CRESWELL CRAGS DERBYSHIRE (SK535742)
ARCHAEOLOGICAL INVESTIGATIONS DURING THE DIVERSION OF THE CRAGS ROAD B6042 AND RELATED WORKS

2012

P. Webb

Project Code: CRA

Trent & Peak Archaeology
Unit 1 Holly Lane,
Chilwell,
Nottingham NG9 4AB
0115 8967400
Email tpa@yokat.co.uk

Trent & Peak
ARCHAEOLOGY

Report number: 017/2012

SUMMARY

- Trent & Peak Archaeology was commissioned on behalf of Derbyshire County Council to implement the agreed scheme of archaeological mitigation during the intrusive ground works for the diversion of the B6042, with Oxford Archaeological Associates (OAA) providing specialist advice on the Palaeolithic, Pleistocene and geo-archaeology.

- The Crags Road Diversion Scheme was implemented to divert the B6042 where it ran through the limestone gorge at Creswell Crags to a new northerly route running between the gorge and Whitwell Quarry. Archaeological investigations were focused upon the building of the new bypass, removal of the old road and other related works, including the laying of ducting for cabling from the Crags Lodge to the Visitor Centre and works in front of Mother Grundy's Parlour to install a viewing platform. Work commenced upon the construction of the 'New Road' line in July 2005, the decommissioning of the 'Old Road' in December 2006 and Mother Grundy's Parlour in July, 2007.

- Creswell Crags is located towards the north-east corner of Derbyshire centred on NGR SK 535742 at a height of approximately 75mOD. It is situated on Cadeby formation dolostone with superficial deposits of clay, silt, sand and gravel.

- Evaluation along the New Road line, revealed evidence for post-glacial (Holocene) activity in the form of artefacts of Neolithic, Bronze Age and Romano-British date. However, concentrations were low, and interpreted as 'not greater than the normal background of such material spread across the landscape' and therefore of low significance.

- Mother Grundy's Parlour was subjected to excavations by antiquarians during the 19th and earlier 20th centuries. Excavations were carried out by, amongst others, Heath and Mello in 1875, Mello and Dawkins in 1876 (possibly other excavations by these workers between 1874-9), Laing around *c.*1887, Armstrong from 1923-24 (plus later excavations of uncertain date), McBurney from 1959-60 and finally Campbell in 1969. It was thought that some of the up-cast material from these excavations, which could contain discarded smaller finds, might be contained in the mouth of the cave.

- Recording and excavation were carried out in accordance with the detailed Scheme of Archaeological Works, and reflected the specialised and potentially significant nature of the archaeological and geo-archaeological resource.

- A series of water pipe trenches were initially excavated before an area for the site compound was stripped of topsoil. This was followed by a topsoil and subsequent subsoil strip along the line of the 'New Road'. The natural bedrock was also excavated at various locales along the line of the road.

- A 600m stretch of the B6042 between Hennymoor Lane and the A616 and the pavement flanking the south side of the road were stripped of tarmac and the deeper set kerb edgings were removed.

- A 2m x 3m area was excavated to a depth of 0.15m by hand in front of the gates of Mother Grundy's Parlour. The area was divided into 1m squares and all of the soil was excavated in 0.05m spits and sieved (mesh size 5mm) in order maximise finds recovery. The finds were either plotted individually if discovered *in situ*, or were recorded by grid square and spit depth if recovered from sieving.

- Observations along the line of the New Road emphasise the considerable scope for the discovery of collapsed caves and fissures of potential geological, palaeoenvironmental and archaeological interest in the Creswell area. The sediments within Brewster's Hole contained gravel, showing that this sediment was fluvially derived during the later Pleistocene from eroded material of the Sherwood sandstones that once overlaid the Magnesian limestones around Creswell. The discoveries of phreatic tubes and gulls along the New Road line, although archaeologically sterile, emphasise the potential for the

discovery around Creswell of Pleistocene features open to the outside world during periods of known human habitation and the potential for the preservation of archaeologically significant sediments associated with Palaeolithic artefacts and faunal material within these features.

- The limited excavation to the east of Robin Hood's Cave (Area 203) indicates that there is the possibility of pockets of late Pleistocene or early Holocene sediments surviving between service trenches, wall foundation trenches and other areas of disturbance within the gorge though the discovery of the sediments has implications for future research or developments, including upgrading of utility services within the gorge. All work should be monitored archaeologically, and more light shed upon the origin and significance of these deposits.

- Whilst the archaeological deposits from the Palaeolithic, Mesolithic and Neolithic were restricted to a small number of residual flint artefacts which were recovered from within subsoil layers, they do provide further evidence of human activity surrounding the gorge.

- Only a small number of medieval finds was recorded during the archaeological investigations. All of these were derived from the line of the New Road and its associated enabling works, and would appear to be the result of manuring in the vicinity of Bank House Farm. No medieval features or structures were noted during the works, despite the proximity contemporary activity recorded in the area of Fox Meadow, close to the western end of both the New and Old Road works.

- The most significant post-medieval discovery was of a building to the north of the new road line. This small building, probably part of a barn, located east of Bank House Farm, had probably formed part of the farm complex in the 17th and 18th centuries. The stone foundations were buried beneath colluvium, especially on the east side, suggesting a considerable colluvial accumulation in recent centuries downslope of the higher ground to the east.

- A curved wall discovered during enabling works for the compound to the south east of the New Road (Area 04) is probably also of post-medieval date and may again be associated with Bank House Farm (see Fig 4). A nearby pit or ditch (0008), containing a single sherd of 18^{th}-19^{th} century coarse earthenware pottery may also be associated with this farm complex.

CRESWELL CRAGS DERBYSHIRE (SK535742)
ARCHAEOLOGICAL INVESTIGATIONS DURING THE DIVERSION OF THE CRAGS ROAD B6042 AND RELATED WORKS

CONTENTS

List of Figures

List of Plates

CRESWELL CRAGS DERBYSHIRE (SK535742)
ARCHAEOLOGICAL INVESTIGATIONS DURING THE DIVERSION OF THE CRAGS ROAD B6042 AND RELATED WORKS

1. INTRODUCTION

1.1 Trent & Peak Archaeology was commissioned on behalf of Derbyshire County Council to implement the agreed scheme of archaeological mitigation during the intrusive ground works for the diversion of the B6042, with Oxford Archaeological Associates (OAA) providing specialist advice on the Palaeolithic, Pleistocene and geo-archaeology.

1.2 The Crags Road Diversion Scheme was implemented to divert the B6042 where it ran through the limestone gorge at Creswell Crags to a new northerly route running between the gorge and Whitwell Quarry (see Figure 1). Archaeological investigations were focused upon the building of the new bypass, removal of the old road and other related works, including the laying of ducting for cabling from the Crags Lodge to the Visitor Centre and works in front of Mother Grundy's Parlour to install a viewing platform.

2. PROJECT BACKGROUND

2.1 Creswell Crags (Figure 1) is located towards the north-east corner of Derbyshire centred on NGR SK 535742 at a height of approximately 75mOD. It is situated on Cadeby formation dolostone with superficial deposits of clay, silt, sand and gravel (Aitkenhead et al 2002).

2.3 The planned works took place within an archaeologically sensitive landscape. Creswell Crags has since been short listed by the Department for Culture, Media and Sport as a potential world heritage site, due to the internationally significant caves containing Pleistocene archaeological remains (including rare rock art) and palaeontological material.

2.2 The 'Old Road' line of the B6042 runs between Hennymoor Lane and the A616 and is now downgraded to a bridleway. The 'New Road' line is a 1.2km section that passes 200 to 250m to the north of the Crags running through former pasture and woodland. It is still bounded by a recent woodland plantation in its central section and mixed agricultural land at its western end.

2.3 Three phases of archaeological work were carried out between July 2005 and July 2007. These are discussed below in turn:

1. *Construction of the new bypass between Mansfield Road and Bankhouse Farm before it rejoins the former Crags Road at its northeast end, between SK52877 74211 and SK53649 74686.*

   In view of the archaeological, palaeontological and geological significance of the site, a detailed programme of archaeological and geological investigation was considered essential. This was carried out in accordance with an approved written scheme of investigation 'B6042 Crags Road Diversion, Creswell, Derbyshire: Scheme of Archaeological Works' or SAW (OAA 2004).

2. *Decommissioning of the B6042 through Creswell Crags Gorge.*
   The second phase, described as 'Old Road' works, was subject to Scheduled Monument Consent (SMC) which requires archaeological monitoring of all decommissioning works.

3. *Construction of timber viewing platform at Mother Grundy's Parlour.*
   Scheduled Monument Consent required that all the groundworks carried out in this archaeologically sensitive area were conducted by an archaeologist in a controlled manner.

2.4 Work commenced upon the construction of the 'New Road' line in July 2005, the decommissioning of the 'Old Road' in December 2006 and Mother Grundy's Parlour in July,

2007. This document reports on the conditioned programme of archaeological, palaeontological and geological works carried out during all the groundworks.

Construction of the New Road (Figure 2)

2.5 The route of the new road and the methods of its construction were selected with the aim of minimising the impact upon the highly sensitive landscape adjacent to the Scheduled Ancient Monument of Creswell Crags, which lies close to earlier discoveries of ancient collapsed caves (Collcut and Johnson, 1999) and a Neolithic long cairn (Knight and Priest, 1995). The Scheme of Treatment stipulated that an archaeologist be present during all intrusive ground works, to monitor the work and identify any significant archaeological and palaeoenvironmental material. Provision was made for specialist geoarchaeological advice in the event that Pleistocene sediments or anything of geological significance (e.g. collapsed caves or fissures) be discovered (Collcutt 2002; 2004).

Removal of Old Road and Related Works (Figure 2)

2.6 Groundworks for the decommissioning and downgrading of the B6042 to a bridleway were undertaken by Derbyshire County Council during December 2006 and January 2007. Other works relating to the decommissioning of the road, including the removal of the wooden path edgings of the north-side lake path and cable ducting for the electric gates at Crags Lodge, continued into August 2007. Trent & Peak Archaeology conducted the watching briefs on behalf of Derbyshire County Council in fulfilment of Scheduled Monument Consent (SMC) and Site of Special Scientific Interest (for Geology and Palaeontology) Consent. Assessments by Collcutt (1999) highlighted possible methodologies that could be employed to minimise the impacts of such works in terms of disturbance to potential Pleistocene sediments and archaeological remains

2.7 The issue of sensitivity and palaeoenvironmental, archaeological and geological potential of previously unstudied areas within the gorge had been previously raised by Simon Collcutt (Collcutt and Johnson 1999). It was advised that the tarmac surface of the carriageway should not be disturbed, as significant deposits might exist beneath it. However, the tarmac was removed, leaving a protective layer of earlier road surface materials largely intact. The northern road-side wall was noted as being in a poor state of repair, thus representing a significant threat to the slope deposits that it retained. The southern road-side wall, by contrast, was recognised as being of a lesser risk but of greater aesthetic benefit if it were removed (*ibid:*50).

2.8 In addition to the stone wall, the north side of the old Crags Road corridor was defined by a number of stone-filled gabions. These were designed to give protection to pedestrians and to reduce the road width, and were in response to previous slope instability problems deemed to have been a safety issue to traffic. The stone removed from the gabions was embanked against damaged or unstable sections of the north wall and a *c.*1m wide strip of the tarmac road surface was left *in-situ* where it adjoined the wall.

Mother Grundy's Parlour (Figure 2)

2.9 It was proposed that a new viewing platform should be constructed in front of the gates of Mother Grundy's Parlour (MGP). Due to the probability that the material into which the platform was to be inserted was sediment included probable up-cast from earlier (19th and 20th century) excavations, it was deemed appropriate to excavate the area in some detail, and so a small hand excavation was carried out.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 The archaeological background and potential for archaeological discoveries during construction have been considered in detail in the Environmental Statement (Fairhurst & Partners 2003, vol.2 Appendix B), synthesised in Collcutt (2004) therefore only a summary is provided here.

3.2 Evaluation along the New Road line, revealed evidence for post-glacial (Holocene) activity in the form of artefacts of Neolithic, Bronze Age and Romano-British date

(Chamberlain 2003). However, concentrations were low, and interpreted as 'not greater than the normal background of such material spread across the landscape' and therefore of low significance (Collcutt 2004).

3.3. At the assessment stage archaeological attention focused on the potential for exposures of artefacts or deposits from the Upper Pleistocene (Middle and Upper Palaeolithic, Old Stone Age, Last / Devensian Glaciation / Ice Age). Colcutt noted:

> *"No such material has yet been identified along or immediately adjacent to the New Road line and the likelihood of a future discovery of a 'primary archaeological site' of Palaeolithic age has been assessed as very low. It is the proximity of Creswell Crags, with its cave and other Pleistocene deposits, definitely containing Palaeolithic archaeology, which justifies the precautionary principles underpinning the Planning requirements and the main provisions of the Scheme. Old Road Works, by definition taking place in many cases in extreme proximity to the recognised Pleistocene interests of the Crags, will be designed to avoid disturbance of natural deposits, although there remains a possibility that very small exposures of such deposits might arise during necessary decommissioning operations."*
>
> (Colcutt 2004)

3.4 Mother Grundy's Parlour was subjected to excavations by antiquarians during the 19th and earlier 20th centuries. Excavations were carried out by, amongst others, Heath and Mello in 1875, Mello and Dawkins in 1876 (possibly other excavations by these workers between 1874-9), Laing around *c.*1887, Armstrong from 1923-24 (plus later excavations of uncertain date), McBurney from 1959-60 and finally Campbell in 1969 (Collcutt and Johnson 1999). It was thought that some of the up-cast material from these excavations, which could contain discarded smaller finds, might be contained in the mouth of the cave.

4. METHODOLOGY

4.1 Recording and excavation were carried out in accordance with the detailed Scheme of Archaeological Works (OAA 2004), and reflected the specialised and potentially significant nature of the archaeological and geo-archaeological resource. Recording followed the format described in TPA's Recording Manual, a copy of which is lodged with the County Archaeological Officer. A detailed photographic record (slide/print and digital) was kept and all sections were drawn at an appropriate scale of 1:10, 1:20 or 1:50. A detailed pro-forma paper record of the deposits and features that were encountered during excavations was maintained. Finds were located either three-dimensionally or against chainage (New Road) and were assigned a unique three letter code (AAA, AAB etc,), with the exception of more abundant material (e.g. slags) which were bulk bagged by layer. Any features discovered were located where appropriate by EDM survey using a Leica Total Station or were located by reference to the road chainage (New Road). Features such as caves were planned by hand and/or EDM.

Construction of New Road

4.2 The documents 'B6042 Crags Road Diversion, Creswell Derbyshire: Scheme of Archaeological Works' (OAA 2004) and 'Archaeological Method Statement, B6042 Crags Road Diversion, Creswell, Derbyshire' (TPA, formerly T&PAU) describes the scope and nature of the archaeological works conducted to discharge the planning conditions and SMC. Only a brief description is therefore offered here. Due to the specialised knowledge required in fields such as Pleistocene sedimentary geology, karst geomorphology, and Palaeolithic archaeology, there was a requirement for highly specialised support. This was provided by Dr Simon Collcutt of OAA who also oversaw the project. Trent & Peak Archaeology provided the day-to-day watching brief cover during all of the groundworks and Dr Collcutt attended on a regular basis for monitoring purposes and could also be called upon to visit where discoveries were adjudged to merit his onsite specialist support.

4.3 The watching brief works can be broken down into three broad phases:

- Site compound strip and enabling works.

- Soft sediment strip of material overlying the road line
- Rock-cut phase

At all stages there was at least one archaeologist present during stripping or rock-cutting.

4.5 The enabling works (Areas 01-05) comprised a series of water pipe trenches of varying lengths and were excavated by machine with a 0.3m flat bladed ditching bucket to a depth of approximately 0.5m.

4.6 The location of the site compound (Areas 06-12) measuring approximately 30m x 28m was stripped of topsoil to a depth of c.0.2m by 360° mechanical excavator with a 3.2m flat bladed ditching bucket.

4.7 Areas 13 and 14, measuring in total 34m x 7m, were initially stripped of topsoil by machine with a flat bladed ditching bucket. A 0.5m wide pipe trench was then excavated along the length of these to a depth of approximately 1.2m using a toothed bucket (for Area 13) to break through the bedrock, and a flat bladed bucket (for Area 14) for the removal of subsoil.

4.8 The full length of the New Road (Areas 15-36), measuring 1100m x 15-20m, was stripped of topsoil to a depth of approximately 0.2m by machine with 3.2m flat bladed ditching bucket. A second strip was then carried out to remove the subsoil to a further depth of approximately 0.15m by machine with a flat bladed ditching bucket. At a number of locations along the New Road line excavation was carried out to a greater depth by machine with a toothed bucket. Between chainage 340m-440m excavation was carried out to a depth of up to 3.5m; between 560m-620m excavation ranged between 1.5m-4m; and between 900m-1030m excavation was between 0.2-1.5m.

4.9 A series of four trial trenches (T1-T4) were also excavated along the length of the New Road in order to carry out compaction tests on the rock. These measured c. 5m x 5m and were excavated up to maximum depth of c.1.7m by machine with toothed bucket.

4.10 Area numbers were given to each 50m section of chainage along the road line and each 50m section was marked out on the ground using level markers, thus allowing for accurate plotting of finds (see Figs 1, 7 and 8). All artefacts were allocated a three letter finds code and plotted. Their location relative to the appropriate soil/sedimentary unit was also recorded.

Removal of Old Road and Related Works

4.11 The methodology employed during decommissioning of the road was devised to ensure that the works did not impact upon preserved features or deposits of archaeological, palaeoenvironmental or geological significance and did not adversely affect the character of the gorge.

4.12 A 600m stretch of the B6042 (Areas 200-210,300-305) between Hennymoor Lane and the A616 and the pavement flanking the south side of the road were stripped of the upper 0.15m of tarmac by a 360° excavator using a 3.2m toothed bucket. The deeper set kerb edgings were pulled up using a JCB with 0.3m toothed bucket so as to prevent disturbance to the lower deposits and sediments.

4.13 The north wall of the gorge was not disturbed and the edge of the road surface abutting it was left *in situ* to give the wall extra protection. The gabions adjacent to the north wall were broken up by a JCB with a toothed bucket and the material derived from these was embanked against the north wall. The south wall was removed to 0.15m below the level of the road sub-base along its length by 360° excavator. The traffic lights at either end of the gorge were removed.

4.14 All activities were recorded on pro-forma record sheets and a full photographic record was maintained. An additional series of photographs was taken of the north face of the south

wall prior to its demolition, supplementing those taken by officers of Derbyshire County Council.

Mother Grundy's Parlour
4.15 A 2m x 3m area was excavated to a depth of 0.15m by hand in front of the gates of Mother Grundy's Parlour. The area was divided into 1m squares and all of the soil was excavated in 0.05m spits and sieved (mesh size 5mm) in order maximise finds recovery. The finds were either plotted individually if discovered *in situ*, or were recorded by grid square and spit depth if recovered from sieving.

5. RESULTS

5.1 Results are presented in the following sequence: 'New Road', 'Old Road' and 'Mother Grundy's Parlour'.

New Road: Areas 01-14 Site Compound and Enabling Works

Areas 01-03 (Figures 3 – 5)
5.2 Areas 01 to 03 comprised a series of water pipe trenches for the installation of new troughs in the paddock to the north-west of Bank House Farm. Area 01 was a narrow trench (0.30m wide) measuring 19.3m long and 0.54m deep. This revealed topsoil of brown silty loam (0001) overlying subsoil of firm dark reddish brown silty loam (0002), and a bright reddish brown clayey silt deposit with very few inclusions of angular dolomite (0003). Given the close proximity to the River Wollen, the silty subsoils may well be of alluvial origin. The basal sediment (0004) comprised a friable, creamy yellow sandy silt that contained 80% angular dolomitic inclusions, some of which were rotten. This sedimentary sequence was repeated in Areas 02 to 03 (pipe trenches measuring 20.5m long and 8m long respectively x 0.3m wide and up to 0.63m deep).

A total of 17 pottery fragments were recovered from Areas 01-03, predominantly dating to the 19th century (including stonewares, blue and white transfer printed and plain white wares, yellow ware), but with an 11th-14th century mottled glaze handle fragment (ACV) and a 13th-14th century jug base (ACW) also being recovered.

Area 04-05 (Figures 6-7)
5.3 Areas 04 and 05 were located to the south of Bank House Farm. Area 04 comprised a pipe trench (79.6m long x 0.30m wide x 1m deep), running approximately east-northeast by west-southwest across the corner of the paddock to the south-west of Bank House Farm before connecting with Area 05.

Pit/Ditch 0008
5.4 A possible rubble filled post-medieval ditch or pit (0008) measuring *c*.3.35m wide, containing a single sherd of 18th-19th century coarse earthenware pot (ADL) and roof tile (ACC) fragment, was identified within Area 04. The fill of the feature consisted of a reddish brown clayey silt with frequent stone inclusions. Although occurring in both sections, the narrow trench width prohibits secure interpretation as a pit or ditch.

Wall-base 0010
5.5 The curved corner of a wall-like feature (0010) was also recorded in Area 04. The top of the feature lay just below topsoil and survived as a single course of unmortared drystone construction based upon the bedrock. No dating evidence was recovered, although a post-medieval – early modern date can be speculated.

5.6 Area 05 followed a north-west by south-east alignment running parallel to the field wall for 110m, before reaching the site compound. This ran north-west by south-east, parallel with the field wall, for 110m to the site of the works compound. The stratigraphic sequence consisted of brown silty loam topsoil (0001) overlying an upper subsoil (0002) of firm dark reddish brown silty loam beneath which was a bright reddish brown clayey silt deposit with very few

inclusions of angular dolomite (0003), immediately overlying the uneven limestone bedrock. The sedimentary sequence was broadly comparable to that recorded in Areas 01 to 03.

Areas 06-12 – Site Compound

5.7 Areas 06 to 12 were allocated to each day of stripping of the site compound. The total area covered by these areas measured approximately 30m x 28m and was excavated to a depth of 0.2m. The brown silty loam topsoil (0001) overlaid a fairly bright reddish brown clayey silt colluvial deposit with very few inclusions of angular dolomite (0013), very similar to 0003 elsewhere. Only c.0.20m of topsoil was stripped from these areas.

5.6 In Area 07, running into Area 06 the patchy footings of a fieldwall [0014] built onto layer 0013 were identified by a line of occasional angular limestone boulders strewn in a linear fashion in a north-west by south-east direction for a distance of c.55m. The visible line of this 0.50m wide feature tapered at its south-east end before eventually disappearing, whilst its opposing end was under an un-stripped baulk. No other features or artefacts were found.

Area 13-14 (Figures 8-10)

5.7 Areas 13 and 14 were located to the south of Bank House Farm and comprised an easement measuring 16m x 5m running approximately north-northeast by south-southwest. This was stripped of topsoil to a depth of 0.2m. Within this easement, a 0.70m wide trench was dug for the insertion of a sewer pipe to Bank House Farm. This pipe trench ran through Areas 13 and 14 and eventually through Areas 17, 16 and 15 before connecting to existing services in Mansfield Road (A616).

5.8 Beneath the topsoil (0019) was a layer of rubble in a matrix of buff-coloured, clayey silt (0020). This overlay a layer of yellowish brown silty loam (0021) containing fragments of an undated possible floor tile (ACD,ACE).

Area 13 Stone foundations (0018) Figures 8 - 9

5.9 Within Area 13 stripping of topsoil revealed the fragmentary stone foundation (0018) of a building. These probably represent an outbuilding (such as a barn or cowshed) related to Bank House Farm (formerly Creswell Farm). The remains comprised a roughly faced limestone rubble wall c. 0.6m thick, surviving to a maximum height of three courses, and seated directly on the bedrock. The wall formed an approximate right angle (consistent with the corner of a building), and extended 3.2m north-west/south-east by 2m north-east/south-west (continuing beyond the trench limits).

5.10 In the subsequent excavation no evidence of the walls continuation to the west was observed, consistent with its truncation/robbing. At the westernmost end of the wall, the stonework was one course lower and the wall slightly thinner due either to truncation or perhaps, the existence of a doorway. Within the area enclosed by the wall was a rubble layer up to 0.2m thick (0023), containing small fragments of limestone and mortar. The layer was interpreted as demolition/collapse rubble, overlying an original floor surface (0022). The latter comprised a firm mortar and silty clay matrix up to 0.05m thick. A shallow gully filled with compacted mortar and limestones had been cut into 0022 adjacent to the southern baulk of the trench, perhaps consistent with a partition or drainage channel.

5.11 Projecting from the north-eastern corner of 0018 was a linear spread of rubble (0015) which appeared to mirror the shape and alignment of 0018 (Fig 8). This may be consistent with the outline of an extension to the building, perhaps in the form of a more casual lean-to structure, possibly part of the same complex as the nearby 'Bank house Farm'.

5.13 Most of the finds recovered from this small excavation were of post-medieval date and comprised coarse earthenware, probably of 17th to 19th century date, and a fragment of residual 12th-13th century shelly ware (ADT) from (0019) the topsoil.

Areas 15-17 (Figure 2)

5.14 Areas 15 and 16 comprised those works relating to the final stretch of the sewage pipe trench and the diversion of the River Wollen into a culvert under the Creswell Crags

Road at the southern end of the site and road strip at its west end, up to chainage 100m (Areas 15 and 16).

5.15 Area 17 comprised the first part of the stripping of the new road from chainage 100-150m, and an area to the north-east of the site compound. It was, by way of an extension of the stripping into the field to the east of the New Road line and north of the drystone wall, a shallowly stripped area c.0.20m deep (only topsoil was removed), for the storage of topsoil and subsoil for later re-use. The stratigraphy consisted of the topsoil overlying a red-brown silty clay subsoil (0043).

5.14 No archaeological features were recorded within these areas, other than several modern, hardcore filled narrow land drains observed cutting across the site within Areas 15 to 17.

5.15 Thirty six finds were recovered from Area 15 in post-medieval layers associated with the 20th century culvert. Most of these comprised broken bottle glass, white glazed pottery, coarse earthenware, and stoneware dating to the 18th and 19th centuries. Two fragments of pegged and ribbed 18th-19th century roof tile were also recovered from Area 15. One 17th-18th century overfired earthenware potsherd and two clay pipe fragments were recovered from field drain 0041 within Area 17.

New Road Areas 18-36 Figures 11-12

Topsoil Strip

5.16 The sequence and positioning of Areas 18-36 were linked to the chainage for the new road. Each 50m section was allocated a unique area number starting at the east end of the strip, from Area 18 (chainage 1100-1050m) to Area 36 (chainage 150-125m) at the wall immediately north of the site compound, adjacent to Area 17. These areas were initially stripped of topsoil to a depth of c.0.3m.

5.17 No archaeological features were recorded during the machine removal of topsoil from the entire length of the road. A number of irregular features of uncertain origin were investigated but were interpreted as tree root holes, fence post-holes and animal burrows.

5.18 A small number of flint and chert artefacts were recovered during the topsoil strip. These were plotted together with artefacts revealed during subsoil stripping in Figure 11 and 12.

Subsoil strip

5.19 A subsequent strip of the remaining soft sediments (subsoils) was then carried out across these areas. The depth of the subsoil strip varied along the course of the road, with a greater depth excavated on the two higher ridges exposing the underlying bedrock (Plate 8).

5.20 With the exception of several rocky outcrops (notably in Areas 31 and 28), much of the road line was covered by a reddish brown silty clay (0044-0046), with a thickness of up to 0.15m (possibly deeper in some places), and containing residual Romano-British greyware (AEW,AEX), 13th-14th century reduced green glaze (AEU), green glaze (AER,AES) and over-fired medieval pottery (AEQ). This is consistent with a late medieval – post-medieval for the formation of these subsoil layers, and confirmed their potential to mask earlier deposits of possible archaeological significance.

Area 29 - Sondage

5.21 In Area 29 a sondage (Figure 13) was excavated to a depth of 0.28m which revealed the following sequence of deposits:

Context	Thickness	Description
0046	160mm	Reddish brown silty clay with occasional angular-sub angular limestone fragments
0048	40mm	Reddish brown silty clay with frequent small angular-sub angular limestone fragments

0049	120mm	Pale yellow/buff brown firm silty clay containing loessic patches
0050	90mm	Firm mauve brown silty clay
0051	40mm	Reddish/purplish brown firm silty clay with rare very small rounded stone inclusions and occasional small flecks of manganese
0052		Hard reddish purplish brown clayey silt

5.22 Throughout this strip a small number of flint and chert tools and flakes were recovered from subsoil layers 0044 and 0046 (Figures 11 and 12). The general distribution of these finds favours the higher ground of the two ridges, in particular the ridge overlooking Creswell village and the lower ground of the saddle between them (see Section 7.1 for further details).

Compaction Test Trial Trenches (T01-04) Figures 14-17

5.23 Four trial trenches (T01-T04), measuring 5m x 5m, were excavated at different locations along the line of the new road. They were excavated to varying depths, the deepest being T04 to 1.7m, to facilitate compaction tests. T01 was located at chainage 200m; T02 at 290m; T03 at 350m; and T04 at 950m. They revealed a consistent stratigraphic sequence:

Context	Thickness	Description
0100	230mm	Greyish brown sandy loam
0101	100-340mm	Reddish brown silt
0102	400-850mm	Reddish brown clayey silt
0103	40+mm	Red clay
0104		Degraded dolomite

New Road Rock Cut Phase (Figure 18)

5.24 At a number of locations along the New Road line the excavation cut into the natural dolomite bedrock. This was predominantly confined to the two high points of the ridge that overlooked the western vale towards Creswell village, and the excavation of a soak-away at the north-eastern end of the road line. Between chainage 340m-440m excavation was carried out to a depth of up to 3.5m; between 560m-620m excavation ranged between 1.5m-4m; and between 900m-1030m excavation was between 0.2-1.5m.

5.25 No archaeological features were identified during this phase of the groundworks. However, a number of geological features (Figure 17) were discovered, which are briefly described below, with geo-archaeological analysis provided by Dr Collcutt in a series of letters to the County Archaeologist in Appendix 1 (each one referenced in the text to his letters by date).

Area 19 – Phreatic Tube

5.26 Within Area 19 (chainage 1020-1027) a phreatic tube-like feature was uncovered during the cutting of a soak-away. The eastern side of the feature exhibited concentric circles of dark red brown sandy clay, deep reddish clay, and light-mid brown silty clay within a halo of manganese wad with charcoal flecks. The western side contained the same fills, but spread between rotted and semi-rotted dolomite, suggesting that the bedrock had collapsed after the formation of the feature, with the fill being pushed into the new fissures (see Plate in Appendix 1 Collcutt's letter dated 17/09/05).

Area 28 – Phreatic Tube (possibly part of Intake Cave System)

5.27 A second phreatic tube, which may be part of the Intake Cave System, was revealed during rock cutting in Area 28 (chainage 582m). It comprised a circular feature of 0.70m diameter with a silty brown halo of manganese wad enclosing a chaotic mix of reddish brown and greyish brown silts (see Appendix 1, Collcutt's letter dated 5/9/05 for further detail).

Area 31 Fissure-Form Cave ('Brewsters Hole')

5.27 Within Area 31 (chainage 424) a cave feature (named Brewster's Hole, Figure 19) was discovered during rock cutting. This fissure-form cave was filled in its upper levels with a mix of reddish clays. The chaotic nature of the clays suggested that the sediments were

emplaced under conditions of fast flowing water, such as might be found during the Pleistocene.

5.28 The sediments contained no archaeological material and were not useful for OSL dating. Within the approximate centre of the feature (sediments labelled *a* & *b* on Figure 18) was a deposit of gravel which was bulk sampled for lithological analysis (Appendix 3, BGS report). The BGS report concluded that the pebbles were derived mainly from the basal strata of the nearby Sherwood Sandstone Group and from the west (Trent Valley) and the southwest (Staffordshire) having made their way into the cave system as erratics during the Pleistocene. This cave was probably part of the same system as Intake Cave (see Plate 9, which shows a re-exposure of Intake Cave in Area 28). (See Appendix 1 Collcutt's letter dated 13/08/05).

Area 31 Gulls (fissures)
5.29 Two gulls were identified at chainage 401 and 405 (Area 31) respectively. They presented a comparable sedimentary sequence: an upper fill of reddish clayey gravel overlying red clays and sands containing rotted dolomite (see Appendix 1 letter dated 5/09/05).

Area 32 Gull (fissure)
5.30 Within Area 32 (at chainage 385) (See Plate 11) a gull was identified. Contained within this fissure was a chaotic jumble of rotted/semi-rotted sub-rounded to angular blocks of large dolomite suspended within Tertiary (early Pleistocene/Plio-Pleistocene) clays alongside slumps of much softer greensand lenses that contained sandy silt, all suggesting that it is likely that this fissure was caused by subsidence. No dating of this feature was possible due to the mixed nature of the deposits (see Appendix 1 letter dated 13/08/05).

Old Road Figure 20

Removal of Tarmac Surfacing
5.31 The removal of the tarmac surfacing from the old Crags Road revealed that, for most of its course within the gorge, this had directly overlain deposits comprising earlier road surfaces. Immediately underlying the road surface in Areas 302-305, at the east end of the gorge, was a layer of Magnesian limestone aggregate (1002) 0.20m thick overlying a fairly coarse mix of tarmac and glass slag up to 100mm in size.

5.32 In Area 200 (see Fig 19), removal of the tarmac exposed a cream coloured compacted limestone layer (1003) 0.02m thick. This was interpreted as an earlier road surface which overlay a highly compacted marl-like clayey layer (1004).

5.33 In Area 210, the tarmac surface was much more irregular and was only 0.20m thick in places (see Plate 16). It overlay a layer of dirty brown sandy loam (1007) containing fragments of brick, charcoal and coal, 0.06m thick and similar in appearance to 1004 in Area 200, and interpreted as the base of an earlier road/track way. Layer 1007 also contained fragments of brick, charcoal and coal. Below 1007, and revealed by machine bucket teeth gouges, was a stoney deposit containing rotted dolomite (1008). A 1m by 1m area of this was hand cleaned and photographed. A small sample of 1008 was also retained for reference. Interpretation of this layer is difficult without excavation (precluded in the scheme due to the conditions imposed by the Scheduled Monument Consent) but this layer may represent undisturbed talus material.

5.33 In one relatively small location (Area 302; see Figure 9) towards the eastern end of the gorge the tarmac appeared to directly overly Magnesian limestone. This exposure occurred in small patches in an area of approximately 20m^2 and indicates that here the bedrock had been cut into prior to laying the road surface.

Robin Hood's Cave- Area 203 (Figure 21)
5.34 A small excavation, 33.6m east of the mouth of Robin Hood's Cave and against the northern side of the south wall, was occasioned by a contractor seeking the position of an electrical cable. A small area of 0.50m^2 was hand excavated and cleaned, with the aim of

establishing the depth and character of the former road-side wall. This revealed a possible Pleistocene deposit and it was decided to focus excavation upon a small area measuring 0.40 x 0.30m. This was excavated to a maximum depth of 0.36m below the disturbed surface (0.61m below the old road surface) and revealed the following stratigraphic sequence:

Context	*Thickness*	*Descriptions*
Tarmac & hardcore	400mm	Road surface
1011	50mm	Black ashy clinker layer
1012	110mm	dirty dull yellow orange silty sand with frequent charcoal flecks
1013	180mm	dull brown silty sand containing frequent angular and sub-angular limestone
1014	40mm	reddish brown compacted but friable sand with grey silt mottling
1015	10mm	dull orange soft sandy silt overlying natural dolomite bedrock

All of the recorded layers had been cut by the wall foundations (1010) that supported the overlying, but now demolished, south wall (1009).

5.35 Contexts 1013 and 1014 were both sampled, and a single struck piece of chert (ABW) and a flint bladelet (ABX) (see Appendix 2 for details) were recovered from within context 1014.

5.36 Given that there is likely to be some truncation of the lower part of the slope of the north side of the gorge due to the insertion of the Crags Road, it is possible that 1013 represents talus material sealing early Holocene or late Pleistocene sediments (1014 and 1015). The angularity of the stones in 1013 might arguably support this speculation, whilst the underlying sandy context (1014) could be derived from earlier fluvial processes. However the environmental assessment of these sediments indicates that there is considerable bioturbation (Appendix 4). This coupled with the very small scale of the excavation, makes it difficult to draw any firm conclusions.

5.37 On the spot soil pH determinations were taken on the deposits. Layer 1013 had a soil pH of 9 and 1015 had a soil pH of 8.5, both strongly alkaline. Context 1014 had a neutral soil pH of 7. This is slightly unusual given that bioturbation and leaching, would be expected to the incorporation of dolomitic (alkaline) material, raising this figure from its original depositional pH. However, since this not the case it might suggests that this represents a sealed and ancient sediment. The layer may be consistent with a fluvial deposit, which was originally more acidic, accounting for the presence of possible rotted ossiferous material.

5.38 If this interpretation is correct, and allied with information from Simon Collcutt of Pleistocene sediments being encountered in the holes excavated for some of the survey stations within the gorge, then it seems that there are reasonable pockets of survival between service trenches, wall foundation trenches and the lake. This has obvious implications for future research or developments, including upgrading services etc.

5.39 The environmental assessment report (Appendix 4) highlights considerable bioturbation of these sediments due to the proximity of the wall (rodent action) and a nearby tree. This later disturbance had drawn down very small glass-fragments from the road make-up.

Other works associated with removal of the old road

5.39 Alongside the removal of the old road, kissing-gates were inserted at the east end of the bridle track within the gorge, and the wooden edgings alongside the concessionary footpath on the north side of the gorge, between the lake edge and the new bridle way, were removed. It was advised, upon inspection, that the methodology for the removal of the above footpath edgings was not adequate because it was causing considerable ground heave that might disturb early deposits as Pleistocene deposits had been identified close to the surface

during earlier groundworks (Simon Colcutt pers comm.). The line of this path was an unknown quantity due to the work having been done by the Groundwork Trust without any archaeological monitoring during its insertion. A less destructive methodology was implemented, which involved digging within the path and alongside the edgings and easing the boards out by hand.

Results

5.40 In terms of the sedimentary sequence, much of the path was excavated into silts dredged from the lake. In some areas, notably around the centre of the gorge, the undulating underlying stratum was exposed where it came closer to the surface. In these locations there was a minimal exposure of medium and small sized dolomitic limestone fragments in a hard reddish clay matrix (Triassic Clays). The underlying clays appear undisturbed and archaeologically sterile but the possibility cannot be ruled out that this is re-deposited material. No artefacts were present within this layer. How this layer might fit in with the stratigraphic sequence within the gorge is poorly understood but it could be a significant marker horizon should future works be considered within the Crags Gorge.

5.41 No archaeological features or deposits were encountered during work on the footpath. This could reflect prior disturbance by the Groundwork Trust during the laying of the footpath.

Mother Grundy's Parlour Figures 22-24

5.42 A small excavation of an area 2m x 3m was carried out by hand and revealed a stratigraphic sequence of loamy dark brown to black topsoil (2001) up to 0.12m deep overlying greyish brown silt (2002) and the natural bedrock.

5.43 In total 24 flint and chert objects and 51 mainly small and fragmentary animal bones were recovered during this excavation (summarised in Appendix 2). A very small number of pottery fragments, clay-pipe stems and metal artefacts, including nails, were also recovered. Some of these latter objects, especially the six inch nails and a white tag (either of plastic or Bakelite) led to the interpretation of context 2002 as being a mix of bioturbated and reworked cave earth and topsoil resulting from the earlier excavations within the Mother Grundy's Parlour.

5.44 Finds from MGP, in particular the lithics and the ossiferous material will be dealt with in more detail below. To summarise, the flints represented the discarded material of 19th and 20th century excavations within the cave and cave mouth. Much of the lithic material was broken and measured 23mm or less, with the average length being around 10mm. The appearance of most of the flints was consistent with a Mesolithic date, with the exception of a probable Late Upper Palaeolithic piece (ACI). The only obvious tool was the burnt fragment of the end of a thumbnail scraper of Mesolithic date (AAC). Several other fragments were spalls from tool manufacture.

5.45 A total of 52 small and fragmentary bone remains were discovered during the excavation. Of these, 14 may be of Palaeolithic or Mesolithic date on the basis of surface patination and carbonisation (R. Jacobi pers comm. See also Appendix 2 section 4.2). The remaining bones were modern or of uncertain age (see Appendix 2).

5.46 Five tooth fragments (AAP, ABC, ABJ, ADC and ADO) of uncertain age were also recovered. These were mainly bovine in appearance, although ADO may be a bovid or cervid (ibid).

5.47 The discovery of Pleistocene or early Holocene flintwork and fragments of bone that may also relate to early phases of activity at MGP emphasises the potential significance of the cave mouth area for further research and excavation.

6. SUMMARY AND CONCLUSION

Pleistocene Caves, Fissures and Deposits

6.1 Observations along the line of the New Road emphasise the considerable scope for the discovery of collapsed caves and fissures of potential geological, palaeoenvironmental

and archaeological interest in the Creswell area. The sediments within Brewster's Hole contained gravel, showing that this sediment was fluvially derived during the later Pleistocene from eroded material of the Sherwood sandstones that once overlaid the Magnesian limestones around Creswell. The discoveries of phreatic tubes and gulls along the New Road line, although archaeologically sterile, emphasise the potential for the discovery around Creswell of Pleistocene features open to the outside world during periods of known human habitation and the potential for the preservation of archaeologically significant sediments associated with Palaeolithic artefacts and faunal material within these features.

6.2 The limited excavation to the east of Robin Hood's Cave (Area 203) indicates that there is the possibility of pockets of late Pleistocene or early Holocene sediments surviving between service trenches, wall foundation trenches and other areas of disturbance within the gorge, although environmental assessment of these sediments indicates considerable disturbance by bioturbation (Appendix 4). This coupled with the very small scale of the excavation, makes it difficult to draw any firm conclusions, though the discovery of the sediments has implications for future research or developments, including upgrading of utility services within the gorge. All work should be monitored archaeologically, and more light shed upon the origin and significance of these deposits.

Palaeolithic

6.3 Only one flint flake or blade AAC was identified as belonging to the Palaeolithic and was placed within the date range of Lower or Middle Palaeolithic based upon the type of patina it carried. This would make this the oldest humanly modified artefact discovered in the Creswell area.

6.4 Two other flints (AAI and AAG) were identified as possibly being of Upper Palaeolithic type but are more likely to be of Mesolithic or Early Neolithic origin.

Mesolithic and Neolithic

6.5 The Mesolithic and Neolithic flints and chert constituted a small assemblage, and mainly represent the background noise of activity during these periods in the Creswell area. Colluviation and other soil processes along the New Road line had resulted in much of the material being moved from its primary depositional context. However, the locations of the clusters of flint could be the result of those working with tools and weapons during the later Mesolithic or early Neolithic taking advantage of the sheltered dip between ridges.

Medieval

6.6 Only a small number of medieval finds was recorded during the archaeological investigations. All of these were derived from the line of the New Road and its associated enabling works, and would appear to be the result of manuring in the vicinity of Bank House Farm. No medieval features or structures were noted during the works, despite the proximity contemporary activity recorded in the area of Fox Meadow, close to the western end of both the New and Old Road works.

Post-Medieval

6.7 The most significant discovery was of a building to the north of the new road line (north-east portion of the site, Area 13). This small building, probably part of a barn, was discovered during enabling works. It was located c.50m south east of Bank House Farm and had probably formed part of the farm complex in the 17th and 18th centuries. The stone foundations were buried beneath colluvium, especially on the east side, suggesting a considerable colluvail accumulation in recent centuries downslope of the higher ground to the east.

6.8 A curved wall discovered during enabling works for the compound to the south east of the New Road (Area 04) is probably also of post-medieval date and may again be associated with Bank House Farm (see Fig 4). A nearby pit or ditch (0008), containing a single sherd of brown glazed red-earthenware pottery may also be associated with this farm complex.

Acknowledgements
Many thanks are due to the late Dr Roger Jacobi for his invaluable help in the identification and classification of the flint collection, and for his general advice. Ian Wall and the staff at Creswell Crags Visitors Centre are also thanked for allowing us access to their facilities. Thanks are also owing to Derbyshire County Council staff during the construction works. 'Brewsters Hole' was named in memory of Stan Brewster.

References

Aitkenhead, N., Barclay, W. J., Brandon, A., Chadwick, R. A., Chisholm, J. I., Cooper, A. H., and Johnson, E. W. 2002 *British regional geology: the Pennines and adjacent areas* (Fourth Edition). British Geological Survey

Armstrong A L, 1956. 'Report on the excavation of Ash Tree Cave, near Whitwell, Derbyshire, 1949 to 1957'. *Derbyshire Archaeological Journal* 76, 57-64

Barton, N. 2005 *Ice Age Britain* London: Batsford

Barton, R.N.E., Jacobi, R.M., Stapert, D. and Street, M. J. 2003 'The Late-glacial reoccupation of the British Isles and the Creswellian'. *Journal of Quaternary Science* Vol. 18 631-643

Bell, M. & Walker, M.J.C. 1992 *Late Quaternary Environmental Change: Physical and Human Perspectives* Harlow: Longman

Bishop, M. *An Archaeological Resource Assessment of the Palaeolithic and Mesolithic in Nottinghamshire* East Midlands Archaeological Research Framework

Campbell J B, 1969. 'Excavations at Creswell Crags: preliminary report'. *Derbyshire Archaeological Journal* 89, 47-58

Chamberlain, A.T. 2003. *Archaeological Evaluation of Trial Pits on the Route of Crags Road Diversion, Creswell* (Archaeological Research & Consultancy at the University of Sheffield for Derbyshire Consulting Engineers).

Colcutt, S.N. 1995a (Feb) *Proposed extension to Whitwell Quarry, Derbyshire, evaluation of the Palaeolithic interest scooping report* (Oxford Archaeological Associates Lmtd.).

Colcutt, S.N. 1995b (July) *Proposed extension to Whitwell Quarry (Area E), Derbyshire, quaternary sediments and limestone cavities field observations* (Oxford Archaeological Associates, commissioned by Redland Aggregates Ltd.).

Colcutt, S.N. 1996 (April) *Proposed extension to Whitwell Quarry (Area E), Derbyshire, Trial excavations within Limekiln Close Cave & Intake Cave* (Oxford Archaeological Associates Lmtd.)

Collcutt, S.N. & Johnson, A.E. 1999. *Creswell Crags, Nottinghamshire/Derbyshire: Sensitivity Survey (Archaeology, Palaeontology & Geology)* Report by Oxford Archaeological Associates Limited & Oxford Archaeotechnics Limited for the Creswell Heritage Trust, 141 pp., digital plates, figs., August 1999 [Creswell Heritage Trust, Derbyshire & Nottinghamshire County SMRs, English Heritage Archive].

Collcutt, S.N. 2002 *Proposed Realignment of Crags Road, Creswell, Derbyshire: Implications for Old Stone Age Archaeology* Report by Oxford Archaeological Associates Limited for Derbyshire County Council, November 2002

Collcutt, S.N. 2004 B6042 Crags Road Diversion, Creswell, Derbyshire, Scheme of Archaeological Works Report by Oxford Archaeological Associates Limited for Derbyshire County Council.

Courtney, F.M. and Trudgill, S.T. 1984 *The Soil: An introduction to soil study* London: Hodder & Stoughton

Cox. C. 1995 (Mar) *Whitwell Quarry extension SK5275, SK5374, SK5375, SK5376, SK5475 Aerial photographic search and appraisal: Archaeology* (Air photo services, commissioned by T&PAT).

Fairhurst, W.A. & Partners, 2003. *Crags Road Environmental Statement* 2 Vols (specialist archaeological reports contained in Appendix B of Vol 2).

Gilbertson D D and Jenkinson R D S, 1984. *In the shadow of extinction: a quaternary archaeology and palaeoecology of the lake, fissures and smaller caves at Creswell Crags SSSI*. Sheffield: University of Sheffield, Department of Prehistory and Archaeology.

Green, H S,1980. *The Flint Arrowheads of the British Isles*. BAR British Series 75(i).

Jacobi, R.M., Rowe, P.J., Gilmour, M. A., Grün, R. and T.C. Atkinson, 1998 'Radiometric dating of the middle Palaeolithic tool industry and associated fauna of Pin Hole Cave, Creswell Crags, England'. *Journal Of Quaternary Science* Vol. 13 29-42

Jenkinson R D S, 1978. *The archaeological caves and rock shelters in the Creswell Crags area. Creswell Crags Visitor Centre Research Report 1*. Nottingham: Nottinghamshire County Council, Leisure Services.

Jones, H.J and Wall, I. 2002 *A Report on the Watching Brief at Creswell Crags Museum and Education Centre and the Decommissioned Sewage Treatment Works (SK 538 743), Derbyshire* T&PAU Report

Knight, D. and Brown, J. 1995 (Jul) *Whitwell quarry extension, Whitwell, Derbyshire: archaeological assessment* Unpublished report (T&PAT).

Knight, D. and Priest, V. 1995 (Aug) *Whitwell quarry extension, Whitwell, Derbyshire: summary report on test-pitting in Area E* Unpublished report (T&PAT).

Knight D, Garton D and Leary R, 1998. 'The Elmton fieldwalking survey: prehistoric and Romano-British artefact scatters'. *Derbyshire Archaeological Journal* 118, 69-85.

Knight, D. and Howard, A.J. *Trent Valley Landscapes: The Archaeology of 500,000 Years of Change* Kings Lynn: Heritage Marketing and Publications Ltd

Mills, N. 2001 *Creswell Crags Conservation Plan Creswell* Crags Heritage Trust

Mello Rev J M, 1879. 'Palaeolithic Man at Creswell'. *Derbyshire Archaeological Journal* 1, 15-24.

Metcalf A T, 1885. 'On the mammoth at Creswell'. *Derbyshire Archaeological Journal* 7, 92-96.

Myers, A. M. 2001 *An Archaeological Resource Assessment of the Mesolithic in Derbyshire* East Midlands Archaeological Research Framework

Myers, A. M. 2001 *An Archaeological Resource Assessment of the Palaeolithic in Derbyshire* East Midlands Archaeological Research Framework

Olsen, S. 1996 'Horse Hunters of the Ice Age' ed. By Olsen, S. *Horses Through Time* Carnegie Museum of Natural history

Parfitt, S.A., Barendregt, R.W., Breda, M., Candy, I., Collins, M.J., Coope, G.R., Durbidge, P., Field, M.H., Lee, J.R., Lister, Mutch, R., Penkman, K.E.H., Preece, R.C., Rose, J., Stringer, C.B., Symmons, Whittaker, J.E., Wymer, J.J., and Stuart, A.J. 2005 'The earliest record of human activity in northern Europe' *Nature* 438 1008-1012

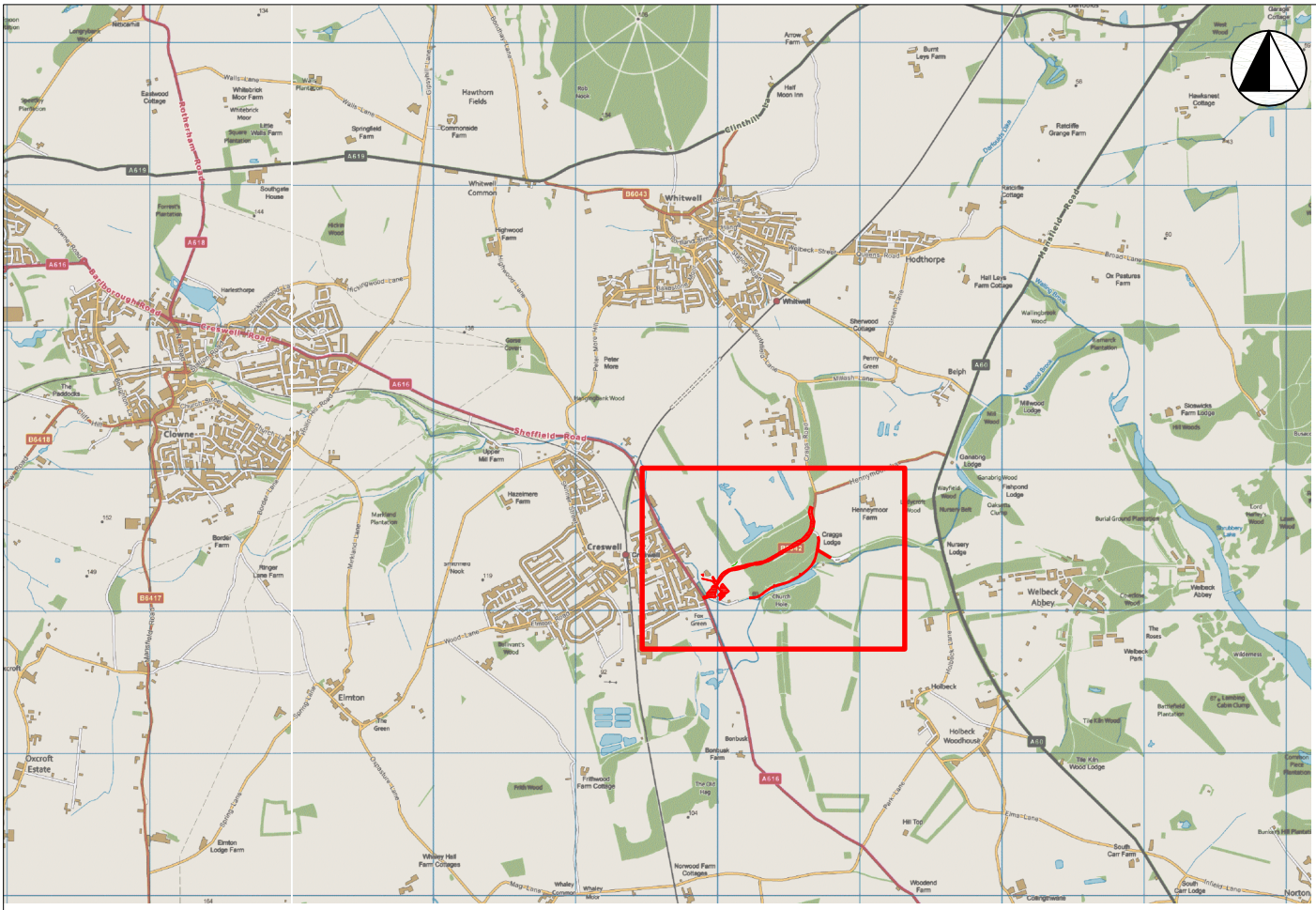
Pike A.W.G., Gilmour, M., Pettitt, P., Jacobi, R., Ripoll, S., Bahn, P. and Muñoz, F. (in press) 'Verification of the age of the Palaeolithic cave art at Creswell Crags, UK', *Journal of Archaeological Science*

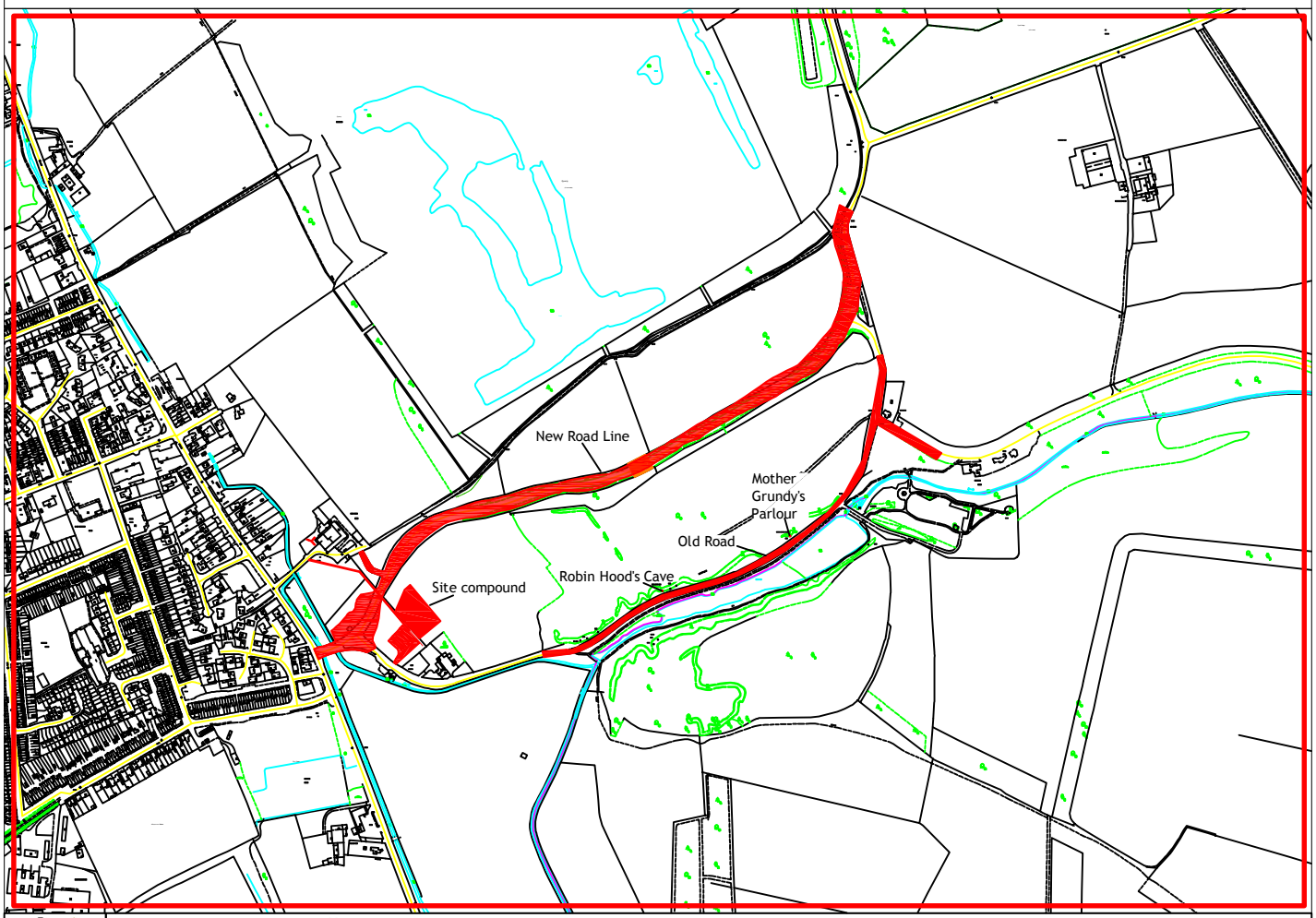
Pitts, M W, 1978. 'Towards an Understanding of Flint Industries in Post-Glacial England', *Institute of Archaeology Bulletin* 15, 179-197

Pitts, M W and Jacobi, RM, 1979. 'Some Aspects of Change in Flaked Stone Industries of the Mesolithic and Neolithic in Southern Britain', *Journal of Archaeological Science* 6(2), 163-177

Radley, J, 1968. 'A Mesolithic Structure at Sheldon, With a Note on Chert as a Raw Material on Mesolithic Sites in the Southern Pennines', *Derbyshire Archaeological Journal* 88, 26-36.

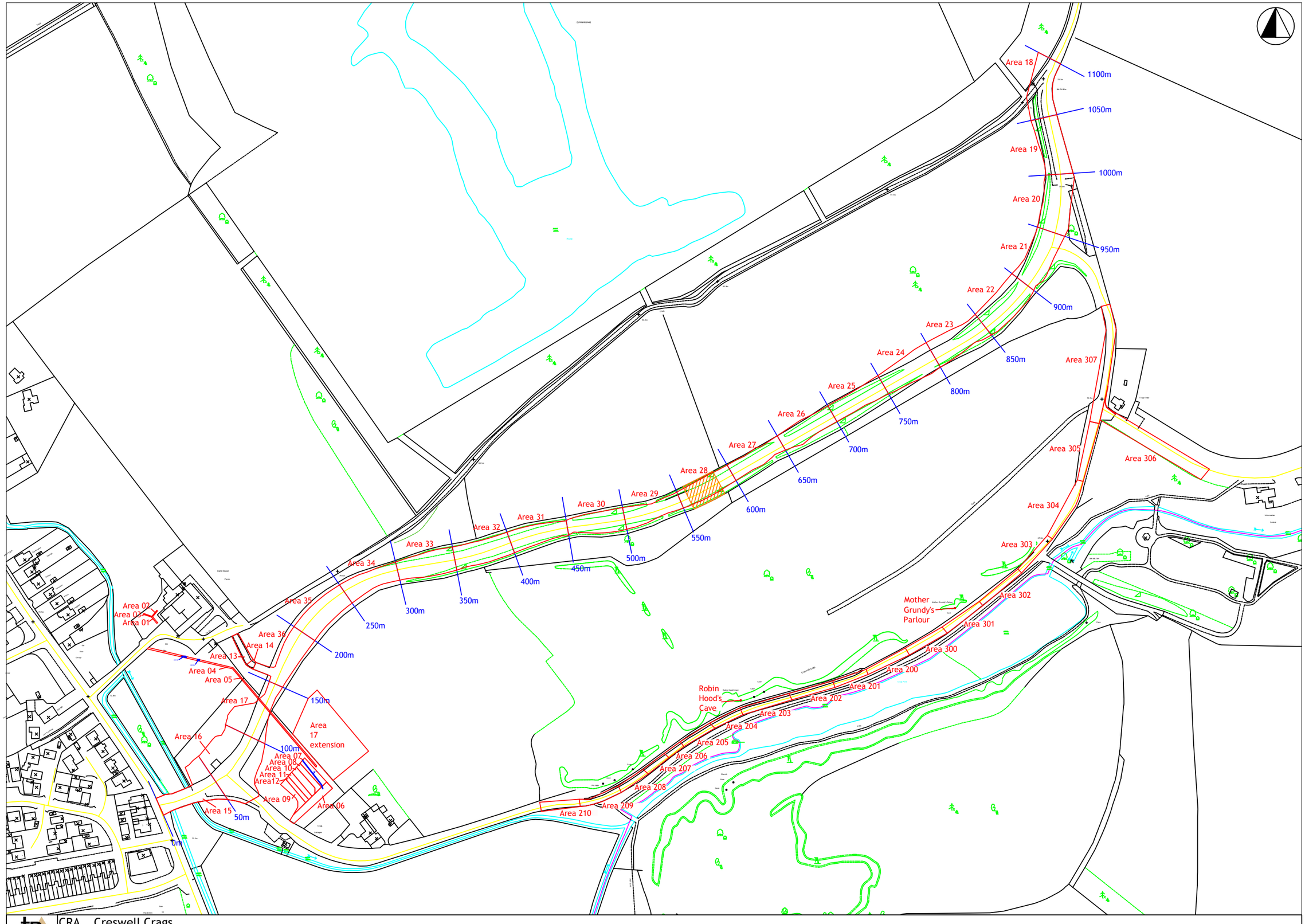
Samson C and Jenkinson R D S, 1979. *On the discovery and geophysical survey of new archaeological caves in Creswell Crags, Derbyshire*. Creswell Crags Visitor Centre Research Report 2. Nottingham: Nottinghamshire County Council, Leisure Services.



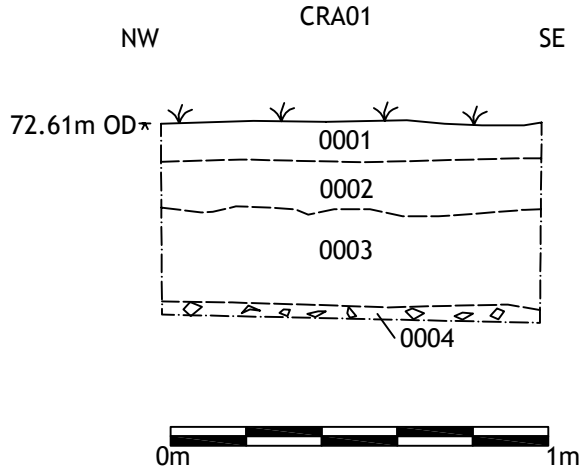


CRA	Creswell Crags
Figure 1	Site location plan
Scale at A4	1:50000 / 1:10000

Trent & Peak Archaeology

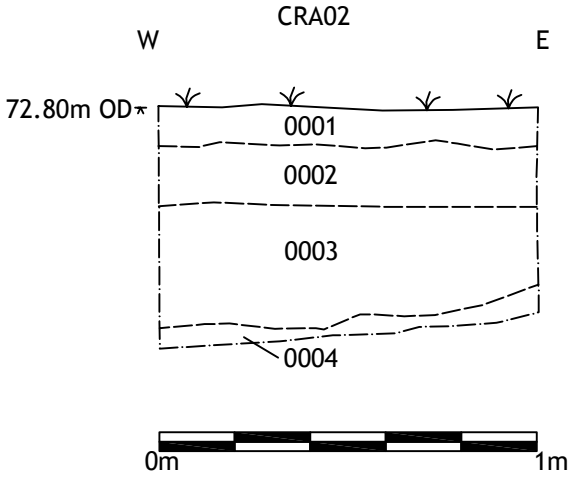


CRA Creswell Crags
Figure 2 Plan showing location of watching brief areas
Scale at A3 1:3000



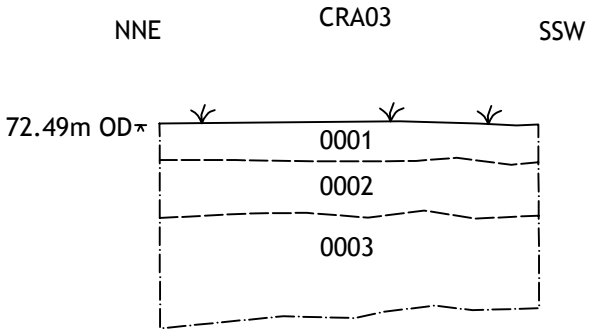
0001 Brown silty loam
0002 Dark reddish brown silty loam
0003 Bright reddish brown clayey silt with few angular dolomite inclusions
0004 Friable creamy yellow sandy silt with 80% angular dolomite inclusions

CRA Creswell Crags
Figure 3 South west facing section Area 01
Scale at A4 1:20



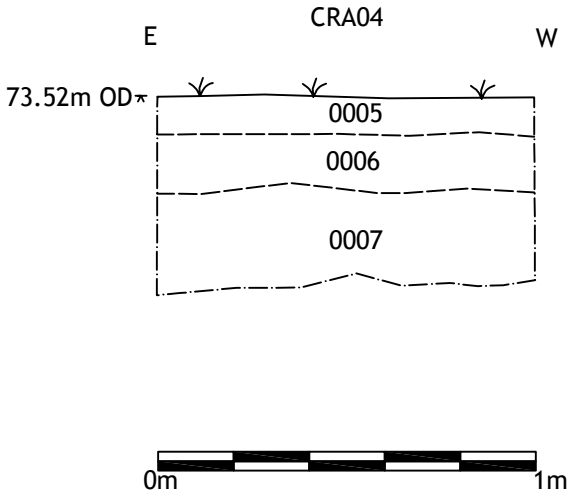
0001 Brown silty loam
0002 Dark reddish brown silty loam
0003 Bright reddish brown clayey silt with few angular dolomite inclusions
0004 Friable creamy yellow sandy silt with 80% angular dolomite inclusions

CRA Creswell Crags
Figure 4 South facing section Area 02
Scale at A4 1:20



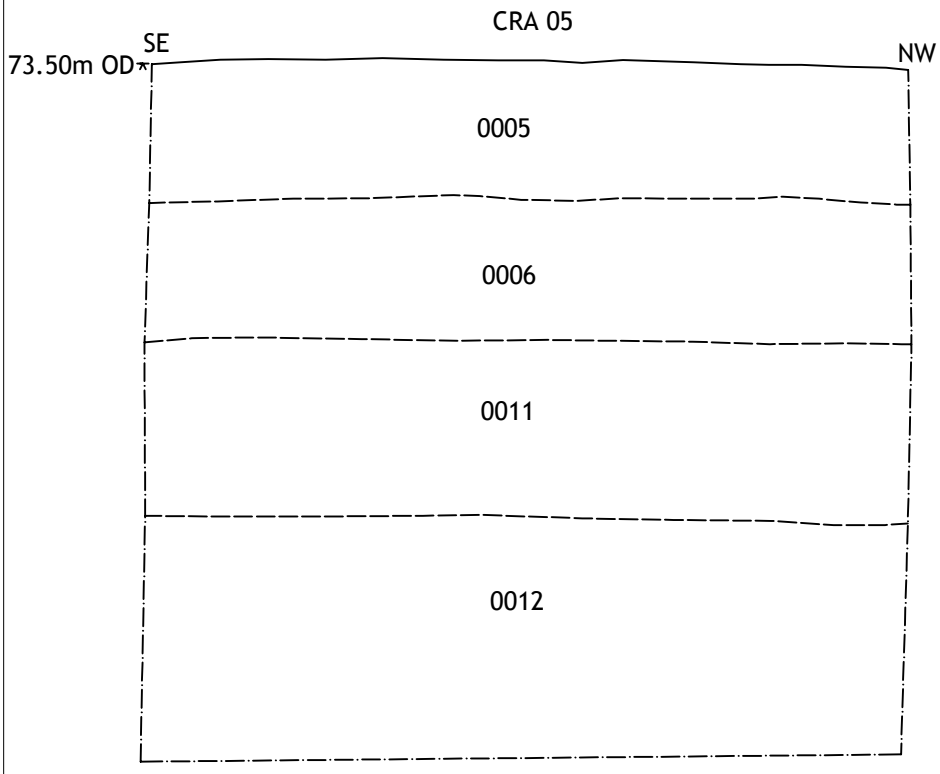
0001 Brown silty loam
0002 Dark reddish brown silty loam
0003 Bright reddish brown clayey silt with few angular dolomite inclusions

CRA Creswell Crags
Figure 5 North west facing section Area 03
Scale at A4 1:20



0005 Firm brown silty loam with frequent angular limestone fragments
0006 Firm mid yellowish brown silty loam with frequent small and medium angular-sub angular limestone fragments
0007 Friable creamy yellow sandy silt with 80% angular dolomite inclusions

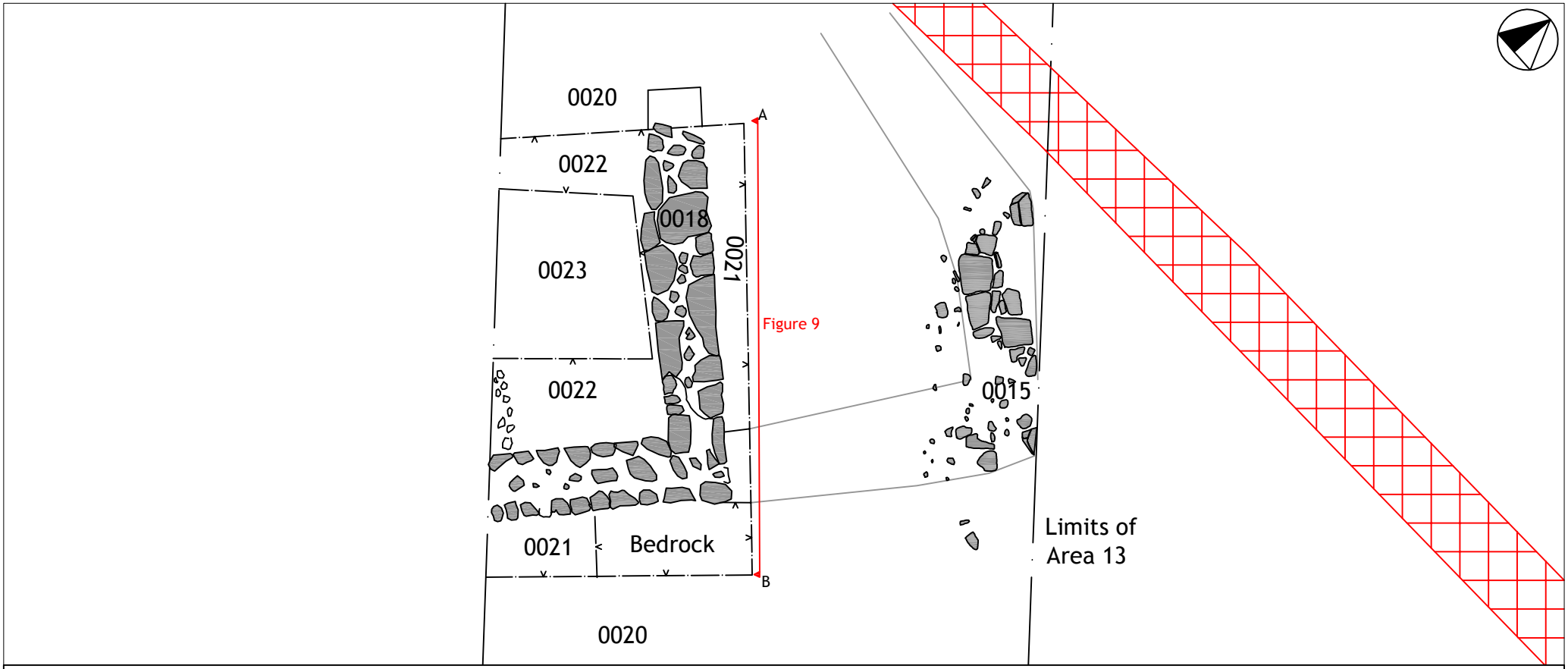
CRA Creswell Crags
Figure 6 North facing section Area 04
Scale at A4 1:20



0005 Firm brown silty loam with frequent angular limestone fragments
0006 Firm mid yellowish brown silty loam with frequent small and medium angular-sub angular limestone fragments
0011 Hard brownish red silty clay with few small-medium rounded stone and sub angular limestone
0012 Hard reddish brown silty clay

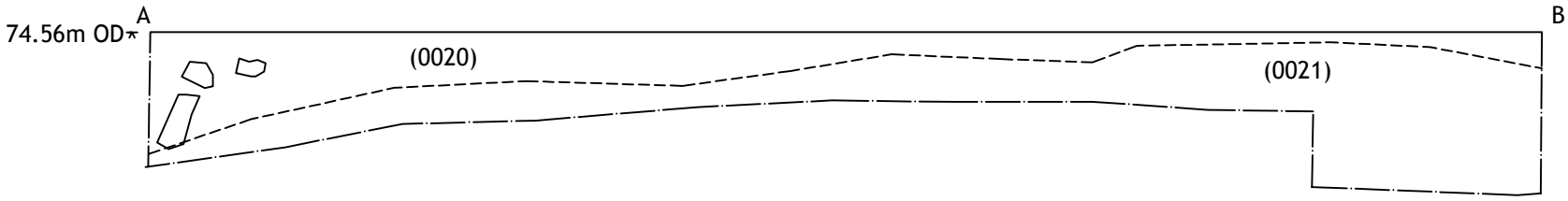
CRA Creswell Crags
Figure 7 North east facing section Area 05
Scale at A4 1:20

0m 1m



CRA Creswell Crags
Figure 8 Plan of building remains within Area 13
Scale at A4 1:50

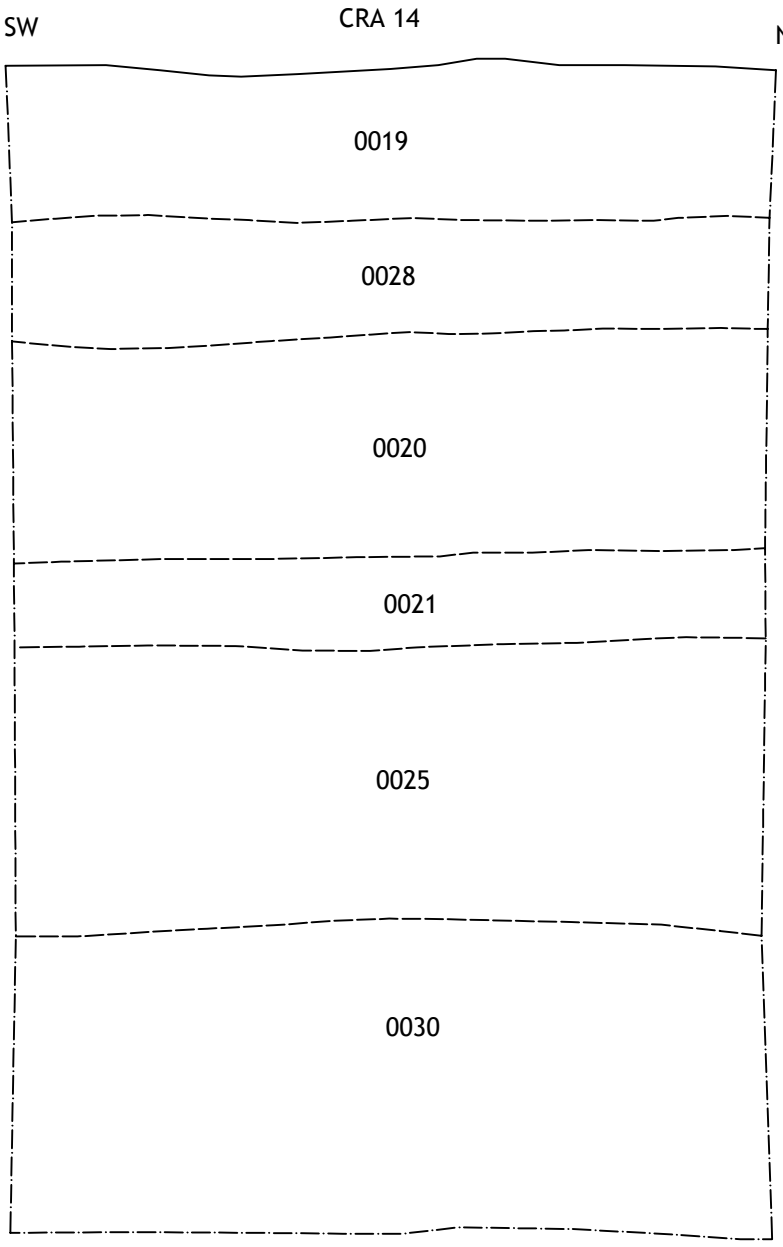
0m 5m



CRA Creswell Crags
Figure 9 South west facing section within Area 13
Scale at A4 1:20

0m 1m

Trent & Peak ARCHAEOLOGY



0019 Dark brown silty loam topsoil

0028 Dark yellowish brown clayey silt

0020 Mid yellowish brown clayey silt

0021 Mixed yellow and grey clayey silt

0025 Mid yellowish brown silt

0030 Red silty clay

CRA Creswell Crags
Figure 10 South east facing section Area 14 pipe trench
Scale at A4 1:20

0m 1m

Key to mapped finds

AAH - individually recorded flint artefact
P - pottery
M - metalwork
B - bone
S - stone
T - tile or brick

Area 01
Area 02
Area 03
Area 04
Area 05
Area 06
Area 07
Area 08
Area 09
Area 10
Area 11
Area12
Area 13
Area 14
Area 15
Area 16
Area 17
Area
17
extension
Area 28
Area 29
Area 30
Area 31
Area 32
Area 33
Area 34
Area 35
Area 36
Area 205
Area 206
Area 207
Area 208
Area 209
Area 210
Robin
Hood's
Cave
A
0m
50m
100m
150m
200m
250m
300m
350m
400m
450m
500m
550m
Bank House
Farm
Crags
Cottages
Cave
Pin Hole
Church
Hole
Parkhill
Robin Hoo

CRA Creswell Crags
Figure 11 Plan of New Road showing locations of finds in Areas 01-17,29-36
Scale at A3 1:1500

Trent & Peak ARCHAEOLOGY

0m 200m

Key to mapped finds

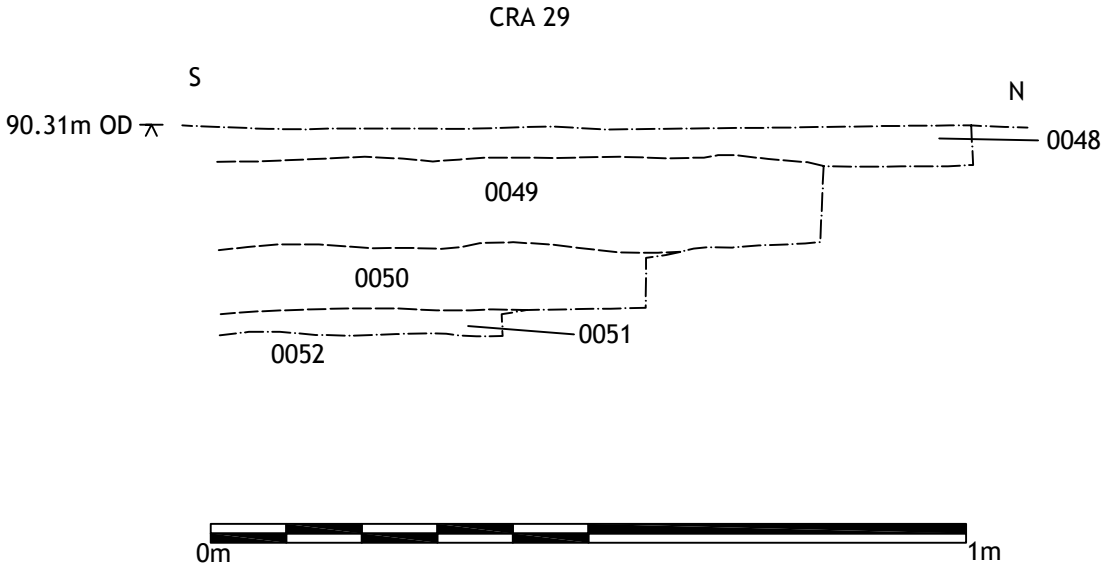
AAH - individually recorded flint artefact
P - pottery
M - metalwork
B - bone
S - stone
T - tile or brick

Area 18
1100m
Area 19
1050m
Area 20
100
Area 21
950
Area 22
900m
Area 23
850m
Area 24
800m
Area 25
750m
Area 26
700m
Area 27
650m
Area 28
Area 29
Area 30
Area 307
Area 305

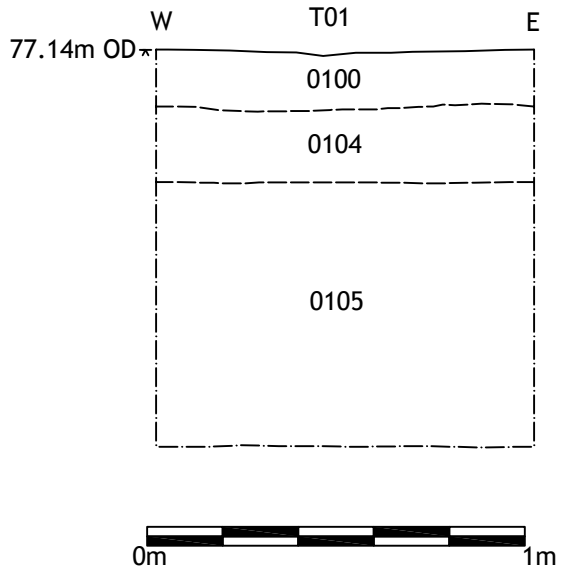
Pond
Track
73.5m
BM 74.81m
77.7m
83.8m
86.0m
88.1m
75.0m
75.9m

CRA Creswell Crags
Figure 12 Plan of New Road showing location of finds in Areas 18-28
Scale at A3 1:1500

0m 200m

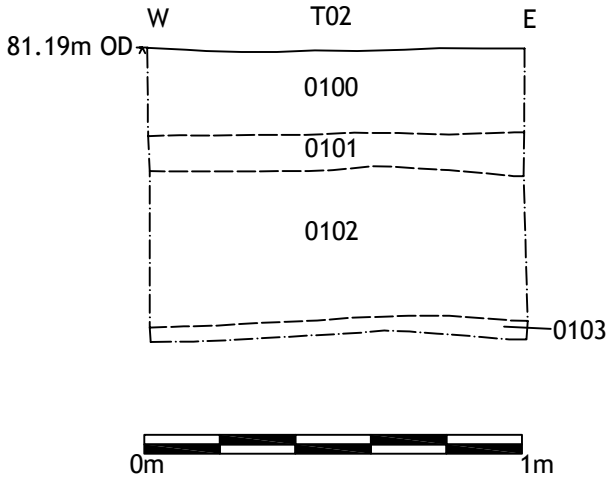


0046 Reddish brown silty clay with occasional angular - sub angular limestone fragments
0048 Reddish brown silty clay with frequent small angular - sub angular limestone fragments
0049 Pale yellow / buff brown firm silty clay containing loessic patches
0050 Firm mauve brown silty clay
0051 Reddish / purplish brown firm silty clay with rare very small rounded stone inclusions and occasional small flecks of manganese
0052 Hard reddish purplish brown clayey silt



0100 Greyish brown sandy loam topsoil
0104 Degraded dolomite
0105 Solid dolomite bedrock

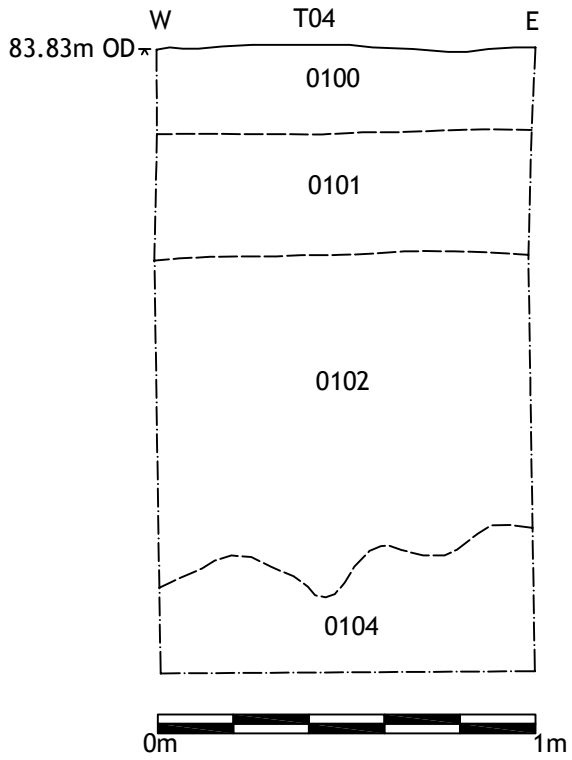
CRA Creswell Crags
Figure 14 Representative south facing section of Trial Pit 01
Scale at A4 1:20



0100 Greyish brown sandy loam
0101 Reddish brown silt
0102 Reddish brown clayey silt
0103 Red clay

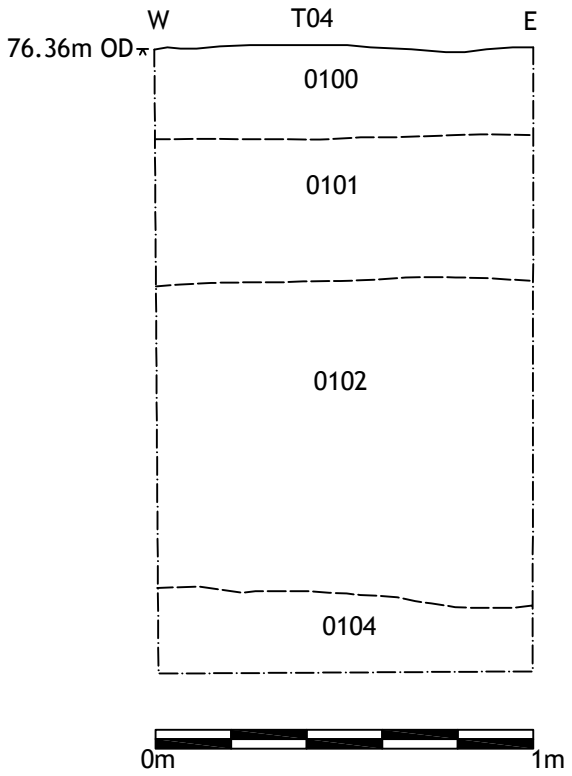
CRA Creswell Crags
Figure 15 Representative south facing section of Trial Pit 02
Scale at A4 1:20

Trent & Peak ARCHAEOLOGY



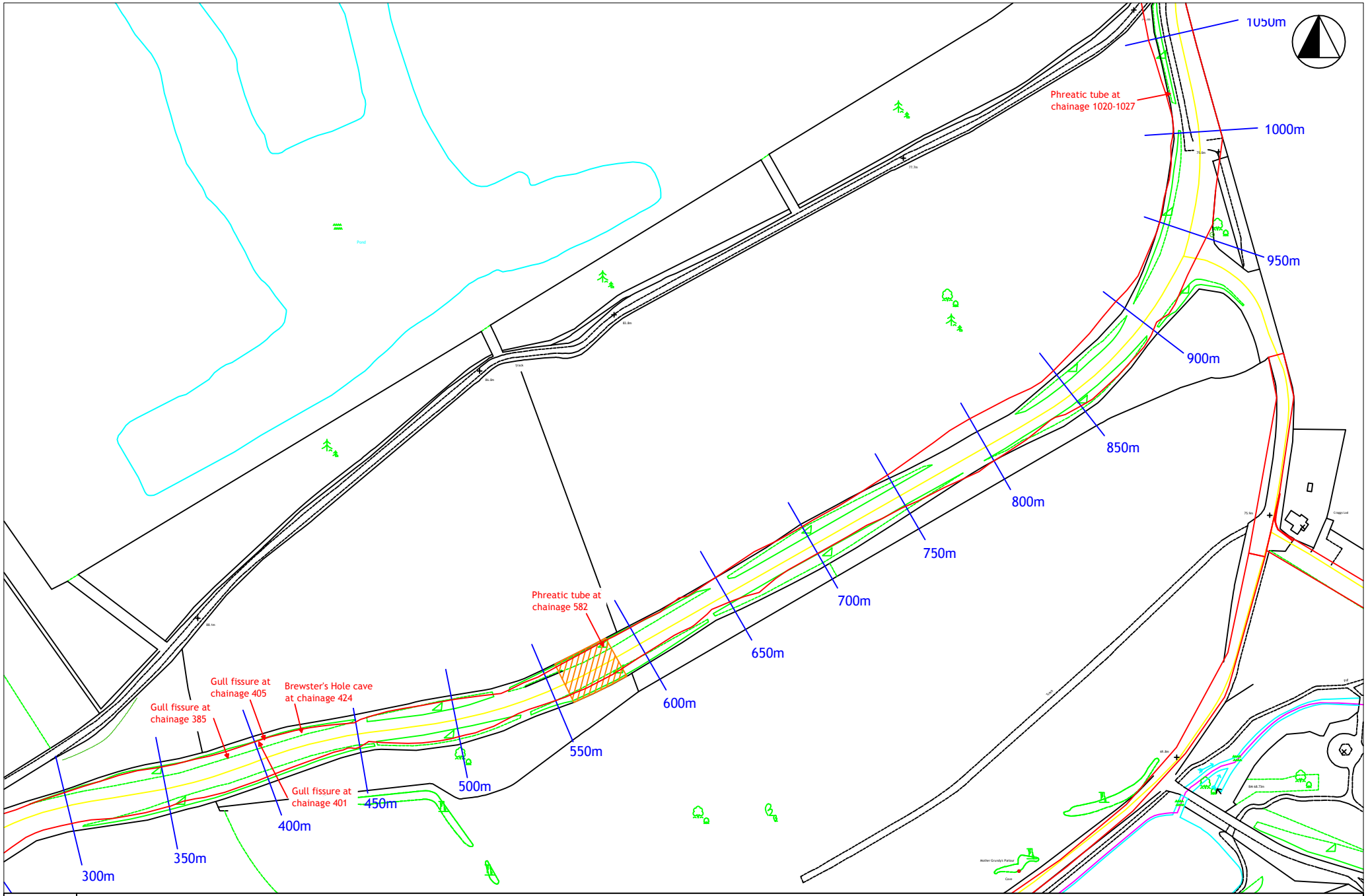
0100 Greyish brown sandy loam
0101 Reddish brown silt
0102 Reddish brown clayey silt
0104 Degraded dolomite

CRA Creswell Crags
Figure 16 Representative south facing section of Trial Pit 03
Scale at A4 1:20



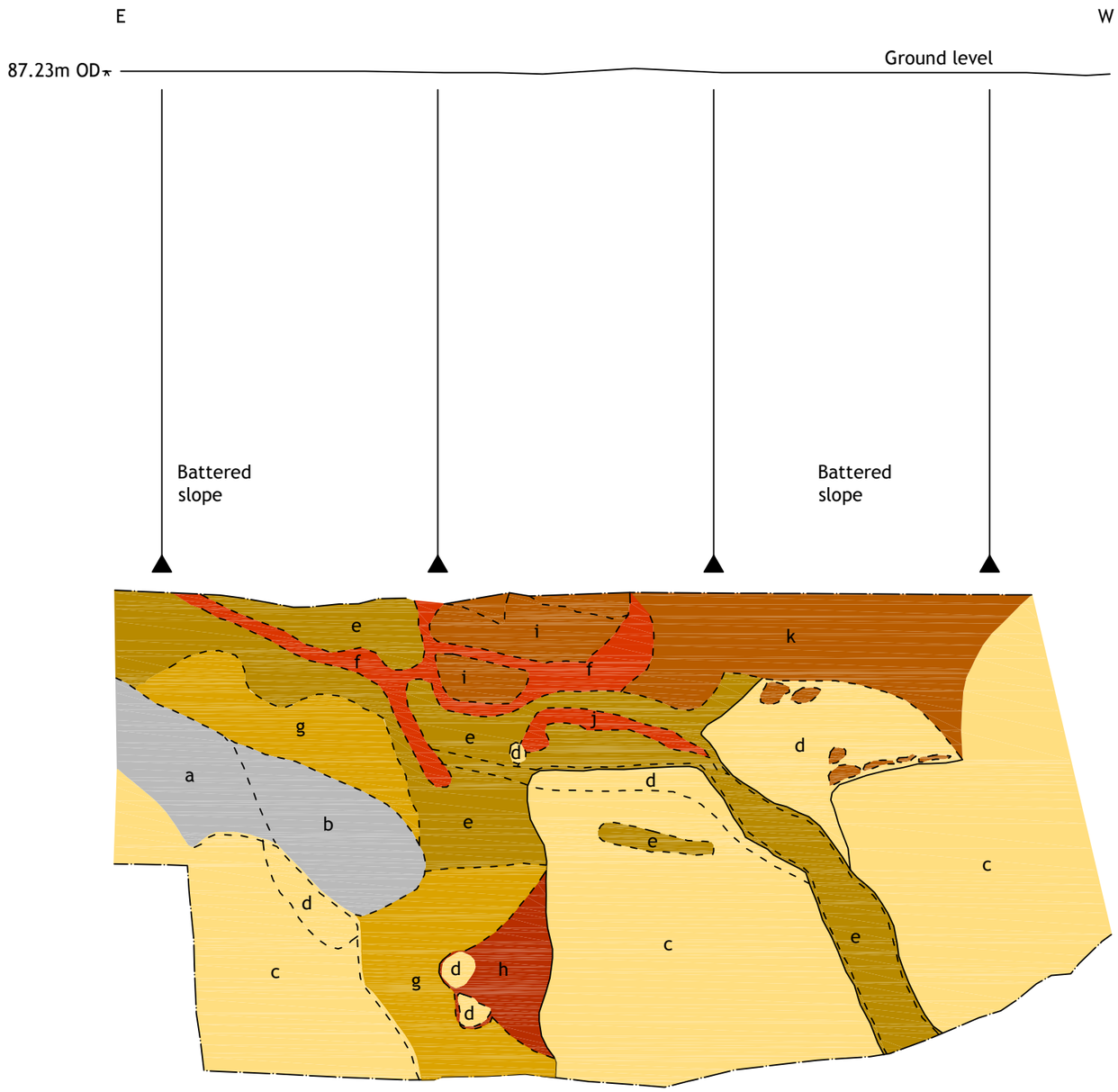
0100 Greyish brown sandy loam
0101 Reddish brown silt
0102 Reddish brown clayey silt
0104 Degraded dolomite

CRA Creswell Crags
Figure 17 Representative south facing section of Trial Pit 04
Scale at A4 1:20



CRA Creswell Crags
Figure 18 Plan showing locations of geoarchaeological features
Scale at A3 1:2500

Trent & Peak ARCHAEOLOGY



Limestone bedrock (c) and friable degraded dolomitic limestone (d)

Gravel in clayey sand matrix, firm (a) and less firm (b). Gravel sampled for petrological analysis by the BGS

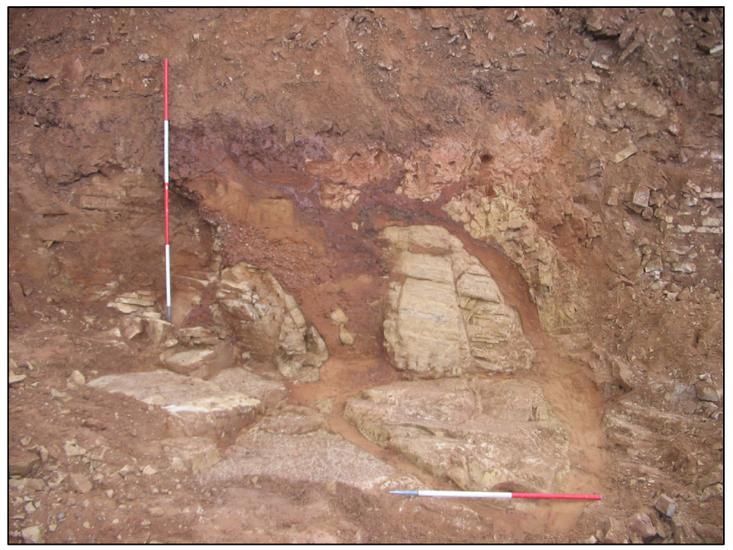
Brown loamy sand (e)

Firm silty clay. Reddish-brown (f), greyish-brown (j)

Reddish-brown loamy sand. Homogeneous (i), marbled (k)

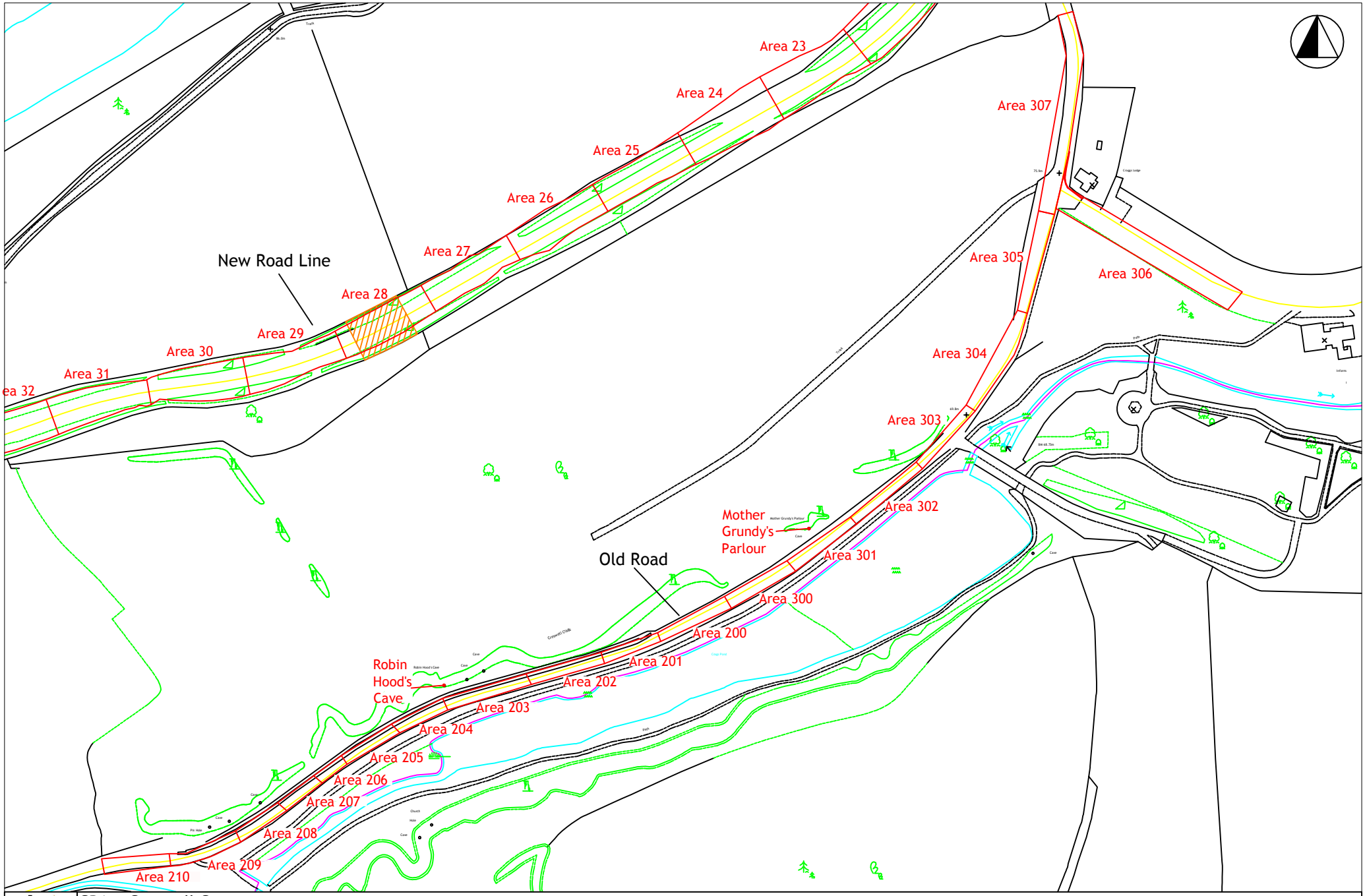
Yellow-orange friable sand (g)

Bright reddish-brown friable sand (h)



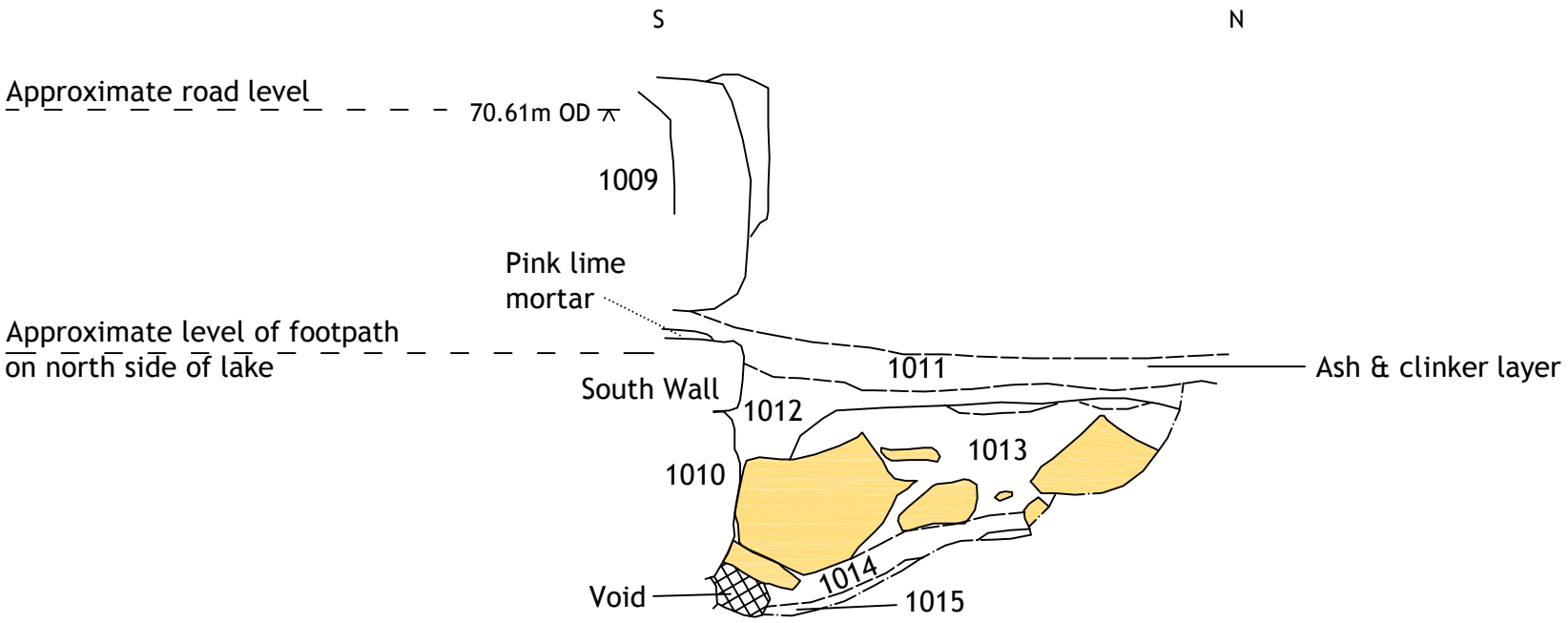
CRA Creswell Crags
Figure 19 North facing section of Brewster's Hole cave at chainage 424
Scale at A3 1:20

0m 1m



CRA Creswell Crags
Figure 20 Plan showing location of watching brief areas during the 'Old Road' works
Scale at A4 1:2500

Trent & Peak ARCHAEOLOGY



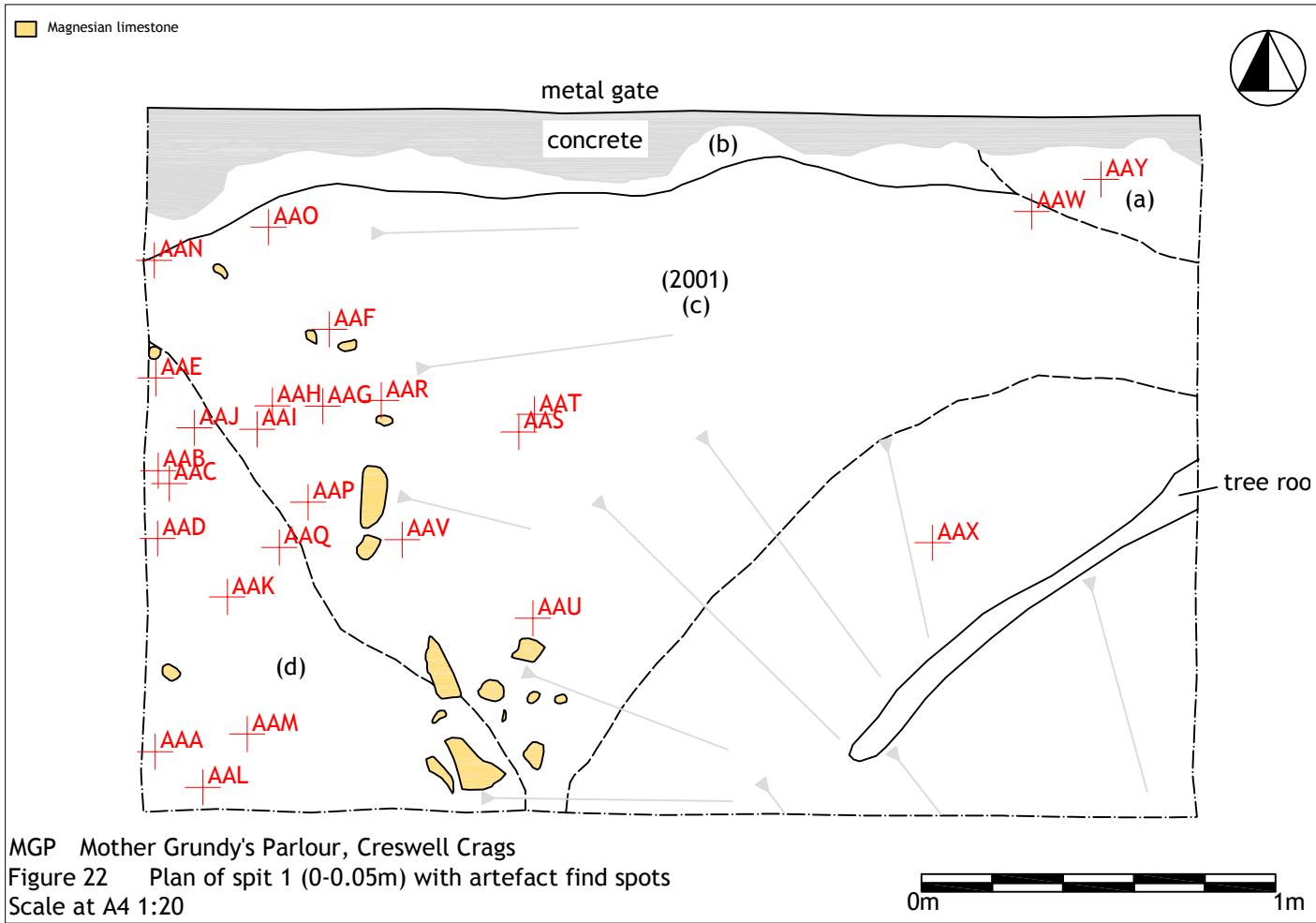
1011 Black ashy clinker
1012 Dirty dull yellow orange silty sand with frequent charcoal flecks
1013 Dull brown silty sand containing frequent angular and sub angular limestone
1014 Reddish brown compacted but friable sand with grey silt mottling
1015 Dull orange soft sandy silt overlying natural dolomite bedrock

Magnesian limestone

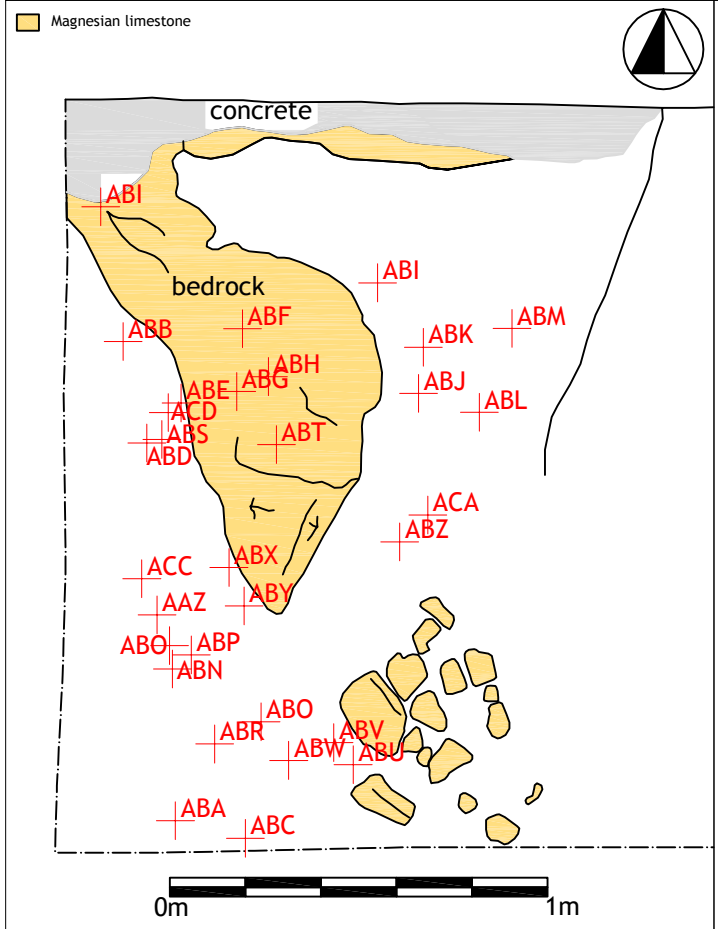
Trent & Peak Archaeology

CRA Creswell Crags
Figure 21 East facing section of test pit in Area 203 (Robin Hood's cave)
Scale at A4 1:10

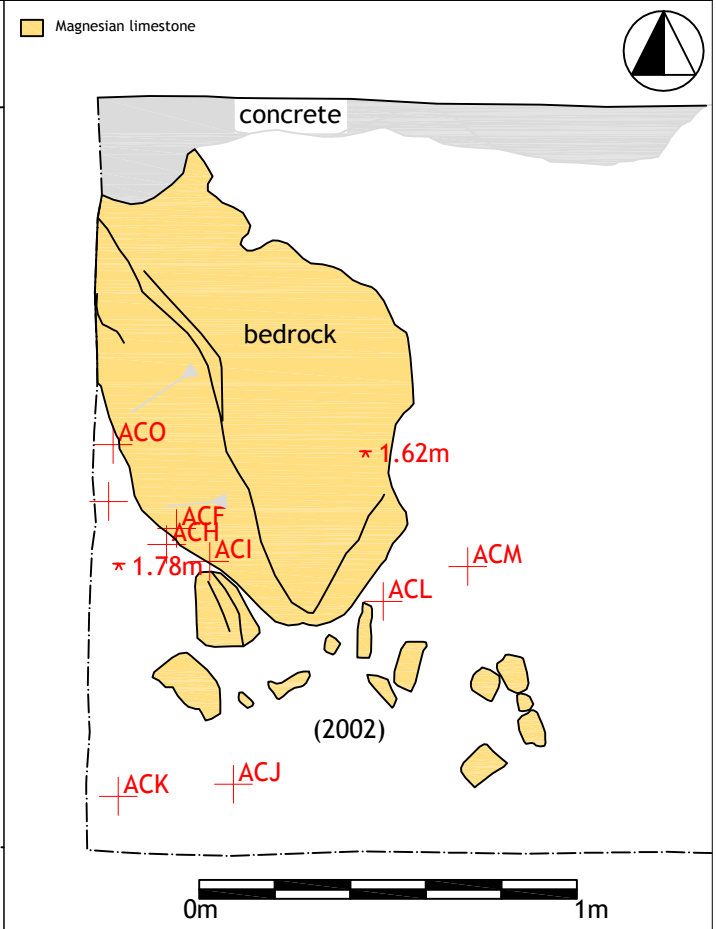
0m 1m



MGP Mother Grundy's Parlour, Creswell Crags
Figure 22 Plan of spit 1 (0-0.05m) with artefact find spots
Scale at A4 1:20



MGP Mother Grundy's Parlour, Creswell Crags
Figure 23 Plan of spit 2 (0.05-0.10m) with artefact find spots
Scale at A4 1:20



MGP Mother Grundy's Parlour, Creswell Crags
Figure 24 Plan of spit 3 (0.10-0.15m) with artefact find spots
Scale at A4 1:20

Trent & Peak ARCHAEOLOGY

Plate 1 Area 01 enabling works. Water pipe trenching

Plate 2 South facing section Area 01 demonstrating topsoil and subsoil sequence of Areas 01-03

Plate 3 Area 11 stripping for compound works

Plate 4 Area 13 showing post-medieval (c.17th century) structure interpreted as an outbuilding belonging to Bank House Farm. This was demolished in the 19th century

Plate 5 Area 13 showing the footings of the post-medieval building with limestone bedrock and colluvial build-up on the north-easern side of the structure

Plate 6 New Road line during topsoil stripping. Taken from the western rise looking east

Plate 7 Sondage within Area 29 showing subsoil layers 0048-0052

Plate 8 Sondage within Area 30 showing subsoil layer 0046

Plate 9 Rock cut trial trench T01

Plate 10 Re-exposure of Intake Cave in Area 28 (chainage 582) on northern side of New Road

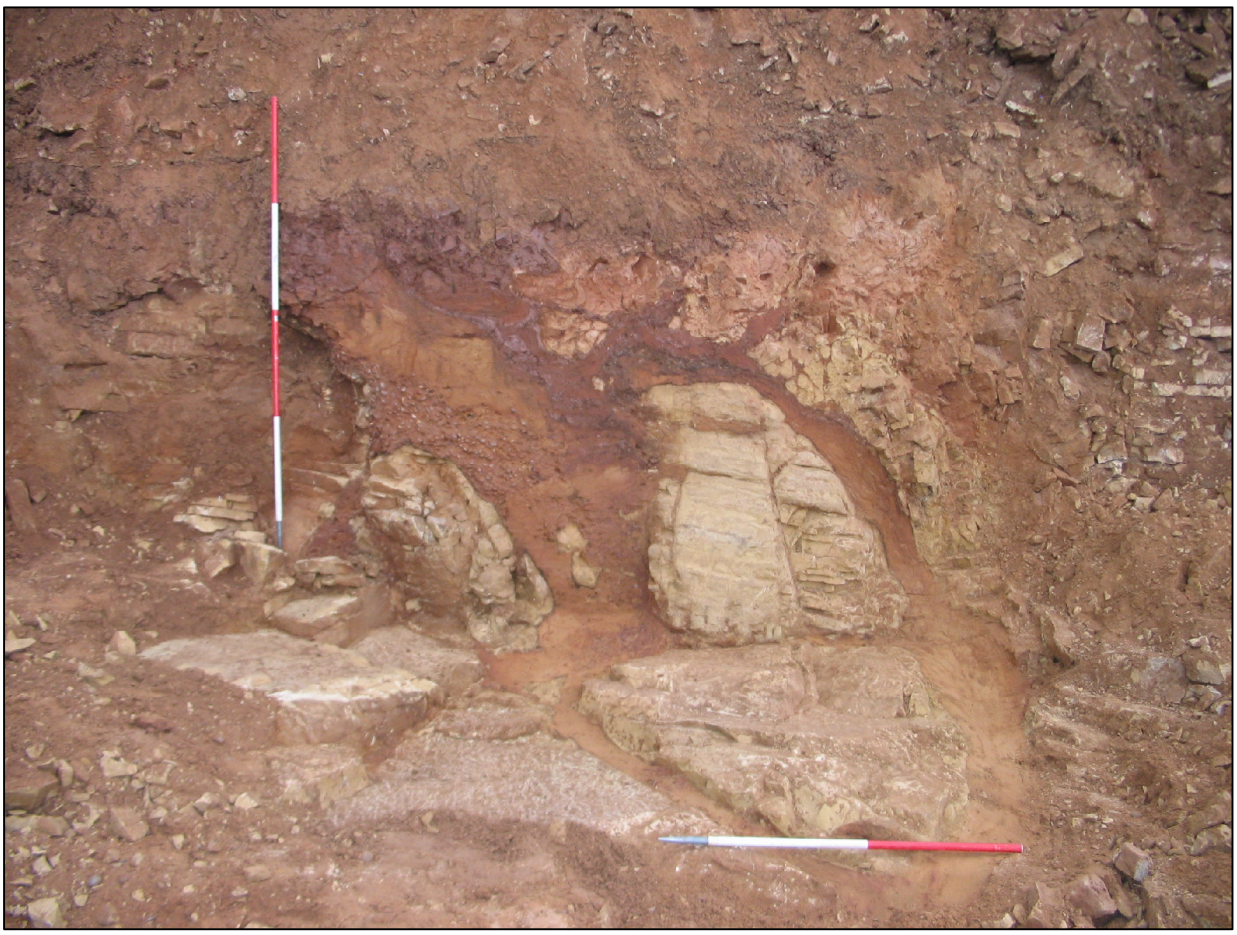


Plate 11 Brewster's Hole in Area 31 (chainage 425). Note lobe of gravel approximately 0.5m to right of upright scale

Plate 12 Chaotic fills of one of the 'gulls' in Area 32 (chainage 385) showing emplaced limestones now rotted to ghosts

Plate 13 Old Road during early stages of breaking up the tarmac. Looking west

Plate 14 Area 210 at the western end of the gorge. Here the tarmac and sub-base was thin and overlay a silty sand clast supported matrix with frequent limestone inclusions

Plate 15 Area 203 showing talus type material and silts under Old Road line. A small chert flake was discovered in this material

Plate 16 Gatepost hole at the east end of the gorge showing the depth of newly made ground. This was one of several holes excavated to varying depths for the installation of kissing gates in Area 305

Plate 17 Removal of path edgings using a small machine to excavate the central path fill of crushed limestone and lever out the boards

Plate 18 Pre excavation photograph of the area to be excavated in front of Mother Grundy's Parlour

Plate 19 Excavation of Mother Grundy's Parlour after removal of spit 3 (0.10-0.15m)

Plate 20 Small Early Neolithic leaf shaped arrowhead (AAU) from Area 32/33 (chainage 350)

Appendix 1

Geoarchaeology/New Road Caves and Fissures. Letters by Simon Collcutt

1 DIVINITY ROAD
OXFORD OX4 1LH

OXFORD ARCHAEOLOGICAL
ASSOCIATES LIMITED

Directors: Catherine A.F. Laoué
Jacqueline Russell
Simon N. Collcutt

Telephone (01865) 247374
Facsimile (01865) 242487
Email *oaa-consult@btconnect.com*

9th. August, 2005.

Dr. D. Barrett,
County Archaeological Officer,
Environmental Services Department,
County Hall,
Matlock,
Derbyshire DE4 3AG.

BY EMAIL

Dear Dave,

Re. B6042 Crags Road Diversion

This is just a brief letter to confirm that I attended the site yesterday, with Howard Jones and Barry Lewis, and found all archaeological matters to be in satisfactory order. I was also able to liaise with Aggregate Industries and their subcontractors, as well as with your colleagues from Derbyshire Consulting Engineers.

I looked over the flintwork recovered by TPAU during the topsoil stripping process; there was no material (neither débitage nor formal tools) which appeared likely to be of Palaeolithic (or even Mesolithic) age.

Towards the northeastern end of the new road line, we purpose-cut a long machine trench to bedrock flanking (south of) the previous find of purer loessic silts (i.e. on the southwestern flank of the Eastern Rise). No new primary material came to light. In fact, much of this zone is occupied by a relatively large solution feature, containing 'early' (i.e. likely Tertiary to early Pleistocene sediments of no archaeological/palaeontological interest) partially laminated but contorted clayey fine sands. There were therefore no potentially protective bedrock steps upon which primary Late Pleistocene deposits might have survived. Although TPAU will continue to watch the cutting work in this general area, I do not believe it to be likely that any new exposure of a loessic sequence will be found here.

The other specific area which we watched being opened was the zone on the very brow of the escarpment, before the steeper slope down into the vale (towards Creswell village). As expected, there has been considerable valley-side cambering here, very large (5 m plus) blocks of limestone splitting away from the main body and moving slightly downslope, allowing fine sediments to accumulate in the resulting fissures (c.1 m scale width towards the top). Whilst this process takes place gradually 'underground', without the development of any air cavity, it is theoretically possible that a cross-slope 'notch' could have appeared at the surface at times which might have attracted Palaeolithic activity or, at least, for a sample of Palaeolithic material deposited generally on the escarpment edge to have been trapped, as fine sediment subsided behind a foundering block of limestone. In the event, there were only old reddish clayey deposits in the three fissure

cycles nearest the break of slope, suggesting that, at this point along the escarpment, the cambering was not particularly active in the Late Pleistocene. Again, TPAU will examine any additional fissure fills which appear a little further back (northeastwards) from the scarp but there does not seem to be significant potential for Palaeolithic or related environmental material.

TPAU have sketched and/or photographed the exposures created yesterday at both ends of the road line and these documents will form part of the formal archive in due course.

Barry reports that a useful relationship has been established with the contractors on site; everyone was certainly most willing to provide us with the test exposures requested yesterday and I would judge that a reasonable standard of archaeological watching will be possible throughout the project without undue constraint upon the construction works. All parties (yourself included) know that they can call upon me for advice or help on site, should specific questions arise (I will be working abroad in the week commencing the 26th. September but otherwise I will be available at reasonably short notice). I will keep in touch with TPAU at about a weekly interval, in any case, and I will probably make another couple of visits (particularly when the cutting work approaches the Central Ridge), even if nothing obvious has been signalled from the site, in order to ensure that the specialist watching aspects of the approved Scheme are satisfied. Please let me know if you need any further information at present or if you have any particular instructions.

Best wishes,

Simon Collcutt

email cc. M. Lander (DCC)
J. Delaney (DCC)
H. Jones (TPAU)

1 DIVINITY ROAD
OXFORD OX4 1LH

OXFORD ARCHAEOLOGICAL
ASSOCIATES LIMITED

Directors: Catherine A.F. Laoué
Jacqueline Russell
Simon N. Collcutt

Telephone (01865) 247374
Facsimile (01865) 242487
Email *oaa-consult@btconnect.com*

13th. August, 2005.

Dr. D. Barrett,
County Archaeological Officer,
Environmental Services Department,
County Hall,
Matlock,
Derbyshire DE4 3AG.

BY EMAIL

Dear Dave,

Re. B6042 Crags Road Diversion

Following the T&PAU notification of the intersection of the works with several additional rock-bound features this week, I attended the site yesterday with Howard Jones and Barry Lewis. Barry had already cleared sections of the deposits of interest and he was good enough to allow me to take preliminary photographs of his work, a few of which I shall append here (as separate individual emails to avoid too great a size) to help in my description.

At Chainage 560 (on the Central Ridge), the works have cut through an element of Intake Cave, just a little south of the area previously excavated. The cross-section here (Fig. CREr120805-12b looking NNW, 50 cm intervals on ranging pole) shows the same range of sediment types, again distributed as slightly deformed strata, as was described during the evaluation (COLLCUTT, S.N. 1996. *Proposed Extension to Whitwell Quarry (Area E), Derbyshire: Trial Excavations Within Limekiln Close Cave & Intake Cave* Report by Oxford Archaeological Associates Limited for Redland Aggregates Limited, April 1996). The cave is not visible in the southeastern side of the road cutting; the previous work had shown that the cavity was stepping up in that direction, such that at least this level of any more tiered system (if such existed) will likely have been eroded away as the landsurface dropped. There continue to be no obvious archaeological or palaeontological remains and the mixed/deformed nature of the sediments precludes direct dating by OSL. I would advise that there is nothing further that need be done at this location, save continued observation in case of something new as the road cut is deepened.

At Chainage 385 (on the Western Rise), the works have cut through a major fissure fill, clearly traceable across the full 'half-width' of the cutting made to date (the other, more southerly half of the cutting is to be taken down shortly and the fissure is expected to persist in this direction). The bedrock structural dip northeast of the feature is close to horizontal but the dip on the southwestern side is markedly downwards towards the vale (as can be seen in the 'flaggy' fractured zone on the right hand side of Fig. CREr120805-13b looking SSE), suggesting rotation and foundering of the massive outer block. This, together with the nature of the sediment fill (see below), suggests that the fissure is a neotectonic feature (a gull) associated with cambering of the

escarpment edge (cf. COLLCUTT, S.N. 2002. *Proposed Realignment of Crags Road, Creswell, Derbyshire: Implications for Old Stone Age Archaeology* Report by Oxford Archaeological Associates Limited for Derbyshire County Council, November 2002.). Indeed, this appears to be the main (possibly the most northeasterly) such feature in the scarp-parallel suite which includes the much smaller fissures noted in my last letter (09.08.05). The sediments are dominated by reddish to deep red clays and slightly sandy clays (the clays including appreciable proportions of true weathered clay minerals, not just rock-flour from tillite), with common limestone 'ghosts' (altered to dolomitic sand) at all scales. Whilst there may have been some debris flow or other mass movement involved at some stages of emplacement, the very strong vertical development in fabric (cf. the plunging limestone ghosts centrally between the two ranging poles) shows considerable subsidence; indeed, there are deformation features (microfaults, folding, pinching/rolling [*boudinage*], overprinting) at all scales which demonstrate continual downward vertical movement. The sediment types are all strictly local, available in the lower part (cf. 'red clay') of the known surface (open-air) mantle, and there is no reason to think that the feature may once have been 'roofed'. Whilst there are no obvious archaeological or palaeontological remains and the mixed/deformed nature of the sediments precludes direct dating by OSL, it seems likely that, from the level observed downwards, these deposits are significantly ancient (probably earlier than the known Creswell material). I would advise that there is nothing further that need be done at this location, save continued observation (with basic photographic and sketch recording) to cover the unlikely event of something new as the road cut is deepened; the fissure sediments should continue in much the same fashion well below the level to be reached by the roadworks.

At Chainage 425 (just as the Western Rise starts to drop down into the Western Trough), the works have cut through a new small (2-3 m wide) karstic (true cave) feature. This may be a fissure-form cave, running across the road line in approximately the same direction as other known caves in the vicinity but possibly with significant divergence (c.45° dipping down to the westsouthwest) from the vertical plane (presumably due to guidance from an oblique fault) as seen in section (cf. Fig. CREr120805-7b looking along bearing 166°). The exposure is not particularly good and the feature cannot be readily followed to the northwestern side of the road cutting; whilst the effective base of the cutting in this area has already been reached (at c.2 m below the modern surface), T&PAU are supervising a slight machine deepening of the section shown in the photographs, so as to maximise information retrieval; the other, more southerly 'half-width' of the road cutting should shortly afford T&PAU a further opportunity to observe any lateral continuation of the feature. The flanking rock is generally deeply altered (dolomitic sand with core stones) and there are often darker brown manganese-stained areas in the contact zone between original bedrock and sediment fill; these characteristics are consistent with a relatively stable ancient cave situation, as opposed to the loss (effectively, the slow grinding away) of such vulnerable material during subsidence in a neotectonic feature.

The main, uppermost surviving fill of the cave consists of a chaotic mix of reddish clays and clayey sands, with very varied-scale limestone 'ghosts', the whole showing wavy deformation, especially in the few tiny surviving zones with original lamination; this material, very similar to some levels seen in Intake Cave, was probably emplaced by a series of debris flows along the cave passage. Whilst one charcoal speck was noted in the clayey deposits, there is no reason to think such easily floated/transported material to be anthropogenic. There are no obvious archaeological or palaeontological remains and the mixed/deformed nature of the sediments precludes direct dating by OSL.

Of greater interest is a 'dirty' siliceous gravel deposit, plastered onto the base/northeast wall of the cave. The gravel contains very well sorted (major mode in the 2-4 cm grade, maximum diameter in the 7-8 cm range) and rounded pebbles, mostly of quartz/quartzite but with accessory lithologies (such as more or less rotted siliceous sandstone). There are no obvious limestone pebbles (or coherent ghosts), the only 'local' (karstic) clasts being relatively angular and small (<1 cm) fragments of yellowish phosphatic material, probably plucked from films

on the immediate cave walls during deposit emplacement. The matrix is of slightly clayey sand (apparently including significant crushable, dolomitic material), which gives partial to complete matrix-support to the gravel. Another element comprises relatively common, well rounded mudballs, up to c.2 cm in diameter. These characteristics are typical of deep cave situations, at the phreatic/vadose contact (the top of what passes for the 'watertable' in limestone), with entrainment of dominantly exogenic material in underground streams, sometimes bordering on wet debris flows. It should also be noted that the gravel has suffered further deformation during the later emplacement of the upper mass movement deposits, so that expected primary fabric (such as traces of bedding and imbrication) is no longer obvious. I include a detail here (Fig. CREr120805-5b) so that you can appreciate this deposit more clearly: starting from the bottom-left of the photograph, one sees the light-coloured altered dolomitic bedrock, then the gravel, then a large limestone ghost and the red clayey matrix of the upper debris flows (top-right). The rounding of the siliceous pebbles (which is greater than usually seen in primary, open-air Pleistocene fluvial gravels) probably indicates a long history of reworking, before final cave deposition with local karstic additions (e.g. dolomitic sand, phosphatic clasts, mudballs). Whilst there are no obvious archaeological or palaeontological remains in the gravels (and only the most durable remains, such as tooth fragments of large animals would be at all likely to survive the emplacement process, in any case) and the coarse/mixed/deformed nature of the sediments precludes direct dating by OSL, it seems likely, from the fact that these deposits lie at c.84 m AOD, that the karst activation phase involved was ancient (probably earlier than the known Creswell material). There have been some brief references in the past to the presence of 'gravels' in filled cavities in the old Whitwell Quarry workings but, to my knowledge, no samples have ever been kept from properly documented instances. I have therefore asked T&PAU to sieve a sufficient volume on site (of course, checking for any elements not noted so far) and to retrieve a sample of 500-1000 pebbles. I would recommend that, in due course, this material be analysed by a petrologist with a good background knowledge of the Quaternary of the region, with a view to deciding whether any useful relative chronological information might be forthcoming from the lithologies present.

I understand that all relevant works have been completed at the northeastern end (Eastern Rise) of the road line and I can thus confirm that no exposure of the (primary) loessic silts (cf. COLLCUTT, S.N. 1996. *Proposed Extension to Whitwell Quarry (Area E), Derbyshire: Loessic Material Within Area E & Draughts Within the Creswell Crags Caves* Report by Oxford Archaeological Associates Limited for Redland Aggregates Limited, February 1996) has become available during this project.

I will continue to keep in touch with T&PAU at about a weekly interval and I will probably make another visit (particularly when the cutting work has become deeper across the Central Ridge), even if nothing obvious has been signalled from the site, in order to ensure that the specialist watching aspects of the approved Scheme are satisfied. Please let me know if you need any further information at present or if you have any particular instructions.

Best wishes,

Simon Collcutt

email cc. M. Lander (DCC)
J. Delaney (DCC)
H. Jones (T&PAU)

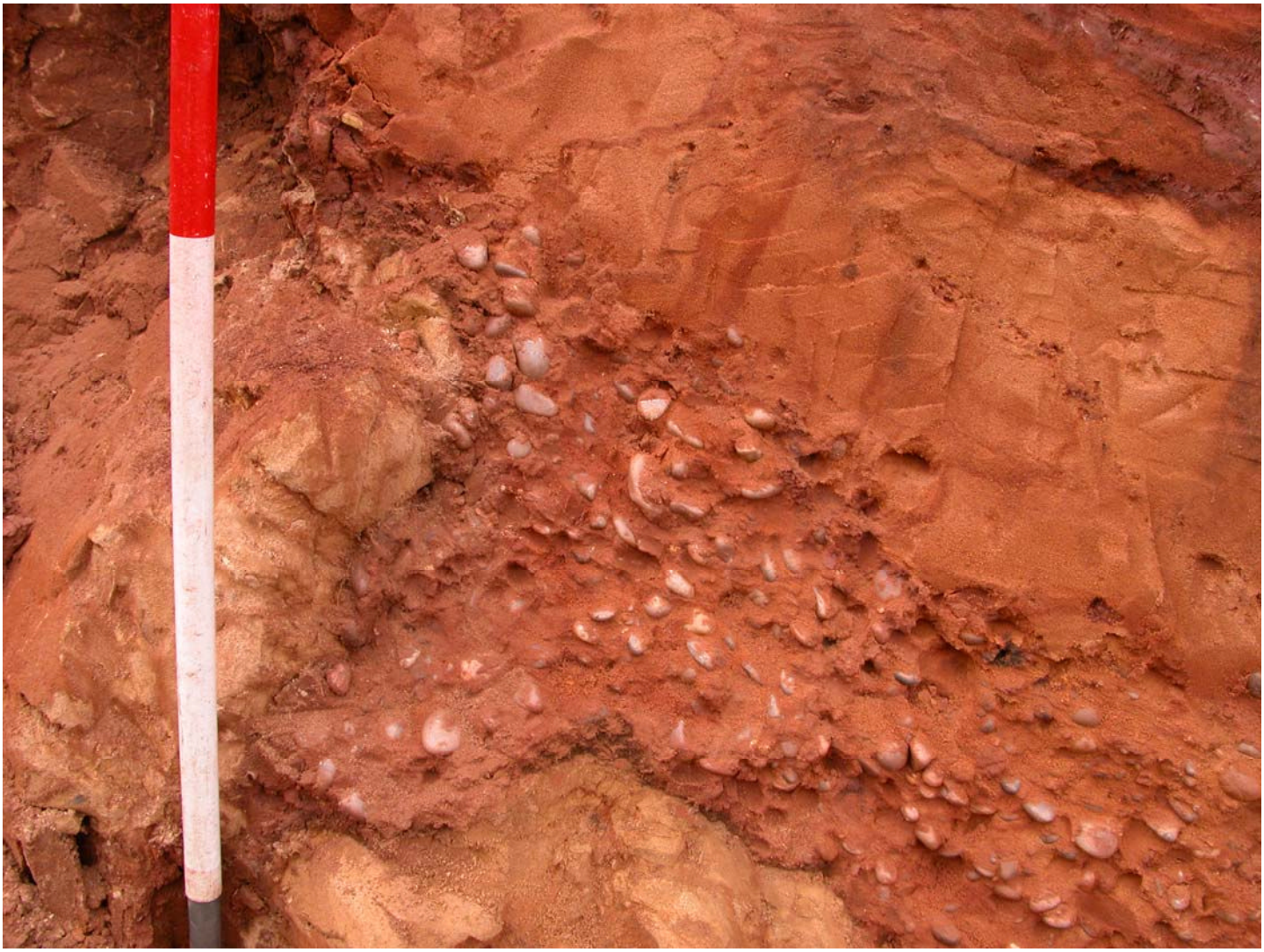


Fig. CREr120805-5b

Fig. CREr120805-7b

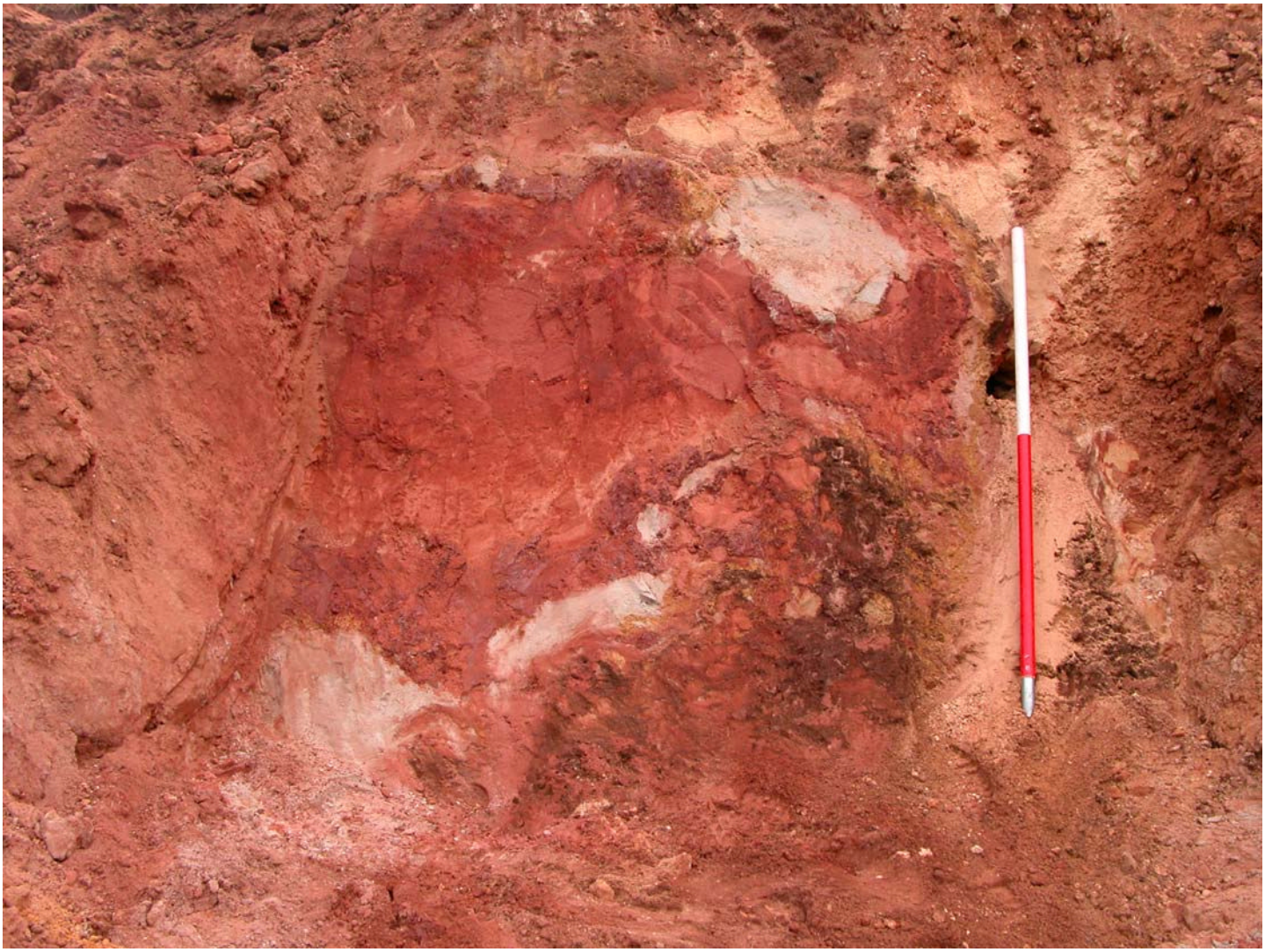


Fig. CREr120805-12b

Fig. CREr120805-13b

1 DIVINITY ROAD
OXFORD OX4 1LH

OXFORD ARCHAEOLOGICAL
ASSOCIATES LIMITED

Directors: Catherine A.F. Laoué
Jacqueline Russell
Simon N. Collcutt

Telephone (01865) 247374
Facsimile (01865) 242487
Email *oaa-consult@btconnect.com*

5th. September, 2005.

Dr. D. Barrett,
County Archaeological Officer,
Environmental Services Department,
County Hall,
Matlock,
Derbyshire DE4 3AG.

BY EMAIL

Dear Dave,

Re. B6042 Crags Road Diversion

Following the T&PAU notification of the intersection of the works with additional rock-bound features last week, I attended the site on Friday (2nd. September) with Howard Jones and Barry Lewis. As you requested at the site meeting that afternoon, I here continue with my notes on my observations. Barry had again cleared sections of the deposits of interest and he was good enough to allow me to take preliminary photographs of his work, a few of which I shall append here (as separate individual emails to avoid too great a size) to help in my description.

You will recall that I have already reported (130805) that the works had cut through an element of Intake Cave, at Chainage "520"; I must first correct a typing error, since I should have reported this as Chainage 560. From that point (i.e. Chainage 560, at a GPS-estimated NGR of SK 53347 74363 ±5 m) to a point some 25-30 m further northeast, under the crest of the Central Ridge, there is a zone of bedrock showing a blocky structure (no doubt from a combination of ancient tectonic and geochemical factors which need not concern us here). This structure subsequently facilitated the development of through-drainage in the phreatic phase (in the distant past when the local 'watertable' was above this level), involving the formation of many fine tubes, mostly a few millimetres to a few centimetres in diameter. However, a small number of tubes grew to greater size; the main fissure-form of Intake Cave itself may well incorporate such tubes at various levels, whilst a discrete tube (still probably part of the general Intake Cave system at a GPS-estimated altitude of c.93 m AOD), with a diameter of c.90 cm, can now be seen in the new cutting at Chainage 582 (Fig. CREr020905-37b looking NNW, which shows the large choked tube in question, as well as a typical small tube, with no sedimentary fill, towards the top-left-hand corner of the photograph). The perimeter of this larger tube is defined by the darker brown halo (manganese wad), where the surrounding bedrock has been altered. Within the lower part of the fill, there are various reddish clays and lighter dolomitic sands, which probably represent an initial streaming phase, although this material was subsequently deformed by the emplacement of debris flow sediment, seen in the upper part of the fill. The range of sediments is thus very similar to that observed previously within the Intake Cave system. The only significant difference is in the shape of the limestone 'ghosts' in the debris flow.

The forms from the main cave flows are relatively angular (cf. T&PAT photographs in COLLCUTT, S.N. 1996. *Proposed Extension to Whitwell Quarry (Area E), Derbyshire: Trial Excavations Within Limekiln Close Cave & Intake Cave* Report by Oxford Archaeological Associates Limited for Redland Aggregates Limited, April 1996), showing that they were sound clasts at the time of movement, rotting to 'ghosts' *in situ* only later. The forms in the tube-fill at Chainage 582, however, are extremely rounded, suggesting that some rotting had occurred prior to the last phase of movement; this, in turn, implies one or more phases of remobilisation as debris was forced deeper into the system. Not surprisingly, there are no archaeological or palaeontological remains and the mixed/deformed nature of the sediments precludes direct dating by OSL. I would advise that there is nothing further that need be done at this location, save continued observation in case of something new as the road cut is completed.

The likelihood of neotectonic features at the Western Rise was signalled in the ES documentation (cf. COLLCUTT, S.N. 2002. *Proposed Realignment of Crags Road, Creswell, Derbyshire: Implications for Old Stone Age Archaeology* Report by Oxford Archaeological Associates Limited for Derbyshire County Council, November 2002), in the form of filled fissures (gulls) behind large blocks of bedrock which have spalled off from the escarpment and have subsided towards the Creswell vale. I have already reported (130805) the feature at Chainage 385 (which turned out to be the largest of the gull sequence). The northern face of the cutting as it now stands (between Chainages c.350 and c.450) is shown in Fig. CREr020905-32b; a whole series of gulls are present, with the large feature at Chainage 385 on the left, nearest the camera, and increasingly smaller features to the northeast (there were also some smaller features southwestwards of Chainage 385, noted in my initial report of 090805).

The fills of these gulls (and indeed of the more 'cave-like' fissures at the northeastern end of the series) demonstrate a logical progression. As I have already noted, the fill of the Chainage 385 feature shows strong vertical movement of bedrock slabs in a massive reddish clayey matrix (cf. Fig. CREr120805-13b sent earlier). Two gulls, at Chainages 401 and 405 (Fig. CREr020905-2), have slightly different sediment. The first point to note is that the upper fills of both these features have contorted pockets of reddish, very poorly sorted, very clayey fine gravel or gravelly clay; the gravel elements are usually rounded and siliceous, commonly of 'pea' size but with rarer pebbles up to c.5 cm in diameter (an example from the Chainage 401 feature is shown in Fig. CREr020905-16b, looking along a bearing of 340°; the scale has 10 cm intervals). It seems likely that these dirty gravels were derived by 'wet collapse' (possibly aided by true cryoturbation) from a surface mantle (no longer obvious as a coherent stratum), more or less immediately above the gulls. The rest of the fills comprise variegated clayey decomposition products, dolomitic 'ghosts', reddish dolomitic sands and red clays. In the feature at Chainage 401, all these sediments have been heavily deformed but, in the neighbouring feature at Chainage 405 (Fig. CREr020905-27), the central portion of the fill (at a GPS-estimated altitude of c.87 m AOD) is still clearly bedded, showing that lateral (long-fissure) streaming movement (of an irregular, pulsed type) probably accounts for a significant proportion of the fine sediment emplacement. By the time one reaches the more 'cave-like' feature at Chainage 425, not only chaotic debris flow but also much better sorted gravels are present (cf. Fig. CREr120805-5b sent earlier), showing that long-fissure movement, probably over significant lateral distances, was there dominant; the survival of altered zones at the fissure periphery indicate that no significant downward movement has occurred after the emplacement of these fills. In passing, I would note that the feature first described at the mid-line of the road at Chainage 425 is now traceable in both the northern and southern cutting faces, such that an alignment of 020°-200° can be reported, although the flow direction(s) are not clear.

There continue to be no archaeological or palaeontological finds whatsoever from the gull series at the Western Rise. I feel that, although one might try to derive an OSL reading from the still stratified central portion of the fills of the gull at Chainage 405, given the rather discontinuous sedimentation in a relatively deep fissure

environment, it is likely that the sediment would not have been thoroughly exposed to sunlight immediately before deposition (the process which sets the luminescence of grains at zero) and that the effort would not be justifiable. I have already noted that T&PAU have sampled the gravel from the feature at Chainage 425; I have asked that a sample of the 'pea' gravel from the feature at Chainage 401 also be taken, although the rarity of larger pebbles will make petrological comparison more difficult. I would advise that there is nothing further that need be done with the exposed gulls in this area.

In my understanding, the cutting for the new road is all but complete. Just in case something new should appear at the last moment, T&PAU should continue to observe the last half-width spit of bedrock being removed in the Central Ridge cutting, and (in due course) the c.1 m deep drainage lines wherever these need to cut *in situ* rock/sediment. The cutting of the drainage sumps towards the northeastern end of the new road line should also be watched; I would remind everyone of the (probably outside) possibility of the survival of loessic silts in that vicinity (and the fact that any such survival would be significant and worthy of further study).

I will continue to keep in touch with T&PAU, although, unless significantly different material should come to light, I do not think another visit from me will be needed (note that I shall be working abroad in the week commencing the 28th. September). Please let me know if you need any further information at present or if you have any particular instructions.

Best wishes,

Simon Collcutt

email cc. M. Lander (DCC)
J. Delaney (DCC)
H. Jones (T&PAU)

Fig. CREr020905-2

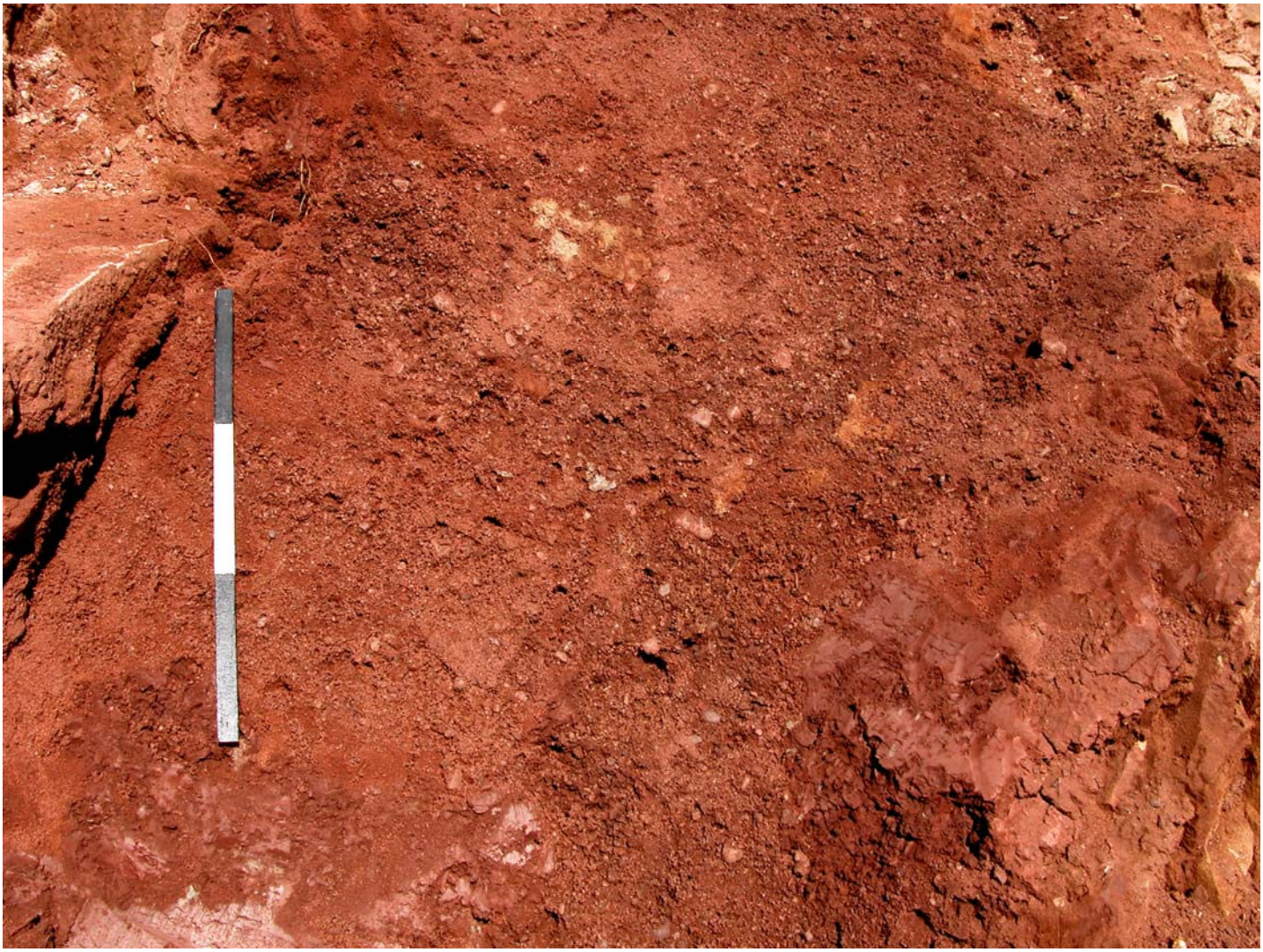


Fig. CREr020905-16b

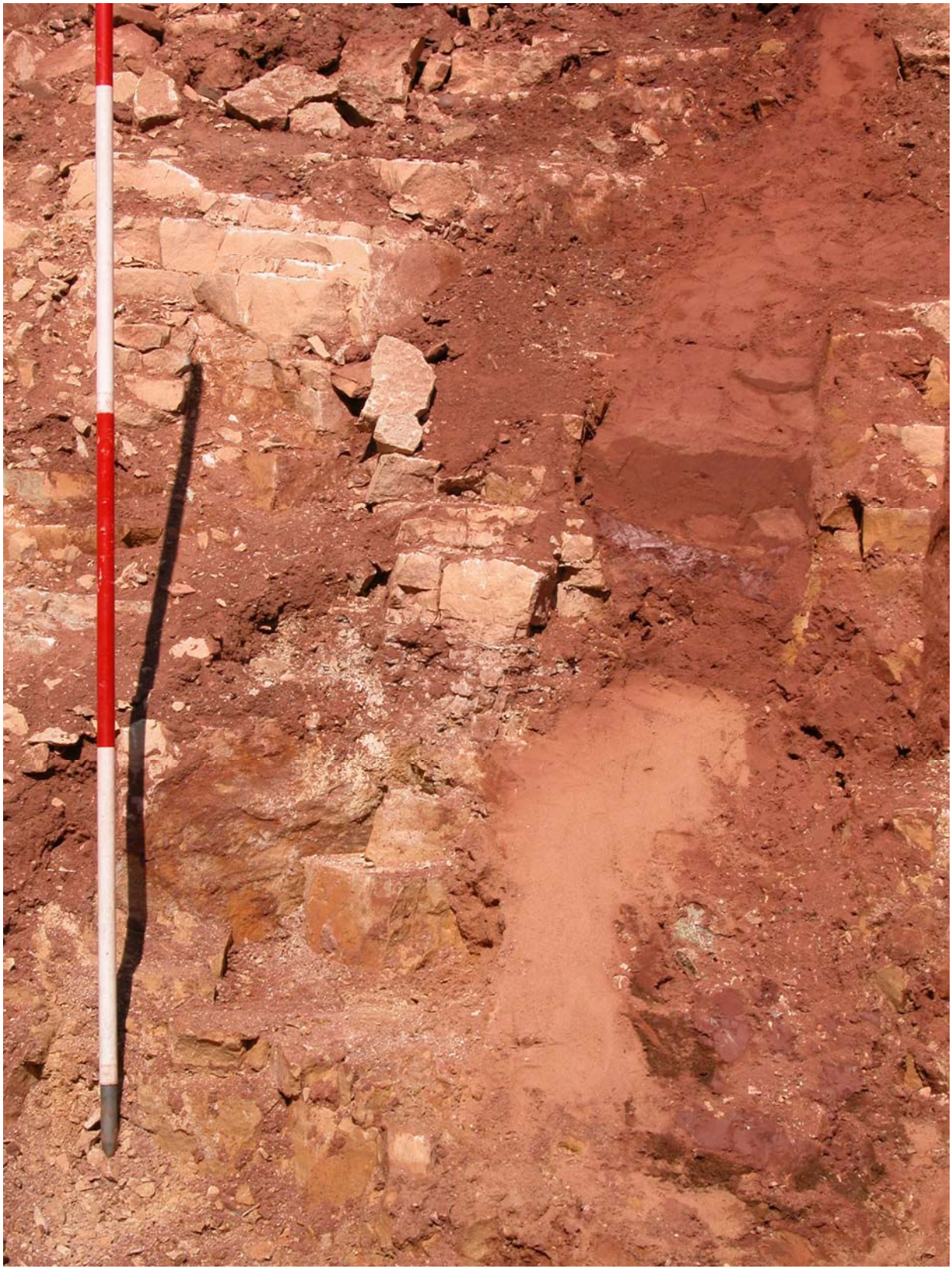


Fig. CREr020905-27

Fig. CREr020905-32b

Fig. CREr020905-37b

1 DIVINITY ROAD
OXFORD OX4 1LH

OXFORD ARCHAEOLOGICAL
ASSOCIATES LIMITED

Directors: Catherine A.F. Laoué
Jacqueline Russell
Simon N. Collcutt

Telephone (01865) 247374
Facsimile (01865) 242487
Email *oaa-consult@btconnect.com*

17th. September, 2005.

Dr. D. Barrett,
County Archaeological Officer,
Environmental Services Department,
County Hall,
Matlock,
Derbyshire DE4 3AG.

BY EMAIL

Dear Dave,

Re. B6042 Crags Road Diversion

Following the T&PAU notification of the intersection of the works with additional rock-bound features last week, I attended the site on Thursday (8th. September) with Barry Lewis. I here continue with my notes on my observations. Barry had again cleared sections of the deposits of interest and he was good enough to allow me to take preliminary photographs of his work, a few of which I shall append here (as separate individual emails to avoid too great a size) to help in my description.

You will recall that I have already reported (050905) that the works had cut through a discrete tube (still probably part of the general Intake Cave system), with a diameter of c.90 cm, at Chainage 582. The cutting through the Central Ridge has now been widened somewhat to accommodate appropriate lateral drainage. On the northwestern side, the previously reported tube is seen to plunge more or less vertically just 'behind' the previous exposure; in the face now exposed, this general zone is strongly permeated with fine tubes. On the southeast side of the cutting, the tube is identifiable at c.0.55 m below topsoil, with the base at c.1.95 m lower still. The 'tube' is therefore oval in cross-section (elongated vertical axis), and the lowest 0.5 m is actually a vadose trench (a notch cut by running water, after the general 'watertable' had dropped and the tube was no longer in the phreatic zone), still more than a metre higher than the top of the tube on the northwester side. Within the phreas, water can run locally 'uphill' (a siphon effect), but, with a free surface, the water that cut the vadose trench would have been running northwestwards (away from the Crags). This observation supports the general prediction that the karstic system in the vicinity of Creswell Crags is strongly compartmentalised by the geological structure (faulting) and that caves will not have formed running continuously at right angles to the gorge over long distances. All surviving sediments within the Chainage 580 tube are of debris flow type (emplaced later than stream flow and scouring/mixing any original stream sediments), as previously described.

A new feature, on a local alignment of 320°-140° (concordant with the known structure), has been intersected during the cutting of a soak-away, nearly at the northeastern end of the route. At Chainage 1020 on the eastern side of the soak-away, the feature presents as a reasonably regular tube (cf. Fig. CREr080905-7b looking ESE). There is a wide halo of rotted and fractured bedrock. The sediments within the tube are disposed in an almost concentric manner. The outer 10-20 cm comprise mottled (dark brown, grey, red-brown) sandy clay, with

significant manganese wad. The next 5-10 cm are a deep reddish clay. The silty clay core of the fill is light to mid-brown or yellowish brown; there is no structure, beyond manganese-traced microfissures and rootlet paths (all probably recent); there are a few small siliceous pebbles and common sandy limestone 'ghosts' at 1-5 mm diameter (fine 'grit' grade). This sediment is a diamict, probably emplaced in the vicinity by debris flow, but apparently forced under pressure into the final position now observed (this point will be taken up below).

At Chainage 1027 on the western side of the soak-away, the feature presents in a more complex manner. At first sight, judging from the wide occurrence of true sediment (not just limestone weathering residue), this would seem to be a relatively large feature (cf. Fig. CREr080905-2b looking WNW). The whole zone is full of more or less rotted bedrock fragments, which have clearly moved somewhat. The largest patches of (reddish) sediment are sandy in texture (dolomitic sand) and have retained their coherence due to the internal friction, whilst the more widespread 'veins' of clayier sediment have been injected between the bedrock clasts. Thus, the original scale and appearance was probably similar to that described above for Chainage 1020; what has happened a little to the north is that the fragmented bedrock above the karstic feature became so unstable that it foundered, the added pressure involved causing the sediment fill to fractionate, according to plasticity, with the clays being injected far out into the foundering mass. At Chainage 1020, the pressure effect has only involved slight movement, largely within the confines of the original tube (the disturbed blotches of wad at the periphery, rather than a continuous band, show that the bedrock had already been altered before cessation of movement). Whilst providing an interesting example of complex diagenesis ('geological aging'), there is nothing of special archaeological or environmental significance in this deformation.

At the Chainage 1020 exposure, both the reddish clay and the lower/outer part of the silty clay core have charcoal flecks (Fig. CREr080905-19b detail, with flecks appearing between the arrows, diameter <2 mm with a 0.5-1.0 mm mode), as well as flecks of similar manganese wad (the differentiation is reasonably simple, even in tiny flecks, since the manganese does not have the true black streak of the charcoal). There are also a very few similar charcoal flecks in the distorted sediments of the Chainage 1027 exposure (it is assumed that more such flecks could have been smeared/ground out, during the diagenetic plastic deformation at that location). A small sample was taken (and is held by T&PAU) from the less disturbed exposure on the eastern side. However, the distribution of the flecks, together with the complete absence of other signs of heating/burning and of bone or struck stone, strongly suggest that this is 'environmental' (i.e. not man-made) charcoal derived from natural surface fires. I do not believe that detailed (e.g. SEM) study of this material would be justified because, even if a few pieces could be identified, there would be no archaeological or chronological context with which to associate the data; it would perhaps be best just to float & sieve this sample, and to observe the flot and >0.5 mineral residue under optical microscope, as a simple check on the present conclusions.

I understand that cutting for the new road is now complete. I would confirm that no loessic silts or stratified hillwash bodies have come to light at any point during the road diversion project. I would therefore recommend that the fieldwork aspect of the conditioned archaeological scheme be formally discharged; if you have no further queries, perhaps you could take the necessary steps with your colleagues in Planning. I will liaise with T&PAU over the post-excavation needs; no doubt, Howard and Barry will be contacting you shortly concerning the appropriate specification.

Best wishes,

Simon Collcutt

email cc. M. Lander (DCC)
J. Delaney (DCC)
H. Jones (T&PAU)

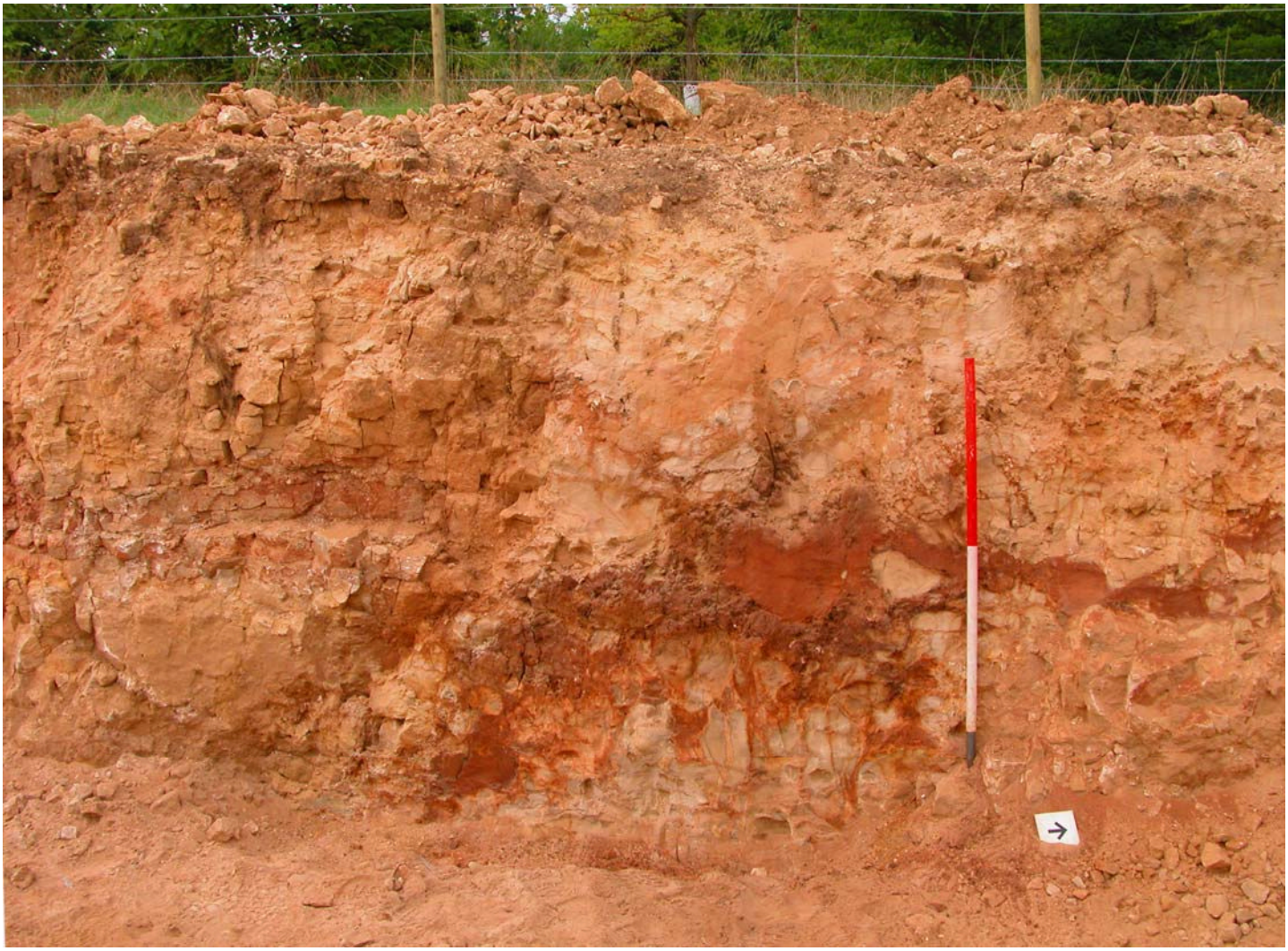


Fig. CREr080905-2b

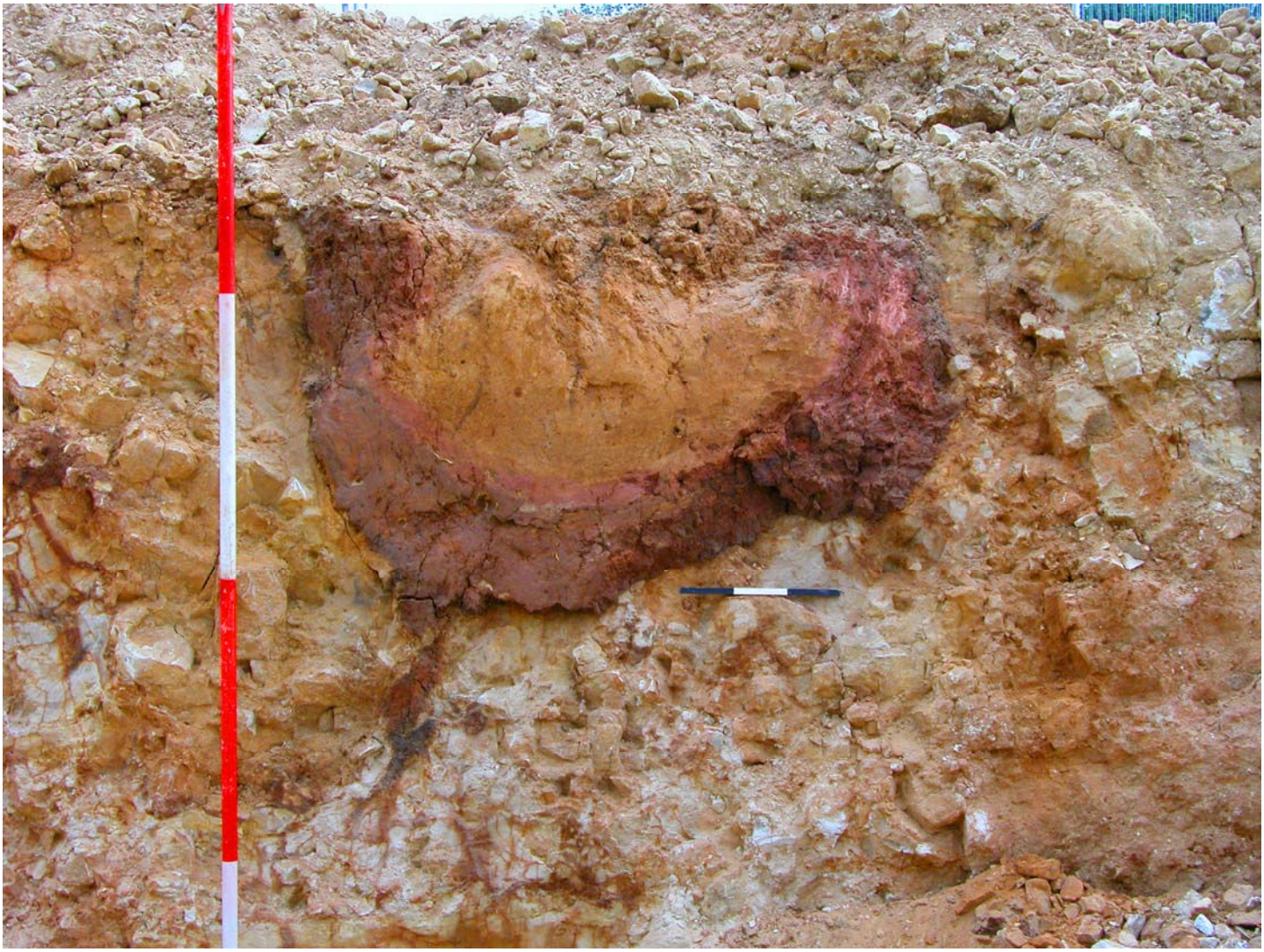


Fig. CREr080905-7b

Fig. CREr080905-19b

Appendix 2
Catalogue of Finds

Bone

New Road Catalogue of Bone

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	03	-	0001/0002	ACA	BONE	FRAGMENT		1	1	38	END OF LONGBONE, SAWN
CRA	31	-	SUBSOIL	ACB	BONE	FRAGMENT		1	1	1	CHAINAGE POINT 320

Mother Grundy's Parlour Catalogue of Bone

By Roger Jacobi and Jenny Brown

Bone									
Material	**Context**	**Find Code**	**Comment**	**Spit**	**Spit Depth**	**Grid Square**	**Recovery Method**	**Condition/ Fragmentation**	**Period**
Bone	1001	AAE	Very weathered fragment of large mammal limb bone	1	0.04		3D	Fragment.Weathered	?
Bone	1001	AAG	Small humerous - clearly modern	1	0.03		3D	Complete	Modern
Bone	1001	AAJ	Partial rib of artiodactyl - sheep?	1	0.04		3D	Partial	
Bone	1001	AAK	Burnt. Two fragments of large mammal bone, both clearly Piestoceen, and probably from older deposits in the cave. From upcast of earlier excavations.	1	0.04		3D	Fragments	Pleistocene
Bone	1001	AAM	Burnt? Fragment of large mammal limb bone? Pleistocene	1	0.04		3D	Fragment	Pleistocene
Bone	1001	AAO	Bird bone - modern	1	0.04		3D	Fragment	Modern
Bone	1001	AAP	Fragment of cheek tooth (?bovine, but needs comparative)	1	0.04m		3D	Fragment	
Bone	1001	AAR	Fragment of limb bone, possibly identifiable, needs comparative	1	0.01m		3D	Fragment	
Bone	1001	AAS	Surface. Unidentifiable, looks modern	1	0.01		3D	Fragment	Modern
Bone	1001	AAU	Fragment of heavily root-etched large mammal limb bone. Could be LUP or Mesolithic from condition	1	0.04		3D	Fragment	LUP/ Mesolithic
Bone	1001	AAV	Joins with ABZ, ACL - recent break. Fragment of scapula?	1	0.05		3D	Fragment	
Bone	1001	AAW	Bird bone - modern	1	0.05		3D	complete	Modern
Bone	1001	AAX	Surface find. Bird bone - modern	1	0.00		3D	Complete	Modern
Bone	1001	AAZ	Fragment of rib - hare sized. Age unknown	2	0.10m		3D	Fragment	Unknown
Bone	1001	ABC	Fragment of small bovid lower cheek tooth.	2	0.05m		3D	Fragment	
Bone	1001	ABD	Fragment of vertabra - needs comparative	2	0.07m		3D	Fragment	
Bone	1001	ABE	Fragment of large mammal limb bone - unidentifiable	2	0.10		3D	Fragment	
Bone	1001	ABF	Two small fragments of bovine tooth	2	0.06m		3D	Fragment	
Bone	1001	ABG	Fragment of carbonised large mammal bone	2	0.10		3D	Fragment	Mesolithic?
Bone	1001	ABH	Fragment of large mammal cortical bone - not worked.	2	0.10		3D	Fragment	

Bone									
Material	**Context**	**Find Code**	**Comment**	**Spit**	**Spit Depth**	**Grid Square**	**Recovery Method**	**Condition/ Fragmentation**	**Period**
Bone	1001	ABI	Fragment of limb bone from small artiodactyl - sheep/caw	2	0.08		3D	Fragment	
Bone	1001	ABJ	cf. bovine fragment of unerrupted tooth. Identifiable large mammal bone fragment	2	0.06		3D	Fragment	
Bone	1001	ABL	Large mammal bone - needs comparative - may be recent	2	0.10		3D	Fragment	
Bone	1001	ABO	Unidentifiable fragment	2	0.10		3D	Fragment	
Bone	1001	ABP	Fragment of carbonised large mammal bone. There is much carbonised bone from MGP - onepiece has been C14 dated to th Mesolithic c8500	2	0.10		3D	fragment	Mesolithic
Bone	1001	ABQ	Carbonised? Fragment of large mammal limb bone - could well be Pleistocene	2	0.10		3D	Fragment	Pleistocene?
Bone	1001	ABT	Fragment of carbonised large mammal bone	2	0.10		3D	Fragment	Mesolithic
Bone	1001	ABV	Rib? Fragment. Appears carbonised on internal surface	2	0.10		3D	Fragment	Mesolithic?
Bone	1001	ABY	Fragment of large mammal bone. Appears Pleistocene	2	0.10		3D	Fragment	Pleistocene
Bone	1001	ABZ	Fragment of large mammal bone (from scapula?)	2	0.08		3D	Fragment	
Bone	1002	ACL	Joins with AAV and ABZ. Scapula fragment most likely need checking. Small domestic cow if scapula	3	0.15		3D	Fragment	
Bone	1002	ACM	Fragment of large mammal bone limb bone. Appears Pleistocene	3	0.15		3D	Fragment	Pleistocene
Bone	1002	ACY	Very small fragment of large mammal limb bone unidentifiable	3	0.10-0.15	2	Sieved	Fragment	
Bone	1002	ACZ	Fragment of carbonised? Large mammal bone or could be deeply stained by manganese	3	0.10-0.15	3	Sieved	Fragments	
Bone	1001	ADA	Small scapula. Modern. Could be identified	2	0.05-0.10	2	Sieved	Fragment but near complete	Modern
Bone	1001	ADB	cf. Tibia shaft fragment. Small artiodactyl	2	0.05-0.10	2	Sieved	Fragment	Modern?
Bone	1001	ADC	Bovine tooth fragment. Needs checking	2	0.05-0.10	2	Sieved	Fragment	
Bone	1001	ADE	Large mammal. Gummeral shaft fragment. Check against bovid	1	0.0-0.05	1	Sieved	Fragment	
Bone	1001	ADF	Fragment of large mammal limb bone. Probably Pleistocene	1	0-0.05	1	Sieved	Fragment	Pleistocene?
Bone	1001	ADG	Fragment of carbonised large mammal bone	2	0.05-0.10	2	Sieved	Fragment	Mesolithic?
Bone	1001	ADH	Fragment of carbonised large mammal bone	2	0.05-0.10	4	Sieved	Fragment	Mesolithic?
Bone	1001	ADI	Minute fragment of bird bone	2	0.05-0.10	4	Sieved	Fragment	Modern
Bone	1001	ADJ	small mammal innominate. Could possibly be identified - needs comparative	2	0.05-0.10	4	Sieved	Complete?	
Bone	1001	ADK	Unidentifiable small fragment	2	0.05-0.10	4	Sieved	Fragment	Modern?
Bone	1001	ADL	Bird bone. Appears to have been eaten by small carnivore	1	0-0.05	4	Sieved	Fragment	Modern
Bone	1001	ADM	Femur. Modern juvenile - not identified	2	0.05-0.10	4	Sieved	Complete	Modern

Bone									
Material	**Context**	**Find Code**	**Comment**	**Spit**	**Spit Depth**	**Grid Square**	**Recovery Method**	**Condition/ Fragmentation**	**Period**
Bone	1001	ADN	Bird bone. Modern	1	0-0.05	3	Sieved	Complete	Modern
Bone	1001	ADO	This is identfiable but needs comparitive. Looks like a 'dp-4' of a very small bovid/cervid	2	0.05-0.10	2	Sieved	Near complete	
Bone	1001	ADP	Bird bone	1	0-0.05	6	Sieved	Fragment. Proximal?	Modern

Comments by R. Jacobi
No bone was recovered from either the New Road or Old Road excavations and watching briefs. Mother Grundy's Parlour produced a small and very fragmentary assemblage.

The MGP assemblage consisted of 52 small and fragmentary pieces of bone discovered during excavation. Of these, 7 were Pleistocene or probably Pleistocene; 7 were Mesolithic or probably Mesolithic; 12 were certainly modern; and the remainder were probably modern (R. Jacobi pers. comm.). The patination of the bone was indicative of their age as more securely dated bone from cave contexts within the gorge displays the same type and degree of patination (ibid). The Mesolithic and Palaeolithic bones comprised very small fragments of the larger limb bones of mammals, including bovid and cervid remains. All were less than 50mm in size, making identification difficult (ibid). Several of the ancient bones in the assemblage were carbonised recalling the discovery of many carbonised bones during earlier investigations within MGP.

A number of modern bones were recovered. Most of these were bird bones, including a small number of complete and identifiable fragments (see Appendix 2). One of these fragments (ADL) has carnivore damage (gnawing). A number of tooth fragments were also recovered (AAP, ABC, ABJ, ADC and ADO). These were mainly bovine in appearance, although ADO is possibly bovid/cervid.

The assemblage recovered from MGP is significant for the preservation of small bone fragments that may relate to the Pleistocene activity. Their presence emphasises the potential value of these deposits, reinforcing the need for archaeological monitoring of future works outside caves within the gorge.

Brick/tile

New Road Catalogue of Brick/tile

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	04	0008	0009	ACC	BRICK/TILE	TILE FRAGMENT, ROOF	PM	1	1	221	REGIONAL 'S'-SHAPED ROOF TILE [PI]. MORTAR STREAK ON SURFACE
CRA	13	-	0021	ACD	BRICK/TILE	FRAGMENTS	MED/PM	1	1		HARD-FIRED, STRIATIONS ONE SIDE ?FROM MOULD

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	13	-	0021	ACE	BRICK/TILE	FRAGMENTS	MED/PM	1	1		HARD-FIRED, STRIATIONS ONE SIDE ?FROM MOULD
CRA	15	-	0031	ACF	BRICK/TILE	TILE FRAGMENT	PM	1	1	119	FLAT TILE WITH NAIL HOLE
CRA	15	-	0033	ACG	BRICK/TILE	TILE FRAGMENTS	PM	1	1		FLAT TILE WITH 2 HOLES
CRA	15	-	0033	ACH	BRICK/TILE	TILE FRAGMENTS	PM	1	1		SMALL FRAGMENT

Clay pipe

New Road Catalogue of Clay Pipe

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	17	-	0041	ACJ	CLAY PIPE	STEM FRAGMENT	PM	1	1	3	

Mother Grundy's Parlour Catalogue of Clay Pipe

Clay Pipe										
Site Code	**Context**	**Spit**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**Weight(g)**	**Depth**	**Comment**
MGP	1001	2	ABK	CLAY PIPE	STEM FRAGMENT	PM/MOD	1	1	0.06m	
MGP	1001	2	ACD	CLAY PIPE	STEM FRAGMENT	PM/MOD	1	1	0.1m	SPUR
MGP	1001	1	ADS	CLAY PIPE	STEM FRAGMENT	PM/MOD	1	2	0-0.05m	SIEVED. GRID SQUARE 3

A number of clay pipe stems were recovered from Mother Grundy's Parlour, together with a single stem from the new Road works.

Flint/chert

New Road Catalogue of Flint

By Jenny Brown and Roger Jacobi

Flint												
Area	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**
CRA21	CH875	AAC	Honey-black translucent flint	Heavily		Flake/blade fragment			Proximal portion of anciently broken flake or blade. Yellow basket-work	Lower/Middle Palaeolithic		

Flint												
Area	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**
									patina			
CRA24/23	CH8005	AAD	Honey-black translucent flint	Heavily		Blade fragment			Mesial portion of blade. Part ancient and part recent damage.		0	0
CRA22	CH874	AAE	Honey-black translucent flint			Natural?					0	0
CRA25	CH702	AAG	Wolds-type flint			Blade fragment			Distal portion of blade, with mechanical damage	Meso/Neolithic	0	0
CRA26	CH684	AAH	Honey-black translucent flint			Blade-like flake			Plain platform. Mechanical damage.		30	16
CRA26	CH685	AAI	Honey-black translucent flint	Lightly		Crested blade fragment			Distal portion of crested blade broken in antiquity. Mechanical damage?	LUP/Meso/Early Neolithic	0	0
CRA26	CH656	AAJ	Honey-black translucent flint		Burnt	Burnt fragment					0	0
CRA27	CH638	AAK	Honey-black translucent flint	Heavily		Blade fragment			Distal portion of blade		0	0
CRA30	CH484	AAL	Honey-black translucent flint	Lightly		Flake/blade fragment			Distal portion of flake/blade fragment - recent break. Chalky cortex. Stained?		0	0
CRA30	CH460	AAM	Honey-black translucent flint			Flake			Plunging flake. Faceted platform. Removals at 90 degrees.		18	29
CRA31/30	CH450	AAN	Honey-black translucent flint	Lightly		Blade fragment	Miscellaneous retouched piece		Proximal portion of blade. Recent mechanical damage. Shattered butt.		0	0
CRA32	CH398.5	AAO	Honey-black translucent flint?	Heavily		Flake fragment	Microlith fragment - scalene triangle/rhomboid		Single platform. Retains some cortex. Impact scar used as burin?	Late Mesolithic	0	0
CRA32	CH361.5	AAP	Wolds-type flint			Natural					0	0
CRA35	CH230	AAQ	Honey-black translucent flint	Heavily		Flake			Plain platform. From single platform core. Mechanical damage		17	14
CRA36	CH183	AAR	Honey-black translucent flint	Heavily		Blade-like flake			From single platform. Plain platform?		28	16

Flint												
Area	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**
CRA36	CH200	AAS	Honey-black translucent flint	Lightly		Flake			Plain platform.		12	13
CRA36	CH170	AAT	Honey-black translucent flint	Lightly		Core fragment			Core fragment on flake		0	0
CRA32/33	CH350	AAU	Honey-black translucent flint	Heavily		Flake fragment	Leaf-shaped arrowhead		Green type 4B. Retouched over most of dorsal and ventral.	Early Neolithic	0	0
CRA30	CH459	AAV	Honey-black translucent flint			Flake fragment			From turned core		0	0
CRA30	CH458	AAW	Honey-black translucent flint	Lightly		Flake fragment			Proximal portion of flake/blade. Previous removals at 90 degrees		0	0
CRA30	CH457	AAX	Honey-black translucent flint			Blade			Plain platform. Primary removal. Soft hammer removal. Mechanicl damage.		27	12
CRA29	CH520	AAY	Honey-black translucent flint			Core fragment					0	0
CRA32	CH350	AAZ	?		Calcined	Flake fragment	End scraper on flake		Recent break		0	0
CRA26	CH665	ABA	Honey-black translucent flint			Flake fragment	Leaf-shaped arrowhead fragment		Cortex on dorsal. Retouch around edge of ventral. Massive impact damage?		0	0
CRA30	CH465	ABB	Grey opaque flint			Polished axe fragment					0	0
CRA34	CH265	ABD	Grey speckled flint	Lightly		Chunk					0	0
CRA32	CH320	ABE	Honey-black translucent flint		Burnt	Flake/blade fragment			Mesial fragment of chunky flake or blade		0	0
CRA32	CH380	ABF	Black chert			Chip					0	0
CRA32	CH380	ABG	Honey-black translucent flint			Chunk			On older patinated piece		0	0
CRA33	CH345	ABI	Black chert			Natural					0	0
CRA32	CH365	ABJ	Honey-black translucent flint	Lightly		Broken piece			Proximal fragment of broken piece.		0	0
CRA36	CH192	ABK	Honey-black			Flake			Primary flake. Cortical		19	23

Flint												
Area	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**
			translucent flint						platform. Recent mechanical damage.			
CRA	CH436	ABM	Grey speckled flint			Core fragment	Scraper	Core on flake, reused	Opposed platform core. ??Neolithic as not corticated		0	0
CRA34	CH264	ABN	Wolds-type flint?			Flake			Primary flake		13	13
CRA34	CH262	ABO	Honey-black translucent flint			Flake fragment			Shattered butt. Mechanical damage.		0	0
CRA36	CH182	ABP	Black chert			Flake/blade fragment			Thermal damage		0	0
CRA35	CH241	ABQ	?	Heavily		Flake fragment	Microlith - scalene triangle		Has been through the crop of a game bird.	Late Mesolithic	0	0
CRA32	CH360	ABR	Honey-black translucent flint			Bladelet			From opposed platform core. Mechanical damage.		25	10
CRA35/36	CH200	ABS	Honey-black translucent flint	Lightly		Chunk					0	0
CRA37		ABT	Honey-black translucent flint	Lightly		Core		Flake and bladelet removals	Frost shattered fragment		0	0
CRA13		ABU	Black chert			Blade					25	14
CRA05		ABV	Honey-black translucent flint			Chunk			Mechanical damage		0	0

Old Road and Associated Works Catalogue of Flint

By Barry Lewis and Jenny Brown

Flints												
Site Code	**Area**	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**
CRA (Old Rd)	203	1014	ABW	Chert	no		Flake			Chert flake - likely to be Mesolithic	Meslithic	21mm	14mm
CRA (Old	203	1013	ABX	Flint?	slightly		Bladelet			Tip of minute bladelet - now in two pieces.	Mesolithic?	6mm	2mm

Flints													
Site Code	**Area**	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**
Rd)													
CRA (Old Rd)		U/S	ABY	Flint	medium patination		Bladelet			Mesial fragment of bladelet. Anciently broken at distal end, recent break at proximal. Late Mesolithic/early Neolithic. Found in field during watching brief to NNW of Crags Lodge in spoil heap. GPS +/-7m SK5371174542	Late Mesolithic/Early Neolithic	18mm	12mm

Mother Grundy's Parlour Catalogue of Flint

By Jenny Brown and Barry Lewis (identification by R. Jacobi – Pers Comm)

Flint														
Site Code	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**	**Spit**	**Spit Depth**
MGP	1001	AAC	Flint		burnt and crazed	blade?	End/thumbnail scraper		Burnt fragment of very small end and side scraper, or thumbnail scrapers. N.b. there are both LUP and Mesolithic scrapers from MGP. From its small size, probably Mesolithic	Mesolithic	13mm	9mm	1	0.04m
MGP	1001	AAF	Flint	lightly		blade-like			Mesial fragment, probably from bladelet. Recent break at proximal end.	Mesolithic?	11mm	5mm	1	0.02m
MGP	1001	ABB	Flint	?	Burnt	flake/blade fragment			Mesial fragment of flake or blade (burnt)		14mm	17mm	2	0.1m
MGP	1001	ABM	Flint/chert?		burnt and crazed	unknown			Uninterpretable fragment of burnt larger artefact		22mm	20mm	2	0.07m
MGP	1001	ABN	Flint	fairly heavily		bladelet			Distal fragment. Probably from bladelet. Recent break.	Mesolithic	8mm	6mm	2	0.1m
MGP	1001	ABS	Flint	lightly		Chip			Chip with hinge termination		8mm	6mm	2	0.1m
MGP	1001	ABU	Flint	Heavily		blade Fragment			Mesial fragment from anciently broken bladelet	Mesolithic	23mm	9mm	2	0.1m
MGP	1001	ABX	Flint		Burnt?	Chip			Burnt/ chip		6mm	5mm	2	0.1m
MGP	1002	ACE	Flint	Lightly		Chip			Small broken piece		14mm	9mm	3	0.15m
MGP	1002	ACH	Grey Flint	very lightly		Chunk			Small broken piece (not east to interpret)		11mm	5.5mm	3	0.13m
MGP	1002	ACI	Flint	Fairly heavily		Blade-like?	Scraper? Spall		Spall from trimming the edge of a scraper. From its distictive	Late Upper Palaeolithic	10mm	5mm	3	0.15m

Flint														
Site Code	**Context**	**Find Code**	**Material**	**Corticated**	**Burnt**	**Form**	**Tools**	**Core**	**Comment**	**Periods**	**Length**	**Breadth**	**Spit**	**Spit Depth**
									patination this is almost certainly LUP.					
MGP	1002	ACJ	Flint	?	Lightly heated	Blade			Proximal fragment, most probably from a blade. Facetted butt. Ancient distal break.	Mesolithic?	19mm	17mm	3	0.15m
MGP	1002	ACK	Flint	Fairly heavily		Blade-like	Burin		Burin spall. Partially retouched along edge to guide its removal. Burins are few at MGP	Mesolithic?	17mm	4mm	3	0.15m
MGP	1002	ACN	Flinty-chert	very lightly	burnt	Flake or Blade			Spall removed from flake or balde as a result of burning. Raw material appears to be flinty-chert, therfore Mesolithic	Mesolithic	16mm	11mm	3	0.1-0.15m
MGP	1002	ACO	Translucent-grey Flint	Lightly		Chip			Small Chip		12mm	7mm	3	0.1-0.15m
MGP	1001	ACP	Flint	Yes		Bladelet?			Mesial Fragment, broken piece of bladelet(?)	Mesolithic?	8mm	7mm	2	0.05-0.10m
MGP	1001	ACQ	Flint	Fairly heavy		Blade			Spall from backing a backed blade, or from making a notch for microburin technique	Mesolithic?	8mm	4mm	2	0.05-0.1m
MGP	1001	ACR	Flint	Fairly heavy		bladelet			Mesial fragment of bladelet?. Broken piece		8mm	5mm	2	0.05-0.10m
MGP	1001	ACS	Flint	Failry heavy		Chip			Chip		10mm	6mm	2	0.05-0.10m
MGP	1001	ACT	Flint	Fairly heavy		Spall			Spall, almost certainly from amking notch as part of microburin technique	Mesolithic?	12mm	7mm	2	0.05-0.10m
MGP	1001	ACU	Flint	Fairly heavy	appears burnt	blade/flake fragment			Fragment of small crested balde or flake. Appears burnt	LUP/Neolithic	9mm	6mm	2	0.05-0.10m
MGP	1001	ACV	Flint		Burnt and crazed	Chunk			Burnt flint fragment		10mm	8mm	2	0.05-0.10m
MGP	1001	ACW	Flint	Medum paitination		Flake			Small flke with hinge termination		15mm	14mm	1	0.0-0.05m
MGP	U/S	ACX	Flint/flinty chert	Medium patination		Bladelet			Mesial fragment of an anciently broken bladelet. Found by workmen	Mesolithic?	20mm	10mm		

Flint and Chert Artefacts **By J. Brown**

New Road

During the watching brief on the New Road 43 pieces of potentially worked flint and chert were recovered. One was found to be glass, and three have been identified as natural, leaving 39 pieces of humanly-modified flint and chert. The pieces were examined and a basic catalogue created detailing material, any burning or cortication, the form of each piece, and any other pertinent information such as mechanical damage or the nature of a tool, with categories chosen to highlight the diagnostic features of the assemblage. Complete flakes and blades were measured to provide breadth/length ratios. The important points are commented on below, with a basic catalogue of all the pieces presented as Appendix 2 and distribution plots in Figures 7 and 8.

Dating

Much of flint in this collection is corticated to varying degrees, as might be expected in an area with limestone geology. It would appear that these variations in cortication cannot be used as an aid in providing relative ages for the pieces since, for example, one leaf-shaped arrowhead has no cortication (ABA) whilst the other (AAU) is heavily corticated, yet both belong in the Early Neolithic (c.4500 BC). However broad dating of flintwork can be made on the basis of the form of the tools and debitage, and on the manner by which the flint is knapped. It would appear that the flint from this collection represents human activity at several periods in prehistory.

AAC is the proximal portion of an anciently broken flake or blade, covered in a dense, yellow, basket-work patina such as is found only on Lower or Middle Palaeolithic pieces (Dr Roger Jacobi, pers. comm.). This could well be the oldest artefact found so far in the Creswell area (Dr Roger Jacobi, pers. comm.). AAC can be seen in Figure 8.

AAO and AAQ are two geometric microliths that are diagnostic of activity in the Late Mesolithic (c.6000 to 4500 BC). AAO is part of a scalene triangle or rhomboid, and ABQ is a scalene triangle much rounded by passage through the gut of a game bird. Also likely to be from this period are four black chert flakes (ABF, ABI, ABP and ABU). The area around Creswell has produced quantities of tools and debitage made of black chert attributed with confidence to the Late Mesolithic (Dr Roger Jacobi, pers. comm.).

Activity in the Neolithic is demonstrated by a fragment from leaf arrowhead AAU and arrowhead fragment ABA which are classically dated to the Early Neolithic. It is possible that the flint axe fragment ABB also dates to this period. The two leaf arrowheads are dissimilar, and do not necessarily suggest production at the same time in the Early Neolithic. AAU is small, slim but thickish, of Green type 4B/l (Green 1980, 72), heavily retouched on both faces and almost undamaged. ABA is broken (apparently the product of massive impact damage), with perhaps half of the original remaining. It was part of a larger, but thinner, arrowhead than AAU; it is broader in relation to its length, and is perhaps a Green type 3B/p (Green 1980, 71). It is much less retouched and still retains cortex on the dorsal surface.

The debitage has a high proportion of small flint blades and bladelets, both complete and fragmentary, and a core (ABT) and three core fragments (AAT, AAY, and ABM) from which these could have been produced. They probably result from knapping activity in the Late Mesolithic or Early Neolithic. The majority of blades and fragments lack intact platforms, and only ABU exhibits the platform preparation and abrasion most usually to be seen on pieces from blade technologies. The size of crested blade AAI suggests that it could be Upper Palaeolithic, but it could as easily be later, perhaps Mesolithic or Early Neolithic, as could the large blade fragment of Wolds-type flint AAG. Measurements of breadth/length ratios of complete flakes and blades, and the

application of the resulting profiles as suggested by Pitts and Jacobi (Pitts, 1978; Pitts and Jacobi, 1979), broadly supports a date in the Late Mesolithic or Early Neolithic, although the amount of data is small. A number of obvious blade fragments cannot be included.

AAZ, a calcined end scraper on a thick triangular flake, is not dateable.

Materials

Most of the flint is corticated to some degree, sometimes making identification of the raw material difficult. However, it seems that translucent flint, honey-to-black in colour, predominates in the collection, with much smaller amounts of grey speckled flint and grey/white opaque Wolds-type flint.

Where present, the cortex is generally worn and rolled, indicating a source derived from a river deposit. The flint is mostly of good quality, but appears to come from small nodules. The size of the pieces and the nature of the raw materials are both typical of collections from river gravels and associated deposits found in the Trent Valley, and other Nottinghamshire river valleys. Most of the flint is almost certainly obtained from gravels and associated deposits, probably to the south and east of Creswell Crags.

The collection also includes a fragment of polished flint axe made from grey/white Wolds-type flint. Although small pieces of this type of flint may have been found in gravels and associated deposits, the most probable source of flint large enough to produce these tools is in the Lincolnshire or Yorkshire Wolds, implying trade or exchange either of raw material or, most probably, of finished axes.

The four black chert flakes are small and could just conceivably have come from nodules obtained from gravels or related deposits. However the area around Creswell is known for collections of tools and debitage made of this good quality black chert, which is certainly attributable to the Late Mesolithic (Dr Roger Jacobi, pers. comm.). Examples of black chert were discovered at nearby Elmton. The quantity is such that it is assumed that blocks were transported into the area from a primary source, presumably the carboniferous limestones of northern Derbyshire, not too far to the west. Radley's 1964 map of known Mesolithic findspots of black chert in the Southern Pennines (Radley, 1964, 34) includes Mother Grundy's Parlour, Creswell, as an outlier.

Site function

The flint and chert was recovered from a large area along the line of the New Road, approximately 1100m long and 20m wide, and showed no obvious concentrations. Most came from subsoil deposits, but none was stratified within features. Given the size of the area, the amount of material recovered was quite small and probably represents little more than a background scatter of casual losses. The date range of the material spans from the Mesolithic to the Neolithic with some emphasis on the later Mesolithic and earlier Neolithic based on tool forms.

Between Areas 36 to 22 (see Figs 7 and 8) there was a fairly even distribution of flints with a trend towards loose 'clusters' on the higher ground, particularly on the first ridge overlooking the vale, in the direction of Creswell village. A second cluster was within the dip between the two ridges. There are two possible causes for this: 1) movement downslope due to colluviation and bioturbation, or, 2) the dip between the ridges offered some shelter for working with tools and weapons. One interesting observation that might be made is that the types of tools, i.e. microliths for projectile points, two leaf shaped arrowheads, part of a polished flint axe, scrapers and blades, might represent transient hunting and look-out activities utilising the higher ground during the later Mesolithic/early Neolithic.

The tools recovered during the excavation are: four projectile points (two microliths, AAO and ABQ, and two leaf-shaped arrowheads, AAU and ABA), a fragment of polished flint axe (ABB), two scrapers (AAZ, an endscraper on a flake, and ABM, a core fragment on a flake, which has been retouched to form a scraper), and a miscellaneous retouched blade (AAN). These tools represent human activity within two distinct periods in the Late Mesolithic and the Early Neolithic. The debitage could fit with either or both periods. Given the dispersed nature of the finds it is not reasonable to group them in an attempt to reconstruct episodes of human activity.

It is interesting that two Early Neolithic leaf-shaped arrowheads were recovered here, as none have so far been recovered from the nearby Creswell Crags caves, although there are fragments of an Early Neolithic plain round-bottomed bowl and human bone from Robin Hood Cave (Dr Roger Jacobi, pers. comm.). Nearby Whitwell long Cairn did, however, produce contemporary material (Knight and Brown 1995).

Flint and Chert Artefacts from the Old Road

Stone artefacts recovered during the Old Road excavations included a single chert flake (ABW) from beneath the old road in Area 203 (context 1014) and a minute tip of a very small bladelet (ABX), found at the interface of 1014 and 1013. The latter was found close to the wall formerly running through the gorge; extensive animal burrowing activity was noted at this location and the artefact is therefore likely to be residual.

The only other lithic artefact from the Old Road is an unstratified mesial fragment of bladelet (ABY), anciently broken at the distal end and more recently at its proximal end. This may be assigned a Late Mesolithic/early Neolithic date, and was found during a watching brief at SK53711 74542 (GPS +/-7m) in Area 307.

Mother Grundy's Parlour by Barry Lewis and Jenny Brown, comments by R. Jacobi

A collection of mainly small and fragmentary artefacts was discovered during work at Mother Grundy's Parlour. These represented the discarded objects of earlier excavations within the cave and predominantly dated from the Mesolithic and Palaeolithic.

Many of the lithic artefacts were broken, with a maximum of 23mm and an average length of around 10mm. The flints were consistently within the size and form range of the Mesolithic period, with the exception of ACI (which was likely to have been of Late Upper Palaeolithic date) and ACU (a fragment of a small crested blade, which could be of Neolithic or Late Upper Palaeolithic date) (R. Jacobi pers. comm.) The only obvious tool was the burnt fragment of a thumbnail/end scraper of Mesolithic date (AAC). Other finds were spalls from tools.

Glass

New Road Catalogue of Glass

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	24	-	TOPSOIL	AAF	GLASS	FRAGMENT	PM	1	1	1	CHAINAGE POINT 782 (N)
CRA	13	-	0016	ACK	GLASS	FRAGMENT	MED/PM	1	1	2	WINDOW GLASS
CRA	15	-	0031	ACL	GLASS	BOTTLE FRAGMENTS	PM	1	1		3 BOTTLE BASES, ONE STAMPED ' ...BLE WATERS DAYBRO...'
CRA	15	-	0031	ACM	GLASS	BOTTLE FRAGMENTS	PM	1	1		3 BOTTLE BASES, ONE STAMPED ' ...BLE WATERS DAYBRO...'
CRA	15	-	0031	ACN	GLASS	BOTTLE FRAGMENTS	PM	1	1		3 BOTTLE BASES, ONE STAMPED ' ...BLE WATERS DAYBRO...'
CRA	15	-	0033	ACO	GLASS	BOTTLE + FRAGMENTS	PM	1	1		BASE OF NARROW RECTANGULAR BOTTLE + WINDOW GLASS
CRA	15	-	0033	ACP	GLASS	BOTTLE + FRAGMENTS	PM	1	1		BASE OF NARROW RECTANGULAR BOTTLE + WINDOW GLASS
CRA	15	-	0033	ACQ	GLASS	BOTTLE + FRAGMENTS	PM	1	1		BASE OF NARROW RECTANGULAR BOTTLE + WINDOW GLASS
CRA	15	-	0034	ACR	GLASS	FRAGMENTS, VESSEL	PM	1	1		
CRA	15	-	0034	ACS	GLASS	FRAGMENTS, VESSEL	PM	1	1		
CRA	15	-	0037	ACT	GLASS	FRAGMENT, WINDOW	PM	1	1	29	
CRA	26	-	SUBSOIL	ACU	GLASS	FRAGMENT	MED/PM	1	1	4	CHAINAGE POINT 842 (N)

Mother Grundy's Parlour Catalogue of Glass

Glass										
Site Code	**Context**	**Spit**	**Find Code**	**Material**	**Object**	**Period**	**Count**	**Weight(g)**	**Depth**	**Comment**
MGP	1001	1	ADT	GLASS	FRAGMENT	PM/MOD	1	3	0-0.05m	SIEVED. GRID SQUARE 1. CLEAR
MGP	1001	2	ADU	GLASS	FRAGMENT	PM/MOD	1	2	0.05-0.1m	SIEVED. GRID SQUARE 2. GREEN. LETTERING ..ER…
MGP	1001	1	AAA	GLASS	FRAGMENT	PM/MOD	1	8	0.04m	CLEAR
MGP	1001	1	AAT	GLASS	FRAGMENT	PM/MOD	1	2	0.05m	CLEAR
MGP	1001	1	AAY	GLASS	FRAGMENT	PM/MOD	1	7	0.05m	CLEAR
MGP	1001	2	ABW	GLASS	FRAGMENT	PM/MOD	1	9	0.1m	CLEAR
MGP	1001	2	ACC	GLASS	FRAGMENT	PM/MOD	1	1	0.1m	CLOUDY
MGP	1001	1	AAI	GLASS	FRAGMENT		1	1	0.04	CLOUDY

Glass bottle fragments were recovered from the New Road and represented post-medieval discarding of rubbish, perhaps from Victorian picnickers. A single piece of modern window glass was recovered from Area 15 of the New Road.

Metal

New Road Catalogue of Metal

CRA FINDS											
Site Code	Area	Feature	Context	FindCode	Material	Object	Period	Count	NoBags	Weight(g)	Comment
CRA	23	-	SUBSOIL	-	METAL	IRON, FRAGMENT		1	1	15	CHAINAGE POINT 900 (S)
CRA	13	-	0023	-	METAL (IRON)	NAIL	MED/PM	1	1	69	SQUARE SECTION, 95mm LENGTH SURVIVING
CRA	15	-	0037	-	METAL	FRAGMENTS, TUBE?		6	1	6	

Mother Grundy's Parlour Catalogue of Metal

Metal										
Site Code	Context	Spit	Find Code	Material	Object	Period	Count	Weight(g)	Depth	Comment
MGP	1001	2	ABR	METAL, IRON	6" NAIL	PM/MOD	1	40	0.1m	
MGP	1001	1	ADV	METAL, IRON	2" NAIL?	PM/MOD	1	4	0-0.5m	SIEVED. GRID SQUARE 1
MGP	1001	1	ADW	METAL, IRON	2" NAIL?	PM/MOD	1	4	0-0.5m	SIEVED. GRID SQUARE 4
MGP	1001	2	ADX	METAL, IRON	FRAGMENT		1	18	0.5-0.1m	SIEVED. GRID SQUARE 1. RECTANGULAR, SQUARE SECTION, FLATTENED AT END

A very small number of metal artefacts were recovered from the New Road works and from MGP. Objects from the New Road included a single square section nail of post-medieval date. Nails from MGP included two 2 inch nails and a 6in nail. These, along with a Bakelite-type tag with a hole at one end, had been used as markers during the earlier excavations. A flattened piece of metal deriving from an object of unknown form was also recovered.

Plastic

Mother Grundy's Parlour Catalogue of Plastic

Plastic										
Site Code	Context	Spit	Find Code	Material	Object	Period	Count	Weight(g)	Depth	Comment
MGP	1001	2	ACB	PLASTIC? / BAKELITE?	OBJECT, RECTANGULAR		1	9	0.1m	RECTANGULAR, WITH PERFORATED END. ?MARKER TAG FROM C20th EXCAVATIONS (BL)

Pottery

New Road Catalogue of Pottery

CRA FINDS											
Sitecode	Area	Feature	Context	FindCode	Material	Object	Period	Count	NoBags	Weight(g)	Comment
CRA	23	-	SUBSOIL	ABL	POT	BODYSHERD	PM	2	1	8	CHAINAGE POINT 730 (N). PINK EARTHENWARE, YELLOW GLAZE WITH BROWN FLECKS INSIDE. SHERDS JOIN
CRA	01	-	0002/0001	ACV	POT	HANDLE FRAGMENT	MED	1	1	15	BUFF, MOTTLED GREEN GLAZE
CRA	01	-	0002/0001	ACW	POT	BASE ANGLE	MED	1	1	84	BUFF, SANDY, GREEN GLAZE SPLASHES OUTSIDE
CRA	01	-	0002/0001	ACX	POT	BODYSHERD	PM	1	1	21	BUFF EARTHENWARE, YELLOW GLAZE BOTH SIDES
CRA	01	-	0002/0001	ACY	POT	BASE FRAGMENT	PM	1	1	13	BUFF EARTHENWARE, WHITE GLAZE BOTH SIDES; PLATE
CRA	01	-	0002/0001	ACZ	POT	BODYSHERD	PM	1	1	2	BUFF EARTHENWARE, WHITE GLAZE/ WHITE & BLUE GLAZE
CRA	01	-	0002/0001	ADA	POT	BODYSHERD	PM	1	1	9	STONEWARE, BROWN GLAZE BOTH SIDES, DECORATIVE DETAIL OUTSIDE
CRA	01	-	0002/0001	ADB	POT	BODYSHERD	PM	1	1	3	STONEWARE, BROWN GLAZE BOTH SIDES
CRA	03	-	0001/0002	ADC	POT	RIM	PM	1	1	23	GREY-BROWN CLAY, GLAZED BROWN BOTH SIDES
CRA	03	-	0001/0002	ADD	POT	BASE ANGLE	PM	1	1	150	STONEWARE, GLAZED CREAM & BROWN
CRA	03	-	0001/0002	ADE	POT	RIM	PM	1	1	70	COARSE RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	03	-	0001/0002	ADF	POT	BASE ANGLE	PM	1	1	149	COARSE RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	03	-	0001/0002	ADG	POT	RIM	PM	1	1	70	COARSE RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	03	-	0001/0002	ADH	POT	BODYSHERD	PM	1	1	56	COARSE RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	03	-	0001/0002	ADI	POT	RIM	PM	1	1	29	CREAM CLAY, WHITE GLAZED BOTH SIDES; BOWL OR DISH
CRA	03	-	0001/0002	ADJ	POT	RIM	PM	1	1	10	WHITE CLAY, GLAZED BLUE & WHITE PATTERNED SURFACE, WHITE UNDERSIDE; PLATE
CRA	03	-	0001/0002	ADK	POT	BODYSHERD	PM	1	1	9	GREY-BROWN CLAY, BROWN GLAZED BOTH SIDES

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	04	0008	0009	ADL	POT	BASE ANGLE	PM	1	1	44	HARD-FIRED , INCOMPLETE PITTED BROWN GLAZE INSIDE, GLAZE SMUDGE ON BASE
CRA	10	-	0013	ADM	POT	BODYSHERD	PM	1	1		COARSE RED EARTHENWARE, GLAZED BROWN INSIDE. PIECES JOIN
CRA	10	-	0013	ADN	POT	BODYSHERD	PM	1	1		COARSE RED EARTHENWARE, GLAZED BROWN INSIDE. PIECES JOIN
CRA	13	-	0016	ADO	POT	BODYSHERD	PM	1	1	3	COARSE RED EARTHENWARE, UNGLAZED
CRA	13	-	0017	ADP	POT	BODYSHERDS	PM	1	1		COARSE RED EARTHENWARE, GLAZED BROWN INSIDE, PARALLEL GROOVES OUTSIDE
CRA	13	-	0017	ADQ	POT	BODYSHERDS	PM	1	1		COARSE RED EARTHENWARE, GLAZED BROWN INSIDE, PARALLEL GROOVES OUTSIDE
CRA	13	-	0017	ADR	POT	BODYSHERDS	PM	1	1		COARSE RED EARTHENWARE, GLAZED BROWN INSIDE, PARALLEL GROOVES OUTSIDE
CRA	13	-	0019	ADS	POT	RIM	PM	1	1	45	COARSE RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	13	-	0019	ADT	POT	RIM	MED	1	1	25	SHELLY
CRA	13	-	0020	ADU	POT	BODYSHERD	PM	1	1	7	COARSE RED EARTHENWARE, BROWN GLAZED INSIDE, SMUDGE OUTSIDE
CRA	13	-	0020	ADV	POT	BODYSHERD	PM	1	1	3	BUFF EARTHENWARE, BLACK GLAZED BOTH SIDES
CRA	15	-	0031	ADW	POT	BODYSHERD	PM	1	1	44	RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	15	-	0034	ADX	POT	BODYSHERDS	PM	1	1		RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	15	-	0033	ADX	POT	BODYSHERD	PM	1	1	15	BUFF EARTHENWARE, BROWN GLAZE OUTSIDE, BUFF GLAZE INSIDE
CRA	15	-	0034	ADY	POT	BODYSHERDS	PM	1	1		RED EARTHENWARE, GLAZED BROWN INSIDE
CRA	15	-	0034	ADZ	POT	BODYSHERD	PM	1	1		RED EARTHENWARE, GLAZED BROWN INSIDE. FRAGMENTS JOIN
CRA	15	-	0034	AEA	POT	BODYSHERD	PM	1	1		RED EARTHENWARE, GLAZED BROWN INSIDE. FRAGMENTS JOIN
CRA	15	-	0034	AEB	POT	BODYSHERD	PM	1	1	8	STONEWARE, GLAZED BROWN OUTSIDE, GREY-GREEN INSIDE
CRA	15	-	0037	AEC	POT	HANDLE	PM	1	1	19	WHITE EARTHENWARE, WHITE GLAZE, BLUE PAINT OR TRANSFER
CRA	15	-	0037	AED	POT	BASE ANGLE	PM	1	1	20	WHITE EARTHENWARE, WHITE GLAZE, BLUE TRANSFER
CRA	15	-	0037	AEE	POT	BODYSHERD	PM	1	1	36	BUFF EARTHENWARE, GREY-BUFF GLAZE
CRA	15	-	0037	AEF	POT	RIM	PM	1	1	5	WHITE EARTHENWARE, WHITE GLAZE, BLUE TRANSFER
CRA	15	-	0037	AEG	POT	RIM	PM	1	1	19	WHITE EARTHENWARE, WHITE GLAZE, BLUE TRANSFER

CRA FINDS											
Sitecode	**Area**	**Feature**	**Context**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Comment**
CRA	15	-	0037	AEH	POT	BODYSHERD	PM	1	1	3	WHITE EARTHENWARE, WHITE GLAZE, BLUE PAINT OR TRANSFER
CRA	15	-	0037	AEI	POT	BODYSHERD	PM	1	1	3	WHITE EARTHENWARE, WHITE GLAZE, BLUE PAINT OR TRANSFER
CRA	15	-	0037	AEJ	POT	BODYSHERD	PM	1	1	40	WHITE EARTHENWARE, MOTTLED BLUE & WHITE GLAZE
CRA	17	-	0041	AEK	POT	BASE ANGLE	PM	1	1		FRAGMENTS ALL JOIN (AEK-AEO)
CRA	17	-	0041	AEL	POT	BASE ANGLE	PM	1	1		FRAGMENTS ALL JOIN (AEK-AEO)
CRA	17	-	0041	AEM	POT	BASE ANGLE	PM	1	1		FRAGMENTS ALL JOIN (AEK-AEO)
CRA	17	-	0041	AEN	POT	BASE ANGLE	PM	1	1		FRAGMENTS ALL JOIN (AEK-AEO)
CRA	17	-	0041	AEO	POT	BASE ANGLE	PM	1	1		FRAGMENTS ALL JOIN (AEK-AEO)
CRA	24	-	SUBSOIL	AEP	POT	BODYSHERD	PM	1	1	23	CHAINAGE POINT 790 (N)
CRA	25	-	SUBSOIL	AEQ	POT	BODYSHERD	MED/PM	1	1	8	CHAINAGE POINT 71 (S). HARD FIRED, GLAZE SPOTS
CRA	27	-	SUBSOIL	AER	POT	BODYSHERD	MED/PM	1	1		CHAINAGE POINT 880 (S). GREY EARTHENWARE, OLIVE GREEN GLAZE OUTSIDE
CRA	27	-	SUBSOIL	AES	POT	BODYSHERD	MED/PM	1	1		CHAINAGE POINT 880 (S). GREY EARTHENWARE, OLIVE GREEN GLAZE OUTSIDE
CRA	30	-	0046	AET	POT	RIM	PM	1	1	5	STONEWARE, BROWN GLAZE
CRA	30	-	0046	AEU	POT	BODYSHERD	MED	1	1	7	OLIVE GREEN GLAZE
CRA	30	-	0046	AEV	POT	BODYSHERD	MED	1	1	3	
CRA	30	-	0046	AEW	POT	BODYSHERDS	RB	1	1		ABRADED GREYWARE
CRA	30	-	0046	AEX	POT	BODYSHERDS	RB	1	1		ABRADED GREYWARE
CRA	37	-	TOPSOIL	AEY	POT	BODYSHERD	PM	1	1	11	BUFF-PINK EARTHENWARE, DARK BROWN GLAZE INSIDE
CRA	37	-	SUBSOIL	AEZ	POT	BASE ANGLE	PM	1	1	91	COARSE RED EARTHENWARE, INCOMPLETE BROWN GLAZE INSIDE
CRA	08	-	TOPSOIL	AFA	POT	BASE ANGLE	PM	1	1	11	COARSE RED EARTHENWARE, GLAZED BROWN BOTH SIDES

Mother Grundy's Parlour Catalogue of Pottery

Pottery										
Site Code	**Context**	**Spit**	**Find Code**	**Material**	**Object**	**Period**	**Count**	**Weight(g)**	**Depth**	**Comment**
MGP	UNSTRAT	-	ADR	POT	BODYSHERD	PM	1	4	-	FOUND BY WORKMEN.
MGP	1001	2	ABA	POT	BODYSHERD	PM	1	21	0.1m	

Pottery										
Site Code	Context	Spit	Find Code	Material	Object	Period	Count	Weight(g)	Depth	Comment
MGP	1001	2	ACA	POT	BODYSHERD	PM	1	3	0.1m	
MGP	1001	1	ADQ	POT	BODYSHERD	PM/MOD	1	1	0-0.05m	SIEVED
MGP	1002	3	ACF	POT	BODYSHERD	PM/MOD	1	2	0.15m	
MGP	1002	3	ACG	POT	BODYSHERD	MED/PM	1	22	0.15m	

Romano British
Two body sherds of highly abraded Romano-British greyware pottery were retrieved from Area 30, subsoil context (0046).

Medieval
Medieval pottery objects from the New Road works were confined to topsoil and subsoil finds probably representing manuring activities. Area 01, to the east of Bank House Farm, contained only 2 probably medieval pot sherds – the highest numbers in a single area.

Post-Medieval
A small number of late post-medieval sherds was recovered from the Old Road line (mainly 20th century white china/blue and white ware). A number of pottery sherds consisting of red glazed or brown glazed earthenwares were recovered along the New Road line with the main concentrations being to the west of the Western Rise, as would be expected due to the proximity of the village of Creswell and greater activity. MGP produced a number of post-medieval sherds, which are interpreted as being associated with the discarding of broken pottery during the earlier excavations in the cave.

Shell

Mother Grundy's Parlour Catalogue of Shell

Shell										
Site Code	Context	Spit	Find Code	Material	Object	Period	Count	Weight(g)	Depth	Comment
MGP	1001	1	AAB	SHELL	FRAGMENT		1	1	0.04m	

Stone

Mother Grundy's Parlour Catalogue of Stone

Stone											
Site Code	**Context**	**Spit**	**Find Code**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Depth**	**Comment**
MGP	1001	1	AAD	STONE	FRAGMENT, PEBBLE		1	1	52	0.02m	CRACKED
MGP	1001	1	AAH	STONE	FRAGMENT		1	1	13	0.03m	
MGP	1001	1	AAQ	STONE	FRAGMENT, PEBBLE		1	1	5	0.04m	

Wood

Mother Grundy's Parlour Catalogue of Wood

Wood											
Site Code	**Context**	**Spit**	**FindCode**	**Material**	**Object**	**Period**	**Count**	**NoBags**	**Weight(g)**	**Depth**	**Comment**
MGP	1001	1	AAN	WOOD	FRAGMENT, ROOT		1	1	1	0.04m	
MGP	1001	1	AAL	WOOD			1	1	1		

Appendix 3

Lithological identification of pebbles from a sample of gravel from Creswell Crags

By C.D. Tame and A.E. Mildowski of the British Geological Survey (BGS)

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Lithological identification of pebbles from a sample of gravel from Creswell Crags

Laboratory Operations Programme

Commissioned Report CR/07/111

BRITISH GEOLOGICAL SURVEY

LABORATORY OPERATIONS PROGRAMME

COMMISIONED REPORT CR/07/111

Lithological identification of pebbles from a sample of gravel from Creswell Crags

CD Tame and AE Milodowski

Keywords

Cresswell Crags; Cave deposit; Pebbles; Provenance; Archaeology.

Front cover

Quartzite pebbles recovered from gravel deposit, Cresswell Crags.

Bibliographical reference

TAME, CD AND MILODOWSKI, AE. 2005. Lithological identification of pebbles from a sample of gravel from Cresswell Crags. *British Geological Survey Commissioned Report*, CR/07/111. 22pp.

Keyworth, Nottingham British Geological Survey 2007

BRITISH GEOLOGICAL SURVEY

The full range of Survey publications is available from the BGS Sales Desks at Nottingham, Edinburgh and London; see contact details below or shop online at www.geologyshop.com

The London Information Office also maintains a reference collection of BGS publications including maps for consultation.

The Survey publishes an annual catalogue of its maps and other publications; this catalogue is available from any of the BGS Sales Desks.

The British Geological Survey carries out the geological survey of Great Britain and Northern Ireland (the latter as an agency service for the government of Northern Ireland), and of the surrounding continental shelf, as well as its basic research projects. It also undertakes programmes of British technical aid in geology in developing countries as arranged by the Department for International Development and other agencies.

The British Geological Survey is a component body of the Natural Environment Research Council.

British Geological Survey offices

Keyworth, Nottingham NG12 5GG

☎ 0115-936 3241 Fax 0115-936 3488
e-mail: sales@bgs.ac.uk
www.bgs.ac.uk
Shop online at: www.geologyshop.com

Murchison House, West Mains Road, Edinburgh EH9 3LA

☎ 0131-667 1000 Fax 0131-668 2683
e-mail: scotsales@bgs.ac.uk

London Information Office at the Natural History Museum (Earth Galleries), Exhibition Road, South Kensington, London SW7 2DE

☎ 020-7589 4090 Fax 020-7584 8270
☎ 020-7942 5344/45 email: bgslondon@bgs.ac.uk

Forde House, Park Five Business Centre, Harrier Way, Sowton, Exeter, Devon EX2 7HU

☎ 01392-445271 Fax 01392-445371

Geological Survey of Northern Ireland, Colby House, Stranmillis Court, Belfast BT9 5BF

☎ 028-9038 8462 Fax 028-9038 8461

Maclean Building, Crowmarsh Gifford, Wallingford, Oxfordshire OX10 8BB

☎ 01491-838800 Fax 01491-692345

Columbus House, Greenmeadow Springs, Tongwynlais, Cardiff, CF15 7NE

☎ 029–2052 1962 Fax 029–2052 1963

Parent Body

Natural Environment Research Council, Polaris House, North Star Avenue, Swindon, Wiltshire SN2 1EU

☎ 01793-411500 Fax 01793-411501
www.nerc.ac.uk

Foreword

This report is the published product of a study by the British Geological Survey (BGS) commissioned by Derbyshire County Council to provide background information on the lithologies (rock-types) of pebbles encountered in a sample of gravel collected from Creswell Crags. This work was undertaken in support of archaeological studies being carried out by Trent & Peak Archaeology, University of Nottingham on behalf of Derbyshire County Council.

Acknowledgements

The authors acknowledge the advice of Dr Graham Lott, in the provision of background information on the lithologies of pebbles from the Sherwood Sandstone Group (Triassic).

Contents

FIGURES

TABLES

1 Introduction

Trent and Peak Archaeology (University of Nottingham) are undertaking archaeological investigations at Creswell Crags (Derbyshire) on behalf of Derbyshire County Council. As part of this investigation there is a requirement to understand the origin of gravel deposits within the Creswell Crags cave system, which is important for reconstructing the history of the site. In relation to this, the British Geological Survey (BGS) was contracted by Derbyshire County Council (under work order GC1620) to analyse a sample of gravel collected by Dr Barry Lewis of Trent & Peak Archaeology.

1.1 OBJECTIVES

The objectives of the BGS study were:

- Carry out a visual inspection of the gravel sample, to identify and provide a brief description of the range of lithologies present;
- To determine the relative proportions (by weight) of the different lithologies present in the gravel sample;
- To try to identify the provenance (source) of the material comprising the gravels based on the lithological composition of the pebbles.

1.2 METHODOLOGY

A large bulk sample (~23 kg) of gravel was provided by Trent & Peak Archaeology. The gravel sample was washed and scrubbed to remove the clayey-sand matrix material from the pebble surfaces. It was then visually inspected to identify the range lithologies present, using a hand-lens and/or binocular microscope as required, and the pebbles were sorted and categorised accordingly into broad lithological types. The total mass of pebbles within each lithology category was then determined by weighing.

2 Results

2.1 GENERAL DESCRIPTION

The gravel sample, as provided, was reddish brown (Munsell Colour 10R 4/4 wet: Geological Society of America, 1995) with a clayey-sand matrix. It comprised predominantly well rounded coarse gravel clasts (20 to 60 mm diameter), but includes subordinate amounts of well rounded fine gravel (2 to 6 mm) and medium gravel (6-20 mm) material, with rare small cobbles (up to 70 mm diameter)[1].

The matrix to the gravel comprised a mixture medium to fine grained red-brown quartz-rich sand and disseminated clay, with some very small (up to 10 mm) and very soft reddish brown clay or shale flakes or clasts that readily broke up and dispersed to mud during washing the gravel. The relative proportions of clasts of each lithology category (determined by weight) are given in Table 1, and illustrated diagrammatically in Figure 1 and Figure 2. More detailed description of the material within each lithological category is given in the subsequent sections.

[1] Particle size classification in accordance with size classes defined under BS5930.

Table 1. Proportions of the various lithologies represented in the pebble fraction.

Pebble lithology	Weight (g)	Proportion (%)
Igneous	533.2	2.6
Rotten igneous	227.0	1.1
Metamorphics (gneissic, schistose, unidentified)	181.6	0.9
Conglomerate	118.6	0.6
Friable Permo-Triassic sandstone	116.2	0.6
Indurated medium to coarse indurated or metasedimentary feldspathic sandstones	568.5	2.7
Indurated or metasedimentary varicoloured quartz-cemented fine sandstones and siltstones	10913.1	52.8
Indurated quartz-arenites and quartzite	3959.6	19.2
Quartz	3342.1	16.2
Chert	420.2	2.0
Indurated or metasedimentary mudstones	267.6	1.3
Soft Permo-Triassic mudstone clasts	2.1	<0.1 (0.01)
Total	**20649.8**	**100**

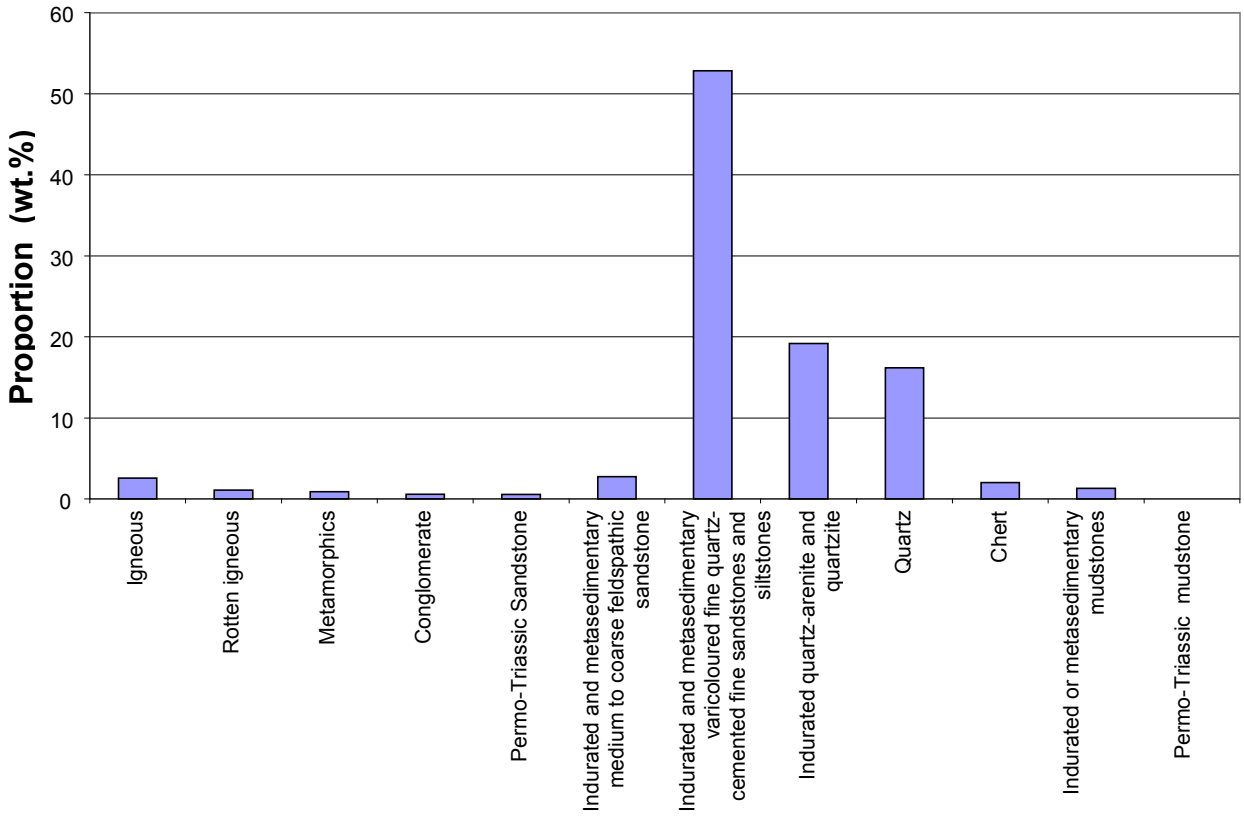


Figure 1. Histogram showing the proportions of the pebble lithologies

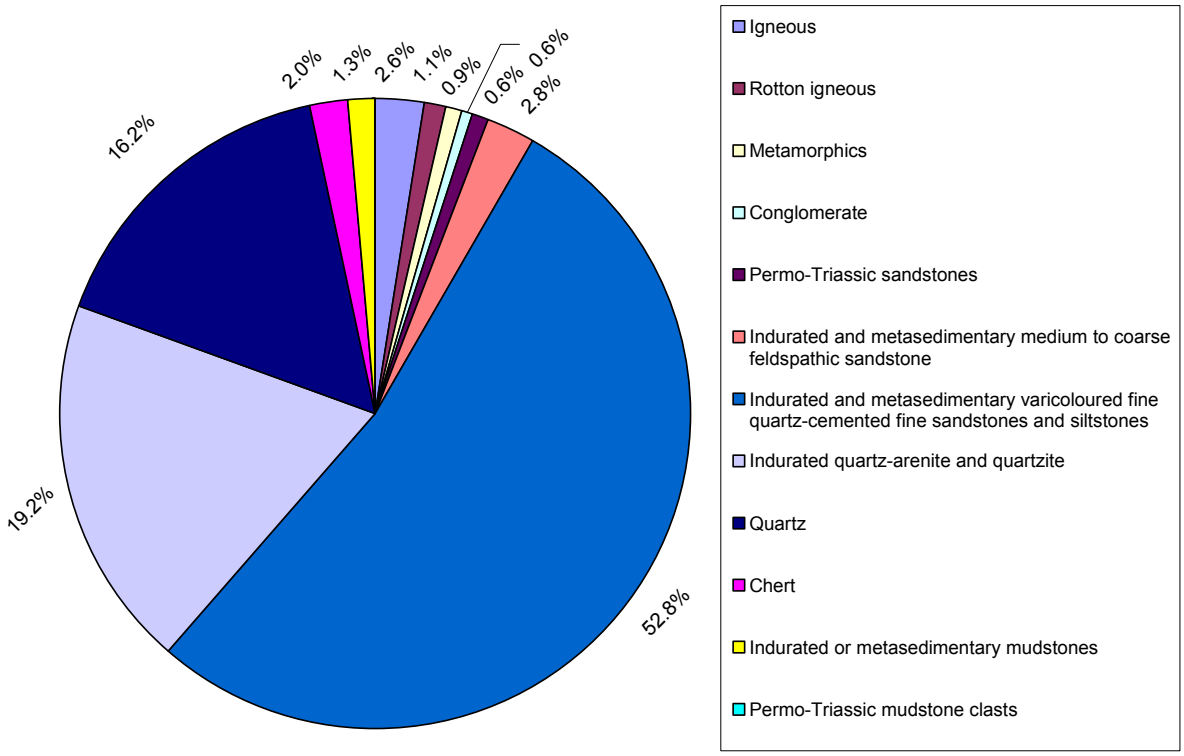


Figure 2. Pie chart showing relative proportions of pebble lithologies

2.2 DETAILED PEBBLE DESCRIPTIONS

2.2.1 Indurated or metasedimentary varicoloured quartz-cemented fine sandstones and siltstones

This category is the most abundant of all the lithologies, representing 52.8 % of the clast population (Figure 2). The pebbles vary from 10mm to 55mm in size; they are smooth and very well rounded (Figure 3) but with some angular edges where the clasts have broken along incipient fractures open. The rock types are tough and highly indurated, consisting either of tightly quartz-cemented fine to medium grained feldspathic, and possibly lithic or volcaniclastic sandstones and siltstones, or metamorphosed sandstones and siltstones (psammites/semipelites). Component grain boundaries are difficult to determine by basic visual examination but appear to be tightly welded or recrystallised. The rocks vary considerably in colour from light coloured pebbles (yellowish grey, 5Y 8/1; pinkish grey 5YR 8/1; pale red purple 5RP 6/2) to darker browns (10YR 5/4 to 5YR 2/2) and reddish browns (5R 4/6 to 5R 2/6 and 5R 2/2), suggesting that there is a variation in mineralogical composition but the grains are too fine to distinguish, although generally the rocks are siliceous. However, precise lithological classification of these rocks would require more detailed thin section petrographical analysis.

Some of the pebbles display fine parallel banding representing the original sedimentary bedding lamination (Figure 3). No obvious metamorphic foliation is evident although some pebbles may contain fine quartz veins. The reddish brown colouration is at least partly due to impregnation along grain boundaries and partial replacement of ferromagnesian mineral grains by trace to minor amounts of very fine grained iron oxide (probably hematite: Fe_2O_3).

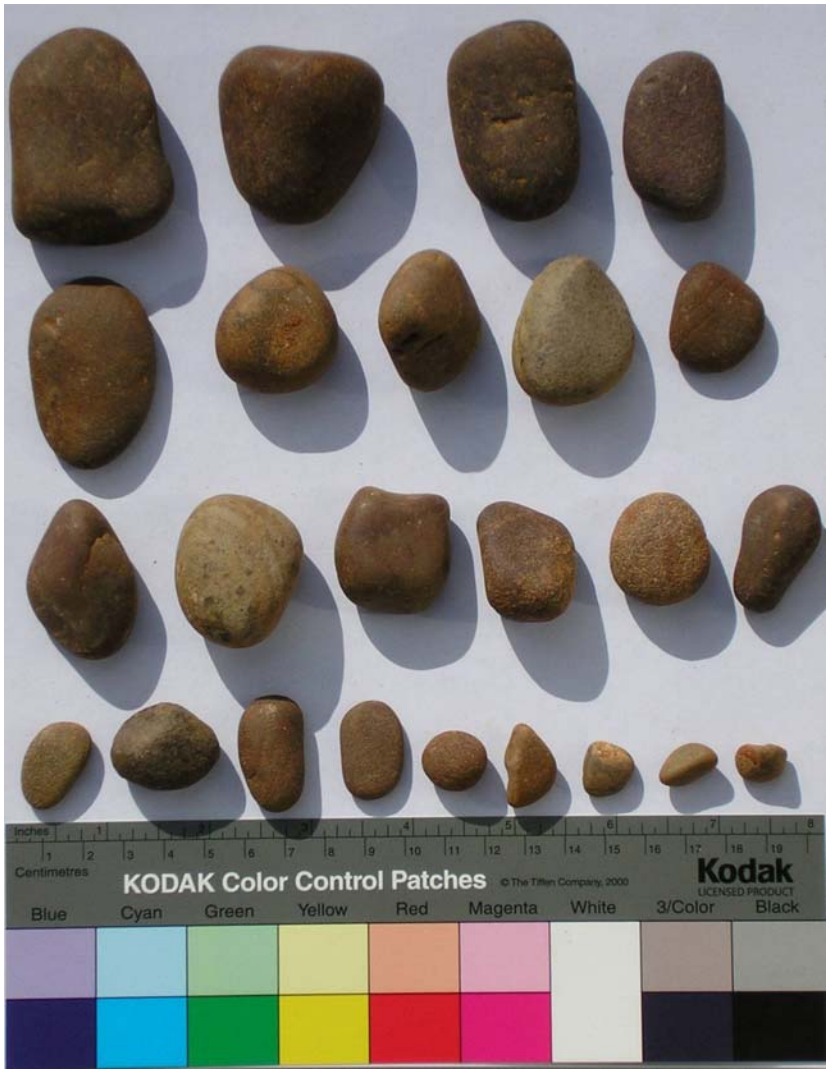


Figure 3. Representative examples of the very well-rounded, indurated or metasedimentary varicoloured quartz-cemented fine sandstones and siltstones showing the range clast sizes and colours

2.2.2 Indurated quartz arenite or quartzite pebbles

This category is the second most abundant rock type represented in the gravel sample (19.2 %). The pebbles are of similar size (10mm to 55mm) and morphology to the indurated or metasedimentary varicoloured quartz-cemented fine sandstones and siltstones described previously. They are generally smooth and rounded (Figure 4) with some clasts showing angular edges where recent breakage has occurred along incipient fractures. These pebbles typically comprise buff to grey pebbles of very hard, tough and highly indurated quartz-cemented, fine to medium grained quartz arenites (sandstones and siltstones) or recrystallised quartzites (metamorphic) generally in colour and grains are difficult to see.

Many of the pebbles have been stained and reddened by the precipitation of fine grained iron oxide (hematite) along grain boundaries and microfractures within the clasts, and strongly stained pebbles may be more similar in colour to the varicoloured indurated or metasedimentary varicoloured quartz-cemented fine sandstones and siltstones. The majority of clasts are massive and structureless but some pebbles display sedimentary banding with either fine parallel bedding lamination or low-angle current-bedded (cross-bedded) lamination (Figure 4). Some pebbles are also veined by thin quartz-filled fractures.

Figure 4. Representative examples of the very well-rounded quartzite pebbles showing the range clast sizes and colours

2.2.3 Quartz pebbles

Quartz pebbles are the third most abundant clast type (16.2 %) represented in the gravel sample. The clast size varies from 10mm to 45mm, and the pebbles are generally smooth and well-rounded in shape (Figure 5).

The quartz pebbles are composed of white to grey polycrystalline and monocrystalline vein-quartz. In many cases, the quartz making up the pebbles appears to comprise vein quartz that has been brecciated and subsequently annealed and recrystallised before being eroded and formed into pebbles. This suggests that quartz was originally derived from hydrothermal quartz veins that had been strongly tectonised. Fine hairline fractures impregnated and stained by fine red-brown hematite and orange-yellow goethite also cut many clasts (Figure 5). Some quartz pebbles also display polished and frosted surfaces that resemble polishing observed in aeolian or desert environments.

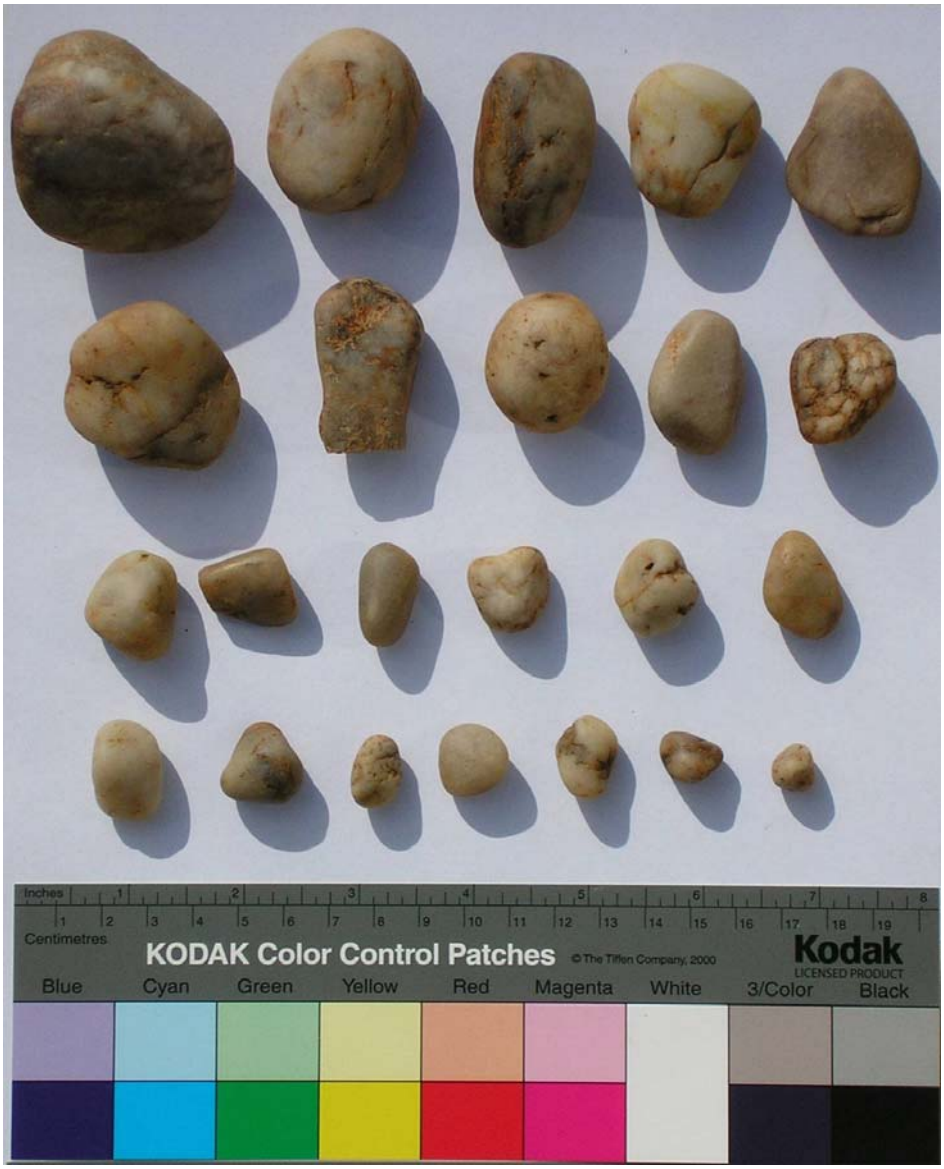


Figure 5. Representative examples of well-rounded pebbles of vein quartz, showing the range of clast sizes and shapes

2.2.4 Medium to coarse indurated feldspathic sandstones

This class of pebble lithology represents a minor fraction (2.8 %) of the gravel sample. Pebbles vary from well rounded pebbles (with angular edges formed only as a result of breaking along fracture lines) to subangular and angular clasts (see example pebbles illustrated in Figure 6). The pebbles are smaller than the three major classes of pebble lithologies described above, varying in size from 15mm to 40mm. They comprise hard, tough rocks, which are tightly cemented by quartz or feldspar but, unlike the rock types described previously in Section 2.2.1, the component sand grains can be readily distinguished. Colour is variable, and includes white, cream, yellow, black, reddish brown, pale pink and grey varieties of pebbles. It is likely that these pebbles have a variety of primary sources, including parent rocks similar to those of the pebbles described in Sections 2.2.1. Some of these pebbles are pale coarse sandstone composed of angular detrital grains of quartz and reddened or partially altered feldspars (possibly kaolinised although identification of specific clay minerals and alteration would required more detailed mineralogical analysis), and which closely resemble sandstones from the Millstone Grit (Carboniferous).

Figure 6. Representative examples of medium to coarse indurated feldspathic sandstones, showing the range of clast sizes and shapes

2.2.5 Cherts

A minor fraction (2.0 %) of the clasts present in the gravel are chert pebbles. These are rounded to sub-rounded, and are predominantly dark grey to black in colour with occasional pale grey or white chert clasts. Chert clasts range in size from 10mm to 50 mm but are generally around 15mm to 30mm.

Some chert clasts may be veined by white quartz (as shown in Figure 7). Traces of bedding may be visible in some of the black cherts indicating that they were derived originally from bedded chert or represent silicified sediments. Most of the chert clasts are smooth, however, the pale coloured cherts often display rough or pitted surfaces suggesting that they have suffered corrosion or dissolution effects.

Figure 7. Representative examples of chert pebbles showing the range of clast sizes and shapes

2.2.6 Indurated or metasedimentary mudstone clasts

Indurated or metasedimentary mudstone (pelite) clasts represent a very minor fraction (1.3 %) of the clasts present in the gravel. These are very fine grained rocks and the pebbles vary in size and shape. They are generally 15mm to 35mm diameter, and most are sub-rounded and flattened but occasionally some show more sphericity (Figure 8). The colours vary from pale green and cream coloured to purple and olive brown. Most show signs of patchy reddening due to staining and impregnation by very fine grained hematite.

Some of the pebbles have internal sedimentary laminations or weak slaty cleavage, and some clasts split readily along micaceous bedding plane.

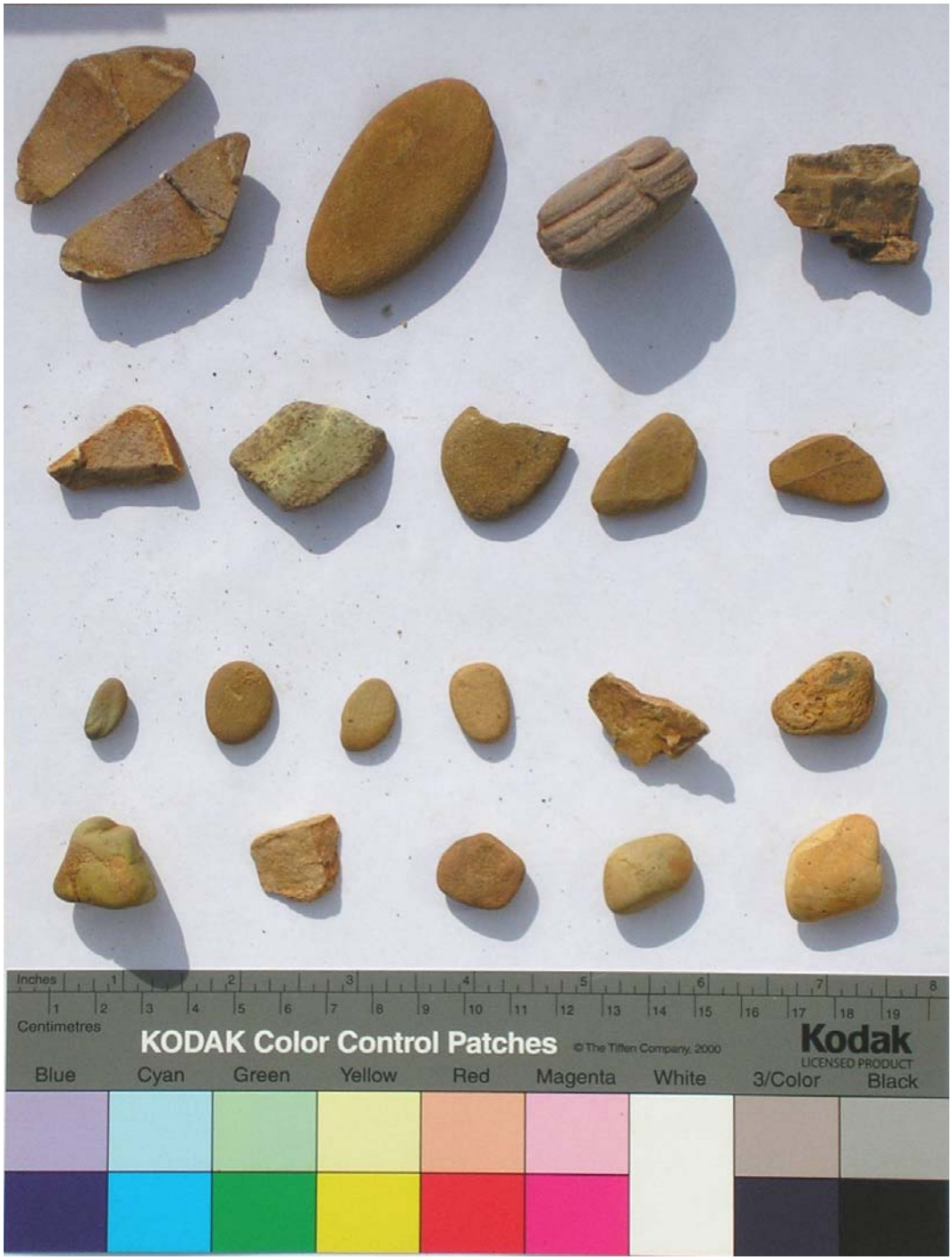


Figure 8. Representative examples of indurated or pelitic (metasedimentary) pebbles showing the range of clast sizes and shapes

2.2.7 Conglomerate clasts

Clasts of conglomerate or conglomeratic sandstone are present as a very minor fraction (0.6 %) of the clasts in the gravel sample. Conglomerate clasts are generally around 30mm diameter, and are sub-rounded to rounded depending on their composition (examples are shown in Figure 9). The more indurated varieties are well rounded and smooth, possibly representing coarser variants of the indurated sandstone described in Section 2.2.1 and 2.2.2. However, some clasts are more porous and 'gritty' in texture and may represent coarser variants of the 'gritty' sandstones (described in Section 2.2.4). These hard pebbles appear to be cemented by quartz.

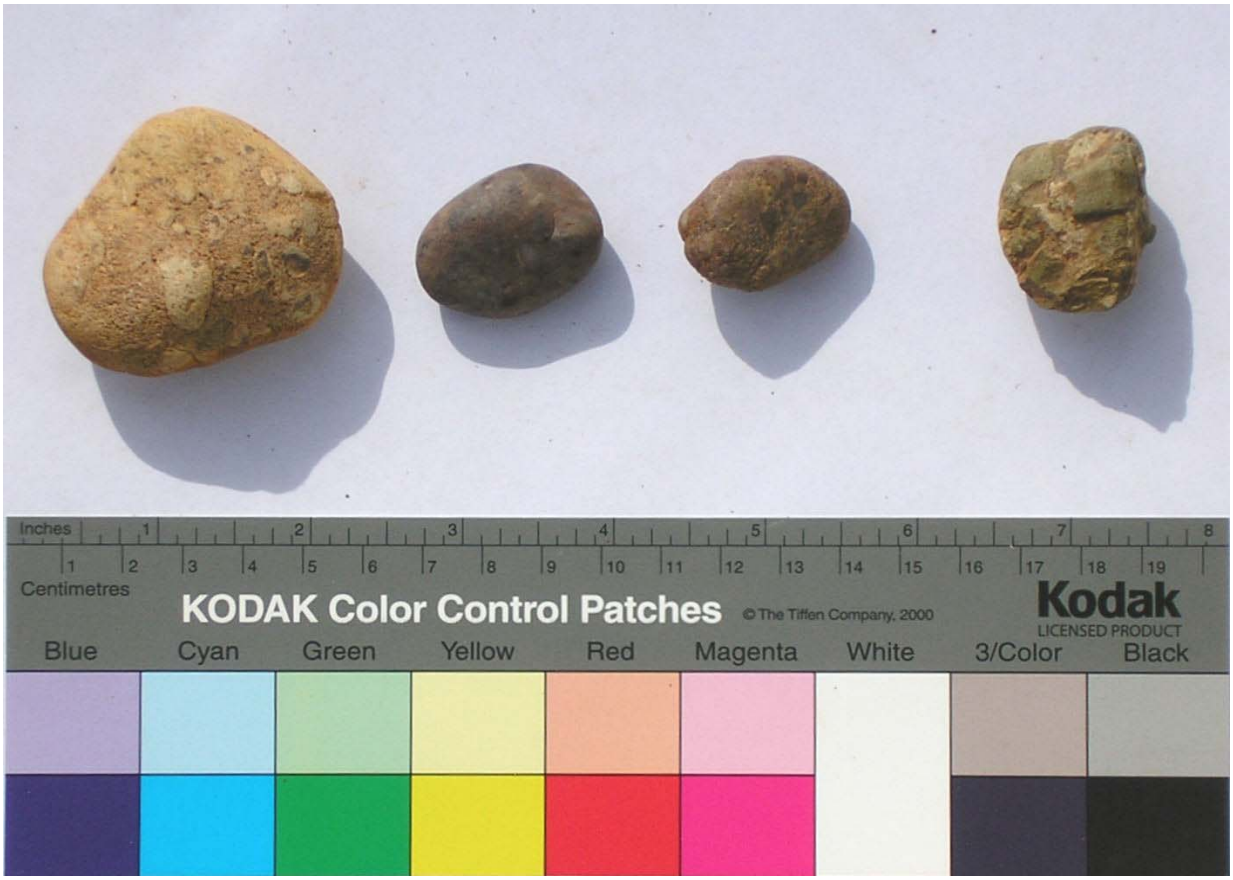


Figure 9. Rare examples of conglomeratic sandstone pebbles showing the range of clast sizes and shapes

2.2.8 Permo-Triassic sandstone clasts

A minor proportion (0.6 %) of clasts are represented by weakly cemented, friable, reddish-brown, ferruginous fine to medium grained, and moderately well-sorted to poorly sorted sandstones (Figure 10). They are composed of medium grained quartz-rich sand, with some feldspathic and uncommon micaceous grains. Clasts are generally small, ranging from 4 mm to 25 mm in size, but normally around 8 mm to 20 mm. They are fairly well rounded clasts, with some sub-round and sub-angular edges.

Some clasts display well-rounded and frosted ('millet-seed') grains of quartz that are characteristic of aeolian sandstones. In other cases, the grains appear to be subrounded and subangular. The grains or grain surfaces are coated or partially cemented by red iron oxide. Some of the clasts are black in colour probably as a result of staining by black manganese oxides, which would suggest that they have been derived from shallow weathered sandstone

These sandstone clasts are very fragile, there could originally possibly have been more of these pebbles in the gravel but they are easily destroyed as a result of disaggregation. Due to their fragility these clasts will not have been transported far. They closely resemble the red sandstones seen in the local Triassic Sherwood Sandstone Group or Permian sandstone formations.

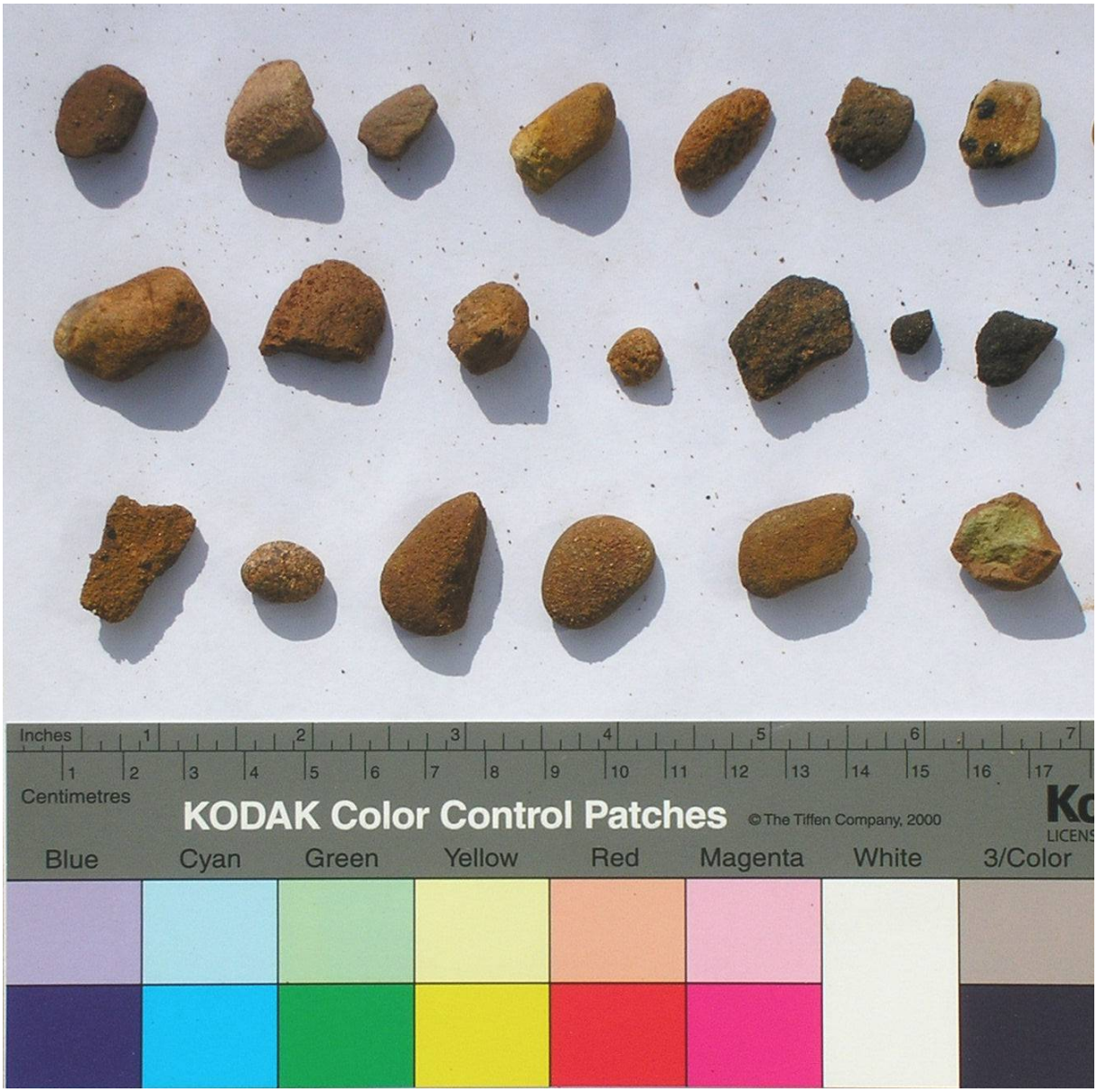


Figure 10. Examples of Permo-Triassic sandstone pebbles showing the range of clast sizes and shapes

2.2.9 Permo-Triassic mudstone clasts

Soft, plastic red-brown mudstone clasts make up a trace amount of the overall gravel (around 0.01 %). They are less than 15mm in size and have a flattened shape with rounded edges (Figure 11). They are very fragile and will not have been transported far from their source. Possibly some of these clasts were probably disaggregated and destroyed during the sampling and cleaning process. These mudstone clasts are very similar in lithology to the red-brown mudstones of the local Permian mudstones, Triassic Mercia Mudstone Group or to thin mudstones and intraclasts seen in the local Triassic Sherwood Sandstone Group.

Figure 11. Rare examples of flake-like pebbles of soft, plastic red mudstone.

2.2.10 Well rounded igneous clasts

A minor proportion (2.6 %) of the pebbles present in the gravel are represented by hard and altered igneous rocks (Figure 12). There are a couple of large pebbles, up to 60mm long but generally they vary from 10mm to 35mm in size. These rocks typically have a 'spotted' appearance and compositions vary but they are generally altered basic to intermediate rock types, with some lighter acidic volcanic (crystal-lithic tuffs and lavas), and altered microgranitic rock types. However precise identification would require detailed thin section petrographic analysis. The pebbles are sub-angular to sub-rounded with some rounded pebbles. All of these igneous pebbles show some degree of weathering and alteration, and are typically strongly oxidised (ferruginised) or iron stained. (Figure 12).

Figure 12. Examples of pebbles representing altered igneous rocks showing the range of clast sizes and shapes

2.2.11 Rotten igneous clasts

These pebbles are generally small and fragmented and are too highly altered to readily identify from a basic visual inspection. They represent about 1.1 % of the pebbles present in the gravel sample, and vary from 8 mm to 20 mm in size. Some clasts are rounded pebbles but most are generally sub-angular to angular and they are all stained orangey-red with iron oxide. These pebbles may represent more altered equivalents of the rocks described in Section 2.2.10.

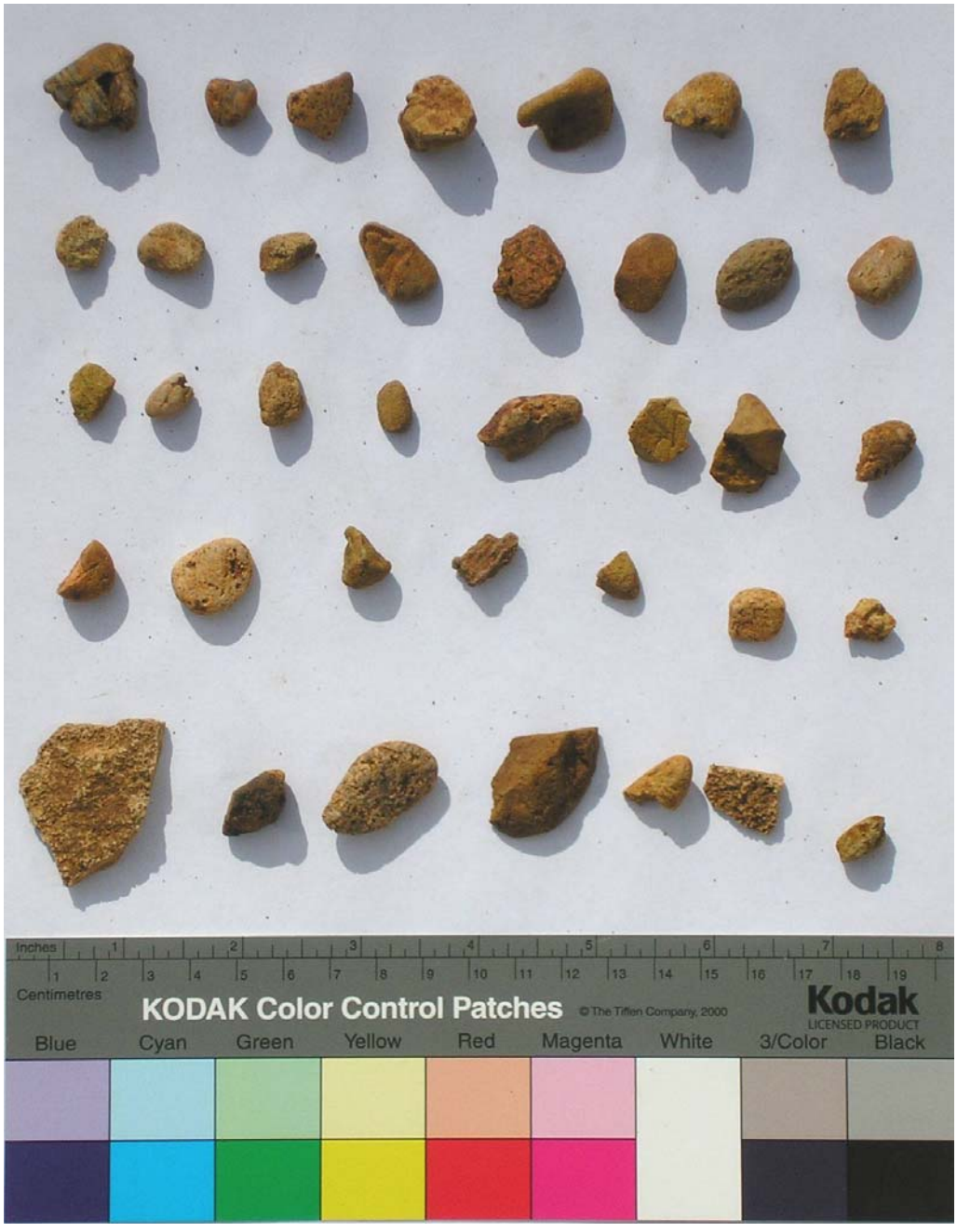


Figure 13. Representative examples of pebbles representing rotten igneous rocks showing the range of clast sizes and shapes

2.2.12 Other metamorphic rocks

Other types of metamorphic rocks make up less than 1 % of the pebbles in the gravel sample. Clasts range from 10 mm to 45 mm, they are sub-rounded, and there is quite a lot of variation in the smoothness of their surfaces. They display gneissic foliation or some degree of schistocity and appear to be of higher grade metamorphic origin to those clasts described in Sections 2.1.1 and 2.2.2. However, no two pebbles are similar and the rocks types are difficult to identify without more detailed thin section petrographic analysis.

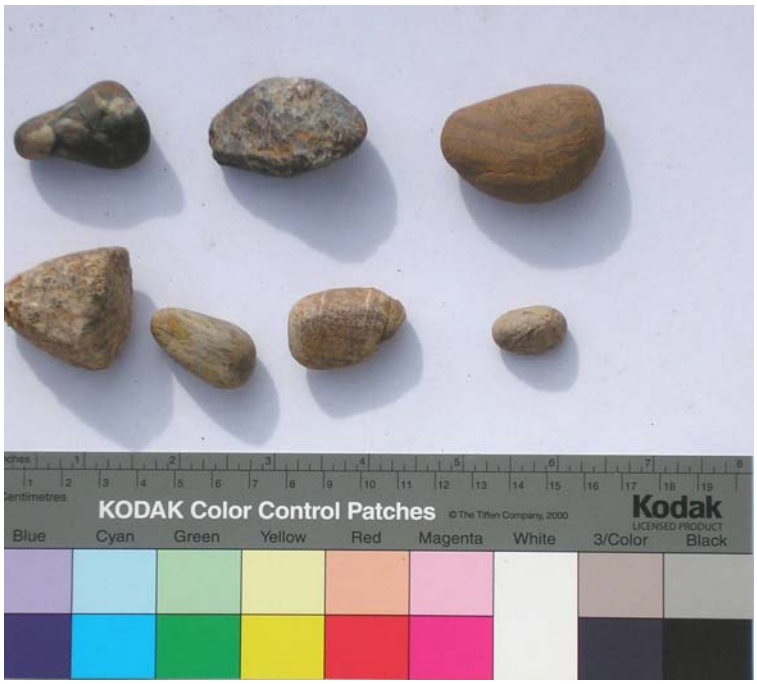


Figure 14. Representative examples of pebbles representing foliated metamorphic rocks showing the range of clast sizes and shapes

3 Discussion and conclusions

The pebbles in the gravel sample from Creswell Crags are dominated by highly indurated or metasedimentary varicoloured quartz-cemented fine sandstones and siltstones (52.8 %), quartzite and quartz arenite (19.2 %) and vein quartz (16.2 %) pebbles. The pebbles are typically very well rounded water-worn clasts indicating significant transport and abrasion since derivation from their parent rock source. Individual sand/silt grains are welded or recrystallised and difficult to differentiate by the naked eye, and precise lithological characterisation of the rocks would require detailed thin section petrographic analysis (outside the remit of this present study). These do not resemble the sandstones and siltstones of the regional Carboniferous rocks, nor of the Lower Palaeozoic rocks found further west in Wales. However, these pebbles very closely resemble the pebbles found in the conglomeratic basal part of the Triassic Sherwood Sandstone Group (originally referred to as the Bunter Pebble Beds) elsewhere in the Midlands and United Kingdom (Jones et al., 1999; Venus, 2006). The primary parent rock source for these pebbles during the deposition of the Sherwood Sandstone Group during the Triassic is considered to have been the Armorican Peninsula of Brittany and Normandy (Jones et al., 1999 and references therein). The presence of small numbers of clasts of poorly preserved red-brown friable

sandstone, similar to the sandstones of the Sherwood Sandstone Group, would support the conclusion that the bulk of these pebbles have probably been derived from reworking of pebbles from the conglomeratic strata of the lower part of the Sherwood Sandstone Formation.

Eden et al. (1957) also describe the presence of 'erratics' of Bunter type pebbles within the drift/boulder clay deposits of the Sheffield and Cresswell area, which they suggest could only have been derived from the Sherwood Sandstone Group further south in the Trent Valley and around Nottingham, or from further southwest in Staffordshire. These authors suggest that these bunter Pebble erratics were carried into the Sheffield area by a 'palaeo' Trent river system. Therefore, it is plausible that the Creswell Caves gravel sample may have a similar derivation.

A very small proportion of pebbles represent intermediate to basic volcanic rocks, granitic and metamorphic and chert lithologies. The regional Carboniferous rocks contain some basic volcanic rocks and similar black dark-coloured cherts can be found within the Carboniferous Limestone, and therefore may potentially have provided a minor local contribution to the Creswell Caves pebble assemblage. Also some of the coarser feldspathic sandstone clasts resemble the gritstones of the Carboniferous Millstone Grit which crops out at the eastern edge of the Peak District. Again this might indicate a very minor contribution of rock types from the local Carboniferous strata to the west of area. However, similar igneous and metamorphic rocks are also found in the assemblage of pebbles found in the basal Sherwood Sandstone Formation (Venus, 2006), and overall it is most likely that the bulk of the pebbles have been reworked from the conglomeratic lower part of the Sherwood Sandstone Formation.

References

Most of the references listed below are held in the Library of the British Geological Survey at Keyworth, Nottingham. Copies of the references may be purchased from the Library subject to the current copyright legislation.

EDEN, R.A., STEVENSON, I.P. AND EDWARDS, W. 1957. *Geology of the Country around Sheffield*. Memoirs of the Geological Survey of Great Britain (England and Wales). One-Inch Geological Sheet **100**, New Series. HMSO, London, 226pp.

GEOLOGICAL SOCIETY OF AMERICA. 1995. *Rock Colour Chart with Genuine Munsell Colour Chips*. The Geological Society of America, Boulder Colorado, USA.

JONES, D.G., MORTON, A.C., LENG, M.J., HASLAM, H.W., MILODOWSKI, A.E., STRONG, G.E. AND KEMP, S.J. 1999. Chapter 4: Provenance of the basin fill. In: PLANT, J.A., JONES, D.G. AND HASLAM, H.W. (EDITORS). *The Cheshire Basin; Basin Evolution, Fluid movement and Mineral Resources in a Permo-Triassic Rift Setting*. British Geological Survey, Keyworth, Nottingham, United Kingdom.

VENUS, J. 2006. Petrographic description and identification of pebble samples from the Permian-Triassic (?Hopwas Breccia Formation), Lichfield Sheet (154). *British Geological Survey , Technical Report*, **IR/06/141**.

Appendix 4

Palaeoenvironmental assessment of deposits from the decommissioned B6042

PALAEOENVIRONMENTAL ASSESSMENT OF DEPOSITS FROM THE DECOMMISIONED B6042

INTRODUCTION
This report provides an assessment of the palaeo-environmental samples retrieved during a watching brief carried out by Trent & Peak Archaeology. In the report, environmental finds and their quantity have been listed in table form and a brief description of the sediment given.

METHOD
The samples described below were taken from deposits revealed during the watching brief. In the laboratory, the soil was wet sieved through both 1mm and 250µ stainless steel sieves. Once dry, the retained fractions were examined under a low power binocular microscope for mammal bone, fish bone, mollusc shell, charcoal and plant remains. Other associated finds were also noted, in particular chert and flint. The finds were separated and stored in phials for further analysis if required.

Table 1: environmental finds from CRA 200 1004
Sediment description: Below road surface. Not natural, reworked Triassic marl surface? Possibly sub-base for the road.

Material	**No. of fragments**
Small mammal: bone Teeth	252 30 complete
Fish bone	5
Burnt bone	0
Mollusc shell	1 complete
Charcoal	45
Charcoaled grain (unident.)	2
Plant remains: Seed - Elder (*Sambucus)* Root/twig	2 complete 5
Chert/Flint	0
Other	0

Table 2: environmental finds from CRA 203 1013
Sediment description: Clast supported, buff sandy silt from angular stones.

Material	**No. of fragments**
Small mammal bone	3
Fish bone	0
Burnt bone	1
Mollusc shell	23 7 complete
Charcoal	104
Charcoaled grain	0
Plant remains: Seed (unident.) Root/twig	2 complete 135
Chert/Flint	11
Other: glass	3

Table 3: environmental finds from CRA 203 1014
Sediment description: sandy texture, dull orange in colour.

Material	**No. of fragments**
Small mammal: Bone Teeth	240 16 complete
Fish bone	15
Burnt bone	18
Mollusc shell	632 125 complete
Charcoal	243
Charcoaled grain	0
Plant remains: Seed – Elder *(Sambucus)* Root/twig	4 309
Chert/flint	25
Other: tar like substance Small bead/wire item Glass	9 1 7

Table 4: environmental finds from CRA 203 1015
Sediment description: Dull orange. Base sediment of sondage.

Material	**No. of fragments**
Small mammal bone	0
Fish bone	0
Burnt bone	0
Mollusc shell	3 2 complete
Charcoal	10
Charcoaled grain	0
Plant remains: Root Seed	5 0
Chert/flint	0
Other: glass fragment	1

CONCLUSION
The finds of a tar like substance and probable wire piece in CRA 203 1014, and a fragment of glass in CRA 203 1015 indicate some modern contamination. These are both lower layers and it seems likely that each with evidence of contamination in these, the layers above will also be disturbed. The large number of small mammal bones found in several of the samples, indicates considerable rodent activity which will have contributed to this disturbance.

Overall, there were significant numbers of plant and vertebrate remains recovered, which can be considered to indicate the potential for the study of further biological remains from deposits in the area.