

**LAND AT HETTON ROAD,
HOUGHTON-LE-SPRING,
TYNE AND WEAR**

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EVALUATION REPORT

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MARCH 2019

PRE-CONSTRUCT ARCHAEOLOGY

Land at Hetton Road, Houghton-Le-Spring, Tyne and Wear

Site Code: HRH19

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DOCUMENT VERIFICATION

**ARCHAEOLOGICAL INVESTIGATIONS AT HETTON ROAD, HOUGHTON-LE-SPRING,
TYNE AND WEAR**

EVALUATION REPORT

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1. NON-TECHNICAL SUMMARY

- 1.1 Pre-Construct Archaeology was commissioned by R & K Wood Planning LLP on behalf of C. S. Ford and Sons to undertake an archaeological evaluation in association with a proposed residential development on land adjacent to Hetton Road, Houghton-le-Spring, Tyne and Wear (central NGR NZ 3440 4870). The proposed development is a rectangular parcel of arable land of c. 13.4 hectares located between the towns of Houghton-le-Spring and Hetton-le-Hole. The site is bounded to the north by Hetton Road, to the west by a small wooded area and Rainton Bridge Village, to the south and west by local nature reserve Hetton Bogs and Rainton Burn.
- 1.2 A desk-based assessment (PCA 2017b) concluded that there was low to moderate potential for prehistoric remains, low potential for both Roman and early medieval remains, low to moderate potential for medieval remains, moderate potential for post-medieval remains and high potential for early modern remains in the form of the North Hetton Branch of the Rainton and Seaham Railway.
- 1.3 A geophysical (magnetometer) survey of the proposed development (AD Archaeology 2018) identified magnetic anomalies suggestive of systems of ridge and furrow cultivation along with a strong series of anomalies which represent the line of the North Hetton Branch of the Rainton and Seaham Railway. The geophysical survey also identified a group of linear anomalies at the south-western extent of the site that could potentially represent archaeological features.
- 1.4 Further archaeological investigation was required, as part of the planning process, to inform the Tyne and Wear Archaeological Officer at Newcastle City Council of the archaeological potential of the site. In accordance with paragraph 189 of the National Planning Policy Framework, Draft Core Strategy Policies E4 and E5, and saved Unitary Development Plan Policies B11, B13 and B14, archaeological evaluation trial trenching was required to test the results of the aforementioned geophysical survey as well as bank areas where no geophysical anomalies were identified.
- 1.5 A detailed site specification was prepared by the Tyne and Wear Archaeology Service prior to work commencing at the site (Ref: MON157959). Fourteen evaluation trenches were required to inform Planning Authority of the character, nature, date, depth, degree of survival of archaeological deposits on the site. The trenches comprised two 20m trenches (Trench 6 & 11), eight 25m trenches (Trench 1, 2, 3, 4, 5, 8, 9 & 14), one 30m trench (Trench 7) and three 50m trenches (Trench 10, 12 & 13).
- 1.6 Trenches 1-3, 6-8 & 14 were sited to target various anomalies identified by geophysical survey, Trench 9 was sited over a blank area where no geophysical anomalies were identified, Trenches 4, 5 & 11 were sited to investigate the former route of the North Hetton Branch of the Rainton and Seaham Railway, Trenches 12 & 13 were sited to investigate areas of ridge and furrow and Trench 10 was sited to investigate an area of modern disturbance.

- 1.7 Five phases of activity were identified during the archaeological evaluation: Phase 1: superficial geology, Phase 2: undated (colluvium), Phase 3: medieval and undated, Phase 4: early modern and Phase 5: modern. Superficial geology was exposed in Trenches 1-9 and 11-14. Colluvium was present in Trenches 2 and 3.
- 1.8 Trenches 2, 3 and 6 were sited to test a group of linear anomalies at the south-western extent of the site. Although no archaeological features were identified in these trenches that corresponded closely with these geophysical anomalies three features were recorded in Trenches 6 and 7 that probably represent boundary or drainage ditches. A single sherd of medieval pottery was recovered from the south-western most ditch in Trench 7 and it is likely all three ditches recorded in Trenches 6 and 7 are contemporary in date. Undated but probably medieval furrows were recorded in Trenches 1 and 5. Early modern period activity was recorded in Trenches 4, 5 and 11 representing elements of the North Hetton Branch of the Rainton and Seaham Railway. Modern deposits were encountered within Trench 10.
- 1.9 Two paleoenvironmental samples were processed from the medieval and undated ditches recorded in Trench 7. The processed samples produced limited ecofactual material. Charred plant remains were present in both samples, however the small quantities limit any potential for AMS radiocarbon submission. One of the two paleoenvironmental samples produced a quantity of charcoal that would be suitable for AMS radiocarbon submission. These would need to be identified to species and a shorter lived one, such as hazel (*Corylus avellane*), selected for submission.

2. INTRODUCTION

2.1 Project Background

- 2.1.1 This report details the results of an archaeological evaluation undertaken in January 2018 on land at Hetton Road, Houghton-le-Spring, Tyne and Wear (Figure 1 & 2). The archaeological investigation was commissioned by R & K Wood Planning on behalf of Colin Ford and was undertaken by Pre-Construct Archaeology Limited (PCA). The work was carried out ahead of the construction of residential housing.
- 2.1.2 The archaeological evaluation comprised trial trenching in order to identify the potential for archaeological remains. A desk-based assessment (PCA 2017b) concluded that the site has low to moderate potential for prehistoric remains, low potential for Roman and early medieval remains, high potential for medieval remains, moderate potential for post-medieval remains and high potential for early modern remains.
- 2.1.3 The geophysical survey of the proposed development identified a number of potential archaeological features of interest (AD Archaeology 2017) (Figure 3). A group of anomalies identified at the south-western extent of the site was thought to represent archaeological features possibly in the form of settlement activity (Anomaly 3). Various aligned linear anomalies identified across the site are suggestive of several systems of ridge and furrow cultivation of possibly post-medieval or medieval date. A series of strong NE-SW aligned anomalies represent the former route of the North Hetton Branch of the Rainton and Seaham Railway crossing (Anomaly 1). The geophysical survey also identified modern activity at the site including modern services and a large area of modern disturbance in the central part of the site.
- 2.1.4 The scope of works for the archaeological evaluation was set out in a detailed specification compiled by Tyne and Wear Archaeology Officer (Ref. MON15759). Fourteen trenches (Trench 1 to 14) were mechanically excavated during the archaeological work. The evaluation comprised two 20m trenches (Trench 6 & 11), eight 25m trenches (Trench 1, 2, 3, 4, 5, 8, 9 & 14), one 30m trench (Trench 7) and three 50m trenches (Trench 10, 12 & 13) (Figure 2).
- 2.1.5 The Online Access to the Index of Archaeological Investigation (OASIS) reference number of the project is preconst1-342609.

2.2 Site Location and Description

- 2.2.1 The site (centred at NZ 34405 48705) comprised a roughly rectangular shaped parcel of arable land covering c. 13.4 hectares located between the towns of Hetton-le-Spring and Hetton-le-Hole.
- 2.2.2 The site is bounded to the east by Hetton Road and residential dwellings, to the north by residential dwellings, to the west by a small wooded area and residential dwellings and to the south by a local nature reserve 'Hetton Bogs'.

2.3 Geology and Topography

- 2.3.1 The bedrock geology of the site comprises Pennine Middle Coal Measures Formation mudstone, siltstone and sandstone formed approximately 309 to 312 million years ago in the Carboniferous Period when the local environment was previously dominated by swamps, estuaries and deltas (*British Geological Survey website*).
- 2.3.2 The superficial geology within the development boundary is comprised of Devensian glaciolacustrine deposits formed up to two million year ago in the Quaternary Period when the local environment was dominated by ice age conditions (*ibid.*).
- 2.3.3 The site gently slopes down from north-east to south-west at 69.03m AOD to 56.01m AOD, respectively, towards the area known as Hetton Bogs where the Rough Dene Burn merges with the Hetton Burn to form the Rainton Burn which runs adjacent to the southern boundary of the proposed development site.

2.4 Planning Background

- 2.4.1 The requirement to undertake the archaeological investigation is in line with planning policy at a national level, as set out in the *National Planning Policy Framework (NPPF)* (Ministry of Housing, Communities & Local Government 2018). In accordance with paragraph 189 of the NPPF archaeological evaluation trial trenching was required to test the results of the geophysical survey. Paragraph 189 states that:

In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

- 2.4.2 The archaeological investigation was carried out as a condition of planning application 18/00202/FUL for a proposed residential development.
- 2.4.3 The archaeological investigation was required, as part of the planning process, to inform the Local Planning Authority (LPA), South Tyneside Council, and their archaeological advisors at Tyne and Wear Archaeology Service of the character, date, extent and degree of survival of archaeological remains at the site. South Tyneside Council has responsibility for development control in relation to the historic environment. A detailed site specification was produced by Tyne and Wear Archaeology Service prior to works commencing at the site (Ref. MON15759).

2.5 Archaeological and Historical Background

Information in this section is largely extracted from the desk-based assessment undertaken by Pre-Construct Archaeology Limited in 2017. The research and writing of those responsible is acknowledged.

Prehistoric (450,000 BC-43 AD)

- 2.5.1 There are no HER entries representing the prehistoric eras within the study site, however, there are four within the wider 1km search radius.
- 2.5.2 The Seven Sisters round barrow is located approximately 1km to the north-west of the proposed development site and is a Scheduled Monument. The round barrow is situated on arable land on the western flank of Copt Hill and can easily be seen from the study site. The barrow mound is 3m high and approximately 25m in diameter and was constructed of earth and stone. To the west and north-west of the mound there are visible remains of a surrounding bank with aerial photography indicating a further boundary to the west and north of the mound about 25m from the edge of the feature and a rectilinear cropmark believed to be the terminal of a cursus.
- 2.5.3 Excavation of the barrow in 1877 by Canon William Greenwell and Mr T Robinson revealed that the primary burial was a Neolithic cremation believed to be an example of an axial mortuary structure. There were also several Bronze Age cremations and inhumations and an early medieval inhumation.
- 2.5.4 The barrow was excavated again over two seasons between 2003-2004. The majority of the trenches were devoid of any archaeological features but a possible Mesolithic posthole alignment and a possible Neolithic wooden mortuary structure were revealed. A single sherd of Iron Age pottery was also recovered which may suggest activity during the later prehistoric period.
- 2.5.5 The barrow is classified as a bowl barrow; the most numerous form of round barrow. Such funerary monuments date from the Late Neolithic period to the Late Bronze Age, with most examples belonging to the period 2400-1500 BC. They were constructed as earthen or rubble mounds, sometimes ditched, which covered single or multiple burials and occur within isolation or grouped as cemeteries. There are over 10,000 surviving bowl barrows recorded nationally occurring across most of lowland Britain which often occupied prominent locations. They are considered to be a major historic element in the modern landscape and their considerable variation of form and longevity as a monument type provide important information on the diversity of beliefs and social organisation amongst early prehistoric communities.
- 2.5.6 A ditch was partially excavated during an archaeological evaluation at Gillas Lane (ASDU 2013, 2014a), c. 460m to the north-east of the site, ahead of a residential housing development in 2013. The ditch was tentatively dated to the prehistoric period and was more thoroughly investigated in 2014 (ASDU 2014b). Evidence from small charred plant microfossils and charcoal assemblages combined with the presence of calcined bone,

suggests the ditch contained domestic hearth waste. The ditch measured 80m in length but continued beyond the surveyed area to the east and probably to the west. Radiocarbon dating of three ditch fills returned two Bronze Age and one Iron Age date.

- 2.5.7 An archaeological strip, map and record excavation was undertaken in 2016 by Pre-Construct Archaeology at land near to the rear of Markle Grove, East Rainton c. 900m to the south-west of the proposed development (NZ 33710 48126). The earliest activity at the site comprised undated but probably Iron Age or earlier features including part of a substantial ditched enclosure along the western margin of the site that represented a settlement nucleus of Iron Age date and a sinuous segmented ditch extending across the eastern edge of the site. Also recorded at the site were various undated discrete features to the west of the segmented ditch including postholes, a short linear feature and three variously aligned ditches along the eastern edge of the site that are likely to be of a contemporary prehistoric date (PCA 2017a).

Roman (AD 43 – AD 410)

- 2.5.8 There are no HER entries from the Roman period within the 1km search radius of the proposed development.

Early Medieval (AD 411- 1066)

- 2.5.9 There are no HER entries for the early medieval period within the boundaries of the study site. However, an early medieval inhumation was recovered from the Seven Sisters round barrow. Furthermore, the village of East Rainton is likely to have an early-medieval origin with the earliest known reference to Rainton in *Symeon's History of the Church of Durham* (1125) where it is suggested the two villages of Rainton form one *vill*, and the name possibly derived from the old English *Reignald's tun* after its builder Reingnald, son of Franco, one of the seven bearers of St. Cuthbert (Mawer 1920).

Medieval (AD 1066-1539)

- 2.5.10 There are no HER entries for the medieval period on the study site itself; but six are listed within the wider 1km search radius.
- 2.5.11 There are numerous documentary references to Rainton in the medieval period with the earliest reliable reference being the *Foederarium Prioratus Dunemense* (c. 1125) where it is described as an ancient manor and park of the Prior and Convent of Durham. The Boldon Buke (1183) refers to "a moiety of the mill of Rainton" and 'The mills of Newbottle, of Biddick with half of the mill of Rainton yield is 15 marks' with these probably referring to mills at Middle Rainton or Rainton Gate located to the south-west of the development site. There is also a 12th-century reference to Rainton in John's confirmation of Henry II charter that at this time comprised 7 free tenants with 1 messuage, 60 acres land and 5 acres meadow each. Land holdings with reference to East Rainton are documented throughout the later medieval and early post medieval periods in the Halmote Court Rolls and Gillycorn Rent Assessments with

- the earliest of these being a Halmote Court roll of 1296 (Watts 2002). These documents also refer to the presence of a mill at Rainton Gate.
- 2.5.12 Rainton corn mill and brewery are shown on the first edition Ordnance Survey which depicts a mill dam and malt kilns on the site at the north end of the township beside Rainton Burn. It is possible that the eastern mill race was connected to the tail race of Hetton Mill. The mill was already in existence by the end of the 12th century when it was divided between the Bishop and the Priory.
- 2.5.13 The outlay of East Rainton village during the medieval period is based on its earliest depictions on 19th-century mapping evidence and probably comprised an irregular street pattern centred on a large open area 'village green'.
- 2.5.14 Houghton-le-Spring is located c. 918m to the north-east of the proposed development. The earliest documentary reference to the town was in 1112 AD and was described by Surtees as one of the great copyhold manors of the see of Durham, as well as the centre of an extensive parish. In 1483 Bishop Dudley granted leave to the rector to enclose and fortify and embattle a tower.
- 2.5.15 The 2016 excavations at East Rainton, c. 900m to the south-west, revealed evidence of medieval settlement and industrial activity (PCA 2017a). A substantial ditched enclosure was recorded truncating the prehistoric ditch along the western margin of the site and the focus of settlement was apparently situated beyond the area of excavation to the west. Pottery recovered from the ditch indicates a 12th to early-14th century date. Significant activity was recorded to the east of the ditch and it appears that this major boundary separated the area of settlement from an area utilised for industrial and processing activities. A group of four well preserved medieval corn-drying kilns was excavated and the paleoenvironmental assemblages recovered from these are considered to be of regional significance. Six hearths were recorded across the western half of the site along with postholes and pits and these produced a small assemblage of finds including medieval pottery, bone, daub and an iron knife blade. Three shallow ditches recorded across the central part of the site probably represent surviving segments of a system of medieval field boundaries.
- 2.5.16 The aforementioned Hetton Mill was located c. 38m to the south of the southern extent of the proposed development area. The mill was situated at the northern end of the township below the confluence of the Hetton Burn and Rough Dene. The mill belonged to the manorial lords of the township, the de Latons and their successors, but it does figure in a number of the charters issued by William de Laton in the 13th century, recording grants of land to free tenants, in particular Geoffrey Mody of Hetton and his descendants. The mill was rebuilt in the 18th century and closed in the 1950s.
- 2.5.17 Broad ridge and furrows are noted c. 572m to the north-east of the proposed development.

Post-medieval (AD 1540-1799)

- 2.5.18 There are no post-medieval assets within the study site itself but 14 are located within the wider 1km search radius.
- 2.5.19 Captain Hutton's tomb is noted within the HER c. 985m to the north of the proposed development. Robert Hutton was a captain in Cromwell's Army and served in the Scottish campaign and the plunder of Dundee after the Restoration. He and the Rector feuded because of their religious differences as Robert was a Puritan. The arguments are said to have been caused because the Captain wanted his favourite horse to be buried in the churchyard and the Rector had refused. When the horse died, Captain Hutton buried it in his orchards at Houghton Hall and left instructions that on his death, he too should be buried there. This duty was carried out shortly after his death with an altar tomb being construction in the grounds of his estate. The altar bore the inscription *Hic jacet Robertus Hutton, Armiger, qui obut Avg. die nono 1680 et moriendo vivit*. The tomb remained in the orchard of Houghton Hall until the 20th century when it was taken to the churchyard.
- 2.5.20 The Rainton waggonway branch to Stubley Moor Pit is noted to the west of the site. By 1697, the Wharton's Rainton Waggonway carried coal from their Rainton Ducks Colliery across Dubmire and Hall Moors and over Sedgelech from where the line took up an old waggonway route used by Sir John Duck through Newbottle, Penshaw and down Waggon Hill to the south bank of the River Wear. Branches were added to the waggonway from Newbottle Colliery for the Earl of Scarborough's coal in 1723 and another from Smith's Colliery in Morton but the route that these branch lines took has not been established. In 1730, following Jane Wharton's death, the colliery passed by marriage to the Tempest family. Over the middle years of the 18th century, the course of the main way around Dubmires was altered because of wayleave problems and for a time the line became circuitous. By the late 1760s, the line had reverted to its former course. Branch lines were later added to deep collieries including Eden Main and Penshaw (Wharton Main) Collieries. The branch to Stubley Moor Pit was added before the mid-18th century.
- 2.5.21 A second waggonway is noted c. 1km to the west of the proposed development site. Two branches of this waggonway existed in 1777 within land owned by Henry Walton, Mr Maskell and Mr Rotherham. It served a pit which lay south of the later Nicholson's Pit and North Pit. The waggonway is also shown on a manuscript plan of Rainton Colliery Grounds of probable late 18th-century date and on Greenwood's plan of 1820. With the opening of the Rainton to Seaham Railway in 1831 the waggonway routes would have lapsed with only the section south-east of North Pit remaining in use which linked to the new line. Three trenches were excavated across the waggonway by Pre-Construct Archaeology in July 2001 in advance of the construction of Rainton Bridge South Business Park. A final phase of excavation was undertaken in November 2002 which proved that the waggonway was a double way, diverging to form a four-track system approaching the pithead of North Pit. This may have represented a marshalling area as opposed to four loading platforms (Glover 2005).

- 2.5.22 Archaeological investigations of former colliery waggonways in the region, such as at Rainton Bridge South, Sunderland (Glover 2005), the Harraton Waggonway, Washington (PCA 2010), and Sir Charles Parsons School, Walker, Tyne and Wear (Proctor 2013), have provided details of their construction. Waggonway tracks were usually bounded on either side by drainage ditches or 'gutters' from their earliest construction. Such trackside ditches served to delineate the wayleave corridor of the waggonway and provided drainage for the track; adequate drainage was essential to stop the timbers rotting. At Rainton Bridge, a line of stakeholes on the outer edge of one of the trackside ditches marked the position of a fence line which would have prevented stock crossing the ditch and straying onto the track. These investigations have largely confirmed theories regarding general construction of late 18th- and 19th-century waggonways, in that initial groundworks involved laying down linear banks of ballast, often small-coal and ash, upon which wooden sleepers were placed and to provide gradients as required. Wooden rails were then laid down and pegged into place, before a layer of fine ballast was deposited on and around the sleepers as protection. Further ballast could be added to raise or effectively conceal the rails, with provision sometimes made for a path and, more usually, drainage gutters or ditches either side.
- 2.5.23 The North East was a world leader in the development of early railways. The *North- East Regional Research Framework for the Historic Environment* (NERRF) emphasises the need for more research in this area with a focus on early waggonway and pre-locomotive hauled lines, as well as activity at the terminals of early railways, specifically the development of coal staithes (Petts & Gerrard 2006, 180).
- 2.5.24 The Rainton Bridge waggonway served two pits within the nearby area; the North Pit c. 1km to the west and an unnamed pit c. 955m to the west of the site. The North Pit is shown on a plan of 1777 and is depicted as a pronounced shaft mound with two long blocks of building aligned north-south on the west hand side, probably forerunners of the later pit cottages. The unnamed pit is also shown on a plan of 1777 but had entirely disappeared by 1856 leaving only the fan-shaped field boundaries, where the waggonway opened out into sidings in the pit yard.
- 2.5.25 In 1586 it was recorded that a watermill, called Houghton and Rayton mill in Co. Durham, was parcel of the possessions of the dissolved hospital of St. James, near Northallerton. Unfortunately, the exact location of the watermill is unknown.
- 2.5.26 Three farms are listed within or near the 1km search radius of the proposed development; a Grade II listed 17th-century farmhouse c. 1.1km to the south-west; North Pit Farm c. 1.1km to the west, and Summer House Farm located c. 1km to the south-west.
- 2.5.27 Other post-medieval assets within the 1km search radius include: John Smales Brewery; an Infectious Diseases Hospital c. 500m to the south-west; a cottage c. 1km to the south-west; a pair of spring fed stone troughs c. 791m to the south-west, and Hetton Houses Wood, an area of ancient woodland c. 214m to the south of the proposed development.

Early Modern (AD 1800-1899)

- 2.5.28 Seventy-three early modern assets are noted within the 1km search radius, of which one, the Rainton and Seaham North Hetton Branch Railway is located within the proposed development.
- 2.5.29 Until about 1820, colliery owners were reluctant to sink shafts through the Magnesian limestone of East Durham because they thought it 'cut off the coal measures'; or that, if coal existed beneath it, such coal must be deteriorated both in quality and thickness (Griffin 1977, 63).
- 2.5.30 A trial shaft is noted c. 450m to the south-east of the proposed development. The pit is depicted as old on the first edition Ordnance Survey so was certainly out of use by 1857. Buildings possibly associated with the shaft are noted on the tithe map plan of 1839. A second pit known as the Dun Well Pit is noted at Rainton Colliery c. 795m to the south-west of the proposed development. The pit formed part of Rainton Colliery which opened before 1815 and closed in July 1978. The colliery included Adventure Pit (NZ 315 470), Alexandria Pit (HER 3219), Hazard Pit, Meadows Pit (HER 6848), Nicholson's Pit (HER 3201), North Pit (HER 3197), Plain Pit (HER 3198), and Resolution Pit (NZ 311 476). Dun Well Pit may have been used as a ventilation shaft for the Hazard Colliery. Its pump house existed into the 20th century.
- 2.5.31 The Rainton and Seaham Railway was built by the Marquis of Londonderry and opened in 1831. The line was worked entirely by inclines. In 1896 the line closed but the section near Copt Hill to the North Hetton Branch was taken over by the Hetton Coal Company and worked until 1917. At Rainton Bridge, the line used to cross the Sunderland to Durham toll road at level crossing gates.
- 2.5.32 The North Hetton Branch of the Rainton and Seaham Railway crossed the study site and sections of the embankment can still be seen in the north-east and south-west corners of the site. The branch line linked North Hetton Colliery (HER 3224), with the main Rainton and Seaham line (HER 2976).
- 2.5.33 Three engines are noted along the Rainton and Seaham Railway; Rainton Old Engine c. 910m to the west; Rainton Engine and Reservoir c. 866m to the north-east and the Rainton Bridge Engine c. 395m to the south-west of the study site. Two coal depots are also noted along the railway, the Rainton Bridge coal depot c. 460m to the south-west and the second c. 750m to the south-west.
- 2.5.34 With the development of more effective pumping engines to drain previously unworkable deep coal seams and the development of nucleated collieries, the Rainton Waggonway, especially its southern lines, was extensively upgraded and re-organised by the Tempests, to whom it had passed by marriage from the Whartons in 1730. A number of new branch lines to the new collieries were constructed between 1816 and 1826. The line to Low Moorsley Pit was opened in 1821. This railway spur led from a coal depot to Dun Well Pit and the Rainton and Seaham

- Railway North Hetton Branch. A branch line is also noted extending from the Rainton Waggonway to North Pit and is shown on the first edition Ordnance Survey.
- 2.5.35 Hetton Colliery (HER 2989), one of the earliest and largest mines in the district, had three shafts which were very costly to sink. The owners, Hetton Colliery Company, engaged George Stephenson to construct a railway to Sunderland, some 10km distant, and this opened on 18 November 1822 (Griffin 1977). The northern end of the Hetton Company's Railway line (HER 2848) was at Hetton Drops (HER 2808) located beside the River Wear in Sunderland. There were two Coal Depots (HER 2818 and 2850) in Sunderland. The Hetton Company's Railway used stationary engines and self-acting inclines and was the first line in the world designed for locomotives, which worked the first 1.5 miles from the colliery.
- 2.5.36 The Eppleton Branch of the Hetton Railway was located to the east of the proposed development area. The line ran from the Eppleton Colliery (HER 2982) to the Hetton Railway. This was a self-acting incline built in 1825. The ropes were removed c. 1900 although the line continued in use until 1959.
- 2.5.37 Numerous other early modern assets are noted within or just beyond the 1km search radius of the study site; a bone mill was located c. 1km to the north-west; a blacksmiths workshop c. 995m to the south-west; a Grade II listed former brewery c. 1km to the north; a further brewery c. 1km to the south-west; the Blacksmith's Arms public house, c. 1km to the south-west; The Village Inn c. 1.1km to the south-west; the Copt Hill Inn c. 1.2km to the north-east; the Grade II listed Rose and Crown Inn c. 1.1km to the south-west; Cross House Inn/Burn Hotel c. 271m to the north, and the Mill Inn located c. 529m to the west.
- 2.5.38 The Houghton-le-Spring Tithe Map of 1838 depicts the North Hetton Branch of the Rainton and Seaham Railway crossing the site running north-east to south-west with the remainder of the site divided into seven agricultural fields.
- 2.5.39 The railway line is still extant in Bell's map of 1789-1844. The remainder of the study site is split into six fields that are labelled as being in the ownership of the heirs of the late Rev. R. Hutton. No structures are noted within the proposed development boundary although structures relating to the water mills along the Rainton Burn are noted to the south.
- 2.5.40 The Ordnance Survey of 1871 shows the railway embankment within the site in greater detail. A small rectangular structure can also be seen in the north-east corner of field No.1048 just outside the proposed development boundary.
- 2.5.41 The Rainton and Seaham Railway is still extant by the Ordnance Survey of 1898. The small rectangular structure observed in field 1048 on the Ordnance Survey of 1871 is no longer visible.
- Modern (AD 1900 to present)**
- 2.5.42 Twelve modern heritage assets are noted within the wider 1km search radius of the site, although none are located within the study site itself.

- 2.5.43 The modern assets comprise of colliery housing c. 1.1km to the east; a Grade II listed Mine Rescue Station c. 300m to the north-east; the Nesham Place Conservation Area c. 1.1km to the north; St. Michael's Conservation Area c. 1.1km to the north; the Church Institute c. 1.1km to the south-east; a greyhound stadium c. 678m to the north-east; a shop c. 1km to the north; a clinic c. 1km to the north; an Almshouse c. 1.2km to the south-west; a grammar school c. 813m to the north; a secondary school c. 856m to the north and a site of a former gypsy camp c. 676m to the south-west.
- 2.5.44 The Ordnance Survey of 1923 shows the railway embankment but no tracks which confirms that the line was closed in 1917. A trackway can be seen running from the railway embankment to the north on Gillas Lane. No other structures are observed.
- 2.5.45 The Ordnance survey of 1939 depicts the beginnings of the housing estate being constructed to the north of the study site. By the Ordnance survey of 1959 the housing estate has expanded to the south and now backs onto the study site. The embankment is still extant but trees are shown growing at its south-western extent.
- 2.5.46 No additional features are observed within 1m and 2m DTM lidar data for the proposed development site (Environment Agency).

3. PROJECT AIMS AND RESEARCH OBJECTIVES

3.1 Project Aims

3.1.1 The project aims to fulfil the requirements of the local planning authority by undertaking an appropriately specified scheme of archaeological work. The primary aim of the scheme of works was to determine the absence/presence of archaeological features on site. The work aimed to attempt to define the presence, character, date and extent of any structures or archaeological deposits within the boundaries of the proposed development site. The results are to be used to inform decisions regarding further mitigation measures that may be required at the site prior to the proposed development.

3.2 Research Objectives

3.2.1 The project was undertaken with reference to the research framework set out in *Shared Visions: The North-East Regional Research Framework for the Historic Environment* (NERRF) (Petts and Gerrard 2006), which highlights the importance of research as a vital element of development-led archaeological work. By setting out key research priorities for all periods of the past, NERRF allows archaeological projects to be related to wider regional and national priorities for the study of archaeology and the historic environment.

3.2.2 The archaeological evaluation had the potential to contribute to NEERF Research Strategies for the Later Medieval period, particularly MDii. *Landscape* and the Post-Medieval period, particularly PMviii. *Industrial intensification 1790-1830*.

3.2.3 An appropriate level of reporting on the work was required, including, if necessary, full analysis and publication of any notable archaeological findings upon completion of the evaluation. Thus, the results of the work constitute the preservation by record of any archaeological remains encountered and subsequently removed during the course of works.

4. ARCHAEOLOGICAL METHODOLOGY

4.1 Fieldwork

- 4.1.1 The fieldwork was undertaken in compliance with the codes and practice of the Chartered Institute for Archaeologists and the relevant ClfA standard and guidance document (ClfA 2014 a & b). PCA is a CIFA 'Registered Organisation'. All fieldwork and post-excavation was carried out in accordance with the Yorkshire, the Humber & The North East: Regional Statement of Good Practice (SYAS 2011).
- 4.1.2 The project was managed in line with principles set out in Historic England's *'Management of Research Projects in the Historic Environment'* (MoRPHE) published in 2006.
- 4.1.3 All archaeological staff involved in the project were suitably qualified and experienced for their project roles. The project was overseen for PCA by Aaron Goode, Project Manager at PCA's Durham Office. All relevant Health and Safety legislation, regulations and codes of practice were respected. PCA's Health and Safety (H&S) Policy is the starting point for managing H&S at all locations where PCA carries out its operations.
- 4.1.4 The scope of work for the archaeological evaluation was set out in a detailed specification compiled by the Tyne and Wear Archaeology Service (MON15759).
- 4.1.5 The trial trenching evaluation was carried out between the 14th-18th January over five days and consisted of fourteen trenches (one 15m trench, one 20m trench, eight 25m trenches, one 30m trench and three 50m trenches) (Figure 2). Initially Trench 1 was to be 20m long, however due to its close proximity to a residential property boundary this was shortened to 15m long.
- 4.1.6 The trenches were set-out using a Leica Viva Smart Rover Global Navigation Satellite System (GNSS), with pre-programmed co-ordinate data determined by an office-based CAD operative.
- 4.1.7 The trenches were sited to provide the most productive archaeological information and address the research Aims and Objectives. Trenches 1-3, 6-8 and 14 were located to investigate anomalies identified by geophysical survey. The table below summarises the justification for each trench location:

Trench	Justification
1	Over anomalies on the geophysics.
2	Over anomaly 3.
3	Over anomaly 3.
4	Over railway, anomaly 1.
5	Over railway, anomaly 1.

6	Over anomaly 3.
7	Over anomalies on the geophysics.
8	Over anomalies on the geophysics.
9	Over blank area on geophysics.
10	To ascertain how deep the modern disturbance is and to see if archaeological features could survive underneath.
11	Over railway embankment.
12	To see if earlier archaeological features underlie the ridge and furrow.
13	To see if earlier archaeological features underlie the ridge and furrow.
14	Over anomalies on the geophysics.

Trench location justification

4.1.8 Ground level in the trenches was reduced using a 360° 13-tonne mechanical excavator utilising a toothless ditching bucket. Successive spits of no more than 100mm depth were removed until either the top of the first archaeological horizon or the top of superficial geological deposits was reached. All ground reduction was carried out under archaeological supervision.

4.1.9 All trenches were excavated to a maximum depth of 1.2m below ground level. If superficial geological material or archaeological remains were not observed at this depth, then a sample excavation was undertaken at the end of the trench to the maximum reach of the machine or until ground water/geological/archaeological material was observed. The sample excavation was then immediately photographed and recorded from a safe distance before being backfilled due to health and safety constraints.

4.1.10 The table below summarises the dimensions and findings of the fourteen excavated trenches:

Trench	Length	Width	Depth	Superficial Geology	Archaeology
1	25m	2m	1.2m	Yes	Yes
2	25m	2m	1.2m (1.35m in sample excavation)	Yes	No
3	25m	2m	0.35m – 1.2m	Yes	No
4	25m	2m	0.54m	Yes	Yes
5	25m	2m	0.45m	Yes	Yes
6	20m	2m	0.40m	Yes	Yes
7	30m	2m	0.40m	Yes	Yes
8	25m	2m	0.42m	Yes	No

9	25m	2m	0.35m	Yes	No
10	50m	2m	1.2m (2m in sample excavation)	No	No
11	15m	2m	2.30m (Stepped trench)	Yes	Yes
12	50m	2m	0.35m	Yes	No
13	50m	2m	0.35m	Yes	No
14	25m	2m	0.30m	Yes	No

Trench summary

- 4.1.11 The investigation of archaeological levels was by hand, with cleaning, examination and recording both in plan and in section, where appropriate. Investigations within the trenches followed the normal principles of stratigraphic excavation were conducted in accordance with the methodology set out in the field manual of PCA (PCA 2009) and the Museum of London Site Manual (Museum of London 1994).
- 4.1.12 Deposits and cut features were individually recorded on the *pro-forma* 'Trench Recording Sheet' and 'Context Recording Sheet'. All site records were marked with the unique-number HRH19 (site code).
- 4.1.13 A detailed photographic record of the evaluation was prepared using SLR cameras (35mm film black and white prints for archive purposes) and by digital photography. All detailed photographs included a legible graduated metric scale. The photographic record illustrated both in detail and general context archaeological exposures and specific features in all trenches.

4.2 Post-excavation

- 4.2.1 The stratigraphic data for the project comprises written and photographic records. A total of 76 archaeological contexts were defined in the fourteen trenches (Appendix 2). Post-excavation work involved checking and collating site records, grouping contexts and phasing the stratigraphic data. A written summary of the archaeological sequence was then compiled, as described in Section 5.
- 4.2.2 During the evaluation, no artefactual material was retained from the early modern deposits encountered due to their origins, artefactual material was retained from a medieval deposit in the form of a single pottery sherd discovered in ditch [703], Trench 7.
- 4.2.3 The complete Site Archive, comprising the written, drawn, artefactual and photographic records (including all material generated electronically during post-excavation) will be packaged for long term curation. In preparing the Site Archive for deposition, all relevant standards and guidelines documents referenced in the Archaeological Archives Forum guidelines document (Brown 2007) will be adhered to, in particular a well-established United Kingdom Institute for Conservation (UKIC) document (Walker, UKIC 1990) and the most recent ClfA publication relating to archiving (ClfA 2014c).

- 4.2.4 At the time of writing the Site Archive was housed at the Durham Office of PCA, Unit 19a Tursdale Business Park, Durham, DH6 5PG. When complete, the site Archive will be deposited at the relevant museum under the site code HRH19.

5. RESULTS: THE ARCHAEOLOGICAL SEQUENCE

During the archaeological investigation, separate stratigraphic entities were assigned unique and individual context numbers, which are indicated in the following text as, for example [123]. The context numbers have been assigned per trench therefore contexts from Trench 1 are in the 100s and contexts from Trench 2 in the 200s etc. The archaeological sequence is described by placing stratigraphic sequences within broad phases, assigned on a site-wide basis in this case. An attempt has been made to add interpretation to the data and correlate these phases with recognised historical and geological periods. The figures can be found in Appendix 1 with the context index and stratigraphic matrix located in Appendix 2 and 3 respectively. A selection of plates can be found within Appendix 4. Environmental assessment analysis can be found within Appendix 5.

5.1 Phase 1: Superficial Geology

- 5.1.1 Phase 1 represents superficial geological deposits observed within Trenches 1-9 and 11-14 which generally comprised light to mid yellowish brown sandy clay [101], [202], [302], [402], [502], [601], [701], [801], [901], [1101], [1201], [1301] & [1401].
- 5.1.2 The maximum and minimum height of the upper interfaces of the geological material was 68.73m AOD in Trench 14 at the north-eastern part of the site and 55.66m AOD in Trench 3 at the south-western part of the site, respectively.
- 5.1.3 The natural geological material was encountered across the site at maximum and minimum depths below ground level of 0.54m and 0.35m, respectively. The exceptions were Trenches 2 and 3 where geological material was encountered at 0.85m below ground level.
- 5.1.4 Superficial geology was not encountered in Trench 10.

5.2 Phase 2: Undated (Colluvium)

- 5.2.1 Colluvial deposits were present in the south-western part of the site within areas of low-lying elevations and recorded within sample excavations undertaken in Trenches 2 and 3.
- 5.2.2 In Trench 2 the colluvial deposit extended across the trench up to 0.50m thick and comprised mid reddish-brown sandy clay [201]. The maximum and minimum height recorded for this deposit was 56.54m AOD and 55.88 AOD, respectively.
- 5.2.3 At the north-eastern extent of Trench 3 a colluvial deposit was exposed for a maximum distance of 15m and comprised c. 0.50m thick greyish brown sandy clay [301]. The maximum and minimum height that the colluvial deposit was encountered was 56.23 AOD and 55.32 AOD, respectively.
- 5.2.4 No datable material was recovered from any of the colluvial deposits therefore the date that such deposits were formed is uncertain.

5.3 Phase 3: Medieval and undated

- 5.3.1 Phase 3 represents medieval and undated features in the form of ditches recorded in Trenches 6, and 7, undated furrows recorded in Trenches 1 and 5 and sub-soil deposits in Trenches 4-5 (Figure 3).
- 5.3.2 A shallow WNW-ESE aligned ditch [603] was recorded extending across Trench 6 for a distance 2.93m, truncating the superficial geology [601] (Figure 4; Plate 1). It had a shallow U-shaped profile with dimensions of up to 0.60m wide by 0.13m deep and was encountered at a maximum height of 56.48m AOD (Figure 8, Section 3). No finds were recovered from its single mid dark brownish grey sandy clay backfill [602].
- 5.3.3 Two east-west aligned ditches, [703] and [705], were recorded in Trench 7 truncating superficial geology [701]. The south-westernmost ditch [703] was exposed for a distance of 2.70m and was encountered at a maximum height of 57.65m AOD (Figure 4; Plate 2). It had a shallow U-shaped profile and was 0.78m wide by 0.45m deep (Figure 8, Sections 6 & 7). A single body sherd of medieval pottery was recovered from its single compact mid brownish grey sandy clay backfill [702].
- 5.3.4 A paleoenvironmental sample (Sample 1) was analysed from the backfill [702] of ditch [703] and produced limited environmental remains including very small quantities of charcoal and charred plant remains; likely a single grass (cf. Poaceae) and a probable wheat (cf. *Triticum*) caryopsis (Appendix 5). The charcoal recovered from this sample is not be suitable for AMS radiocarbon submission.
- 5.3.5 Ditch [705] was exposed for distance of 3m within the central part of Trench 7 and was encountered at a maximum height of 57.40m AOD (Figure 4; Plate 3). It had a V-shaped profile and was 0.59m wide by 0.26m deep (Figure 8, Section 8). No finds were recovered from its single friable dark reddish-brown sandy clay [704].
- 5.3.6 A paleoenvironmental sample (Sample 2) from the backfill [704] of ditch [705] was analysed and also produced limited environmental remains (Appendix 5). Plant remains were present with uncharred *Brassica* sp. and a single charred barley (*Hordeum* sp.). Although the charred plant remains recovered from this sample are not suitable for AMS radiocarbon submission there were sufficient quantities of charcoal fragments for AMS radiocarbon submission. This will be undertaken as part of a later phase of archaeological work.
- 5.3.7 Although only a single sherd of medieval pottery was recovered from ditch [703] it is likely that ditches [705] and [603] are also medieval in date and represent part of a wider system of agricultural field boundaries within the south-western part of the site.
- 5.3.8 Undated but probably medieval furrows were recorded in Trenches 1 and 5 (Figure 3). In Trench 1 two NE-SW aligned furrows [103] were each exposed for a distance of c. 2.50m and were up to 1.60m wide. No finds were recovered from any of their mid yellowish brown silty clay fills [102]. In Trench 5 a single NE-SW aligned furrow [516] was exposed for a distance of 2.00m and had dimensions of 2.24m wide by 0.18m deep. No finds were recovered from its firm mid brownish grey silty clay [517].

5.3.9 Undated sub-soil deposits were recorded extending across Trenches 4 and 5. These deposits comprised mid reddish brown, sandy clay up to 0.14m thick in Trench 4 [401] and 0.23m thick in Trench 5 [501]. The maximum and minimum height recorded for such deposits were 64.08m AOD in Trench 5 and 59.96m AOD in Trench 4.

5.4 Phase 4: Early Modern

5.4.1 Phase 4 represents early modern activity associated with the North Hetton Branch of the Rainton and Seaham Railway that was first depicted on the tithe map of 1839. Presently the railway survives as an NE-SW aligned earthwork embankment that extends to the southwest from the northeastern boundary for a distance of c. 135m and occurs at maximum and minimum heights of 71.28m AOD and 64.80m AOD, respectively. The railway embankment would have continued to the southwest across the site on the same alignment, however this was removed in the 20th century by subsequent agricultural improvement regimes.

5.4.2 Geophysical survey identified broad positive linear anomalies (Anomaly 1) extending across the western part of the site on a similar alignment to that of the earthwork embankment and represent elements of the railway that survive as below ground features.

5.4.3 Various elements of the railway were recorded in Trenches 4, 5 and 11 (Figure 3).

5.4.4 At the north-eastern extent of the site the railway survives as a NE-SW aligned embankment earthwork. Trench 11 was sited to target the railway embankment and to this end substantial embankment formation layers were recorded [1105] – [1117] and associated ditch [1104] (Figures 3 & 7; Figure 8, Sections 9, 10 & 11; Plate 6).

5.4.5 The earliest embankment formation deposit [1117], overlay the superficial geology [1101], and comprised compact light to mid-brown sandy clay up to 0.36m thick. This in turn was overlain by eleven embankment formation deposits that comprised various compositions of clay, sand, ash and clinker ([1116], [1115], [1113], [1112], [1111], [1110], [1109], [1108], [1107], [1106] = [1114], [1105]). The embankment deposits had a maximum combined thickness of c. 1.40m and occurred at maximum and minimum heights of 68.96m AOD and 66.75m AOD, respectively. The table below summarises all embankment formation layers encountered in Trench 11.

Context	Thickness	Description	Interpretation
[1117]	0.36m	Compact light-mid brown clayey sand	Embankment formation layer
[1116]	0.42m	Compact light-mid yellowish brown sandy clay	Embankment formation layer
[1115]	0.67m	Loose light-mid grey clinker	Embankment formation layer
[1113]	0.12m	Loose dark grey ash	Embankment formation layer
[1112]	0.20m	Loose light-mid grey clinker	Embankment formation layer
[1111]	0.22m	Loose dark grey ash and clinker	Embankment formation layer
[1110]	0.35m	Loose mid brownish grey clinker and ash	Embankment formation layer
[1109]	0.15m	Loose mid grey clinker	Embankment formation layer
[1108]	0.57m	Loose mid grey ash and clinker	Embankment formation layer
[1107]	50mm	Loose dark grey ash	Embankment formation layer

[1106] = [1114]	0.48m	Loose light-mid grey clinker	Embankment formation layer
[1105]	0.68m	Loose dark brownish grey silty sandy ash	Embankment formation layer

Summary of embankment layers recorded in Trench 11.

- 5.4.6 A NE-SW aligned ditch [1104] recorded parallel to the railway earthwork embankment was exposed for a distance of 4.50m and had dimensions of 0.78m wide by at least 0.78m deep (Figure 7, Section 9). The ditch truncated the earliest embankment formation layer [1117] and contained two backfill deposits, [1102] & [1103], that had similar compositions of firm light-mid brown sandy clay. Although no finds were recovered from any of the backfill deposits it is likely this feature represents a drainage feature associated with the railway embankment.
- 5.4.7 The geophysical survey identified a strong series of anomalies that closely corresponds with the route of the North Hetton Branch of the Rainton and Seaham Railway and Trenches 4 and 5 were sited to target these geophysical anomalies within the south western and central parts of the site (Figure 3). To this end substantial cuttings were recorded in each trench c. 0.22m below the present ground level (Figures 5 & 6).
- 5.4.8 In Trench 5 two substantial cuttings, [503] and [514], were recorded in the central part of the trench (Figure 6; Figure 8, Section 4; Plate 5). The earliest cutting [514], truncated the superficial geology [501], and had dimensions of at least 16.32m wide by at least 0.98m thick. It contained seven fills, [508] – [513] & [515], that had various compositions of sand, silt, clay, coal, clinker and ash. A further substantial cutting [503] was recorded truncating the north-western edge of cutting [514] and had dimensions of 10.60m wide by at least 0.68m deep. This cutting contained four fills, [504] – [507], that had various compositions of clinker, cinder and ash. The depth of both cuttings was not established due to safety constraints.
- 5.4.9 In Trench 4 a substantial cutting [403] that was c. 10.40m wide was recorded truncating the superficial geology [402] (Figure 5; Plate 4). Only the uppermost most fill of the cutting was exposed and comprised loose dark grey and light brown coal, clinker and slag [404]. This cutting represents a continuation of the cuttings recorded in Trench 5 to the north-east.
- 5.4.10 The route of North Hetton Branch of the Rainton and Seaham Railway as depicted on 19th century mapping evidence and as identified by the geophysical survey survives as an earthwork embankment at the north-eastern part of the site and as below ground features in Trenches 4 and 5 in the form of substantial cuttings. Although no finds were recovered from any of the embankment formation layers in Trench 11 or from the cutting fills that represent further embankment formation layers in Trenches 4 and 5, they are probably of a contemporary date.
- 5.4.11 The geophysical survey suggested that the series of linear anomalies could potentially represent NE-SW aligned trackside ditches or drainage features that would have flanked the railway embankment. Although no evidence of drainage features were identified in Trenches 4 and 5 during the evaluation, the cuttings were not fully excavated and they may survive at a greater depth.

5.5 Phase 5: Modern

- 5.5.1 Phase 5 represents modern deposits recorded across the development site.
- 5.5.2 In Trench 11 a shallow NW-SE aligned linear feature [1119] was recorded truncating Phase 4 railway embankment drainage ditch [1104] (Figure 8, Section 9). This feature is interpreted as modern agricultural feature.
- 5.5.3 Trench 10 was sited to investigate a substantial area of modern disturbance to establish if archaeological features could survive beneath this. To this end modern dump deposits [1001] were excavated to a maximum depth of 1.20m across Trench 10 and up to 2m deep within a sample excavation undertaken at the south-western extent of the Trench. The superficial geology was not encountered within Trench 10 and it is unlikely that archaeological remains survive at this location at greater depths.
- 5.5.4 Topsoil comprised friable mid brownish grey sandy silt ([100] Trench 1; [200] Trench 2; [300] Trench 3; [400] Trench 4; [500] Trench 5; [600] Trench 6; [700] Trench 7; [800] Trench 8; [900] Trench 9; [1000] Trench 10; [1100] Trench 11; [1200] Trench 12; [1300] Trench 13; [1400] Trench 14) and varied in thickness across the site from a maximum of 0.42m in Trench 4 to a minimum of 0.22m in Trench 5. Topsoil was recorded at maximum and minimum heights of 69.03m AOD in Trench 14 and 56.01m AOD in Trench 3, respectively.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 The archaeological investigations comprised the excavation of fourteen trenches at Hetton Road, Houghton-le-Spring, Tyne and Wear. Geological deposits, medieval and undated features and early modern and modern features and deposits were encountered. This activity was assigned to five phases of activity:

- Phase 1: Superficial geological deposits comprising glacial till was encountered in Trenches 1-9 and 11 to 14;
- Phase 2: Undated colluvium deposits were encountered in Trenches 2 and 3;
- Phase 3: Medieval and undated features in the form of ditches were encountered in Trenches 6 and 7 and undated but probably medieval furrows were recorded in Trenches 1 and 5;
- Phase 4: Early modern features and deposits associated with the North Hetton Branch of the Rainton and Seaham Railway were encountered in Trenches 4, 5 and 11;
- Phase 5: Modern dump deposits were encountered in Trench 11.

6.1.2 The earliest features encountered comprised three ditches in Trenches 6 and 7 at the south-western part of the site. Although only a single sherd of medieval pottery was recovered from one of the ditches, based on the similar form and composition of their fills, these three ditches are all likely to be of a contemporary medieval date and probably represent part of a wider system of agricultural field boundaries.

6.1.3 Two paleoenvironmental samples taken from the ditches (Samples 1 & 2) were sent for analysis to determine if there was sufficient quantities of charcoal material that would be suitable for AMS radiocarbon submission. To this end Sample 2 did produce sufficient quantities of charcoal for AMS radiocarbon submission. The charcoal would need to be identified to species and a shorter lived one, such as hazel (*Corylus avellana*), selected for submission. The charcoal recovered from Sample 2 should be retained until a radiocarbon date has been achieved. The remaining material is unsuitable for further paleoenvironmental analysis and can be discarded.

6.1.4 Undated but probably medieval furrows were recorded in Trenches 1 and 5, however these are of low archaeological significance.

6.1.5 Features and deposits associated with the North Hetton Branch of the Rainton and Seaham Railway were encountered in Trenches 4, 5 and 11. The route of the railway is depicted extending across the site on 19th century mapping evidence and also identified as a series of linear anomalies by the geophysical survey undertaken at the site. Trench 11 was sited to target the earthwork embankment at the north-eastern part of the site and Trenches 4 and 5

were sited at the central and south-western parts of the site to target the linear geophysical anomalies (Anomaly 1). Railway embankment formation layers were recorded in Trench 11 and had a combined maximum thickness of at least 1.40m. Substantial cuttings were recorded in Trenches 4 and 5 that would account for the linear geophysical anomalies. The cutting fills were similar to those of the embankment earthwork layers and also represent embankment formation layers.

- 6.1.6 Trenches 2, 3 and 6 were sited to target a series of fragmented linear anomalies at the south-western extent of the site (Anomaly 3). To this end no features or deposits were identified that would account for this anomaly. Trenches 1, 7, 8, and 14 were sited to target various geophysical anomalies across the site. To this end no features or deposits were recorded that would account for these anomalies. Trenches 12 and 13 were sited to target areas where the geophysical survey identified ridge and furrow agricultural features and to establish if archaeological features underlie these. No archaeological features were identified in Trenches 12 or 13. Trench 9 was sited to investigate a blank area on the geophysical survey. No features were identified in Trench 9. Trench 10 was sited to test the depth of an area of modern disturbance within the central part of the site. A sample excavation undertaken in Trench 10 recorded the thickness of the modern material exceeding 2.00m. Although the full thickness of modern material in this area was not established it is unlikely that any archaeological features survive at a greater depth.

6.2 Recommendations

- 6.2.1 The findings of the archaeological evaluation demonstrate that the site has potential to contribute to NEERF Research Strategies for the Later Medieval period, particularly MDii. *Landscape* and the Post-Medieval period, particularly PMviii. *Industrial intensification 1790-1830*. The archaeological potential at the site specifically relates to those features and deposits associated with the medieval period recorded at the south-western part of the site and the early modern period features and deposits associated with the North Hetton Branch of the Rainton and Seaham Railway.
- 6.2.2 Given the findings of the archaeological evaluation, it is possible that further archaeological work at the site will be required as a means of mitigating the potential archaeological resource. The necessity for any further archaeological work will be decided by the Local Planning Authority. Early consultation should be undertaken to identify the scope and extent of any such work.

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7.2 Online Sources

The **British Geological Survey** website: www.bgs.ac.uk. This was consulted for information regarding the geology of the study area.

The Heritage Gateway website, managed by English Heritage in partnership with ALGAO and IHBC, provides access to local and national records on the historic environment: <http://www.heritagegateway.org.uk/gateway/>

The MAGIC website: www.magic.gov.uk/website/magic/. MAGIC is a partnership project involving six government organisations including Historic England and Natural England. The website is essentially an interactive map collecting information on key environmental schemes and designations.

The Natural England website: www.naturalengland.org.uk/publications. Consulted for information about 'National Character Areas'.

The PastScape website, the online records held in Historic England's national historic environment database: www.pastscape.org.uk/.

8. ACKNOWLEDGEMENTS AND CREDITS

Acknowledgements

Pre-Construct Archaeology would like to thank R & K Wood Planning (on behalf of Colin Ford) for commissioning the archaeological investigations herein described. PCA would also like to thank Jennifer Morrison, Tyne and Wear Archaeology Officer, for her assistance during the project.

PCA Credits

Fieldwork: Danni Louise-Floyd (Supervisor), Andy Abson, James Hopper, Derek Moscrop and Rob Sinclair

Report: Danni Louise-Floyd and Aaron Goode

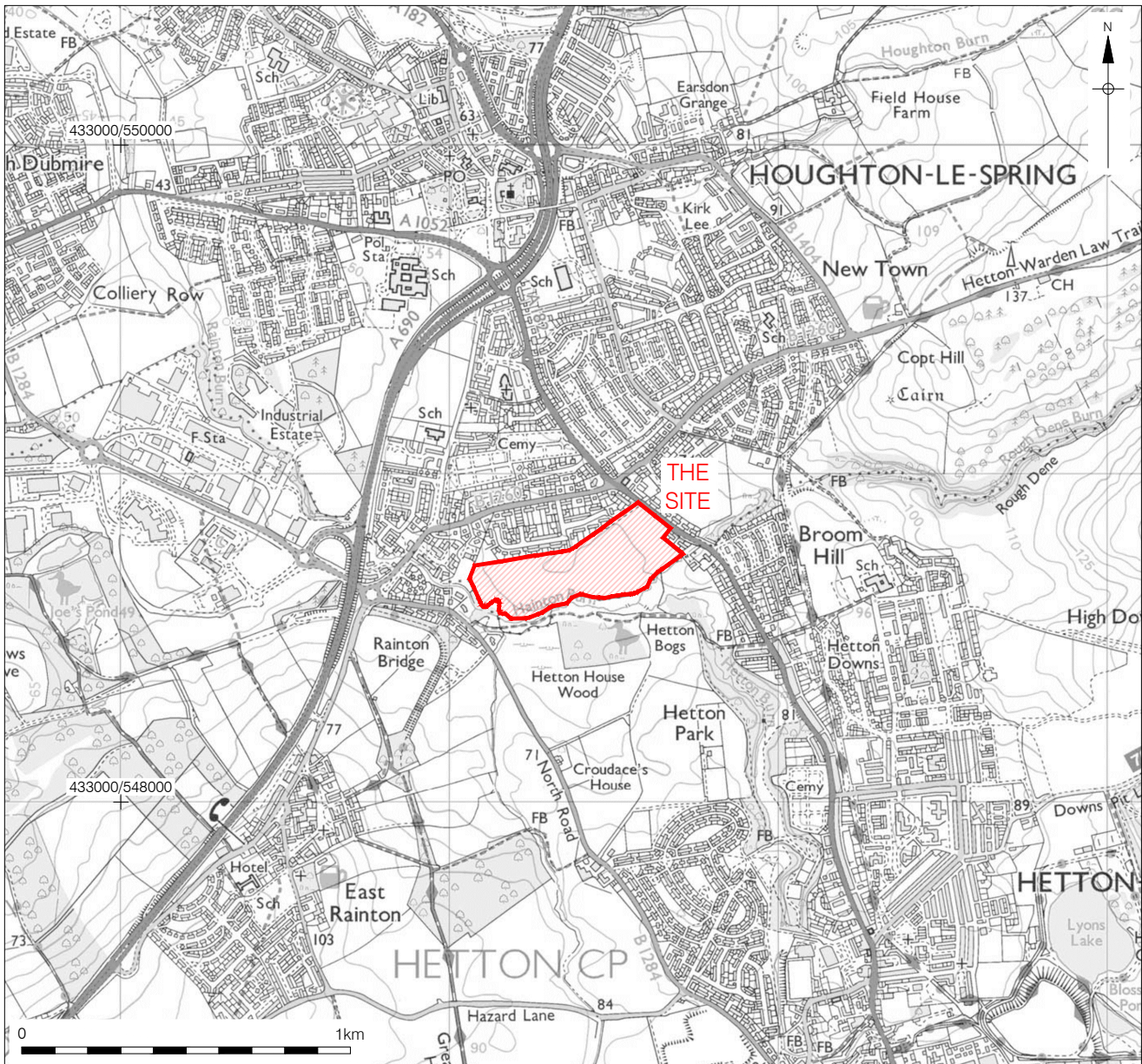
Project Manager: Aaron Goode

CAD: Diana Valk

Other Credits

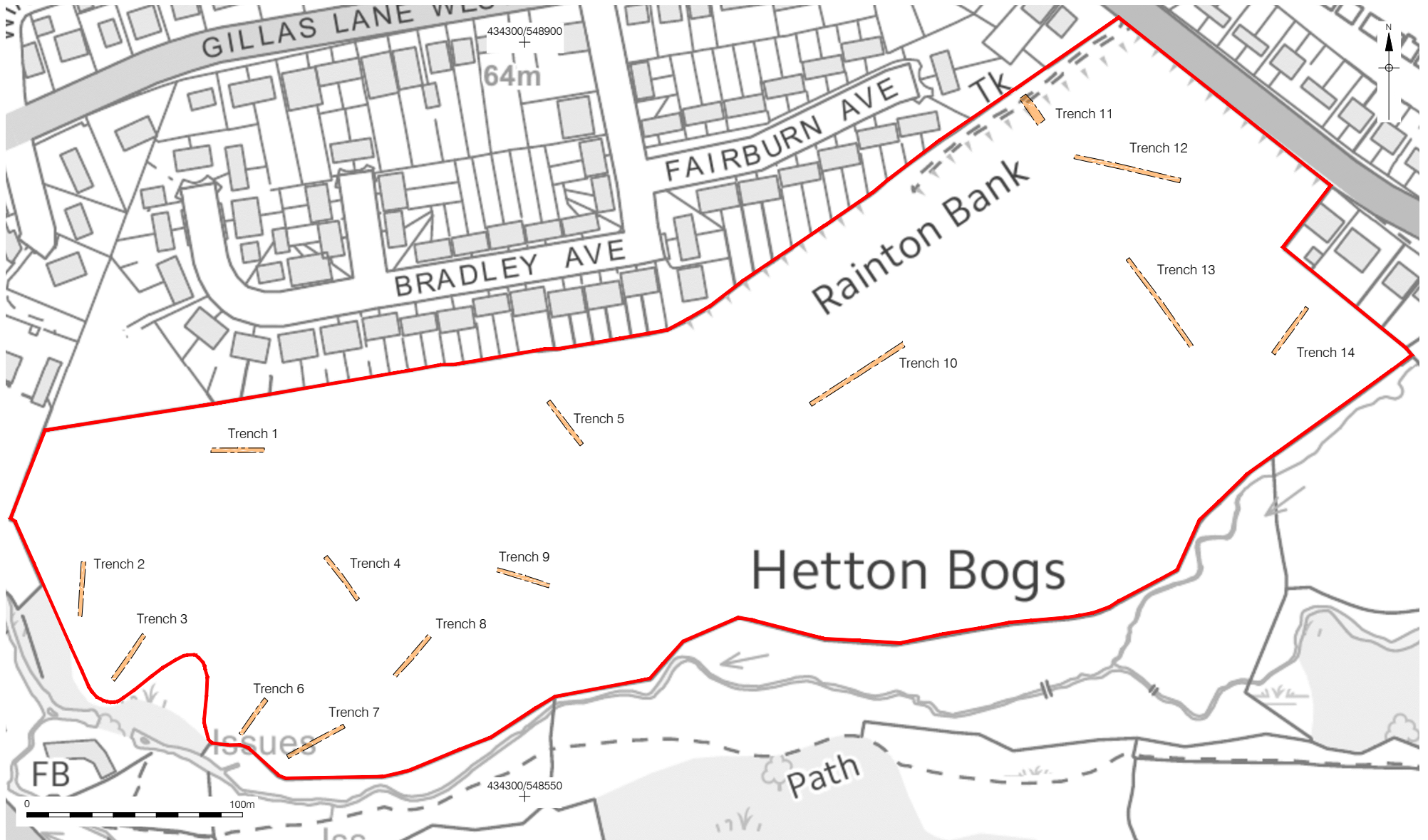
Paleoenvironmental remains: Lynne F. Gardiner (Wardell Armstrong LLP)

APPENDIX 1: FIGURES



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Figure 1
 Site Location
 1:2,000,000; 250,000 & 20,000 at A4



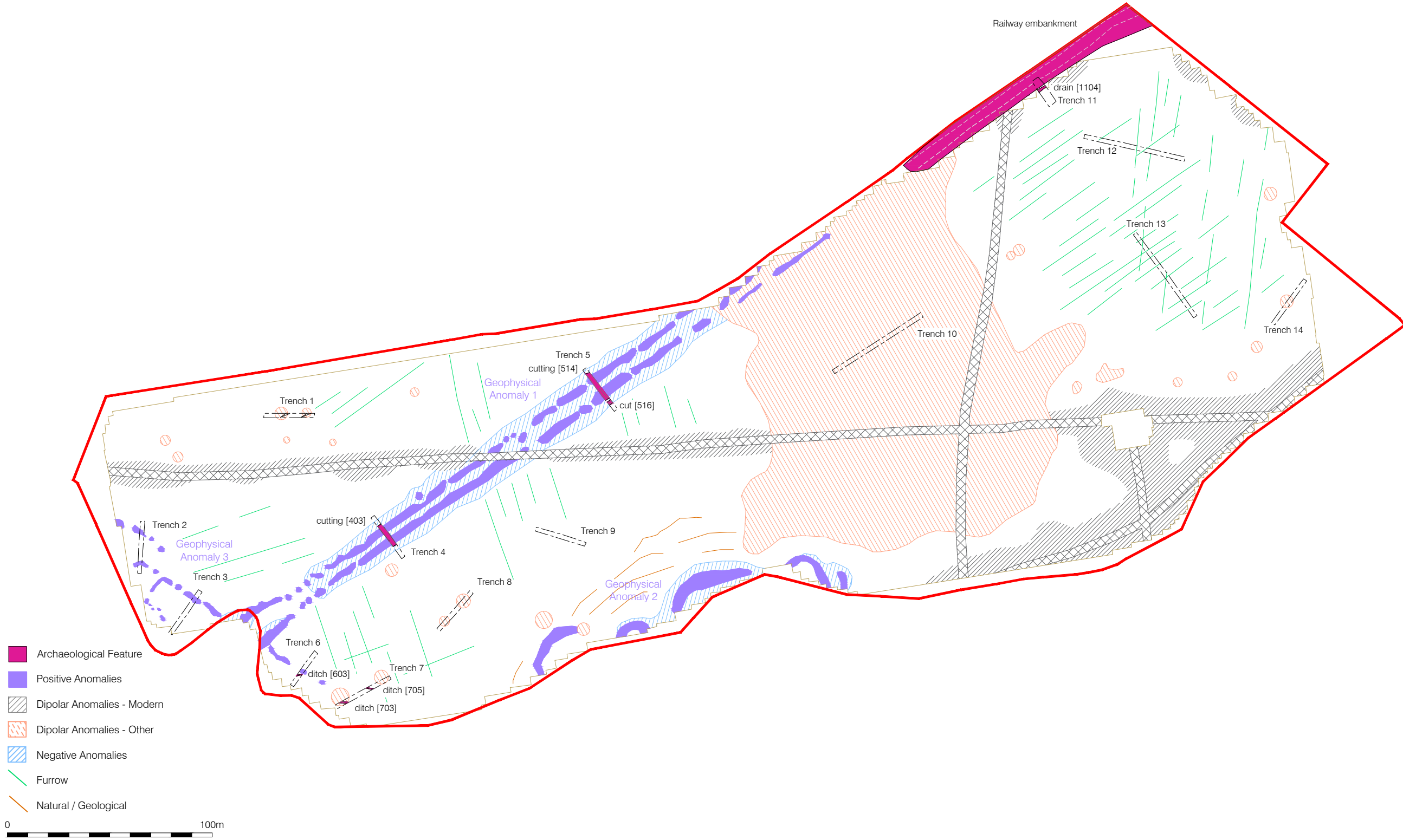
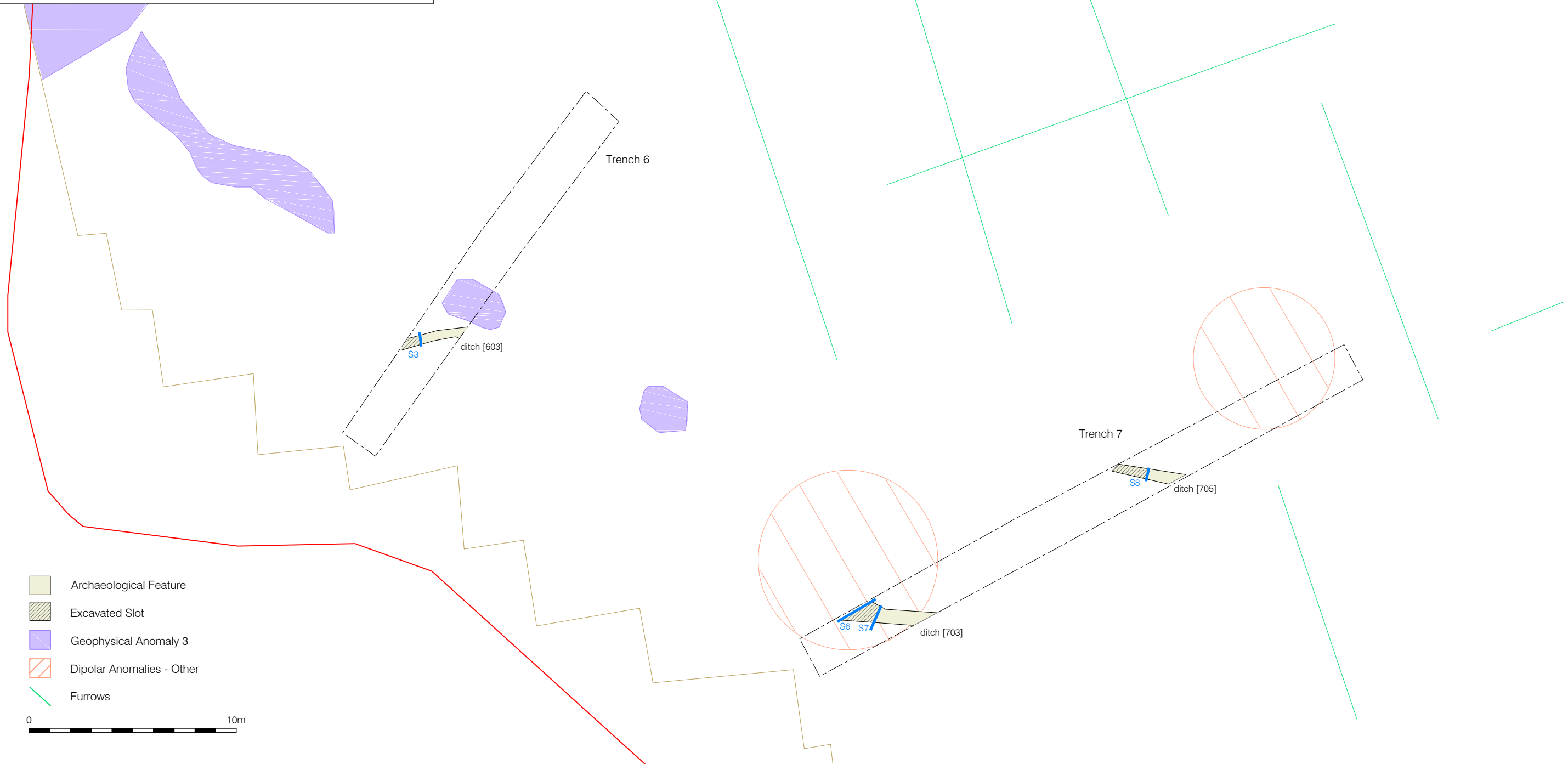
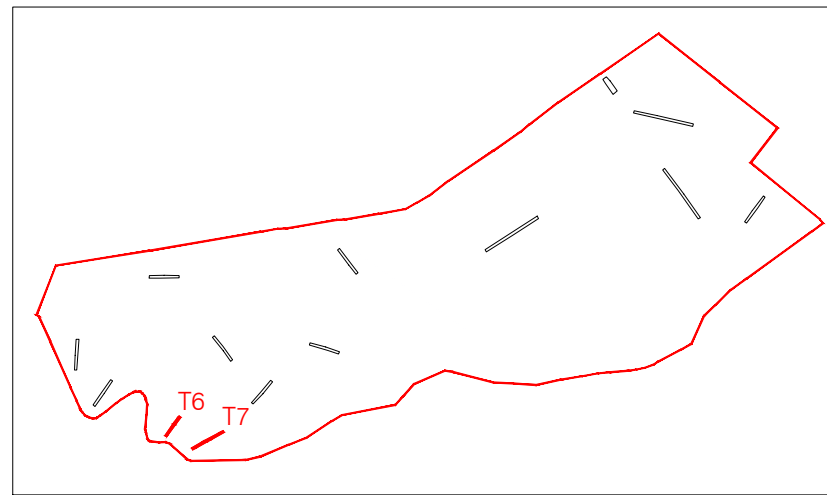


Figure 3
Trench Location Map overlain on Geophysical Survey
1:2,000 at A3



- Archaeological Feature
- Excavated Slot
- Geophysical Anomaly 3
- Dipolar Anomalies - Other
- Furrows



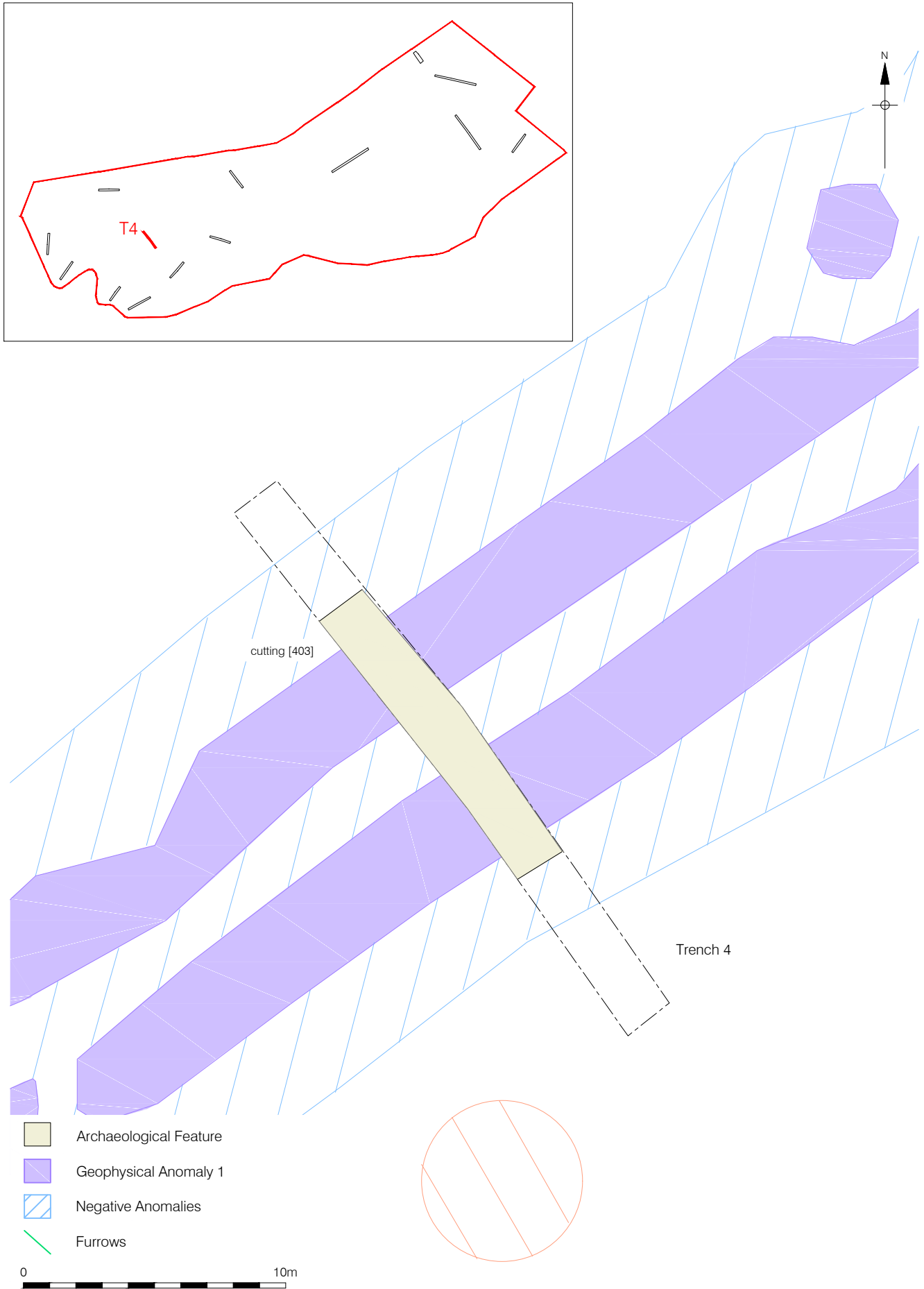


Figure 5
 Trench 4 Location Plan Showing Features
 and Geophysical Survey
 1:200 at A4

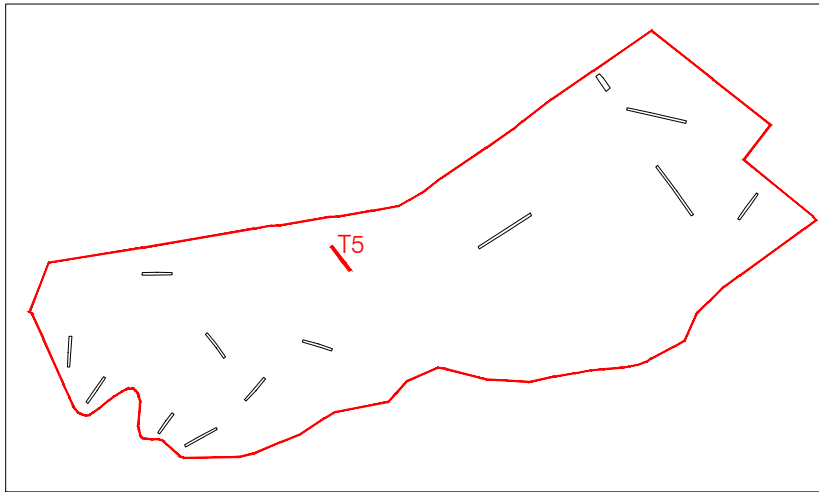


Figure 6
Trench 5 Location Plan Showing Features
and Geophysical Survey
1:200 at A4

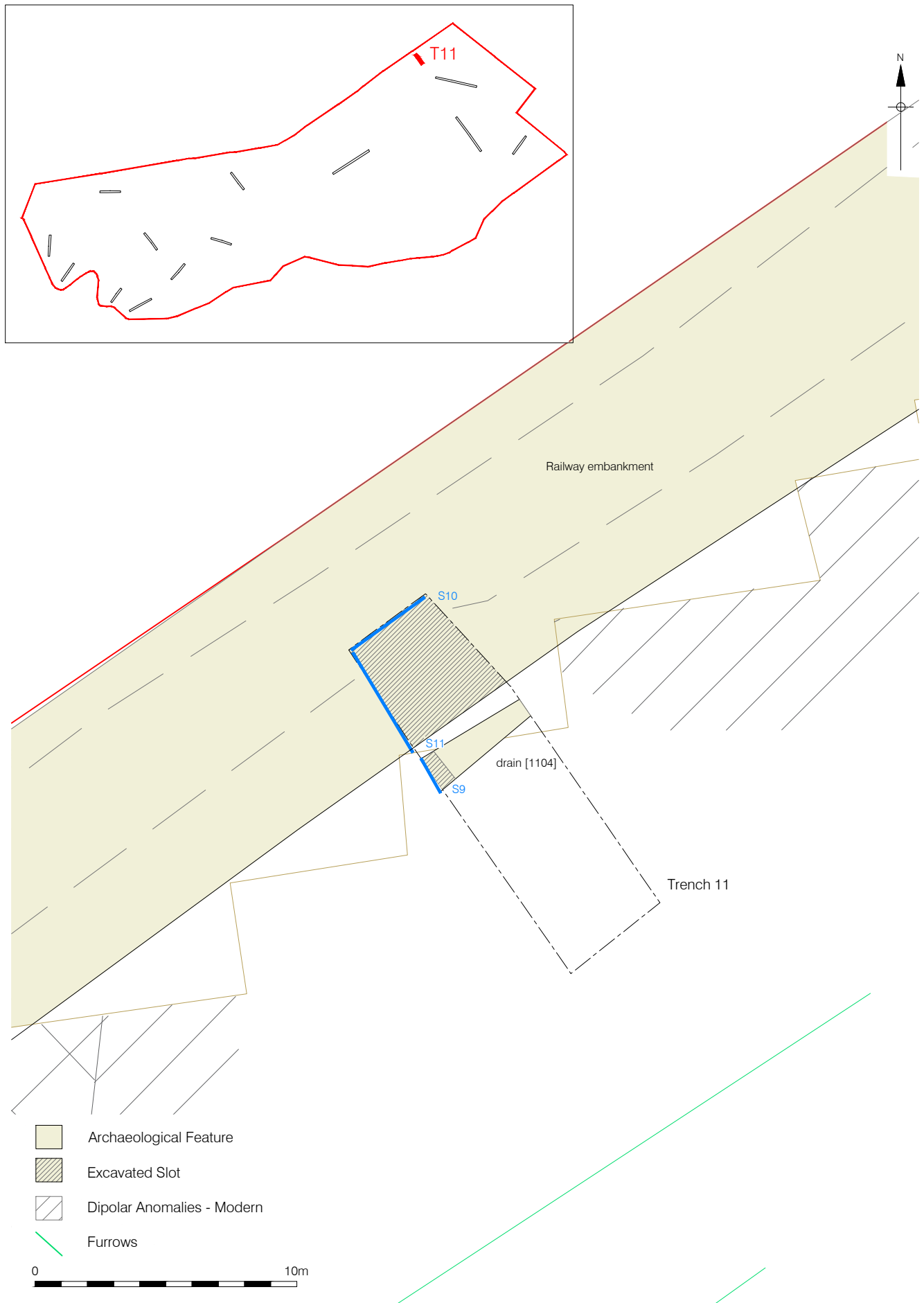
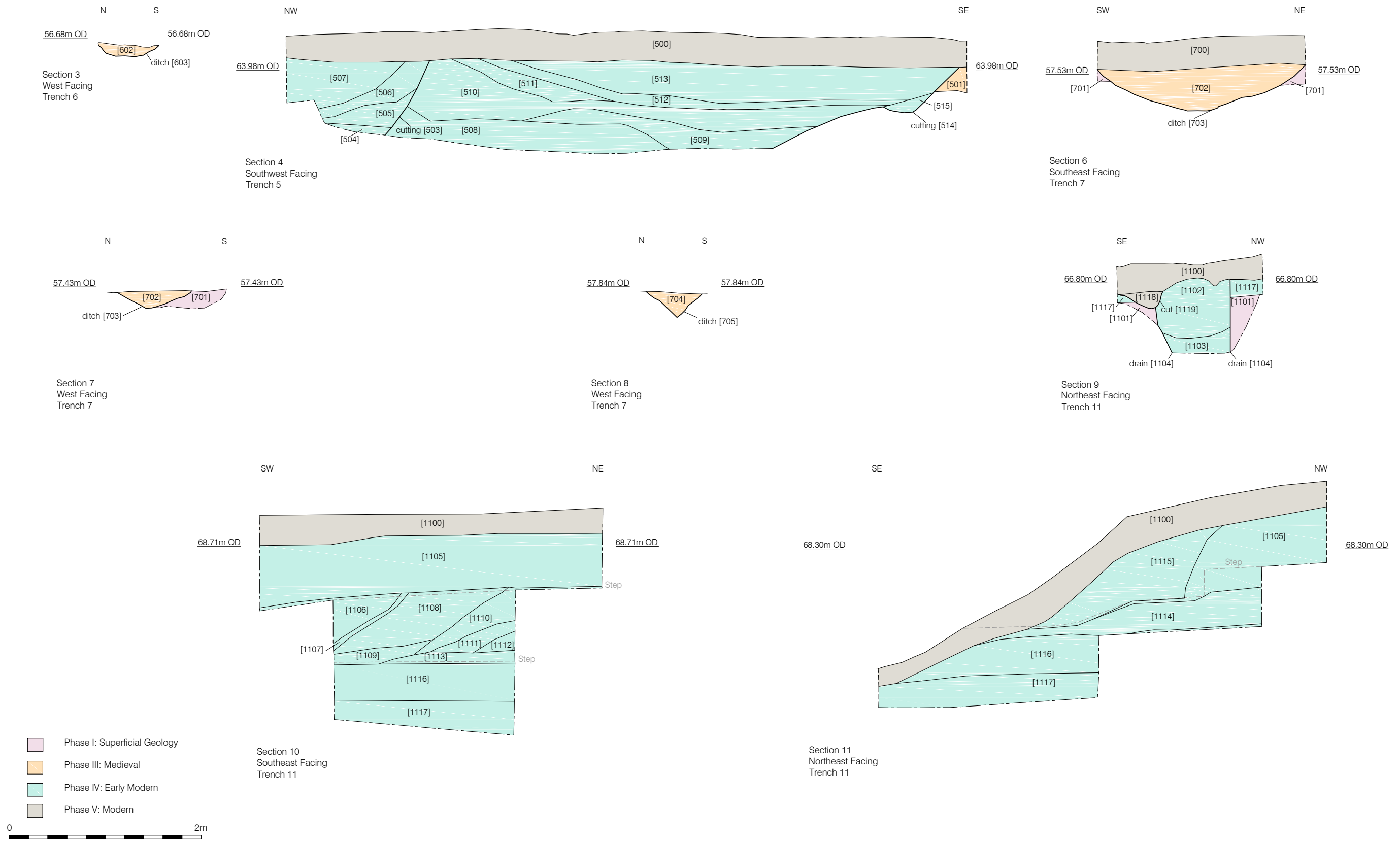


Figure 7
 Trench 11 Location Plan Showing Features
 and Geophysical Survey
 1:200 at A4

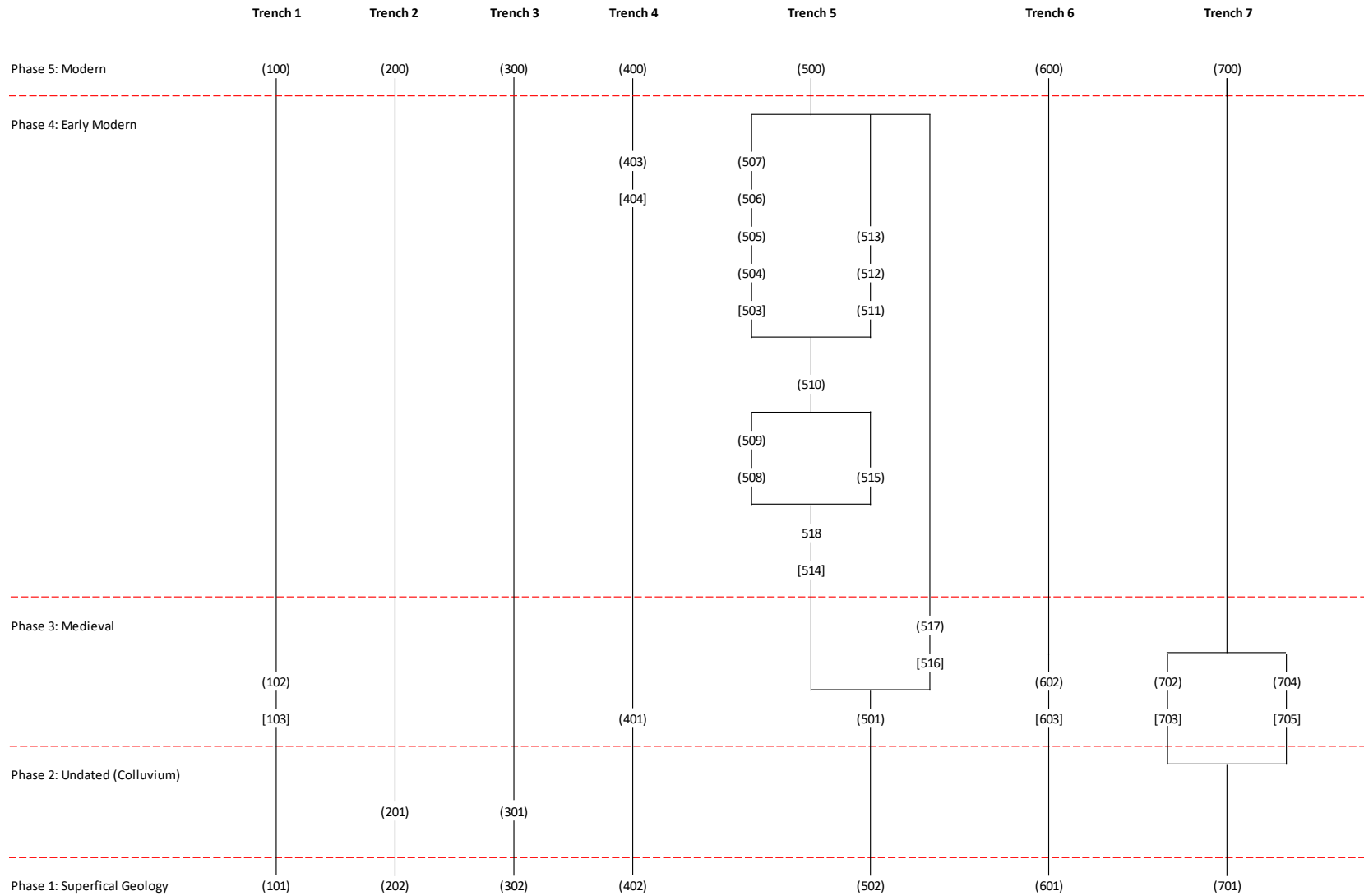


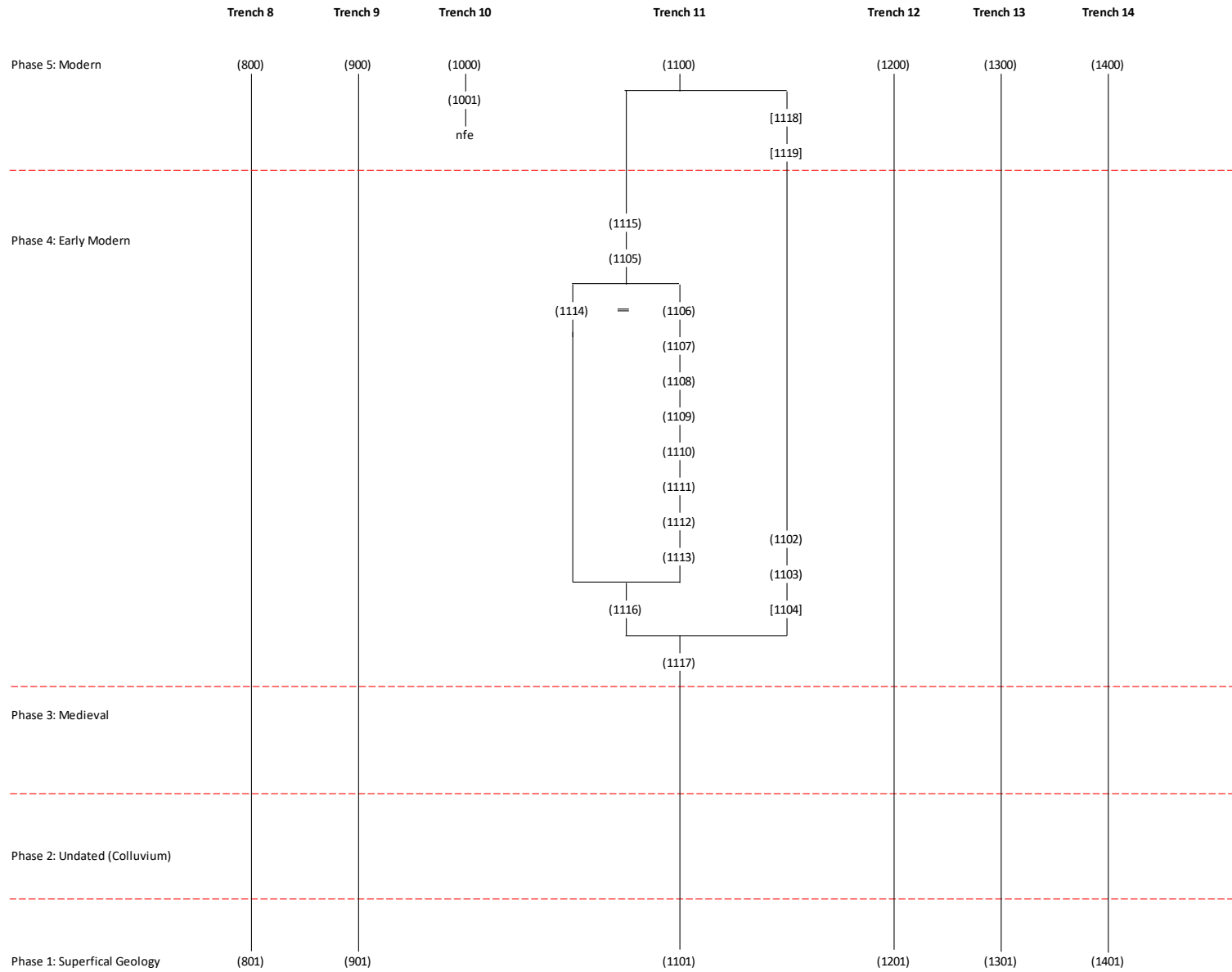
APPENDIX 2: CONTEXT INDEX

Context	Phase	Type 1	Type 2	Fill of	Interpretation
Trench 1					
100		Deposit	Layer	-	Topsoil
101		Deposit	Natural	-	Natural
102		Cut	Linear	-	Furrow
103		Deposit	Fill	[102]	Fill of furrow [102]
Trench 2					
200		Deposit	Layer	-	Topsoil
201		Deposit	Layer	-	Colluvium
202		Deposit	Natural	-	Natural
Trench 3					
300		Deposit	Layer	-	Topsoil
301		Deposit	Layer	-	Colluvium
302		Deposit	Natural	-	Natural
Trench 4					
400		Deposit	Layer	-	Topsoil
401		Deposit	Layer	-	Subsoil
402		Deposit	Natural	-	Natural
403		Cut	Linear	-	Embankment cutting
404		Deposit	Fill	[403]	Fill of [403]
Trench 5					
500		Deposit	Layer	-	Topsoil
501		Deposit	Layer	-	Subsoil
502		Deposit	Natural	-	Natural
503		Cut	Linear	-	Embankment cutting
504		Deposit	Fill	[503]	Fill of [503]
505		Deposit	Fill	[503]	Fill of [503]
506		Deposit	Fill	[503]	Fill of [503]
507		Deposit	Fill	[503]	Fill of [503]
508		Deposit	Fill	[514]	Fill of [514]
509		Deposit	Fill	[514]	Fill of [514]
510		Deposit	Fill	[514]	Fill of [514]
511		Deposit	Fill	[514]	Fill of [514]
512		Deposit	Fill	[514]	Fill of [514]
513		Deposit	Fill	[514]	Fill of [514]
514		Cut	Linear	-	Embankment cutting
515		Deposit	Fill	[514]	Fill of [514]
516		Cut	Linear	-	Furrow
517		Deposit	Fill	[516]	Fill of furrow [516]
518		Deposit	Fill	[514]	Fill of [514]
Trench 6					
600		Deposit	Layer	-	Topsoil
601		Deposit	Layer	-	Natural
602		Deposit	Fill	[603]	Fill of ditch [603]
603		Cut	Linear	-	Ditch [603]

Context	Phase	Type 1	Type 2	Fill of	Interpretation
Trench 7					
700		Deposit	Layer	-	Topsoil
701		Deposit	Natural	-	Natural
702		Deposit	Fill	[703]	Fill of ditch [703]
703		Cut	Linear	-	Ditch [703]
704		Deposit	Fill	[705]	Fill of ditch [705]
705		Cut	Linear	-	Ditch [705]
Trench 8					
800		Deposit	Layer	-	Topsoil
801		Deposit	Natural	-	Natural
Trench 9					
900		Deposit	Layer	-	Topsoil
901		Deposit	Natural	-	Natural
Trench 10					
1000		Deposit	Layer	-	Topsoil
1001		Deposit	Layer	-	Landfill deposit
Trench 11					
1100		Deposit	Layer	-	Topsoil
1101		Deposit	Natural	-	Natural
1102		Deposit	Fill	[1104]	Upper fill of drainage [1104]
1103		Deposit	Fill	[1104]	Lower fill of drainage [1104]
1104		Cut	Linear	-	Drain [1104]
1105		Deposit	Layer	-	Embankment formation layer
1106		Deposit	Layer	-	Embankment formation layer, same as [1114]
1107		Deposit	Layer	-	Embankment formation layer
1108		Deposit	Layer	-	Embankment formation layer
1109		Deposit	Layer	-	Embankment formation layer
1110		Deposit	Layer	-	Embankment formation layer
1111		Deposit	Layer	-	Embankment formation layer
1112		Deposit	Layer	-	Embankment formation layer
1113		Deposit	Layer	-	Embankment formation layer
1114		Deposit	Layer	-	Embankment formation layer, same as [1106]
1115		Deposit	Layer	-	Embankment formation layer
1116		Deposit	Layer	-	Embankment formation layer
1117		Deposit	Layer	-	Embankment formation layer
1118		Deposit	Fill	[1119]	Fill of feature [1119]
1119		Cut	Linear	-	Feature [1119]
Trench 12					
1200		Deposit	Layer	-	Topsoil
1201		Deposit	Natural	-	Natural
Trench 13					
1300		Deposit	Layer	-	Topsoil
1301		Deposit	Natural	-	Natural
Trench 14					
1400		Deposit	Layer	-	Topsoil
1401		Deposit	Natural	-	Natural

APPENDIX 3: STRATIGRAPHIC MATRIX





APPENDIX 4: PHOTOGRAPHIC PLATES

Plate 1: Trench 6, ditch [603], view east, scale: 1m



Plate 2: Trench 7 ditch [703], view east, scale 1m:



Plate 3: Trench 7, ditch [705], view east, scale: 1m



Plate 4: Trench 4, cutting [403]: view southeast, scale 1m



Plate 5: Trench 5, cuttings [503] & [514], view southeast, scale 2m



Plate 6: Trench 11, Railway Embankment: view northeast, scale 1m



APPENDIX 5: ENVIRONMENTAL ASSESSMENT REPORT

DATE ISSUED: February 2019
JOB NUMBER: CL12251
SITE CODE: HRH19
REPORT VERSION NUMBER: 001

Pre-Construct Archaeology Ltd. (North)

Hetton Road, Houghton-Le-Spring, Tyne and Wear

Environmental Sample Assessment Report

PREPARED BY:

Lynne F. Gardiner Senior Environmental
Archaeologist



REVIEWED BY:

Freddie Sisson Environmental Supervisor



APPROVED BY:

Chloe Brownlee-Chapman Regional Manager



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WASTE RESOURCE MANAGEMENT

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6 References.....7

SUMMARY

Wardell Armstrong LLP (WA) was commissioned by Pre-Construct Archaeology Ltd. (North) to undertake assessment of two bulk environmental samples from a site on land adjacent to Hetton Road, Houghton-Le-Spring, Tyne and Wear.

The samples were processed following Wardell Armstrong methodology. The sandy clay samples did not yield artefactual material; geological material (coal and magnetised matter) was collected. Charcoal and charred plant remains were observed within the flots. The small quantities of charred plant remains from both samples and charcoal from <1> do not offer any potential for further palaeoenvironmental study or suitability for radiocarbon submission. However, the charcoal from <2> is likely to be suitable for radiocarbon dating.

ACKNOWLEDGEMENTS

Wardell Armstrong LLP (WA) wishes to thank PCA Ltd. (North) for commissioning the work, and for all their assistance throughout.

The processing and sorting of the samples and flots were undertaken by Freddie Sisson. The assessment was undertaken by Lynne F. Gardiner.

1 INTRODUCTION

- 1.1.1 Two bulk environmental samples were taken from ditch fills during an archaeological evaluation undertaken by PCA Ltd. (North) on land adjacent to Hetton Road, Houghton-Le-Spring, Tyne and Wear. These were presented to WA (Wardell Armstrong LLP) for assessment.
- 1.1.2 The samples' sediments weighed a combined total of 109kg (75l).
- 1.1.3 This report presents the results of the assessment of the environmental samples, palaeobotanical and charcoal remains in accordance with Campbell et al. (2011) and English Heritage (2008).
- 1.1.4 The environmental assessment was undertaken by Lynne F. Gardiner.

2 METHODOLOGY

- 2.1.1 The bulk environmental samples were processed at WA. The colour, lithology, weight and volume of each sample was recorded using standard Wardell Armstrong pro forma recording sheets. cf. Table 1. The samples were processed with 500-micron retention and flotation meshes using the Siraf method of flotation (Williams 1973). Once dried, the residues from the retention mesh were sieved to 4mm and the artefacts and ecofacts removed from the larger fraction and retained. The smaller fraction was scanned with a magnet for microslags such as hammerscales. This fraction was then examined for smaller artefacts such as beads.
- 2.1.2 The resulting flot from the wash-over, plant macrofossils and charcoal were retained and scanned using a stereo microscope (up to x45 magnification). Any non-palaeobotanical finds were noted on the flot pro forma. Details of the flots are presented in Table 1.
- 2.1.3 The plant remains were identified to species as far as possible, using Cappers et al (2012), Cappers and Bekker (2013), Cappers and Neef (2012), Hather (2000), Jacomet (2006) and Schoch et al. (2004) and the author's reference collection. Nomenclature for plant taxa followed Stace (2010) and cereals followed Cappers and Neef (2012).

3 RESULTS

3.1.1 *Trench 7, fill (702) <1> of ditch [703]*

The sample from (702) was a slightly acidic sandy clay sediment. Coal and naturally occurring magnetised matter was recovered from sorting the retent residues. The

flot yielded a very small amount of charcoal (0.1g) and charred plant remains; likely a single grass (cf. Poaceae) and a probable wheat (cf. *Triticum* sp.) caryopsis.

3.1.2 Trench 7, fill (704) <2> of ditch [705]

The sediment matrix was like the previous sample and returned a slightly acidic pH reading of 5.74. The yield of non-ecofactual material was as <1>, with coal and magnetised matter. There was a greater weight of charcoal (0.9g). Plant remains were present with uncharred *Brassica* sp. and a single charred barley (*Hordeum* sp.) caryopsis.

3.1.3 The magnetised matter in both samples did not present any microsclags.

3.1.4 Both samples' flots contained small amounts of very fine rootlets and earthworm capsules.

4 DISCUSSION

4.1 The paucity of any meaningful ecofactual assemblages prohibited any palaeoenvironmental discussion.

4.1.1 The slightly acidic pH levels presented from both samples were not suitable for bone preservation (Campbell et al 2011, 5) and may be an indication of why no bone was present.

4.1.2 The slightly rooted flots and earthworm capsules presented slight evidence for bioturbation and, as such, the presence of the charred plant remains may be through this.

5 STATEMENT OF POTENTIAL AND RECOMMENDATIONS

5.1 Charred plant remains were observed in both samples, but the quantities limit any potential for AMS radiocarbon submission. The charcoal from <1> would also not be suitable, however, the charcoal fragments from <2> would be. These would need to be identified to species and a shorter lived one, such as hazel (*Corylus avellana*), selected for submission.

5.1.1 These samples did not produce anything suitable for further palaeoenvironmental analysis. The coal, magnetic matter and plant remains (both uncharred and charred) may be discarded. The charcoal should be retained until a radiocarbon date has been achieved. Once this has been done the remaining fragments may then be discarded.

5.1.2 The pH levels in the soils would allow for the recovery of charred plant material and charcoal, therefore, if further archaeological interventions occur within the area then sampling for the potential recovery of these ecofacts should be considered.

6 REFERENCES

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Table 1: sample data

C	<>	TQ	pH	CP	TP	MP	PW	PV	CS	TS	Components (sorting)	SW	SV	Findings	Flot w+v	Flot yield
702	1	4	5.07	dark brown	friable	sandy clay	56	37	pale yellowish brown	loose	stone>1cm 20%: stone<1cm 25%: sand 55%	5481	3200	Coal (3g), Magnetic matter (6g)	125.1g/ 100ml	Charcoal: 0.1g Plant remains: CH: cf. <i>Poaceae</i> sp. (n=1), cf. <i>Triticum</i> sp. (n=1): UCH <i>Brassica</i> sp. (n=4), <i>Chenopodium</i> sp. (n=3)
704	2	4	5.74	dark brown	plastic	sandy clay	53	38	mid reddish brown	loose	stone>1cm 20%: stone<1cm 20%: sand 60%	3293	2400	Coal (1g), Magnetic matter (5g)	152.8g/ 150ml	Charcoal 0.9g Plant remains: CH: <i>Hordeum</i> sp. (n=1 frag.), UCH: <i>Brassica</i> sp. (n=3)

Key: C=context, <>= sample number, TQ= number of tubs in sample, CP=colour of pre-processed sediment, TP= texture of pre-processed sediment, MP= matrix of pre-processed sediment, PW= weight (kg) of sample sediment, PV= volume (l) of sample sediment, CS= colour of retent residues, TS= texture of retent residues, SW= weight (g) of retent residues, SV= volume (ml) of retent residues, Flot w+v- flot weight (g) and volume (ml), CH= charred, UCH= uncharred

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