ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
Faithful+Gould
for
Northumberland County Council

Roberts Lodge
Berwick
Northumberland

geophysical survey and archaeological evaluation

report 3439
May 2014

Durham University

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Green Lane · Durham · DH1 3LA · tel 0191 334 1121 · fax 0191 334 1126
archaeological.services@durham.ac.uk · www.dur.ac.uk/archaeological.services

1. Summary

The project

1.1 This report presents the results of a geophysical survey and archaeological evaluation conducted in advance of a proposed development of land adjacent to Roberts Lodge, Berwick, Northumberland. The works comprised four surveys totalling *c.*3ha and the excavation of 40 evaluation trenches.

1.2 The works were commissioned by Faithful+Gould on behalf of Northumberland County Council and conducted by Archaeological Services Durham University.

Results

1.3 Small gullies were identified in trenches 3, 4 and 8. Although their origin is uncertain they have the potential to be prehistoric in date and may relate to the adjacent cropmark site.

1.4 Several anomalies identified in the geophysical survey as a broad soil-filled feature were shown to be a small, naturally silted valley within which was a post-medieval stone culvert. This was identified in trenches 21, 29, 31, 35 and 37.

1.5 Trench 35 targeted an anomaly identified as a soil-filled feature in the geophysical survey. Excavation showed this to be an in-filled quarry pit.

1.6 Deposits associated with modern activity, some of which were highlighted in the geophysical survey, were identified in trenches 22, 27, 26, 25. These were probably associated with Roberts Lodge itself and a mill and track, all of which are present on Ordnance Survey maps.

1.7 Groundworks associated with the development have the potential to impact on an archaeological resource in the western part of the site.

Recommendations

1.8 No archaeological resource has been identified which requires preservation *in situ*. A programme of archaeological recording is recommended in the western part of the site to record the archaeological deposits that may be impacted upon by the proposed development.

2. Project background

Location (Figure 1)

2.1 The proposed development area is located on open land adjacent to Roberts Lodge, Berwick, Northumberland (NGR centre: NT 99200 50792). It covers an area of approximately 7ha. Four surveys totalling *c*.3ha were conducted in four land parcels; a fifth area of proposed survey was not undertaken due to being overgrown. Two further areas of survey had been completed in 2006 (Archaeological Services 2006). To the east and south is open farmland, to the north and west housing and a road.

Development proposal

2.2 Planning applications are to be submitted for two residential developments at Roberts Lodge, Berwick, Northumberland, as part of Northumberland County Council Affordable Homes Programme. This will comprise a detailed application for part of the site and an outline application for the rest. Both application areas were evaluated together.

Objective

2.3 The principal aim of the surveys and evaluation trenching was to determine the nature and extent of any sub-surface features, including cut, built and fired features, of potential archaeological significance within the proposed development area, so that an informed decision may be made regarding the nature and scope of any further scheme of archaeological works that may be required in relation to the proposed development.

Methods statement

2.4 The surveys and evaluation trenching have been undertaken in accordance with a Written Scheme of Investigation and Methods Statement provided by Archaeological Services Durham University (reference DS14.145) and approved by the planning authority, and in accordance with national standards and guidance (see para. 5.1 below).

Dates

2.5 Fieldwork was undertaken between 22nd April and 9th May 2014. This report was prepared for May 2014.

Personnel

2.6 The geophysical survey was conducted by Patricia Edwards and Nathan Thomas (supervisor). Trial trench evaluation was conducted by Jonathan Dye and Nathan Thomas (supervisor). This report was prepared by Richie Villis (geophysics) and Jonathan Dye (evaluation), with illustrations by David Graham. Specialist reporting was conducted Lorne Elliott (palaeoenvironmental) and Jennifer Jones (artefacts). The project manager was Daniel Still.

Archive/OASIS

2.7 The site code is **BRL14**, for **B**erwick **R**oberts **L**odge 20**14**. The archive is currently held by Archaeological Services Durham University, and will be transferred to the Berwick Borough Museum in due course. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-179344**.

3. Historical and archaeological background

3.1 An HER search and historical and archaeological development summary for the proposed development area and within a 1km radius has been undertaken for the WSI (DS14.145). The following summary information is taken from that, presented with only minor amendments.

3.2 There are a number of potential prehistoric sites in the vicinity of the proposed development area that have been identified on aerial photographs. These include two cropmark enclosure sites directly to the south (HER2507 and 2487) and another a little over 200m to the east (HER23579).

3.3 Approximately 800m east of the site is the course of a Roman Road (the Devils Causeway (HER12394) and the location of what was thought to be a Roman fort at Springhill (HER4131) but is more likely to be a settlement.

Previous geophysical survey

3.4 Archaeological Services have previously completed a geophysical survey in the west part of the site in 2006 (Archaeological Services 2006). The results of that survey are summarised here.

3.5 Anomalies which may reflect pits and ditches were detected in the western half of the area.

3.6 Intense dipolar magnetic anomalies resulting from ferrous litter and deposits of building rubble have the potential to mask any anomalies associated with archaeological features. This is especially pertinent in the eastern part of the survey area.

4. Landuse, topography and geology

4.1 At the time of survey the proposed development area comprised multiple fields of open grassland and pasture, including grazing by horses. It was not possible to collect any data in Area 4 due to overgrown vegetation.

4.2 The area sloped down from south to north with elevations of between approximately 75m and 55m OD. A steep rock outcrop occupied the central part of Area 5.

4.3 The underlying solid geology of the area comprises sandstone, siltstone and mudstone strata of the Scremerston Coal Member; no superficial deposits are recorded (BGS2014).

5. Geophysical survey

Standards

5.1 The surveys and reporting were conducted in accordance with English Heritage guidelines, *Geophysical survey in archaeological field evaluation* (David, Linford & Linford 2008); the Institute for Archaeologists (IfA) *Standard and Guidance for archaeological geophysical survey* (2011); the IfA Technical Paper No.6, *The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden

2002); and the Archaeology Data Service & Digital Antiquity *Geophysical Data in Archaeology: A Guide to Good Practice* (Schmidt 2013).

Technique selection

5.2 Geophysical survey enables the relatively rapid and non-invasive identification of sub-surface features of potential archaeological significance and can involve a suite of complementary techniques such as magnetometry, earth electrical resistance, ground-penetrating radar, electromagnetic survey and topsoil magnetic susceptibility survey. Some techniques are more suitable than others in particular situations, depending on site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

5.3 In this instance it was considered likely that cut features such as ditches and pits might be present on the site, and that other types of feature such as trackways, wall foundations and fired structures (for example kilns and hearths) might also be present.

5.4 Given the anticipated shallowness of targets and the non-igneous geological environment of the study area a geomagnetic technique, fluxgate gradiometry, was considered appropriate for detecting the types of feature mentioned above. This technique involves the use of hand-held magnetometers to detect and record anomalies in the vertical component of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation; such anomalies can reflect archaeological features.

Field methods

5.5 A 30m grid was established across each survey area and related to the Ordnance Survey National Grid using a Leica GS15 global navigation satellite system (GNSS) with real-time kinematic (RTK) corrections typically providing 10mm accuracy.

5.6 Measurements of vertical geomagnetic field gradient were determined using Bartington Grad601-2 dual fluxgate gradiometers. A zig-zag traverse scheme was employed and data were logged in 30m grid units. The instrument sensitivity was nominally 0.03nT, the sample interval was 0.25m and the traverse interval was 1m, thus providing 3,600 sample measurements per 30m grid unit.

5.7 Data were downloaded on site into a laptop computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

Data processing

5.8 Geoplot v.3 software was used to process the geophysical data and to produce both continuous tone greyscale images and trace plots of the raw (minimally processed) data. The greyscale images and interpretations are presented in Figure 3; the trace plots are provided in Figure 4. In the greyscale images, positive magnetic anomalies are displayed as dark grey and negative magnetic anomalies as light grey. Palette bars relate the greyscale intensities to anomaly values in nanoTesla.

5.9 The following basic processing functions have been applied to each dataset:

clip	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic
zero mean traverse	sets the background mean of each traverse within a grid to zero; for removing striping effects in the traverse direction and removing grid edge discontinuities
de-stagger	corrects for displacement of geomagnetic anomalies caused by alternate zig-zag traverses
interpolate	increases the number of data points in a survey to match sample and traverse intervals; in this instance the data have been interpolated to 0.25m x 0.25m intervals

Interpretation: anomaly types

5.10 Three types of geomagnetic anomaly have been distinguished in the data:

positive magnetic	regions of anomalously high or positive magnetic field gradient, which may be associated with high magnetic susceptibility soil-filled structures such as pits and ditches
negative magnetic	regions of anomalously low or negative magnetic field gradient, which may correspond to features of low magnetic susceptibility such as wall footings and other concentrations of sedimentary rock or voids
dipolar magnetic	paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials (including fences and service pipes) and/or fired structures such as kilns or hearths

General comments

5.11 Except where stated otherwise in the text below, positive magnetic anomalies are taken to reflect relatively high magnetic susceptibility materials, typically sediments in cut archaeological features (such as ditches or pits) whose magnetic susceptibility has been enhanced by decomposed organic matter or by burning.

5.12 Small, discrete dipolar magnetic anomalies have been detected in all of the survey areas. These almost certainly reflect items of near-surface ferrous and/or fired debris, such as horseshoes and brick fragments, and in most cases have little or no archaeological significance.

Area 1

5.13 Two sets of regularly spaced, parallel magnetic anomalies have been detected in this area, aligned broadly north-south and east-west. These probably reflect land drains.

5.14 Occasional other positive magnetic anomalies have been detected in this area. These could reflect the remains of soil-filled features. It is unclear as to whether they reflect anthropogenic or geomorphological features (such as buried scarps or variations in topsoil thickness).

Area 2

5.15 This area is characterised by a concentration of dipolar magnetic anomalies, which are likely to reflect high concentrations of ferrous or fired waste.

5.16 A north-east/south-west aligned strong positive magnetic anomaly has been detected in the south-east corner of the area. This could reflect a soil-filled feature.

Area 3

5.17 As in Area 2 this area is typified by high concentrations of dipolar magnetic anomalies, especially along the north edge. This is likely to reflect an area of in-filled or otherwise disturbed ground.

5.18 A broad positive magnetic anomaly has been detected aligned north-west/south-east across the area. This could reflect a soil-filled feature. The anomaly follows the course of the base of a small valley and may reflect sediments accumulated there, however, an anthropogenic origin cannot be dismissed.

Area 5

5.19 Several linear, broad and diffuse positive magnetic anomalies have been detected in this area. These may reflect the remains of soil-filled ditch features though given their position in the landscape, at the base of a rocky outcrop, they are probably geological in origin. One broad anomaly is a continuation of that detected in Area 3, which runs along the base of the valley.

5.20 Weak linear magnetic anomalies aligned broadly north-south in parts of this area probably reflect land drains.

6. The evaluation trenches

Introduction

6.1 Forty-one trenches were planned to sample the site and target geophysical anomalies (Figure 2). Area 4 was heavily overgrown resulting in trenches 25 and 26 being relocated and trench 24 being abandoned. Modern overburden was stripped using a mechanical excavator equipped with a toothless ditching bucket under archaeological direction. Trenches were hand cleaned for the identification of archaeological remains.

Trench 1

6.2 Trench 1 was 25m by 1.5m. Natural subsoil, a pink orange sand with inclusions of clay [101], was identified at a depth of 0.4m-0.65m. Over the subsoil was a red brown sandy silt topsoil [100: 0.4m-0.65m deep]. A modern pit, containing the remains of a tractor, was identified and corresponds with a strong dipolar anomaly detected on the geophysics.

Trench 2

6.3 Trench 2 was 25m by 1.5m. Natural subsoil, a red orange sand [201], was identified at a depth of 0.6m-0.8m. Over the subsoil was a red brown sandy silt topsoil [200: 0.6m-0.8m deep]. No archaeological features were identified and no artefacts recovered.

Trench 3 (Figures 5, 7)

6.4 Trench 3 was 25m by 1.5m. Natural subsoil, a pink orange sand with boulder and clay inclusions [303], was identified at a depth of 0.35-0.65m. Cut into this was a small, linear, U-shaped gully [F301: 1.5m+ by 0.8m, 0.25m deep], which was filled by a grey brown silty sand [302]. An extremely weak magnetic anomaly can be discerned here which might correspond to the gully fill. Sealing these was a red brown sandy silt topsoil [300: 0.35m-0.65m deep].

Trench 4 (Figures 5, 8)

6.5 Trench 4 was 50m by 1.5m. Natural subsoil, a mottled pink clay with boulders and sand inclusions [401], was identified at a depth of 0.3-0.7m. Cut into this was a small, linear, U-shaped gully [F402: 1.5m+ by 0.6m, 0.15m deep], which was filled by a grey brown sandy silt [403]. This has not been detected magnetically. Sealing these was a grey brown sandy silt topsoil [400: 0.3m-0.7m deep].

Trench 5

6.6 Trench 5 was 25m by 1.5m. Natural subsoil, varying from a pink sandy clay in the east end of the trench to a pink white sand with boulders in the west [502], was identified at a depth of 0.4m-0.1.4m. In the centre of the trench was a large area of modern made ground. This was formed by a cut [F503: 15m by 1.5m+, 1.4m deep] which had been filled with a mix of redeposited natural subsoils, and capped with a layer of hardcore [501]. A plastic water pipe was also present running across the trench and was sealed by the hardcore. This corresponds with an area of disturbance detected in the geophysical survey. Sealing these deposits was a brown sandy silt topsoil [500: 0.4m-1.4m deep]. No archaeological features were identified and no artefacts recovered.

Trench 6

6.7 Trench 6 was 25m by 1.5m. Natural subsoil, a mottled red pink clay with regular inclusions of boulders and sand [601], was identified at a depth of 0.3m-0.8m. Cut into this was a small pipe trench containing a plastic pipe. Sealing these was a grey brown sandy silt topsoil [600: 0.3m-0.8m deep]. Areas of burning were noted on the surface during excavation as well as large amounts of modern debris, which corresponds with an area of disturbance detected in the geophysical survey. No archaeological features were identified and no artefacts recovered.

Trench 7

6.8 Trench 7 was 25m by 1.5m. Natural subsoil, a mottled orange yellow sand with inclusions of stone [701], was identified at a depth of 0.3m-0.6m. Over the subsoil was a grey brown sandy silt topsoil [700: 0.3m-0.6m deep]. No archaeological features were identified and no artefacts recovered.

Trench 8 (Figures 5, 9)

6.9 Trench 8 was 25m by 1.5m. Natural subsoil, a mottled pink orange yellow clay with yellow sand inclusions [801], was identified at a depth of 0.3-0.4m. Cut into this was a small, linear gully with steep sides and a flat base [F802: 2m+ by 0.5m, 0.25m deep]. The primary fill of the gully was mottled orange and white sand [803: 0.15m deep], and probably the result of silting. The secondary fill was a grey brown sandy silt with occasional large rounded stones [804: 0.10m deep]. Sealing these deposits was a grey brown sandy silt topsoil [800: 0.3m-0.4m deep].

Trench 9

6.10 Trench 9 was 25m by 1.5m. Natural subsoil, a mottled orange yellow sand with inclusions of stone to the north and mottled pink orange clay to the south [901], was identified at a depth of 0.3m-0.7m. Over the subsoil was a grey brown sandy silt topsoil [900: 0.3m-0.7m deep]. No archaeological features were identified and no artefacts recovered.

Trench 10

6.11 Trench 10 was 25m by 1.5m. Natural subsoil, a mottled orange yellow and pink clay with inclusions of sand [1001], was identified at a depth of 0.2m-0.45m. Over the subsoil was a grey brown sandy silt topsoil [1000: 0.2m-0.45m deep]. No archaeological features were identified and no artefacts recovered. A geophysical anomaly here may reflect variation in topsoil thickness, as recorded above.

Trench 11

6.12 Trench 11 was 25m by 1.5m. Natural subsoil, a mottled orange yellow clay with inclusions of stone and sand [1101], was identified at a depth of 0.3m-0.5m. Over the subsoil was a grey brown sandy silt topsoil [1100: 0.3m-0.5m deep]. No archaeological features were identified and no artefacts recovered.

Trench 12

6.13 Trench 12 was 50m by 1.5m. Natural subsoil, a mottled orange yellow clay with inclusions of stone and sand [1201], was identified at a depth of 0.3m-0.4m. Over the subsoil was a grey brown sandy silt topsoil [1200: 0.3m-0.4m deep]. No archaeological features were identified and no artefacts recovered. Linear anomalies interpreted as land drains on the geophysical survey would have lain parallel to the trench axis but were not identified within the trench.

Trench 13

6.14 Trench 13 was 25m by 1.5m. Natural subsoil, a mottled orange yellow sandy clay [1301], was identified at a depth of 0.3m-0.5m. Over the subsoil was a grey brown sandy silt topsoil [1300: 0.3m-0.5m deep]. No archaeological features were identified and no artefacts recovered.

Trench 14

6.15 Trench 14 was 25m by 1.5m. Natural subsoil, a mottled orange yellow clay with patches of sand [1401], was identified at a depth of 0.3m-0.4m. Cutting this were three French drains, identified as soil-filled features in the geophysical survey. Sealing these deposits was a grey brown sandy silt topsoil [1400: 0.3m-0.4m deep].

Trench 15

6.16 Trench 15 was 50m by 1.5m. Natural subsoil, a mottled orange yellow and pink clay with patches of sand and stone [1501], was identified at a depth of 0.25m-0.55m. Cutting this were two French drains, identified as soil-filled features in the geophysical survey. Sealing these was a grey brown sandy silt topsoil [1500: 0.25m-0.55m deep].

Trench 16

6.17 Trench 16 was 50m by 1.5m. Natural subsoil, a mottled orange yellow and pink clay with patches of sand [1601], was identified at a depth of 0.3m-0.6m. Over the

subsoil was a grey brown sandy silt topsoil [1600: 0.3m-0.6m deep]. No archaeological features were identified and no artefacts recovered.

Trench 17

6.18 Trench 17 was 50m by 1.5m. Natural subsoil, varying from a mottled orange yellow clay to mixed white and yellow sands with stone inclusions [1701], was identified at a depth of 0.4m-0.7m. A possible soil-filled feature identified on the geophysical survey was due to this variation in natural. Over the subsoil was a brown sandy silt topsoil [1700: 0.4m-0.7m deep]. No archaeological features were identified and no artefacts recovered. A recent geotechnical pit was present in the southern end of the trench.

Trench 18

6.19 Trench 18 was 25m by 1.5m. Natural subsoil, varying from a mottled yellow clay in the south end of the trench to a red orange clay in the north [1801], was identified at a depth of 0.3m-0.5m. Over the subsoil was a grey brown sandy silt topsoil [1800: 0.3m-0.5m deep]. No archaeological features were identified and no artefacts recovered.

Trench 19

6.20 Trench 19 was 25m by 1.5m. Natural subsoil, varying from a yellow sand in the west end of the trench to a mixed red and yellow sand in the east [1901], was identified at a depth of 0.5m-0.8m. Over the subsoil was a brown sandy silt topsoil [1900: 0.5m-0.8m deep]. No archaeological features were identified and no artefacts recovered.

Trench 20

6.21 Trench 20 was 25m by 1.5m. Natural subsoil, varying from mixed yellow and red sands in the north end of the trench to outcrops of laminated sandstone in the south [2001], was identified at a depth of 0.4m-0.7m. Over the subsoil was a brown sandy silt topsoil [2000: 0.4m-0.7m deep]. No archaeological features were identified and no artefacts recovered.

Trench 21 (Figures 6, 10)

6.22 Trench 21 was 50m by 1.5m and cut across a shallow valley. Natural subsoil, a mixed yellow and brown sand with areas of laminated sandstone [2102], was identified at a depth of 0.3m-1.4m. In the base of the valley was a deposit of brown silt colluvium with inclusions of occasional shells and stone [2105: 6.5m by 1.5m+, 0.55m deep]. Modern pottery and post-medieval ceramic building material were recovered from this deposit. Into this colluvium a construction cut had been made [F2103: 1.5m+ by 0.65m] for the creation of a stone culvert [F2104: 1.5m+ by 0.65m, 0.4m deep]. The culvert was constructed from two visible courses and capstones, but was not fully excavated as it was still flowing. Sealing the culvert was a grey brown sandy silt subsoil with black streaking [2101: 0.66m deep], and over this was a brown sandy silt topsoil [2100: 0.3m deep]. This natural valley and culvert correspond to a broad soil-filled feature identified in the geophysical survey.

Trench 22

6.23 Trench 22 was 25m by 1.5m. Natural subsoil, a pink brown clay with patches of orange red sand [2202], was identified at a depth of 0.5m-1.3m. Above this was a concrete slab located in the east end of the trench and a layer of modern debris and

redeposited natural [2201: 0.2-1.2m deep] which had been used to level the ground to the west of it. This corresponds with an area of disturbance identified in the geophysical survey and may be associated with the outbuildings of Roberts Lodge shown on OS maps. Over the modern debris and concrete was a shallow layer of grey brown sandy silt topsoil [2200: 0.1m-0.3m deep].

Trench 23

6.24 Trench 23 was 25m by 1.5m. Natural subsoil, varying from mixed yellow, red and grey sands in the south end of the trench to pink brown clay in the north [2301], was identified at a depth of 0.3m-0.4m. This was cut by a single trench for a ceramic field drain. Over the subsoil was a brown silty sand topsoil [2300: 0.3m-0.4m deep]. No archaeological features were identified and no artefacts recovered.

Trench 24

6.25 Trench 24 was abandoned due to dense vegetation and boggy ground.

Trench 25

6.26 Trench 25 was relocated due to dense vegetation and was 30m by 1.5m. Natural subsoil, an orange pink clay [2501], was identified at a depth of 0.25m-0.45m. Over the subsoil was a brown sandy silt topsoil [2500: 0.25m-0.45m deep]. These were cut by two modern field drains which flanked an area of hardcore [2502: 0.8m by 1.5m+, 0.2m deep], which sat above the topsoil. This was probably associated with the mill or track marked on the 1950s OS map.

Trench 26

6.27 Trench 26 was relocated due to dense vegetation and was 42m by 1.5m. Natural subsoil, varying from a red pink clay in the north east of the trench to an orange yellow sand in the south west [2601], was identified at a depth of 0.3m-0.6m. Cut into this was a modern field drain. Over the subsoil was a grey brown sandy silt topsoil [2600: 0.3m-0.6m deep]. Some degraded tarmac and rubble was noted above the topsoil in the south-west end of the trench which may relate to a track marked on OS maps.

Trench 27

6.28 Trench 27 was 25m by 1.5m. Natural subsoil, a pink red clay with sand patches [2702], was identified at a depth of 0.3m-0.4m. Cut into this were two modern field drains. A layer of modern debris, containing bricks and rubble [2701: 0.3m deep], sealed the natural subsoil for *c.*20m of the trench. This was may be associated with the mill or track marked on the 1950s OS map. Over the modern debris was a brown sandy silt topsoil [2700: 0.1m-0.3m deep].

Trench 28

6.29 Trench 28 was 25m by 1.5m. Natural subsoil, a yellow clay in the east end of the trench and a mixed red and grey sand in the west [2801], was identified at a depth of 0.3m-0.4m. Cut into this were two modern field drains. Over the subsoil was a grey brown sandy silt topsoil [2800: 0.3m-0.4m deep]. No archaeological features were identified and no artefacts recovered.

Trench 29 (Figure 11)

6.30 Trench 29 was 50m by 1.5m and cut across a shallow valley. Natural subsoil, red brown sand and clay to the west end of the trench and white yellow sands and clay

to the east [2905], was identified at a depth of 0.4m-1.3m. In the base of the valley was a deposit of mixed grey brown and yellow clay silt colluvium [2904: 6.5m by 1.5m+, 0.2m deep]. Into this colluvium a construction cut had been made [F2901=F2103: 1.5m+ by 0.65m] for the creation of a stone culvert [F2902=F2104: 1.5m+ by 0.65m, 0.4m deep]. Sealing the culvert was a grey brown sandy silt subsoil [2903:0.3m deep], and over this was a brown sandy silt topsoil [2900: 0.4-0.8m deep]. This culvert and valley are a continuation of those first identified in Trench 21 and correspond to a soil-filled feature identified in the geophysical survey.

Trench 30

6.31 Trench 30 was 25m by 1.5m. Natural subsoil, a yellow clay in the south end of the trench and a red orange clay in the north [3001], was identified at a depth of 0.4m-0.5m. Cut into this were two modern field drains. Over the subsoil was a grey brown sandy silt topsoil [3000: 0.4m-0.5m deep]. No archaeological features were identified and no artefacts recovered.

Trench 31

6.32 Trench 31 was 50m by 1.5m and cut across a shallow valley. Natural subsoil, varying from orange sand and gravel to the west of the trench, to white yellow sand centrally and solid sandstone geology to the east [3102], was identified at a depth of 0.4m-1.6m. In the base of the valley was a deposit of grey black clay silt colluvium with patches of sand [3101:15m by 1.5m+, 0.7m deep]. Into this colluvium a construction cut had been made [F3103=F2103: 1.5m+ by 0.65m] for the creation of a stone culvert [F3104=F2104: 1.5m+ by 0.65m]. In addition three modern field drains were present running across the trench. Sealing these deposits was a grey brown sandy silt topsoil [3100:0.4m-0.9m deep]. This culvert and valley are a continuation of those identified in Trench 21 and correspond to a soil-filled feature identified in the geophysical survey.

Trench 32

6.33 Trench 32 was 25m by 1.5m and located on a natural slope. Natural subsoil [3201], a white yellow sand in the north end of the trench was identified at a depth of 0.1m-1.3m, and a pink orange sand in the south end of the trench was identified at a depth of 0.25m-1m. Cut into this were two modern field drains. Over the subsoil was a grey brown sandy silt topsoil [3200: 0.4m-0.5m deep]. No archaeological features were identified and no artefacts recovered.

Trench 33

6.34 Trench 33 was 50m by 1.5m. Natural subsoil [3301], a pink brown clay with inclusions of stone in the south-east end of the trench, a pink sand with boulders in the centre, and solid sandstone geology in the north-west, were identified at a depth of 0.25m-0.5m. Over the subsoil was a grey brown sandy silt topsoil [3300: 0.25m-0.5m deep]. A soil-filled feature identified in the geophysical survey is the result of variation in natural deposits.

Trench 34

6.35 Trench 34 was 25m by 1.5m and cut across a shallow valley. Natural subsoil [3402], a red orange sand was identified at the ends of the trench at a depth of 0.4m, and a yellow sand was identified in the centre of the trench at a depth of 0.4m-1m. In the base of the valley was a deposit of grey yellow sand colluvium [3401: 8m by 1.5m+,

1m deep]. This valley corresponds to a soil-filled feature identified in the geophysical survey. Over the subsoil was a grey brown sandy silt topsoil [3400: 0.4m-1m deep].

Trench 35 (Figure 6)

6.36 Trench 35 was 25m by 1.5m and ran down the side of a shallow valley. Natural subsoil [3506], a yellow sand was identified in the centre of the trench at a depth of 2m, and solid sandstone geology was identified at a depth of 0.4m-2m to the north and south. These were cut by probable quarrying activity which took the form of a large pit with sharp breaks of slope and vertical edges [F3503: 8m by 1.5m+, 1.25m deep]. In the base of the cut was a deposit of yellow grey clay sand colluvium [3502: 8m by 1.5m+, 0.9m deep]. The quarry activity was sealed by a layer of mixed redeposited natural with frequent inclusions of sand and stone [3501: 0.2-0.4m deep], which was present across the trench. Into this redeposited natural a construction cut had been made [F3504=F2103: 1.5m+ by 0.4m, 0.3m deep] for the creation of a stone culvert [F3505=F2104: 1.5m+ by 0.4m, 0.3m deep]. Sealing these deposits was a grey brown sandy silt topsoil [3500: 0.4m-1.1m deep]. This culvert and valley are a continuation of those first identified in Trench 21; both these and the quarrying correspond to soil-filled features identified in the geophysical survey.

Trench 36

6.37 Trench 36 was 25m by 1.5m. Natural subsoil [3601], a mottled orange yellow clay with identified in the western end of the trench and solid bedrock geology in the east end, at a depth of 0.25m-0.8m. Over the subsoil and bedrock was a grey brown sandy silt topsoil [3600: 0.25m-0.8m deep]. No archaeological features were identified and no artefacts recovered.

Trench 37

6.38 Trench 37 was 50m by 1.5m and cut across a shallow valley. Natural subsoil [3705], a yellow orange sand, was identified in the north-east and south-west ends of the trench at a depth of 0.3m to 0.6m, and solid sandstone geology was identified in the centre of the trench at a depth of 0.6m-1.3m. In the base of the valley was a deposit of grey brown clay sand colluvium [3702: 2.2m by 1.5m+, 0.6m deep]. Into this colluvium a construction cut had been made [F3703=F2103: 1.5m+ by 0.4m, 0.4m deep] for the creation of a stone culvert [F3704=F2104: 1.5m+ by 0.4m, 0.4m deep]. Sealing these deposits was a yellow brown silty clay subsoil [3701: 0.2m deep] and above this a grey brown sandy silt topsoil [3700: 0.3m-0.5m deep]. This culvert and valley are a continuation of those first identified in Trench 21 and correspond to a soil-filled feature identified in the geophysical survey.

Trench 38

6.39 Trench 38 was 50m by 1.5m. Natural subsoil [3801], a yellow grey mottled clay in the south-east end of the trench, pink brown sand and gravel in the centre, and pink brown sand in the north-west, was identified at a depth of 0.3m-0.4m. Over the subsoil was a grey brown sandy silt topsoil [3800: 0.3m-0.4m deep]. No archaeological features were identified and no artefacts recovered.

Trench 39

6.40 Trench 39 was 50m by 1.5m. Natural subsoil [3901], a yellow grey mottled clay in the north-east end of the trench and pink brown clay in the south-west, was identified at a depth of 0.3m-0.4m. This was cut by a French drain. Over the subsoil was a grey

brown sandy silt topsoil [3900: 0.3m-0.4m deep]. No archaeological features were identified and no artefacts recovered.

Trench 40

6.41 Trench 40 was 50m by 1.5m. Natural subsoil [4001], a yellow grey mottled clay was identified at a depth of 0.35m-0.45m. This was cut by a modern field drain. Over the subsoil was a grey brown sandy silt topsoil [4000: 0.35m-0.45m deep]. No archaeological features were identified and no artefacts recovered.

Trench 41

6.42 Trench 41 was 25m by 1.5m. Natural subsoil [4101], a yellow grey mottled clay in the north end of the trench and an orange yellow sandy clay in the south, was identified at a depth of 0.3m-0.45m. This was cut by a modern field drain. Over the subsoil was a grey brown sandy silt topsoil [4100: 0.3m-0.45m deep]. No archaeological features were identified and no artefacts recovered.

7. The artefacts

Pottery assessment

Results

7.1 Four sherds (9g wt) came from context [2105], comprising one piece of plain and two of transfer-printed whiteware and a sherd of colour glazed ware. All are of 19th or early 20th century date.

Recommendation

7.2 No further work is recommended.

Building materials assessment

Results

7.3 A sliver of probable brick with no measurable dimensions and a fragment of post-medieval pantile (15mm thick) with one sanded face also came from context [2105].

Recommendation

7.4 No further work is recommended.

8. The palaeoenvironmental evidence

Methods

8.1 A palaeoenvironmental assessment was carried out on three bulk samples, taken from gully fills of possible prehistoric origin. The samples were manually floated and sieved through a 500μm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification using a Leica MZ7.5 stereomicroscope for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (1997). Habitat classifications follow Preston *et al.* (2002).

8.2 Selected charcoal fragments were identified, in order to provide material suitable for radiocarbon dating. The transverse, radial and tangential sections were examined at

up to x600 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990) and Hather (2000), and modern reference material held in the Environmental Laboratory at Archaeological Services Durham University.

8.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010).

Results

8.4 The flot matrices were similar in nature, comprising small fragments of charcoal, coal and clinker/cinder. Charred rhizomes were present in [302] and charred heather twigs were recorded in [302] and [804]. The charcoal was in poor condition with frequent mineral inclusions preventing identification in some instances. Identified charcoal included oak from [403] and alder from [804]. Charred plant macrofossil remains comprised a single grass caryopsis from [804]. Uncharred seeds of knotgrass and goosefoot family were noted, although the well-drained nature of the site and the presence of modern roots indicate that these are recent introductions. Finds from the samples were absent. Material is available for radiocarbon dating, although some of this may be unsuitable due to either insufficient weight of carbon or the potential for long-lived species. The results are presented in Table 1.2.

Discussion

8.5 The assessment provides little information about the age of the features due to the absence of diagnostic material. However, the presence of clinker/cinder, charcoal and the charred remains of rhizomes and heather twigs indicate that these deposits are archaeological in nature and potentially prehistoric in origin.

Recommendations

8.6 No further analysis is required for the plant macrofossils due to their low numbers and poor preservation. If additional work is undertaken at the site, the results of this assessment should be added to any further palaeoenvironmental data produced.

9. The archaeological resource

9.1 Small gullies were identified in trenches 3, 4 and 8. Although their origin is uncertain they have the potential to be prehistoric in date, and may be related to the adjacent cropmark site.

9.2 A broad linear anomaly identified in the geophysical survey was shown to be a small, naturally silted valley bottom with a post-medieval stone culvert set within it. This was identified in trenches 21, 29, 31, 35 and 37.

9.3 Trench 35 targeted an anomaly identified as a soil-filled feature in the geophysical survey. Excavation showed this to be an in-filled quarry pit.

9.4 Deposits associated with modern activity, some of which were highlighted in the geophysical survey, were identified in trenches 22, 27, 26, 25. These were probably associated with Roberts Lodge itself and a mill and track, all of which are present on OS maps.

10. Impact assessment

10.1 Development of the majority of the site is unlikely to impact on any significant archaeological deposits.

10.2 In the west of the site three gullies of possible prehistoric origin have been identified. Development of these areas has the potential to truncate of remove significant archaeological deposits

11. Recommendations

11.1 No archaeological resource has been identified which requires preservation *in situ*. A programme of archaeological recording is recommended in the western part of the site to record the archaeological deposits that may be impacted upon by the proposed development.

12. Sources

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Appendix 1: Data tables

Table 1.1: Context data

P=Pottery C=CBM

No	Trench	Description	P	C
100	1	Topsoil		
101	1	Natural		
200	2	Topsoil		
201	2	Natural		
300	3	Topsoil		
F301	3	Gully		
302	3	Fill		
303	3	Natural		
400	4	Topsoil		
401	4	Natural		
F402	4	Gully		
403	4	Fill		
500	5	Topsoil		
501	5	Subsoil		
502	5	Natural		
F503	5	Cut		
600	6	Topsoil		
601	6	Natural		
700	7	Topsoil		
701	7	Natural		
800	8	Topsoil		
801	8	Natural		
F802	8	Gully		
803	8	Fill		
804	8	Fill		
900	9	Topsoil		
901	9	Natural		
1000	10	Topsoil		
1001	10	Natural		
1100	11	Topsoil		
1101	11	Natural		
1200	12	Topsoil		
1201	12	Natural		
1300	13	Topsoil		
1301	13	Natural		
1400	14	Topsoil		
1401	14	Natural		
1500	15	Topsoil		
1501	15	Natural		
1600	16	Topsoil		
1601	16	Natural		
1700	17	Topsoil		
1701	17	Natural		
1800	18	Topsoil		
1801	18	Natural		
1900	19	Topsoil		
1901	19	Natural		
2000	20	Topsoil		
2001	20	Natural		
2100	21	Topsoil		
2101	21	Subsoil		
2102	21	Natural		
F2103	21	Cut		
F2104	21	Culvert		
2105	21	Colluvium	•	•
2200	22	Topsoil		

No	Trench	Description	P	C
2201	22	Subsoil		
2202	22	Natural		
2300	23	Topsoil		
2301	23	Natural		
2500	25	Topsoil		
2501	25	Natural		
2600	26	Topsoil		
2601	26	Natural		
2701	27	Rubble		
2702	27	Natural		
2800	28	Topsoil		
2801	28	Natural		
2900	29	Topsoil		
F2901	29	Culvert		
F2902	29	Cut		
2903	29	Subsoil		
2904	29	Colluvium		
2905	29	Natural		
3000	30	Topsoil		
3001	30	Natural		
3100	31	Topsoil		
F3101	31	Colluvium		
F3102	31	Cut		
3103	31	Culvert		
3104	31	Natural		
3200	32	Topsoil		
3201	32	Natural		
3300	33	Topsoil		
3101	33	Natural		
3400	34	Topsoil		
3401	34	Colluvium		
3402	34	Natural		
3500	35	Topsoil		
3501	35	Subsoil		
3502	35	Colluvium		
F3503	35	Cut		
F3504	35	Cut		
F3505	35	Culvert		
3506	35	Natural		
3600	36	Topsoil		
3601	36	Natural		
3700	37	Topsoil		
3701	37	Subsoil		
3702	37	Colluvium		
F3703	37	Culvert		
F3704	37	Cut		
3705	37	Natural		
3800	38	Topsoil		
3801	38	Natural		
3900	39	Topsoil		
3901	39	Natural		
4000	40	Topsoil		
4001	40	Natural		
4100	41	Topsoil		
4101	41	Natural		

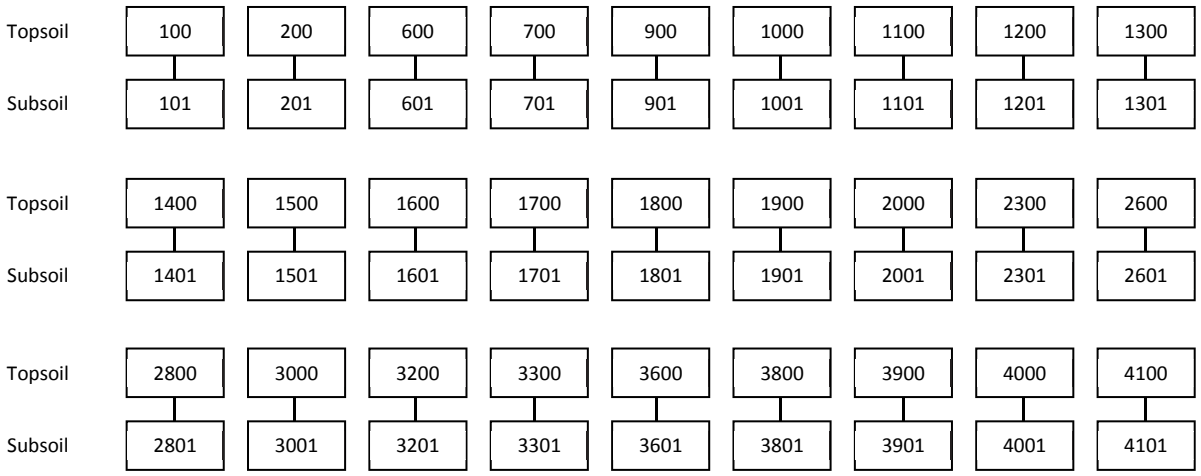
Table 1.2: Macrofossil results

Sample	**1**	**2**	**3**
Context	**302**	**403**	**804**
Feature number	**301**	**402**	**802**
Feature	**gully**	**gully**	**gully**
Material available for radiocarbon dating	(✓)	(✓)	(✓)
Volume processed (l)	9	16	9
Volume of flot (ml)	40	120	100
Residue contents			
Charcoal	-	+	-
Flot matrix			
Charcoal	+	+	+
Clinker / cinder	+	++	+
Coal	+	++	+
Heather twigs (charred)	+	-	+
Rhizomes (charred)	+	-	-
Roots (modern)	+	++	++
Uncharred seeds	(+)	++	(+)
Charred remains (total count)			
(x) Poaceae undiff. >2mm (Grass family) caryopsis	-	-	1

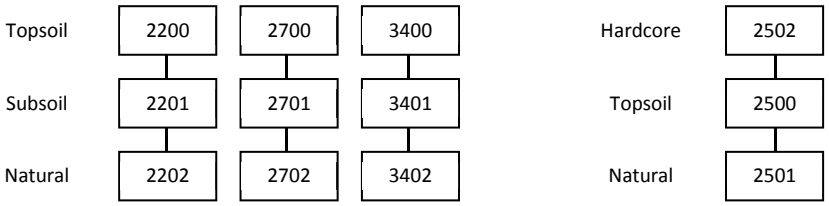
[a-arable; c-cultivated; h-heathland; t-tree/shrub; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
Waterlogged remains are scored from 1-5 where 1: 1-2; 2: 3-10; 3: 11-40; 4: 41-200; 5: >200
(✓) there may be insufficient weight of carbon available for radiocarbon dating]

Appendix 2: Stratigraphic matrices

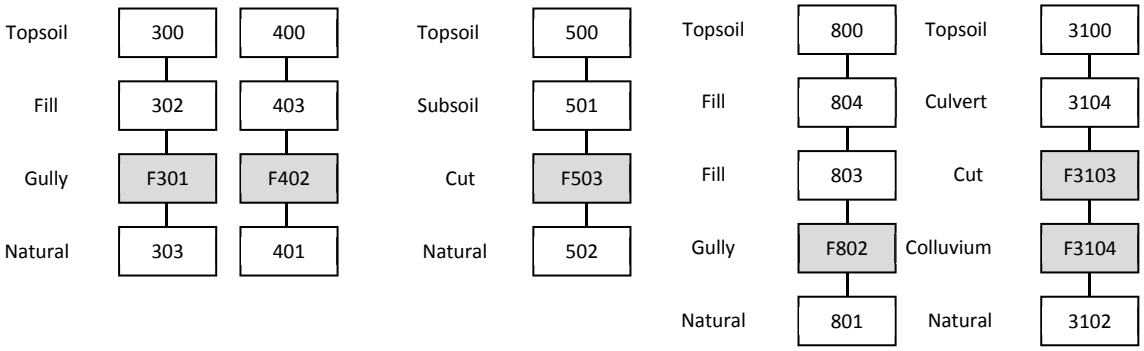
Trenches 1, 2, 6, 7, 9-20, 23, 26, 28, 30, 32, 33, 36, 38-41



Trenches 22, 25, 27 and 34



Trenches 3, 4, 5, 8, and 31



Trenches 21, 29, 35, and 37

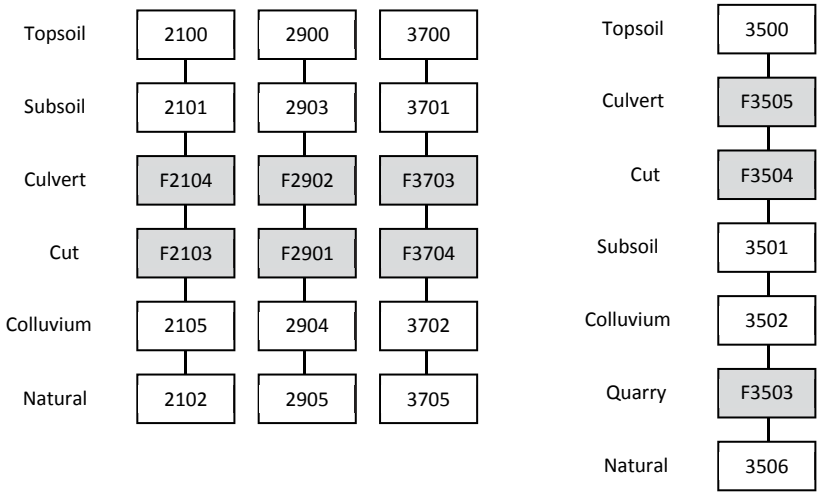


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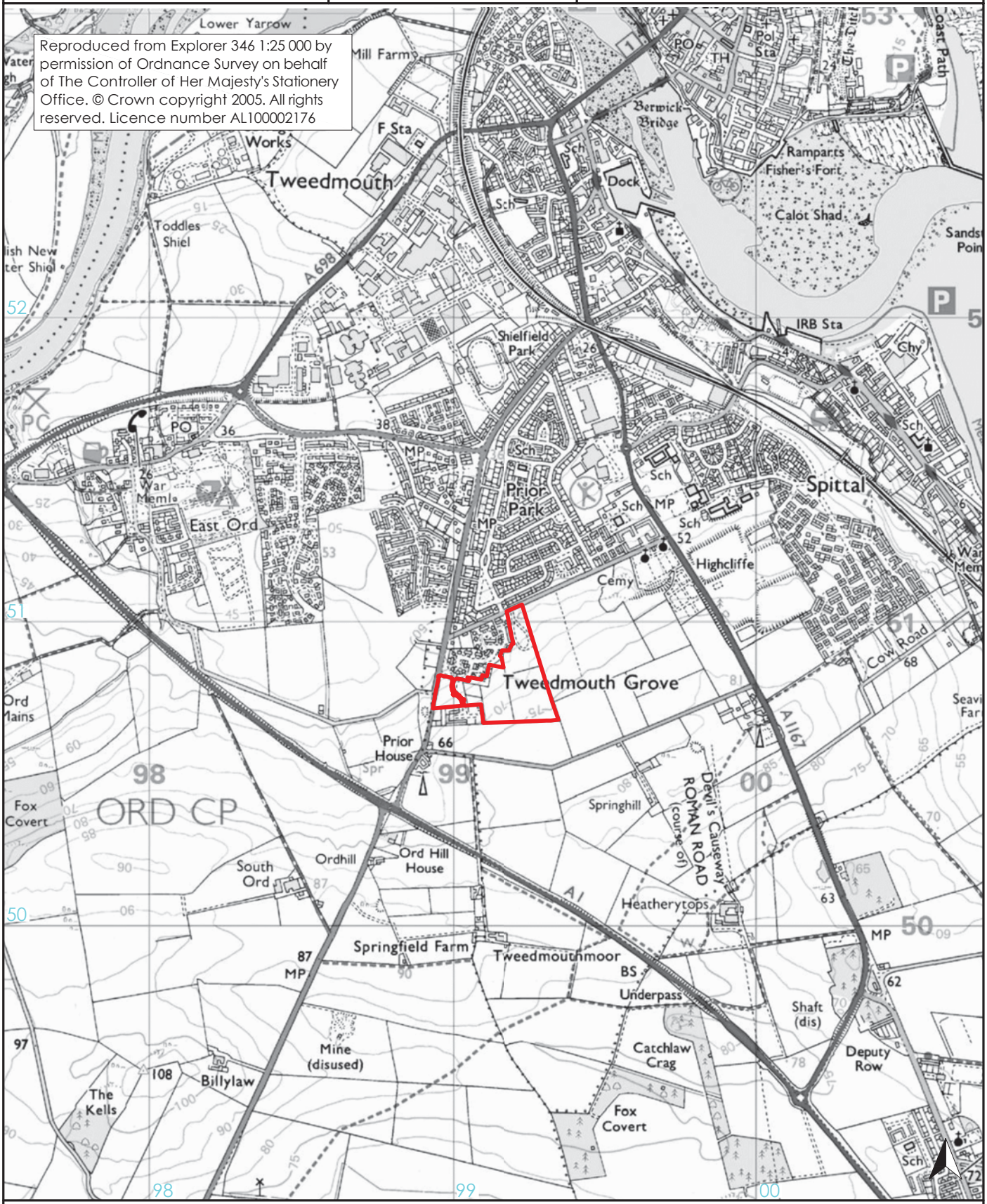
Figure 1: Site location



site location

0 800m
scale 1:17 500 for A4 plot

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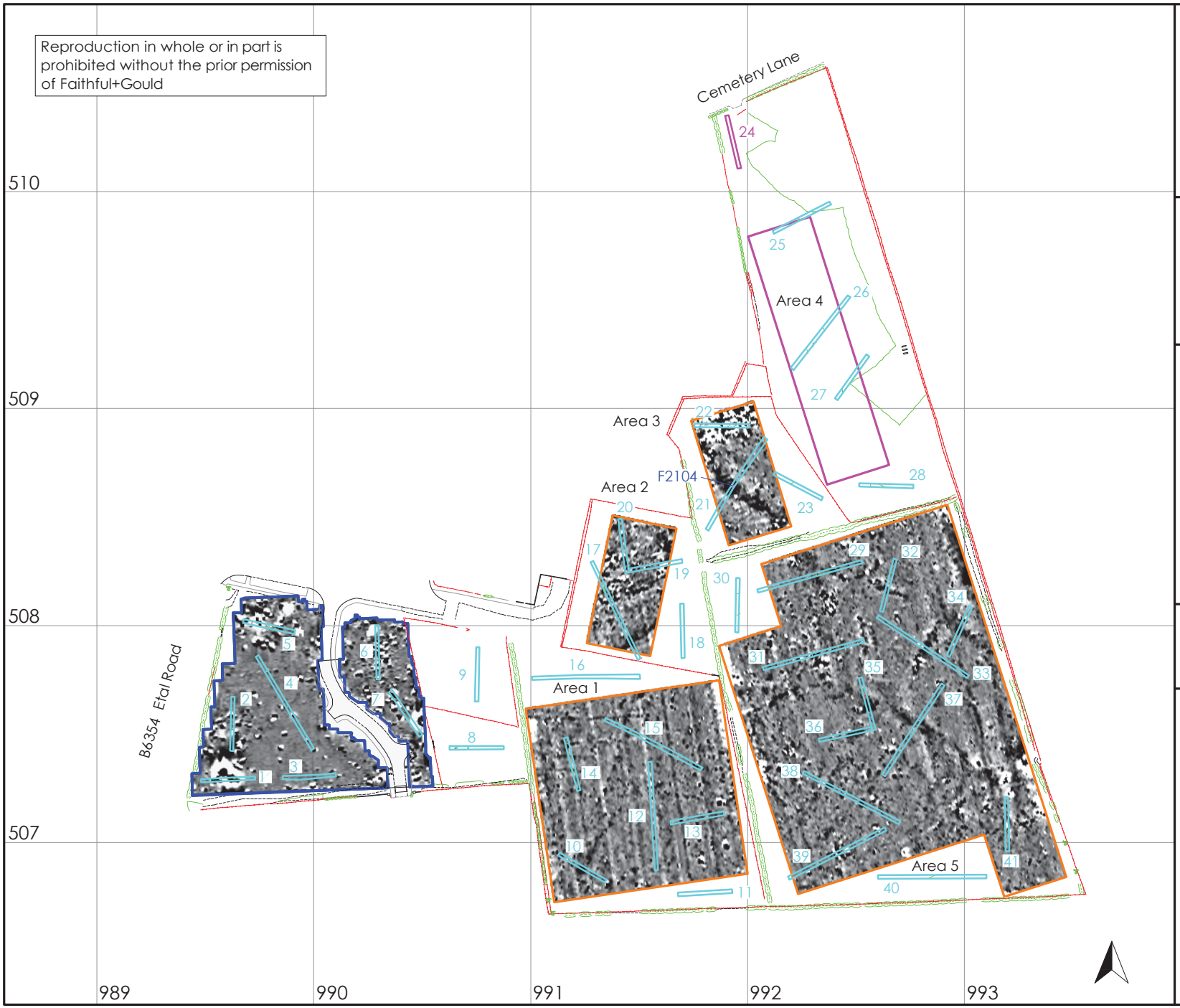

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Figure 2: Survey and trench locations

0 100m
scale 1:2500 for A4 plot

- magnetic survey
- previous magnetic survey
- overgrown not surveyed/ excavated
- trench

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A

B

C

509

508

507

990

991

992

993

Area 1

Area 2

Area 3

Area 4

Area 5

A - geophysical survey

magnetic survey

previous magnetic survey

-5 nT 5

B - geophysical interpretation

dipolar magnetic anomaly

positive magnetic anomaly

negative magnetic anomaly

C - archaeological interpretation

soil-filled feature

disturbed area

land drain

fence

0 50m

scale 1:1000 for A1 plot

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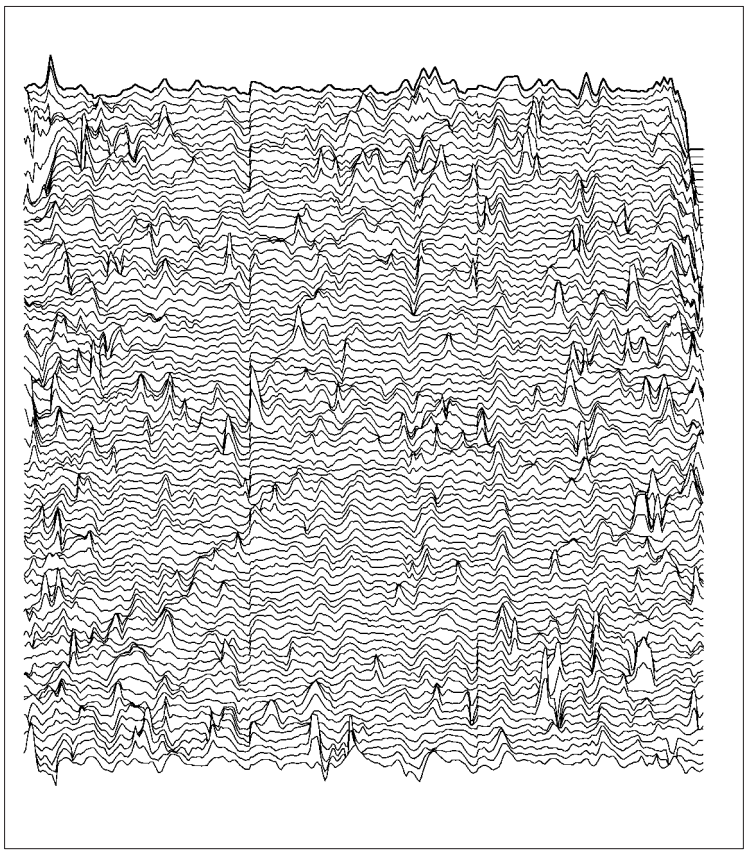
Figure 3: Geophysical survey and interpretation

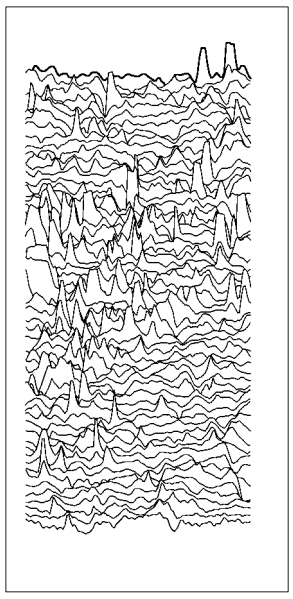
Area 1

25.00nT/cm



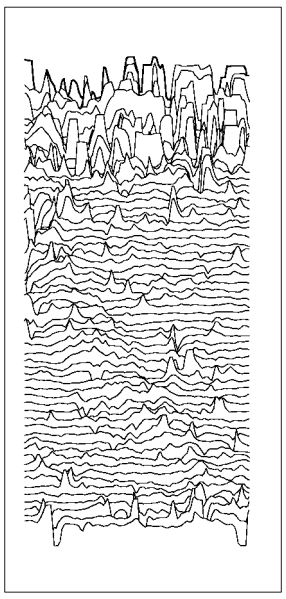
Area 2

42.90nT/cm



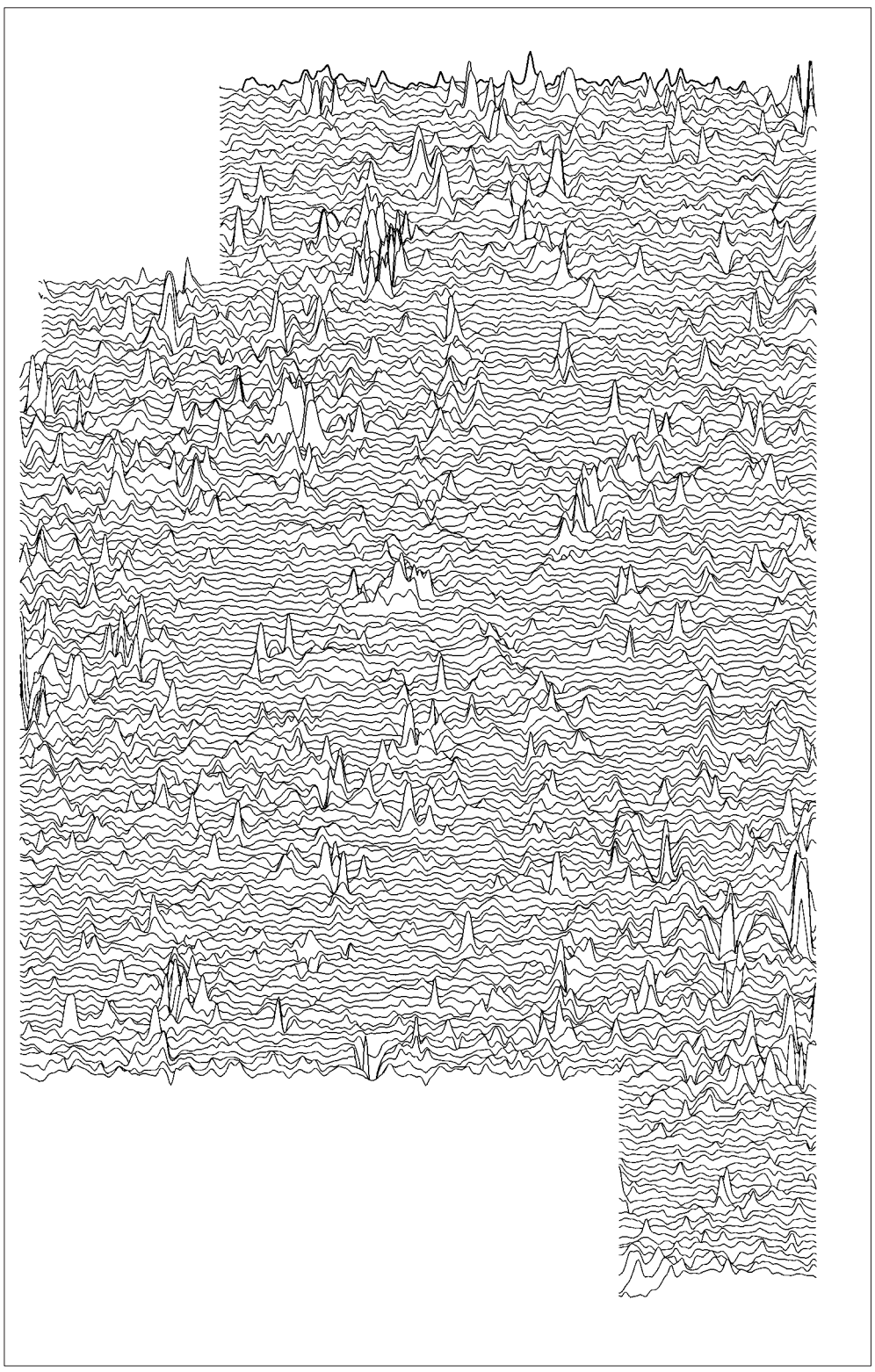
Area 3

70.20nT/cm



Area 5

27.70nT/cm



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0 50m
scale 1:1000 for A3 plot

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Figure 4: Trace plots of geomagnetic data

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extent of excavation

2 section

field drain

0 4m
scale of plans 1:80 for A3 plot

0 2m
scale of sections 1:40 for A3 plot

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Figure 5: Trench 3, 4 and 8 plans and sections

Section 1
W E
300
59.98m OD
302
F301

Trench 3, plan
S1
303
303
302
F301

Section 2
S N
55.22m OD
403
F402

Trench 4, plan
401
403
S2
F402
403
401

Section 3
NW SE
64.05m OD
804
803
F802

Trench 8, plan
801
804
S3
804
F802
801
801

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extent of excavation
section
field drain
stone culvert

0 4m
scale of plans 1:80 for A3 plot

0 2m
scale of sections 1:40 for A3 plot

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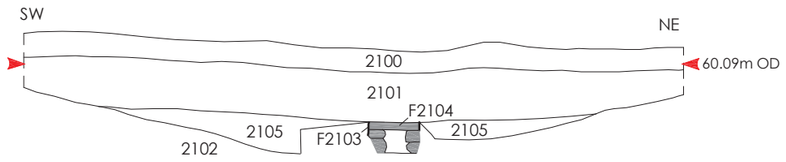
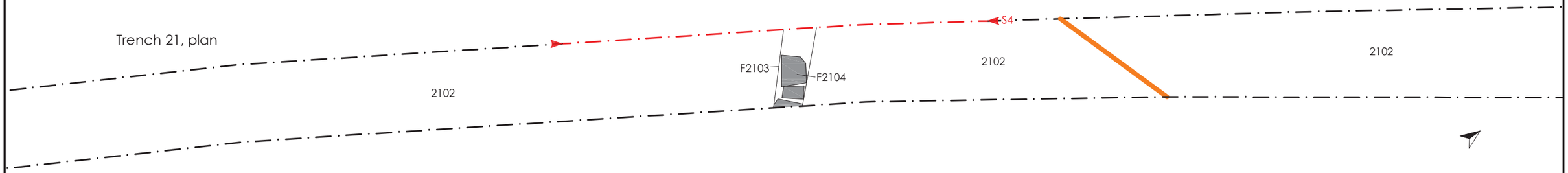
Figure 6: Trench 21 and 35 plans and sections

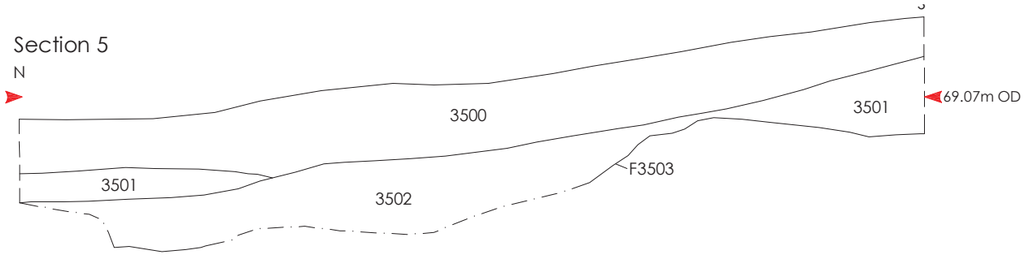
Section 4



Trench 21, plan



Section 5



Trench 35, plan

Figure 7: Trench 3, gully F301, looking north

Figure 8: Trench 4, gully F402, looking west

Figure 9: Trench 8, gully F802, looking north-east

Figure 10: Trench 21, culvert F2104, looking south-west

Figure 11: Trench 29, culvert F2104, looking south

Figure 12: Trench 22, made ground, looking east

Figure 13: Trench 35, quarry activity, looking south

Figure 14: Trench 26, modern hardcore, looking north-west