LAND TO THE EAST OF WINDERMERE GARDENS, CROOK, COUNTY DURHAM

ARCHAEOLOGICAL EVALUATION REPORT

FEBRUARY 2020

PRE-CONSTRUCT ARCHAEOLOGY

Land to the east of Windermere Gardens, Crook, County Durham

Site Code: WGC20

Commissioning Client:

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***On behalf of*:**

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DOCUMENT VERIFICATION

LAND TO THE EAST OF WINDERMERE GARDENS, CROOK, COUNTY DURHAM

EVALUATION REPORT

Pre-Construct Archaeology Limited Quality Control	
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CONTENTS

1. NON-TECHNICAL SUMMARY

1.1 Pre-Construct Archaeology were commissioned by Padgett White Architects Ltd on behalf of Mr Andrew Wilson to undertake an archaeological evaluation of land to the east of Windermere Gardens, Crook, County Durham, centred at National Grid Reference NZ 1677 3549. This work was undertaken in association with a pre-application (PRE28/19/01345) for a residential development comprising 122 dwellings. The overall proposed development comprised *c.* 3.36 hectares of a single pasture field located on the south-eastern fringe of the market town of Crook

1.2 An outline pre-application advice report by Durham County Council advised that a geophysical survey and trial trenching evaluation should be undertaken prior to determination of the planning application. The aim was to identify if heritage assets were present, and the significance of any such assets. Archaeological features of national significance may warrant preservation in situ, features of regional or local significance may require further mitigation prior to development. The archaeological work involved a scheme of geophysical survey undertaken in December 2019 followed by archaeological trial trenching evaluation in January 2020.

1.3 The County Durham Historic Environment Record was consulted, and the results presented with the geophysical survey report. A 1km radius from the centre of the proposed development was examined. No HER entries are located within the development site, two entries are located immediately to the south-west and east of the site, comprising findspots of prehistoric flint artefact scatters (H1068 and H1772 respectively).

1.4 The geophysical survey identified no anomalies suggestive of a clear archaeological origin. Several anomalies of uncertain origin were identified that may relate to archaeological assets. A fragmentary linear anomaly running NW/SE parallel to the modern field boundary may represent an earlier boundary or the route of a track parallel to the boundary. A series of variously aligned faint positive linear anomalies were identified within the southern part of the proposed development however these do not form a clear shape that would be indicative of an archaeological site.

1.5 The trial trenching evaluation, undertaken according to a Written Scheme of Investigation approved by Durham County Council Archaeology Section, comprised a *c.* 4% sample of development site. Fifteen 50m x 1.8m trenches were located across the proposed development site, sited to investigate potential archaeological assets identified by geophysical survey and areas where no geophysical anomalies were identified.

1.6 Three phases of activity were encountered: Phase 1: superficial geology; Phase 2: late 19th/early 20th-century midden deposits and waste pits and Phase 3: topsoil. The geophysical anomalies identified in the early phase of works were all related to either variations in the superficial geology or post-medieval/early modern waste deposits and pits. No features or deposits of archaeological significance were observed during the evaluation.

2. INTRODUCTION

2.1 Project Background

2.1.1 This report details the results of an archaeological evaluation undertaken on land off Windermere Gardens, Crook, County Durham in January 2020 in association with a pre-application (PRE28/19/01345) for a residential development. The overall proposed development comprises *c*. 3.36 hectares of a single pasture field located on the south-eastern fringe of the market town of Crook (central NGR NZ 1677 3549) (Figures 1 and 2). The archaeological investigation was commissioned by Padgett White Architects Ltd on behalf of Mr Andrew Wilson and was undertaken by Pre-Construct Archaeology Limited (PCA).

2.1.2 A geophysical survey of the site undertaken in December 2019 (Appendix 5) identified no anomalies which were suggestive of a clear archaeological origin, although several anomalies were of uncertain origin and may have been related to archaeological assets.

2.1.3 The scope of works for the archaeological evaluation was set out in the Written Scheme of Investigation (WSI) (PCA 2020) which was approved by Durham County Council Archaeology Section (DCCAS). The aim of the evaluation was to clarify the presence, nature, date, extent and significance of any archaeological remains that might be present in the areas of proposed impact. Fifteen trenches (Trenches 1 to 15) were mechanically excavated during this phase of archaeological work.

2.1.4 The Online Access to the Index of Archaeological Investigation (OASIS) reference number of the project is preconst1-382469.

2.2 Site Location and Description

2.2.1 The proposed development is located *c.* 1km to the south-east of the centre of Crook and to the south of Blencathra Crescent on the Watergate Housing Estate (central NGR NZ 1677 3459) (Figure 2). The overall development comprises part of a larger pasture field that continues to the east beyond the proposed development where its eastern boundary is delimited by a steep slope. The proposed development site is bounded by residential properties to the west and north; by pasture fields to the south and to the east by an area of woodland and the continuation of the steeply sloping pasture field, beyond which lies an arable field and Rumbly Hill Lane.

2.3 Geology and Topography

2.3.1 The bedrock geology of the area is comprised of Mudstone, Siltstone and Sandstone of the Pennine Lower Coal Measures Formation; sedimentary bedrock formed approximately 318 to 319 million years ago in the Carboniferous Period. The superficial geology within the proposed development area is comprised of Devensian-Diamicton till formed up to two

million years ago in the Quaternary Period when the local environment was dominated by ice age conditions (British Geological Survey website).

2.3.2 The development site lies to the east of the Crook Beck, a tributary of the River Wear which lies *c.* 3.5km to the south. The eastern side of the site is located on the steeply sloping valley side of the Crook Beck, with ground level falling from a maximum height of *c.* 154.99m AOD in the east to *c*. 136.44m AOD in the west. At the time of the investigations the lower lying western part of the site was waterlogged and marshy.

2.4 Planning Background

2.4.1 An outline pre-application advice report by Durham County Council associated with a proposed residential development of 122 dwellings advised that a geophysical survey and trial trenching evaluation should be undertaken prior to determination of the planning application.

2.4.2 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) (Department for Communities and Local Government 2012 (revised 2019)). The NPPF came into effect in 2012, replacing *Planning Policy Statement 5: 'Planning for the Historic Environment'* (PPS5) (DCLG 2010), to provide updated guidance for LPAs, property owners, developers and others on the conservation and investigation of the historic environment. Heritage assets – those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest – remain a key concept of the NPPF, retained from PPS5. Despite the deletion of PPS5, the *PPS5: Planning for the Historic Environment – Practice Guide* (English Heritage, DCMS and DCLG (revised) 2012), remains a valid, UK Government-endorsed, document.

2.4.3 Chapter 16 of the NPPF 'Conserving and enhancing the historic environment' describes, in paragraph 185, how LPAs should '…set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment' and details, in paragraph 189, that '*In determining applications, LPAs 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] HER should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed included or has the potential to include heritage assets with archaeological interest, LPAs should require developers to submit an appropriate desk-based assessment and where necessary [the results of] a field evaluation'*.

2.4.4 DCCAS has responsibility for archaeological development control in relation to the historic environment. A WSI for the trial trenching evaluation (PCA 2020) was approved by DCCAS prior to works commencing.

2.5 Archaeological and Historical Background

2.5.1 Information in this section is largely extracted from the historical background in the geophysical survey report (Appendix 5) and the research and writing of those responsible is acknowledged. Sites within the Durham Historic Environment Record are followed by the HER number.

2.5.2 The town of Crook lies 10 miles to the south-west of Durham, at the lower end of Weardale. As with the majority of the North-East of England there is increasing evidence and awareness that the region was the focus of activity throughout the prehistoric period. The earliest evidence for settlement in this area consists of the discovery of scatters of prehistoric flint artefacts. A number of flint artefacts including an arrowhead were located immediately south-west of the site (H1068). There is a further findspot of flint immediately east of the site (H1772). Although no definite prehistoric settlements have been identified within 1km of the site, it is possible that two cropmarks of uncertain date (H2741 and H2743) identified on aerial photographs may relate to prehistoric settlement activity. Cropmark H2743 lies 400m south of the site and cropmark H2741 is 600m to the north.

2.5.3 Although there are no known Roman sites in the immediate area, a 2nd-century Roman coin (H1805) was found 700m west of the site.

2.5.4 There are no known Anglo-Saxon period sites or finds within 1km of the site. However, there may have been a settlement on the site of the village before the Norman Conquest as the name Crook comes from the Old Norse word '*krokr*', which means '*a bend*'. The bend may refer to either a bend on the River Wear or the Crook Beck, which runs through the town.

2.5.5 By the medieval period, Crook had developed into a small agricultural settlement. There may have been another village at nearby Woody Field, and also possibly at Billy Row. However, these were all little more than hamlets, and Crook was part of the parish of Brancepeth. It is possible, though, that there was a holy well (H1773), though the evidence for this is not clear. There are fragmentary remains of two sides of a possible medieval moat (H1807) 600m north of the site.

2.5.6 The village continued as an agricultural settlement until the early 1800s, when the population was just under 200. At this time there were over fifteen farms, a mill and The Horse Shoe Inn (H37451). The mill (H47613), a pond (H47618) and its race (H47620) lay at the main focus of the village 900m north of the site. Rumby Hill Farm (H48624) lay 200m south of the site. It is likely that the area of the site formed agricultural land throughout the medieval and post-medieval periods (H61241).

2.5.7 It was with the growth of the coal industry that Crook expanded, particularly once the Stockton to Darlington railway was opened in 1843. By 1854 the population had risen to over 3,000. More coal mines were opened in the area in the 1850s and 1860s. At one time there were a total of 26 mines in and around the are of Crook. Many other industries grew up around the pits, although like coke production, they all revolved around coal. These

provided many jobs and by 1890 the population was over 12,000. Churches, schools, housing, shops and pubs were constructed to provide for the developing community.

2.5.8 The recent development of the immediate area can be traced through the sequence of Ordnance Survey maps. The area of the site itself is shown as rural open fields until the 1970s with the construction of the Watergate Housing Estate immediately to the west. The first edition Ordnance Survey map of 1861 depicts the location of an *'Old Shaft'* within the western extent of the proposed development; this closely corresponds with a large depression that probably represents the disused shaft. Also depicted on the 1861 first edition map is a quarry just to the north-east of the site, which was out of use by the time of the 1898 second edition map. The 1921 Ordnance Survey map shows Rumby Hill Colliery and a connecting tramway to the south-west of the site. The Ordnance Survey of 1897 depicts an Air Shaft along the southern boundary. This was perhaps the disturbance noted on the geophysical survey to the south-east of Trench 11 and is represented on site by a soil mound. The shaft appears to have been backfilled by the time of the 1971 Ordnance Survey map.

3. PROJECT AIMS AND RESEARCH OBJECTIVES

3.1 Project Aims

3.1.1 The primary aim of the programme of works was to determine the absence/presence of archaeological remains. The archaeological work will identify, investigate and record any archaeological remains observed during the evaluation. The results will be used to inform decisions regarding further archaeological mitigation measures that may be required at the site prior to determination and commencement of development.

3.1.2 The objective of trial trench evaluation as defined by the Chartered Institute for Archaeologists (CIfA) is to 'determine, as far as is reasonably possible, the nature of the archaeological resource within a specified area using appropriate methods and practices' (CIfA 2014a).

3.2 Research Objectives

3.2.1 Archaeological work provides potential opportunities to address key research objectives as set out in *shared Visions: The North East Regional Research Framework for the Historic Environment (NERRF) (Petts & Gerrard 2006).* The NERRF highlights the importance of research as a vital element of development-led archaeological work. It sets out key research priorities for all periods of the past so that all elements of commercial archaeological work can be related to wider regional and national priorities for the study of archaeology and the historic environment.

3.2.2 The site is considered to have potential to provide a contribution to several '*Key Research Themes*' in the NERRF '*Research Agenda and Strategy*' for the Prehistoric periods:

- NBi. Early settlement in an upland/lowland context;
- NBii. Settlement chronology;
- NBv. Material culture: general.

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. The full scheme of archaeological work is described in the following section.

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 CIfA standard and guidance document (CIfA 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). The works also complied with the *Standards for all Archaeological Work in County Durham and Darlington* document issued by Durham County Council Archaeology Section (DCCAS 2019).

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 the work for the archaeological evaluation was set out in a detailed WSI (PCA 2020). The archaeological evaluation comprised the mechanical excavation of 15 trial trenches (Trench 1-15), measuring *c*. 50m in length and *c*. 1.8m wide (Figure 2). These trenches comprised a 4% sample of the area under archaeological investigation with a contingency for up to an additional 1% to expand if required.

4.1.5 The trial trenches were positioned to avoid any obvious obstructions and to provide good coverage of the site. The trenches were sited to target anomalies identified by the geophysical survey and were also located in apparent blank areas to maximise the potential of the site.

4.1.6 The archaeological evaluation was carried out between the 20th to the 24th January 2020. 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 Ground level in the trenches was reduced using a tracked 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.

4.1.8 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 and 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).

4.1.9 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 WGC20 (site code).

4.1.10 The height of all principal strata and features was calculated in metres above Ordnance Datum (m AOD). A detailed photographic record of the evaluation was prepared using SLR 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 44 archaeological contexts were defined within the 15 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 deposits encountered, as no archaeological deposits or features were noted.

4.2.3 The complete Site Archive, in this case comprising only the written, drawn 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 CIfA publication relating to archiving (CIfA 2014c).

4.2.4 At the time of writing the Site Archive was housed at the Durham Office of PCA, The Rope Works, Broadwood View, Chester-le-Street, County Durham, DH3 3AF. When complete, the site Archive will be deposited at an appropriate repository, under the site code WGC20.

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.

5.1 Phase 1: Superficial Geology

5.1.1 Phase 1 represents superficial geological deposits that were observed within all 15 trenches. The geological material was comprised of mid brownish yellow sandy clay (Plate 1 & 2). This represents the Devensian-Diamicton till that was deposited across the region up to two million years ago in the Quaternary Period when the local environment was dominated by ice age conditions (British Geological Survey website).

5.1.2 The table below summarises the depth below ground level and metres above Ordnance Datum (AOD) height of geological deposits within the trenches. The highest level at which natural sub-stratum was encountered was 152.39m AOD in Trench 2 at the north-east end of the site. The lowest level was 136.03m in the south-western side of the site. This reflects the steeply sloping valley side of the Crook Beck, which flows a short distance to the west of the site.

No.	Context	Depth (below ground level)	m AOD	
			Highest	*Lowest*
Trench 1	[101]	0.20m	151.05m (NE)	150.08m (SW)
Trench 2	[201]	0.30m	152.39m (E)	144.99m (W)
Trench 3	[301]	0.30m	147.55m (SE)	142.76m (NW)
Trench 4	[402]	0.60m	148.43m (SE)	142.73m (NW)
Trench 5	[502]	0.4m (NW) to 1m (SE)	149.14m (SE)	142.78m (NW)
Trench 6	[602]	0.4m (NW) to 1m (SE)	148.34m (SE)	142.92m (NW)
Trench 7	[701]	0.31m	142.45m (NE)	141.31m (SW)
Trench 8	[802]	0.25m (NW) to 0.75m (SE)	146.5m (SE)	142.22m (NW)
Trench 9	[901]	0.37m	145.15m (SE)	141.61m (NW)
Trench 10	[1001]	0.20m	143.59m (SE)	140.06m (NW)
Trench 11	[1102]	0.20m (SE) to 0.70m (NW)	148.87m (SE)	144.76.20m (NW)
Trench 12	[1201]	0.20m	142.97m (SE)	140.01m (NW)

Trench 13	[1301]	0.15m	142.57m (S)	140.83m (N)
Trench 14	[1401]	0.20m	140.33m (SE)	139.49m (NE)
Trench 15	[1501]	0.11m	137.97m (SE)	136.03m (NW)

Summary of superficial geology depths and levels

5.2 Phase 2: Late-19th century-Early 20th century midden deposits and waste pits

5.2.1 Phase 2 represents late 19th century to early 20th-century midden deposits and waste pits. Anecdotal evidence from the local residents suggests that the site was used for tipping waste material that was collected from nearby settlements on horse and cart and dumped on the site. Archaeological evidence corroborates this information as layers of black ash with frequent fragments of metal, pot and glass was noted within Trenches 1, 2, 4, 5, 6, 8, 9, and 11.

5.2.2 The table below summarises the thickness and Ordnance Datum height of the midden deposits encountered during the scheme:

No.	Context	Thickness	m AOD	
			Highest	*Lowest*
Trench 1	[102]	0.36m	150.53m	
Trench 2	[204]	0.20m	152.49m (E)	145.09m (W)
Trench 4	[401]	0.30m	148.73m (SE)	143.03m (NW)
Trench 5	[501]	0.40m	149.84m (SE)	142.88m (NW)
Trench 6	[601]	0.40m (NW) to 1m (SE)	149.04m (SE)	143.02m (NW)
Trench 8	[801]	0.10m (NW) to 0.6m (SE)	147.10m (SE)	142.32m (NW)
Trench 9	[902]	0.10m	145.52m (SE)	141.67m (NW)
Trench 11	[1101]	0.05m (SE) to 0.29m (NW)	147.18m (centre)	145.05m (NW)

Summary of midden deposits

5.2.3 Three waste pits were also observed across the site (Figure 3). These comprised pit [203] in Trench 2; pit [404] in Trench 4 and pit [504] in Trench 5. Pit [203] was located at the eastern end of Trench 2 and was exposed for 2.60m east–west by >0.53m north-south and was *c.* 0.28m deep (Plate 3). The pit cut midden deposit [204] and was filled with black ash and clinker [202] that contained frequent fragments of glass and pottery.

5.2.4 Circular pit [404] was located at the north-western end of Trench 4. It was exposed for 1.40m north-west–south-east by 0.95m north-east–south-west and excavated to a depth of 0.52m (Plate 4). It was filled with black ash and clinker [403].

5.2.5 Sub-circular pit [504] was located at the north-western end of Trench 5. It measured 1.23m north-west–south-east by 1.12m north-east–south-west and was 0.34m deep. It was filled with black clinker and ash [503].

5.3 Phase 3: Modern topsoil

5.3.1 Phase 3 represents modern topsoil that was encountered within all trenches. The deposit comprised dark greyish brown silty clay. The table below summarises the thickness and metres above Ordnance Datum height for topsoil within all areas:

No.	Context	Thickness	m AOD	
			Highest	*Lowest*
Trench 1	[100]	0.20m	151.25m	150.28m
Trench 2	[200]	0.30m	152.69m	145.29m
Trench 3	[300]	0.30m	147.85m	143.06m
Trench 4	[400]	0.30m	149.03m	143.33m
Trench 5	[500]	0.30m	150.14m	143.18m
Trench 6	[600]	0.30m	149.34m	143.32m
Trench 7	[700]	0.31m	142.45m	141.62m
Trench 8	[800]	0.15m	147.25m	142.47m
Trench 9	[900]	0.27m	145.52m	141.98m
Trench 10	[1000]	0.20m	143.79m	140.26m
Trench 11	[1100]	0.20m	149.07m	145.25m
Trench 12	[1200]	0.20m	143.17m	140.21m
Trench 13	[1300]	0.15m	142.72m	140.98m
Trench 14	[1400]	0.20m	140.53m	139.69m
Trench 15	[1500]	0.11m	138.08m	136.14m

Summary of topsoil thickness and levels

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 The archaeological investigations undertaken on land to the east of Windermere Gardens, Crook, County Durham, comprised the excavation of 15 trenches. Geological deposits, late-19th/early 20th-century midden deposits and waste pits, as well as modern topsoil were encountered. This activity was assigned to three phases of activity:

- Phase 1: Superficial geological deposits comprising glaciofluvial deposits of clayey sand were encountered within all trenches;
- Phase 2: midden deposits and three waste pits derived from dumping activity on the site in the late 1800s to the early 1900s;
- Phase 3: Modern topsoil.

6.1.2 No features of archaeological significance were recorded within any of the evaluation trenches. The evaluation has established that all of the geophysical anomalies were either metal objects/areas of burning within the midden deposits or waste pits. The absence of archaeology is not unexpected given the topography of the site with its steep slopes and marshy ground.

6.2 Recommendations

6.2.1 No further work is required on the information recovered during the evaluation, with the Site Archive (including this report), forming the permanent record of the strata encountered.

7. REFERENCES

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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.

8. ACKNOWLEDGEMENTS AND CREDITS

Acknowledgements

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PCA Credits

Fieldwork: Scott Vance (Supervisor) and James Hopper

Report: Scott Vance

Project Manager: Jennifer Proctor and Aaron Goode

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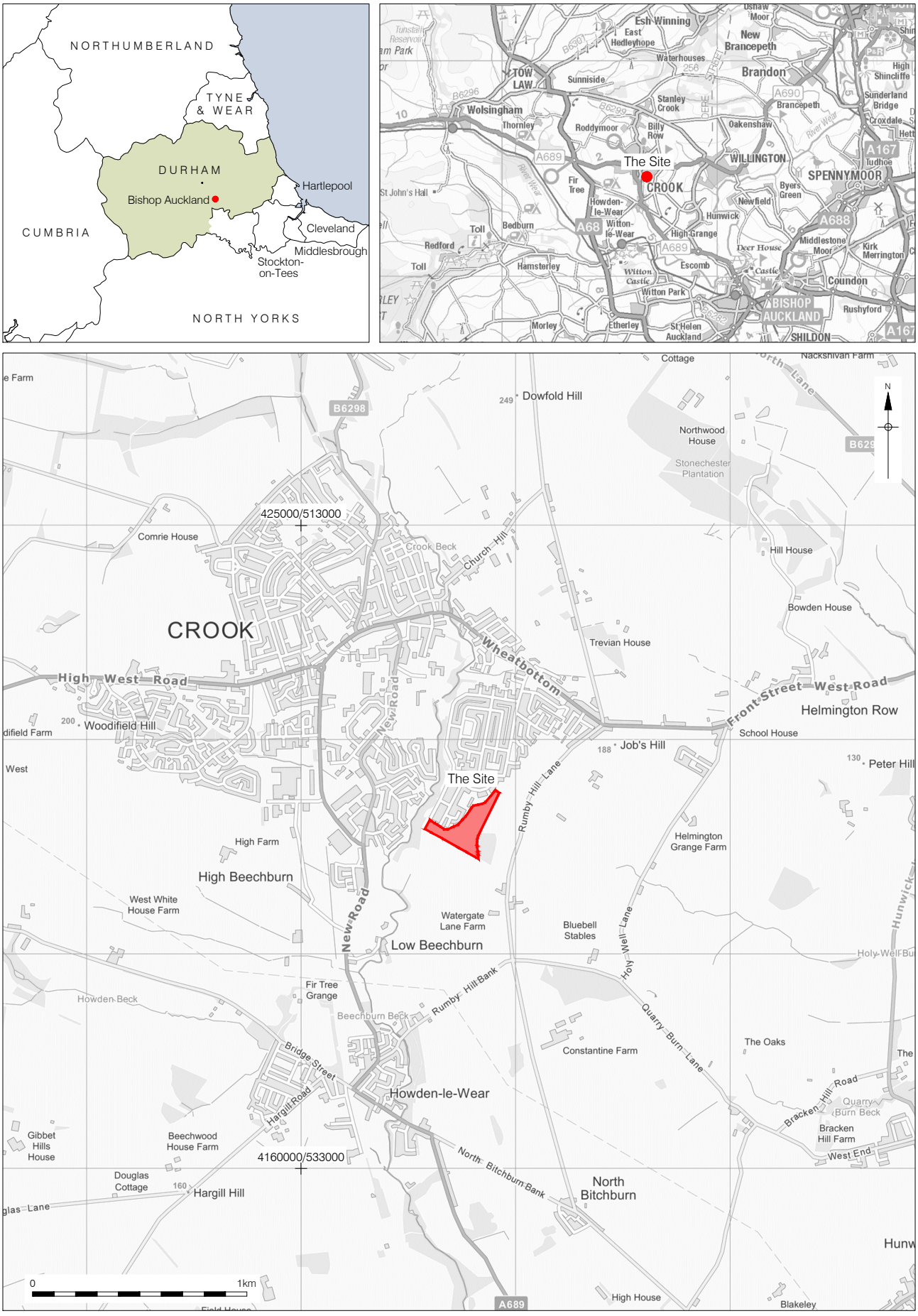
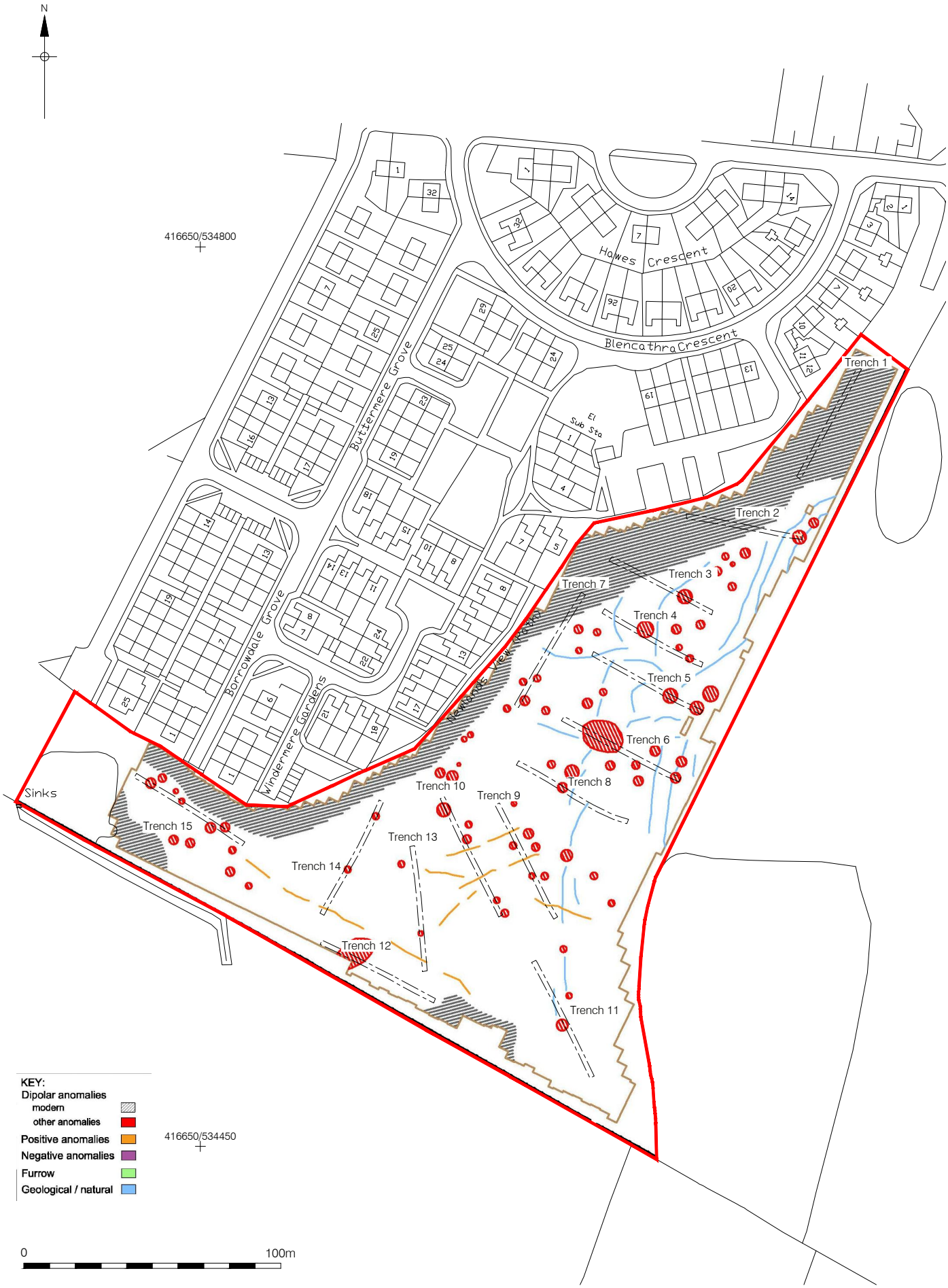
APPENDIX 1: FIGURES



28/01/20 RM

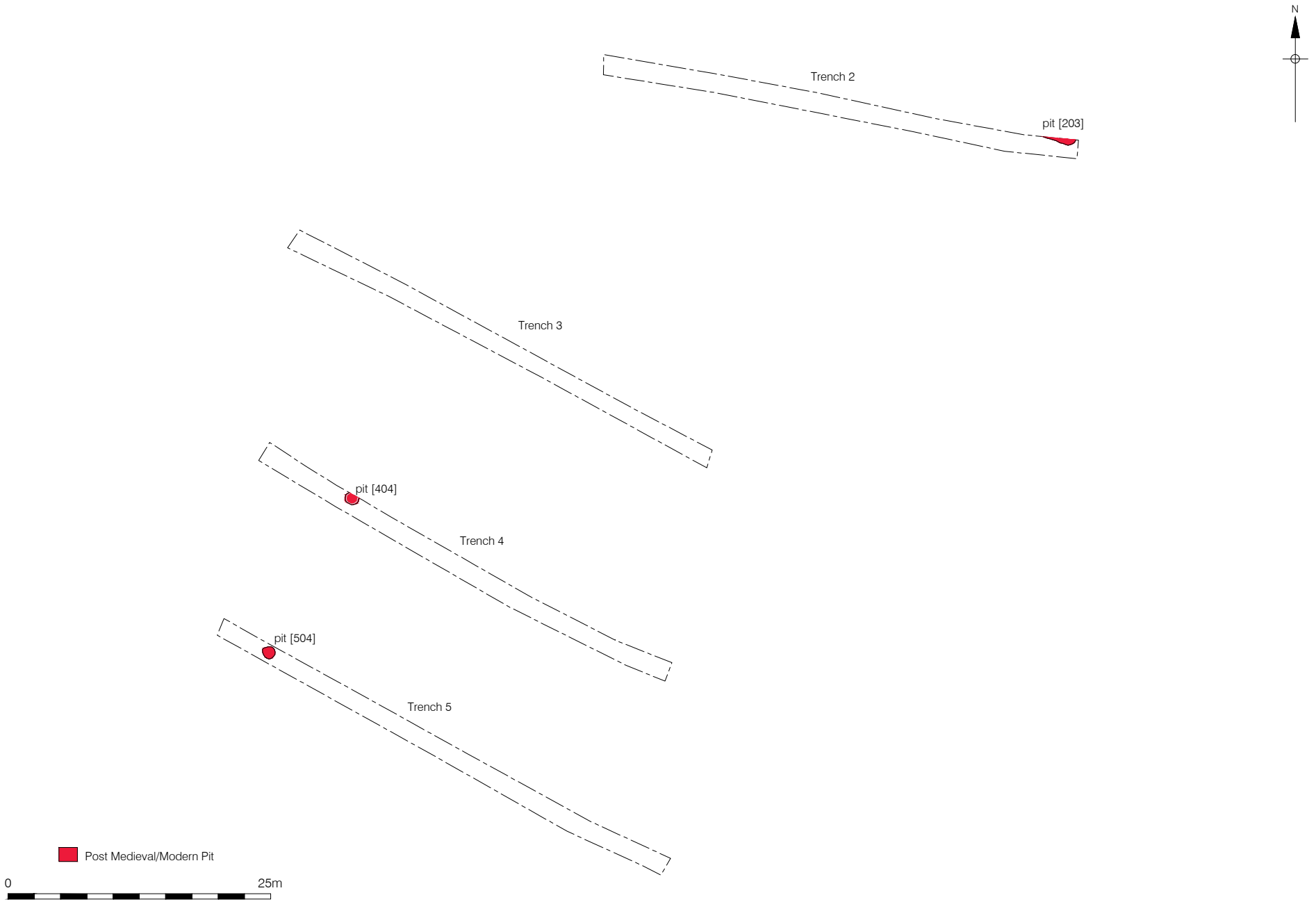
Figure 1
Site Location
1:2,000,000; 1:250,000; 1:25,000 at A4



OS Mapping supplied by the client

28/01/20 RM

Figure 2
Trench Locations overlain on Geophysical Survey
1:2,000 at A4



28/01/20 RM

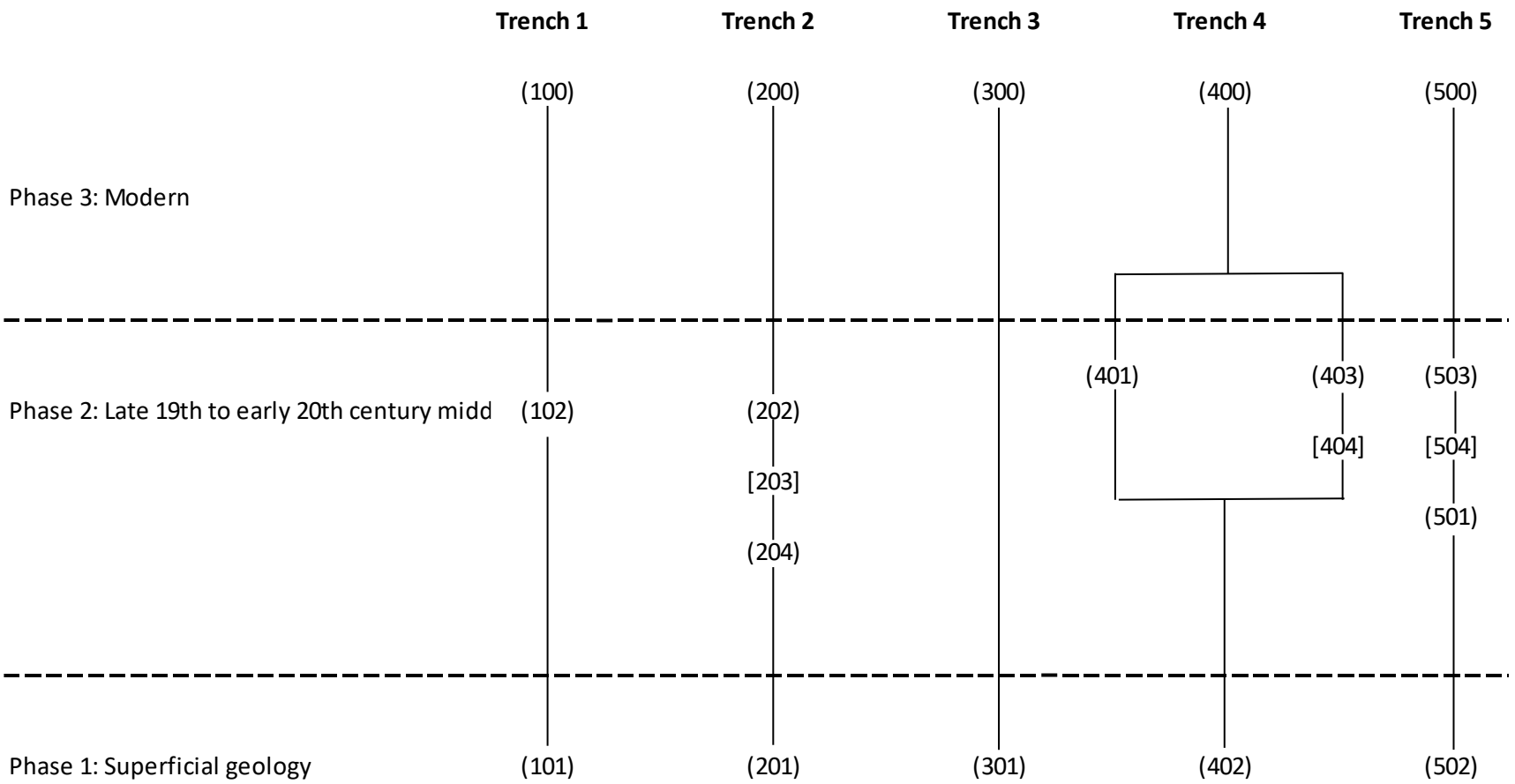
Figure 3
Plan of Trenches 2-5
1:500 at A4

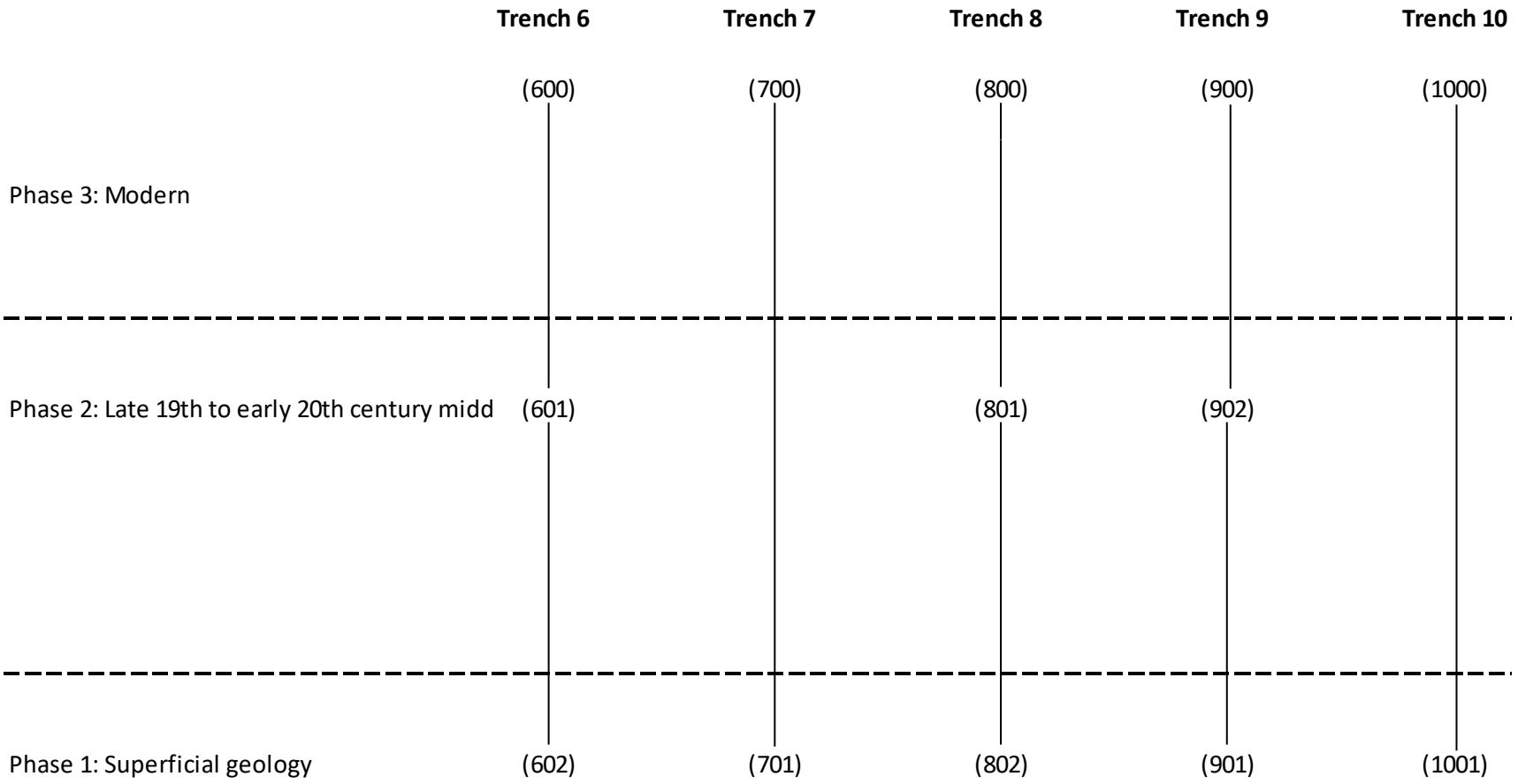
APPENDIX 2: CONTEXT INDEX

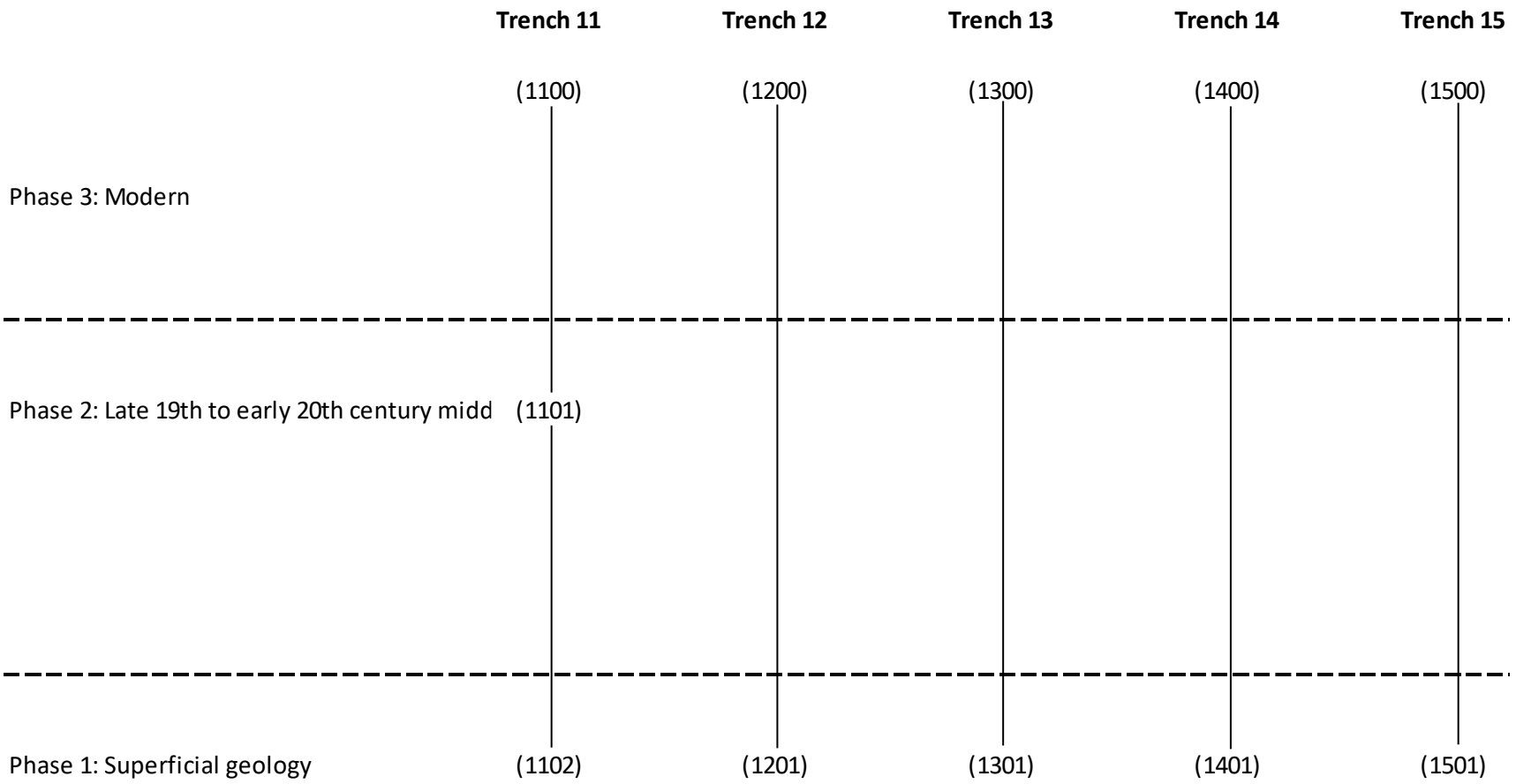
Context	*Phase*	*Type 1*	*Type 2*	*Fill of*	*Interpretation*
Trench 1					
100	1	Deposit	Layer		Topsoil
101	3	Deposit	Layer		Superficial geology
102	2	Deposit	Layer		Midden deposit
Trench 2					
200	3	Deposit	Layer		Topsoil
201	1	Deposit	Layer		Superficial geology
202	2	Deposit	Fill	[203]	Fill of rubbish pit [203]
203	2	Cut	Discrete		Modern rubbish pit
204	2	Deposit	Layer		Midden deposit
Trench 3					
300	3	Deposit	Layer		Topsoil
301	1	Deposit	Layer		Superficial geology
Trench 4					
400	3	Deposit	Layer		Topsoil
401	2	Deposit	Layer		Midden deposit
402	1	Deposit	Layer		Superficial geology
403	2	Deposit	Fill	[404]	Fill of pit [404]
404	2	Cut	Discrete		Pit
Trench 5					
500	3	Deposit	Layer		Topsoil
501	2	Deposit	Layer		Midden deposit
502	1	Deposit	Layer		Superficial geology
503	2	Deposit	Fill	[504]	Fill of pit [504]
504	2	Cut	Discrete		Pit
Trench 6					
600	3	Deposit	Layer		Topsoil
601	2	Deposit	Layer		Midden deposit
602	1	Deposit	Layer		Superficial geology
Trench 7					
700	3	Deposit	Layer		Topsoil
701	1	Deposit	Layer		Superficial geology
Trench 8					
800	3	Deposit	Layer		Topsoil
801	2	Deposit	Layer		Midden deposit
802	1	Deposit	Layer		Superficial geology
Trench 9					
900	3	Deposit	Layer		Topsoil
901	1	Deposit	Layer		Superficial geology
902	2	Deposit	Layer		Midden deposit
Trench 10					
1000	3	Deposit	Layer		Topsoil
1001	1	Deposit	Layer		Superficial geology
Trench 11					
1100	3	Deposit	Layer		Topsoil
1101	2	Deposit	Layer		Midden deposit

1102	1	Deposit	Layer		Superficial geology
Trench 12					
1200	3	Deposit	Layer		Topsoil
1201	1	Deposit	Layer		Superficial geology
Trench 13					
1300	3	Deposit	Layer		Topsoil
1301	1	Deposit	Layer		Superficial geology
Trench 14					
1400	3	Deposit	Layer		Topsoil
1401	1	Deposit	Layer		Superficial geology
Trench 15					
1500	3	Deposit	Layer		Topsoil
1501	1	Deposit	Layer		Superficial geology

APPENDIX 3: STRATIGRAPHIC MATRIX




Trench 6
Trench 7
Trench 8
Trench 9
Trench 10
(600)
(700)
(800)
(900)
(1000)
Phase 3: Modern
Phase 2: Late 19th to early 20th century midd
(601)
(801)
(902)
Phase 1: Superficial geology
(602)
(701)
(802)
(901)
(1001)


Trench 11
Trench 12
Trench 13
Trench 14
Trench 15
(1100)
(1200)
(1300)
(1400)
(1500)
Phase 3: Modern
Phase 2: Late 19th to early 20th century midd
(1101)
Phase 1: Superficial geology
(1102)
(1201)
(1301)
(1401)
(1501)

APPENDIX 4: PHOTOGRAPHIC PLATES

Plate 1: Trench 2 overview: view east, scale: 2m

Plate 2: Trench 12: view north-west, scale: 2m

Plate 3: Trench 2 Pit [203]: view north-east, scale: 2m

Plate 4: Trench 4 Pit [404]: view south-west, scale: 1m

APPENDIX 5: GEOPHYSICAL SURVEY

AD343

Land off Windermere Gardens, Crook, County Durham

Archaeological Geophysical Survey

Author	Jamie Scott
Commissioned by	Pre-Construct Archaeology
Project Number	AD343
OASIS Number	adarchae1-378589
Date	December 2019

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LIST OF FIGURES

EXECUTIVE SUMMARY

AD Archaeology Ltd was commissioned by Pre-Construct Archaeology to carry out a geophysical survey (magnetometry) on land off Windermere Gardens, Crook.

The objective of the geophysical survey was to evaluate the presence of sub-surface archaeological remains on the site by means of the location and interpretation of geophysical anomalies.

The geophysical survey has produced good results and it has been possible to distinguish anomalies relating to modern disturbance and geology from other magnetic anomalies of possible archaeological origin.

The survey has not identified any magnetic anomalies suggestive of ridge and furrow cultivation on the site but has detected one possible feature which may represent a relict field boundary.

The geophysical survey has not detected any other features which are suggestive of a clear archaeological origin or which cannot be explained in reference to modern features. However, this is not unexpected, given the topography of the site with its steep slopes which suggest that it is unlikely that settlement activity would have taken place on the area of the development site itself in the past.

1 INTRODUCTION

1.1 The Project

1.1.1 AD Archaeology Ltd was commissioned by Pre-Construct Archaeology to carry out a geophysical survey (magnetometry) on land off Windermere Gardens, Crook.

1.1.2 The site is located to the south of Blencathra Crescent at the south of the Watergate Housing Estate, Crook (NGR centre: NZ 1677 3459). The site is roughly triangular in shape and covers an area of approximately 3.5 ha. The site comprises part of a single agricultural field which was in use for grazing at the time of survey.

1.2 Aims and Objectives

1.2.1 The objective of the geophysical survey was to evaluate the presence of sub-surface archaeological remains on the site by means of the location and interpretation of geophysical anomalies. A search of Durham County Council's Historic Environmental Record was undertaken in order to provide information on the archaeological and historic background of the site.

1.3 Archaeological and Historical Background

1.3.1 The town of Crook lies 10 miles to the south west of Durham, at the lower end of Weardale. As with the majority of the North-East of England there is increasing evidence and awareness that the region was the focus of activity throughout the prehistoric period. The earliest evidence for settlement in this area consists of the discovery of scatters of prehistoric flint artefacts. A number of flint artefacts including an arrowhead were located immediately south-west of the site (ID 1; H 1068). There is a further findspot of flint immediately east of the site (ID 2; H1772). Although no definite prehistoric settlements have been identified within 1km of the site, it is possible that two cropmarks of uncertain date (ID 6; H2741 and ID 7; H2743) identified on aerial photographs may relate to prehistoric settlement activity. Cropmark (ID7; H2743) lies 400m south of the site and cropmark (ID6; H2741) is 600m to the north.

1.3.2 Although there are no known Roman sites in the immediate area a 2nd Century Roman coin (ID 4; H1805) was found 700m west of the site.

1.3.3 There are no known Anglo-Saxon period sites or finds within 1km of the site. However there may have been a settlement on the site of the village before the Norman Conquest as the name Crook comes from the Old Norse word 'krokr', which means ' a bend'. The bend may refer to either a bend on the River Wear or the Crook Beck, which runs through the town.

1.3.4 By the medieval period Crook had developed into a small agricultural settlement. There may have been another village at nearby Woody Field, and also

possibly at Billy Row. However, these were all little more than hamlets, and Crook was part of the parish of Brancepeth. It is possible, though, that there was a holy well (ID 3; H1773), though the evidence for this is not clear. There are fragmentary remains of two sides of a possible medieval moat (ID 5; H1807) 600m north of the site.

1.3.5 The village continued as an agricultural settlement until the early 1800s, when the population was just under 200. At this period there were over fifteen farms, a mill and an inn 'The Horse Shoe' (ID 16; H37451). The mill (ID 18; H47613) a pond (ID 19; H47618) and its race (ID 20; H47620) lay at the main focus of the village 900m north of the site. Rumby Hill Farm (ID 21; H48624) lay 200m south of the site. It is likely that the area of the site formed agricultural land through the medieval and post-medieval periods (ID 25; H61241).

1.3.6 It was with the growth of the coal industry that Crook expanded, particularly once the Stockton to Darlington railway was opened in 1843. By 1854 the population had risen to over 3,000. More coal mines were opened in the area in the 1850s and 1860s. At one time there were a total of 26 mines in and around the area of Crook. Many other industries grew up around the pits, although like coke production, they all revolved around coal. These provided many jobs and by 1890 the population was over 12,000. Churches, schools, housing, shops and pubs were constructed to provide for the developing community.

1.3.7 The recent development of the immediate area can be traced through the sequence of Ordnance Survey maps. The area of the site-itself is shown as rural open fields until the 1970s with the construction of the Watergate Housing Estate immediately to the west. The first edition OS map of 1861 shows a quarry just to the north-east of the site, which was out of use by the time of the second edition OS map of 1898. The third edition OS map of 1921 shows Rumby Hill Colliery and a connecting tramway to the south-west of the site.

1.4 Geology, Geomorphology and Topography

1.4.1 The underlying solid geology of the area comprises Pennine Middle Coal Measures (mudstone, siltstone and sandstone), which are overlain by Devensian glacial till (BGS, 2019).

1.4.2 The topography of the site (as shown on Figure 3) comprises a steep slope forming the eastern boundary of the site with the remainder of the site sloping less steeply from north-east to south-west. Along the steep slope some areas of thick gorse vegetation obstructed small portions of the survey and the north-western corner of the development site was unsuitable for survey due to thick vegetation. At the time of survey the ground conditions consisted of waterlogged grassland.

2 THE GEOPHYSICAL SURVEY

2.1 Technique

2.1.1 Geophysical survey is a method by which examination of the Earth's physical properties takes place using non-invasive ground survey techniques in order to reveal buried sub-surface features and anomalies (Gaffney and Gater 2004). A hand-held magnetic fluxgate gradiometer records differences in electromagnetic field to a depth of approximately 1 metre into the ground. Differences or disturbances in sub-soil magnetic susceptibility can be the result of archaeological features, geology or modern intrusions.

2.1.2 This geophysical survey was conducted in line with all professional guidelines (CIfA 2014a, b) and recommendations as laid out and presented in *Geophysical survey in archaeological field evaluation* (David, Linford and Linford 2008), *Geophysical Data in Archaeology* (Schmidt 2001), and discussed in, *Revealing the Buried Past: Geophysics for Archaeologists* (Gaffney & Gater 2004).

2.2 Methodology

2.2.1 The magnetometer survey was carried out using a *Bartington Grad 601-2* fluxgate gradiometer, which scanned and stored all magnetic data. The sample interval was set at 0.25m and the traverse interval at 1m using a north-east / south-west traverse direction in a zigzag scheme. The data was then downloaded onto a laptop computer on site for assessment, and later processed on a PC.

2.2.2 The survey comprised 41 full and partial 30m by 30m grids (see Figure 3) which were set out using a Trimble R6 GNSS GPS system.

2.2.3 All grid locations have been accurately tied in to Ordnance Survey mapping and NGR co-ordinates.

2.3 Post-Processing

2.3.1 *TerraSurveyor version 3.0.27* software was used to process all of the data recorded. AutoCAD software was used for the presentation of the figures.

2.3.2 The post-processing of the recorded raw data includes the application of certain functions in order to aid both the presentation and interpretation of the results. In this instance, data has been '*de-striped*' to remove striping effects that can be caused by directional effects inherent in magnetic instruments; '*clipped'* to limit it to specified minimum and maximum values; thus removing extreme data point values, '*despiked*' to remove data spikes caused by small surface iron anomalies usually the result of metal 'rubbish'; 'Destagger' to adjust the displacement of geomagnetic anomalies caused by alternate zig-zag traverses. The data presentation includes three formats: Raw Data Plots (with minimal processing), Greyscale Plots

(demonstrating processed data) and Magnetic Anomaly Interpretation Plans (identifying possible archaeological features, modern features and other anomalies). Trace plots of the raw survey data were not informative and as such are not included in this report.

3 SURVEY RESULTS (Figs. 4-6)

3.1 Magnetic Anomaly Interpretation

3.1.1 The data displays three different types of magnetic anomalies:

Positive magnetic anomalies identifiable through darker grey shades on the greyscale images, which can be suggestive of soil-filled pit and ditch type features representing high magnetic susceptibility.

Negative magnetic anomalies are identifiable through lighter grey shades on the greyscale images, which can be suggestive of wall footings and other stone concentrations or features representing low magnetic susceptibility.

Dipolar magnetic anomalies identifiable through concentrations of mixed dark and light grey shades on the greyscale images which can be suggestive of fired and ferrous materials and structures; and/or modern intrusion and disturbance, representing paired positive and negative magnetic susceptibility.

3.2 Services, modern disturbance and geological features

3.2.1 Areas of strong dipolar magnetic response (grey hatch on Figure 6) along the north-western boundary of the site represent magnetic disturbance associated with the modern housing which bounds the site in this direction and associated buried services, grounds disturbance and metallic elements within the boundary fences. Along the southern boundary of the site two further areas of magnetic disturbance (grey hatch) coincide with the locations of modern livestock feed/water troughs.

3.2.2 Across the site areas of strong dipolar magnetic response (red on Fig. 6) either relate to modern surface rubbish and debris (aluminium cans etc.) which were noted frequently at the time of survey; or to ferrous objects from agricultural activity and/or stray bricks or similar objects in the upper soil horizons or to localised variations in the geological background. These dipolar responses are more frequent on this site than other areas surveyed, this is probably due to a combination of the proximity of modern housing and the effects of hillwash and landslip causing an accumulation of objects at the bottom of the steep hill which forms the eastern boundary of the site.

3.2.3 Along the line of the eastern boundary of the site the survey has detected a series of faint irregular positive linear anomalies (blue on Fig. 6). Where these anomalies follow the line of the slope and the natural fall of the land they have been identified as geological / natural features. Similarly, in this area faint positive anomalies running down the slope probably correspond with geomorphological features in the form of narrow temporary water channels and again have been identified as being of natural origin.

3.3 Former field boundaries and magnetic anomalies of archaeological interest

3.3.1 In the southern area of the site the survey has detected a fragmentary positive linear anomaly running NW – SE parallel to the modern field boundary (orange on Fig. 6). The magnetic response of this anomaly is suggestive of a soil-filled cut feature such as a ditch or gully. This anomaly was not evident as a surface feature during the survey and given its position probably represents an earlier line of the field boundary of the site or a path or track which ran parallel to boundary.

3.3.2 In the southern half of the site several other faint linear positive have been identified (orange on Fig. 6) however none of these form a clear shape suggestive of an archaeological site and at least one of the features probably corresponds with a modern surface animal track noted in this area at the time of survey.

4 DISCUSSION

4.1 The geophysical survey has produced good results and it has been possible to distinguish anomalies relating to modern disturbance and geology from other magnetic anomalies of possible archaeological origin.

4.2 The survey has not identified any magnetic anomalies suggestive of ridge and furrow cultivation on the site but has detected one possible feature which may represent a relict field boundary.

4.3 The geophysical survey has not detected any other features which are suggestive of a clear archaeological origin or which cannot be explained in reference to modern features. However, this is not unexpected, given the topography of the site with its steep slopes which suggest that it is unlikely that settlement activity would have taken place on the area of the development site itself in the past.

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APPENDIX 1: CATALOGUE OF HISTORIC AND ARCHAEOLOGICAL FEATURES

ID	HER No	Easting	Northing	Description	Date	Statutory Designation
1	H1068	416530	534550	Prehistoric flints, Rumby Hill, Crook	Prehistoric	
2	H1772	416900	534560	Flint findspot, Crook	Prehistoric	
3	H1773	417660	534330	Holy well at Bitchburn, Crook	Uncertain	
4	H1805	416000	535000	Roman coin, Crook	Roman	
5	H1807	416520	535350	Medieval Moat, Crook	Medieval	
6	H2741	416500	535300	Cropmark from aerial photo, Crook	Uncertain	
7	H2743	416700	534100	Cropmark, Howden-le-Wear	Uncertain	
8	H7013	416700	535600	3 & 4 Church St., Crook	Post-medieval	
9	H7016	416000	533800	Fir Tree Grange, aka The Smelt House	Post-medieval	
10	H7018	416000	535000	Methodist Chapel, Emerson St., Crook	Post-medieval	
11	H15872	417831	534886	Homelands Hospital, Helmington Row	Modern	
12	H36946	416531	535599	War Memorial Cenotaph, Town Centre	Modern	LB II
13	H36947	416615	535502	Methodist Church, Dawson St.	Post-medieval	LB II*
14	H36962	415986	533802	Outbuildings north of Fir Tree Grange	Post-medieval	LB II
15	H36969	415994	533779	Fir Tree Grange, Howden-le-Wear	Post-medieval	LB II
16	H37451	416648	535581	Premises occupied by JG Forster and Ye Olde Horse Shoe Inn	Post-medieval	LB II
17	H44772	416118	535373	Culvert, Crook Bypass, Crook	Post-medieval	
18	H47613	416641	535663	Former Corn Mill, Crook	Post-medieval	
19	H47618	416617	535668	Former Mill Pond, Crook	Post-medieval	
20	H47620	416563	535856	Former Mill Race, Crook	Post-medieval	
21	H48624	417019	534238	Rumby Hill Farm, Crook	Post-medieval	
22	H49047	416590	535620	St. Catherine's Church, Crook	Post-medieval	
23	H60707	415930	535070	Remains of nine circular brick kilns, Eclipse Brickworks, Crook	Modern	
24	H61052	416500	535400	Former Empire Electric Palace Theatre, Crook	Modern	
25	H61241	416380	534560	Agricultural remains, New, Road, Crook	Post-medieval	
26	H65766	417390	535060	Jobs Tollgate, Crook	Post-medieval	
27	H66167	416500	535620	Co-op, North Terrace, Crook	Post-medieval	

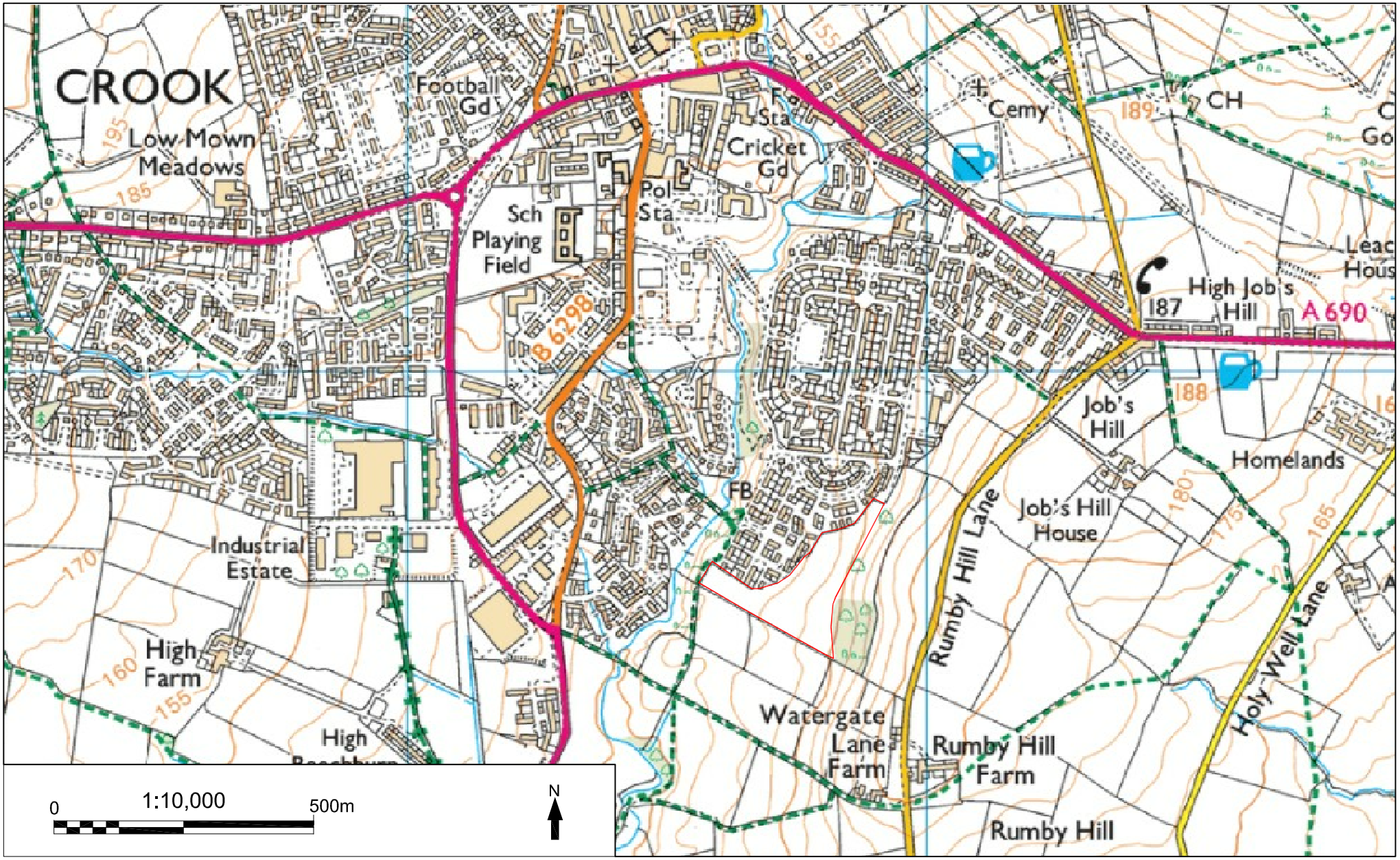

Figure 1: General location of site

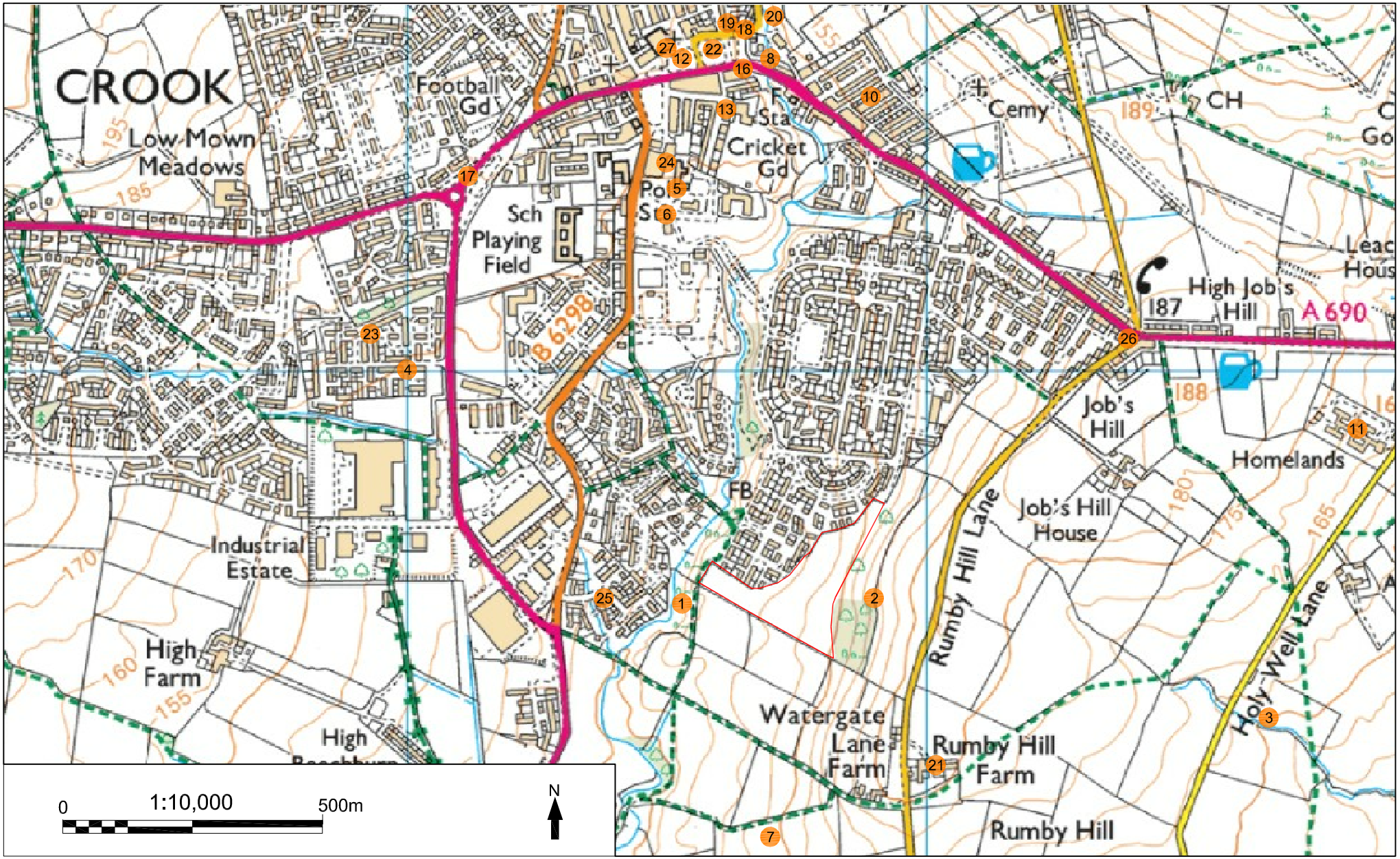

Figure 2: Historic Environment Record (HER) features

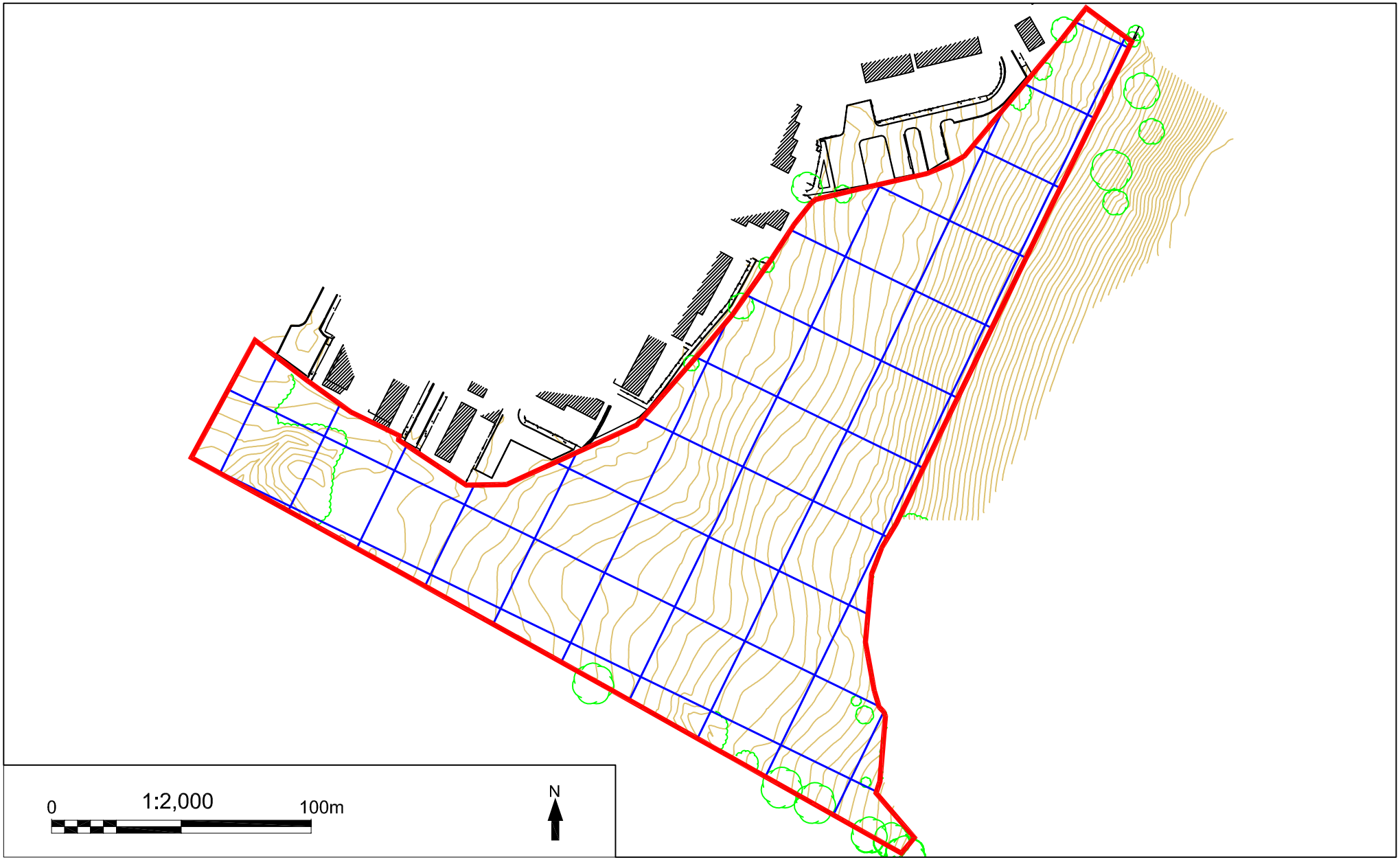

Figure 3: Detailed site location and geophysical survey grid layout

Figure 4: Geophysical survey - raw data plot

Figure 5: Geophysical survey - greyscale plot (processed data)

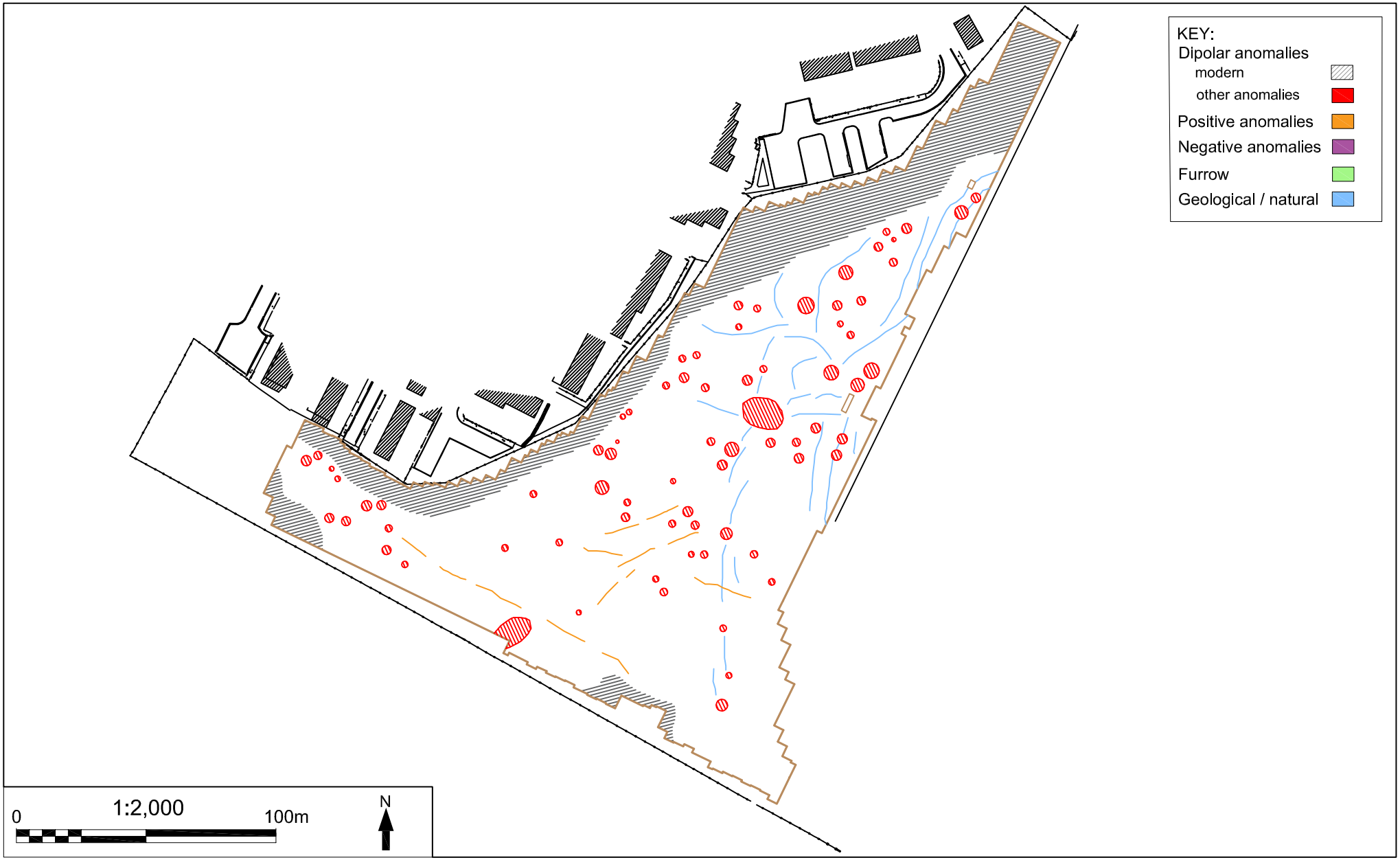

Figure 6: Geophysical survey - interpretation plot

Selected site photographs

P C A

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