AN ARCHAEOLOGICAL EVALUATION (PHASE 1) AT ALEXANDRA BUSINESS PARK, CLAXHEUGH, SUNDERLAND, TYNE AND WEAR

PRE-CONSTRUCT ARCHAEOLOGY

An Archaeological Evaluation (Phase 1) at Alexandra Business Park, Claxheugh, Sunderland, Tyne & Wear

Central National Grid Reference: NZ 3680 5675

Site Code: CLX 04

Commissioning Client:
Cundall Johnson & Partners
Consulting Engineers
Horsley House
Regent Centre
Gosforth
Newcastle-upon-Tyne
NE3 3LU

Tel: 0191 213 1515

Contractor:
Pre-Construct Archaeology Limited
Northern Office
Unit 19a, Tursdale Business Park
Tursdale
Durham
DH6 5PG

Tel: 0191 377 1111

CONTENTS

List of Figures

		page
1.	**NON-TECHNICAL SUMMARY**	*1*
2.	**INTRODUCTION**	*3*
3.	**PLANNING BACKGROUND AND RESEARCH OBJECTIVES**	*6*
4.	**ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**	*8*
5.	**GEOLOGY AND TOPOGRAPHY**	*12*
6.	**ARCHAEOLOGICAL METHODOLOGY**	*13*
7.	**THE ARCHAEOLOGICAL SEQUENCE**	*16*
8.	**CONCLUSIONS**	*32*
9.	**REFERENCES**	*34*
10.	**ACKNOWLEDGEMENTS AND CREDITS**	*35*

APPENDICES

Appendix A: Stratigraphic Matrices

Appendix B: Context Index

Appendix C: Pottery Assessment

Appendix D: Geophysical Survey Report

List of Figures

		page
Figure 1	**Site location**	*4*
Figure 2	**Trench location**	*5*
Figure 3	**Trench 1, section**	*20*
Figure 4	**Trenches 2a and 2b, sections**	*21*
Figure 5	**Trench 3, section**	*22*
Figure 6	**Trench 4, section**	*23*
Figure 7	**Trench 5, section**	*24*
Figure 8	**Trench 5, plan**	*25*
Figure 9	**Trench 6a, section**	*26*
Figure 10	**Trench 6a, plan**	*27*
Figure 11	**Trench 6b section**	*28*
Figure 12	**Trench 7, representative sections**	*29*
Figure 13	**Trench 9, section**	*30*
Figure 14	**Trench 10, section**	*31*

1. NON-TECHNICAL SUMMARY

1.1 An archaeological field evaluation was undertaken by Pre-Construct Archaeology Limited in August 2004 at Alexandra Business Park, Sunderland, Tyne and Wear. There is a re-development proposal for Alexandra Business Park, extending west to Claxheugh Rock, which entails an extensive mixed-use scheme incorporating housing, a school, retail units, a hotel and a hospice. The central National Grid Reference for the overall re-development site is NZ 369 579.

1.2 A desk-based assessment of the overall re-development site was undertaken by Pre-Construct Archaeology prior to the evaluation. This indicated a moderate to high potential for prehistoric remains, low to moderate potential for Roman remains, low potential for medieval remains and a high potential for post-medieval remains, especially in the eastern portion of the site. In order to determine the nature and extent of any archaeological remains at the site, and thus inform the planning decision, the Tyne and Wear Archaeology Officer requested that archaeological field evaluation be undertaken in advance of the re-development.

1.3 Archaeological field evaluation is to be undertaken at Alexandra Business Park in a phased manner, as areas of the proposed re-development site become available. Phase 1 of the evaluation involved limited geophysical survey on suitable parcels of land in the southern central part of the re-development area, followed by the investigation of 9 archaeological evaluation trenches, of varying dimensions. Six of these trenches (Trenches 1 to 6) were located in a former vehicle storage area in the western portion of the site. A further 3 trenches (Trenches 7, 9 and 10) were located on elevated ground in the southern central part of the site. The central National Grid Reference for the Phase 1 site is NZ 3680 5675.

1.4 No remains of archaeological significance were encountered within any of the trenches investigated. The evidence from the trenches sited on the former vehicle storage area indicated that this part of the site had been subject to extensive landscaping activity in recent times.

1.5 In Trenches 1, 2a and 2b, intrusions associated with recent landscaping and drainage activity were recorded cutting into the natural sub-stratum. Such features were overlain by a thin layer of topsoil or gravel.

1.6 In Trenches 3 and 4, substantial dump deposits were recorded to the north, overlying the sloping natural sub-stratum. These derive from landscaping and land reclamation activity, as the northern part of the site was consolidated and levelled in recent times. The foundation trench of a wall ran across the southern portion of Trench 4, the structure with which it was associated probably having been demolished prior to recent landscaping. A substantial probable landscaping feature was also recorded at the northern end of Trench 4. A mixed layer of gravel and topsoil formed the uppermost deposit in Trench 3, with turf and topsoil forming the present ground surface in Trench 4.

1.7 The eastern edge of an extinct watercourse, probably Neddy's Gill, was recorded in Trench 5. Two alluvial fills were recorded within the confines of the trench, neither of which produced dating evidence. A substantial deposit of clay, presumably dumped to infill and consolidate Neddy's Gill, overlay the alluvial deposits. Later dump deposits were also recorded, again derived from recent ground consolidation activity. Live services were encountered in the western portion of Trench 5, effectively curtailing further investigation there.

1.8 In Trench 6a, a layer of alluvial material was encountered overlying the natural sub-stratum; this may have derived from an episode of flooding of Neddy's Gill. A small assemblage of post-medieval pottery, dating from the mid 19th century, and clay pipe fragments was recovered from this deposit. Two shallow NW-SE aligned gullies truncated the alluvial deposit, one of which produced a single pottery sherd of mid 19th century date. The function of these gullies is uncertain; they may have acted as drainage gullies or could possibly be the remnants of a field boundary illustrated on the Ordnance Survey 1st edition map. Dump deposits sealed the gullies and these were truncated by a probable landscaping feature at the northern end of the trench. A further dump deposit was recorded sealing the landscaping feature and a layer of gravel formed the uppermost deposit in Trench 6a.

1.9 In Trench 6b, the natural sub-stratum was overlain by modern dump deposits. A substantial landscaping truncation was recorded at the southern end of the trench, probably the continuation of a similar feature recorded at the northern end of Trench 6a. A dump layer overlay this feature and a gravel surface formed the uppermost deposit.

1.10 In Trench 7, substantial layers of dumped material overlay the natural sub-stratum. These deposits had effectively raised the ground level to create a terrace on the hillside in this part of the site. A land drain was recorded at the eastern end of the trench, truncating the 'made ground', and a layer of tarmac overlain by a mixed deposit formed the uppermost part of the sequence in this trench.

1.11 Trench 9 was positioned on a former football pitch to investigate a linear east-west anomaly, possibly indicative of an archaeological feature, detected by geophysical survey. Dump deposits were recorded in the northern portion of the trench, overlying the sloping natural sub-stratum to form a level surface for the field. Four field drains were recorded, one of which ran in an east-west alignment, and was potentially the source of the geophysical anomaly.

1.12 Trench 10 was also positioned on a former football pitch to investigate a linear east-west anomaly detected during the geophysical survey. A linear probable landscaping feature recorded in the centre of the trench may have been the source of the geophysical anomaly. Dump deposits filled this feature, overlain by further 'made ground' material. Four field drains were recorded.

1.13 In conclusion, Phase 1 of the archaeological evaluation at Alexandra Business Park, Claxheugh demonstrated that no significant archaeological remains were present within the areas investigated. Evidence of extensive landscaping was recorded across the areas subject to archaeological evaluation.

2. INTRODUCTION

2.1 This report describes the findings of Phase 1 of an archaeological evaluation co-ordinated and undertaken by Pre-Construct Archaeology Limited (hereinafter PCA) at Alexandra Business Park, Claxheugh, Sunderland, Tyne and Wear. The work was undertaken in September 2003 and August 2004, in advance of a proposed re-development scheme. The central National Grid Reference of the 'site' investigated by the Phase 1 evaluation is NZ 3680 5675 (Figure 1).

2.2 The evaluation was commissioned by Cundall Johnston & Partners (hereinafter CJP), in advance of the proposed re-development of an extensive riverfront site encompassing Alexandra Business Park and extending west to Claxheugh Rock. A phased programme of archaeological evaluation is being undertaken in advance of the re-development scheme. The purpose is to allow the impact of the re-development proposals upon the archaeological resource to be assessed in order to inform the planning decision.

2.3 Phase 1 of the archaeological evaluation was preceded by an archaeological desk-based assessment of the site, undertaken by PCA in June 2003.[1] This established a baseline consideration of the archaeological potential of the site. Phase 1 of the evaluation initially entailed limited geophysical survey of suitable parcels of land in the southern central part of the site. The results of the survey, undertaken by GeoQuest Associates on behalf of PCA, are appended to this report (Appendix D). Subsequently, archaeological trial trenching was undertaken by PCA, in the western and southern central parts of the site. Phase 1 of the evaluation was undertaken according to a specification compiled by the Tyne and Wear Archaeology Officer (hereinafter TWAO), attached to Newcastle City Council (hereinafter NCC).[2]

2.4 In total, the proposed re-development site at Alexandra Business Park covers an area of *c.* 39.4 hectares. The site is located on the south bank of the River Wear, between *c.* 0.6km and *c.* 2.1km west of Queen Alexandra Bridge. It is bounded to the north by the River Wear, to the east by Woodbine Terrace and to the south by Pallion Retail Park and the railway line of the Tyne and Wear Metro, where it runs between Pallion and South Hylton. The western limit of the re-development site lies just beyond Claxheugh Rock.

2.5 Phase 1 of the evaluation involved the investigation of 9 archaeological trial trenches. Six of these trenches (Trenches 1 to 6) were located in a former vehicle storage area in the western portion of the site (Figure 2). A further 3 trenches (Trenches 7, 9 and 10) were located in the elevated southern part of the site, formerly occupied by sports facilities. Trenches 9 and 10 were positioned to target two linear anomalies detected by the geophysical survey.

2.6 The completed project archive, comprising written, drawn, and photographic records and artefacts will be deposited at The Museum of Antiquities, Department of Archaeology, Newcastle University, under the site code CLX 04.

[1] PCA, 2003.
[2] NCC, 2004.

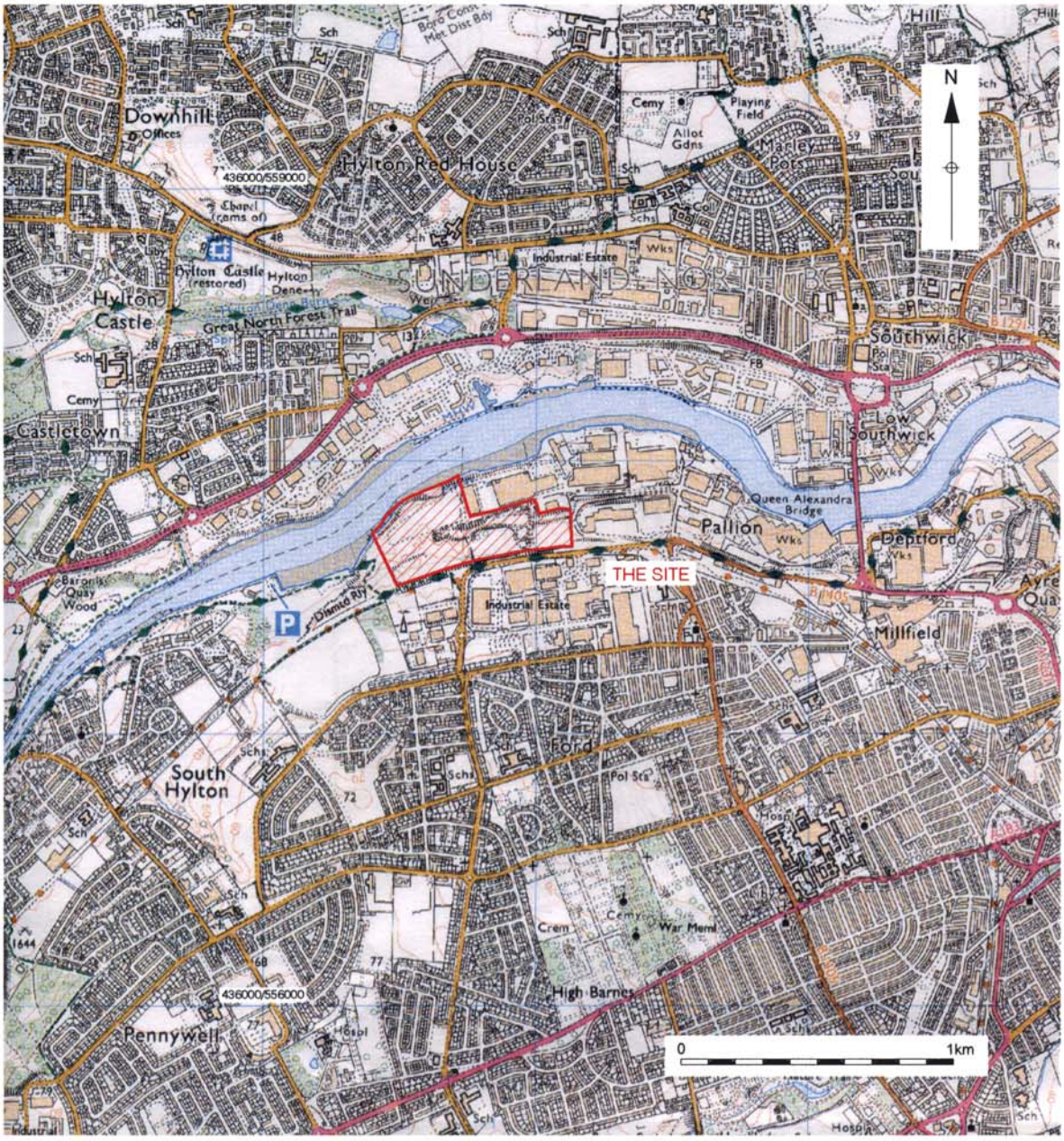


Figure 1. Site location
Scale 1:25,000

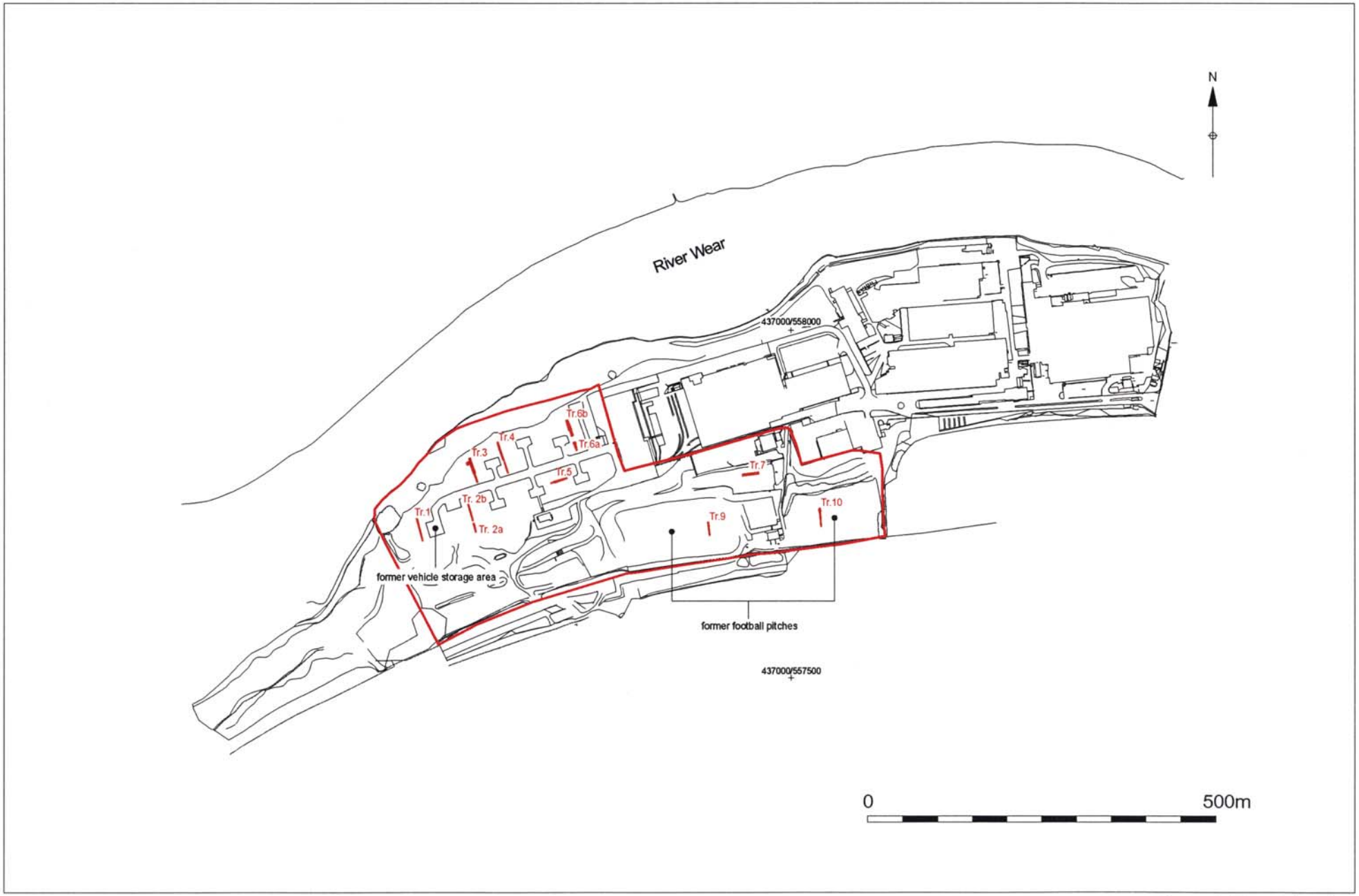


Figure 2. Trench location
Scale 1:7,500

3. PLANNING BACKGROUND AND RESEARCH OBJECTIVES

3.1 Planning Background

3.1.1 A proposal has been submitted for re-development of the riverfront site of Alexandra Business Park, Claxheugh, Sunderland as an extensive mixed-use development, to include housing, a school, retail units, a hotel and a hospice.

3.1.2 The need for early consultation in the planning process in order to determine the impact of development schemes upon the archaeological resource is identified in the document *'Planning Policy Guidance Note 16: 'Archaeology and Planning'* (PPG 16).[3] The TWAO attached to NCC has responsibility for archaeological development control throughout Tyne and Wear, including Sunderland. The TWAO identifies planning proposals that will be subject to archaeological conditions.

3.1.3 The River Wear waterfront, which forms the northern fringe of the site, lies within an area of potential archaeological importance, as defined by the City of Sunderland's UDP. This is because a number of prehistoric and Roman finds have been found on both riverbanks or have been dredged from the river. The riverside, especially in the eastern portion of the re-development site, is also archaeologically important because of its potential for post-medieval industrial remains.

3.1.4 The TWAO determined that archaeology would be a material consideration in the determination of the planning application for the re-development of the site. It was the recommendation of the TWAO that a programme of archaeological assessment and evaluation should be undertaken at the site prior to development, in order to further inform the planning decision.

3.1.5 An archaeological desk-based assessment of the overall development area was undertaken by PCA in August 2003. This concluded that there was a moderate to high potential for prehistoric remains, low to moderate potential for Roman remains, low potential for medieval remains and a high potential for post-medieval remains, especially in the eastern portion of the site. This was followed by a limited programme of geophysical survey on former football pitches in the southern central part of the site. This identified two possible archaeological features of potential interest.

3.1.6 Archaeological investigation, comprising trial trenching evaluation, was required in order to determine the extent, nature, date and degree of preservation of any archaeological remains at the site, pre-determination of the planning application. For the purposes of archaeological development control, the aim of the evaluation was to assess the potential of the archaeological resource at the site in order to inform a decision regarding an appropriate mitigation strategy.

3.1.7 The TWAO prepared a specification for the evaluation, which included suggested trench locations.

[3] Department of the Environment, 1990.

3.2 Research Objectives

3.2.1 In broad terms, the archaeological evaluation aimed to establish the date, nature, extent and significance of archaeological remains at the site as evidenced by any buried deposits and features and any artefactual and ecofactual evidence that they may contain.

3.2.2 The specific objectives of the archaeological trial trenching were:

- to determine if any undisturbed archaeological deposits or features survive within the area of the proposed re-development;
- to determine or confirm the general nature of any remains present;
- to determine or confirm the approximate date or date range of any remains by means of artefactual or other evidence;
- to determine or confirm the approximate extent of any remains;
- to determine the condition and state of preservation of any remains;
- to determine the degree of complexity of the horizontal and/or vertical stratigraphy present;
- to determine or confirm the likely range, quality and quantity of any artefactual evidence present;
- to determine the potential of the site to provide palaeoenvironmental and/or economic evidence and the forms in which such evidence may be present.

3.2.3 Additional aims and objectives of the project were:

- to set out the background of the site, drawing together the results of previous archaeological, historical, and environmental work in the area;
- to compile a site archive consisting of all site and project documentary and photographic records, as well as artefactual and palaeoenvironmental material recovered;
- to compile a report that contains an assessment of the nature and significance of the stratigraphic, artefactual, archaeological and palaeoenvironmental data.

3.2.4 Trial trenches were to be used to investigate the archaeological potential and assess the impact of the development on the archaeological resource.

3.2.5 The evaluation aimed to provide sufficient data to enable an appropriate mitigation strategy to be devised in order to minimise the impact of the proposed development upon the archaeological resource.

4. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Prehistoric

4.1.1 There are no known prehistoric sites located within the site and no finds have been collected from directly within its boundaries. However, the Tyne and Wear Historic Environment Record (hereinafter HER) includes a number of entries relating to objects retrieved from relatively close to the site or found in the channel of the River Wear during dredging works.

4.1.2 Several finds of stone tools have been made in the vicinity of the site. A rough flint axe of Neolithic date was found in 1884 during the enlarging of Doxford's Shipyard directly to the east. A Neolithic polished stone axe was found downstream of the site on the opposing bank at Pickersgill's Shipyard in 1976.

4.1.3 Slightly further afield, and of less certain provenance, a broken stone axe was found, probably upstream and on the opposite bank from the site, and a prehistoric flint scraper of possible Neolithic date was found to the east, although the exact location is uncertain.

4.1.4 A short distance to the east of the site, fragments of a male human skull were found during deep excavation for building purposes at Laing's Shipyard in 1974. The date of the fragments is unknown, but they may have been of prehistoric origin.

4.1.5 Directly to the north of the central area of the site, an assortment of human and animal bones were dredged from the riverbed in 1872. These included two human skulls, along with bones from deer, dogs, a goat and a whale. No date is suggested for these remains, but they could reasonably be prehistoric in origin.

4.1.6 A short distance upstream of the site, a log boat was found in the River Wear in 1880. The boat is believed to be of Late Bronze Age or Early Iron Age date. A second log boat may also have been recovered during the 1880's, possibly in association with stone tools but it is also possible that the two reported finds represent the same boat.

4.1.7 To the west of the site, two (or possibly three, records are unclear) bronze swords of a probable Late Bronze Age date were dredged from the river during the 19th century. Almost immediately to the west of the site, a bronze sword is said to have been dredged from the river between Hylton Dene and Park's Nook. Initially thought to be Roman, it now seems more likely that the sword was of a Late Bronze Age date, of Ewart Park type. Another bronze sword of Ewart Park type may be the same object, however, this is far from certain as differential preservation was reported on the two swords. A third reported sword, also of Ewart Park type, was dredged from the river at Hylton.

4.1.8 The scattering of prehistoric finds that have been located around the site suggests some degree of activity in the area during the prehistoric period. The river and its periphery would have provided an ideal habitat for fishing and wildfowling during prehistoric, and indeed later, periods. The river may well have facilitated trade and movement of people and goods rather than being considered a barrier. The presence of Claxheugh Rock at the western end of the site may also have provided a focus of activity, providing a good vantage point over the river and the surrounding land.

4.2 Roman

4.2.1 There has been considerable debate as to the nature of a possible river crossing to the west of the site during the Roman period. Finds of substantial masonry blocks, disturbed by dredging, have been reported over a number of years in the vicinity of Hylton. Some of these stones appear to have been clamped together with iron and lead straps, but after proving to be a danger to shipping, especially during the 19th century, they were removed. However, debate has centred on the exact nature of the crossing and its precise location. It has been suggested, at different times, that the crossing would have been a stone bridge, a causeway or a dam with a road along it. Whatever the truth, it appears that there was almost certainly a crossing of the river in the Hylton area.

4.2.2 No finds or other evidence of Roman occupation or land-use are recorded from the site or within the immediate vicinity of the area. However, several finds have been dredged from the river in the locale. Two Roman coins, one of which was found with human remains (although possibly not associated with them), have been found in the river close to the site. A lead plaque was recovered during 19th century demolition of the possible stone bride or causeway mentioned above and a milestone bearing an inscription to the Emperor Gordian was discovered in the Wear to the west of the site.

4.2.3 Despite the finds from the vicinity of the site, there are probably too few to suggest with any confidence that Roman activity occurred on the site. Roman activity is likely to have been located to the west, in the areas where a possible crossing of the Wear was established during the Roman period. It is not beyond reason to suggest that the few finds of Roman date that have been recovered close to the site may have washed down the river from this focus of activity.

4.3 Medieval

4.3.1 The villages of Ford and Grindon, to the west and south west of the site, are believed to have been in existence from at least 1360, when “le Forth” and Grindon first appear in documents. The exact location of Ford is not known with any certainty but it may have centred on High Ford at the junction between Grindon Lane and Hylton Road or Low Ford between Hylton Road and Westmoor Road.

4.3.2 Despite the possible existence of a medieval village *c.* 100m to the south of the site, there is little evidence that significant associated activity extended as far as the site, although the river would presumably have been exploited by the occupants of settlements in the vicinity during the medieval period. However, given there are no HER entries from the medieval period within the site, there is probably little reason to suggest evidence of medieval activity to be present within its boundaries.

4.4 Post-Medieval

4.4.1 The history of the ship building industry in Sunderland can be traced back as far as the 1340's when Thomas Menvil began building boats on the banks of the Wear. However, it is in the post-medieval period that the industry blossomed, coming to dominate the banks of the Wear as Sunderland became one of the most important ship building centres in the country.

4.4.2 The first recorded evidence of ship building in the study area is of Ralph Goodchild, a shipwright of Pallion, building ships on the site by 1672. The exact location of the yard is unknown but is likely to have been in the Pallion (eastern) area of the study site. In 1695, the yard was taken over by John Goodchild who mainly built small ships averaging 70-80 tons, for the transportation of lime, produced on site in a number of limekilns.

4.4.3 In 1790, Henry Rudd moved from Monkwearmouth to Pallion to build boats where, between 1790 and 1800, Luke Crown, a name later to become famous in Sunderland shipbuilding history, served his apprenticeship. Again, the exact location of his yard is unknown but is likely to have been situated in the eastern part of the site.

4.4.4 Ship building continued through the first half of the 19th century in the Pallion area with the likes of Thomas Ogden, whose yard produced boats in the area between 1827 and 1845. Relatively little is known about many of these early 19th century yards and the precise locations of many remain largely unclear.

4.4.5 During the mid 19th century, a number of shipyards are known to have operated on the riverfront within or near to the site. Some were relatively short-lived and throughout the 1850's and 1860's, the yards of Briggs, Buckley and Ramsey, Shevill, Rutter and Cumming, Wilkinson and Oswald - to name a few - all came and went.

4.4.6 Despite a high turnover of shipyards in this period, the 1850's did see the establishment of one of the more prosperous yards and one of Sunderland's most important shipbuilders. In 1850, George Short set up a shipyard at Claxheugh, after a partnership with Joseph Simpson, in the firm of Simpson and Short, dissolved. The yard bordered Neddy's Gill (also known as Neddies Dene) at Mowbray's Quay, in the western part of the study site. After laying down two ships in the first year of business, the barques 'Defiance' and 'Kate', the business steadily grew. George Short is recorded as having lived in a cottage near the yard for many years. This may have been Claxheugh Cottage (later Rock House), shown to the south-west of the yard on the Ordnance Survey map sequence, or alternatively, it may have been a property on the riverfront at Mowbray's Quay.

4.4.7 In 1869, George Short transferred his timber ship building business from Mowbray's Quay to Pallion, in the eastern part of the site. The business continued to develop and, with the running of the business transferred to his four sons, became known as Short Brothers in 1871. The second son, John Young Short, became the guiding hand, particularly in design terms, in the firm's affairs. With a change from wood to iron ship construction in 1871, the firm launched five iron vessels that same year.

4.4.8 Short's came to specialise in cargo ships and, in the periods between 1899 and 1905, the yard went through a number of significant alterations. In 1899, the yard of neighbouring North of England Shipbuilding Company was taken over, which greatly increased not only the yard size of Short's but also the quay facilities. The yard was extended southwards from 1900 and it was during expansion of the yard between 1903 and 1904 that Pallion Hall, a large, two-storey house, was demolished.

4.4.9 Little is known of the early history of Pallion Hall. It may have been built in the early 18th century and is believed to have been in existence by at least 1721. The hall is perhaps best remembered as the birthplace of Joseph Swann, the inventor of the incandescent lamp.

4.4.10 During the 20th century, the fortunes of Short's went into decline. Despite increased production during the war years and high production in the immediate post-war years and into the 1950's, the yard was in terminal decline and the 'Carlton', the final ship to be made by the firm, was launched in 1964. Subsequently the yard was demolished. Alexandra Business Park has been developed at the site in recent decades.

5. GEOLOGY AND TOPOGRAPHY

5.1 Geology

5.1.1 The 'solid' geology of the site is Magnesian limestone of the Durham coastal plain. This is overlain by a *c*. 10m thick band of glacial boulder clay.

5.2 Topography

5.2.1 The development site is set above the mud flats of the River Wear to the north and has higher ground to the south, which is particularly pronounced to the western end of the site where Claxheugh Rock forms a spur of this higher level.

5.2.2 The elevated southern central area of the site, formerly occupied by various sporting facilities, stands at *c*. 30-35m OD, with the line of the Tyne and Wear Metro running along an embankment to the south, at a height of *c*. 53m OD. Two former football pitches in this area were subject to limited geophysical survey as part of the Phase 1 evaluation. To the north-west, this area falls away steeply to an extensive terraced area, occupying the western end of the site, at *c*. 13-17m OD. Part of this terrace is occupied by a branched system of concrete roadways, a former vehicle storage area. This area was investigated thoroughly during the Phase 1 evaluation. A brick building is located on the southern edge of the terrace, overlooking the storage area. To the north, a steep drop from this terrace leads down to the river mud flats.

6. ARCHAEOLOGICAL METHODOLOGY

6.1 Geophysical Survey

6.1.1 Limited geophysical survey was undertaken on suitable parcels of land in the southern central part of the site. The methodology and results of this work, which were used to guide some of the trial trenches in the subsequent part of the evaluation, are described in Appendix D to this report.

6.2 Trial Trenching

6.2.1 The archaeological fieldwork at Alexandra Business Park was undertaken in accordance with the relevant standard and guidance document of the Institute of Field Archaeologists.[4]

6.2.2 Phase 1 of the evaluation comprised 9 trenches, the locations of which were proposed by the TWAO in the project specification. A tenth trench (Trench 8) suggested in the specification could not be investigated as it lay beyond the western limit of the area available for evaluation. Trenches 1-4 and 6-7 were positioned specifically to record the presence or absence of any prehistoric or Roman remains on the site. Trench 5 was sited east-west across the probable line of Neddy's Gill, to assess the potential for waterlogged deposits and palaeoenvironmental information. Trenches 9 and 10 were positioned specifically to investigate anomalies identified through geophysical survey on former football pitches in the southern central part of the site.

6.2.3 Trench 1 was located at the western limit of the former vehicle storage area, aligned NNW-SSE and measured 33.70m x 2.30m. Trench 2 was located to the east of Trench 1, running parallel to it, and was opened in two separate sections (Trenches 2a and 2b) to avoid live services. Trenches 2a and 2b measured 14.10m x 2.25m and 25.30m x 2.25m, respectively. Trench 3 was located to the north-east of Trench 2b and was aligned NNW-SSE, measuring 37.30m in length. The northern portion of Trench 3 was stepped for safety reasons, so at ground level it measured a maximum of 8.60m wide and at its base it was 2.30m wide. Trench 4, located to the east of Trench 3, running parallel to it, and measured 47.50m in length. The northern portion of Trench 4 was stepped and measured a maximum of 3.30m wide at ground level and 2.20m at the base of the trench. Trench 5, aligned ENE-WSW, was located in the south-eastern portion of the former vehicle storage area. It measured 25.0m long and was 2.20m wide at its base. The central portion of the trench was stepped for safety reasons - at this point it measured up to 3.58m wide at ground level. Due to the presence of live electricity cables and a live drain, the westernmost portion could not be opened to the length suggested in the project specification.

[4] Institute of Field Archaeologists, 1999.

6.2.4 Trench 6, located in the north-eastern corner of the former vehicle storage area, was opened in two separate sections (Trenches 6a and 6b) to avoid live electricity cables. Both sections were aligned NNW-SSE. Trench 6a measured 13.10m in length and was 2.20m wide at its base. The majority of the trench was stepped and it measured up to 5.10m wide at ground level. Trench 6b measured 25.10m in length and was 2.25m wide at its base. This portion of the trench was also stepped along its length, its maximum width at ground level being 5.46m.

6.2.5 Trench 7 was sited on an elevated area of ground in the southern central part of the site, formerly occupied by a tennis court. It was aligned roughly east-west and measured 25.10m in length and was 2.50m wide at its base. The trench was stepped for safety reasons and measured up to 3.50m wide at ground level. Trenches 9 and 10 were located in the southern part of the site, on former football pitches. Trench 9 measured 19.80m x 2.20m and was aligned NNW-SSE. Trench 10 measured 27.0m long x 2.40m wide. The northern end of Trench 10 was stepped for safety reasons and measured a maximum of 3.08m wide at ground level.

6.2.6 Ground reduction was undertaken using a 20 tonne 360º mechanical excavator utilising a wide-blade ditching (non-toothed) bucket. All work was directed by the supervising archaeologist. Overburden and archaeologically insignificant material was removed gradually by the machine, in spits of approximately 100mm thickness, down to the first significant archaeological horizon. Spoil was mounded away from the edge of each trench by the machine.

6.2.7 Subsequent excavation and recording was undertaken in accordance with recognised archaeological practice and following methodology set out in PCA's field recording manual.[5] Following machine clearance, the sections and the base of each trench were cleaned using appropriate hand tools, where this was possible. The long sections of the trenches were drawn at a scale of 1:10 or 1:20. Where appropriate, the base of each trench was planned at a scale of 1:20 relative to a baseline established along the trench. The position of each trench baseline was precisely located using a Geodimeter Total Station EDM.

6.2.8 Archaeological deposits were recorded using a 'single context recording' system. Features, deposits and structures were recorded on *pro forma* context record sheets. The height of all principal strata and features were calculated relative to Ordnance Datum and indicated on the appropriate plans and sections. A 'Harris Matrix' stratification diagram to record stratigraphic relationships was compiled and fully checked during the course of the fieldwork.

6.2.9 Within appropriate archaeological horizons, partial excavation, the recovery of dating evidence or cleaning and recording of deposits was preferred to full excavation, and was practised wherever possible.

6.2.10 A photographic record of the investigations was compiled using SLR cameras. This comprised black and white prints and colour transparencies (on 35mm film), illustrating in both detail and general context the principal features and finds discovered. The photographic record also included 'working shots' to illustrate more generally the nature of the archaeological operation mounted. All photographs included a graduated metric scale.

6.2.11 Four Temporary Bench Marks (TBMs) were established on the site using a Total Station EDM employing existing survey data. The TBMs had values of 16.29m OD, 26.11m OD, 30.71m OD and 32.25m OD.

6.3 Post-Excavation

6.3.1 The site's stratigraphic data is represented by the written, drawn and photographic records. A total of 132 archaeological contexts were defined in the evaluation trenches (Appendix B). Post-excavation work involved checking and collating site records, grouping contexts and phasing the stratigraphic data (Appendix A). A written summary of the archaeological sequence was then compiled, as described below in Section 7.

6.3.2 The artefactual material from the site comprised a small assemblage of late post-medieval pottery and clay pipe fragments. The material was washed, dried, marked and packaged as appropriate and according to relevant guidelines.[6] Specialist assessment of this material was undertaken.

6.3.3 The project's palaeoenvironmental sampling strategy was to recover bulk samples where appropriate, from well-dated (where possible), stratified deposits covering the main periods or phases of occupation and the range of feature types represented, with specific reference to the objectives of the evaluation. To this end, no features of significance were encountered to warrant the recovery of bulk samples.

6.3.4 No other categories of inorganic artefactual material were represented.

6.3.5 Survival of all materials from archaeological fieldwork depends upon suitable storage. The complete project archive, comprising written, drawn and photographic records (including all material generated electronically during post-excavation) and all 'finds' will be packaged for long term curation according to relevant guidelines.[7] None of the material recovered required specialist stabilisation or an assessment of its potential for conservation research. The depositional requirements of the receiving body, in this case the Museum of Antiquities, Department of Archaeology, Newcastle University, will be met in full.

[5] PCA, 1999.
[6] Watkinson and Neal, 1998; UKIC, 1983.
[7] UKIC, 1990.

7. THE ARCHAEOLOGICAL SEQUENCE

Note: Discrete stratigraphic entities (e.g., a cut, a fill, a deposit) were assigned unique and individual archaeological 'context' numbers, and these are indicated in the following text as [*]. The archaeological sequence at the site has been described by stratigraphic phases, detailing the progression of deposition. Standard archaeological phase numbers have been allocated to each of the deposits encountered even where these may have formed as part of the natural geological sub-strata. These phases are indicated by Roman numerals (e.g. III) and broad, site-wide, phases of activity have been assigned.

7.1 Phase I – Natural Sub-stratum

7.1.1 The natural sub-stratum was recorded in each of the trenches investigated. These silty clay or clay deposits varied in colour, but were typically light-mid brownish or greyish yellow. The deposits recorded were: [70], [21], [30], [38], [110], [77], [50], [59], [129], [11] and [99] (Trenches 1-7, and 9-10, respectively). In each case the material is interpreted as natural boulder clay.

7.1.2 The maximum height at which the natural sub-stratum was encountered varied across the site. In the former vehicle storage area, it was recorded at a maximum height of 16.69m OD in the northern end of Trench 2a, sloping down to 13.91m OD at the southern end of Trench 6b. On the higher ground to the south, the natural sub-stratum was recorded at a maximum height of 31.95m OD and 30.73m OD in Trenches 9 and 10, respectively, both of which were sited on former football pitches. In Trench 7, positioned on a former tennis court to the north of the former football pitches, the natural sub-stratum was recorded at a maximum height of 23.68m OD.

7.2 Phase II – Post-medieval (Neddy's Gill and Associated Alluvium)

7.2.1 The eastern edge of a substantial linear feature, [52], was recorded in Trench 5, at a maximum height of 15.61m OD (Figures 7 and 8). It had a shallow sloping side and was excavated to a depth of *c.* 1.70m below the existing ground surface, continuing below the safe limit of excavation, and for a maximum distance of *c.* 10m east-west, continuing to the west. The earliest exposed fill, [76], comprised mid grey silty clay, up to 0.50m thick. A later fill, [75], comprised dark grey, organic clayey silt, up to 0.14m thick. Neither deposit, both evidently alluvial in origin, produced artefactual dating evidence. The feature is interpreted as the eastern edge of a former watercourse, Neddy's Gill, shown on historic maps running north-south in the vicinity of Trench 5.

7.2.2 In Trench 6a, an alluvial deposit, [49], was encountered overlying natural boulder clay at a maximum height of 15.10m OD. It comprised light grey silty clay, up to 0.26m thick, and a small assemblage of post-medieval pottery and clay pipe, dating from the mid 19th century, was recovered from this deposit (Appendix C). This deposit is interpreted as possibly being derived from an episode of flooding of Neddy's Gill, the course of which can be projected running immediately to the west of the trench.

7.3 Phase III – Late Post-medieval

7.3.1 In Trench 6a, two parallel, NW-SE aligned features, [46] and [48], truncated alluvial deposit [49] (Figures 9 and 10). Both measured 0.20m in width and were very shallow features, only 60mm deep. The features had concave sides falling to concave bases, recorded at a maximum height of 15.10m OD in the southern end of the trench and sloping down to 14.62m OD at their northernmost recorded extents.

7.3.2 Two similar deposits filled features [46] and [48], comprising dark grey silty clay, [45] and [47] respectively. The function of these features is uncertain, but they may have been drainage gullies, or the remnants of a NW-SE aligned field boundary visible on the 1st edition Ordnance Survey map. A single pottery sherd of mid 19th century date was recovered from fill [45].

7.4 Phase IV - Modern

7.4.1 In Trench 1, a substantial east-west aligned linear feature, [69], truncated the natural sub-stratum in the northern part of the trench (Figure 3). This had steep to vertical sides, a flat base and measured 8.22m wide and up to 0.70m deep. The highest level at which it was recorded was 16.22m OD. Its fill, [68], comprised small and medium sub-angular limestone fragments in a clayey sand matrix. The function of this feature is uncertain, however it is likely that it was associated with recent landscaping of the area. Three drains, [63], [65] and [67], were also recorded in Trench 1, running in NW-SE and east-west alignments across the trench. All three were filled by similar deposits, [62], [64] and [66], respectively, comprising fine sub-rounded pebbles in a matrix of grey silty clay. A mixed layer of turf and gravel, measuring up to 0.10m thick, formed the uppermost deposit in Trench 1, recorded at a highest level of 16.39m OD.

7.4.2 In the northern portion of Trench 2a, two east-west aligned linear features, [18] and [20], were recorded in section, truncating the natural sub-stratum (Figure 4). Both features were steep sided, with flat bases and measured *c*. 1.0m wide and *c*. 0.25m deep. Similar deposits, [17] and [19], respectively, comprising fine sub-rounded and sub-angular pebbles in a silty clay matrix, were recorded filling the two features. The function of these features is uncertain, but they may have been drainage gullies. A probable service trench, [16], was recorded in the central portion of Trench 2a. Its fill, [15], comprised small sub-angular sandstone fragments. A thin layer of turf, [14], recorded at a highest level of 16.60m OD at the southern end of the trench, formed the uppermost deposit in this trench.

7.4.3 Two shallow features, [25] and [27], truncated the natural sub-stratum in the southern portion of Trench 2b (Figure 4). These measured 0.12m wide and 0.12m deep and 0.20m wide and 0.20m deep, respectively. The features were filled by similar deposits, [24] and [26], respectively, comprising small sub-rounded and sub-angular gravel and pebbles in silty clay. The function of these features is not certain, but they are interpreted as being associated with the recent landscaping at the site. At the northern end of Trench 2b, a probable drain, [29], was recorded on a NW-SE alignment. Its fill, [28], comprised fine sub-rounded and sub-angular pebbles in a matrix of silty clay. A layer of gravel, [23], formed the current ground surface across the majority of the trench. This was overlain by a thin layer of turf, [22], at the southern end of the trench, recorded at a maximum height of 16.27m OD.

7.4.4 Substantial deposits of 'made ground' were recorded in the northern part of Trench 3, decreasing in thickness to the south. In the central portion of the trench, a layer of silty clay, [37], was recorded overlying the natural sub-stratum (Figure 5). It measured up to 0.26m thick and was recorded at a highest level of 15.46m OD in the south, sloping down to 14.60m OD to the north. The composition of this deposit suggests that it was alluvial in origin, however, it is uncertain whether was re-deposited, perhaps as a levelling layer, or remained *in situ*. In the southern portion of the trench, a layer of silty sand, [32], up to 0.22m thick, overlay the natural sub-stratum and this material can be broadly equated with layer [37]. In the northern portion of the trench, a deposit of clayey sand, [36], was observed at the base of a machine excavated sondage, at a maximum height of 13.61m OD. This was overlain by substantial deposit [31]=[35], of brick rubble in a clayey sand matrix, which measured 0.20m thick at the southern end of the trench, increasing to 2.38m at the northern end. The material was evidently derived from a demolition episode, possibly one that removed brick buildings from the site itself. The aim of this dumping activity was clearly to raise ground level to the north, thereby reclaiming land from the river. A mixed layer of topsoil and gravel, [34], recorded at a maximum height of 16.29m OD, formed the ground surface in Trench 3. This was truncated by a drain, [112].

7.4.5 In Trench 4, a linear feature, [104], was recorded running NW-SE across the northern portion of the trench (Figure 6). It was traced for 24.30m and was 0.50m wide, and at least 0.31m deep, continuing below the base of excavation. It was recorded at a maximum height of 15.47m OD. Its fill, [103], comprised brick rubble and silty sand. This feature is interpreted as a possible 'robbed out' wall, representing the position of a former structure on the site. It was overlain by a substantial deposit, [102], up to *c*. 1.0m thick, comprising brick and sandstone masonry rubble with silty sand. This is interpreted as a ground raising dump, similar to dump [31]=[35] in Trench 3. Two further dump deposits, [105] and [107], were recorded in section overlying [102]. The former comprised silty clay, up to 0.26m thick, while the latter comprised clayey sand mixed with medium-sized sandstone fragments, up to 0.60m thick. Across the northern portion of the trench, a layer of re-deposited clay, [106], was recorded in section overlying these deposits. This is also interpreted as a ground levelling dump. A substantial east-west aligned feature, [109], was recorded in the northern portion of the trench, truncating the 'made ground' deposits. This was steep-sided and measured 1.04m wide and 1.26m deep, continuing below the base of excavation. Its fill, [108], comprised brick rubble in clayey sand. The precise purpose of the feature is uncertain. A layer of gravel, [100], recorded at a highest level of 16.17m OD, formed the present ground surface across the majority of the trench. This was overlain by a layer of topsoil and turf, [101], in the northern portion of the trench.

7.4.6 In Trench 5, a substantial layer of redeposited clay, [74], overlay alluvial deposit [75] (Figure 7). This was up to 1.12m thick and was recorded at a highest level of 15.79m OD. It is interpreted as having been deliberately dumped to infill Neddy's Gill and consolidate this area. Two further dump deposits, [73] and [72], were recorded overlying dump [74]. The former comprised brick and sandstone masonry rubble, up to 0.40m thick, while the latter comprised coal fines with silty sand, up to 0.14m thick. Three service trenches, [115], [117] and [119], with fills, [114], [116] and [118], respectively, were recorded running north-south across the western portion of Trench 5. A concrete slab, [113], measuring at least 2.24m E-W and 1.16m N-S was recorded overlying dump deposit [72] at the western end of the trench.

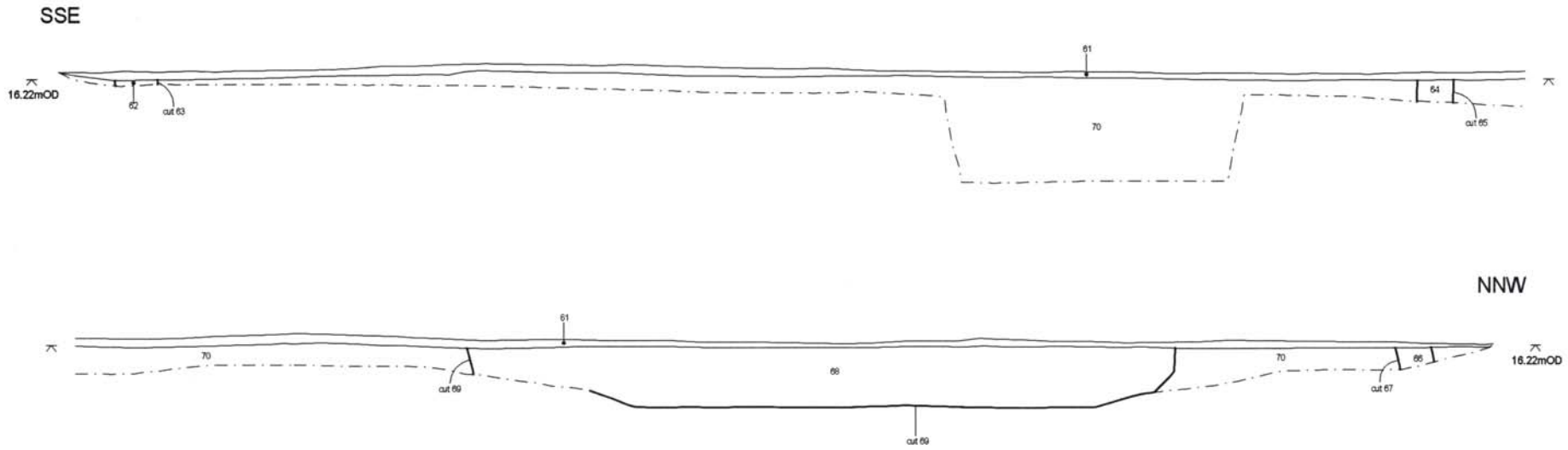
7.4.7 A series of deposits, [41]-[44], encountered in Trench 6a have been interpreted as 'made ground' (Figure 9). The combined thickness of these deposits was 1.37m. At the northern end of the trench, a feature, [91], measuring 3.48m wide and up to 1.0m deep, and with a mottled clayey fill, [90], truncated these deposits. This feature is also interpreted as probably being related to landscaping activity on the site, although its precise function is unclear. A layer of crushed brick, [40], extended across the trench, measuring up to 0.38m thick. This deposit represents further ground levelling in recent times. A thin layer of gravel, [39], formed the current ground surface, recorded at a highest level of 16.15m OD.

7.4.8 A similar sequence of deposits was recorded further north in Trench 6b. Three dump deposits [56]-[58], with a combined thickness of 1.50m, were recorded across the majority of the trench (Figure 11). The northern edge of a substantial feature, [55], was recorded at the southern end of Trench 6b. This measured at least 5.30m wide, up to 1.38m deep and contained three mixed fills, [53], [54] and [60]. This feature is interpreted as probably representing the continuation of feature [90], as recorded in Trench 6a. A layer of crushed brick, [132], extended across the trench, this probably a continuation of layer [40], recorded in Trench 6a. A layer of gravel, [51], formed the current ground surface in Trench 6B, at a maximum height of 16.07m OD.

7.4.9 In Trench 7, a substantial sequence of dump deposits, [124]-[128], was recorded throughout the trench (Figure 12). These deposits generally comprised re-deposited boulder clay, whilst deposit [128] also contained redeposited alluvial material. The combined maximum thickness of these deposits was *c.* 1.55m. Investigations in this trench were limited by the depth required to expose a complete stratigraphic sequence and by the ingress of groundwater. However, it was evident that this material had been dumped, during an episode of landscaping in recent times, in order to create an artificial terrace on the sloping ground in the southern part of the site. A land drain, [131], containing a ceramic drainpipe, [130], truncated deposit [124], at the eastern end of the trench. A layer of tarmac, [123], extended across the trench, overlain by a mixed dump deposit, [122], up to 0.17m thick, which formed the current ground surface, at a highest level of 25.50m OD.

7.4.10 In Trench 9, deposits, [2]-[4], were recorded in section in the northern portion of the trench (Figure 13). They had a combined thickness of 0.68m and appear to have been dumped upon the underlying natural sub-stratum in order to create a level surface for the former football pitch in this part of the site. Four field drains, [6], [8], [10] and [13], were recorded running on east-west or NE-SW alignments through the trench. One of these may have been the origin of the geophysical anomaly that the trench was sited to test.

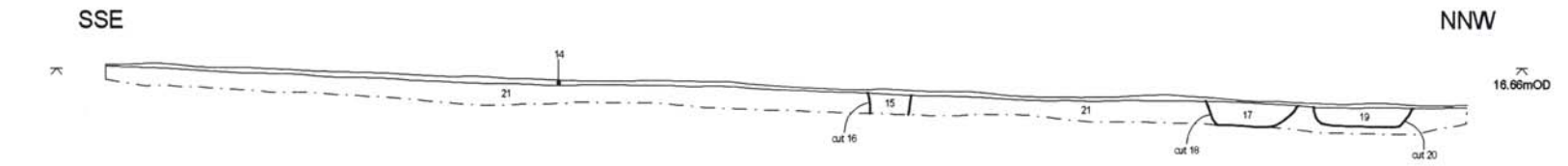
7.4.11 An east-west aligned feature, [83], was recorded In the central portion of Trench 10 (Figure 14). It measured 4.46m wide and 0.56m deep and its primary fill, [86], comprising fragmented sandstone. Three other fills, [85], [84], and [82], were recorded, the two uppermost deposits extending beyond the southern edge of the feature. This feature was probably associated with recent landscaping activity and is likely to have been the cause of the geophysical anomaly that the trench was designed to test. A deposit, [81], up to 0.12m thick, overlay deposit [82] and has been interpreted as a levelling dump. This was overlain by a further levelling dump, [78]=[80], up to 0.82m thick. Three NE-SW aligned land drains, [93], [95], and [121], extended across the trench. A layer of topsoil, [98], up to 0.42m thick, formed the uppermost deposit in the trench, recorded at a maximum height of 31.03m OD.



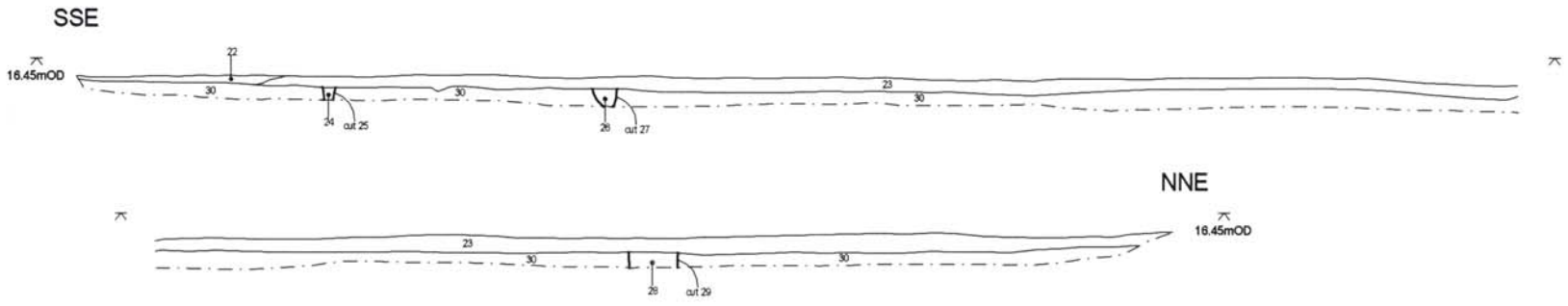
Trench 1. ENE facing section.

0 5m

Figure 3. Trench 1, section
Scale 1:75



Trench 2a. ENE facing section.



Trench 2b. ENE facing section.

Figure 4. Trenches 2a and 2b, sections
Scale 1:75

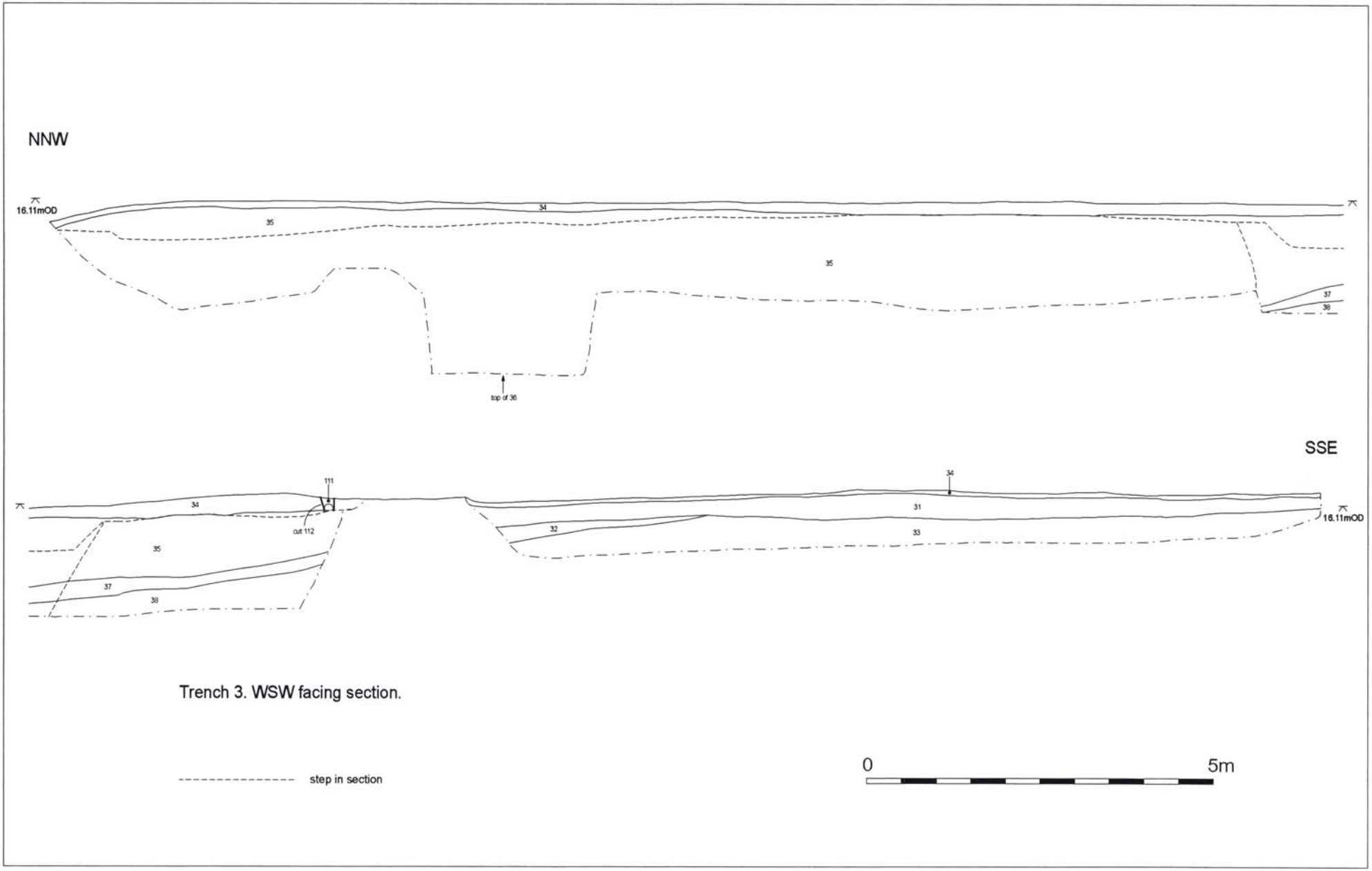
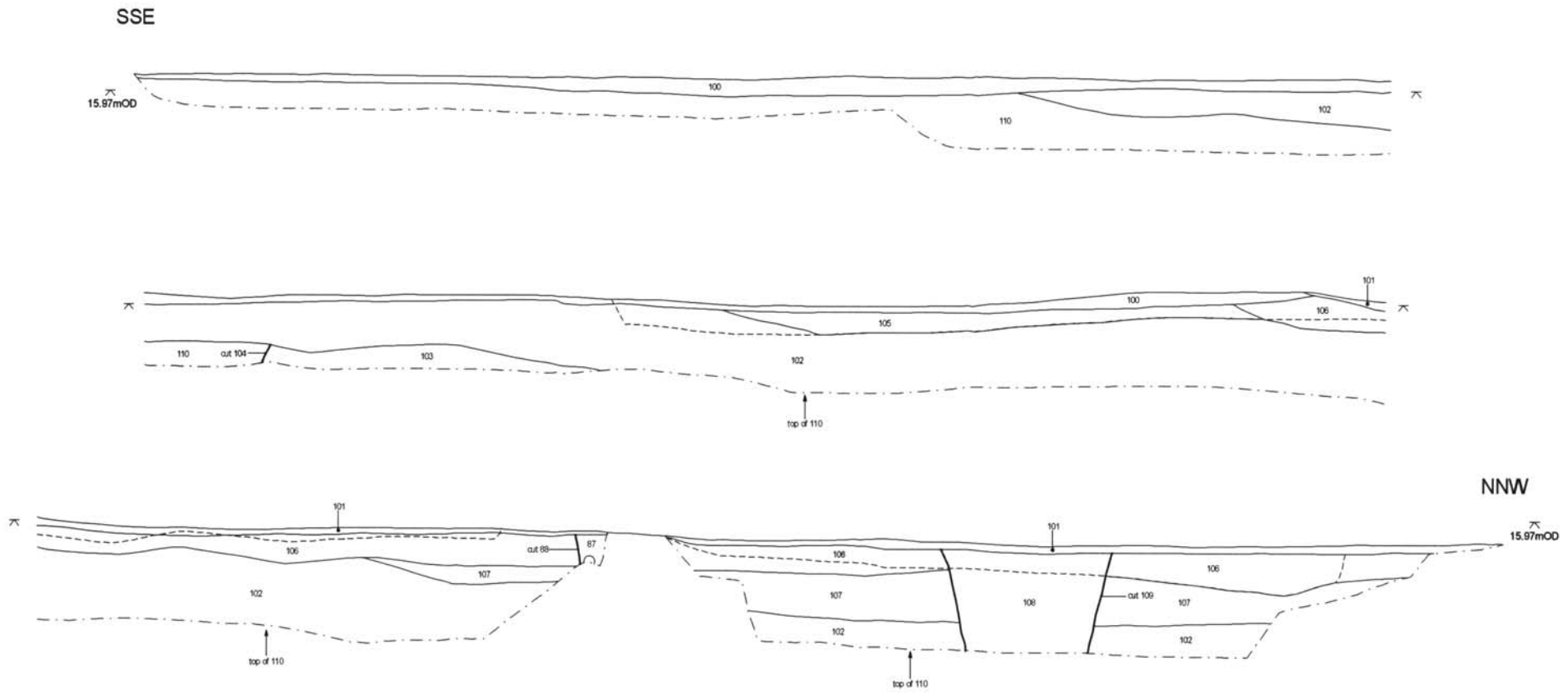
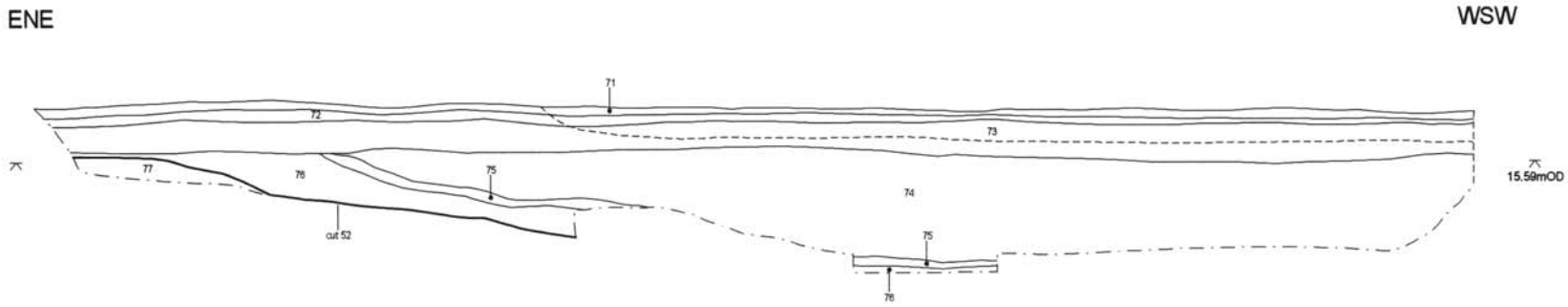


Figure 5. Trench 3, section
Scale 1:75



Trench 4. ENE facing section.

Figure 6. Trench 4, section
Scale 1:75

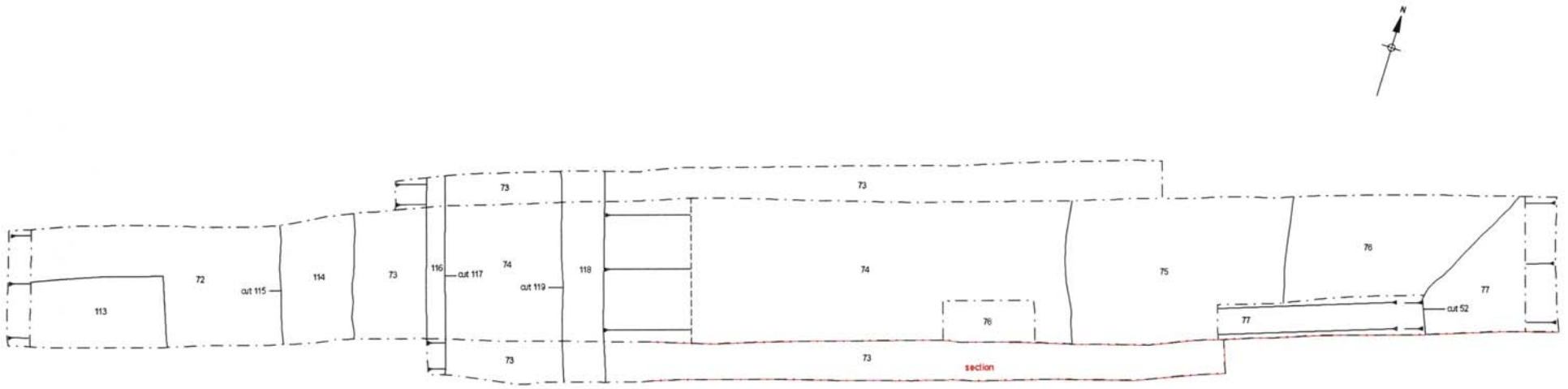


Trench 5. NNW facing section.

step in section

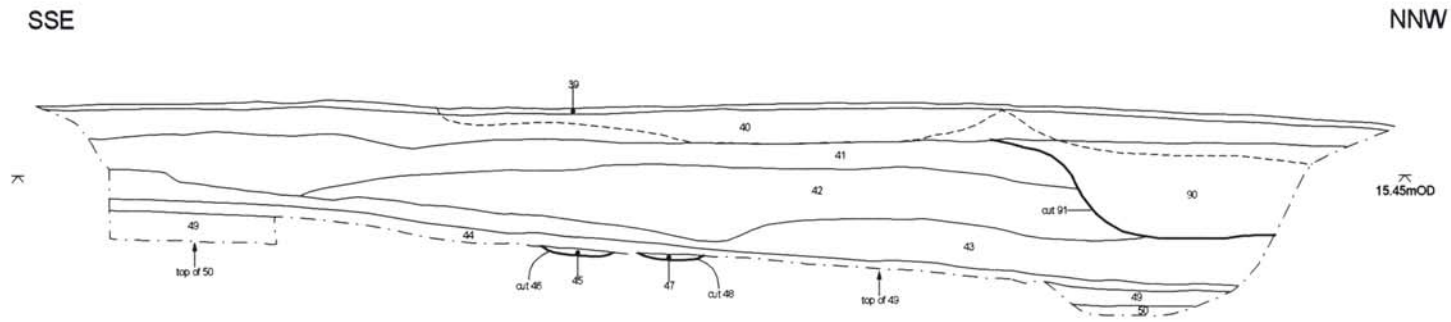
0 5m

Figure 7. Trench 5, section
Scale 1:75



Trench 5, plan.

Figure 8. Trench 5, plan
Scale 1:100



Trench 6a. ENE facing section.

step in section

0 5m

Figure 9. Trench 6a, section
Scale 1:75

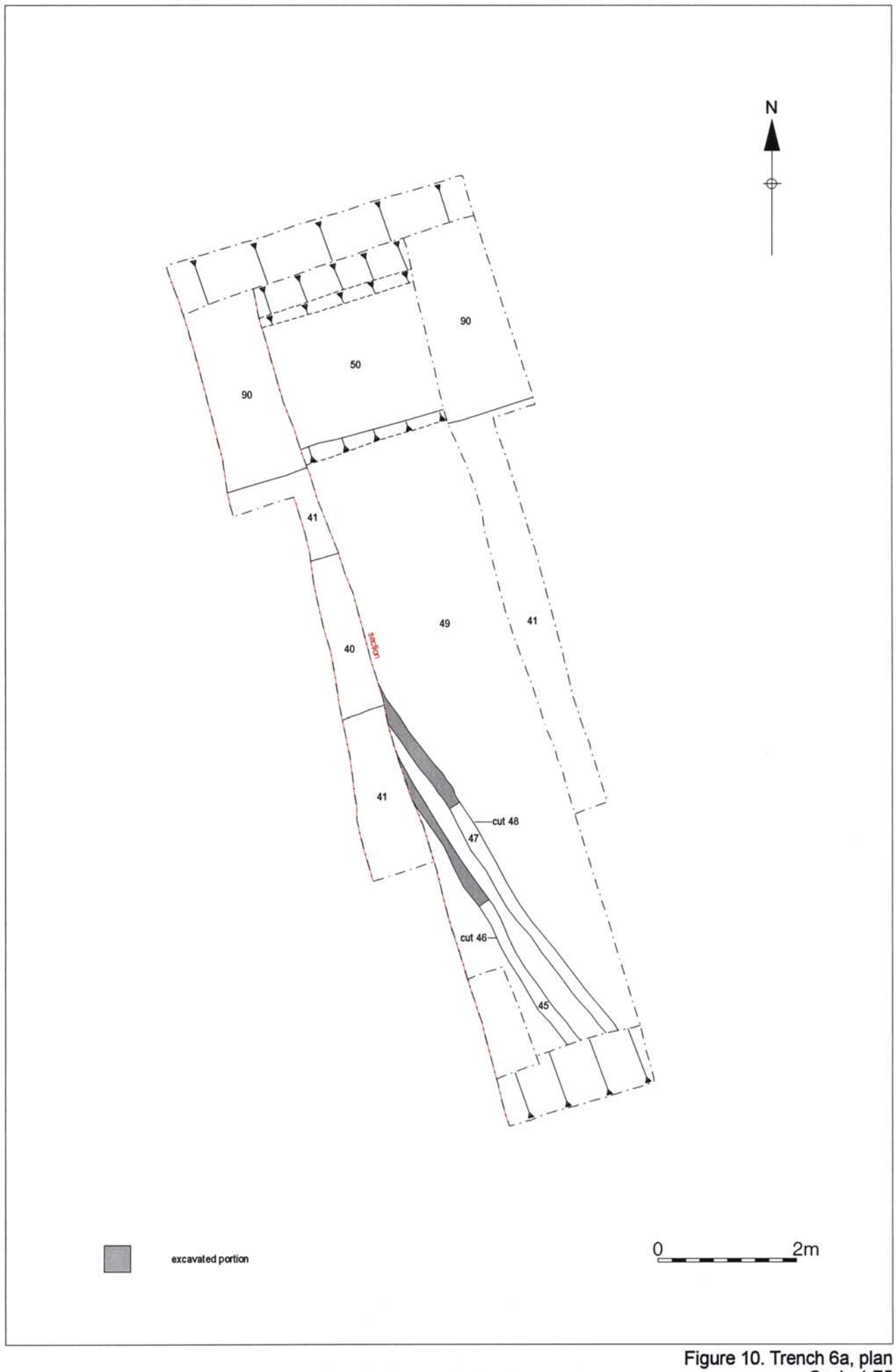
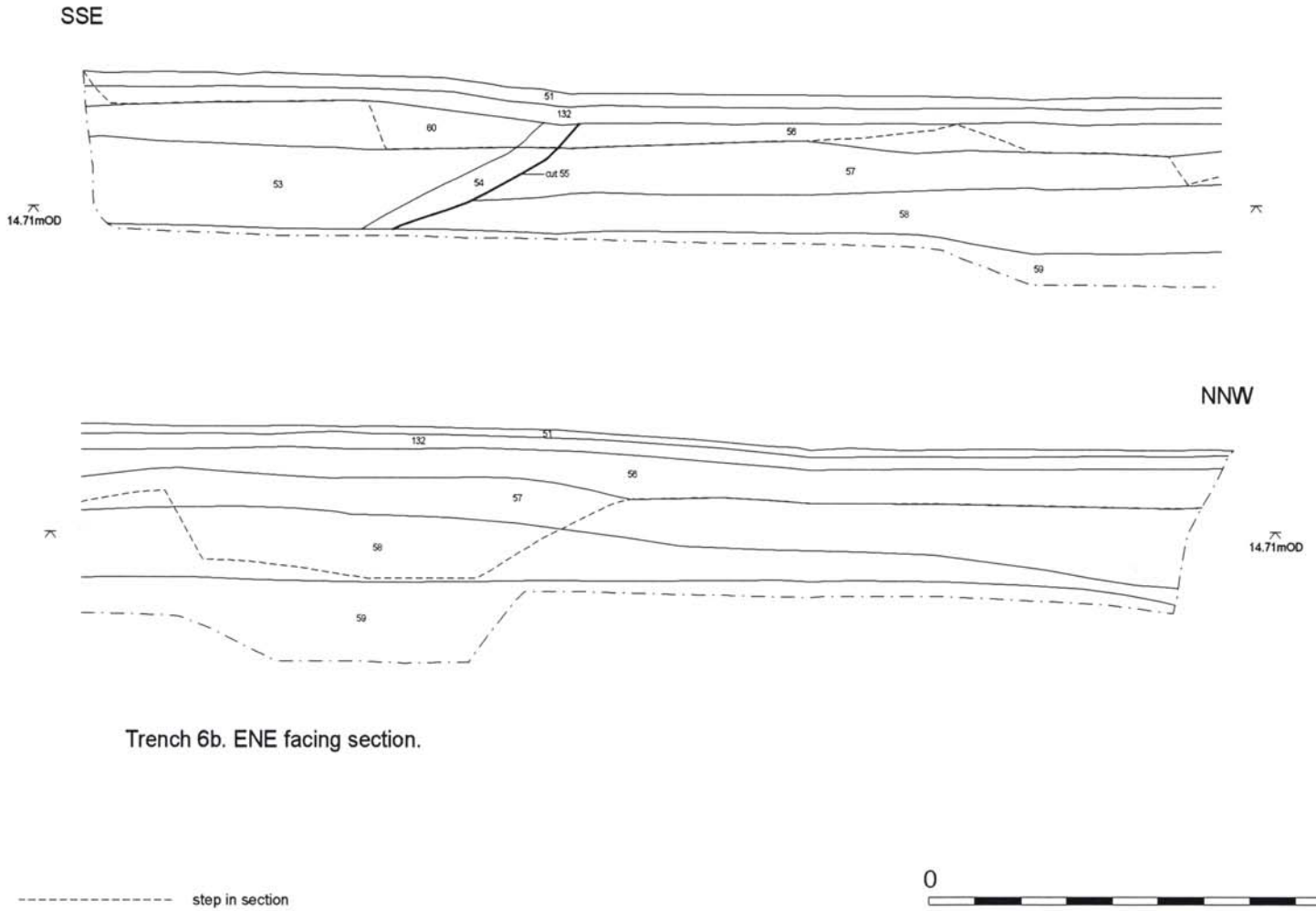
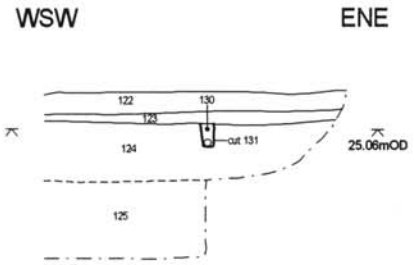


Figure 10. Trench 6a, plan
Scale 1:75

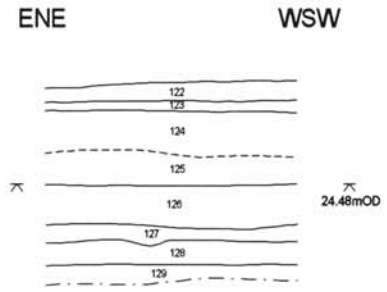


Trench 6b. ENE facing section.

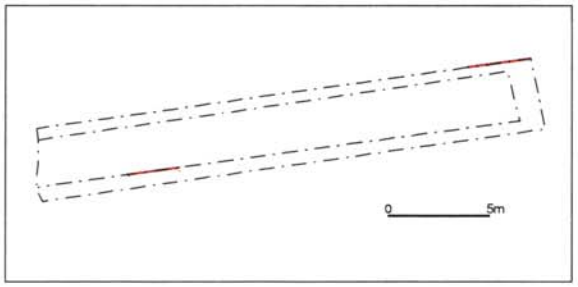
Figure 11. Trench 6b, section
Scale 1:75



Trench 7. SSE facing section.



Trench 7. NNW facing section.



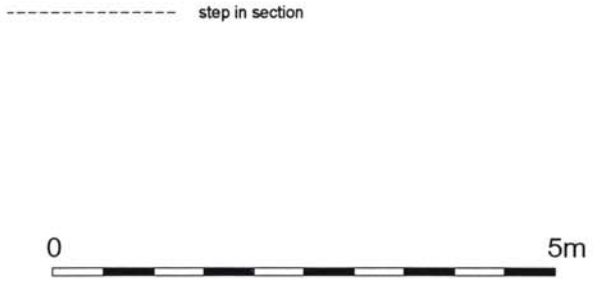
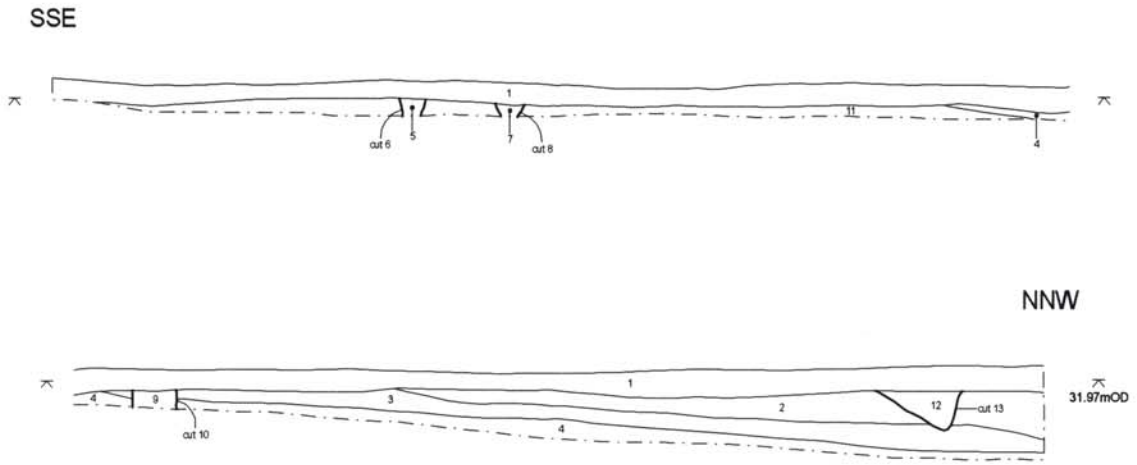
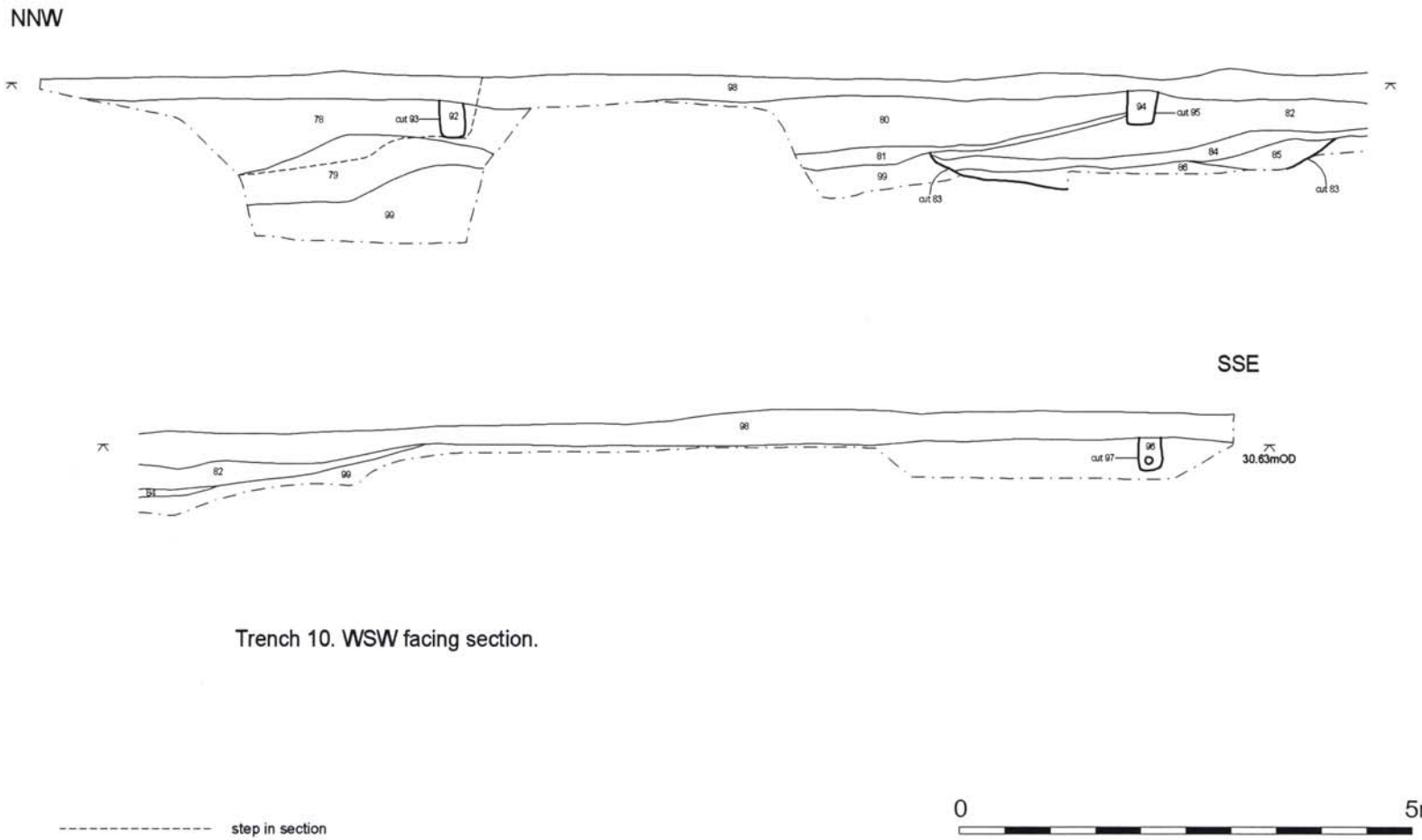


Figure 12. Trench 7, representative sections
Scale 1:75



Trench 9. ENE facing section.

Figure 13. Trench 9, section
Scale 1:75



Trench 10. WSW facing section.

Figure 14. Trench 10, section
Scale 1:75

8. CONCLUSIONS

8.1 Conclusions: the Archaeological Resource

8.1.1 Phase 1 of the archaeological evaluation at Alexandra Business Park, Claxheugh, Sunderland, did not record any evidence of significant archaeological activity.

8.1.2 Trenches 1, 2a and 2b demonstrated that the natural sub-stratum in the south-western part of the former vehicle storage area had been horizontally truncated to form a level area in recent times. A number of land drains and probable landscaping features were recorded cutting into the truncated upper interface of the natural sub-stratum. In these trenches, there was barely any depth to the stratigraphy, with either a thin layer of topsoil/turf or gravel forming the existing ground surface.

8.1.3 In the northern parts of Trenches 3 and 4, substantial deposits of 'made ground', up to 2.50m thick, were recorded. Material had evidently been dumped, as the land fell away naturally to the north, with the intention of reclaiming land from the riverside. By this means, the landscaped terrace, upon which the vehicle storage area was established, was extended to the north. There was evidence in the southern ends of both trenches to suggest that the natural sub-stratum had been horizontally truncated during this activity. In the central portion of Trench 3, a probable alluvial deposit was recorded, although the preferred interpretation is that the material was re-deposited. A 'robbed out' wall was recorded in the southern portion of Trench 4, and this is likely to relate to a former building at the site. At the northern end of Trench 4, a substantial feature probably associated with landscaping activity was recorded. A mixed layer of gravel and topsoil formed the uppermost deposit in Trench 3, while in Trench 4 topsoil/turf formed the existing ground surface.

8.1.4 Trench 5 was positioned to investigate the former watercourse, Neddy's Gill, shown on the Ordnance Survey 1st edition map. The eastern edge of this palaeochannel was encountered, at a depth of *c.* 0.60m below existing ground level, and it was excavated to a depth of *c.* 1.70m. It it was not possible to expose the base of the feature within the confines of the trench due to safety concerns. Two alluvial deposits were recorded within the palaeochannel, but neither produced dating evidence. A substantial dump of re-deposited clay had been used to infill Neddy's Gill and consolidate the area, prior to 'made ground' deposits being laid down.

8.1.5 In Trench 6a, an alluvial layer overlay the natural sub-stratum, and this produced a small assemblage of post-medieval pottery dating to the mid 19th century. This deposit is interpreted as being derived from a flooding episode of Neddy's Gill, the course of which would have run immediately to the west of the trench. Two shallow gullies were recorded cutting into the alluvial deposit, at a depth of *c.* 1.40m below the existing ground level. The function of these gullies is uncertain, although they may have acted as drainage gullies or be the remnants of a field boundary illustrated on the Ordnance Survey 1st edition map - one produced a single sherd of mid 19th century pottery. Again, extensive 'made ground' deposits formed the upper part of the stratigraphic sequence in this trench, and a large probable landscaping feature was recorded at the northern end of the trench. A layer of gravel formed the existing ground surface.

8.1.6 In Trench 6b, substantial 'made ground' deposits were recorded overlying the natural sub-stratum, again these evidently having been dumped during land reclamation activity in recent times. The natural sub-stratum lay up to *c*. 1.70m below the existing ground level in this trench. A substantial landscaping feature was recorded at the southern end of the trench, probably the continuation of the feature recorded at the northern end of Trench 6a. Again, a gravel surface formed the existing ground surface.

8.1.7 Trench 7 was located on a former tennis court, on the higher ground in the southern portion of the site. Substantial 'made ground' deposits were recorded overlying the natural sub-stratum, which lay up to *c*. 1.80m below the existing ground level. These were evidently dumped to raise the ground level and in so doing create an artificial terrace in the hillside. A land drain was recorded at the eastern end of the trench truncating the 'made ground'. A loose mixed dump layer formed the uppermost deposit.

8.1.8 Trench 9 was located in a former football pitch in the southern portion of the site, positioned to investigate a linear anomaly detected during the geophysical survey. Deposits of 'made ground' were recorded in the northern portion of the trench, evidently laid down upon the natural sub-stratum to form a level surface for the football pitch. The maximum depth at which the natural sub-stratum was recorded was *c*. 0.90m below the existing ground level. Four land drains were recorded in the trench, one of which ran in an east-west alignment, and this is likely to have been the source of the geophysical anomaly.

8.1.9 Trench 10, also located in a former football pitch, to the east of Trench 9, was positioned to investigate a linear anomaly detected during the geophysical survey. An east-west aligned feature was recorded, cutting into the natural sub-stratum at a depth of *c*. 0.70m below the existing ground surface. It was evidently of recent origin and possibly related to landscaping activity; this was probably the source of the geophysical anomaly. 'Made ground' deposits overlay this feature, levelling the natural slope of the ground to the north. Four land drains were recorded and again, a layer of topsoil/turf formed the uppermost deposit recorded.

8.2 Conclusions: the Impact of the Development Proposals

8.2.1 No significant archaeological features were encountered within the area investigated by the Phase 1 evaluation at Alexandra Business Park. The trial trenching identified evidence for substantial and extensive landscaping activity associated with terracing and land reclamation at this riverside location.

8.2.2 The eastern edge of an ancient watercourse, Neddy's Gill, was recorded in Trench 5, but the alluvial deposits within the feature produced no artefactual material to indicate that it had been utilised in any way by humans during archaeological eras prior to the 19th century. In Trench 6a, an alluvial deposit possibly associated with the same feature produced dating evidence to suggest that it remained open during the mid 19th century, as indicated by cartographic evidence.

8.2.3 It is concluded that no further archaeological work is warranted in this part of the development site.

9. REFERENCES

Department of the Environment, 1990. *Planning Policy Guidance Note 16: Archaeology and Planning (PPG 16),* HMSO.

Institute of Field Archaeologists, 1999. *Standards and Guidance for Archaeological Field Evaluation,* IFA.

Pre-Construct Archaeology Limited, 1999. *Field Recording Manual*, unpublished document, PCA.

Pre-Construct Archaeology Limited, 2003. *An Archaeological Desk-Based Assessment of the Site of the Proposed Claxheugh Village and Marina, Sunderland, Tyne and Wear,* unpublished client report, PCA.

NCC, 2004. *Specification for evaluation work to record suspected archaeological deposits at Alexandra Business Park, Claxheugh, Sunderland,* unpublished document, NCC.

United Kingdom Institute for Conservation (UKIC), 1983. *Conservation Guidelines No.2. Packaging and storage of freshly excavated artefacts from archaeological sites,* Archaeology Section of the UKIC.

United Kingdom Institute for Conservation (UKIC), 1990. *Conservation Guidelines No.3. Environmental standards for the permanent storage of excavated material from archaeological sites,* Archaeology Section of the UKIC.

Watkinson, D. and Neal, V., 1998. *First Aid for Finds* (3rd edn.), Rescue and Archaeology Section of the UKIC.

10. ACKNOWLEDGEMENTS AND CREDITS

Acknowledgements

Pre-Construct Archaeology would like to thank Cundall Johnston & Partners for commissioning the work described in this report. The liaison role of Raymond Thew of CJP is particularly acknowledged.

The curatorial role of Jennifer Morrison, the Tyne and Wear Archaeology Officer, is also acknowledged.

PCA Credits

Report: Emma Allen

Fieldwork: Emma Allen (Site Supervisor), Katie Murphy, Louise Robinson, Aidan Turner and Tom Wells.

Project Management: Robin Taylor-Wilson

Post-Excavation Manager: Jenny Proctor

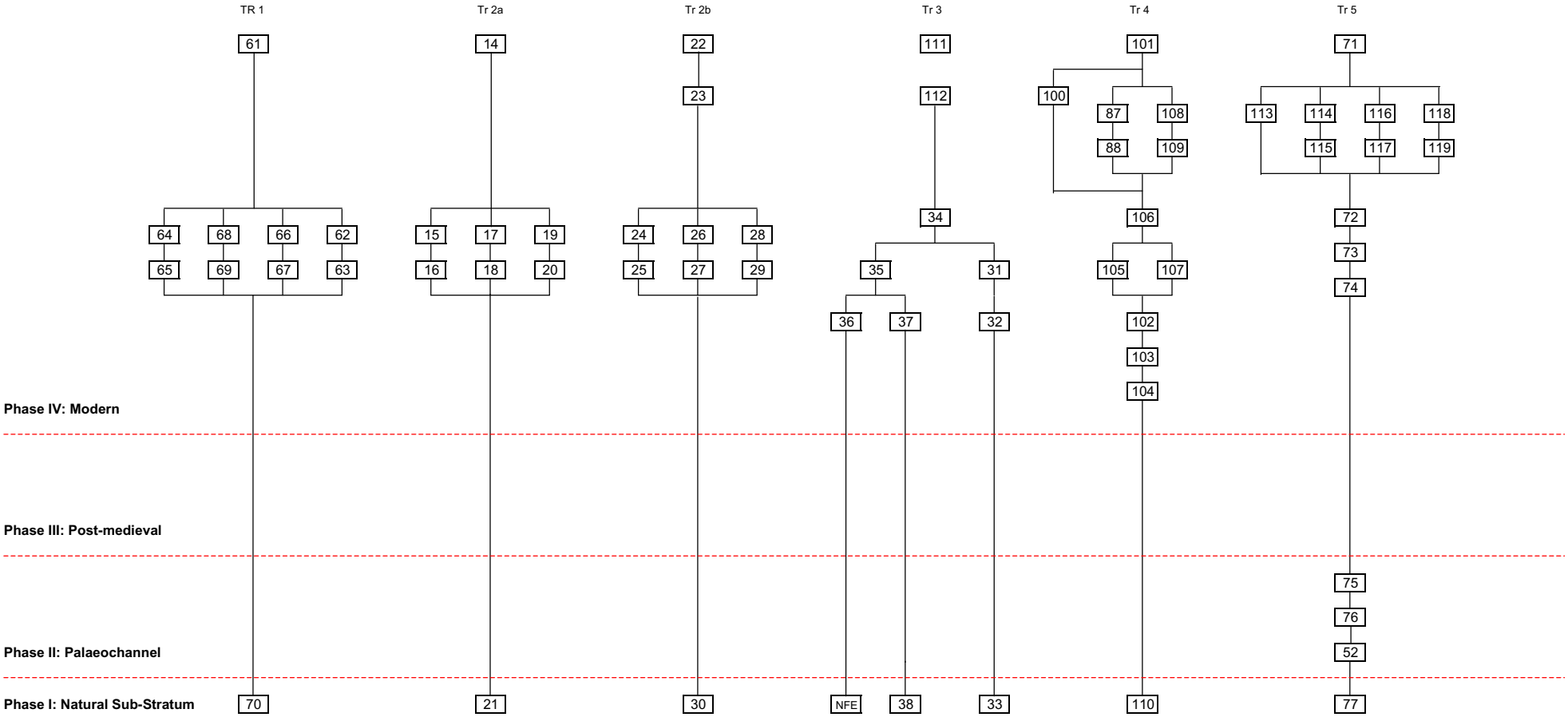
CAD: Adrian Bailey

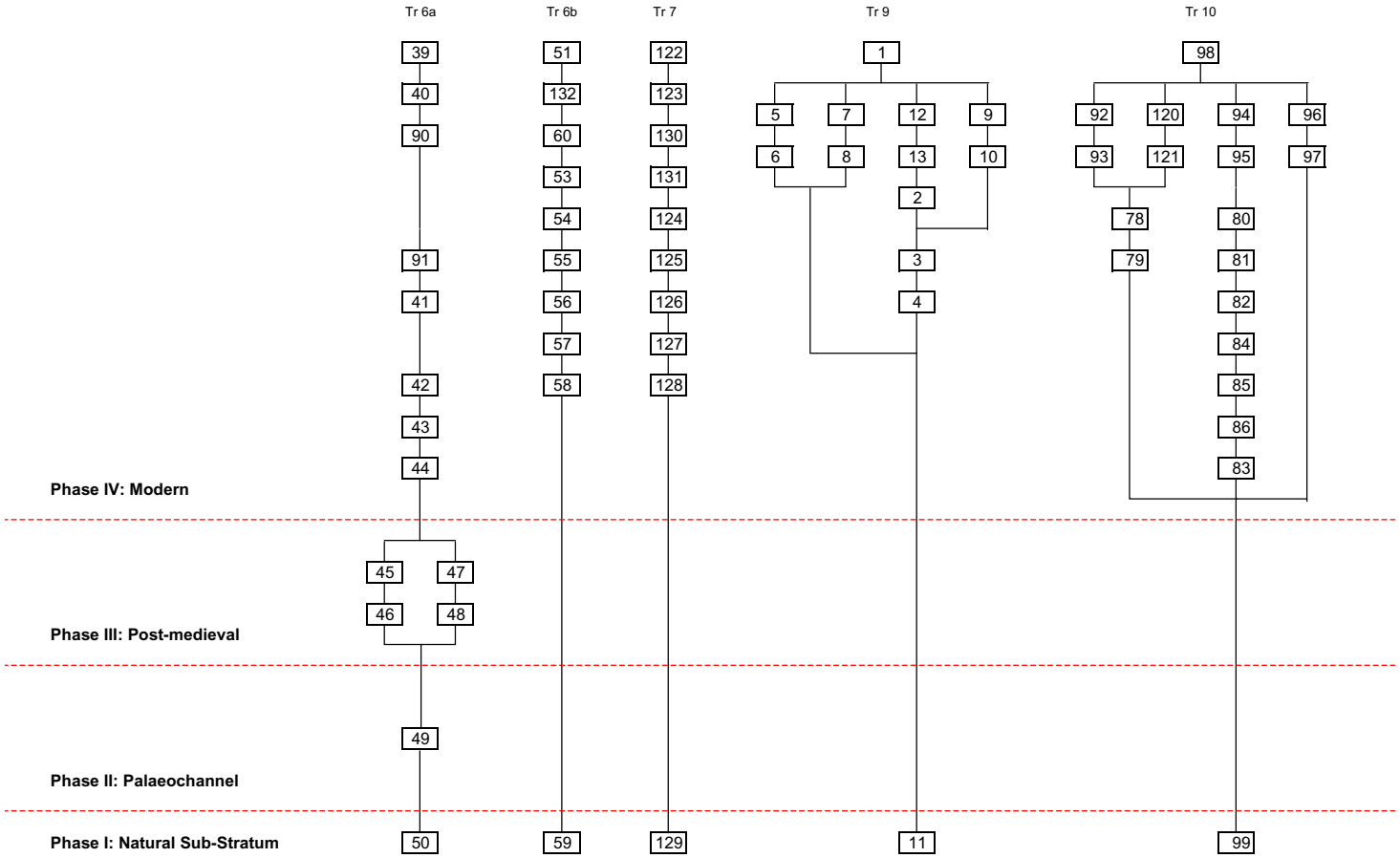
Other Credits

Pottery Assessment: Jenny Vaughan (NCAS)

Survey: Jim Wright

APPENDIX A
STRATIGRAPHIC MATRICES


TR 1
Tr 2a
Tr 2b
Tr 3
Tr 4
Tr 5
61
64
68
66
62
65
69
67
63
14
15
17
19
16
18
20
22
23
24
26
28
25
27
29
111
112
34
35
31
36
37
32
101
100
87
108
88
109
106
105
107
102
103
104
71
113
114
116
118
115
117
119
72
73
74
75
76
52
70
21
30
NFE
38
33
110
77
Phase IV: Modern
Phase III: Post-medieval
Phase II: Palaeochannel
Phase I: Natural Sub-Stratum


Tr 6a
Tr 6b
Tr 7
Tr 9
Tr 10
39
40
90
91
41
42
43
44
45
47
46
48
49
50
51
132
60
53
54
55
56
57
58
59
122
123
130
131
124
125
126
127
128
129
1
5
7
12
9
6
8
13
10
2
3
4
11
98
92
120
94
96
93
121
95
97
78
80
79
81
82
84
85
86
83
99
Phase IV: Modern
Phase III: Post-medieval
Phase II: Palaeochannel
Phase I: Natural Sub-Stratum

APPENDIX B
CONTEXT INDEX

Context	Trench	Phase	Type	Type	Description	Interpretation
1	9	IV	Deposit	Layer	Soft; dark brownish grey; sandy silty clay; occ small sub-rounded and sub-angular sandstone frags; up to 0.26m thick	Turf and topsoil
2	9	IV	Deposit	Layer	Firm; mid yellowish brown; sandy clay; mottled with firm; mid greyish brown; silty clay; mod small sub-angular and sub-rounded sandstone frags and pebbles; up to 0.46m thick	Made ground
3	9	IV	Deposit	Layer	Soft; dark grey; silty clay; freq small sub-angular coal frags and flecks; mod small sub-angular sandstone frags; occ small limestone sub-rounded frags; up to 0.28m thick	Made ground
4	9	IV	Deposit	Layer	Soft; mid greyish brown; sandy clay; freq small sub-angular sandstone frags; coal frags and flecks; occ small sub-angular limestone frags; up to 0.20m thick	Made ground
5	9	IV	Deposit	Fill	Fine sub-rounded and sub-angular pebbles; soft, mid grey, silty clay matrix; at least 0.18m thick	Fill of land drain [6]
6	9	IV	Cut	Linear	Linear; steep sides; base not seen; E-W aligned; 2.10m E-W; 0.25m N-S; at least 0.18m deep	Land drain
7	9	IV	Deposit	Fill	Small sub-rounded and sub-angular gravel in a soft; mid grey; silty clay; at least 0.12m thick	Fill of land drain [8]
8	9	IV	Cut	Linear	Linear; vertical sides; base not seen; NE-SW aligned; 2.60m NE-SW; 0.25m NW-SE; at least 0.12m deep	Land drain
9	9	IV	Deposit	Fill	Fine sub-rounded and sub-angular pebbles; soft, mid grey, silty clay matrix; at least 0.18m thick	Fill of land drain [10]
10	9	IV	Cut	Linear	Linear; steep-vertical sides; base not seen; NE-SW aligned; 2.80m NE-SW; 0.25m NW-SE; at least 0.18m deep	Cut for land drain
11	9	IV	Deposit	Layer	Firm; light to mid brownish yellow with light grey mottling; clay; occ-mod sub-angular and sub-rounded sandstone frags	Natural boulder clay
12	9	IV	Deposit	Fill	Fine sub-rounded and sub-angular pebbles; soft, mid grey, silty clay matrix; up to 0.40m thick	Fill of land drain [13]
13	9	IV	Cut	Linear	Linear; steep sides; concave base; 1.80m NE-SW; 0.25m NW-SE; up to 0.40m deep	Land drain
14	2a	IV	Deposit	Layer	Firm; mid greyish brown; silty clay; occ small sub-rounded pebbles; up to 0.05m thick	Turf
15	2a	IV	Deposit	Fill	Small sub-angular mid yellow sandstone frags; at least 0.22m thick	Fill of ?land drain [16]
16	2a	IV	Cut	Linear	Linear; steep-vertical sides; base not seen; E-W aligned; 2.05m E-W; 0.25m N-S; at least 0.22m deep	Probable land drain
17	2a	IV	Deposit	Fill	Fine sub-rounded and sub-angular gravel and pebbles; firm, mid brownish grey, silty clay matrix; up to 0.27m thick	Fil of feature [18]
18	2a	IV	Cut	?Linear	?Linear; steep sides; flat base; E-W aligned; 2.05m E-W x 0.94m N-S; up to 0.27m deep; recorded in section	?Drain
19	2a	IV	Deposit	Fill	Fine sub-rounded and sub-angular gravel and pebbles; firm, mid brownish grey, silty clay matrix; up to 0.22m thick	Fill of feature [20]
20	2a	IV	Cut	?Linear	?Linear; steep sides; flat base; E-W aligned; 2.05m E-W; 1.02m N-S; up to 0.22m deep; recorded in section	?Drain
21	2a	I	Deposit	Layer	Firm; mid pinkish brown with mid grey mottling; clay; occ small sandstone flecks	Natural boulder clay
22	2b		Deposit	Layer	Firm; mid greyish brown; silty clay; occ small sub-rounded pebbles; up to 0.08m thick; located at southern end of trench	Turf
23	2b	IV	Deposit	Layer	Small sub-rounded and sub-angular gravel and pebbles in a firm; mid brownish grey; silty clay; up to 0.18m thick	Gravel surface

Context	Trench	Phase	Type	Type	Description	Interpretation
24	2b	IV	Deposit	Fill	Fine sub-rounded and sub-angular gravel and pebbles; firm, mid brownish grey, silty clay matrix; up to 0.12m thick	Fill of [25]
25	2b	IV	Cut	?Linear	Not seen in plan; steep sides; flat base; 0.12m N-S; up 0.12m deep	?Landscaping feature
26	2b	IV	Deposit	Fill	Fine sub-rounded and sub-angular gravel and pebbles; firm, mid grey, silty clay matrix; up to 0.20m thick	Fill of feature [27]
27	2b	IV	Cut	?Linear	Not seen in plan; steep sides; concave base; 0.20m N-S; up to 0.20m deep	?Landscaping feature
28	2b	IV	Deposit	Fill	Fine sub-rounded and sub-angular gravel and pebbles; firm, mid brownish grey, silty clay matrix; up to 0.15m thick	Fill of drain [29]
29	2b	IV	Cut	Linear	Linear; vertical sides; base not excavated; NW-SE aligned; 2.70m NW-SE; 0.30m wide; at least 0.15m deep	Drain
30	2b	I	Deposit	Natural	Firm; mid pinkish brown with mid grey mottling; clay; occ small sub-angular and sub-rounded sandstone frags; occ small coal frags and flecks	Natural boulder clay
31	3	IV	Deposit	Layer	Loose; dark brownish grey; slightly silty; brick rubble and sand; freq small fragments of coal and fine sub-rounded gravel; up to 0.36m thick	Made ground
32	3	IV	Deposit	Layer	Compact; mid brownish grey; silty sand; occ coal flecks; up to 0.22m thick	Made ground
33	3	I	Deposit	Layer	Firm; mid pinkish brown with mid grey mottling; clay; mod-freq flecks of small sub-angular sandstone and coal fragments	Natural boulder clay
34	3	IV	Deposit	Layer	Soft; mid greyish brown; silty sandy clay with freq fine sub-rounded and sub-angular gravel; freq fine root disturbance; up to 0.26m thick	Mix of topsoil and gravel
35	3	IV	Deposit	Layer	Frogged red bricks and frags; large sub-angular concrete fragments in a loose; dark brownish grey clay sand; up to 2.38m thick	Made ground
36	3	IV	Deposit	Layer	Loose; mid brown; clay sand; seen at base of trench; not bottomed	Made ground
37	3	IV	Deposit	Layer	Soft; mid grey; slightly silty clay; occ lumps of light-mid brownish yellow clay; occ small sub-rounded sandstone fragment; up to 0.26m thick	?Re-deposited alluvial deposit
38	3	I	Deposit	Layer	Firm; light-mid brownish yellow; clay; occ small sub-rounded and sub-angular sandstone frags	Natural boulder clay
39	6a	IV	Deposit	Layer	Loose; light yellowish grey; fine sub-rounded pebbles; up to 0.04m thick	Gravel surface
40	6a	IV	Deposit	Layer	Loose; red crushed brick; freq small brick and slate frags; occ fine gravel; up to 0.38m thick	Made ground
41	6a	IV	Deposit	Layer	Compact; mid brownish grey; silty sand; freq sub-angular sandstone, brick frags and gravel; up to 0.62m thick	Made ground
42	6a	IV	Deposit	Layer	Compact; dark grey with black lenses; sand; freq iron nails; up to 0.76m thick	Made ground
43	6a	IV	Deposit	Layer	Firm; mid brownish grey; slightly silty clay; occ fine sub-rounded gravel; up to 0.50m thick	?Alluvial layer
44	6a	IV	Deposit	Layer	Firm; dark grey; clayey silt; occ small wood frags; up to 0.12m thick	Alluvial layer
45	6a	III	Deposit	Layer	Firm; dark grey; silty clay; up to 0.06m thick	Fill of gully [46]
46	6a	III	Cut	Linear	Linear; concave steep sloping sides; concave base; NW-SE aligned; 4.84m NW-SE; 0.20m NE-SW; up to 0.06m deep	?Drainage gully
47	6a	III	Deposit	Fill	Firm; dark grey; silty clay; up to 0.05m thick	Fill of gully [48]
48	6a	III	Cut	Linear	Linear; concave steep sloping sides; concave base; NW-SE aligned; 6.30m NW-SE; 0.20m NE-SW; up to 0.05m deep	?Drainage gully
49	6a	II	Deposit	Layer	Firm; light grey; silty clay; occ fine rounded gravel; up to 0.26m thick	Alluvial layer
50	6a	I	Deposit	Layer	Firm; light-mid yellowish brown; silty clay	Natural boulder clay

Context	Trench	Phase	Type	Type	Description	Interpretation
51	6b		Deposit	Layer	Soft; mid brownish grey; sandy clay with fine and medium sized sub-rounded and sub-angular gravel; up to 0.16m thick	Gravel surface
52	5	II	Cut	?Linear	Shallow sloping side; base not seen; 10m E-W, continuing to west, 0.50m max excavated depth	Eastern edge of Neddy's Gill
53	6b	IV	Deposit	Fill	Small and medium-sized sub-angular sandstone frags, with unfrogged red bricks; in a matrix of firm, mid brownish pink, clay; mixed with loose, mid brownish gre, silty sand; occ small coal frags and flecks; up to 0.94m thick	Fill of feature [55]
54	6b	IV	Deposit	Fill	Compact; mid greyish brown; clay sand and small and medium-sized sub-angular ironstone frags; up to 0.32m thick	Fill of [55]
55	6b	IV	Cut	?Pit	Not seen in plan; mod steep sloping sides; flat base; extends at least 5.30m N-S; at least 2.05m E-W; up to 1.38m deep; recorded in section	?Substantial pit
56	6b	IV	Deposit	Layer	Compact; dark grey; medium and large sub-angular ironstone frags in silty sand matrix; freq small coal frags; up to 0.48m thick	Made ground
57	6b	IV	Deposit	Layer	Firm; mid pinkish brown mixed with light-mid greyish yellow; clay; occ small cbm frags and coal flecks; up to 0.88m thick	Made ground
58	6b	IV	Deposit	Layer	Loose; dark grey with mid brownish grey mottling; slightly silty sand; freq coal flecks and mod small sub-angular sandstone frags; occ small cbm frags; up to 0.76m thick	Made ground
59	6b	IV	Deposit	Layer	Firm; light-mid pinkish brown with light grey mottling; clay; occ small sub-rounded and sub-angular sandstone frags	Natural boulder clay
60	6b	IV	Deposit	Fill	Loose; dark grey; frogged bricks and medium-sized sub-angular sandstone frags; in silty sand matrix; freq flecks and small frags coal; freq light grey mortar frags and mod small cbm frags; up to 0.50m thick	Fill of feature [55]
61	1	IV	Deposit	Layer	Firm; mid brownish grey; fine sub-rounded pebbles in silty clay matrix; occ coal flecks and small sub-angular sandstone frags; up to 0.10m thick	Gravel and turf ground surface
62	1	IV	Deposit	Fill	Soft; mid-dark brownish grey; fine sub-rounded pebbles in silty clay matrix; at least 0.06m thick	Fill of drain [63]
63	1	IV	Cut	Linear	Linear; vertical sides; base not excavated; NW-SE aligned; at least 1.50m NW-SE; 0.45m NE-SW; at least 0.06m deep	Drain
64	1	IV	Deposit	Fill	Soft; mid-dark brownish grey; fine sub-rounded pebbles in silty clay matrix; at least 0.26m thick	Fill of drain [65]
65	1	IV	Cut	Linear	Linear; vertical sides; base not excavated; E-W aligned; at least 2.10m E-W; 0.40m N-S; at least 0.26m deep	Drain
66	1	IV	Deposit	Fill	Soft; mid-dark brownish grey; fine sub-rounded pebbles in silty clay matrix; at least 0.26m thick	Fill of drain [67]
67	1	IV	Cut	Linear	Linear; vertical sides; base not excavated; E-W aligned; at least 2.15m E-W; 0.45m N-S; at least 0.26m deep	Drain
68	1	IV	Deposit	Fill	Compact; light greyish yellow; clayey sand with small sub-angular limestone frags; up to 0.70m thick	Fill of feature [69]
69	1	IV	Cut	?Linear	?Linear; steep-vertical sides; flat base; E-W aligned; 8.22m N-S; 2.10m N-S; up to 0.70m deep	?Landscaping feature or ?service trench
70	1	I	Deposit	Natural	Firm; mid pinkish brown; clay; freq flecks and frags sandstone	Natural boulder clay
71	5	IV	Deposit	Layer	Loose; yellowish light grey; fine rounded pebbles; up to 0.10m thick	Gravel surface
72	5	IV	Deposit	Layer	Loose; dark grey; small coal frags in silty sand matrix; occ cbm flecks; up to 0.14m thick	Made ground
73	5	IV	Deposit	Layer	Loose; mid brownish pink; crushed and fragmented brick and fragmented sandstone blocks; up to 0.40m thick	Made ground

Context	Trench	Phase	Type	Type	Description	Interpretation
74	5	IV	Deposit	Layer	Firm; mid pinkish brown mixed with light-mid brownish grey; silty clay; mod fine sub-angular gravel; up to 1.12m thick	Made ground
75	5	II	Deposit	Layer	Friable; dark grey-black; organic clay silt; freq fine rootlets; up to 0.14m thick	Alluvial layer
76	5	II	Deposit	Layer	Firm; mid grey; silty clay; occ small angular sandstone frags; occ fine sub-rounded gravel; up to 0.50m thick	Alluvial layer
77	5	IV	Deposit	Layer	Firm; light greyish yellow; silty clay	Natural boulder clay
78	10	IV	Deposit	Layer	Firm; mid orange grey; clay; occ small sub-angular sandstone and cbm frag; up to 0.82m thick	Made ground
79	10	IV	Deposit	Layer	Soft; dark grey-black; sandy silt; occ small sub-angular sandstone frags and charcoal flecks; up to 0.74m thick	Made ground
80	10	IV	Deposit	Layer	Firm; mid orange grey; clay; occ small sub-angular sandstone; up to 0.62m thick	Made ground
81	10	IV	Deposit	Layer	Loose; dark grey-black; sandy silt; occ small stones; up to 0.21m thick	Made ground
82	10	IV	Deposit	Layer	Firm; mid orange grey; clay; up to 0.65m thick	Made ground
83	10	IV	Cut	?Linear	?Linear; steep sides; flat base; E-W aligned; 4.46m N-S; 2.10m E-W; up to 0.56m deep	Landscaping feature
84	10	IV	Deposit	Layer	Soft; black sandy silt; up to 0.24m thick	Made ground
85	10	IV	Deposit	Layer	Firm; mid grey; clay; up to 0.32m thick	Made ground
86	10	IV	Deposit	Layer	Firm; mid-light yellow small sub-angular sandstone frags; occ lumps of mid orange brown; clay; up to 0.22m thick	Made ground
87	4	IV	Deposit	Fill	Firm; dark brownish grey; silty clay mixed with firm; mid pinkish brown; clay; contains one orange-brown plastic pipe casing electricity cables; at least 0.39m thick	Fill of service trench [88]
88	4	IV	Cut	Linear	Linear; steep sides; base not seen; E-W aligned; 2.20m E-W; 0.40m N-S; 0.39m deep	Service trench
90	6a	IV	Deposit	Fill	Loose; mid greyish brown; silty sand; mixed with firm; mid pinkish brown; silty clay; freq iron frags; up to 1.0m thick	Fill of feature [91]
91	6a	IV	Cut	?Pit	Not seen in plan; mod steep sloping concave sides; flat base; 3.48m N-S; 2.20m E-W; up to 1.0m deep	Landscaping feature
92	10	IV	Deposit	Fill	Firm; fine sub-rounded gravel; up to 0.41m thick	Fill of drain [93]
93	10	IV	Cut	Linear	Linear; steep sides; flat base; NE-SW aligned; 0.30m N-S; 0.41m deep; recorded in section	Drain
94	10	IV	Deposit	Fill	Firm; fine sub-rounded gravel; up to 0.38m thick	Fill of drain [95]
95	10	IV	Cut	Linear	Linear; steep sides; flat base; NE-SW aligned; 0.36m N-S; 0.38m deep; recorded in section	Drain
96	10	IV	Deposit	Fill	Firm; fine sub-rounded gravel; up to 0.36m thick	Fill of drain [97]
97	10	IV	Cut	Linear	Linear; steep sides; flat base; NE-SW aligned; 0.24m N-S; 0.36m deep; recorded in section	Drain
98	10	IV	Deposit	Layer	Soft; dark greyish brown; silty clay; occ small sub-angular sandstone; up to 0.42m thick	Topsoil
99	10	I	Deposit	Layer	Firm; mid brownish yellow; clay; mod-freq small sub-angular sandstone frags and coal flecks	Natural boulder clay
100	4	IV	Deposit	Layer	Loose; dark grey; clayey silt and fine sub-angular and sub-rounded gravel; occ small coal frags; up to 0.20m thick	Gravel surface
101	4	IV	Deposit	Layer	Compact; mid brownish grey; clayey sand; mod fine sub-rounded and sub-angular gravel; occ coal flecks; up to 0.10m thick	Turf and Topsoil
102	4	IV	Deposit	Layer	Loose; mid reddish brown; red brick rubble (mostly frogged whole and half bricks) with medium and large sub-angular and squared yellow sandstone blocks; loose, dark brownish grey, silty sand matrix; freq small coal frags; up to 1.02m thick	Made ground
103	4	IV	Deposit	Fill	Loose; mid pinkish brown; red brick rubble (frogged and unfrogged bricks, e.g. 250mm x 100mm x 80mm) in silty sand matrix; at least 0.31m thick	Fill of ?robbed out wall [104]

Context	Trench	Phase	Type	Type	Description	Interpretation
104	4	IV	Cut	Linear	Linear; vertical sides; base not seen; NW-SE aligned; 17.30m NW-SE; 0.50m NE-SW; at least 0.31m deep	?Robbed wall
105	4	IV	Deposit	Layer	Firm; dark brownish grey; silty clay; freq fine sub-angular and sub-rounded gravel; up to 0.26m thick	Made ground
106	4	IV	Deposit	Layer	Firm; mid pinkish brown; clay; occ small sub-rounded and sub-angular sandstone frags and gravel; occ coal flecks; up to 0.48m thick	Made ground
107	4	IV	Deposit	Layer	Loose; mid greyish brown; clayey sand; with medium-sized sub-angular sandstone frags and ironstone frags; freq coal flecks and small cbm frags; occ pieces of sheet metal and plastic; up to 0.60m thick	Made ground
108	4	IV	Deposit	Fill	Loose; mid brownish grey, clayey sand; with red brick rubble (frogged and unfrogged bricks); freq small coal frags and flecks; small sub-angular and sub-rounded sandstone frags; at least 1.26m thick	Fill of [109]
109	4	IV	Cut	?Linear	?Linear; steep sloping; base not seen; 1.04m N-S; at least 2.10m E-W; at least 1.26m deep	Substantial cut, uncertain function
110	4	I	Deposit	Layer	Firm; mid pinkish brown with light to mid grey mottling; clay; occ small sub-angular sandstone frags and flecks; occ small coal frags	Natural boulder clay
111	3	IV	Deposit	Fill	Soft; mid-dark greyish brown; sandy clay; freq small sub-rounded and sub-angular gravel; contains plastic pipe casing electricity cables; at least 0.19m thick	Fill of service trench [111]
112	3	IV	Cut	Linear	Linear; steep sloping; base not seen; 0.20m N-S; at least 2.10m E-W; at least 0.19m deep	Service trench
113	5	IV	Structure	Surface	Indurated; light grey; concrete; at least 2.24m E-W; at least 1.16m N-S	Concrete slab
114	5	IV	Deposit	Fill	Loose; mid yellow; sand; contains red 'electricity' bricks; at least 0.13m deep	Fill of service trench [115]
115	5	IV	Cut	Linear	Linear; vertical sides; base not seen; N-S aligned; 2.05m N-S; 1.20m E-W; at least 0.13m deep	Service trench
116	5	IV	Deposit	Fill	Loose; light yellowish grey; small sub-angular sandstone frags; contains ceramic drain pipe, 0.20m in diameter; at least 0.18m deep	Fill of drain [117]
117	5	IV	Cut	Linear	Linear; vertical sides; base not seen; at least 3.24m N-S; 0.30m E-W; at least 0.18m deep	Cut for drain
118	5	IV	Deposit	Layer	Loose; mid brownish yellow; sand; contains two mid orange-brown plastic pipes casing electricity cables; at least 0.15m thick	Fill of service trench [119]
119	5	IV	Cut	Linear	Linear; vertical sides; base not excavated; 3.40m N-S; 0.70m wide E-W; at least 0.15m deep	Service trench
120	10	IV	Deposit	Fill	Loose; fine sub-rounded gravel; not excavated	Fill of drain [121]
121	10	IV	Cut	Drain	Linear; sides straight in plan; base not excavated; NW-SE aligned; 3.50m NE-SW; 0.20m NW-SE; not excavated	Drain
122	7	IV	Deposit	Layer	Loose; mid-dark grey; tarmac and coarse sand; mod small sub-angular yellow sandstone fragments; up to 0.17m thick	Dump layer forming ground surface
123	7	IV	Deposit	Layer	Loose; dark grey-black; tarmac; up to 0.13m thick	?Former ground surface or make-up layer
124	7	IV	Deposit	Layer	Firm; mid brownish grey; silty clay; occ small sub-angular sandstone frags; occ fine gravel and small coal frags; up to 0.58m thick	Made ground
125	7	IV	Deposit	Layer	Firm; mid pinkish brown; silty clay; freq small sub-angular sandstone; occ small coal flecks; up to 0.80m thick	Made ground
126	7	IV	Deposit	Layer	Firm; mid-dark pinkish brown; silty clay; occ small sub-angular sandstone frags and coal flecks; up to 0.52m thick	Made ground

Context	Trench	Phase	Type	Type	Description	Interpretation
127	7	IV	Deposit	Layer	Firm; light brownish yellow; silty clay; occ coal flecks; up to 0.20m thick	Made ground
128	7	IV	Deposit	Layer	Firm; light brownish yellow; silty clay mixed with lenese of dark grey, silty clay; freq small rootlets; mod small coal frags; up to 0.20m thick	Made ground
129	7	I	Deposit	Layer	Light to mid greyish yellow; clay; mod small angular sandstone frags; occ small coal frags; up to 0.24m thick	Natural boulder clay
130	7	IV	Deposit	Fill	Loose; black; tarmac; contains ceramic drain, 0.10m in diameter; up to 0.20m thick	Fill of drain [131]
131	7	IV	Cut	Linear	Linear; steep sides; flat base; N-S aligned; 0.12m N-S; up to 0.20m deep	Drain
132	6b	IV	Deposit	Layer	Compact; mid brownish pink; small sub-angular and sub-rounded sandstone frags in silty sand matrix; up to 0.20m thick	Made ground

APPENDIX C
POTTERY ASSESSMENT

CERAMIC ASSESSMENT

*By **Jenny Vaughan (NCAS)***

Discussion

A small assemblage of ceramic material was recovered from Trench 6a. It comprised six fragments of pottery, two clay pipe stems and a chip of ceramic building material.

The pottery indicates a mid 19th century or later date for activity on the site. The small fragments of clay pipe stem could be any date from the later 18th to the early 20th century.

Catalogue

Context	***Ceramic type***	***No.***	***Weight (g)***	***Comment***
45	Refined whiteware	1	5	With purple transfer print
49	Refined whiteware	1	4	Plain
49	Refined whiteware	1	7	Plate rim with blue sponge decoration
49	Refined whiteware	1	5	Blue on one side
49	Brown glazed redware	1	15	-
49	Stoneware	1	4	?19th century bottle
49	CBM chip	1	6	-
49	Clay pipe stem	1	3	Stem bore 4/64”
49	Clay pipe stem	1	2	Stem bore 5/64”

APPENDIX D
GEOPHYSICAL SURVEY REPORT

1 INTRODUCTION

1.1 This report describes the results of geophysical surveys within 3 areas of land at Claxheugh, Pallion, in the City of Sunderland (centred at NZ 369 579; Figure 1). This site is the subject of a proposal for the development of a riverfront village and marina to be known as 'Claxheugh Village'. The purpose of the study was to assess potential for survival of subsoil archaeological remains as the first stage of a field evaluation, and follows a desk-based assessment compiled by staff from Pre-Construct Archaeology Ltd (PCA). A total area of 1.45ha was mapped in the 3 blocks shaded brown in Figure 1.

1.2 The research was carried out by GeoQuest Associates on behalf of PCA, in accordance with a specification drafted by Jennifer Morrison, Sites and Monuments Officer for the Tyne and Wear planning authority. A further programme of field evaluation, in the form of selective trial trenching, may follow from the results of the geophysical survey.

1.3 The area of proposed development is about 39.5ha in extent, bounded to the N by the River Wear and to the S by a branch of the Metro railway line. The Queen Alexandra Bridge lies about 1.2km E of the centre of the development site.

1.4 Documentary research by PCA suggest that the site has moderate to high potential for the survival of prehistoric remains, since numerous discoveries of artefacts from this period have been made in the vicinity. The desk-based assessment determined that the potential for Roman remains is low to moderate, while prospects for post-medieval remains was estimated to be high. Much of the northern and eastern parts of the site are occupied by industrial units, roads and warehouses on several distinct levels which may represent modified former river terraces. Rough grassland and sports pitches are present on the southern and western limits of the development site, with steel fencing and piling forming the boundary to the Metro railway line.

1.5 The geophysical surveys were designed to test for the presence of subsoil archaeological features beneath the 3 areas of grassland where the potential for survival was judged to be a maximum. Areas 1 and 2 were located on disused sports pitches, while Area 3 is situated on a north-facing slope, W of the main industrial complex, where a number of low earthworks exist. Geophysical survey of the 3 areas was carried out on 9th September 2003.

2 THE GEOPHYSICAL SURVEY

2.1 Measurements of vertical geomagnetic field gradient were recorded using a Geoscan FM36 fluxgate gradiometer recording at 0.05nT/m resolution. A zig-zag traverse scheme was employed and data were logged in grid units of 20x20m at 1.0x0.5m intervals, thus providing 800 measurements per grid.

2.2 Data obtained from the survey were downloaded on-site into a portable graphics computer for quality checks and initial processing. These data were subsequently transferred to a laboratory computer for final processing, interpretation and archiving.

2.3 The GeoQuest InSite® software was used to process the gridded geophysical data and thus convert the field readings in each sample block into a continuous tone grey-scale image. In Figure 2 a convention has been used that shows positive magnetic anomalies as dark grey and negative magnetic anomalies as light grey.

2.4 An archaeological interpretation of the geophysical surveys is presented in Figures 3 and 4. A key defines the colours and fill styles used in these drawings, while feature codes **f1**, **f2**, etc, are included in Figure 4 for reference in the discussion below.

3 INTERPRETATION

Area 1

3.1 Geomagnetic field anomalies over most of this sports pitch were found to be very intense and variable, particularly close to goalposts (majority in range ±10nT), presumably reflecting a high proportion of iron and brick debris (**f1**). A significant magnetic field anomaly is also present from rails, pylons and fencing along the Metro railway which runs immediately S of this sample block. Several negative anomaly 'slots' in the grey scale image correspond to trains passing during the survey period and to electrical current surges in the overhead electric cables. Strong geomagnetic anomalies from these sources may have obscured more subtle features of archaeological interest.

3.2 **f2**: A diffuse and discontinuous positive magnetic anomaly has been detected in the centre of the area, in the form of an arc originating close to the westernmost pair of goal posts. This anomaly provides tentative evidence for a tile drain or soil-filled ditch, about 2m wide.

3.3 No further geophysical anomalies of archaeological or geotechnical interest have been detected in Area 1.

Area 2

3.4 **f1**: A pattern of intense and variable geomagnetic anomalies have been detected, of similar style to those seen in Area 1. Again, the source material is thought to be items of iron or brick, on or within the topsoil.

3.5 **f3**: A possible westward continuation of ditch-type feature **f2** (Area 1) is seen as a 5-10m wide positive magnetic anomaly in the grey-scale image of Figure 2. This anomaly appears to turn SW from an initial E-W alignment in the western half of the sports field. However, the anomaly cannot be traced further owing to the overriding magnetic influence of the steel piling, fencing and other services along the Metro track.

3.6 No further geophysical anomalies of archaeological or geotechnical interest have been detected in Area 2.

Area 3

3.7 **f1**: Dense concentrations of magnetic dipoles have been detected along the margins of this sample block, attesting to the presence of iron and brick litter on the ground surface and within the topsoil.

3.8 **f4**: Several weak, N-S oriented magnetic lineations may have been mapped in the central part of this area, providing tentative evidence for a set of tile land drains or, alternatively, the silted furrows of a ridge and furrow field system.

3.9 No further geophysical anomalies of archaeological or geotechnical interest have been detected in Area 3.

4 SUMMARY AND CONCLUSIONS

4.1 Archaeological geophysical surveys have been carried out on 3 sample blocks of rough grassland within the proposed site for Claxheugh Village and Marina, Pallion, Sunderland. The research was carried out on behalf of Pre-Construct Archaeology Ltd, acting as archaeological consultants for the development scheme. The purpose of the survey was to inform a programme of archaeological investigation aimed at mitigating the effects of groundworks on the heritage resource of the area.

4.2 A total of 1.45ha was mapped using a fluxgate magnetometer, logging data at 1.0x0.5m gridded resolution. Magnetic field anomalies over a large proportion of each site were found to be very intense, reflecting significant concentrations of brick and ferrous litter on, and in, the topsoil. Strong geomagnetic field anomalies from the Metro track and boundary fences also extended some distance into the study areas, restricting the detection of more subtle geophysical anomalies of possible archaeological interest.

4.3 Nevertheless, the geophysical data provide tentative evidence for the survival of a soil-filled ditch which appears to traverse the 2 sports pitches (and presumably the area between them). Alternatively, the source of the geophysical anomaly may be a tile drain or geological feature, such as a change in drift composition or topography on the rockhead.

5 CONFIDENCE LIMITS

5.1 The following are the levels of confidence which we assign to features inferred from the geophysical data:

FEATURE	INTERPRETATION	CONFIDENCE LEVEL, %									
		10	20	30	40	50	60	70	80	90	100
f1	Brick, clinker, iron debris	■	■	■	■	■	■	■	■	■	
f2, f3	As ditch	■	■	■							
f2, f3	As tile drain or geology	■	■	■	■	■					
f4	As tile drains	■	■	■							
f4	As silted furrows	■	■								

6 CREDITS

Survey & Report: M. J. Noel PhD, FRAS Date: 22nd September 2003

Note: Whilst every effort has been taken in the preparation and submission of this report in order to provide as complete an assessment as possible within the terms of the brief, GeoQuest Associates cannot accept any responsibility for consequences arising as a result of unknown and undiscovered sites or artifacts.

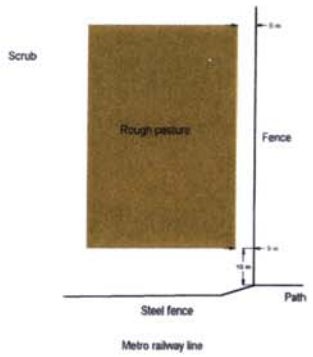
CLAXHEUGH, PALLION, SUNDERLAND
Location of Geophysical Survey Areas

0 60

SURVEY BY GeoQuest FOR Pre-Construct Archaeology Ltd

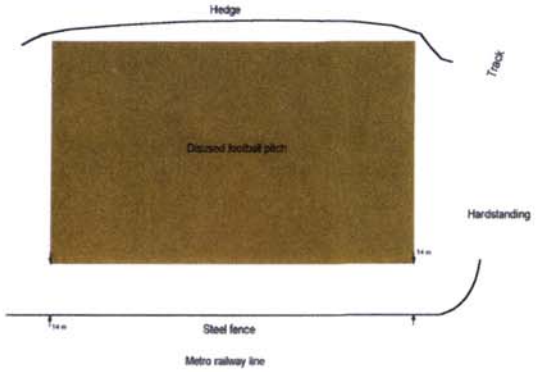
N

AREA 3



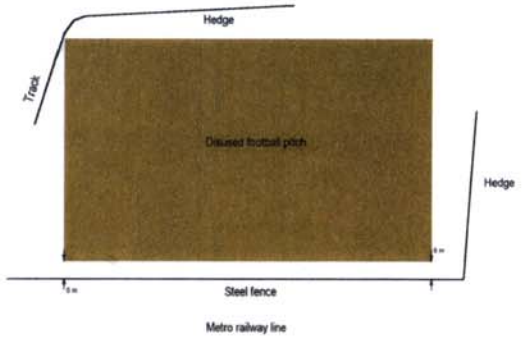
AREA 3: SETTING OUT
Origin of baseline is offset 5m from the N-S oriented fence & is 10m from end of this fence, as shown

AREA 2



AREA 2: SETTING OUT
Baseline is parallel to the steel fence bordering the Metro track & offset by 14m. Origin is in SE corner of the survey block and is opposite the 2nd concrete post W, after a concrete bracing post: these posts are along a 2nd fence, nearer to the Metro railway track.

AREA 1



AREA 1: SETTING OUT
Baseline is parallel to the steel fence bordering the Metro track & offset by 5m. Origin is in SW corner of the survey block and is opposite the 1st concrete post W, after a concrete bracing post: these posts are along a 2nd fence, nearer to the Metro railway track.

FIGURE 1

CLAXHEUGH, PALLION, SUNDERLAND
Results of Geophysical Surveys

0 60

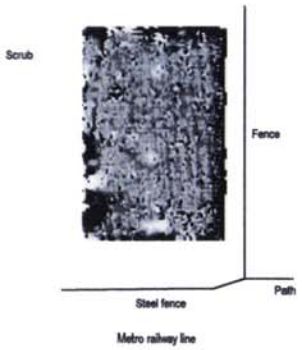
SURVEY BY GeoQuest FOR Pre-Construct Archaeology Ltd

ANOMALIES, nT/m

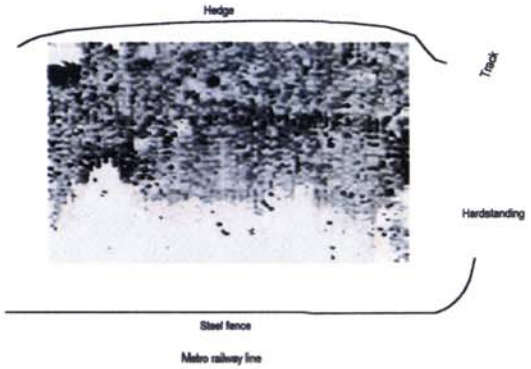
-12.4 -1.4 0.0 1.4 12.4

N

AREA 3



AREA 2



AREA 1

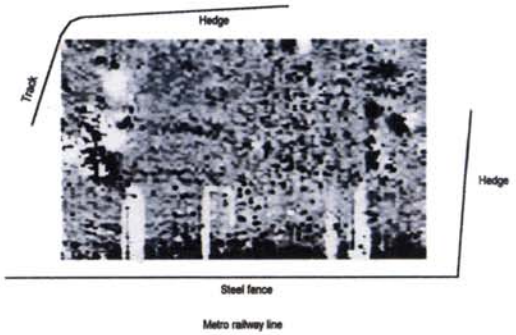


FIGURE 2

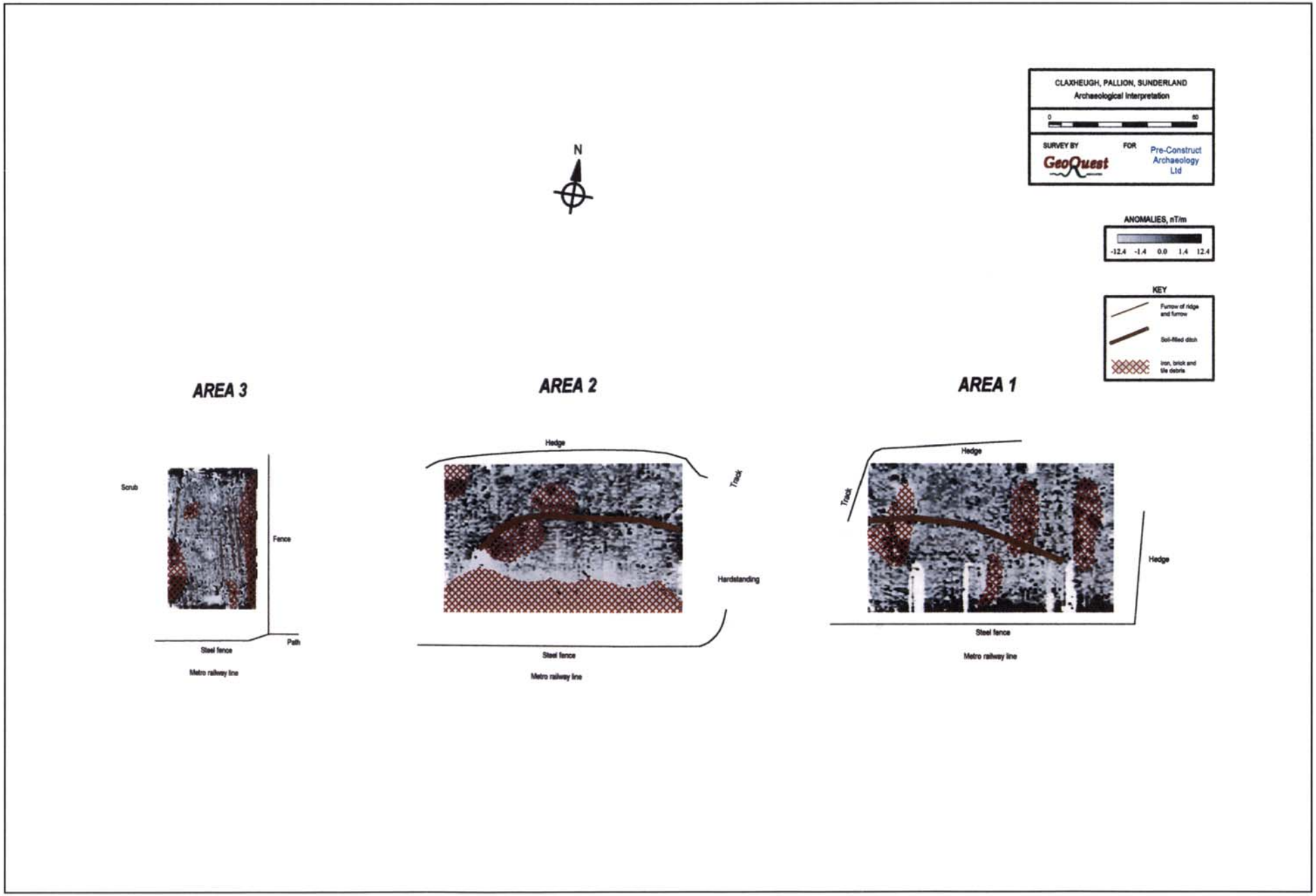

CLAXHEUGH, PALLION, SUNDERLAND
Archaeological Interpretation
0
60
SURVEY BY
GeoQuest
FOR
Pre-Construct Archaeology Ltd
N
ANOMALIES, nT/m
-12.4 -1.4 0.0 1.4 12.4
KEY
Furrow of ridge and furrow
Soil-filled ditch
Iron, brick and tile debris
AREA 3
Scrub
Fence
Steel fence
Path
Metro railway line
AREA 2
Hedge
Track
Hardstanding
Steel fence
Metro railway line
AREA 1
Hedge
Track
Hedge
Steel fence
Metro railway line

FIGURE 3

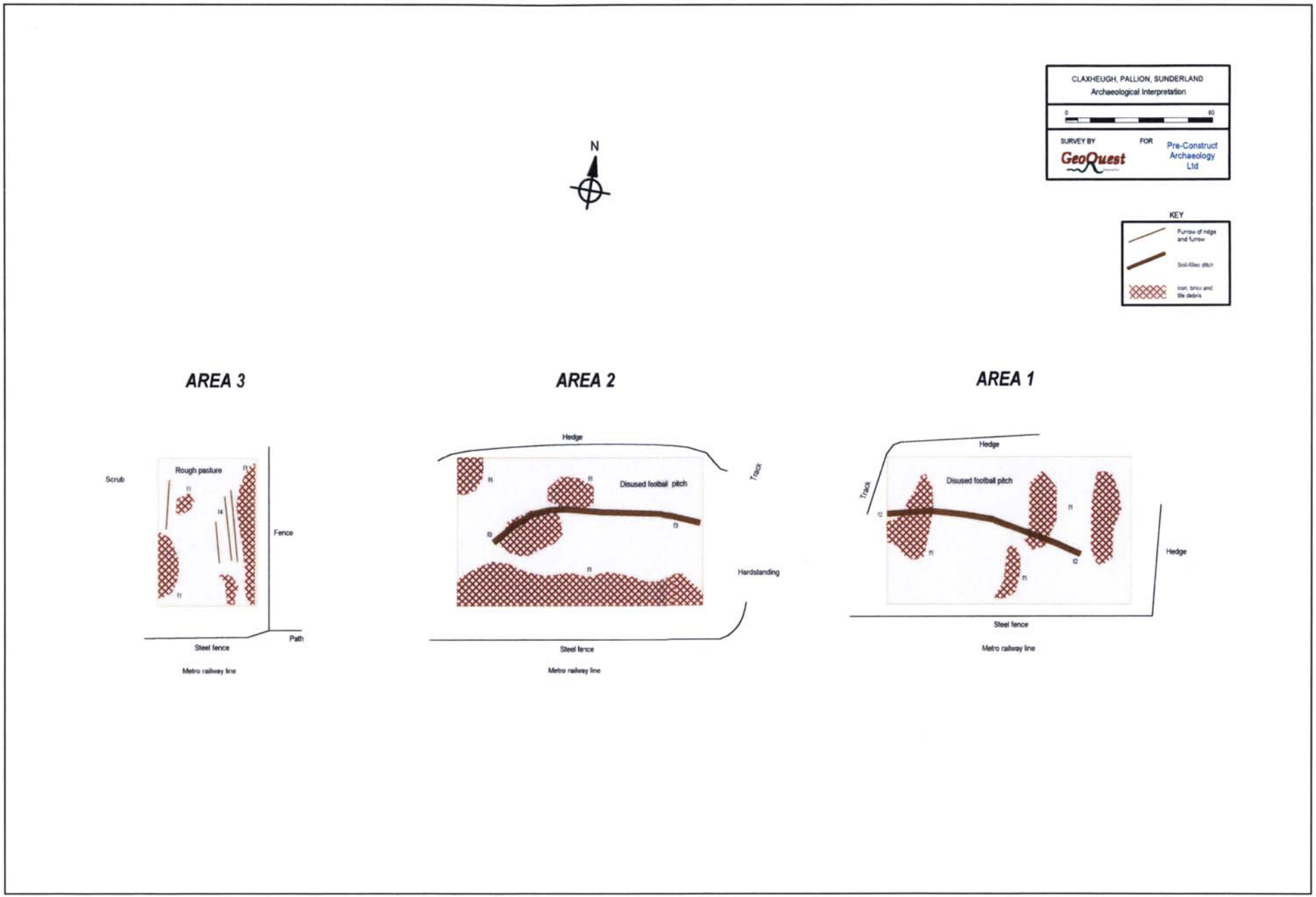

CLAXHEUGH, PALLION, SUNDERLAND
Archaeological Interpretation
0
60
SURVEY BY
GeoQuest
FOR
Pre-Construct Archaeology Ltd
N
KEY
Furrow of ridge and furrow
Soil-filled ditch
Iron, brick and tile debris
AREA 3
Scrub
Rough pasture
f1
f2
f4
Fence
Steel fence
Path
Metro railway line
AREA 2
Hedge
Track
Disused football pitch
f1
f2
f3
Hardstanding
Steel fence
Metro railway line
AREA 1
Hedge
Track
Disused football pitch
f1
f2
Hedge
Steel fence
Metro railway line

FIGURE 4

P C A

PRE - CONSTRUCT ARCHAEOLOGY LIMITED

UNIT 54

BROCKLEY CROSS BUSINESS CENTRE

96 ENDWELL ROAD

BROCKLEY

LONDON SE4 2PD

TEL: 0207 732 3925 0207 639 9091

FAX: 0207 639 9588

EMAIL: info@pre-construct.com

PRE-CONSTRUCT ARCHAEOLOGY LIMITED (NORTHERN OFFICE)

UNIT 19A

TURSDALE BUSINESS PARK

DURHAM DH6 5PG

TEL: 0191 377 1111

FAX: 0191 377 0101

EMAIL: info.north@pre-construct.com