

ARCHAEOLOGICAL  
SERVICES  
DURHAM UNIVERSITY

on behalf of  
UK Coal Mining Ltd

Marley Hill Proposed Surface Mine  
County Durham and Gateshead

geophysical survey and fieldwalking

report 3028  
December 2012



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## 1. Summary

### The project

- 1.1 This report presents the results of geophysical survey and fieldwalking conducted in advance of proposed development at the former Marley Hill Colliery, in County Durham and Gateshead. The works comprised 49ha of geomagnetic survey in 13 areas, with six of these fieldwalked for the surface collection of artefacts.
- 1.2 The works were commissioned by UK Coal Mining Ltd and conducted by Archaeological Services Durham University.

### Results

- 1.3 Possible soil-filled features have been identified in Areas 2, 4, 5, 6, 7, 8, 9, 10, 11 and 13. Some of these almost certainly reflect ditches and other archaeological features, whilst others are considered more likely to be geomorphological.
- 1.4 Possible former ridge and furrow cultivation has been identified in Areas 3 and 8.
- 1.5 Former mining waggonways have been identified in Areas 7, 9 and 10.
- 1.6 Possible evidence of former mine workings, such as former shafts, exploratory shafts and bell pits, have been identified in Areas 4, 5, 6, 7, 8, 10, 12 and 13.
- 1.7 Other evidence of probable industrial activity has been identified in the form of concentrations of ferrous/fired materials, indicating probable industrial waste or otherwise disturbed ground, in Areas 1, 4, 5, 6, 8 and 11.
- 1.8 Former field boundaries, as recorded by historic OS editions, have been identified in Areas 5, 8, 9 and 10.
- 1.9 Probable former tracks have been identified in Areas 5 and 10.
- 1.10 Systems of land drainage have been identified in Areas 1, 4, 5, 6, 7, 8, 9, 12 and 13.
- 1.11 Recent ploughing regimes have been detected in Areas 1, 2, 4, 5, 7, 9, 10 and 13.
- 1.12 Services have been detected in Areas 1, 3, 4, 5, 8 and 11.
- 1.13 Few artefacts were recovered during the fieldwalking of six areas, though these are not without interest: nine pieces of flint, three sherds of pottery and a copper alloy compact containing coins and tickets.
- 1.14 Five of the pieces of flint were worked, three flakes, a scraper and a blade. All the worked pieces were recovered from fields in which possible soil-filled features were also identified in the geophysical survey.

## 2. Project background

### Location (Figure 1)

- 2.1 The proposed development area (PDA) was located on land around the former Marley Hill Colliery, straddling the border between County Durham and Gateshead (NGR centre: NZ 2013 5707). Thirteen surveys totalling approximately 49ha were conducted in thirteen land parcels. Six of these areas were also fieldwalked for the surface collection of artefacts.
- 2.2 The study area occupies open farmland, with former mine workings, railways and waggonways. Tanfield Railway and the A6076 road bound the site to the east; Bobgins Burn and Wheatley's Gill lie to the south and west, and Longfield House and Marley Hill are both just north of the site boundary.

### Development proposal

- 2.3 The proposed development is for the reclamation of the former Marley Hill and Andrew's House Colliery sites with extraction of coal and subsequent landscape restoration.

### Objective

- 2.4 The general aim of the works was to assess the nature and extent of any 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 development.
- 2.5 Project specific aims were to confirm the apparent absence of pre-17th-century occupation and to characterise the extent and survival of the known archaeology across the site with reference to the North East Regional Research Framework (Petts & Gerrard 2006) objectives PM1: post-medieval coal mining; and PM2: early railways.

### Methods statement

- 2.6 The surveys have been undertaken in accordance with a Written Scheme of Investigation provided by Archaeo-Environment Ltd on behalf of the client and with national standards and guidance (see para. 5.1 below).

### Dates

- 2.7 Fieldwork was undertaken between 29th October and 13th November 2012. This report was prepared for 7th December 2012.

### Personnel

- 2.8 Fieldwork was conducted by Ashley Hayes, Sophie Laidler, Natalie Swann (supervisor), Nathan Thomas (supervisor), Richie Villis and Rebekah Watson. The geophysical data were processed by Duncan Hale (the Project Manager) and Natalie Swann. Artefact assessment was by Helen Drinkall (lithics) and Jennifer Jones. This report was prepared by Richie Villis with contributions from Helen Drinkall and Jennifer Jones and illustrations by David Graham. The report has been edited by Duncan Hale.



### **Archive/OASIS**

- 2.9 The site code is **DMH12**, for **Durham Marley Hill 2012**. The survey archive will be supplied on CD to the client for deposition with the project archive in due course. Archaeological Services Durham University is registered with the **Online Access** to the **Index of archaeological investigationS** project (**OASIS**). The OASIS ID number for this project is **archaeol3-138205** for the Tyne & Wear HER and **archaeol3-138213** for the Durham County SMR.

## **3. Historical and archaeological background**

- 3.1 An archaeological desk-based assessment (DBA) has been undertaken (Archaeo-Environment Ltd 2012) to form part of an Environmental Statement (ES) for the site. The following is taken from the DBA's conclusions and is presented here with only minor amendments.
- 3.2 The DBA has been able to produce a broad historical narrative for the development of the historic environment of the area over several millennia. It has also identified a number of accurately mapped historic assets. Much of this detail is however of post-medieval interest and related to the dual intertwined stories of agricultural land use and mineral, principally coal, extraction and export. From the late 17th century onwards there is clear documentary and physical evidence across the site for at least two major phases of coal exploitation, accompanied by enclosure of the landscape and the development of new farmsteads at Wood Houses and Andrews House. The lack of any identifiable historic assets across the site relating to medieval or earlier land use, occupation or exploitation is perhaps surprising when the wider context of the study area is taken into account. The wider environs of the site and the broader Pennine fringe contain numerous historic environment sites of a number of periods which would suggest that the development site should also at least have the potential for historic remains of periods before the 17th century. Much of the site lies between a number of villages with known medieval origins such as Tanfield and Marley Hill, and so for much of the medieval period at least may have been largely agricultural land or waste before the development of intake and isolated farmsteads from the 16th and 17th centuries onwards. Prior to the later medieval period there is however no evidence for the occupation or use of the site despite several areas being of favourable topography with gentle south-facing slopes and easy access to water. It may be that the extensive industrial exploitation of the site since the early 18th century, together with the large areas under arable deep-ploughing since the latter half of the 20th century, have removed or obscured any earlier archaeological sites.
- 3.3 There are no designated heritage sites within the boundary of the proposed development site, although a number of notable designated heritage assets are located within a short distance. Of particular note are the designed landscapes of Gibside and Ravensworth to west and east and both to some degree financed through wealth generated by coal; a number of conservation areas including the modern mining village of Marley Hill immediately to the north; several listed buildings which are mostly within conservation areas but also Beckley Farmhouse to the south; and a number of scheduled monuments, principally of industrial character including a notable group to the south around Causey Arch and Bob Gins Engine House. Due to the topography of the land, the majority of these neither have views to the site, nor are visible in views of the site.

#### 4. Landuse, topography and geology

4.1 Thirteen fields within the proposed development area were identified for geophysical survey; these comprised five fields of pasture and eight arable fields. It was possible to fieldwalk six of the arable fields for the surface collection of artefacts, however, two fields remained in stubble at the time of fieldwork. Geophysical data collection was not possible across parts of Area 8 due to thick gorse bushes, dense undergrowth and extremely steep slopes. The table below presents further details of the survey areas.

Area (geophysical survey)	Field (surface collection)	Size (ha)	Landuse	Topography	NGR (centre)
1	1	4.18	arable, ploughed and seeded	sloping west to east	NZ 20907 57592
2	2	4.68	arable, ploughed and seeded	steep slope at south, ridge at east	NZ 20756 57043
3	n/a	3.24	pasture, horses	sloping north-east to south-west	NZ 20106 57432
4	3	1.60	arable, stubble/ploughed	sloping north to south	NZ 19868 57275
5	n/a	5.20	arable, stubble	sloping north to south	NZ 19657 57017
6	n/a	0.90	pasture, horses, overgrown with nettles & thistles	sloping north to south	NZ 19883 57096
7	n/a	3.98	arable, stubble	sloping north to south	NZ 19729 56797
8	n/a	2.82	pasture, horses, overgrown with nettles, thistles & gorse	very steep slopes north to south	NZ 19888 56927
9	4	4.48	arable, ploughed and seeded	gentle slope north to south	NZ 20482 56843
10	5	10.19	arable, ploughed and seeded	sloping north-east to south-west	NZ 20238 56905
11	n/a	2.03	pasture; overgrown with scrub, nettles & thistles	sloping north to south	NZ 20358 56568
12	n/a	2.16	pasture, overgrown with scrub, nettles & thistles	sloping north to south	NZ 20209 56596
13	6	3.33	arable, ploughed and seeded	sloping north-east to south-west	NZ 20045 56616

4.2 The PDA generally slopes from north down to south with elevations of between 184m OD to 127m OD, with some steeper slopes in the vicinity of Andrew's House Dene and in the south towards Bobgins Burn.

4.3 The underlying solid geology of the area comprises Westphalian mudstone, siltstone and sandstone of the Pennine Middle Coal Measures Formation, which are overlain by Devensian till in the north and west and glaciofluvial sands and gravels in the east. A narrow band of alluvium runs east-west along the line of Bobgins Burn at the extreme south of the PDA.

## 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 *Guide to Good Practice: Geophysical Data in Archaeology* (Schmidt & Ernenwein 2011).

### 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, mining and railway features 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 known, mapped Ordnance Survey points and the 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 Figures 2-5; the trace plots are provided in Figure 6. 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:

<i>clip</i>	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic
<i>zero mean traverse</i>	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
<i>destagger</i>	corrects for displacement of geomagnetic anomalies caused by alternate zig-zag traverses
<i>interpolate</i>	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 Colour-coded geophysical interpretation plans are provided. Three types of geomagnetic anomaly have been distinguished in the data:
- |                          |   |
|--------------------------|---|
| <i>positive magnetic</i> | 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                                  |
| <i>negative magnetic</i> | 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 |
| <i>dipolar magnetic</i>  | 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                       |

### Interpretation: features

#### General comments

- 5.11 A colour-coded archaeological interpretation plan is provided.
- 5.12 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.

- 5.13 Series of narrow, parallel, weak, positive and negative magnetic anomalies have been detected across Areas 1, 2, 4, 5, 7, 9, 10 and 13. These anomalies almost certainly reflect modern ploughing regimes.
- 5.14 Regularly spaced narrow positive magnetic anomalies have been detected in Areas 1, 4, 5, 6, 7, 8, 9, 11, 12 and 13; these almost certainly reflect systems of land drainage.
- 5.15 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 mining waste, horseshoes and brick fragments, and in most cases have little or no archaeological significance. A sample of these is shown on the geophysical interpretation plan, however, they have been omitted from the archaeological interpretation plan and the following discussion.
- 5.16 Additional anomalies are presented by area, below.

#### **Area 1**

- 5.17 A concentration of large dipolar magnetic anomalies has been detected in this area. Although the orientation of a few of the anomalies could indicate *in situ* fired structures such as kilns or ovens, the majority of anomalies do not have this orientation and it is likely that each reflects a large ferrous object. These objects could possibly be associated with the adjacent mining or railway industries, however, such a group of anomalies has not been detected elsewhere within the site. There is a possibility that these anomalies could reflect unexploded ordnance.
- 5.18 A short length of ferrous pipe has almost certainly been detected in the south of this area.

#### **Area 2**

- 5.19 A few linear and curvilinear positive magnetic anomalies have been detected in this area. Typically the narrower anomalies could reflect soil-filled features such as ditches. The broad and weak nature of some of the anomalies detected here probably indicates a geomorphological or geological origin for them, rather than anthropogenic.

#### **Area 3**

- 5.20 A series of parallel positive magnetic anomalies has been detected in this area. These anomalies may reflect former agricultural cultivation, such as ridge and furrow. The intensity of some of these anomalies could indicate that land drains have been laid along the former furrows.
- 5.21 A broadly north/south aligned chain of dipolar magnetic anomalies has been detected in the south-east corner of the area. This almost certainly reflects a ferrous pipe.
- 5.22 A discrete, strong dipolar magnetic anomaly in the south of the area corresponds to an electricity pylon.

#### **Area 4**

- 5.23 Some small positive magnetic anomalies in this area could possibly reflect the remains of soil-filled features such as ditches.
- 5.24 Two larger dipolar magnetic anomalies have been detected in the east of this area. These probably reflect ferrous debris but could possibly reflect former mine workings, such as small exploratory shafts or bell pits.
- 5.25 A concentration of small dipolar magnetic anomalies in the south-western corner of the survey almost certainly reflects ferrous/fired materials, possibly mining waste.
- 5.26 A broadly north/south aligned chain of dipolar magnetic anomalies has been detected across the centre of this area. This almost certainly reflects a service pipe. A similar magnetic anomaly detected at the south-west edge of the area may also reflect a service.

#### **Area 5**

- 5.27 A few linear positive magnetic anomalies have been detected in this area. These could reflect the remains of soil-filled features, possibly former ditches.
- 5.28 A north/south band of small, weak dipolar magnetic anomalies has been detected in the centre of the area. This corresponds to the location of a former track along a field boundary shown on historic OS maps.
- 5.29 At the south of the area a large, intense dipolar magnetic anomaly has been detected. This may reflect former mine workings, such as a shaft.
- 5.30 Anomalies representing a concentration of high magnetic susceptibility material have been detected across the western part of this field. This area appears to have a different land use history compared to surrounding land, which may have involved the dumping of industrial waste or other magnetic materials here.
- 5.31 A chain of strong dipolar magnetic anomalies has been detected in the east of the area. This almost certainly reflects a service pipe.

#### **Area 6**

- 5.32 Two broad and diffuse positive magnetic anomalies have been detected in this area. These may reflect the remains of soil-filled ditches. However, given the diffuse nature of these anomalies and their location on a slope they may reflect a geomorphological phenomenon, such as soil-creep.
- 5.33 Concentrations of dipolar magnetic anomalies in this area may reflect industrial waste associated with former mine workings.

#### **Area 7**

- 5.34 Broad and diffuse positive magnetic anomalies have been detected at the west of the area. These could reflect soil-filled ditches but it is considered more likely that they are geomorphological in origin, rather than anthropogenic.
- 5.35 One large and strong dipolar magnetic anomaly here could reflect a former mine working.

- 5.36 North/south aligned positive magnetic and dipolar magnetic anomalies detected at the north-east and south-east corners of the area correspond to the course of a former waggonway. These anomalies do not run the whole length of the field, which may suggest that a large part of this feature has been severely truncated or completely removed by the ploughing regime.

#### **Area 8**

- 5.37 A curvilinear positive magnetic anomaly, which may reflect a soil-filled feature, has been detected in the north-east of this area.
- 5.38 Strong dipolar magnetic anomalies have been detected in the north-east corner of the area. These anomalies are almost certainly associated with a former mine shaft on the edge of the survey area, depicted by the OS. Similar anomalies have been detected in the south-west of the area.
- 5.39 Very weak and broad, parallel, positive magnetic anomalies have been detected aligned north-west/south-east across this area. These anomalies may reflect a former agricultural practice, such as ridge and furrow cultivation.
- 5.40 A band of small dipolar magnetic anomalies has been detected aligned broadly east/west. This broadly corresponds to the location of a former field boundary recorded by historic OS editions.
- 5.41 A chain of dipolar magnetic anomalies detected in the north-east of the area is likely to reflect a service.

#### **Area 9**

- 5.42 Several broad and diffuse, weak positive magnetic anomalies have been detected in this area. Some of these broadly correspond to the locations of cropmarks visible on Google Earth imagery. These anomalies almost certainly reflect soil-filled features, although it is again likely that they are geomorphological rather than anthropogenic.
- 5.43 Two parallel positive magnetic anomalies have been detected in the south of the area, aligned broadly east/west. These correspond to the course of a former waggonway and a field boundary recorded by historic OS editions.

#### **Area 10**

- 5.44 A number of broad linear and curvilinear positive magnetic anomalies have been detected in this area. Some of these anomalies correspond to cropmark features visible on Google Earth imagery. It is considered likely that these broad and diffuse anomalies reflect geomorphological rather than anthropogenic features.
- 5.45 A north-east/south-west aligned band of positive and associated dipolar magnetic anomalies almost certainly reflects the course of a former waggonway. A region of 'dummy' data readings to the north of this at the base of the slope corresponds to an area of standing water. This may have once been a pond for storing water to cool the wheels of the waggons as they came to the base of the slope.
- 5.46 A series of apparently regular rectilinear positive magnetic anomalies has been detected to the north of the waggonway. These may reflect ditched enclosures or yards associated with the waggonway.



- 5.47 A broadly north-west/south-east aligned positive magnetic anomaly has been detected in the south of the area. This corresponds to a former field boundary recorded by historic OS editions. The early maps record this former field boundary continuing to the north of the waggonway. Two parallel positive magnetic anomalies have been detected there, which almost certainly reflect a former double-ditched track; the northern side of the track may also have been the former field boundary.
- 5.48 A number of large and strong dipolar magnetic anomalies, which could reflect former mine workings and shafts, have also been detected in this area. A large and strong anomaly just west of the pond feature could well be an in-filled or capped mine shaft.
- 5.49 Two pairs of dipolar magnetic anomalies detected in the west of the area correspond to pylons.

#### **Area 11**

- 5.50 A concentration of dipolar magnetic anomalies has been detected at the south-west corner of this area. This is likely to reflect an area of disturbed ground or industrial waste.
- 5.51 A north/south aligned chain of dipolar anomalies has been detected in the east of the area. This almost certainly reflects a service pipe.

#### **Area 12**

- 5.52 Three large and strong dipolar magnetic anomalies have been detected along the western edge of the area. These could reflect former mine workings. A dipolar magnetic anomaly detected in the east of the area corresponds to a pylon.

#### **Area 13**

- 5.53 A number of positive magnetic anomalies have been detected in this area. Whilst some of these are broad and diffuse and probably reflect geomorphological features others almost certainly reflect anthropogenic features such as ditches. Rectilinear anomalies detected in the east of the area almost certainly reflect soil-filled ditch features, such as enclosure or boundary ditches.
- 5.54 Two large and strong discrete dipolar magnetic anomalies have been detected in the east of this area. These may reflect former mine workings or shafts. The anomaly to the north is bordered to the south edge by a negative magnetic anomaly, which may reflect stone walling surrounding a former mine shaft. A concentration of dipolar magnetic anomalies around this feature may reflect industrial waste or some other disturbance associated with former mining works.

## **6. Fieldwalking (surface collection)**

### **Methods**

- 6.1 A transect-based surface collection survey was undertaken across all survey areas in ploughed fields.
- 6.2 Transects were walked at 10m separations using the existing geophysics grid, which was established using a Leica GS15 RTK global positioning system. The ground surface to 1m either side of each transect was inspected for artefactual material.



- 6.3 Artefactual material was collected and bagged individually as 'small finds' (SF) and individual artefact locations were recorded using Leica GS15 systems with RTK correction typically providing accuracy of 10mm.

### **Results**

- 6.4 The vast majority of areas had large amounts of modern pottery and glass scattered across them, possibly as a result of manuring or rubbish tipping in the vicinity of the former coal workings. Modern pottery and glass was not collected. Nine pieces of flint, three sherds of pottery and a copper alloy object were recovered. These finds are discussed below and a table of these finds with their locations is provided at the end of this report (Appendix 1).

### **Pottery assessment**

- 6.5 Three sherds were recovered (72g wt). A body sherd of horticultural earthenware (SF8), probably post-medieval in date, came from Field 5, and a rim sherd (SF2) from a 19th or 20th-century yellow glazed earthenware vessel came from Field 4. The other piece is a base and wall fragment in unglazed buff earthenware, with a moulded possibly floral design on the outside. This may be horticultural, though the projected diameter (110mm) is rather small, or it could be a discarded, unglazed waster. It is of unknown date, but as it appears factory made, it probably dates to the 19th century or later.
- 6.6 No further work is recommended.

### **Flint assessment**

- 6.7 Nine pieces of flint were recovered, but only five showed evidence of working.
- 6.8 SF12, from Field 6, is a blade with a distal break removing the termination. It is manufactured on good quality dark grey/ brown flint, and has three removals on the dorsal surface. In addition to the cortical butt, cortex also covers 25-50% of the dorsal surface. The cortex itself is thick and orange in colour, perhaps suggesting manufacture on a water-worn cobble. (Dimensions: L=43.14mm, W=30.32mm, Th=8.84mm)
- 6.9 Three other worked pieces are flakes. The first (SF 6, Field 5) is very rolled and battered. It has been made on dark grey/ black flint, with three main removals visible on the dorsal surface. It has a non-cortical dorsal surface and a plain butt. The edges are rounded and exhibit many small removals, probably the result of plough damage. (Dimensions: L=48.35mm, W=32.10mm, Th=14.73mm)
- 6.10 The second (SF3, Field 4) is a thick cortical flake, with cortex stretching over 50% of the dorsal surface. It is manufactured on light grey flint, and demonstrates plough damage, with removals and damage to the left dorsal edge. (Dimensions: L = 39.29mm, W = 27.16mm, Th = 12.47mm)
- 6.11 The third flake (SF13, Field 4) is made on good quality dark grey flint, but has a break at the distal end, removing its termination. Whilst there is one main removal on the dorsal, a smaller older surface can be seen on the left side with greater patination. The right dorsal lateral edge is curved with either very fine non-invasive retouch or use wear along its length. (Dimensions: L=37.61mm, W=30.90mm, Th=6.79mm)

- 6.12 The final artefact is a small thumbnail scraper (SF1, Field 2), made on a very small, rolled river pebble of dark grey/ black flint. Along with a cortical butt, the position of which suggests that the small pebble was split in two, the dorsal surface is covered by 25-50% cortex. Due to the nature of the original nodule, the tool is very thick, with steep, parallel, invasive retouch extending around 75% of the circumference. Despite its small size, it is very well made. The size and form suggest an Early Bronze Age date. (Dimensions: L=20.42mm, W=23.94mm, Th=14.19mm)

### **Discussion**

- 6.13 The assemblage appears to be of mixed character. Some pieces demonstrate considerable rolling, whilst others (e.g. the thumbnail scraper SF1) appear to be relatively fresh. In addition, the raw material utilised at the site ranges in appearance from dark grey and black to light grey and brown. This pattern also appears in the type of material used, ranging from small pebbles with thin cortex to larger rolled cobbles, and pieces with a thick cortex covering, suggesting a wide range of sources for the artefacts. Whilst the presence of the thumbnail scraper suggests an Early Bronze Age date, the rest of the artefacts are undiagnostic.
- 6.14 No further work is recommended.

### **Copper alloy objects assessment**

- 6.15 A small, corroded, circular copper alloy cosmetic compact was found in Field 5 (SF5). It is 50mm in diameter and made from two hinged pieces, making it 10mm thick when closed. It was found to contain small pieces of broken glass (probably from a mirror fitted inside one of the halves), three paper bus, train or tram tickets issued by the Northern General Transport Co Ltd, and two halfpennies of George VI, dated 1941 and 1945. One of these has traces of mineralised textile on its surface, presumably from the lining of the compact. No decoration survives, but the compact has 'HOUBIGANT FRANCE' stamped on the side. It is a product of the Houbigant cosmetic company, which was founded in the 18th century, and is still producing perfume and cosmetics today. The compact probably originally held face powder or solid perfume, and may have been re-used as a container for the money and tickets when it was lost at a date post-1945.
- 6.16 No further work is recommended.

## **7. Conclusions**

- 7.1 Approximately 49ha of geomagnetic survey and a programme of fieldwalking was undertaken at Marley Hill, prior to proposed mining development.
- 7.2 Possible soil-filled features have been identified in Areas 2, 4, 5, 6, 7, 8, 9, 10, 11 and 13. Some of these almost certainly reflect ditches and other archaeological features, whilst others are considered more likely to be geomorphological.
- 7.3 Possible former ridge and furrow cultivation has been identified in Areas 3 and 8.
- 7.4 Former mining waggonways have been identified in Areas 7, 9 and 10.
- 7.5 Possible evidence of former mine workings, such as former shafts, exploratory shafts and bell pits, have been identified in Areas 4, 5, 6, 7, 8, 10, 12 and 13.

- 7.6 Other evidence of probable industrial activity has been identified in the form of concentrations of ferrous/fired materials, indicating probable industrial waste or otherwise disturbed ground, in Areas 1, 4, 5, 6, 8 and 11.
- 7.7 Former field boundaries, as recorded by historic OS editions, have been identified in Areas 5, 8, 9 and 10.
- 7.8 Probable former tracks have been identified in Areas 5 and 10.
- 7.9 Systems of land drainage have been identified in Areas 1, 4, 5, 6, 7, 8, 9, 12 and 13.
- 7.10 Recent ploughing regimes have been detected in Areas 1, 2, 4, 5, 7, 9, 10 and 13.
- 7.11 Services have been detected in Areas 1, 3, 4, 5, 8 and 11.
- 7.12 Few artefacts were recovered during the fieldwalking of six areas, though these are not without interest: nine pieces of flint, three sherds of pottery and a copper alloy compact containing coins and tickets.
- 7.13 Five of the pieces of flint were worked, three flakes, a scraper and a blade. All the worked pieces were recovered from fields in which possible soil-filled features were also identified in the geophysical survey.

## 8. Sources

- Archaeo-Environment Ltd 2012 *Marley Hill Colliery Proposed Reclamation Scheme: historic environment desk-based assessment*. Unpublished report **AE-114-2012-1** Archaeo-Environment for UK Coal Ltd
- David, A, Linford, N, & Linford, P, 2008 *Geophysical Survey in Archaeological Field Evaluation*. English Heritage
- Gaffney, C, Gater, J, & Ovenden, S, 2002 *The use of geophysical techniques in archaeological evaluations*. Technical Paper **6**, Institute of Field Archaeologists
- IfA 2011 *Standard and Guidance for archaeological geophysical survey*. Institute for Archaeologists
- Schmidt, A, & Ernenwein, E, 2011 *Guide to Good Practice: Geophysical Data in Archaeology*. Archaeology Data Service

## Appendix 1: Surface collection data

Small Find SF no.	Field (surface collection)	Area (geophysical survey)	Type	NGR
1	2	2	flint (scraper)	NZ 20767.24 57101.58
2	4	9	pot	NZ 20528.22 56737.84
3	4	9	flint (flake)	NZ 20541.43 56814.00
4	4	9	flint (unworked)	NZ 20567.63 56787.33
5	5	10	copper alloy object	NZ 20416.99 57035.52
6	5	10	flint (flake)	NZ 20099.59 56845.91
7	5	10	pot	NZ 20340.96 56794.41
8	5	10	pot	NZ 20302.04 56778.24
9	5	10	flint (unworked)	NZ 20293.49 56932.72
10	6	13	flint (unworked)	NZ 20030.15 56575.34
11	6	13	flint (unworked)	NZ 20026.25 56630.33
12	6	13	flint (blade)	NZ 20082.81 56699.90
13	4	9	flint (flake)	NZ 20391.53 56833.51

## Appendix 2: Project WSI



### **Proposed Marley Hill Colliery Reclamation Scheme.**

**A Written Scheme of  
Investigation (WSI) for  
Field Walking &  
Geophysics.**

**August 2012**



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Marley Hill Colliery Reclamation Scheme; Evaluation WSI

**Proposed Marley Hill Colliery Reclamation Scheme.**

**A Written Scheme of Investigation (WSI) for Evaluation.**

**1.0 INTRODUCTION**

- 1.1 UK Coal (UKC) are intending to submit an application for the reclamation of the former Marley Hill and Andrew's House Colliery sites together with the extraction of coal and subsequent landscape restoration. The site lies within the historic county of Durham, but straddles the boundary between the Mineral Planning Authorities (MPA), of Gateshead Council and Durham County Council.
- 1.2 An environmental impact assessment is currently being undertaken on behalf of UKC by Stephenson Halliday Planning Consultants, and the chapter on Historic Environment by Archaeo-Environment Ltd. Initial discussions and scoping comments from the archaeological officers advising the LPA has indicated that evaluation of the site will be required pre-determination of any planning application to inform the EIA, the planning decision of the LPAs and if granted any subsequent scheme of archaeological mitigation.
- 1.3 This document forms part of a Written Scheme of Investigation (WSI) for archaeological investigation of the site which has been agreed with the planning authorities for pre-determination evaluation. The fieldwalking and geophysical survey required by this WSI will be used to guide the extent and location of a subsequent phase of trial trenching.
- 1.4 This WSI has been informed by a desk based assessment (DBA) of the site and a surrounding study area by Archaeo-Environment, and in discussion with Tyne and Wear Specialist Conservation Team (TWSCT), advisors to Gateshead Council, and the Durham County Council Archaeology Section (DCCAS). No designated sites are physically affected by the proposed scheme and so at this stage no correspondence has been entered into regarding evaluation with English Heritage although comments have been received on the broader scope of assessment from a scoping consultation undertaken by Stephenson-Halliday via the LPAs. Questions regarding potential effects on the setting of any designated heritage assets will be dealt with in the EIA process and ES chapter which will accompany the planning application.

Marley Hill Colliery Reclamation Scheme; Evaluation WSI

1.5 The detail of the work required by this WSI is described below in section 5.0, but in summary this will be focussed on the following and will be guided by paragraph 128 of the National Planning Policy Framework which states that the level of detail required by planning authorities from applicants should be *proportionate to the assets' importance and no more than is necessary to understand the potential impact of the proposal on their significance*.

- Geophysical survey by means of magnetometer of a number of arable and pasture areas across the site. Including the allocation of a contingency for further geophysical survey using resistivity and GPR.
- Field walking of arable areas following ploughing.
- Post fieldwork analysis of finds recovered
- Production of a report or reports to present the results of the above.

1.6 All archaeological works will be undertaken with clear research aims in mind and to appropriate standards. Identified research aims and standards are described in sections 4 and 5 respectively below.

## **2.0 SITE LOCATION AND CONDITONS.**

2.1 The former Marley Hill Colliery is located within the historic county of Durham and straddles the boundary between the unitary authorities of Gateshead Council (GC) and Durham County Council (DCC). The site is centred on NZ 2020 5711, and its location and extent are shown in figure 1. The site spans two historic parishes Chester-le-Street and Whickham and three townships (Tanfield, Ravensworth and Whickham).

2.2 The site generally slopes gently from north (184m OD), to south (127m OD), but is bisected from south-west to north-east by the steep sided and wooded Andrews House Dene, while also falling away steeply on its south side from the site of Andrews House farm towards Bobgins Burn. Much of the north-east quadrant of the site is occupied by the remains of Marley Hill Colliery and Andrews House Colliery, while the remainder of the site is a mixture of pasture and arable criss-crossed by the remains of tramways and railway lines, and pockmarked by several pre-19<sup>th</sup> century coal mining shafts.



## Marley Hill Colliery Reclamation Scheme; Evaluation WSI

- 2.3 The geology of the site is Carboniferous Limestones and sandstones of the coal measures series, heavily glaciated during the last Devonian ice-age. The drift geology is comprised of glacial boulder clays with occasional morainic features of sands and gravels.



Figure 1. Location Plan. © Crown copyright 2011. All rights reserved. Licence number 100042279.  
(Not to scale)

#### 2.4 HISTORIC BACKGROUND.

The site is broadly characterised by the remains of the former Marley Hill Colliery (Sunk: 09 Jan 1840, Closed: 03 Mar 1983) and coke works, and Andrew's House Colliery (Sunk: 26 Oct 1840, Closed: Dec 1920) both originally worked by John Bowes and Partners. These collieries were representative of a much longer tradition of coal mining across the wider site evident from the extensive remains of former shafts and waggonways dating from the late 17<sup>th</sup> century onwards. The site also formerly contained housing, chapel(s), school and shops at Marley Hill Colliery and the nearby Waggonway Terrace (all now demolished). The agricultural use of the land is also evident from former farmstead sites at Woodhouses and Andrew's House



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Farm. Andrew's House is now a standing ruin but its form and remains suggests a well planned 'model' farm group of around 1840.

- 2.5 Searches of the Tyne and Wear HER, the Durham HER, the NMR all supplemented by historic map analysis and walk over survey have produced an initial gazetteer of heritage assets within and immediately adjacent to the site (Appendix A and figure 3). All of these reinforce the impression of a largely post medieval enclosed agricultural landscape superimposed with extensive evidence of the coal industry and its associated transport and social infrastructure. The absence of any clearly medieval or earlier settlement or finds evidence closer than the village of Tanfield 1.5km to the south west, suggests that much of the area may have been common or waste until the 17<sup>th</sup> century. A generally favourable south facing aspect and altitude, together with access to water does however at least suggest the potential for earlier land use and occupation.

### **3.0 RESEARCH AIMS AND OBJECTIVES**

- 3.1 The site provides potential opportunities to further identified research objectives from the North East Regional Research Framework (NERRF 2006). In particular relating to transport and early post medieval coal mining. The following should be addressed in all archaeological works on the site.

Objective PM1. Post Medieval coal mining where selective excavation and recording should be a priority for development control in applications for open casting or other deep ground disturbance within the historic coalfield areas.

Objective PM2. Early railways; investigation should focus on the earliest wagon-ways and pre-locomotive hauled lines, existing landscape features along the course of known early wagon-ways require survey, including railway formations, track-beds and gradients.

### **4.0 ARCHAEOLOGICAL BRIEF.**

- 4.1 An initial desk based assessment, walkover survey and review of aerial photographs has been undertaken and a gazetteer of known and identifiable heritage assets within

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and in the immediate vicinity of the development site has been prepared (Appendix A, figure 3). This has identified a number of sites both extant, ruinous and removed but all of which can be dated to the post medieval period. Available information from the HERs of Durham, Tyne & Wear and the NMR provide no additional firm guidance that the surrounding area has any significant archaeological potential for heritage assets of earlier periods. Nevertheless areas of the site in terms of topography and access to water would appear to have the potential for settlement in earlier historic periods.

4.2 Scoping correspondence with the local planning authorities has indicated that a phased scheme of archaeological evaluation is required to confirm the apparent absence of pre-17<sup>th</sup> century occupation and characterise the extent and survival of the known archaeology across the site. A number of areas suitable for geophysical survey have been identified within arable and pasture fields and where these do not coincide with areas of the site currently or previously wooded, or the site of industrial features clearly shown on 19<sup>th</sup> and 20<sup>th</sup> century Ordnance Survey maps. These areas provide a maximum of some 45.75Ha for survey and are described in section 4.5 to 4.16 below and shown in figure 2.

4.3 Finally a contingency should be identified to allow additional detailed geophysical survey of any features identified in the initial geophysical survey.

4.4 **Geophysical Survey.**

The following areas have been identified as potentially suitable for geophysical survey, being either under arable (A1 – A8), or pasture (P1 – P6). The areas noted are the **maximum** areas available taking into account known obstructions. Field boundaries and areas known to have been formerly occupied by 19<sup>th</sup> and 20<sup>th</sup> century built and industrial features within the site perimeter have been specifically excluded as have areas of woodland. The total combined area is 45.75Ha. Any specific known features or areas of interest are noted below.

4.5 **Area A1:** 8.85Ha of arable land containing no known archaeological features. The area is bisected by an existing hedge bank (running east-west), into two almost equal parts, and was formerly also divided north-south by another hedgerow now removed. Area gently slopes to the south.

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- 4.6 **Area A2:** 1.25Ha of arable land containing no known archaeological features. Gentle slope from north to south.
- 4.7 **Area A3:** 3.35Ha of arable land containing no known archaeological features. Formerly subdivided into 3 compartments by linear hedgerows now all removed.
- 4.8 **Area A4:** 9.30Ha of arable land, largely level with slight fall to the south-west. Bounded to the south-east by the line of an 18<sup>th</sup> century waggonway and crossed by another alignment of the same branch of the Tanfield waggonway of 1748 now removed with no visible surface presence. The area contains one other known archaeological feature, a pre 19<sup>th</sup> century coal mining shaft no longer discernible at surface level. Area formerly bisected by a NW-SE hedgerow now removed.
- 4.9 **Area A5:** 3.05Ha of arable land sloping quite pronouncedly to the south and west. At the top of slope on the east side are the possible sites of a pre-19<sup>th</sup> century coal shaft and a branch of the Tanfield Waggonway of 1748 which served it, neither of which are visible on the surface and which field name evidence suggests may be in the enclosure to the east (A4).
- 4.10 **Area A6:** 3.25Ha of arable land largely level with slight slope to the south. No known archaeological features.
- 4.11 **Area A7:** 4.45Ha of arable land, largely level and at the highest elevation of the site. Area formerly bisected by a N-S hedgerow now removed, no known archaeological features.
- 4.12 **Area A8:** 3.85Ha of arable land, no known archaeological features, aerial photographs show some evidence of a regular field drain system.
- 4.13 **Area P1:** 1.80Ha of pasture on a south facing slope on the south side of the derelict Andrews House Farm. Slope is steep at the top but gentle shelves to almost level at the base within the enclosure.
- 4.14 **Area P2:** 2.00Ha of pasture west of and adjacent to Area P1 from which it is separated by a now largely derelict hedgerow and post and wire fence.

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- 4.15 **Area P3:** 4.1Ha of pasture, the central, level area of an enclosure to the South and East of the former Wood House farm, at the edge of the survey area the land drops sharply to the south. The area contains a number of known archaeological features all representing pre-19<sup>th</sup> century coal shafts, most visible as low mounds. 19<sup>th</sup> century maps show the area previously sub divided into three enclosures by hedgerows now all removed.
- 4.16 **Area P4:** 0.5Ha of pasture. A level area containing no known archaeological features and bounded to north and south by former railway and waggonway routes.
- 4.17 **Geophysical Survey Method.**  
Each area should be surveyed using a magnetometer. The appointed archaeological contractor must be a specialist in geophysical survey techniques and all fieldwork, data processing and reporting must comply with English Heritage guidelines of 2008 (“Geophysical Survey in Archaeological Field Evaluation”).
- 4.18 The survey should consist of 100% detailed magnetometer survey (scanning or magnetic susceptibility are not appropriate techniques). Survey must be conducted with a continuously recording magnetometer of appropriate sensitivity and the data should be logged in 30m grid units.
- 4.19 The geophysical survey will be conducted under the principle of repeatability – i.e. within reason the data obtained should be capable of independent duplication. The survey areas will be divided into grids as necessary within which data collection will be undertaken. Where ground conditions permit, magnetic survey measurements will be collected on the basis of a minimum traverse of 1.00m with a sample interval of 0.25m. The data will be captured in the internal memory of the instrument and then downloaded for processing. As required individual survey grid data will then be matched together as necessary to produce overall plan(s) of the survey area.
- 4.20 Each survey area will be laid out using a total station theodolite or GPS of comparable accuracy and tied into permanent landscape features. Semi-permanent marker pegs will be located in order that the survey grid can be geo-referenced to the Ordnance Survey National Grid. This will allow the grid to be re-established to centimetre accuracy by a third party in order that it can be re-instated and related to any later phases of fieldwork. A record sheet will be created for each survey marker established.

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- 4.21 The report on the results of the geophysical survey should normally include a title page, summary, introduction, method statement, results, conclusions, references and appendices. The survey results should be analysed and the data interpreted and presented at an appropriate scale and located on a detailed site survey map base located on the Ordnance Survey National Grid. This should include a location plan of the survey areas and a large scale greyscale and x-y trace (or sample) plots at a minimum of 1:500 or 1:1000, together with interpretation plans. Locational tie-in information for the survey grid will be included in the report allowing for repeatability of the survey.
- 4.22 **Contingencies.**  
In the event that the magnetometer survey identifies any features requiring further investigation a contingency element for additional geophysics is to be assigned. This if called upon will allow for up to 2 Ha of resistivity survey. Use of the additional geophysical contingency in whole or part will be part of the overall evaluation, and if required undertaken concurrently with the magnetometry survey and the results included in the same report.
- 4.23 **Field Walking**  
Those areas of the site currently under arable cultivation (A1 to A8 figure 2), should be subject to a systematic field walking exercise once the current crops have been lifted and the ground ploughed and if possible harrowed. While historic mapping and archive documentation for the site is plentiful for the 19<sup>th</sup> and 20<sup>th</sup> centuries, little is known of activity across the site pre-dating the 18<sup>th</sup> century. The purpose of the field walking exercise therefore is to identify 18<sup>th</sup> century and earlier finds.
- 4.24 The maximum area of ploughed land available is approximately 37 Ha.
- 4.25 Each field will be walked by experienced archaeologists familiar with a range of small finds. The fields will be walked in transects 10 metres apart and all pre 19<sup>th</sup> century material collected, bagged and plotted using a hand held GPS or TST theodolite, notable groups of finds can be recorded together.
- 4.26 All finds will be securely bagged and labelled, where appropriate suitable packaging materials will be available for the safe storage of fragile or delicate recovered material.

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- 4.27 All collected material will be removed from site for an assessment by a finds specialist. An assessment report will be required illustrated with site plans showing the location of notable individual or groups of finds.

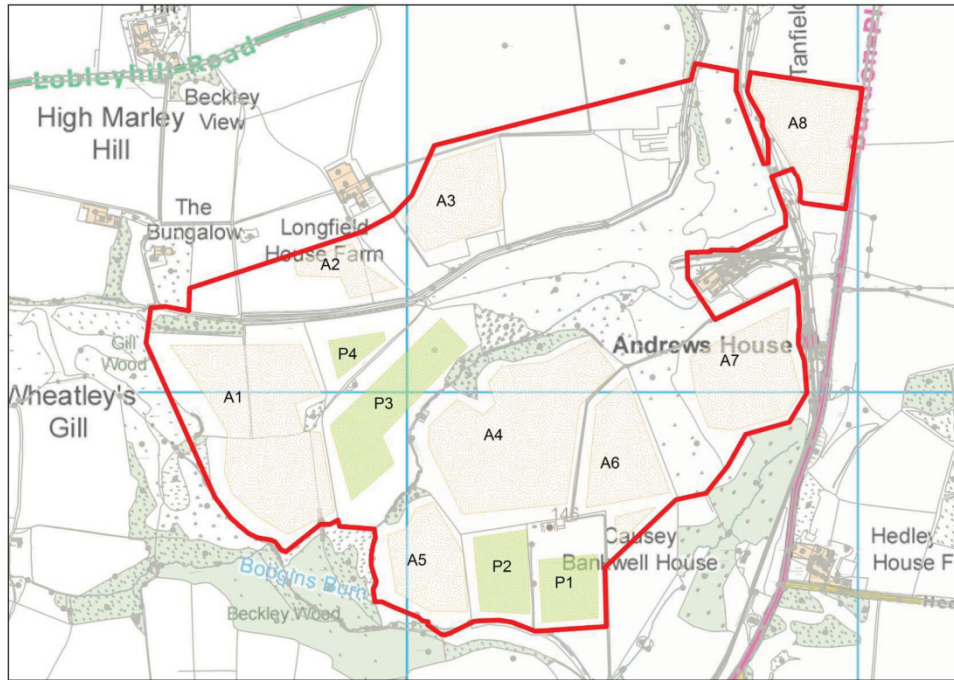


Figure 2.  
Location of  
areas for  
geophysical  
survey 1:1000

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## 5.0 STANDARDS AND METHOD

Archaeological works will be carried out according to archaeological best practice as set out in the following publications: *Yorkshire, the Humber and the North-East: A Regional Statement of Good Practice for Archaeology in the Development Process* (Regional Archaeological DM Officers 2011) and *Standard and Guidance: for archaeological excavation* (IFA 2008).

5.1 The location of all survey work should be accurately recorded in the first instance against development plans/standing buildings and depicted against the OS national grid in reporting. Vertical survey control must be tied to the Ordnance Survey datum. Details of the method employed will be recorded, including the height of the reference point and levels of any deposits/features encountered below ground level.

5.2 All drawn records will be clearly marked with a unique site number, and be individually identified. The scale and orientation of the plan will be recorded. All drawings will be drawn on dimensionally stable media where required. All plans will be drawn relative to the site grid and at least two grid references marked on each plan.

### 5.3 Finds

Significant small finds will be three dimensionally located prior to collection. All finds will be processed to standards identified in English Heritage MoRPHE documentation (PPN 3 2008) and be subject to preliminary specialist assessment in order to help date archaeological features and contexts. No artefacts will be discarded without the permission of the Archaeology Officers for the local planning authorities. Provision will be made within the tender for appropriate levels of artefact conservation.

5.4 All finds recovered will be appropriately packaged and stored under optimum conditions. Finds recovery and storage strategies would be in accordance with published guidelines (English Heritage 1995; Watkinson and Neal 1998). Provision will be made for site visits from specialists and the conservator if necessary.

### 5.5 Treasure.

Any artefacts of gold or silver recovered during the site works identified in this WSI and which are considered to be treasure will be dealt with in accordance with the *Treasure Act* (1996) code of practice including reporting to the Portable Antiquities Scheme through their officer Emma Morris in the DCC archaeology section. All finds



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remain the property of the landowner, but should ultimately be deposited in an appropriate museum.

## 6.0 POST EXCAVATION ASSESSMENT

On completion of the field work elements of the project, an assessment of the site records and finds will be undertaken in accordance with national guidance as specified in MoRPHE (English Heritage 2006) and MoRPHE PPN3 (English Heritage 2008) .

- 6.1 Full analysis of ceramic assemblages (i.e. petrological analysis), will be applied if appropriate as will X-ray photography of metal objects.
- 6.2 Recommendations for scientific dating techniques on any recovered finds
- 6.3 The Evaluation/Geophysics report(s) should be considered as a piece of work in its own right as should the development project not proceed any further it will form an independent standalone record. As such appropriate levels of assessment, reporting and archiving should all be considered at the conclusion of fieldwork in the PX assessment.

## 7.0 REPORTING

- 7.1 Following agreement between the developer, their advisors and the planning authority on the post excavation and publication programme identified at 6.0, a report will be produced to include the following elements as required and appropriate:
  - Executive summary
  - A site location plan showing the site against a regional map and at a minimum of 1:10,000 scale with 10 figure central grid reference
  - Planning reference number
  - OASIS reference number
  - Site code
  - Contractor's details including date work undertaken
  - Description of the nature and extent of the proposed development, including developer/client details
  - Description of the site location and geology

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- A general site plan showing location of areas of survey and excavation to a suitable scale and tied into the national grid
  - Specific discussion of the results including feature descriptions
  - Specialist reports, including assessments of each artefact type as well as environmental data
  - General overall discussion of the results pulling together all data including desk based assessment, features, number and class of artefacts, spot dating & scientific dating of significant finds presented in tabular format
  - Additional plans/map extracts to display noted and recorded archaeological features as appropriate
  - Digital images to clarify information
  - Bibliography and references
  - Full listing of archive contents including a catalogue of all digital photographs.
- 7.2 The hard copy of the report will be presented in an ordered state and contained within a protective cover/sleeve or bound in some fashion (loose-leaf presentation is unacceptable). The report will contain a title page listing site/development name, Local Authority/County together with a general NGR, the name of the archaeological contractor and the developer or commissioning agent. The report will be page numbered and supplemented with sections and paragraph numbering for ease of reference. T&W and DCC archaeologists each require 1x hardcopy bound and 1 x PDF digital copy of the reports for the HER. A further hard copy each will be required by the client and Archaeo-Environment in addition to digital copies in MS Word and pdf.
- 7.3 Tyne and Wear Specialist Conservation Team and Durham County Council Archaeology Section will be given copyright permission / authorisation to use the report and its contents to fulfil their function as an HER this includes giving copies to third parties as part of this function or using the information for educational / outreach purposes.
- 7.4 The report on the site work should also include proposals for further archaeological investigation, if required, and the necessity of publishing the results of the evaluation within a local, regional or national journal as appropriate. A contingency sum should be identified for such publication.

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## 8.0 OASIS

- 8.1 The appointed archaeological contractor will agree to complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/> within 3 months of completion of post excavation and reporting process. Budgetary provision should be made for this.
- 8.2 Once a report has become a public document by submission to or incorporation into the HER, Tyne and Wear Specialist Conservation Team and/or Durham County Council Archaeology Section will validate the OASIS form thus placing the information into the public domain on the OASIS website. Archaeo-Environment have registered the EIA study with Oasis as archaeoe1-125878, the work specified in this WSI and any subsequent work should ensure this is cross-referenced.

## 9.0 MONITORING

- 9.1 The works will be monitored on behalf of UKC by Archaeo-Environment.
- 9.2 The County Archaeologists for both Tyne & Wear and Durham normally require two week's notice in writing of the commencement of fieldwork. During such works the County Archaeologist or their nominated representative shall be allowed access to the site and excavations at all reasonable times. It is noted that DCC make a charge for monitoring visits and this should be included in any quoted fees<sup>1</sup>.

## 10.0 CONTRACT, TIMETABLE AND PERSONNEL

- 10.1 The contract for the works specified in this WSI will be between the archaeological contractor and UK Coal, for whom it will be managed and overseen by Archaeo-Environment.
- 10.2 Subject to contract and access arrangements it is proposed that the works identified in this WSI will be undertaken in early Autumn 2012 given the current state of crop growth, with a draft report being produced for comment within 3 weeks of the completion of fieldwork. The draft report need only be in a digital format as a word document or .pdf.

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<sup>1</sup> [http://content.durham.gov.uk/PDFRepository/Current\\_HERcharging2012-2013.pdf](http://content.durham.gov.uk/PDFRepository/Current_HERcharging2012-2013.pdf)

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- 10.3 The contractor appointed for this work will be determined by competitive tender.
- 10.4 Those tendering should clearly identify staff and specialists who will work on the project and notification will be given by Archaeo-Environment to TWSCT and DCCAS of the successful contractor and their specialists in advance of the commencement of works on site.
- 10.5 Contingency sums will be set aside for all of the identified specialist areas including finds assessment, conservation and archiving. Specialists involved will be told of start dates and the need for their input at an early stage.
- 10.6 All personnel involved in the field walking and geophysical survey and subsequent post excavation and assessment must be suitably qualified and have relevant experience. Information on contract manager and specialist staff to be used on the project should be included in any tender and made available to the archaeology officers of the planning authorities.

## 11.0 HEALTH AND SAFETY

- 11.1 Contractors should ensure they take due accord of the *1974 Health and Safety Act* and the *Construction and Design Management Regulations 2007* and any subsequent amendments. In this case the Federation of Archaeological Managers and Employers (FAME) manual on archaeological health and safety (FAME 2010) is followed for site works and, as normal practice, First Aid boxes, an Accident Book and a telephone must be provided for the project. Appropriate PPE will be worn at all times.
- 11.2 No services are recorded on the site that are likely to hinder excavation or pose a risk to health, however as a precaution, the archaeologists will liaise with the UK Coal project manager to ensure all known services and hazards are identified in advance. The undertaking of a risk assessment prior to the commencement of works is required. Contractors will ensure that all staff working on the site are fully briefed on all health and safety issues relating to the site prior to working there.

## 12.0 PUBLICATION

- 12.1 A contingency budget should be identified to publish the results of the survey should it not proceed to a further stage, most probably in either the Durham Archaeological

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Journal or *Archaeologia Aeliana*. This will be to a minimum standard to include a summary of the work, findings, dates, illustrations and photographs and references to where the archive is lodged.

- 12.2 Both TWSCT and DCC Archaeology Section produce annual publications which highlight the archaeological work conducted in the county over the previous 12 months. TWSCT produce this in house but DCCAS require that a précis of archaeological works conducted in the county as a result of Planning related matters must be submitted to each body.
- 12.3 The précis is not normally more than 500 words in length, but the quality of the site may suggest a rather longer article. It would be appreciated if TIFF images of a minimum of 300dpi are also included. The summary must be sent to the County Archaeologist by the beginning of December of the same year in which the work was conducted. It is also possible that a talk may be required at the Durham Archaeology Day usually in March each year. Budgetary provision should be made for this in the contingency sums.

### 13.0 THE ARCHIVE

- 13.1 The site archive comprising the fully catalogued and original paper records and plans, photographs, negatives and digital material and collected finds material etc, must be deposited at the completion of the work in agreement with TWSCT and the DCC County Archaeological Archive policy. Agreement has been reached that the appropriate archive will be with Tyne and Wear Museums. Alex Croom at Arbeia Roman Fort (0191 4544093), should be contacted to confirm arrangements and any costs for archiving material from the evaluation works.
- 13.2 On conclusion of the project the records generated must be assembled into an indexed and cross referenced archive in accordance with the guidance of English Heritage (2008) *MoRPHE PPN3: Archaeological Excavation* and the *Standards and Guidance* of the Institute for Archaeology (IFA, 1999).
- 13.3 Archiving must meet the relevant standards set out in *Guidelines for the Preparation of Excavation Archives for long-term storage* (UKIC 1990) and *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation* (AAF 2007). The archive must be deposited with the appropriate museum in accordance with their deposition conditions.

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- 13.4 A budget should be clearly identified to cover the costs of archiving which should be established in advance.

#### 14.0 REFERENCES

Archaeological Archives Forum (2007) *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation*.

English Heritage (2006) *Management of Research Projects in the Historic Environment The MoRPHE Project Managers' Guide*. Version 1.1 with minor corrections issued April 2009.

English Heritage (2008) *MoRPHE PPN3: Archaeological Excavation*. Version 1.0

English Heritage (2008) *Geophysical Survey in Archaeological Field Evaluation*.

English Heritage (2011) *Guidelines for Environmental Archaeology: a guide to the theory and practice of methods from sampling and recording to post-excavation (second edition)*.

Institute of Field Archaeologists (2008) *Standard and Guidance: for archaeological Excavation and watching briefs*

Petts, D and C Gerrard (2006) *Shared Visions: The North East Regional Research Framework for the Historic Environment*.

United Kingdom Institute of Conservation (1990) *Guidelines for the Preparation of Excavation Archives for long-term storage*



**Archaeo-Environment Ltd**

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**2012-8-19**

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## **APPENDIX A**

### **Historic Environment Assets.**

ES ID	HER REF	Easting	Northing	Site Name	Source
1		420483	557565	Marley Hill Colliery, Reservoir	1 <sup>st</sup> ED OS
2		420471	557308	Marley Hill Colliery, Coke Ovens	1 <sup>st</sup> ED OS
3		420272	557309	20th century 'Husman' Coke Ovens	3 <sup>rd</sup> ED OS
4		420578	557499	Marley Hill Colliery, Wesleyan Chapel	1 <sup>st</sup> ED OS
5		420502	557388	Marley Hill Colliery, Primitive Methodist Chapel	1 <sup>st</sup> ED OS
7		420548	557408	Marley Hill Colliery, Front Row/Chapel Row/Ranters Row Terraced housing	1 <sup>st</sup> ED OS
8		420598	557550	Marley Hill Colliery, Post Office Row, Gaffers Row	1 <sup>st</sup> ED OS
9		420600	557372	Marley Hill Colliery, Coke Row, Cinderburners Row	1 <sup>st</sup> ED OS
10		420573	557390	Marley Hill Colliery, Middle Row	1 <sup>st</sup> ED OS
11		420519	557043	Andrews House Colliery, well	1 <sup>st</sup> ED OS
12		420576	557082	Andrews House Colliery, Gravel Pit	1 <sup>st</sup> ED OS
13		420252	556936	Old Shaft	1 <sup>st</sup> ED OS
14		420096	556677	Old Shaft	1 <sup>st</sup> ED OS 6"
15		420379	556672	Old Shaft	1 <sup>st</sup> ED OS 6"
16		420484	557169	Andrews House Farm (and Estate pre 1840)	Clavering Estate Map. DRO D/Bo/G34 /(i)
17		420271	556659	Andrew's House farm Trough/Spring	1 <sup>st</sup> ED OS 6"
18		419807	556935	Woodhouses, Farmstead	1 <sup>st</sup> ED OS 6"
19		419706	557177	High Row-Waggonway Row, terraced housing	1 <sup>st</sup> ED OS 6"
20		419706	557177	Low Row Waggonway Row, terraced housing	1 <sup>st</sup> ED OS 6"



## Marley Hill Colliery Reclamation Scheme; Evaluation WSI

ES ID	HER REF	Easting	Northing	Site Name	Source
21		420607	556835	Enclosures	1 <sup>st</sup> ED OS 6"
22		420637	557617	Marley Hill Colliery, School	2 <sup>nd</sup> ED OS 6"
23		420535	557475	Marley Hill Colliery, allotments	2 <sup>nd</sup> ED OS 6"
24		420573	557787	Fen House, farm	1 <sup>st</sup> ED OS 6"
25		420647	557874	The Hole, colliery housing	1 <sup>st</sup> ED OS 6"
26		420771	557868	Bowes Bridge Engine	1 <sup>st</sup> ED OS 6"
27		420136	557257	Marley Hill Colliery, Tar Pits	1938 OS 25"
28		420284	557221	Filter Beds (for Coke Ovens)	1920 OS 25"
29		420241	557444	Marley Hill Colliery, Chemical Works	1938 OS 25"
30		420751	557176	Allotment Gardens	1896 OS 25"
31		420804	557247	Bowes Terrace	1895 OS 25"
32		420924	557408	Marley Hill Terrace	1896 OS 25"
33		420930	557342	Gibraltar Row	1896 OS 25"
34		420376	557479	Clay Pit	1 <sup>st</sup> ED OS 6"
35		420379	557470	Marley Hill Colliery, Cricket and Football Ground	1919 OS 25"
36		419935	556588	Old Shaft; Bobgins Burn	1895 OS 25"
37		420143	556477	Air Shaft	1896 OS 25"
38		420748	556649	Causey Bank Well	1 <sup>st</sup> ED OS 6"
39		420748	556626	Bankwell House	1 <sup>st</sup> ED OS 6"
40		419743	557300	Air Shaft	1896 OS 25"
41		419489	557280	Mine	1961 OS 25"
42		419481	557222	Spoil tip	1961 OS 25"
43		420034	557265	Old' Clay Pit	1896 OS 25"
44		420739	557267	Marley Hill Engine Shed	1st ED OS 6"
45		419840	556574	Old Shaft' Fortune Hill	1st ED OS 6"

## Marley Hill Colliery Reclamation Scheme; Evaluation WSI

ES ID	HER REF	Easting	Northing	Site Name	Source
46	1670	420160	557350	Byermoor Pumping Station	T&W HER
47	3683	419277	557832	Marley Hill Pit	DRO D/ST/P12/2/2 T&W HER
48	3699	419910	557100	Marley Hill, 'Old Shaft'	T&W HER
49	3700	419870	557010	Marley Hill, 'Old Shaft'	T&W HER
50	3701	420040	557090	Marley Hill, 'Old Shaft'	T&W HER
51	3702	420080	557050	Marley Hill, 'Old Shaft'	T&W HER
52	3703	419890	556800	Marley Hill, 'Old Shaft'	T&W HER
53	3705	420625	557470	Marley Hill Colliery	T&W HER
54	3711	420370	574800	Marley Hill Clay Pit	T&W HER
55	3712	420590	557620	Marley Hill, Shaft	T&W HER
56	8613	420700	557500	Marley Hill Colliery, firebrick works	T&W HER
57	1023			Tanfield Moor Waggonway- Andrew's House Branch (3 lines)	T&W HER
58	3713			Tanfield Moor Waggonway (Pontop and Jarrow railway) – (Main line plus 2 branches including Beckley Branch )	T&W HER
59	3723	420850	559520	Northbanks Waggonway	
60	6907	420601	557141	Andrew's House Colliery	T&W HER
61	39464	420316	556702	Andrew's House farm	D HER

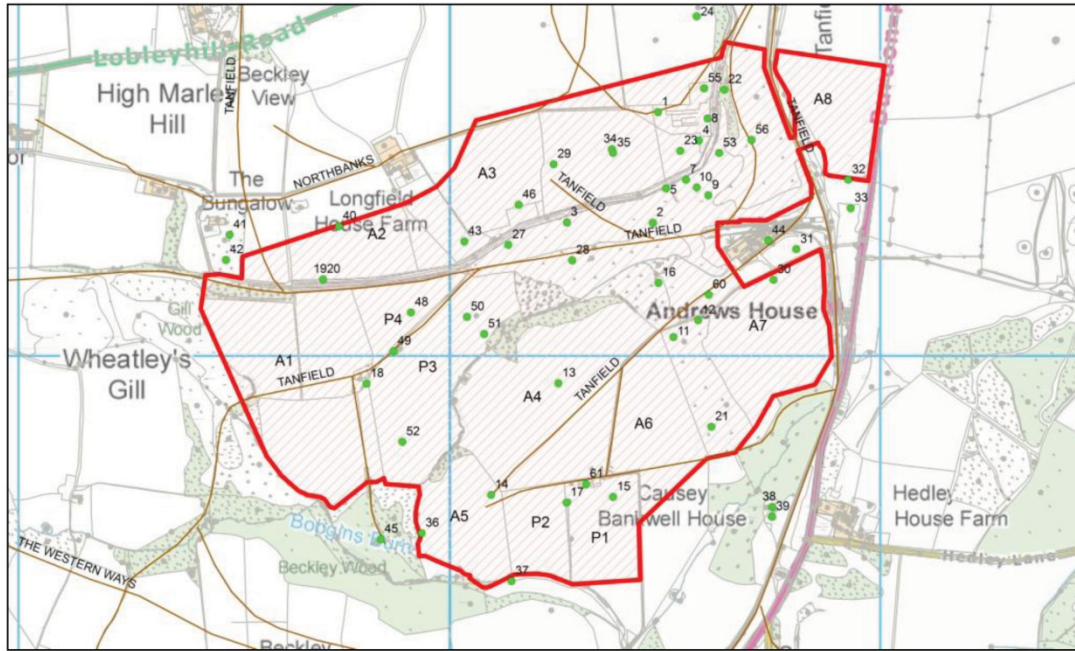
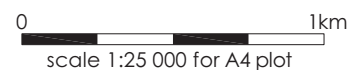
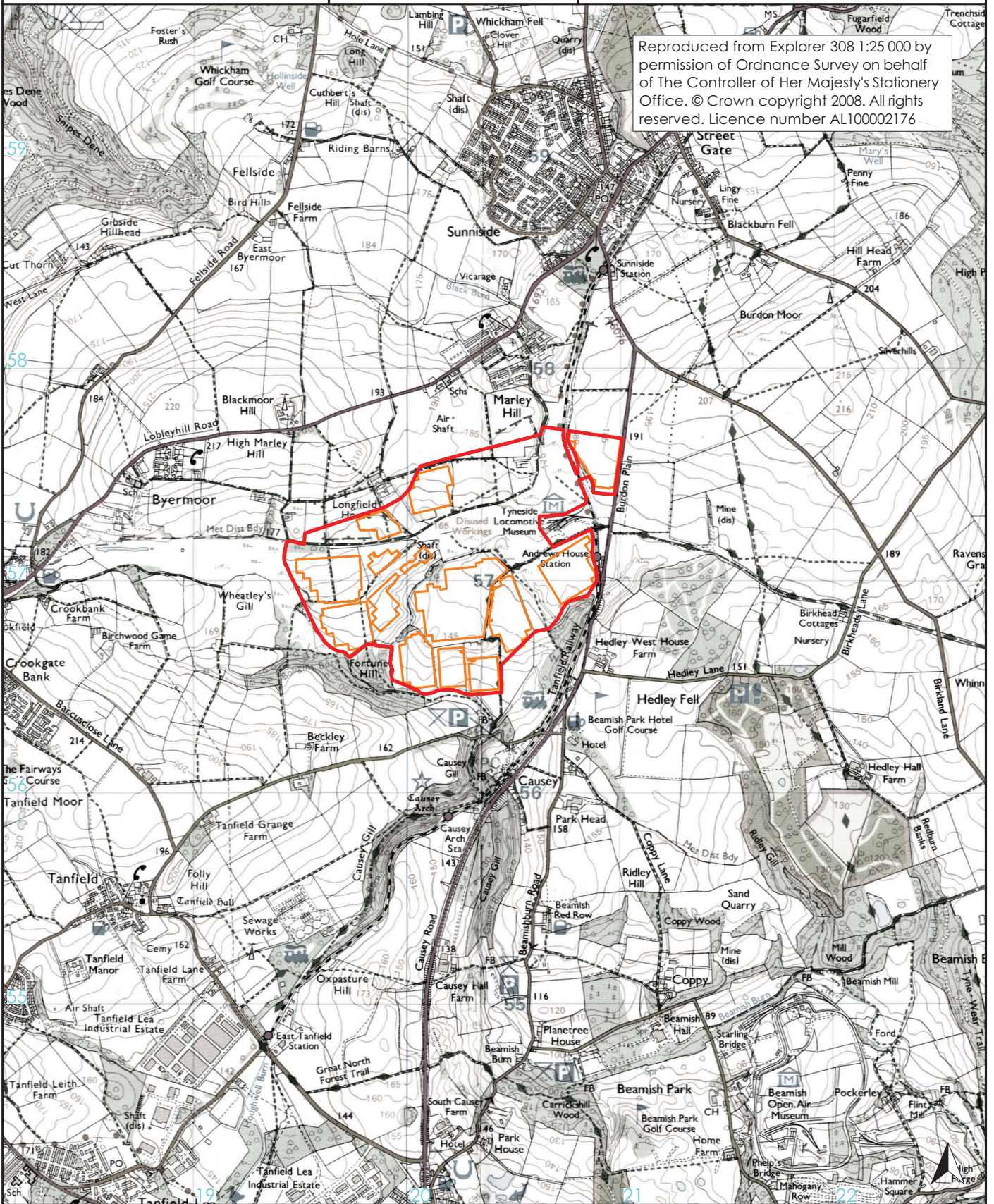


Figure 3. Location of identified Historic Environment Assets (letters refer to geophysical survey areas in fig 2). Brown lines are historic waggonway routes. 1:10000

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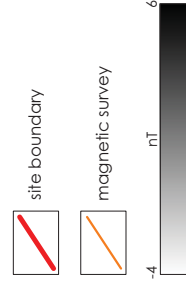
Figure 1: Site location





on behalf of  
**UK Coal Mining Ltd**

Marley Hill Proposed Surface Mine  
County Durham and Gateshead  
geophysical survey and fieldwalking  
report 3028  
Figure 2: Geophysical survey overview







# Gateshead

Site boundary  
 Geophysical survey



100% aerial geophysical survey  
 conducted in 2018  
 by Archaeological Services  
 Durham University  
 on behalf of UK Coal Mining Ltd



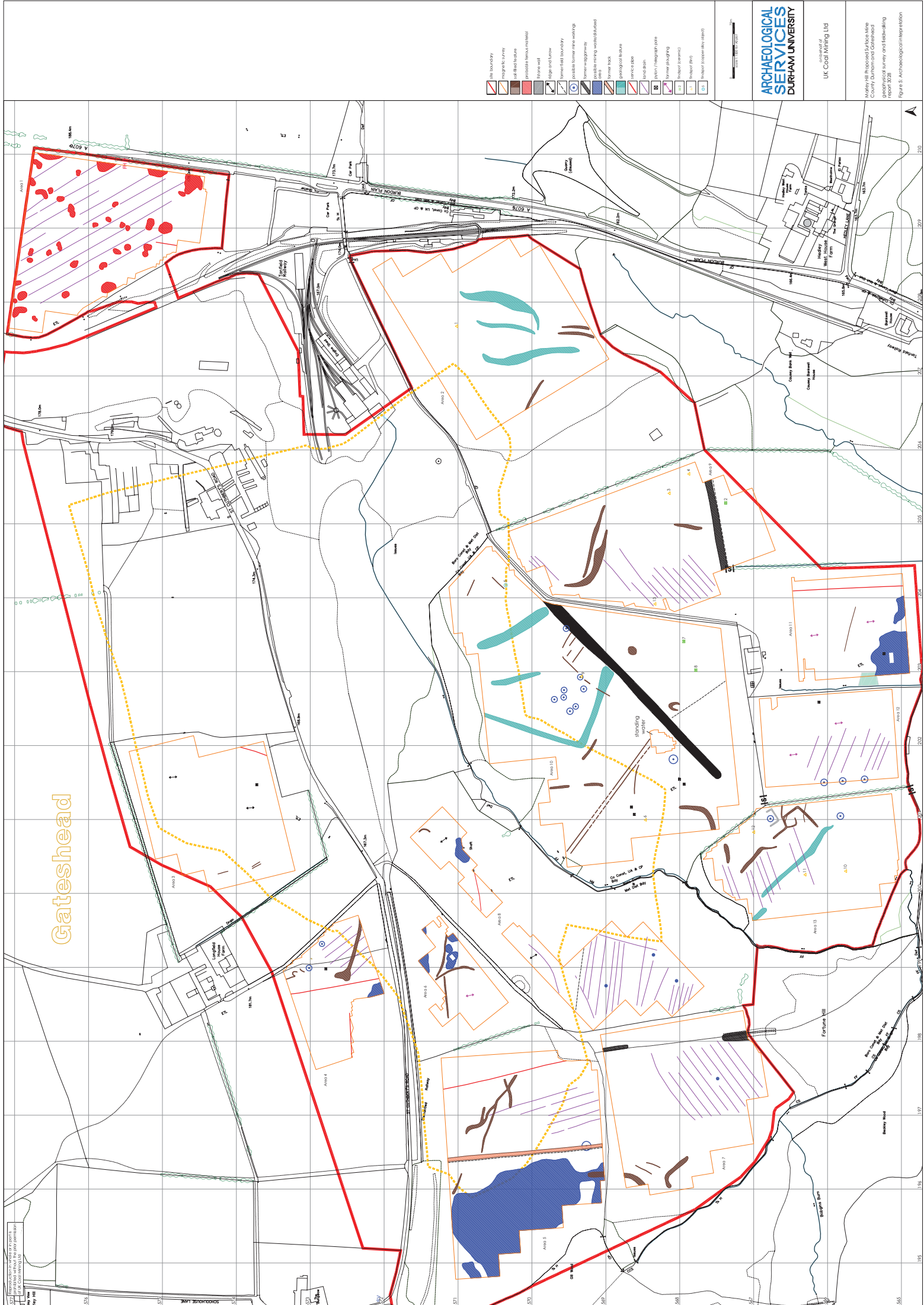


# Gateshead

- site boundary
- magnetic survey
- dipole magnetic anomaly
- positive magnetic anomaly
- negative magnetic anomaly



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- site boundary
- magnetic survey
- cut-drift feature
- possible former mine shaft
- fence wall
- ridge and furrow
- former field boundary
- possible former mine workings
- former millpond
- standing water
- former track
- geological feature
- stone pile
- level drain
- ditch / drainage gully
- former draughting
- former structure
- former pit
- former (possible mine shaft)

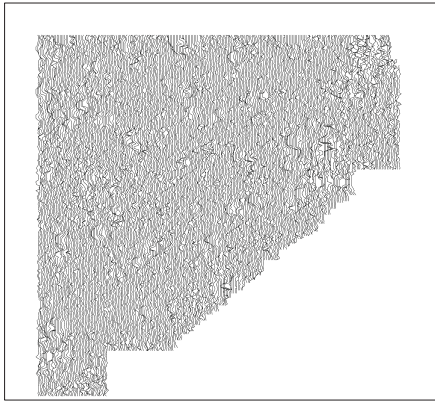
Gateshead

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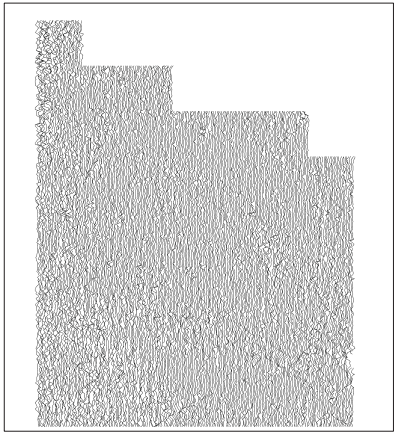
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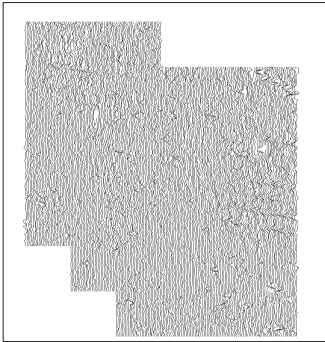
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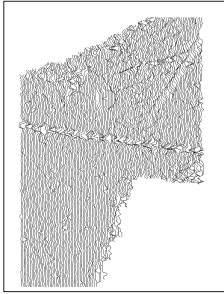
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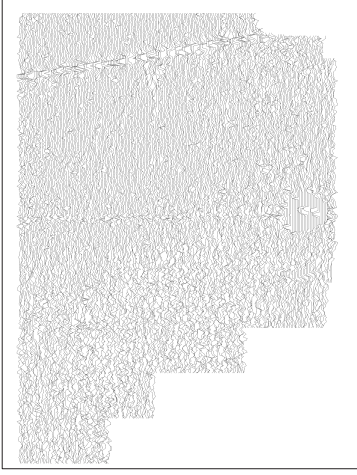
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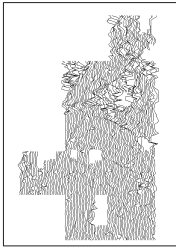
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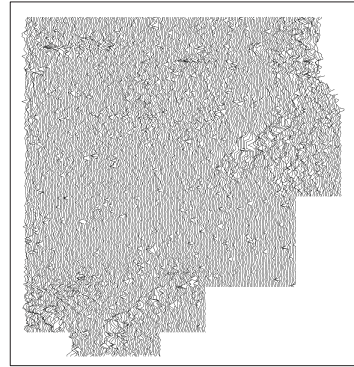
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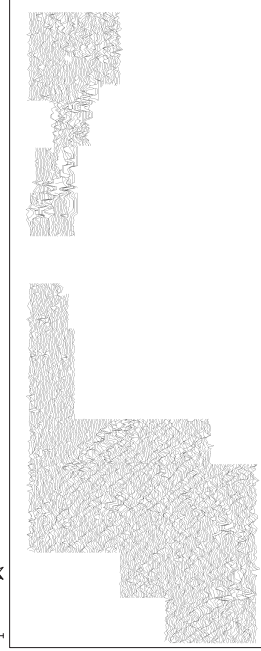
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10.000m



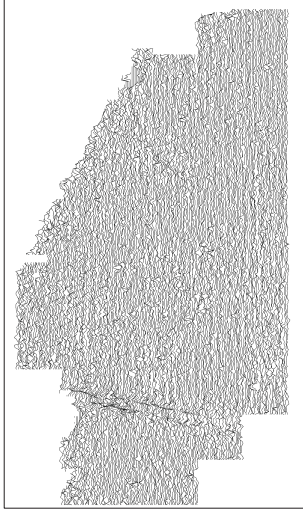
Area 7  
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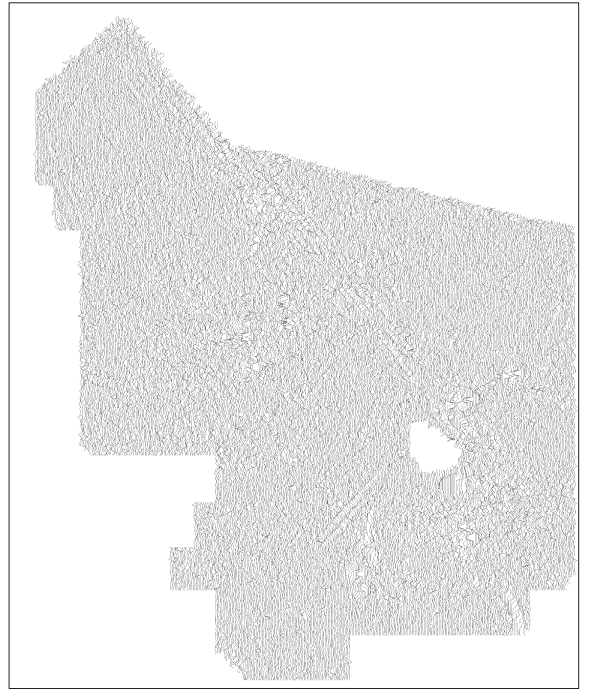
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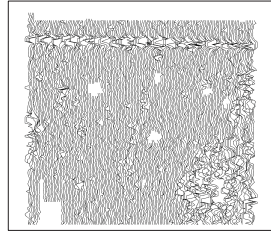
Area 9  
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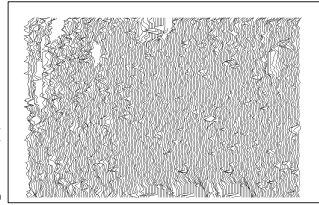
Area 10  
10.000m



Area 11  
10.000m



Area 12  
10.000m



Area 13  
10.000m

