ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
CgMs Consulting

Land off Holmes Chapel Road
Congleton
Cheshire

archaeological evaluation

report 2562
December 2010

Durham University

Contents

Figures

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1. Summary

The project

1.1 Recent geophysical surveys at the site of a long mound in Congleton, Cheshire, shed some light on the nature of the mound and detected some possible features external to the mound (Archaeological Services 2010). However, both the origin of the mound and the relationship (if any) between the mound and the possible external features remained uncertain.

1.2 This report presents the results of further geophysical survey, evaluation trench excavation and environmental sampling, undertaken to try to establish the character and date of the mound. These works comprised electrical resistance and ground-penetrating radar surveys across the long mound, and an evaluation trench at the north-west end of the mound.

1.3 The works were commissioned by CgMs Consulting and conducted by Archaeological Services Durham University.

Results

1.4 The GPR data profiles support the interpretation that the mound material is different to the surrounding natural subsoils, at least in its stone content. The anomalously high resistance values of the mound material do not appear to be structural. The radar transects support this interpretation; no reflections consistent with interpretations of structural features or voids were identified. A linear high resistance anomaly has been detected approximately 5m to the west of the mound, which is not likely to reflect a stone revetment or kerb. The previous phase of geomagnetic surveys detected tentative evidence for a possible stone kerb or revetment along the east edge of the mound, however, no data supporting possible stone revetments or kerbs has been detected in the present surveys. It is considered unlikely that a stone revetment or kerb is present on either side of the mound.

1.5 The linear high resistance anomaly detected on the west side of the mound is likely to be an area of drier ground, possibly associated with animal burrows and/or tree roots noted on the ground. At the west of the mound, a linear band of anomalously low resistance data has been detected. This has been detected over 5m from the mound and could reflect a soil-filled feature, such as a ditch. However, the anomaly has been detected in an area of lower ground between the berm surrounding the mound and the natural slope of the land to the west. In this depression the ground was noted as being wetter and boggy, which would account for this anomaly. All the GPR transects have detected reflections that would be consistent with a ditch feature in this area: an open drainage ditch containing a length of plastic pipe is present to the north of this anomaly. It is considered likely that the possible ditch detected in the resistance survey and GPR data is likely to be a continuation of this modern drainage ditch.

1.6 The evidence from the trench evaluation is inconclusive as to the nature of the mounds formation. It is possible that it is of natural origin, being a pre-existing elongated sand ridge, and further material may have been deliberately built up. However, it is also possible that the mound is a glacial deposit. All other anomalies identified in the previous geophysical survey which were investigated as possible archaeological features were determined to have natural origins. A few tiny fragments of 19th-century pottery were recovered.

1.7 No environmental material suitable for providing an absolute date was recovered during excavation or sample processing and assessment. The pollen assemblage is compatible with a prehistoric or more modern date. In short, there is no unambiguous evidence for a Neolithic date; a prehistoric date is possible, but equally a much more recent date is also possible.

2. Project background

Location (Figures 1 & 2)

2.1 The site is located on land to the south of Holmes Chapel Road, to the west of Congleton, Cheshire (NGR centre: SJ 83036 63413). One earth electrical resistance survey covering 1200sqm and a series of ground-penetrating radar survey transects were undertaken over a possible long barrow (National Monument No. 13499). Holmes Chapel Road and Loach Brook lay to the north and east; to the south was farmland and to the west was Sandy Lane. A T-shaped evaluation trench was excavated at the north-west edge of the long mound to sample anomalies identified in an earlier geophysical survey (Archaeological Services 2010).

Objective

2.2 The aims of the evaluation are:

- to use geophysical techniques to shed further light on the sub-surface nature of the mound and its immediate surroundings; such techniques may determine the presence/absence of soil-filled and stone components of the mound, or voids, and specifically any ditches flanking the mound
- to use targeted excavation to determine the nature, depth, preservation state and date, if possible, of features outside the north-western end of the mound as indicated by the initial phase of geophysical survey
- to determine any relationship between those features and the mound
- to assess classes of artefact and ecofact recovered
- to assess the potential archaeological resource
- to aid interpretation of the mound
- to inform decisions regarding the nature and scope of any further scheme of archaeological work that may be required

2.3 If the mound and/or adjacent possible features are Neolithic then the specific research themes and priorities in the *North West Archaeological Research Framework* (NWARF, ed. M Brennand 2007) which this project has the potential to address include:

- I) Scientific Dating. Specific Agenda Initiatives relevant to this project could include 1.4, 1.5, 2.8, 2.27, 2.54
- K) Environmental and scientific analyses. Specific Agenda Initiatives relevant to this project could include 1.4, 2.10, 2.16

Specification

2.4 The works have been undertaken in accordance with instructions from the client and with a Project Design provided by Archaeological Services Durham University (reference DH10.359 PDrev1), and with approval from the local planning authority and English Heritage.

2.5 Since the works were within a Scheduled Monument they were undertaken in accordance with a Section 42 licence and Scheduled Monument Consent, both granted by English Heritage under of the Ancient Monuments and Areas Act 1979 (as amended by the National Heritage Act 1983).

Dates

2.6 Fieldwork was undertaken between 22nd and 26th November 2010. This report was prepared for 15th December 2010.

Personnel

2.7 Fieldwork was conducted by David Graham and Richie Villis. Geophysical data were processed by Richie Villis. Bulk environmental sample processing was undertaken by Janet Beveridge and Matt Claydon. This report was prepared by Richie Villis (geophysics), David Graham (evaluation trench), Dr Charlotte O'Brien (palaeoenvironmental) and Jennifer Jones (artefacts), with illustrations by David Graham and Janine Watson. The report has been edited by Duncan Hale, the Project Manager.

Archive/OASIS

2.8 The site code is **CHC10**, for **C**ongleton **H**olmes **C**hapel 20**10**. The archive is currently held by Archaeological Services Durham University and will be transferred to CgMs 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 **archaeol3-89057**.

Acknowledgements

2.9 Archaeological Services Durham University is grateful for the assistance of Trefor Hughes in facilitating this scheme of works.

3. Landuse, topography and geology

3.1 The mound is covered with mature deciduous trees in a pasture field.

3.2 The mound measures *c*. 110m long by 20m wide and rises *c*. 2m. An accompanying berm flanks the earthwork on each side. The mean elevation at the foot of the mound is approximately 84m OD.

3.3 The underlying solid geology of the area comprises Triassic strata of the Sidmouth Mudstone Formation, which are overlain by Devensian glaciofluvial deposits of sands and gravels.

4. Historical and archaeological background

4.1 The mound is scheduled as 'National Monument No. 13499 Long barrow 300m south-east of Somerford Bridge'. The mound has never been excavated or investigated.

4.2 The mound at Congleton was first included in the Scheduled Monuments register as a Neolithic Long Barrow on 25th October 1974. The location of the mound is recorded on the 1st Edition Ordnance Survey County Series 1:2500 map of Cheshire, dated 1873.

4.3 Typically long barrows consist of earthen or drystone mounds flanked by ditches. They were constructed as funerary monuments during the Early and Middle Neolithic periods, around 3400-2400 BC. Long barrows are amongst the oldest extant field monuments in the British archaeological landscape. Investigations of long barrows have shown that they were used for communal burial, often with only parts of the human remains selected for interment. Some investigated long barrow sites provide evidence for several phases of funerary monument preceding the barrow. This suggests that long barrows acted as important ritual sites for a local community over a considerable period of time. Around 500 long barrows are recorded in England.

4.4 Long barrows are typically found concentrated in areas such as the Cotswolds, the Wessex downs and the Yorkshire and Lincolnshire Wolds. The mound at Congleton is one of two long barrows recorded in Cheshire.

4.5 The mound is aligned north-west/south-east, parallel and adjacent to Loach Brook, on a small floodplain. A berm flanks the long barrow on either side, but there is no evidence for any flanking ditches.

4.6 Higham believes that the mound could perhaps be natural, having “glacial or fluvoglacial origins” (Higham 1993), whilst the antiquity of the mound has also been questioned (eg Mullen 2002). There have been several alternative origins and functions of the mound suggested, one of which is that the mound may be an 18th-century cattle plague burial mound.

5. The 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) *Draft Standard and Guidance for archaeological geophysical survey* (2010); 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* (draft 2nd edition, Schmidt & Ernenwein 2010).

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, though not detected in the earlier gradiometer survey (Archaeological Services 2010), it was considered possible that the mound may have side ditches. Further earth resistance and ground-penetrating radar (GPR) surveys were therefore requested by English Heritage to try to detect any such ditches. It was also considered possible that other types of feature such as stone or timber chambers and other components might also be present.

5.4 Given the anticipated depth and nature of the targets it was considered appropriate to complement the earlier work by extending the areas covered by both the earth electrical resistance and GPR surveys.

5.5 Earth electrical resistance survey can be particularly useful for mapping stone and brick features. When a small electrical current is injected through the earth it encounters resistance which can be measured. Since resistance is linked to moisture content and porosity, stone and brick features will give relatively high resistance values while soil-filled features, which retain more moisture, will provide relatively low resistance values. GPR generates a short high-frequency radar pulse which is transmitted into the ground via an antenna; the energy is reflected by buried interfaces and the return signal is received by a second antenna. The amplitude of the return signal relates to the electromagnetic responses of different sub-surface materials and conditions, which can be features of archaeological interest. The time which elapses between the transmission and return of energy to the surface can be used to provide depth information.

Field methods

5.6 A 20m grid was established across the survey area and tied-in to known, mapped Ordnance Survey points using a Trimble Pathfinder Pro XRS global positioning system with real-time correction.

5.7 Measurements of earth electrical resistance were determined using Geoscan RM15D resistance meters with a mobile twin probe separation of 0.5m. A zig-zag traverse scheme was employed and data were logged in 20m grid units. The instrument sensitivity was set to 0.1ohm, the sample interval to 0.5m and the traverse interval to 1m, thus providing 800 sample measurements per 20m grid unit.

5.8 Earth electrical resistance 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.

5.9 The GPR survey was conducted using a Malå Ramac X3M radar unit with 250MHz antenna. Returned energy wavelets were recorded from many depths in the ground to produce a series of reflections generated at one location, called a reflection trace. Data traces were collected at 50mm intervals along seven parallel transects, where space allowed (Figure 2).

Data processing

5.10 The GPR transects were imported into the Malå Geo Science Object Mapper v.1.0.13 software and are presented as greyscale profiles in Figure 3. On the depth scales for the profiles a 2ns unit is equivalent to approximately 0.1m.

5.11 Geoplot v.3 software was used to process the earth electrical resistance data and to produce both a continuous tone greyscale image and a trace plot of the raw (minimally processed) data. The greyscale image and interpretations are presented in Figure 4; the trace plot is provided in Figure 5. In the greyscale image, high resistance anomalies are displayed as dark grey and low resistance anomalies as light grey. A palette bar relates the greyscale intensities to anomaly values in ohm.

5.12 The following basic processing functions have been applied to the resistance data:

clip	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic
despike	locates and suppresses spikes in data due to poor contact resistance

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

5.13 A colour-coded geophysical interpretation plan is provided. Two types of resistance anomaly have been distinguished in the data:

high resistance — regions of anomalously high resistance, which may reflect foundations, tracks, paths and other concentrations of stone or brick rubble

low resistance — regions of anomalously low resistance, which may be associated with soil-filled features such as pits and ditches

Interpretation: features

5.14 A colour-coded archaeological interpretation plan is provided.

5.15 A broad area of anomalously high resistance was detected in the centre of the survey area. This corresponds to the position of the mound itself. The high resistance values of these anomalies would be consistent with the mound material comprising large amounts of well-drained sands, gravels and stone. The previous phase of survey (*ibid*.) detected similarly high resistance values for the mound material.

5.16 The GPR data profiles support the interpretation that the mound material is different to the surrounding natural sub-soils. The GPR transects detected many reflections, some over 1.8m below ground level, over the mound. Tree roots may account for some of the variation, but the edge of the mound is clearly identified.

5.17 The anomalously high resistance values of the mound material do not appear to be structural. The radar transects support this interpretation; no reflection traces consistent with structural features or voids were detected.

5.18 A linear high resistance anomaly has been detected approximately 5m west of the mound. This is unlikely to be a possible stone revetment or kerb given its distance from the mound. The previous phase of geomagnetic surveys (*ibid*.) detected tentative evidence for a possible stone kerb or revetment along the east edge of the mound, however, no supporting data has been detected in either the resistance or radar data there. It is considered unlikely that a stone revetment or kerb is present on either side of the mound. The linear high resistance anomaly detected on the west side of the mound is likely to be an area of drier ground, possibly associated with animal burrows and/or tree roots noted on the ground.

5.19 Several metres further west of the mound a band of slightly lower resistance data has been detected. This could reflect a soil-filled feature, such as a ditch. Supporting geomagnetic data is lacking because the previous phase of surveys did not extend this far, due to a temporary fence. The anomaly has been detected in an area of lower ground between the berm surrounding the mound and the natural slope of the land to the west. In this depression the ground was noticeably wetter and boggy, which would account for the low resistance anomaly. All the GPR transects have detected reflections that would be consistent with a ditch-like feature in this area, however, an open drainage ditch containing a length of plastic pipe was present to the north of the anomaly. It is considered likely that the possible ditch detected in the resistance survey and the GPR data is a continuation of this modern drainage ditch.

5.20 Many small hyperbolic reflections are evident in the radar data, the majority of which almost certainly reflect small objects within the topsoil.

6. The evaluation trench

Introduction

6.1 One T-shaped trench, measuring 1.8m by 25m and 1.8m by 12m was excavated near the north-western end of the mound (Figure 2). This targeted geophysical anomalies A, C, E, H and G, as identified in earlier surveys (Archaeological Services 2010). Context data are presented in Appendix 1 Table 1.1.

Results (Figures 6-11)

6.2 Fine yellow sand [10] formed the underlying natural subsoil in the area. A section identified fine bands of this sand, probably water-deposited, continuing over 0.5m below the bottom of the mound (Figure 11). Other areas of this sand near its upper extent may indicate a wind-blown accumulation. This was particularly evident at the north-west end of the mound. The section from the mound to the north also indicated a gradual rise in the height of the natural sand southwards (Figure 6). The land also sloped down to the east and west. It is therefore possible that the mound sits on a natural sand ridge, a combination of water deposited and possibly some wind-blown formation processes. The stream, running parallel to the mound to the east, may also have been a factor in enhancing this elongated natural feature in the landscape by erosion of surrounding sand. Changes in stream course may also explain a similar process to the west of the mound.

6.3 A number of natural deposits were identified in the trench to the north of the mound (Figures 6-9). A natural water channel deposit [11] was identified in the north-west part of the trench. This was aligned broadly north-east to south-west. It consisted of fine orange silty sand. The water had cut [F12] through underlying natural sand depositing this more silty material. There was some banding of the natural sand and patches of gravel within this natural feature. It corresponds with the geological feature identified in the previous geophysical survey. Other patches of gravel were identified in the north part of the trench. These also correspond with the previous geophysical survey results. They were originally interpreted as possibly structural and stone/rubble. They all appear to be of natural formation. A deposit of mottled black-orange (gleyed) organic silt was identified at the south-west end of the trench. This is also of natural origin (interpreted as a possible soil-filled feature in the previous geophysical survey). It suggests this area was more waterlogged and boggier in the past. The drainage channel to the west of the mound has clearly altered the nature of the surrounding land in this area.

6.4 The north-west edge of the mound was identified in the south-west end of the T-shaped trench (Figures 6, 10-11). The mound material consisted of light brown silty-sand [2] with some evidence of laminations within it, including some gravel. Some small orange clay lumps and medium-sized rounded stones/cobbles (up to 0.25m in size) were also identified within it. Some of this stone included granite. This may derive from glacial and/or fluvial action. The mound material is different from the surrounding soil types and may have been enhanced by human action on an existing natural feature in the landscape. The laminations may be evidence of erosion and deposition of the mound from its edges down the slope, rather than any deliberate build up of the mound. The mound material and its laminations could be evidence of a deposition (either anthropogenic or natural) process which has been gradually eroded over time by water action in its surrounding topographical situation. An orange sand [3], with some smaller sized cobbles, was identified under the main material of the mound. This is interpreted as a possible buried soil/subsoil. Pollen analysis was carried out on this deposit (below).

6.5 The mound was significantly disturbed by tree roots in combination with water action both within deposits [2] and [3] and beneath the mound. Linear channels, interpreted as formed by root and water action [F6]/[5] and [F8]/[7], were identified under the mound and continuing to the north of the mound running down the slope to the north-east. The deposit [4] under the lower deposit of the mound [3] appears to have been formed by similar processes (Figures 10 & 11).

6.6 A subsoil [9] of mixed topsoil and underlying natural sand was identified running down the slope from the mound. This was patchy and was the result of root penetration from the trees on the mound and more localised vegetational growth. This phenomenon may explain the soil-filled feature anomalies identified in the previous geophysical survey (Archaeological Services 2010) in that area of the trench. Topsoil [1] varied in depth across the area. At the south end of the trench over the mound the topsoil was shallowest (0.15m) and consisted of more compact dark brown-black loam and turf. The topsoil was deepest as the ground sloped to the north-east (0.46m). The topsoil here was a medium brown-grey silty-clay loam and probably contains more organic material than the sandy deposits. This would explain the anomaly identified in the previous geophysical survey as a soil-filled feature in that area of the trench.

6.7 No artefactual material for dating the mound was identified from the evaluation trench, however, limited artefactual material was recovered during the processing of bulk environmental samples (see below).

7. The palaeoenvironmental evidence

Plant macrofossil assessment

Methods

7.1 A plant macrofossil assessment was carried out on five bulk samples, which comprised linear fills [contexts 5 and 7], a possible ditch fill [context 11], mound material [context 2] and a sandy layer below the mound [context 3]. The samples were manually floated and sieved through a 500μm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, 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.

Results

7.2 Modern roots were common in all of the samples, and the flots also comprised a few beetle fragments [contexts 2, 3 and 5], bud scales [contexts 3 and 7], earthworm cocoons [contexts 2 and 7] and uncharred seeds [contexts 2, 3 and 5]. Small fragments of coal were noted in contexts [2], [5] and [7], and small cinder fragments were recorded in context [2]. Sclerotia (resting bodies) of the soil fungus *Cenococcum geophilum* were present in contexts [2], [3] and [11], which is an ectomycorrhizal species with mutualistic associations with some tree roots, particularly members of the oak, pine and birch families (Hudson 1986). Small charcoal flecks were noted in contexts [2] and [11]. The residue of context [2] comprised a fragment of calcined bone, and a few very small fragments of pottery and fired clay. Charred plant macrofossils were absent from the samples, and the bone and charcoal fragments were too small for identification or radiocarbon dating. The results are presented in Appendix 1 Table 1.2.

Discussion

7.3 The free-draining nature of the site suggests that the roots, uncharred seeds, beetle fragments, bud scales and earthworm cocoons are intrusive material. The bone, charcoal, pot/fired clay and cinder fragments could represent domestic waste, although considering their small size and abraded condition they may also be intrusive. The presence of coal probably reflects the local geology, rather than the disposal of fuel waste. Little information can be provided about the age of the features, due to the absence of charred plant macrofossils or material suitable for radiocarbon dating.

Recommendations

7.4 No further work is recommended on the samples due to the absence of charred plant macrofossil remains.

Pollen assessment

Methods

7.5 Pollen assessment was undertaken on a sandy subsoil [context 3] and the overlying mound material [context 2]. The samples were prepared following an abridged version of standard laboratory procedures, and 100 pollen grains were counted per context. A *Lyopodium* marker spore tablet was added to each from batch 483216 (average 18583 spores/tablet).

Results and discussion

7.6 The results are presented in Appendix 1 Table 1.3. In both samples, pollen was present in moderate concentrations, and ranged in condition from poor to good. In context [3], arboreal pollen was abundant (60% of total land pollen) and was dominated by hazel and alder. Other trees included pine, birch, willow, lime and oak. Heathers were also frequently recorded (17% of tlp). The high arboreal pollen frequency suggests a predominantly wooded landscape, which is more typical of the regional vegetation prior to the widespread clearance of woodland associated with the expansion of agriculture from the later prehistoric period onwards, than to the open landscape of the post-medieval and modern periods. The assemblage is therefore not inconsistent with a prehistoric date for the mound, although it is perhaps possible that a local predominance of trees on the mound or in the local pollen catchment area, could have exaggerated the arboreal pollen frequency to a higher level than would be expected for a post-medieval/modern landscape. It is also feasible that the sandy matrix may have resulted in a differential preservation of pollen, favouring hardier arboreal pollen types, although the general good condition of many of the pollen grains makes this unlikely.

7.7 Pine pollen made up 10% of tlp, which could indicate that the assemblage reflects the landscape prior to the widespread restriction of native pine woodlands noted in many palaeoecological records throughout the British Isles at *c.* 2500 cal. BC, including the nearby pollen site at White Moss, west of Alsager (Lageard *et al* 1999). The pollen assemblage broadly resembles the pre-'pine decline' landscape at White Moss in having a predominance of alder, hazel, birch, pine and heather pollen. The assemblage is unlikely to reflect the landscape prior to *c.* 5000 cal. BC, when pine woodland dominated south Cheshire, which would have resulted in higher pine pollen frequencies. However, the pine pollen could derive from a more recent landscape if there were areas of pine plantation in the pollen catchment. The 1st Edition OS map appears to show an area of mixed conifer and deciduous woodland to the east of the site, referred to as West Heath Plantation, which has subsequently been developed with housing.

7.8 The pollen assemblage in context [2] was similar to that in context [3], although a few herbaceous pollen types associated with arable and pastoral farming were noted. These included docks, buttercups, ribwort plantain and a cereal-type pollen grain. While this could reflect 19th-century farming activity, prehistoric cultivation in the vicinity of the mound is also a possibility.

7.9 Pollen preservation varied, but the presence of a proportion of well-preserved pollen grains in a sandy matrix, could point to part or all of the pollen assemblage being relatively recent. Root material was noted in both contexts, which may indicate that pollen could have been introduced through bioturbation or the percolation of water down through the mound, or may support the assertion that the mound itself is historic in date. However, although it is unusual, pollen can be well-preserved within sands in certain situations, particularly if there is little post-depositional movement of the pollen. A situation such as a fluctuating water table can cause movement of pollen within a sediment column. Pollen was found to be well-preserved in the sandy soil below and within a Bronze Age Barrow at Church Lawton, near Alsager (Innes in press). The pollen assemblage from this barrow resembles the present site in having a predominance of arboreal pollen, which was mainly hazel, alder and birch, with some oak and lime.

Conclusions

7.10 In light of the taphonomic problems, the results of the assessment are inconclusive. The sequence is most likely to post-date *c.* 5000 cal BC and may pre-date *c.* 2500 cal BC, equally the pine pollen could derive from a more recent landscape such as the plantation shown on the 1st Edition OS map. Similarly, the non-arboreal pollen could evidence prehistoric agriculture in the vicinity of the mound or could represent 19th-century farming. Pollen preservation varied, but the presence of a proportion of well-preserved pollen grains in a sandy matrix, could point to part of all of the pollen assemblage being relatively recent. In short, there is no unambiguous evidence for a Neolithic date; a prehistoric date is possible, but equally a much more recent date is also possible.

8. The artefactual evidence

Pottery/fired clay assessment

8.1 Four very small pieces (largest 11mm length) of white glazed earthenware came from environmental sample <4> from context [2]. These are 19th-century or later in date.

8.2 Three small abraded fragments (weight <1g) of fired clay or pottery also came from the same environmental sample from context [2]. These are an homogenous red in colour, and quite heavily gritted with fine (<1mm) sub-angular and rounded quartz grains. No original surfaces survive.

Recommendation

8.3 No further work is recommended.

Bone assessment

8.4 Environmental sample <4> from context [2] contained a single very small (9mm length) piece of unidentifiable calcined bone.

Recommendation

8.5 No further work is recommended.

9. Discussion

9.1 The GPR data profiles support the interpretation that the mound material is different to the surrounding natural subsoils, at least in its stone content. The anomalously high resistance values of the mound material do not appear to be structural. The radar transects support this interpretation; no reflections consistent with interpretations of structural features or voids were identified. A linear high resistance anomaly has been detected approximately 5m to the west of the mound, which is not likely to reflect a stone revetment or kerb. The previous phase of geomagnetic surveys detected tentative evidence for a possible stone kerb or revetment along the east edge of the mound, however, no data supporting possible stone revetments or kerbs has been detected in the present surveys. It is considered unlikely that a stone revetment or kerb is present on either side of the mound.

9.2 The linear high resistance anomaly detected on the west side of the mound is likely to be an area of drier ground, possibly associated with animal burrows and/or tree roots noted on the ground. At the west of the mound, a linear band of anomalously low resistance data has been detected. This has been detected over 5m from the mound and could reflect a soil-filled feature, such as a ditch. However, the anomaly has been detected in an area of lower ground between the berm surrounding the mound and the natural slope of the land to the west. In this depression the ground was noted as being wetter and boggy, which would account for this anomaly. All the GPR transects have detected reflections that would be consistent with a ditch feature in this area: an open drainage ditch containing a length of plastic pipe is present to the north of this anomaly. It is considered likely that the possible ditch detected in the resistance survey and GPR data is likely to be a continuation of this modern drainage ditch.

9.3 The evidence from the trench evaluation is inconclusive as to the nature of the mounds formation. It is possible that it is of natural origin, being a pre-existing elongated sand ridge, and further material may have been deliberately built up. However, it is also possible that the mound is a glacial deposit. All other anomalies identified in the previous geophysical survey which were investigated as possible archaeological features were determined to have natural origins. A few tiny fragments of 19th-century pottery were recovered.

9.4 No environmental material suitable for providing an absolute date was recovered during excavation or sample processing and assessment, though possible broad periods could be indicated by the pollen assemblage.

10. Sources

Archaeological Services 2010 *Land off Holmes Chapel Road, Congleton, Cheshire: geophysical surveys*. Unpublished report **2468**, Archaeological Services Durham University

Brennand, M 2007 Research and Archaeology in North West England. An Archaeological Research Framework for North West England Volume 2 Research Agenda and Strategy. *Archaeology North West* Volume **9** (Issue 19, for 2007)

Chadwick, P & Gidman, J, 2010 *Holmes Chapel Road, Congleton, Cheshire.* Archaeological desk-based assessment. CgMs Consulting

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 for Archaeologists

Higham, HJ, 1993 *The Origins of Cheshire*. Manchester

Hudson, HJ, 1986 *Fungal Biology*. London

IfA 2010 *Draft Standard and Guidance for archaeological geophysical survey*. Institute for Archaeologists

Innes, JB, in press Pollen Analysis from Church Lawton, in McNeil, R, Excavations at Church Lawton, Alsager, Cheshire. *Journal of the Merseyside Archaeological Society*

Lageard, JGA, Chambers, FM, & Thomas, PA, 1999 Climatic significance of the marginalization of Scots pine (*Pinus sylvestris* L.) *c.* 2500 BC at White Moss, south Cheshire, UK. *The Holocene* **9, 3**, 321-331

Mullen, D, 2002 The Loachbrook Farm Mound: Neolithic long barrow or cattle plague burial mound? *Trans Lanc & Cheshire Antiquarian Soc* Vol **98** pp 131-137

Schmidt, A, & Ernenwein, E, 2010 (draft) *Guide to Good Practice: Geophysical Data in Archaeology*. Archaeology Data Service

Appendix 1: Data tables

Table 1.1: Context data

No	Description
1	Topsoil
2	Grey-brown silt sand mound material
3	Orange sand
4	Root disturbance under mound
5	Root disturbance deposit
F6	Root & water disturbance
7	Root disturbance deposit
F8	Root & water disturbance
9	Subsoil – mixed natural sand and root action
10	Yellow natural sand
11	Orange silty sand water channel deposit
F12	Cut of water channel

Table 1.2: Data from plant macrofossil assessment

Context		**5**	**7**	**11**	**2**	**3**
Sample		**1**	**2**	**3**	**4**	**-**
Feature		**Linear**	**Linear**	**Ditch?**	**Mound**	**Sand below [2]**
Volume processed (l)		7	7	8	17	2.5
Volume of flot assessed (ml)		200	200	20	650	60
Residue contents						
Bone (calcined)	indet. frag	-	-	-	(+)	-
Fired clay		-	-	-	(+)	-
Pot (number of fragments)		-	-	-	4	-
Flot matrix						
Beetle fragments		+	-	-	+	+
Bud scale		-	+	-	-	(+)
Cenococcum geophilum (soil fungus)	sclerotia	-	-	+	+	+++
Charcoal		-	-	(+)	(+)	-
Cinder		-	-	-	+	-
Coal		+	(+)	-	+	-
Earthworm cocoon		-	+	-	+	-
Roots (modern)		++++	++++	+++	++++	+++
Uncharred seeds		+	-	-	+	(+)

[(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Table 1.3: Data from plant microfossil assessment

Context	**2**	**3**
Sample	**4**	**-**
Feature	**Mound**	**Sand below [2]**
Volume processed (ml)	1	1
Total land pollen grains counted	116	110
Tree and shrub taxa (total counts)		
Alnus sp (Alder)	15	25
Betulus sp (Birch)	1	4
Corylus-type (Hazel-type)	22	25
Ilex aquifolium (Holly)	1	-
Pinus sp (Pine)	25	11
Quercus sp (Oak)	2	1
Salix sp (Willow)	-	1
Tilia sp (Lime)	-	1
Shrub taxa (total counts)		
Calluna vulgaris (Ling heather)	20	10
Erica-type (Heath-type heather)	15	9
Herbaceous taxa (total counts)		
Apiaceae (Carrot family)	2	1
Aster-type (Daisy-type)	-	3
Cereal-type	1	-
Fabaceae (Pea family)	-	1
Mentha-type (Mint-type)	-	1
cf. *Plantago* sp (cf. Plantain)	-	1
Plantago lanceolata (Ribwort plantain)	2	-
Poaceae (Grass family)	4	13
Ranunculus sp (Buttercup)	1	-
Rumex sp (Dock)	3	-
Succisa pratensis (Devil's-bit scabious)	1	-
Taraxacum-type (Dandelion-type)	1	1
Indet. herbaceous taxa	7	2
Spores (total counts)		
Fungal spores	9	8
Polypodium sp (Polypody)	1	1
Pteridium aquilinum (Bracken)	1	-
Pteridophyta (monolete) undiff. (Ferns)	1	1
Lycopodium (Exotic marker)	9	17
Indet. trilete spores	3	2

Appendix 2: Stratigraphic matrix

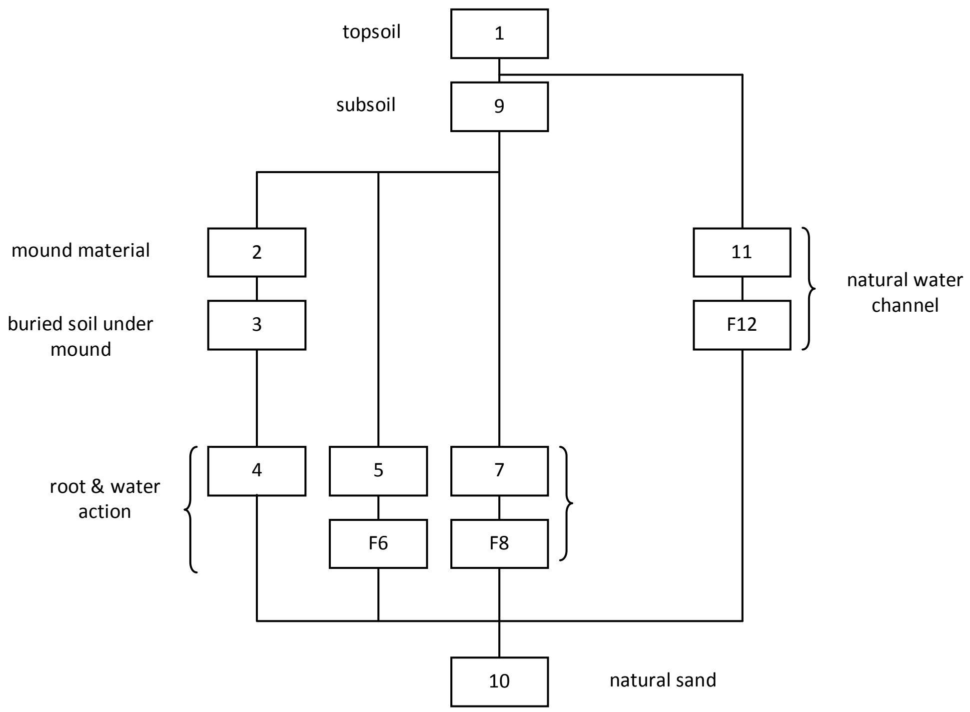

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Figure 1: Site location

site location

0 2.5km
scale 1:50 000 for A4 plot

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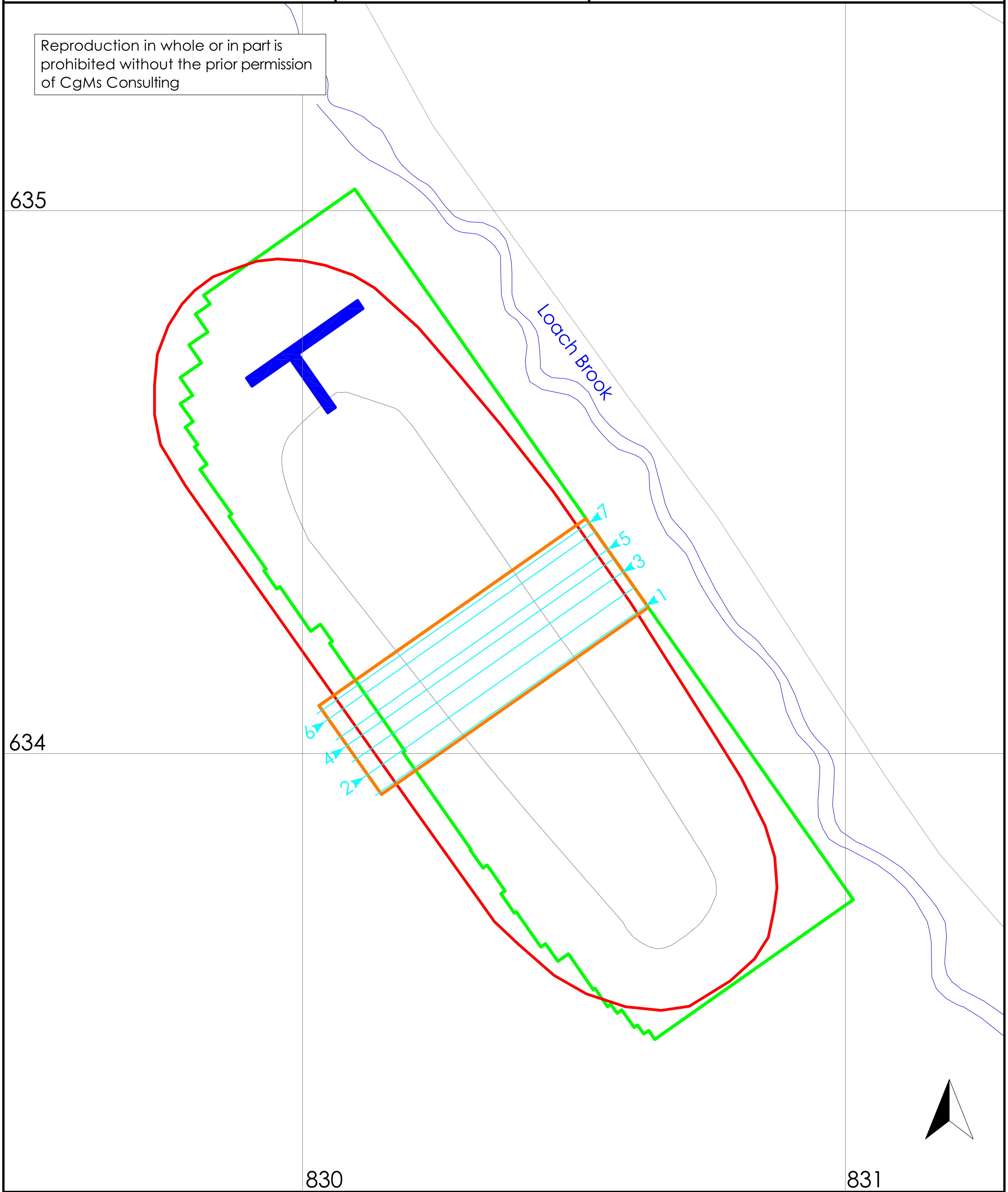
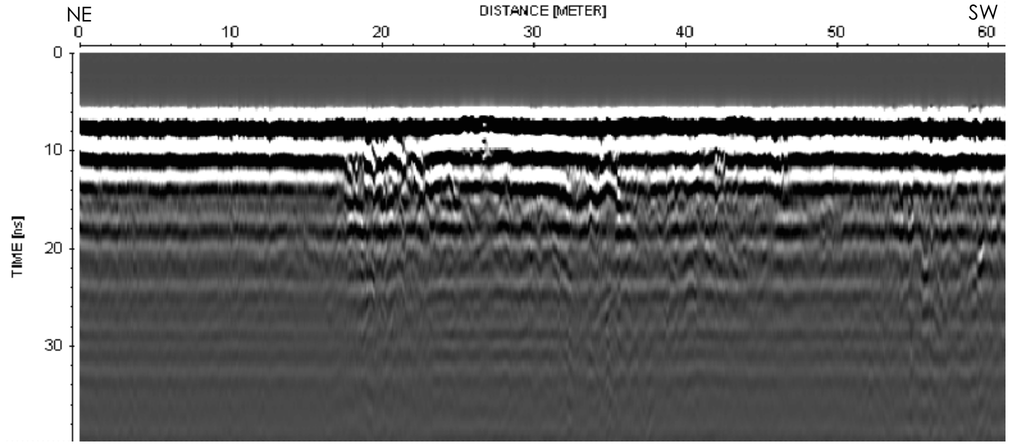
Figure 2: Geophysical survey and trench location



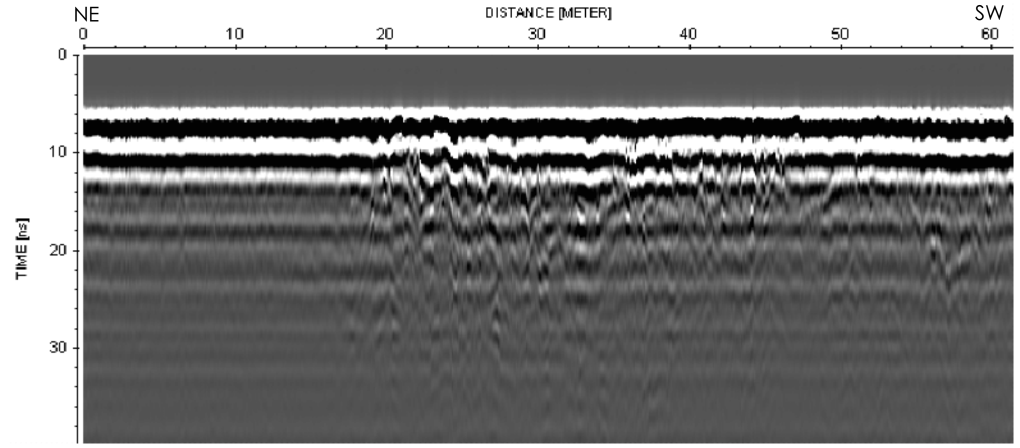
trench
present geophysical survey
previous geomagnetic survey
Scheduled Ancient Monument
direction of radar traverse

0 50m
scale 1:1000 for A4 plot

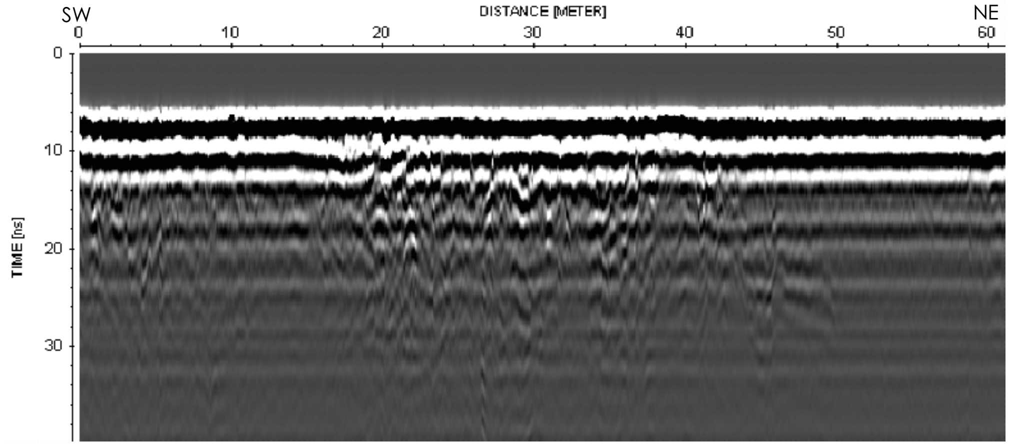
Profile 1



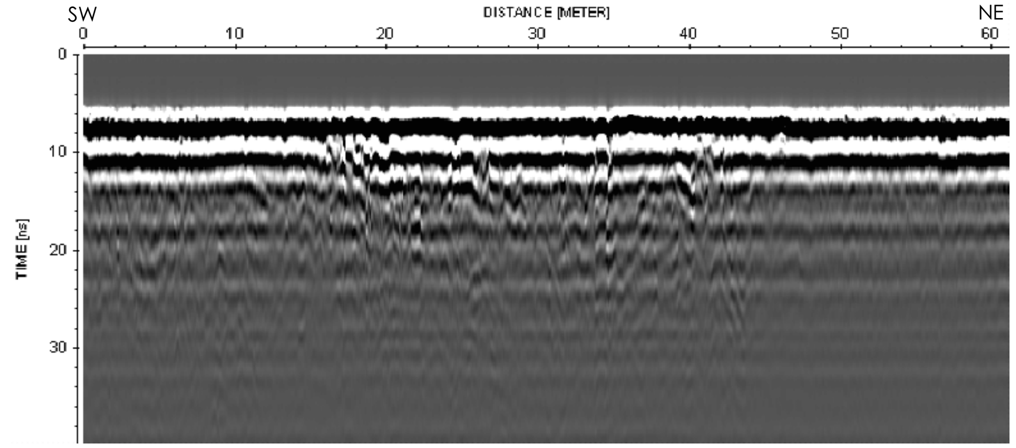
Profile 5



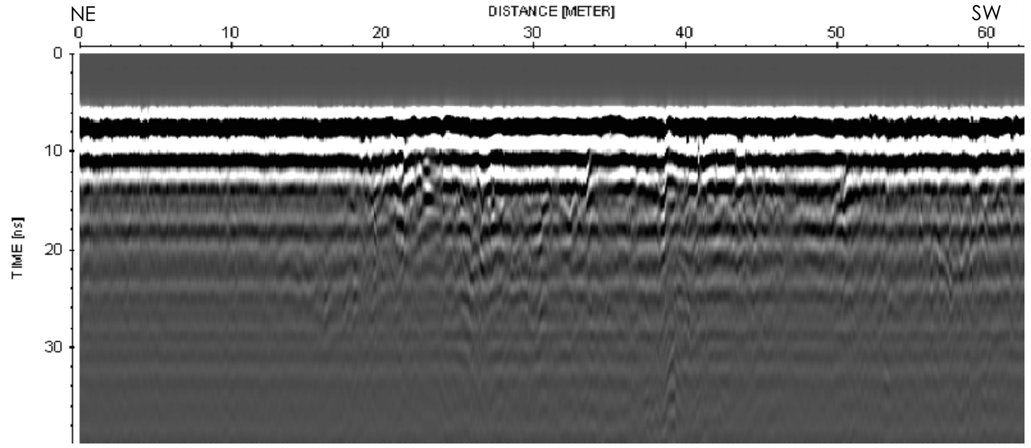
Profile 2



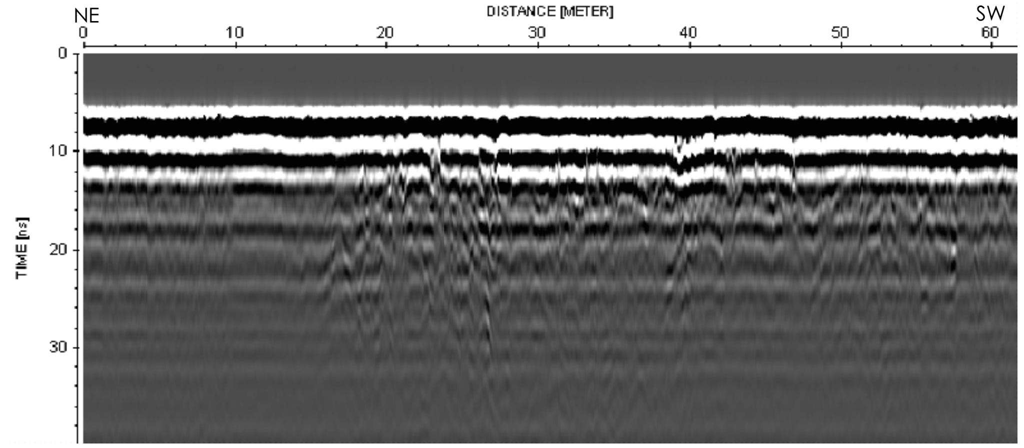
Profile 6



Profile 3



Profile 7



Profile 4

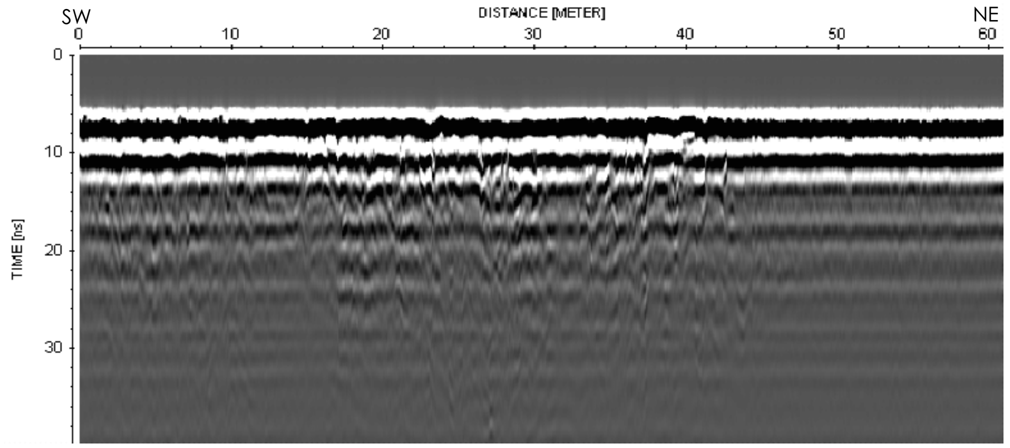


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Figure 3: Profiles of GPR data

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geophysical survey area
previous geophysical survey area
Scheduled Ancient Monument

0 25m
scale 1:500 for A3 plot

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Figure 4: Resistance survey results and interpretations

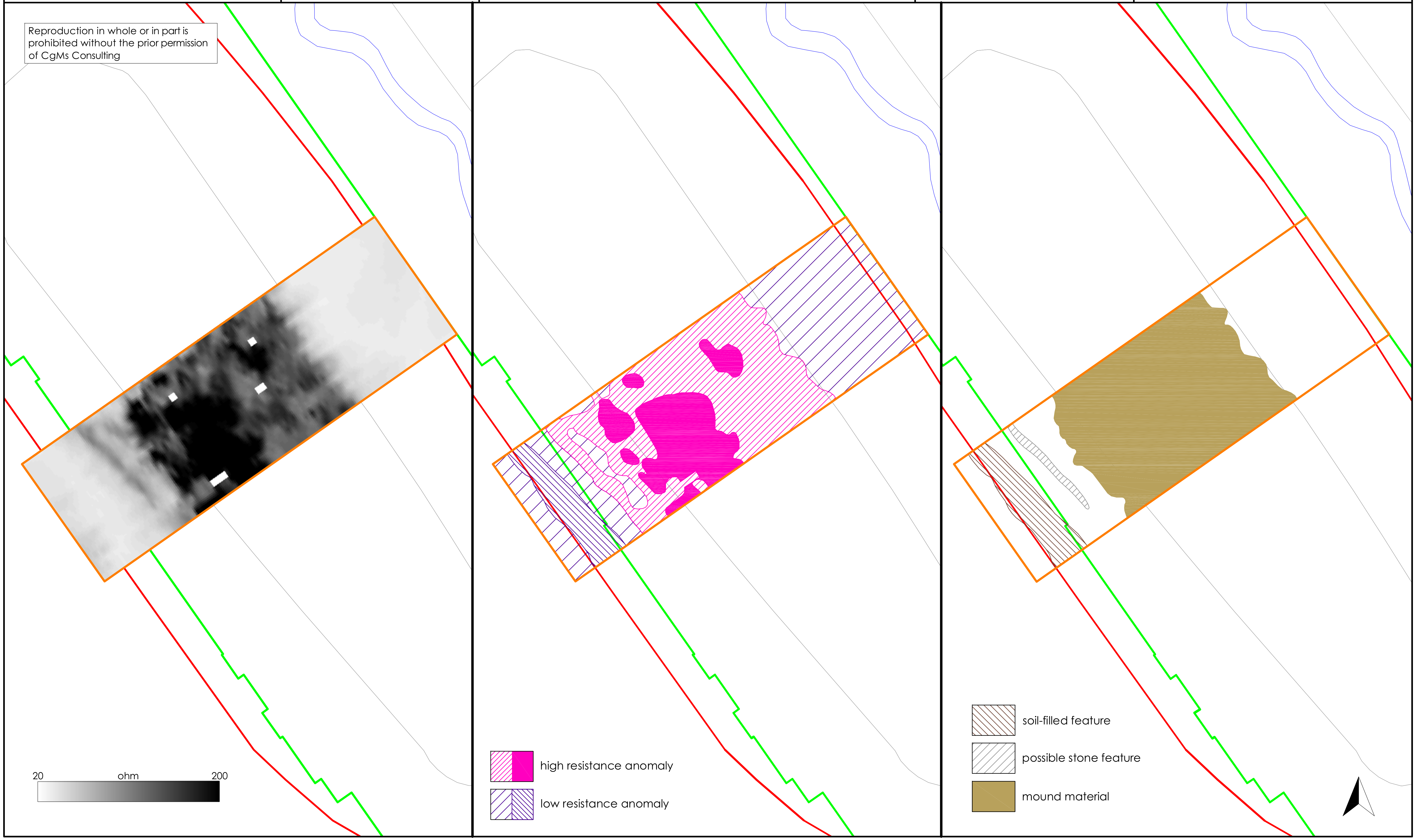

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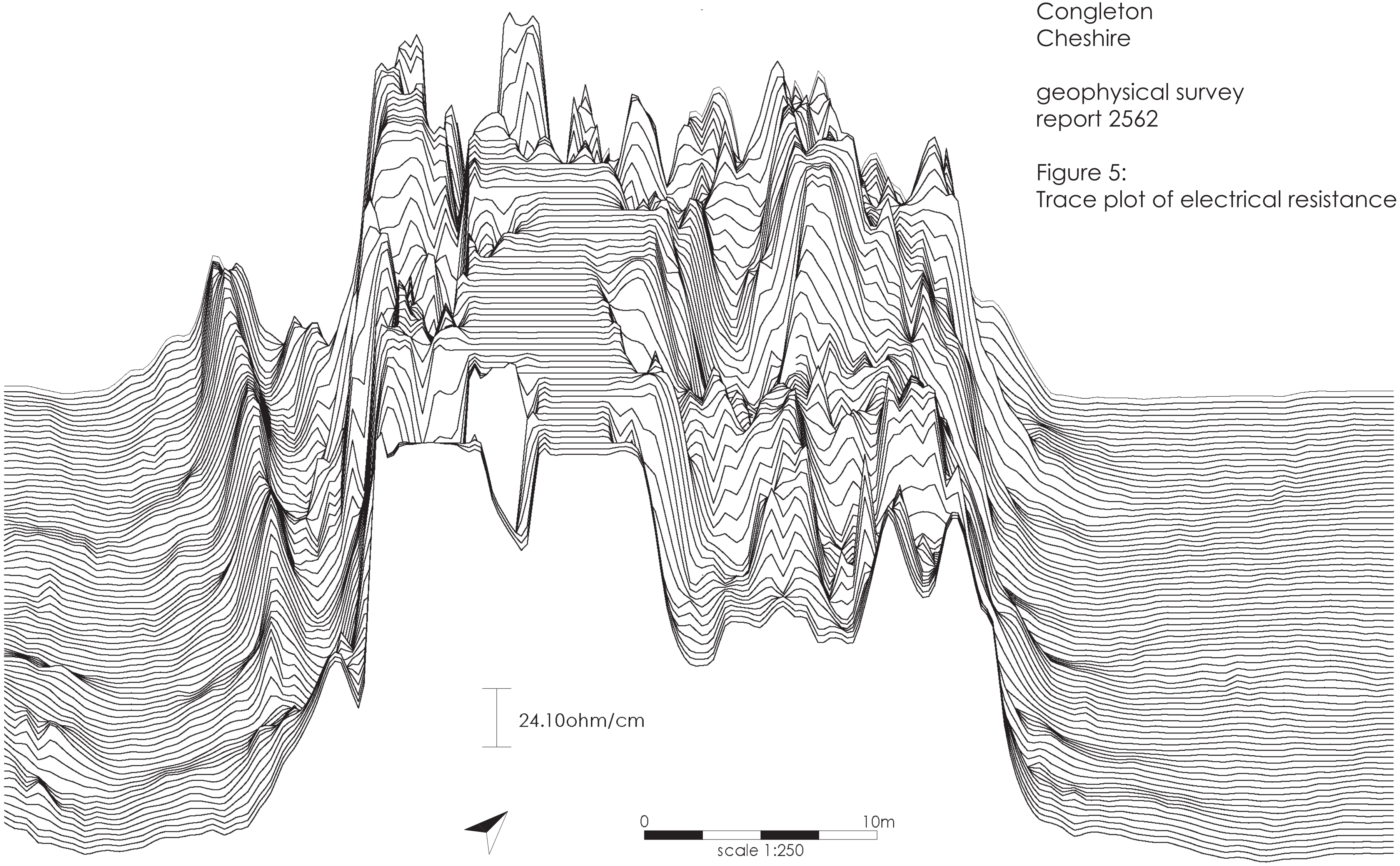
Figure 5:
Trace plot of electrical resistance data



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extent of excavation

section

0 — 4m
scale 1:80 for A3 plot

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Figure 6: Trench plan and sections

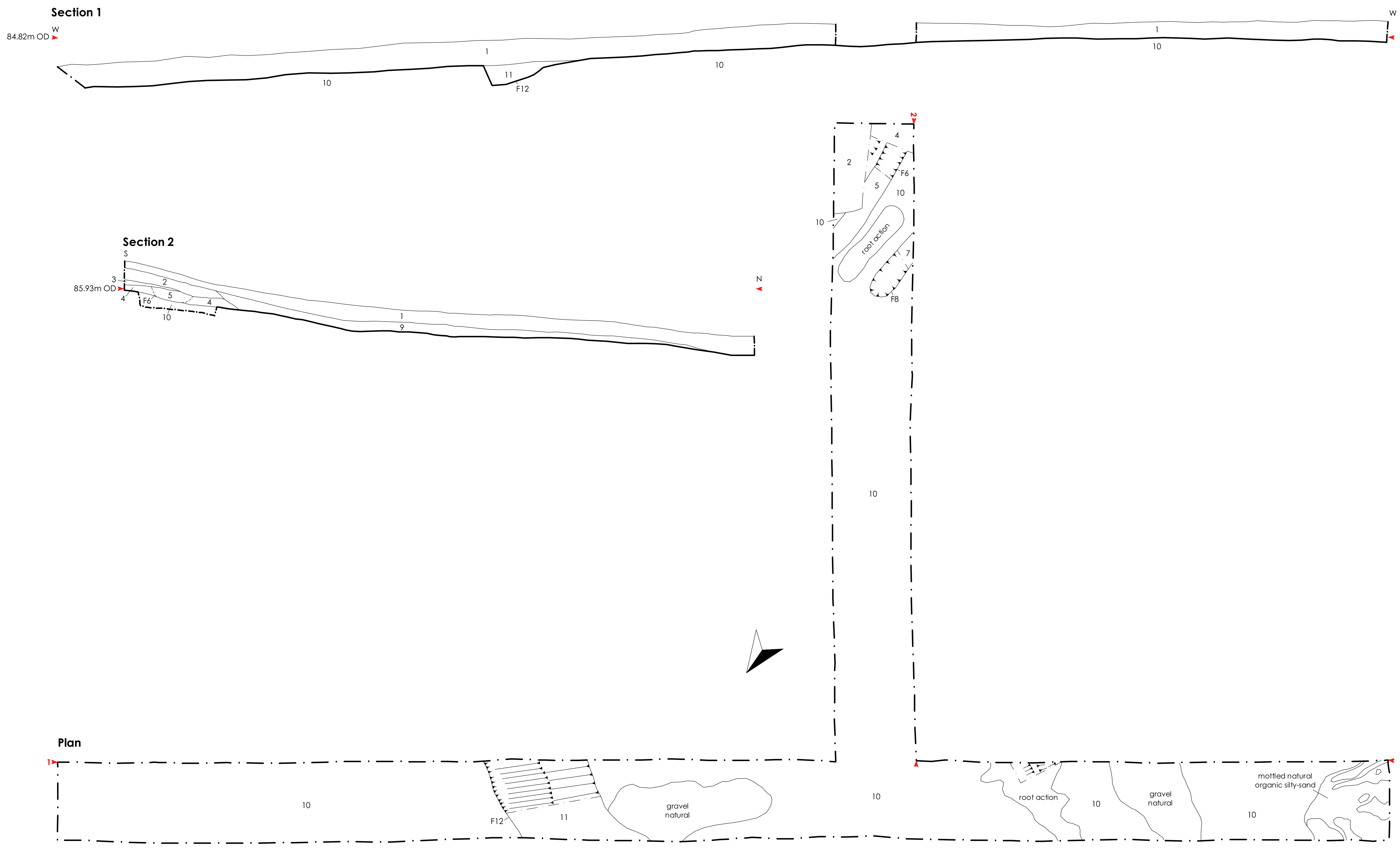

Figure 7: Trench, looking north-east

Figure 8: Trench, looking south-west

Figure 9: Trench, looking south-east

Figure 10: Root disturbance in and under mound, looking south-west

Figure 11: Section through and under mound material, looking south-east