dumping deposits, which possibly suggest that it may have originally derived from elsewhere.

6. DISCUSSION

6.1 INTRODUCTION

6.1.1 The evaluation did not produce any definitive evidence for occupation of the site prior to the nineteenth century, although this is perhaps to be expected as the trenches were positioned within a former water meadow, as suggested by historic mapping. The site remained seemingly undisturbed until an attempt to improve land drainage occurred sometime during the mid-nineteenth century, as depicted by the field enclosures on the 1865 OS map and drains evident in Trench 4. In the late nineteenth century, a railway goods yard was constructed over the site, which changed it dramatically. This process of levelling the site and subsequent construction of railway sidings and goods sheds seems to have removed any potential earlier surviving deposits.

6.2 PHASES OF DEVELOPMENT

6.2.1 The detail provided by the sequence of available historical maps allows four main developmental phases of the site to be identified, ranging from the eighteenth century to the removal of office buildings in the late twentieth century, whilst other documentary sources elucidate the evolution of Carlisle and the wider landscape from the Roman period (LUAU 2000).

6.2.2 **Phase 1 (Roman-mid 1800s):** this is the earliest phase of activity on the site. No deposits of Roman or earlier periods were recovered, although traces of a buried soil horizon (37) in Trench 2 suggests activity from the eighteenth century when historic maps show the land as undeveloped water meadows. This was located above alluvial sand 39 and gravel 40.

6.2.3 The presence of grey silt beneath the alluvial deposits in Trenches 2 and 3 suggests the possibility of earlier archaeological horizons. Although the silt in Trench 3 proved sterile of remains, the presence of worked wood in Trench 2 demonstrated further potential. It is possible, however, that the wood had been washed in with the alluvium during a flooding episode but the silt in this trench was contaminated by diesel hindering further investigation.

6.2.4 **Phase 2 (mid-late 1800s):** during this period the land was divided by formal field enclosures, as shown on the 1865 OS map. The map shows the area surrounding the site was heavily industrialised, although the site itself remained largely undeveloped until the late nineteenth century. Remains from this period include, in Trench 3, traces of a field boundary ditch (06) at the eastern end and a crudely-constructed stone boundary wall (10) positioned at the top of a former river bank. Each feature yielded fragments of pottery and glass that could be attributed to the late eighteenth and nineteenth centuries, such as that from the back fill (14) of wall 10 suggesting that the wall was extant at the same time as the field boundary ditch. Other remains included a relict linear feature (21) that possibly represented a drain within Trench 1.

- 6.2.5 **Phase 3 (late 1800s-1970s):** during this period the site was heavily developed for the construction of the railway goods yard. The extent of this construction is shown on the 1901 and 1925 OS maps and was evidenced in all four trenches. Prior to the construction, the site was prepared by levelling the area with a large amount of material imported onto the site, forming made ground for the overlying structures (**02, 03, 04, 11, 20, and 33**).
- 6.2.6 Structural remains pertaining to the goods yard from this period were observed in Trenches 1 (**18 and 23**) and 2 (**27, 28, 29, 30, and 31**). The row of five stone walls (**27-31**) in Trench 2 possibly represented the foundation of walls beneath the railway sidings shown on the 1901 OS map. The presence of fuel waste ballast between each wall possibly formed a make-up layer for track beds, although no track survived. The OS map of 1925 shows a small extension was added to the south-western corner of the grain shed, which is likely to have comprised walls **18** and **23** identified in Trench 1 as structure **38**. It is possible that the building contained a workshop used for a metal working process, although no furnace remains were encountered.
- 6.2.7 **Phase 4 (1970s-present day):** by the late 1970s the buildings associated with the goods yard had been removed and replaced with council offices, with parts of the site converted to a public car park. Levelling material, comprising gravel hardcore, was observed beneath the tarmac within each trench. The final phase of the site is represented by the demolition of the office buildings to the level of the former car park level.

6.3 IMPACT

- 6.3.1 The potential for surviving archaeological remains on the site has been assessed and identified in the previous impact assessment (OA 2008). This information has been used during the interpretation of the results of the evaluation trial trenching, which demonstrated the site to be of low or local archaeological significance.
- 6.3.2 The made ground and alluvial deposits identified during trenching were consistent with the data collected from the boreholes, suggesting a relatively late deposition for the made ground. Aside from the horticultural layer in Trench 2, these deposits were mainly nineteenth century in date. However, a single piece of wood recovered from the diesel-contaminated grey silt horizon exposed beneath the alluvial deposits at the eastern end of Trench 2, suggested archaeological potential across the central area of the site. Further potential may be suggested by the Roman pottery fragment, albeit residual, recovered from the western end of the site in Trench 3.

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7.3 WEB RESOURCES

www.davehiddleston.com.

APPENDIX 1: PROJECT BRIEF

1. SITE DESCRIPTION AND SUMMARY

Site: Viaduct Estate Road, Carlisle

Grid Reference: NY 3995 5560

Planning Application No.: 1/05/1333

Area of Development: 1.34 hectares

Detailed proposals and tenders are invited from appropriately resourced, qualified and experienced archaeological contractors to undertake the archaeological project outlined by this Brief and to produce a report on that work. The work should be under the direct management of either an Associate or Member of the Institute of Field Archaeologists, or equivalent. Any response to this Brief should follow IFA Standard and Guidance for Archaeological Field Evaluations, 2001. No fieldwork may commence until approval of a specification has been issued by the County Historic Environment Service.

2. PLANNING BACKGROUND

- 2.1 Cumbria County Council's Historic Environment Service (CCCHES) has been consulted by Carlisle City Council regarding a planning application for the erection of a foodstore and associated parking at Viaduct Estate Road, Carlisle.
- 2.2 The site has been the subject of an archaeological desk-based assessment (Lancaster University Archaeological Unit, 2000, *Lower Viaduct Estate, Carlisle, Cumbria*, unpublished report) which indicates that the proposed scheme lies in an area of some archaeological potential.
- 2.3 Because of the high archaeological potential of the site, a condition has been placed on planning consent requiring a scheme of archaeological work to be undertaken at the site. The first phase of this work will be an archaeological evaluation to assess the nature and potential of the site. This Brief deals solely with this phase.
- 2.4 This advice is in accordance with guidance given in Planning Policy Guidance note 16 (Archaeology and Planning) and with local, sub-regional and regional planning policy.

3. ARCHAEOLOGICAL BACKGROUND

- 3.1 An archaeological desk-based assessment of the site has been undertaken (Lancaster University Archaeological Unit, 2000, *Lower Viaduct Estate, Carlisle, Cumbria*, unpublished report) and this brief must be read in conjunction with that report.
- 3.2 The site lies close to the Roman fort and vicus and just outside the walls of the medieval town.
- 3.3 A building is shown within, or close to, the site on a plan of Carlisle dated 1794 and further buildings are shown nearby on Wood's map of 1821. These may have been related to the printfields that were established on the site in the later 18th century as part of Lamb Scott Forster & Co printworks. By 1900 the vicinity had become a focus for industrial activity and a railway goods station and grain shed had been built on the site.

4. SCOPE OF THE PROJECT

4.1 Objectives

- 4.1.1 The evaluation should aim to determine the location, extent, date, character, condition, significance and quality of any surviving archaeological remains liable to be threatened by the proposed development. An adequate representative sample of all areas where archaeological remains are potentially threatened should be studied.

4.2 Work Required

- 4.2.1 A visual inspection of the site. This should include a walkover of the site noting any surface features of potential archaeological interest, areas of potentially significant disturbance, and hazards and constraints to undertaking further archaeological work on site (including the siting of live services, Tree Preservation Orders and public footpaths).

- 4.2.2 The excavation of a series of linear trial trenches to adequately sample the threatened available area, and the investigation and recording of deposits and features of archaeological interest identified within those trenches. All features must be investigated and recorded unless otherwise agreed with the County Historic Environment Service. Demonstrably modern overburden can be removed by machine, but subsequent cleaning and investigation must be by hand. A minimum sample of 5% of the total site area should be investigated.

- 4.2.3 The evaluation should provide a predictive model of surviving archaeological remains detailing zones of relative importance against known development proposals. An impact assessment should also be provided, wherever possible.

- 4.2.4 The following analyses should form part of the evaluation, as appropriate. If any of these areas of analysis are not considered viable or appropriate, their exclusion should be justified in the subsequent report.

- A suitably qualified specialist should assess the environmental potential of the site through the examination of suitable deposits, including: (1) soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features, and; (2) the retrieval of plant macrofossils, insect, molluscs and pollen from waterlogged deposits.
- Advice is to be sought from a suitably qualified specialist in faunal remains on the potential of sites for producing bones of fish and small mammals. If there is potential, a sieving programme should be undertaken. Faunal remains, collected by hand and sieved, are to be assessed and analysed, if appropriate.
- The advice from a suitably qualified soil scientist should be sought on whether a soil micromorphological study or any other analytical techniques will enhance understanding site formation processes of the site, including the amount of truncation to buried deposits and the preservation of deposits within negative features. If so, analysis should be undertaken.

5. SPECIFICATION

- 5.1 Before the project commences a project proposal must be submitted to, and approved by, the County Historic Environment Service.

- 5.2 Proposals to meet this Brief should take the form of a detailed specification prepared in accordance with the recommendations of *The Management of Archaeological Projects*, 2nd ed. 1991, and must include:

- ❖ A description of the excavation sampling strategy and recording system to be used
- ❖ A description of the finds and environmental sampling strategies to be used
- ❖ A description of the post excavation and reporting work that will be undertaken

- ❖ Details of key project staff, including the names of the project manager, site supervisor, finds and environmental specialists and any other specialist sub-contractors to be employed
 - ❖ Details of on site staffing, expressed in terms of person days
 - ❖ A projected timetable for all site work and post excavation work
 - ❖ The proposed locations of the trial trenches
- 5.3 Any significant variations to the proposal must be agreed by the County Historic Environment Service in advance.

6. REPORTING AND PUBLICATION

- 6.1 The archaeological work should result in a report, this should include as a minimum:
- ❖ A site location plan, related to the national grid
 - ❖ A front cover/frontispiece which includes the planning application number and the national grid reference of the site
 - ❖ The dates on which the fieldwork was undertaken
 - ❖ A concise, non-technical summary of the results
 - ❖ An explanation of any agreed variations to the brief, including justification for any analyses not undertaken (see 4.2.4)
 - ❖ A description of the methodology employed, work undertaken and the results obtained
 - ❖ Plans and sections at an appropriate scale showing the location and position of deposits and finds located
 - ❖ A list of, and dates for, any finds recovered and a description and interpretation of the deposits identified
 - ❖ A description of any environmental or other specialist work undertaken and the results obtained
- 6.2 Three copies of the report should be deposited with the County Historic Environment Record within two months of completion of fieldwork. This will be on the understanding that the report will be made available as a public document through the County Historic Environment Record.
- 6.3 The results of the evaluation will need to be made available for inclusion in a summary report to a suitable regional or national archaeological publication if further archaeological fieldwork is expected.
- 6.4 Recommendations concerning any subsequent mitigation strategies and/or further archaeological work following the results of the field evaluation should **not** be included in the report. Such recommendations are welcomed by the County Historic Environment Service, and may be outlined in a separate communication.
- 6.5 Cumbria HER is taking part in the Online Access to Index of Archaeological Investigations (OASIS) project. The online OASIS form at <http://ads.ahds.ac.uk/project/oasis> must therefore also be completed as part of the project. Information on projects undertaken in Cumbria will be made available through the above website, unless otherwise agreed.

7. THE ARCHIVE

- 7.1 An archive must be prepared in accordance with the recommendations in Brown, DH, 2007, *Archaeological Archives A Guide To Best Practice In Creation, Compilation, Transfer and Curation*, Archaeological Archives Forum. Arrangements must be made for its long term storage and deposition with an appropriate repository. A copy shall also be offered to the National Monuments Record.
- 7.2 The landowner should be encouraged to transfer the ownership of finds to a local or relevant specialist museum. In this case Tullie House Museum is the most likely repository. The

museum's requirements for the transfer and storage of finds should be discussed before the project commences.

- 7.3 The County Historic Environment Service must be notified of the arrangements made.

8. PROJECT MONITORING

- 8.1 One weeks notice must be given to the County Historic Environment Service prior to the commencement of fieldwork.
- 8.2 Fieldwork will be monitored by the Historic Environment Officer on behalf of the local planning authority.

9. FURTHER REQUIREMENTS

- 9.1 It is the archaeological contractor's responsibility to establish safe working practices in terms of current health and safety legislation, to ensure site access and to obtain notification of hazards (eg. services, contaminated ground, etc.). **The County Historic Environment Service bears no responsibility for the inclusion or exclusion of such information within this Brief or subsequent specification.**
- 9.2 All aspects of the evaluation shall be conducted in accordance with the Institute of Field Archaeologist's *Code of Conduct* and the IFA's *Standard and Guidance for Archaeological Field Evaluations*.
- 9.3 Human remains must be left *in situ*, covered and protected when discovered. No further investigation should normally be permitted beyond that necessary to establish the date and character of the burial, and the County Historic Environment Service and the local Coroner must be informed immediately. If removal is essential, it can only take place under appropriate Department for Constitutional Affairs and environmental health regulations.
- 9.4 The involvement of the County Historic Environment Service should be acknowledged in any report or publication generated by this project.

10. FURTHER INFORMATION

For further information regarding this brief, contact

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APPENDIX 2: PROJECT DESIGN

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Kier Scotland (hereafter the 'client') has requested that Oxford Archaeology North (OA North) undertake an archaeological investigation of an area of land off the Lower Viaduct Estate, Carlisle, Cumbria (centred NGR NY 3995 5560). The site was identified as having a high archaeological potential in a desk-based assessment previously undertaken (LUAU 2000), due to its position close to the Roman fort and *vicus*, and just outside of the medieval town walls. More recently, by 1900, the site contained a railway goods station and grain shed. Planning permission has been granted for a new Tesco supermarket (planning application ref: 1/05/1333) on the site, but with a condition that a programme of archaeological work is undertaken prior to construction to assess the potential impact on any below ground archaeological remains. Consequently, a brief was issued by Cumbria County Council's Historic Environment Service (CCCHES) for archaeological evaluation trenching of the site covering a minimum 5% random sample.

1.1.2 However, information from geotechnical site investigation work, including borehole data and underground utility mapping survey results indicated areas of contamination and made ground. Therefore, an archaeological impact assessment, taking into account the SI works, was undertaken (OA North 2008) in order that a more targeted programme of evaluation trenching could be agreed with CCCHES. Based on the information provided by the impact assessment (*ibid*), and following consultation with CCCHES, a revised programme of trial trenching will be undertaken consisting of four 20m long trenches targeting the areas around boreholes 11, 12, 13 and 15 (see attached plan), whilst avoiding the underground utilities present.

1.2 OXFORD ARCHAEOLOGY NORTH

1.2.1 Oxford Archaeology North has considerable experience of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 30 years. Evaluations, assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

1.2.2 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute of Field Archaeologists (IFA) **registered organisation, registration number 17**, and all its members of staff operate subject to the IFA Code of Conduct.

2 OBJECTIVES

2.1 This initial phase of the archaeological investigation aims to evaluate the potential for archaeological deposits, and determine their extent, nature and significance of any remains that may be threatened by the proposed development. To this end, the following programme has been designed to provide a programme of archaeological evaluation. The results will provide information as to the impact of the proposed development on any archaeological remains uncovered and the need for any subsequent mitigation strategy. The stages to achieve these ends are as follows:

2.2 **Archaeological Evaluation:** to implement a programme of trial trenching examining a minimum of 150m² within the proposed development area.

2.3 **Report and Archive:** a report will be produced for the client within eight weeks following completion, unless a report submission deadline is agreed with the client at the time of commission. An archive will be produced to English Heritage guidelines (MAP 2 (1991)).

3. HEALTH AND SAFETY

- 3.1 **Risk Assessment:** OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.
- 3.2 **Services and other constraints:** full regard will, of course, be given to all constraints (services etc.) during the evaluation as well as to all Health and Safety considerations. As a matter of course the field team will use a Cable Avoidance Tool (CAT) and Genny prior to any excavation to test for services, in conjunction with the mapped utilities drawing provided by the client.
- 3.3 **Contamination:** a plan has been provided outlining an area of contamination, together with borehole information of any oil contamination located during the SI works. However, any information of additional known contamination issues or any specific health and safety requirements on site should be made available to OA North by the client to ensure all procedures can be met, and that the risk is dealt with appropriately. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Should it be necessary to cause any delay to on-site work, supply additional PPE or other contamination avoidance equipment this will be costed as a variation.
- 3.4 **Staff issues:** all project staff will be CSCS qualified, proof of which can be provided in the form of CSCS cards.
- 3.5 A portable toilet with hand washing facilities is required and can be provided and located on or adjacent to the site, unless the client would prefer to arrange alternative facilities. Therefore, the cost has been provided as a contingency item.
- 3.6 **Fencing/hoarding requirements:** unless significant archaeological deposits are discovered and it is necessary for the trenches to remain open for monitoring purposes, the trenches will be backfilled once they have been recorded and planned. Should heras-style fencing be required this will be costed as a variation.

4. METHOD STATEMENT

4.1 TRIAL TRENCHING

- 4.1.1 The programme of trial trenching will establish the presence or absence of any previously unsuspected archaeological deposits and, if established, will then test their date, nature, depth and quality of preservation. In this way, it will adequately sample the threatened available area.
- 4.1.2 **Trenches:** the evaluation is required to examine a minimum of 150m² in the vicinity of boreholes 11, 12, 13 and 15 (see attached plan). This equates to 4 trenches measuring 20m, and approximately 1.8m (the width being equivalent to a typical excavator bucket). During excavation of the trenches there may be areas inappropriate for evaluation and hence may reduce the overall area of evaluation trenching. The following proposal assumes the site is free of obstruction. Should excavation of the trenches be inhibited by such, this will be charged as an agreed variation to the contract.
- 4.1.3 **Methodology:** the topsoil will be removed by machine (fitted with a toothless ditching bucket) under archaeological supervision to the surface of the first significant archaeological deposit. This deposit will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and inspected for archaeological features. All features of archaeological interest must be investigated and recorded unless otherwise agreed by CCCHES.

- 4.1.4 In normal circumstances the trenches would not be excavated deeper than *c* 1.2m to accommodate health and safety constraints, or less if the deposits are soft or unstable. However, borehole information suggests that the archaeological deposits may be deeper than this, in which case the trench sides will need to be stepped out accordingly. If there is a knock-on affect to the work timetable as a result, this will be costed as a day-rate, provided as a contingency.
- 4.1.5 Any impeding rubble/concrete surfaces will need to be removed prior to trenching. Therefore, any concrete surfaces that require breaking out will be carried out under OA North supervision, using a breaking arm mounted on the mechanical excavator. As with the depths of excavation, any affect on the work timetable as a result, will be costed as a day-rate, provided as a contingency.
- 4.1.6 All trenches will be excavated in a stratigraphical manner, whether by machine or by hand. Trenches will be located by use of GPS equipment which is accurate to +/- 0.25m, altitude information will be established with respect to Ordnance Survey Datum.
- 4.1.7 Any investigation of intact archaeological deposits will be exclusively manual. Selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal. It is hoped that in terms of the vertical stratigraphy, maximum information retrieval will be achieved through the examination of sections of cut features. All excavation, whether by machine or by hand, will be undertaken with a view to avoiding damage to any archaeological features, which appear worthy of preservation *in situ*.
- 4.1.8 All information identified in the course of the site works will be recorded stratigraphically, using a system, adapted from that used by Centre for Archaeology Service of English Heritage, with sufficient pictorial record (plans, sections, and monochrome contacts) to identify and illustrate individual features. Primary records will be available for inspection at all times.
- 4.1.9 Results of all field investigations will be recorded on *pro forma* context sheets. The site archive will include both a photographic record and accurate large scale plans and sections at an appropriate scale (1:50, 1:20 and 1:10). All artefacts and ecofacts will be recorded using the same system, and will be handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration.
- 4.1.10 **Environmental Sampling:** environmental samples (bulk samples of 40 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). An assessment of the environmental potential of the site will be undertaken through the examination of suitable deposits by the in-house palaeoecological specialist, who will examine the potential for further analysis. The assessment would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, the samples would be assessed for plant macrofossils, insect, molluscs and pollen from waterlogged deposits. The costs for the palaeoecological assessment are defined as a contingency and will only be called into effect if good deposits are identified.
- 4.1.11 Advice will also be sought as to whether a soil micromorphological study or any other analytical techniques will enhance the understanding of the site formation processes, including the amount of truncation to buried deposits and the preservation of deposits within negative features. Should this be required the costs for analysis have been provided as a contingency.
- 4.1.12 **Faunal remains:** if there is found to be the potential for discovery of bones of fish and small mammals a sieving programme will be carried out. These will be assessed as appropriate by OA north's specialist in faunal remains, and subject to the results, there may be a requirement for more detailed analysis. A contingency has been included for the assessment of such faunal remains for analysis.

- 4.1.13 **Human Remains:** any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. CCHES and the local Coroner will be informed immediately. If removal is essential the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations. Any delays caused by unforeseen and complex excavation of inhumations may be subject to a variation to the cost of the contract and will be agreed with the client.
- 4.1.14 **Contingency plan:** a contingency costing may also be employed for unseen delays caused by prolonged periods of bad weather, vandalism, discovery of unforeseen complex deposits and/or artefacts which require specialist removal, use of shoring to excavate important features close to the excavation sections etc. This has been included in the Costings document and would be in agreement with the client.
- 4.1.15 The evaluation will provide a predictive model of surviving archaeological remains detailing zones of relative importance against known development proposals. In this way, an impact assessment will also be provided.

4.2 FINDS

- 4.2.1 All finds recovered during the evaluation investigation will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.
- 4.2.2 Finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines) and subject to expert advice. OA has close contact with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham.
- 4.2.3 Neither artefacts nor ecofacts will be collected systematically during the mechanical excavation of the topsoil unless significant deposits, for example clay pipe waster dumps, are encountered. In such an eventuality, material will be sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts, although any ensuing studies will not be regarded as a major element in any post-excavation analysis of the site. Other finds recovered during the removal of overburden or metal detecting survey will be retained only if of significance to the dating and/or interpretation of the site. It is not anticipated that ecofacts (eg unmodified animal bone) will be collected during this procedure.
- 4.2.4 Otherwise artefacts and ecofacts will be collected and handled as per specification. All material will be collected and identified by stratigraphic unit during the evaluation trenching process. Finds will be processed and administered at regular intervals (on a daily basis) and removed from the site.
- 4.2.5 Any waterlogged finds will be treated as appropriate. In the case of large deposits of waterlogged environmental material (eg unmodified wood), advice will be sought with the OA North consultant with regard to an appropriate sampling strategy.
- 4.2.6 Where possible, spot dates will be obtained on pottery and other finds recovered from the site. Artefacts will be examined and commented upon by OA North in-house specialists.

4.2.7 All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.

4.2.8 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

4.3 REPORT

4.3.1 One bound and one unbound copy of a written synthetic report will be submitted to the client, and three copies to the Cumbria HER within eight weeks of completion of the work. The report will include;

- a site location plan related to the national grid
- a front cover to include the planning application number, where relevant, and the NGR
- a concise, non-technical summary of the results
- the circumstances of the project and the dates on which the fieldwork was undertaken
- description of the methodology, including the sources consulted
- a summary of the historical background of the study area
- appropriate plans showing the location and position of features or sites located
- a statement, where appropriate, of the archaeological implications of the proposed development
- photographs as appropriate
- a copy of this project design, and indications of any agreed departure from that design
- the report will also include a complete bibliography of sources from which data has been derived, and a list of any further sources identified but not consulted
- an index to the project archive

4.3.2 **Confidentiality:** all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

4.4 ARCHIVE

4.4.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with Appendix 3 of the current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the HER (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects (paper, magnetic and plastic media) with the County Record Office, Carlisle, and the material archive will be submitted to an appropriate museum, in this case Tullie House.

5. OTHER MATTERS

5.1 ACCESS

- 5.1.1 Liaison for basic site access will be undertaken through the client. It is understood that there will be access for both pedestrian and plant traffic to the site.

5.2 REINSTATEMENT

- 5.2.1 The ground will be backfilled so that the topsoil is laid on the top, and the ground will be roughly graded with the machine. Should there be a requirement by the client, other than that stated, this will involve recosting.

5.3 INSURANCE

- 5.3.1 OA North has a professional indemnity cover to a value of £2,000,000; proof of which can be supplied as required.

5.4 PROJECT MONITORING

- 5.4.1 Whilst the work is undertaken for the client, the County Archaeologist or representative will be kept fully informed of the work and its results, on behalf of the local planning authority, and will be notified a week in advance of the commencement of the fieldwork. Any proposed changes to the project design will be agreed with CCCHES in consultation with the client.

5.5 WORK TIMETABLE

- 5.5.1 **Evaluation Trenching:** it is anticipated that four days will be required to complete this element. However, should it be necessary to step out the trenches to excavate deeper this may result in extra site days.

- 5.5.2 **Report and Archive:** the report and archive will be produced following the completion of all the fieldwork. The final report will be available within eight weeks of completion of the fieldwork, and the archive deposited within six months.

- 5.5.3 OA North would require a formal written agreement at least one week before commencement in order to notify CCCHES and schedule the work as above.

5.6 STAFFING

- 5.6.1 The project will be under the direct management of **Emily Mercer BA (Hons) MSc AIFA** (OA North Senior Project Manager) to whom all correspondence should be addressed.

- 5.6.2 The evaluation will be supervised by either an OA North project officer or supervisor experienced in this type of project, with an assistant. Due to scheduling requirements it is not possible to provide these details at the present time. All OA North project officers and supervisors are experienced field archaeologists capable of carrying out projects of all sizes.

- 5.6.3 Assessment of the finds from the evaluation will be undertaken under the auspices of OA North's in-house finds specialist **Christine Howard-Davis** (OA North finds manager). Christine has extensive knowledge of finds from many periods in the North West.

- 5.6.4 Assessment of any palaeoenvironmental samples will be undertaken by or under the auspices of **Elizabeth Huckerby MSc** (OA North project officer). Elizabeth has extensive knowledge of the palaeoecology of the North West through her work on the English Heritage-funded North West Wetlands Survey.

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United Kingdom Institute for Conservation (UKIC), 1990 *Guidelines for the preparation of archives for long-term storage*, London

United Kingdom Institute for Conservation (UKIC), 1998 *First Aid for Finds* London

APPENDIX 3: CONTEXT LIST

Context No.	Trench No.	Description	Phase
01	All	Tarmac and hardcore levelling for the car park	N/a
02	4	Levelling deposit	3
03	4	Levelling deposit	3
04	4	Dump/levelling deposit	3
05	4	Alluvial sand	1
06	3	Grey deposit/fill at the eastern end of the trench	2
07	3	Compacted dark grey clay overlying 06	3
08	3	Alluvial red sandy-clay beneath 07	1
09	3	Dense gravel containing large water-worn pebbles overlying 08 in the eastern end of the trench	1
10	3	North-west/south-east aligned stone wall at the western end of the trench	2
11	3	Clay levelling layer above 07 and 08	3
12	3	Hardcore levelling layer above 11	N/a
13	3	Grey sand horizon beneath 08 at the western end of the trench	1
14	3	Fill of 15	2
15	3	Construction cut for wall 10	2
16	3	Ditch at the eastern end of the trench	1
17	1	Mid red alluvial sandy-clay at the base of the trench	1
18	1	Single skin wide yellow brick wall aligned north-west/south-east at the northern end of the trench associated with structure 38	3
19	1	Compacted slag surrounding and beneath wall 18 , associated with structure 38	3
20	1	Dirty red clay beneath 19	2
21	1	North-west/south-east aligned linear feature of unknown function. Possible relict drain	2
22	1	Yellow clay	3
23	1	Yellow brick wall aligned east/west at the northern end of the trench	3
24	1	Compacted mortar and slag, possible working floor? associated with structure 38	3
25	1	Yellow brick surface/foundation associated with structure 38	3
26	1	Fuel waste along the western side of wall 23 , probably deriving from structure 38	3
27	2	Wall at the south-western end of the trench	3
28	2	Stone wall aligned north-west/south-east	3
29	2	Stone wall aligned north-west/south-east	3
30	2	Stone partition wall aligned north-west/south-east	3
31	2	Stone wall aligned north-west/south-east	3
32	2	Fuel waste/ballast; possible track bed material	3

33	2	Sand and clay levelling deposit	3
34	2	Ash levelling deposit	3
35	2	Fill of construction cut for two service pipes	3
36	2	Cut for service pipe	3
37	2	Patch of dark soil close to wall 28	2
38	1	Structure located at the northern end of the trench	3
39	2	Alluvial sand	N/a
40	2	Dense alluvial gravel	N/a
41	2	Grey silt (possible buried soil horizon)	1
42	3	River gravel beneath sand 08	N/a
43	4	Dense alluvial gravel	3

APPENDIX 4: FINDS CATALOGUE

Object no	Context	Trench	Quantity	Material	Description	Period
1001	04	4	10	Pottery	Creamware jar, English grey stoneware, glazed white earthenware chamber pot, plates	18th-19th century
1002	04	4	1	Glass	Complete blue-green octagonal medicine bottle	19th century
1003	04	4	9	Clay Tobacco Pipe	Bowls (5); rouletted decoration, two stamped DUBLIN. Stems; medium and large bored, mouth-piece	Mid-late 19th century
1014	04	4	1	Glass	Hamilton (torpedo) mineral water bottle	19th century
1013	04	4	8	Pottery	Complete stoneware bottles; grey (2), brown (2) and cream ginger beer bottle made in Dumfries	19th century
1012	04	4	1	Iron	Industrial vessel	19th century
1019	04	4	1	Animal Bone	Sheep	
1010	06	3	9	Pottery	Dark glazed red earthenware (coarse and fine), glazed white earthenwares; bone china, willow patterned plates	18th-19th century
1007	06	3	3	Industrial Residue	Smelting slag	19th century?
1009	06	3	1	Iron	Heavily corroded unidentifiable object	Undateable
1011	06	3	1	Animal Bone	Bird	Undateable
1008	06	3	4	Ceramic Building Material	Fired clay/daub	Undateable
1017	07	3	1	Clay Tobacco Pipe	Groove decorated bowl	19th century
1018	07	3	2	Pottery	Amphora, yellow glazed red earthenware	First-third century AD, 18th-19th century
1015	14	3	1	Glass	Light green vessel	18th-19th century
1006	24	1	5	Industrial Residue	Smithing slag (4), hearth bottom	Undateable
1004	32	2	1	Industrial Residue	Slag concreted fire brick	Undateable
1005	Grey silt	2	1	Wood	Stake fragment from a probable fence	Undateable
1000	Unstrat	1	1	Ceramic Building Material	Coltness firebrick	20th century

1016	Unstrat	1	1	Ceramic	Dark red glazed red stoneware, industrial use	20th century
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ILLUSTRATIONS

LIST OF FIGURES

Figure 1: Site location

Figure 2: Trench location plan,

Figure 3: Trench 1, plan of excavated remains

Figure 4: Trench 2, plan of excavated remains

Figure 5: Trench 3, plan of excavated remains

Figure 6: Trench 4, plan of excavated remains

Figure 7: Trench 4, north-western facing section

LIST OF PLATES

Plate 1: Wood's plan of the City of Carlisle dating to 1821

Plate 2: Ordnance Survey, first edition map, 1865

Plate 3: Ordnance Survey, second edition map, 1901

Plate 4: Ordnance Survey, third edition map, 1925, 25":1 mile

Plate 5: View of the south-west-facing section through the southern end of the trench

Plate 6: View of the trench, looking south-west

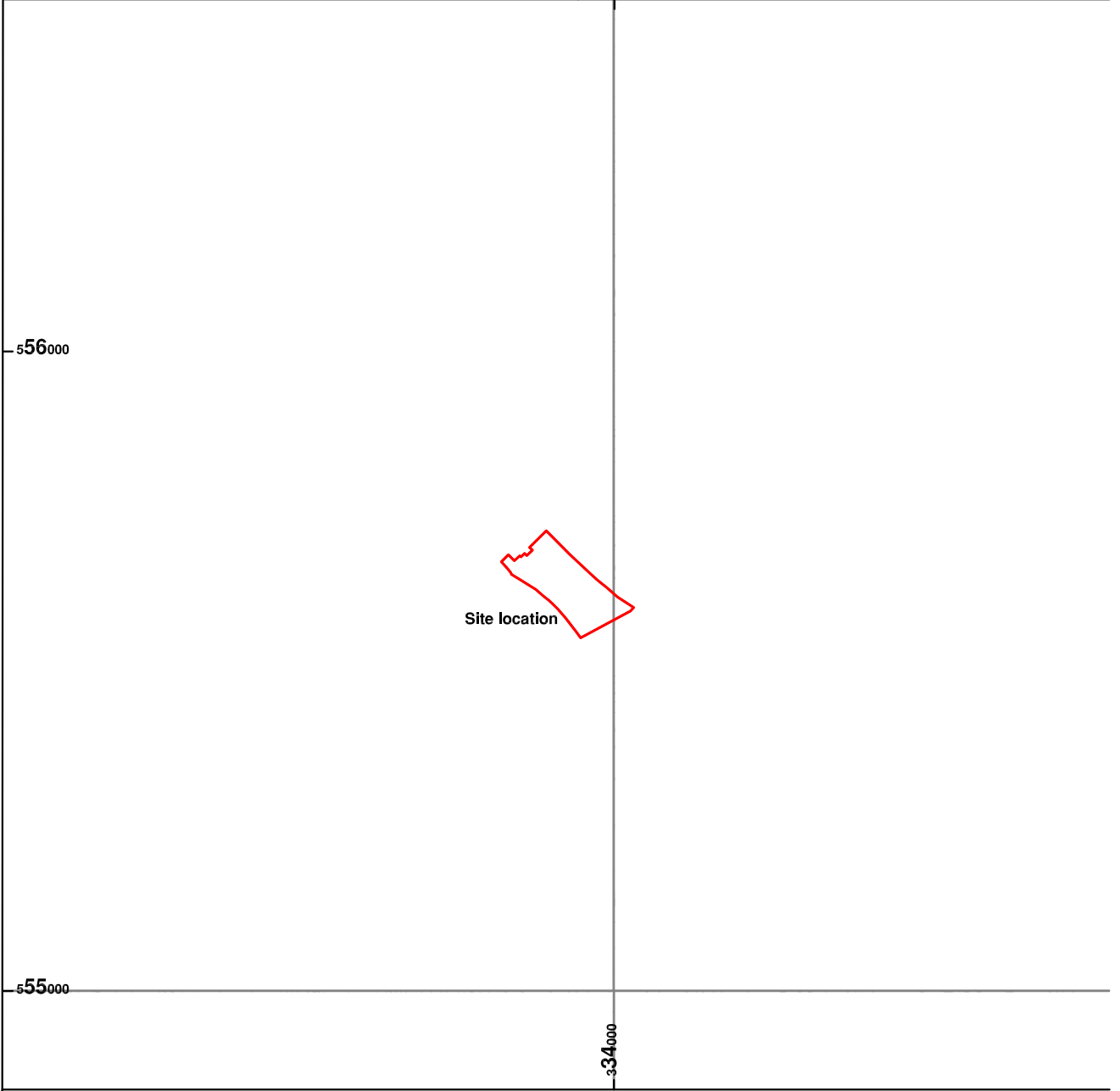
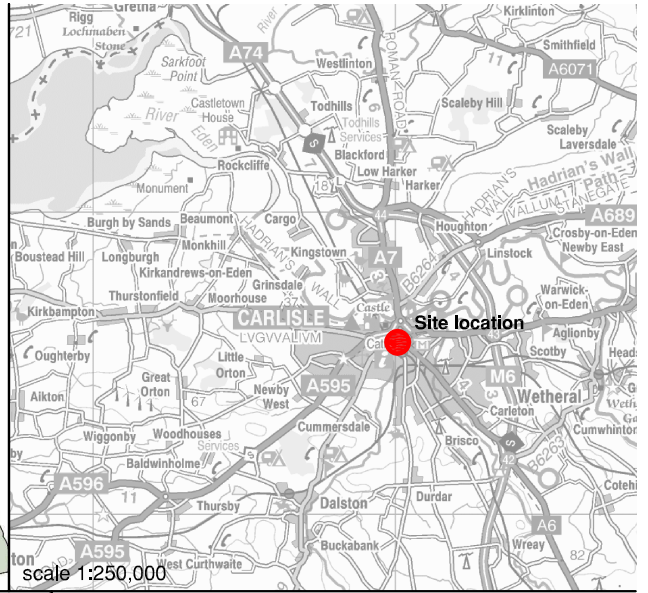
Plate 7: View of the east-facing section within the test pit at the western end of the trench, showing made ground, sand alluvial **08**, and river gravel **09** in the foreground

Plate 8: View of wall **10**, looking south

Plate 9: View of ditch **16** at the eastern end of the trench

Plate 10: View of Trench 4, looking north

Plate 11: Robert Carruthers manufactured ginger beer bottle



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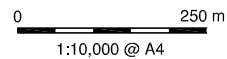


Figure 1: Site location

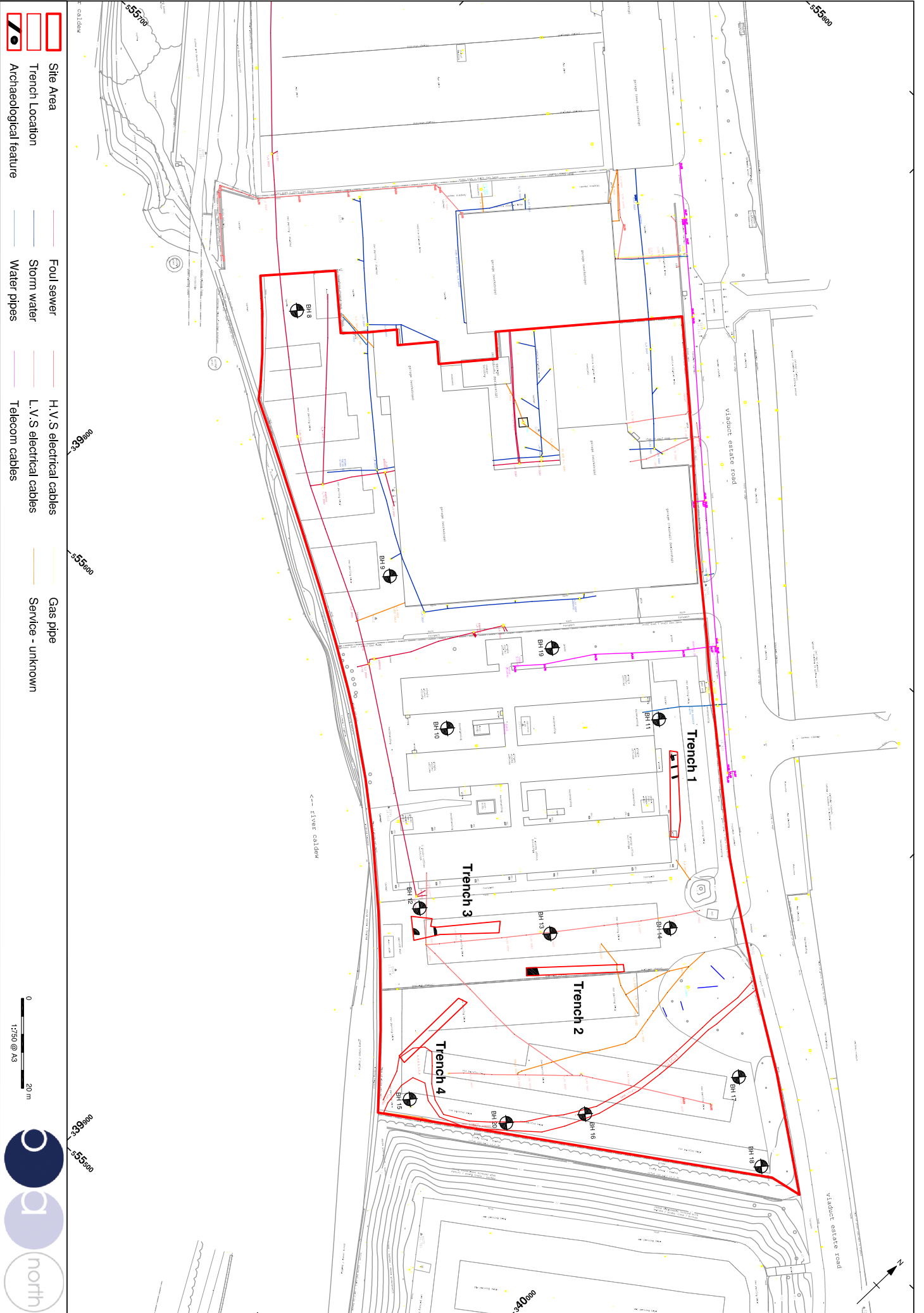


Figure 2: Trench location plan

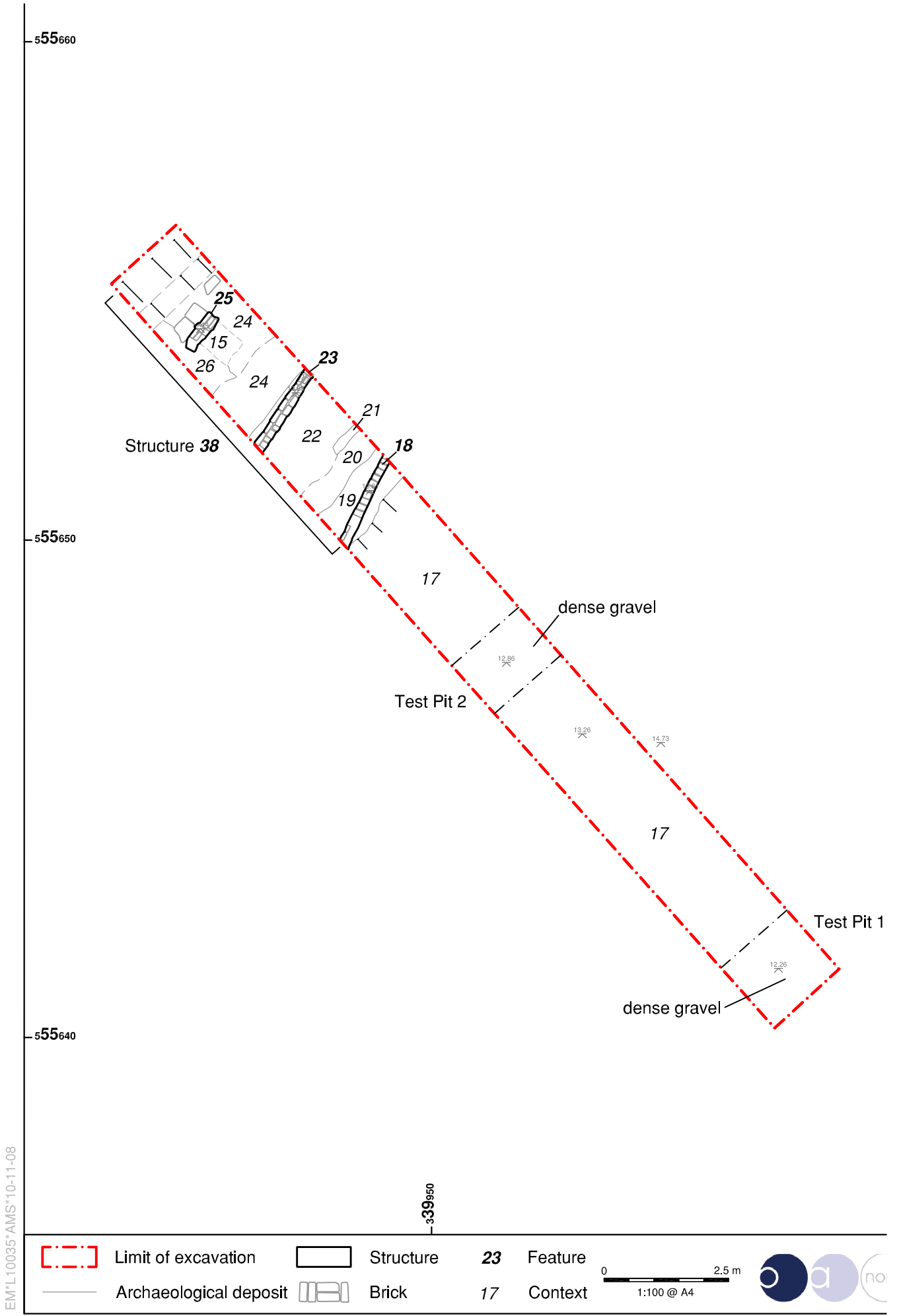


Figure 3: Trench 1, plan of excavated remains

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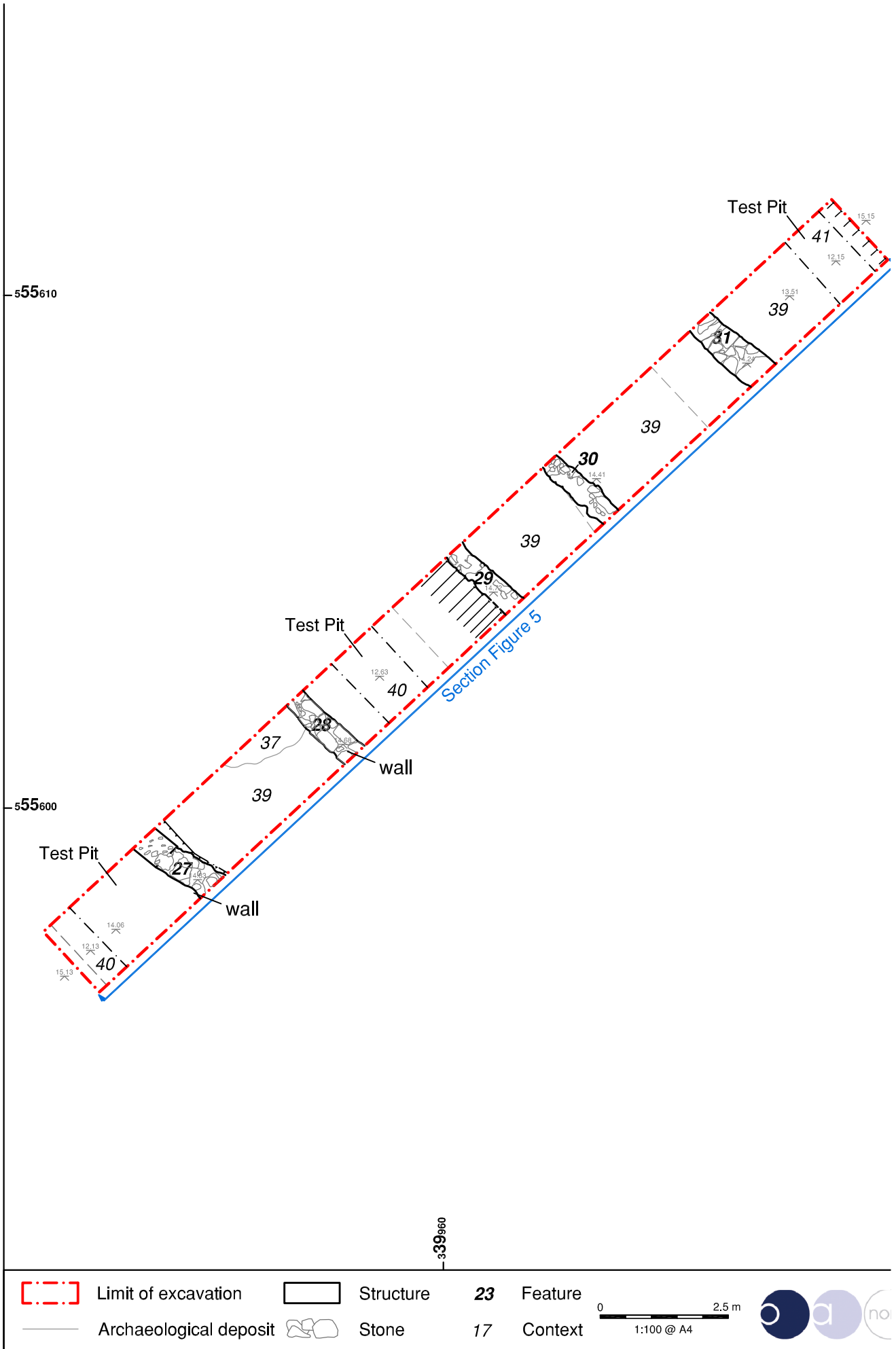


Figure 4: Trench 2, plan of excavated remains

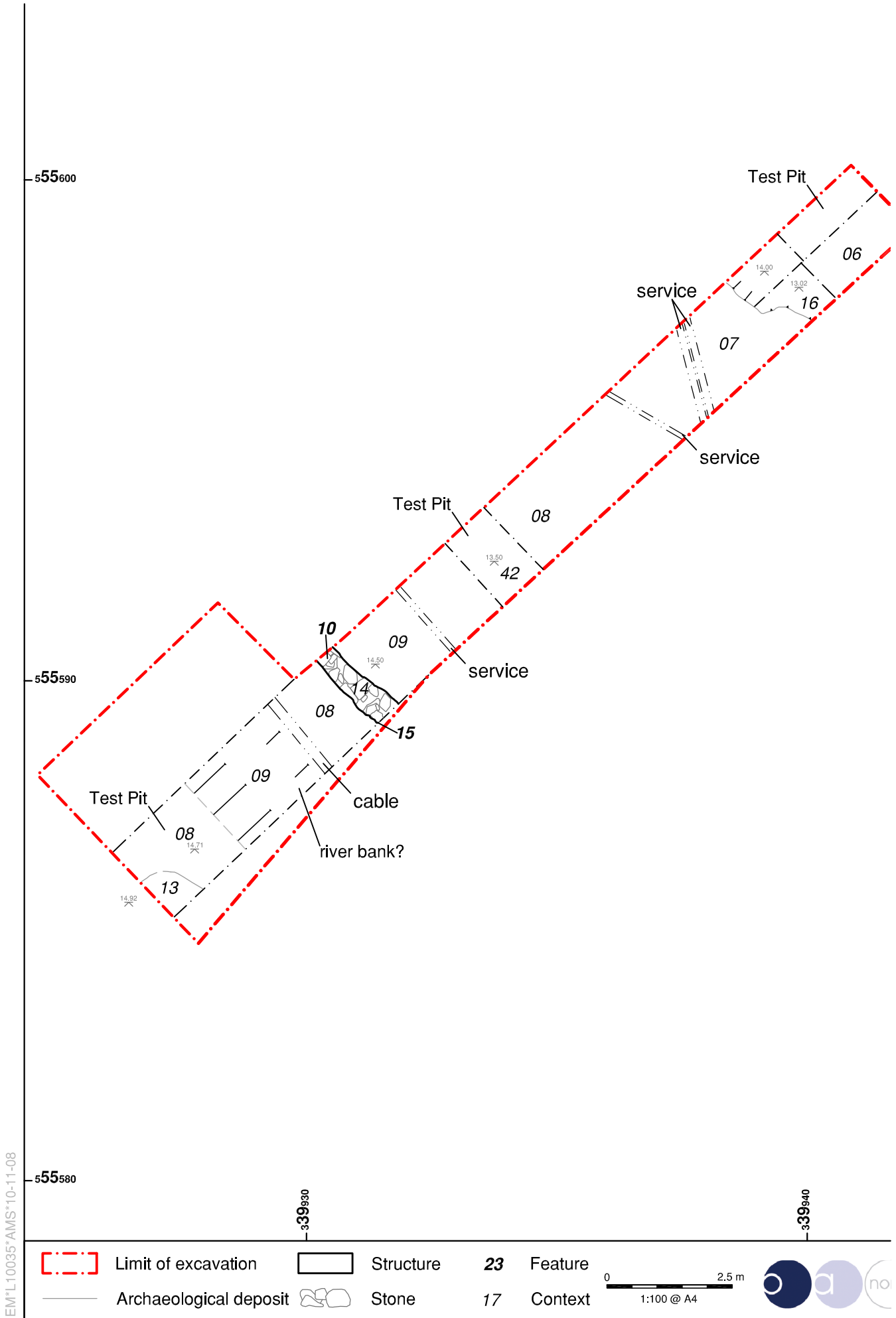


Figure 5: Trench 3, plan of excavated remains

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Figure 6: Trench 4, plan of excavated remains

