



GI MONITORING REPORT

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A66 NTP BOWES TO SCOTCH CORNER GEOTECHNICAL INVESTIGATIONS ARCHAEOLOGICAL MONITORING REPORT

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Ltd

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ARCHAEOLOGICAL MONITORING REPORT

Summary

NAA conducted a scheme of archaeological monitoring in conjunction with Geotechnical Investigation (GI) works along the eastern stretch of the A66, from Bowes to Scotch Corner, as part of an assessment to inform proposed upgrades to the existing carriageway.

The route of the A66 passes through a corridor of significant Roman archaeology, intersecting the Scheduled Monument of Carkin Moor Roman Fort and close to further scheduled forts at Greta Bridge and Bowes. Excavations in recent years have highlighted substantial Iron Age and early Roman occupation at Scotch Corner (Fell 2020, NAA 2020) as well as a Roman roadside settlement to the west of Carkin Moor (NAA in prep.) and have demonstrated that widening of the existing routeway has the potential to encounter considerable archaeological remains dating from the early Prehistoric through to the post-medieval period (Zant and Howard-Davis 2013).

In total, 74 GI interventions were monitored during the current scheme. Most of the archaeological remains were recorded across the area from Stephen Bank to Carkin Moor in the east, within four trial pits. In addition, an impressive suite of ridge and furrow was encountered near Bowes.

Two potential stone trackways were recorded in the vicinity of Carkin Moor. The first, in trial pit (TP) SBC41 had a surface constructed entirely of angular sandstone slabs, while the second in TP SBC42, appeared to have a kerb of large stones flanking a metalled surface, potentially constructed atop an earlier hollow-way. Only the edges of the features were revealed in their respective trial pits and no finds were recovered; however, they both appeared to run along a north-east to south-west alignment, perpendicular to the route of the A66 and, significantly, both were recorded in an area of known Roman archaeology. The potential trackway in TP SBC42 was located directly to the south of the roadside settlement excavated in 2016 (NAA in prep.).

The remaining archaeological features were encountered to the west, in the vicinity of West Layton. In a field directly to the south-west of West Layton Manor, TP SBC12 exposed a cobble foundation for an earthen bank or hedgerow, that probably defined an east-to-west field boundary parallel to the old Roman Road. To the east, two irregular-shaped pits containing charcoal and burnt daub were excavated in TP SBC18. They potentially belonged to a larger pit grouping or structure that was near a kiln or hearth, from which the burnt material likely originated, and which could still survive in the surrounding field.

Although none of the archaeological features contained diagnostic finds, the presence of remains confirms the potential archaeological significance of the stretch of road from Stephen Bank to Carkin Moor, highlighted in earlier work. Despite negative results within the GI interventions, the significance of the remainder of the proposed route cannot be discounted owing to the prevalence of known historic sites along its alignment that include a large number of listed buildings and scheduled monuments.

1.0 INTRODUCTION

1.1 Amey was commissioned by Highways England to undertake the Project Control Framework (PCF) Stage 3 design and assessment of proposed upgrades to the A66 between Junction 40 of the M6 at Penrith and the A1(M) at Scotch Corner. As part of the assessment programme, Ground Investigation (GI) works were carried out along parts of the proposed scheme. This report presents the results of a programme of archaeological monitoring during GI works in four areas along the eastern part of the A66 route between Bowes and Scotch Corner (NGR: c.NY 9865 1350 to c.NZ 2165 0525; Fig. 1).

1.2 The report has been produced by Northern Archaeological Associates (NAA) for Allied Exploration and Geotechnics Ltd, on behalf of Amey. The results of the work will be used to inform the Stage 3 Cultural Heritage Assessment for the project (NAA in prep.).

2.0 LOCATION, GEOLOGY AND TOPOGRAPHY

Location

2.1 Groundworks were proposed in four separate areas along the A66 route (Fig. 1), although monitoring was ultimately not required at the eastern section around Scotch Corner. The monitored sections comprised: a c.2.6km stretch where the current A66 passes to the north of Bowes village (Bowes Bypass section, 14 trial pits); a c.3.3km stretch to the south of Barnard Castle between Cross Lanes and Greta Bridge (17 trial pits); and c.5km between New Road (to the south of Hutton Magna) and Carkin Moor (Stephen Bank to Carkin Moor section, 43 trial pits).

Geology

2.2 In the area of the proposed works at Bowes, the solid geology is primarily mudstones, siltstones and sandstones of the Stainmore formation, although immediately to the east of the village the route crosses an area of Carboniferous limestone (part of the Great Limestone Member formation). The second area, Cross Lanes to Greta Bridge, overlies the same Carboniferous limestone. In the area of Carkin Moor and extending east to Scotch Corner, the solid geology consists of limestone and sandstone of the Alston Formation. In all three areas the bedrock is covered by superficial deposits of Devensian Diamicton Till (BGS 2021).

Topography and land use

- 2.3 The majority of the trial pits were excavated on farmland within arable fields or those set to pasture. Two trial pits were excavated along the line of the South Durham and Lancashire Union Railway near Bowes.

3.0 SUMMARY ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 3.1 There have been surprisingly few prehistoric sites identified along the Scotch Corner to Bowes section of the A66. However, investigations during previous upgrading of the road from Carkin Moor to Scotch Corner identified a scatter of sites of Late Mesolithic/Early Neolithic to Iron Age date (Zant and Howard-Davis 2013).
- 3.2 Known archaeological remains directly relevant to the current works date almost entirely to the Roman period. For much of the route between Scotch Corner and Bowes, the A66 closely follows the line of the Roman road running westwards from Dere Street (the modern A1(M)) towards the Stainmore Pass, which passes the Pennines *en route* to Carlisle (Margary road 82 (Margary 1973, 433–6).
- 3.3 The Roman road junction at Scotch Corner was the site of a substantial Late Iron Age and early Roman settlement, part of which was excavated and surveyed during recent A1 improvements (Fell 2020). Although the site has not yet been granted statutory designation, the archaeological remains are considered by Historic England to be of at least national, and probably international, significance.
- 3.4 Military installations were spaced along the Roman road. Passing westwards from Scotch Corner, the A66 bisects the scheduled Roman fort and prehistoric or Romano-British enclosed settlement 400m west of Carkin Moor Farm (National Heritage List No. 1015418; Zant and Howard-Davis 2013). In 2016, during construction of a water pipeline at the southern side of the A66 immediately to the west of Carkin Moor Roman fort, excavations identified extensive remains of a Roman roadside settlement extending westwards towards Mainsgill Bridge on the south side of the Roman road (NAA 2016 and in prep.). Finds included elements of the Roman Road, seven roadside enclosures (two of which had been walled), cobbled surfaces, the footings of a possible building, refuse dumps and a pottery kiln.
- 3.5 To the west, the route passes a probable Roman camp at Rokeby Park and the scheduled Roman Fort and vicus at Greta Bridge (National Heritage List No. 1019074). At Bowes there lies another scheduled Roman fort (*Lavatrae*), part of which was reused as a

medieval castle (National Heritage List Nos 1002316 and 1002318; Frere and Fitts 2009). The modern A66 bypasses the village to the north, although the Roman road passes through the modern settlement, which is built over the vicus associated with the fort.

- 3.6 Detailed comparison of the proposed trial-pit locations against other known archaeological evidence suggested that the GI works would have no impact upon them. However, there was still the possibility of encountering previously unknown archaeological features and deposits. The potential presence of previously undetected prehistoric evidence has been noted above. The modern A66 does not, in all areas, precisely follow the alignment of the Roman road (where it is known) and the recent excavations to the west of the Carkin Moor fort have demonstrated that remains of the Roman route can survive below the modern verge or within adjacent fields. Peripheral features such as Roman quarry pits (for road materials) have been recognised further to the west, and may also be present on the current part of the route, while some Roman roads may have been flanked at a distance by parallel boundaries as has been recognised on the route leading northwards from Bowes to Barnard Castle (Margary road 82 (Margary 1973, 437); Ambrey *et al.* 2017, 105–6).
- 3.7 None of the trial-pit locations impacted directly upon any recorded sites of medieval or post-medieval significance.

Geophysical survey

- 3.8 Geophysical survey was conducted in advance of the current work (Headland Archaeology unpublished) in addition to an extensive survey of the route between Scotch Corner and Greta Bridge carried out as part of the earlier widening along the A66 (GeoQuest Associates 1999).

4.0 AIMS AND OBJECTIVES

- 4.1 The aim of the archaeological monitoring was to identify the presence and location of archaeological remains within the area of development. The objectives of the monitoring were to:
- establish the presence, nature, extent, preservation and significance of any archaeological remains within the area of the proposed road improvements;
 - provide a detailed record of any such archaeological remains;

- recover and assess any associated structural, artefactual and environmental evidence, where safe to do so;
- undertake a programme of investigation that meets with national and regional standards (Historic England 2015a; ClfA 2014b–d; South Yorkshire Archaeology Service 2018); and
- prepare an illustrated report on the results of the archaeological monitoring to be deposited with Durham County Council Historic Environment Record (HER).

5.0 METHODOLOGY

- 5.1 The trial pits were excavated down to natural geology or archaeological deposits using a tracked excavator fitted with a toothless bucket and measured 2m by 2.5–4m. Borehole and Dynamic Cone Penetration (DCP) starter pits were excavated by hand. Where structures, features, deposits or finds of archaeological interest were exposed, mechanical excavation ceased to allow the investigating archaeologist to assess and record the remains. Once archaeological observations were complete, the monitoring archaeologist allowed mechanical operations to recommence. A toothed bucket was used to excavate the trial pit down to the specified depth, which varied between 3m and 6m.
- 5.2 Where archaeological features extended beyond the limits of the trial pits, as in TP SBC12, TP SBC41 and TP SBC42, the exposed remains were cleaned and recorded and the pit moved. In this way, the presence of archaeology was noted and an interpretation made, but it is possible to preserve the remains in situ until full excavation of the features can be undertaken.
- 5.3 Archaeological designations for each intervention conform to those used by the GI contractors (AEG). A full record (written, graphic and photographic, as appropriate) was made for all work, using pro-forma record sheets and text descriptions appropriate to the work. The location of each intervention was surveyed by the GI contractors.
- 5.4 A photographic record of all contexts was taken in digital format and include a clearly visible, graduated metric scale where possible. A register of all photographs will be kept. The digital photographs will be submitted to the Archaeology Data Service (ADS) for long-term archive storage.
- 5.5 No finds of archaeological interest were recovered.

5.6 Upon discussion between the contractor and the monitoring archaeologist, it became clear the trial pits to be excavated at Scotch Corner were within areas of made ground previously subjected to archaeological excavation (Fell 2020), and therefore monitoring of these interventions was not required.

6.0 RESULTS

6.1 Monitoring of the GI works revealed very little archaeological evidence. The majority of trial pits did not contain archaeological features, deposits or finds; those that were present probably related to known nearby Roman-period settlement or post-medieval agricultural regimes.

6.2 Only the trial pits that revealed potential archaeological remains will be discussed in detail here. An inventory of archaeological contexts recorded is listed in Appendix A, while a tabulated inventory of all trial pits, their deposit depths and characteristics are listed in Appendix B.

TP BB6

6.3 The trial pit was located north of the A66, within the footprint of the old South Durham & Lancashire Union Railway cutting (Fig. 2).

6.4 Beneath a thin topsoil layer was revealed a 0.2m-thick layer of compacted stone and black cinders that is likely to have formed the bedding material for the rail tracks (12, Plate 1). The trackway material had been laid upon natural mid-brownish grey boulder clay, which turned increasingly grey and stony towards the base of the trial pit, at a depth of 4.5m.



Plate 1: TP BB6 through the Bowes railway cutting. Stone, clay and cinder deposit 12 can be seen at the southern edge of the pit.

TP BB8 and BB09

- 6.5 The trial pit was located to the north of the A66 in a field that contained large and prominent ridge and furrow, aligned north to south (Plate 2, Fig. 2).
- 6.6 The pit was excavated through a plough ridge, revealing it to be made up of a 0.45m-thick mixed plough-soil of mid-greyish brown silty clay and redeposited yellow natural clay (13). No finds were recovered to enable potential dating of the ridge-and-furrow earthworks. TP BB09 was located in the field directly to the east, which also contained large ridge and furrow earthworks, presumably of the same regimen. A comparable mixed plough-soil horizon was also recorded in this pit.



Plate 2: prominent ridge-and-furrow earthworks in the vicinity of TP BB8, looking south-east.

TP CLR7

- 6.7 The trial pit was located immediately north of the A66 in the vicinity of Cross Lanes (Fig. 3). Stripping of topsoil revealed a concentration of large stones along the southern edge of the pit. The accumulation of stones perhaps related to field clearance and distribution along a boundary, but there was a possibility they could also be associated with the alignment of the Roman Road. No further exploration was conducted, and to avoid disturbing the remains further at this stage, the decision was made to move the pit c.0.7m to the north where no potential archaeological remains were present.

TP SBC12

- 6.8 The trial pit was located on the north side of the A66, to the south-east of West Layton Manor. The pit was situated in the south-eastern corner of a field set out to pasture, in proximity to its western, tree-lined boundary (Fig. 4).
- 6.9 Removal of a c.0.5m-thick turf and topsoil layer revealed the remnants of a cobble foundation (05) running roughly east to west at the southern end of the pit (Plate 3). Foundation 05 was a rubble construction of large, natural limestone cobbles and small, sub-angular sandstone fragments within a matrix of grey clayey-silt, that could indicate

that it was originally the foundation for an earthen bank. The rubble construction appeared to be sat directly atop the natural yellow clay, although it is possible that it could have been situated within a shallow construction cut. The width of **05** within the pit was 0.6m; however, it extended into the southern Limit of Excavation (L.O.E) and its full dimensions remain unknown. No earthworks were visible on the surface of the field to give any further indication of the extent or orientation of wall **05** and no finds were recovered during cleaning that could provide any dating evidence.

- 6.10 Aside from an initial surface clean for photographing, no further excavation of wall **05** was conducted. The trial pit was subsequently moved c.2m to the north to avoid any further disturbance to the in situ archaeological remains.



Plate 3: cobble wall foundation 05 in TP SBC12, looking south.

TP SBC18

- 6.11 The trial pit was located to the north of the A66, in an arable field opposite the junction with Waitlands Lane (Fig. 4).
- 6.12 Removal of a 0.5m-thick topsoil layer revealed the natural yellow clay into which were cut two irregular pits (**02**, **04**). Pit **02** was the smaller of the two, measuring 0.5m wide by 0.12m in depth, with shallow sloping sides culminating in a flat but uneven base. It

had been backfilled with a single deposit (**01**) of mid-brownish grey silty clay that contained patches of burnt orange clay and frequent flecks of charcoal. Pit **04** was located 0.6m east of **02** and was 0.6m wide by 0.13m deep. It displayed a similar shallow, irregular profile to pit **02** and had been backfilled with a comparable deposit of mid-brownish grey silty clay with burnt clay and charcoal inclusions (**03**). Neither pit demonstrated evidence of in situ burning, indicating the backfill material had been redeposited from elsewhere. No finds or diagnostic material was recovered from either feature to help ascertain a potential date or function.

- 6.13 Pits **02** and **04** were fully excavated and recorded before recommencement of the GI works.



*Plate 4: pits **02** (top) and **04** (bottom) in TP SBC18.*

TP SBC41

- 6.14 The trial pit was excavated into the roadside verge to the south of Warrener Lane, close to the junction with an unnamed lane leading to Pond Dale Farm (Fig. 5).
- 6.15 Removal of an initial thin (0.1m) layer of turf and topsoil and 0.4m of underlying subsoil revealed the edge of what appeared to be a sandstone trackway (**11**), running north-east to south-west at the eastern LOE of the pit.

- 6.16 The upper surface comprised medium to large, angular sandstone slabs of up to 0.5m in width, which appeared to be laid atop smaller and more irregular sandstone fragments within a matrix of mid-orange-brown silty clay. The western edge of **11** was defined by a series of orthostatic sandstone pieces. It was unclear whether the stonework had been situated within a cut or had merely sunk into the natural sandy clay. No further excavation was conducted. The trench was backfilled to preserve the archaeology in situ and the trial pit moved to the east to prevent further disturbance.



Plate 5: overview of sandstone trackway 11 in TP SBC41.

TP SBC42

- 6.17 The trial pit was located to the south of the A66 within an arable field to the east of Mainsgill Farm Shop and within the vicinity of the 2016 NAA excavations (Fig. 5, NAA 2016 and in prep.).
- 6.18 Removal of a 0.3m-thick topsoil layer exposed the natural yellow clay, which was cut at the north-eastern end of the pit by feature **06** (Plate 6). The feature was visible in plan over a span of 2.5m and extended into the eastern LOE of the pit. It had been infilled with a mid-greyish brown deposit of clayey silt (**09**), into which had slumped a layer of rounded and sub-angular sandstone fragments (**08**), of various widths up to a maximum

of 0.4m. The larger stones were concentrated along the edge of cut **06**, indicating that the feature was potentially linear and ran along a north-north-east to south-south-west alignment. An area of smaller sandstone fragments (**10**) was recorded in the south-eastern corner of the pit and could represent the remnants of a metallised surface above deposit **09**.

- 6.19 Feature **06** was cleaned and recorded in plan but was not investigated or disturbed further, the trial pit being moved to the north-west where no archaeological remains were present. No diagnostic finds were recovered and without additional excavation, the form and function of **06** are unclear. However, the concentration of stone and apparent linear form suggests a trackway, potentially belonging to the Roman roadside settlement previously identified in excavations directly to the north (NAA 2016 and in prep.). The degree of slumping of stone deposit (**08**) along the edge of **06** could indicate that the cut is of fairly substantial depth and therefore belongs to an initial ditch or hollow-way that was later capped with a stone track.



*Plate 6: feature **06** in TP SBC42, showing sandstone fragments (**08**) along the western edge and area of metalling to the south-east corner.*

7.0 DISCUSSION

- 7.1 Only seven of the 74 trial pits excavated for Geotechnical Investigations exposed archaeological remains. This may be considered a surprisingly sparse result considering the historical importance of the trans-Pennine corridor and the prevalence of known archaeological sites distributed along the A66.
- 7.2 The majority of the trial pits were excavated in pasture or arable fields and in some places the plough horizon and resulting topsoil layer was in excess of 0.5m thick. This intensive cultivation resulting from post-medieval farming practices has potentially erased many shallower, negative archaeological features, as well as levelling any extant earthworks. Several trial pits were also located in the verge along the current A66, the construction of which would also likely have resulted in significant truncation to any archaeological remains in the corridor. However, the 2016 excavations to the west of Carkin Moor Roman Fort demonstrate that there are areas where the creation of the verge has helped to preserve archaeological remains beneath (NAA 2016 and in prep.).
- 7.3 Aside from ephemeral remnants of the 19th-century South Durham & Lancashire Union Railway in TP BB6 and the impressive ridge and furrow earthworks recorded to the west of Low Broats Farm (TP BB8/BB9, Plate 2), all further archaeological remains were encountered along the stretch from Stephen Bank to Carkin Moor. Unfortunately, no finds were recovered to date these features and the small footprint of the trial pits (2m wide by 2.5–4m in length) precluded confident interpretation.
- 7.4 Shallow pits **02** and **04** within TP SBC18 contained similar charcoal rich fills that indicated they had been backfilled contemporaneously. The fills included heat-affected clay, potentially burnt daub perhaps originating from a nearby kiln or hearth/oven. Without further excavation, it is unclear whether these features represent an isolated pit cluster or belong to a wider, potentially structural, group of features. The extensive truncation appears to preclude the survival of archaeological occupation horizons; however, there is the possibility that the bases of related features still survive in the surrounding field.
- 7.5 The remainder of the archaeological features encountered were apparently linear, each extending beyond the LOE of their respective trial pits, meaning their full forms and extents were unclear, but enough of the features were visible to inform ideas about their functions. None of the features can be related to any documented previously on historic mapping of the area, implying that they could pre-date the mid-19th century.

- 7.6 Cobble and stone construction **05** in TP SBC12 probably provided a foundation for a wall or earthen bank or hedgerow that defined a former field boundary. It ran from east to west, roughly parallel to the line of the current A66 and perhaps reflected the line of the old routeway, still visible to the west.
- 7.7 Excavation of a Roman period roadside settlement along the southern verge of the A66 to the west of Mainsgill Farm (NAA 2016 and in prep.) revealed a series of partial enclosures set out perpendicular to the road. Located to the south of that excavation area, it is probable that feature **06** in TP SBC42 represents a trackway relating to the roadside settlement. The stonework on top of deposit **09** perhaps represented formalisation of an earlier hollow-way with an outer kerb (**08**) and metalled surface (**10**). Recent excavations of Pre-Roman and Roman settlement at Scotch Corner (Fell 2020; NAA 2020; Zant and Howard-Davis 2013) demonstrated that such trackways often defined the boundaries between distinct enclosures and often connected the areas of occupation with an agricultural hinterland beyond and this is likely the case with feature **06**.
- 7.8 A second potential trackway (**11**) was uncovered in TP SBC41. Like **06**, the upper surface was of large angular sandstone slabs, set upon a deposit of mid brown silty-clay that could represent the infill of an earlier hollow-way. There was also a possible kerb of on-edge sandstone blocks pressed into the lower deposit along the western edge. There was no evidence of a metalled surface and it is likely the entirety of the trackway surface was made up of angular sandstone slabs, the gaps being infilled with rubble. The south-western orientation of the track points directly towards Pond Dale Farm to the south and it is plausible that feature **11** was an original packhorse track leading to the farm when it was initially constructed.
- 7.9 There is also the possibility that feature **11** is much older and potentially Roman in date. Sandstone has been a favoured local building material from at least the 1st century AD due to its availability. It was used for walls, floors and road surfaces of early Roman date at Carkin Moor (NAA in prep.) and Scotch Corner (Fell 2020). It has been extensively quarried in the surrounding area up to the present day, with a large modern quarry still active along the A66 at Gatherley Moor. The location of the feature within a hinterland of known Roman archaeology, directly to the north-west around the fort at Carkin Moor, is also a contributing factor, along with its orientation towards the main trans-Pennine thoroughfare of the Stainmore Pass to the north (Margary road 82; Margary 1973, 433–6).

- 7.10 The linear nature of features **5**, **6** and **11** means that there is potential for continuations of these features to be revealed and studied during future work when it may be possible to ascertain dates of construction and a more comprehensive interpretation of their functions and contexts.
- 7.11 Results of the archaeological monitoring of the GI works have demonstrated significant archaeological potential to exist within the stretch between Stephen Bank and Carkin Moor. This area was largely untouched by the previous A66 widening scheme, aside from three test pits excavated within the Scheduled Monument of Carkin Moor Roman Fort (Zant and Howard-Davis 2013, 17–18), only one of which, sited over the defensive ditch, encountered archaeological remains (*ibid.*, Trench 13). However, the discovery of a substantial Roman settlement along the southern verge of the A66, to the west of the fort (NAA 2016 and in prep.), serves to confirm that the surrounding area is likely to be rich in surviving subterranean archaeological remains.
- 7.12 The previous A66 widening scheme also demonstrated that archaeological remains were encountered less frequently to the west of Stephen Bank, the area westwards to Greta Bridge being found to be largely devoid of archaeological remains aside from post-medieval ridge and furrow (GBA12) and a post-medieval quarry (GBA21; Zant and Howard-Davis 2013, 14). An earlier geophysical survey carried out along the same stretch (GeoQuest Associates 1999) did, however, highlight areas of archaeological potential outside the development corridor; therefore, the presence of archaeological remains should not be entirely discounted based on the negative results of the current GI works between Cross Lanes and Greta Bridge.
- 7.13 A number of trial pits in the vicinity of Greta Bridge were excluded from the works described here (TP CLR016–019, TP 021–022). As the location of a Roman fort and associated *vicus*, this area arguably holds significant archaeological potential. Previous excavations within the scheduled area revealed a well-preserved section of the Roman road and demonstrated that the *vicus* extended to the north of the fort, both to the east and west, for a considerable distance, with remains also surviving beneath the existing carriageway of the A66 (Casey 1998). The full extent of the *vicus* and hinterland of the fort at Greta Bridge is unknown and therefore any further work in the area as part of the carriageway upgrade could provide valuable information regarding the potential western limit of Roman occupation in this area.

7.14 Although no archaeology was encountered in the trial pits between Bowes and Greta Bridge, the historical and archaeological potential of the area cannot be discounted owing to the number of scheduled monuments and known historical sites distributed along the route of the A66. The course of the routeway is one which has funnelled human traffic through the trans-Pennine corridor for millennia and therefore the presence of multi-period archaeology should be anticipated during the execution of future works.

8.0 ARCHIVE DEPOSITION

8.1 The full digital archive from the archaeological investigations is to be deposited online in the Archaeology Data Service website.

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APPENDIX A
CONTEXT AND FINDS CATALOGUE

Context Number	Description	Trial Pit
1	Fill of pit 02	SBC018
2	Cut of pit	SBC018
3	Fill of pit 04	SBC018
4	Cut of pit	SBC018
5	Wall foundation	SBC012
6	Cut of ditch/trackway	SBC042
7	Alluvial clay deposit	SBC035
8	Stone 'trackway' surface in 06	SBC042
9	Brownish-grey fill of 06	SBC042
10	Metalled surface on 09	SBC042
11	Sandstone farm track	SBC041
12	Stone, clay and cinder bedding material of railway	BB06
13	Mixed plough-soil of furrow	BB08/BB09

APPENDIX B
TRIAL PIT DEPOSIT MODELS

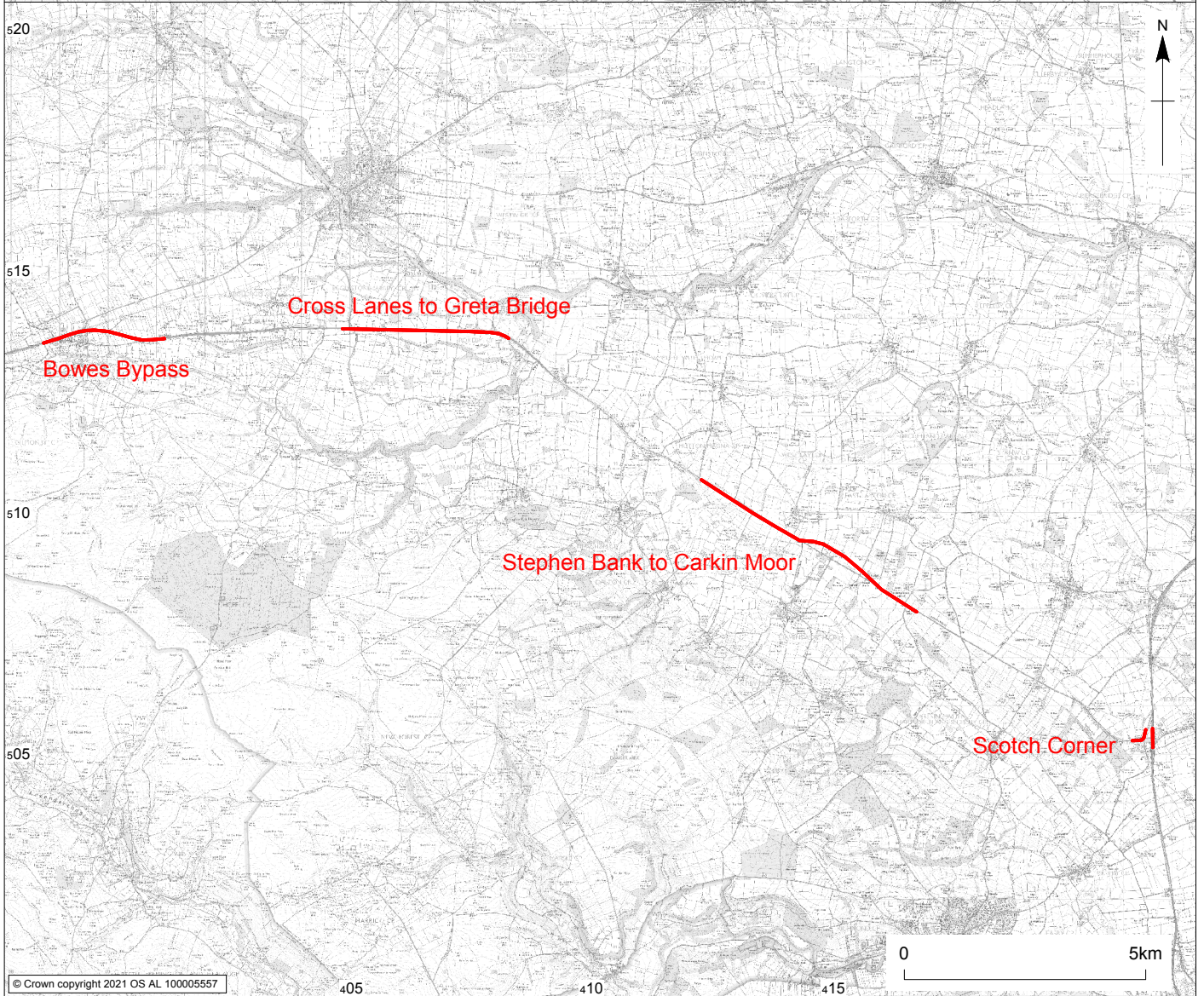
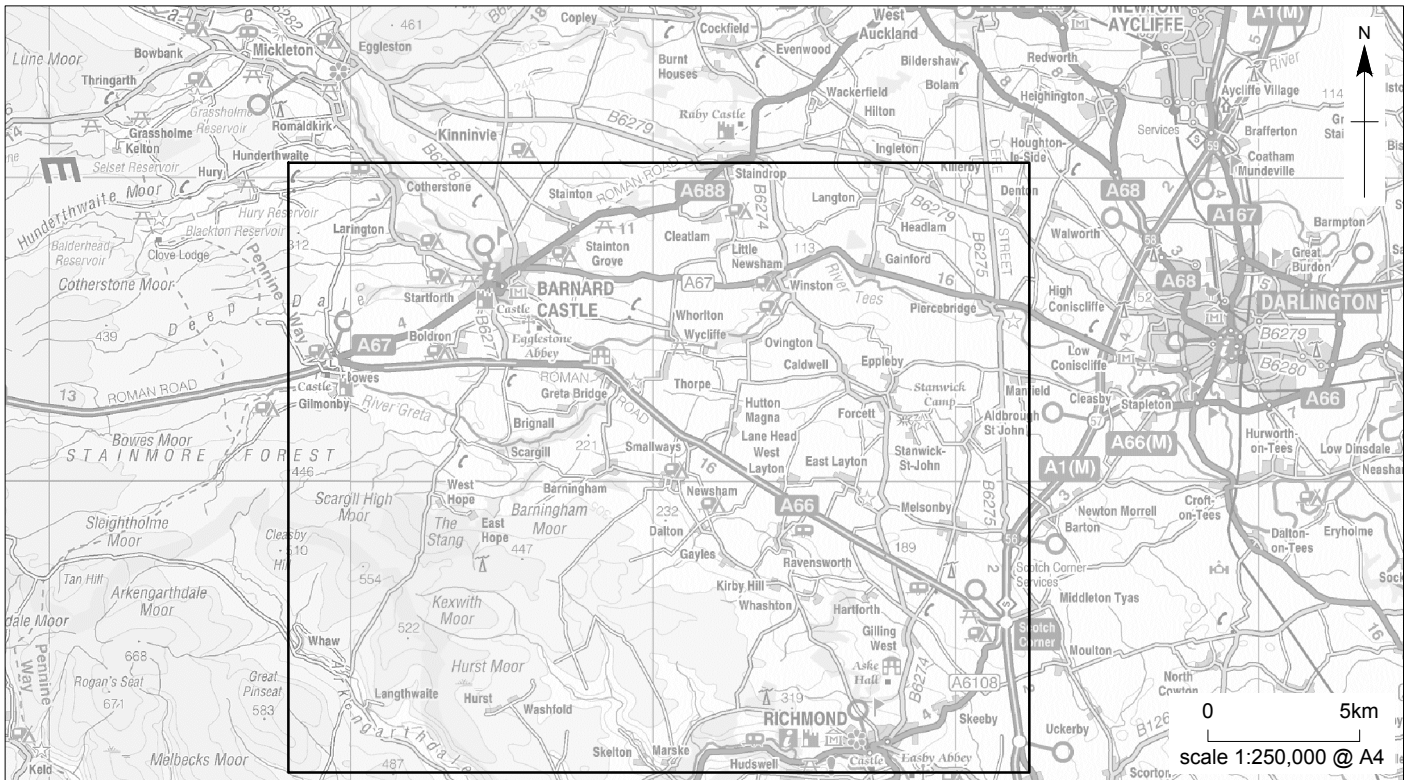
The values given in the table below relate to the depths of the deposits within each GI intervention. Where bedrock was reached, the depth at which it was encountered is given.

Trial Pit	Deposit Sequence
Bowes Bypass	
TP BB001	0.3m Topsoil 0.3–0.6m Subsoil 0.6–3.1m Natural Yellow Clay
TP BB002	0.2m Topsoil 0.2–0.5m Subsoil 0.5–4.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP BB003	0.2m Topsoil 0.2–0.5m Subsoil 0.5m–4.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP BB004	0.2m Topsoil 0.2–0.5m Subsoil 0.5–4.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP BB005	0.2m Topsoil 0.2–1m Modern Backfill of Service Trench 1–4.5m Natural Yellowish-Brown Sandy Clay 4.5m+ Limestone Bedrock
TP BB006	0.2m Topsoil 0.2–0.4m Mixed stone, clay and cinders 12 0.4–4.5m Mid Brown to Dark Grey Boulder Clay
TP BB007	0.15m Topsoil 0.15–0.35m Subsoil 0.35–2.5m Natural Yellow Clay to Dark Grey Boulder Clay 2.5–4.5m Mudstone
TP BB008	0.15m Topsoil 0.15–0.6m Mixed plough-soil of ridge 13 0.6–1.7m Natural Mid Orange-Grey Gravelly Clay 1.7m+ Sandstone Bedrock
TP BB009	0.15m Topsoil 0.15–0.6m Mixed plough-soil of ridge 13 0.6–1.9m Natural Mid Orange-Grey Gravelly Clay 1.9m+ Sandstone Bedrock
TP BB010	0.2m Topsoil 0.2–1.5m Natural Yellow Clay 1.5–3.1m Natural Dark Grey Sandy Silt and Gravel – Riverine?
TP BB011	0.3m Topsoil 0.3–0.5m Subsoil 0.5–2.5 Natural Yellow Clay to Dark Grey Boulder Clay 2.5+ Mudstone
TP BB012	0.2m Topsoil 0.2–0.3m Subsoil 0.3–4m Natural Yellow Clay to Dark Grey Boulder Clay
TP BB013	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3m Natural Yellow Clay to Dark Grey Boulder Clay
TP BB014	0.15m Topsoil 0.15–0.3m Subsoil 0.3–3m Natural Yellow Clay to Dark Grey Boulder Clay
Cross Lanes to Greta Bridge	
TP CLR001	0.25m Topsoil 0.25–0.65m Subsoil 0.65–2m Natural Yellow Clay and Gravel 2.0–3.7m Natural Dark Grey Boulder Clay
TP CLR002	0.3m Topsoil (N-S plough-scars visible in clay beneath)

Trial Pit	Deposit Sequence
	0.3–2m Natural Yellow Clay to Dark Grey Boulder Clay
TP CLR002a	0.3m Topsoil (E-W plough-scars visible in clay beneath) 0.3–2.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP CLR003	0.3m Topsoil 0.3–2m Natural Yellow Clay to Dark Grey Boulder Clay
TP CLR004	0.25m Topsoil 0.25–4.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP CLR005	0.2m Topsoil 0.2–4.5m Natural Orange-brown Gravelly Clay to Dark Grey Boulder Clay
TP CLR006	0.2m Topsoil 0.2–4.5m Natural Orange-brown Gravelly Clay to Dark Grey Boulder Clay
TP CLR007	0.25m Topsoil 0.25–0.55m Subsoil 0.55–3m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP CLR008	0.2m Topsoil 0.2–0.4m Subsoil 0.4–3m Natural Yellow Clay to Dark Grey Boulder Clay
TP CLR009	0.2m Topsoil 0.2–0.4m Subsoil 0.4–3m Natural Yellow Clay to Dark Grey Boulder Clay
TP CLR010	0.25m Topsoil 0.25–0.7m Natural Yellow Clay 0.7–4m Dark Grey Boulder Clay
TP CLR011	0.3m Topsoil 0.3–0.8m Natural Yellow Clay 0.8–4.5m Dark Grey Boulder Clay
TP CLR012	0.25m Topsoil 0.25–0.55m Subsoil 0.55–3m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP CLR013	0.25m Topsoil 0.25–0.35m Subsoil 0.35–3m Natural Brownish-Yellow Stony Clay to Dark Grey Boulder Clay
TP CLR015	0.3m Topsoil 0.3–0.4m Subsoil 0.4–3m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP CLR020	0.15m Topsoil 0.15–0.45m Subsoil 0.45–4.5m Natural Orange-brown Gravelly Clay to Dark Grey Boulder Clay
TP CLR023	0.2m Topsoil 0.2–0.45m Subsoil 0.45–4.5m Natural Orange-brown Gravelly Clay to Dark Grey Boulder Clay
Stephen Bank to Carkin Moor	
TP SBC001	0.25m Topsoil 0.25–0.70m Natural Yellow Sandy Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC002	0.15m Topsoil 0.15–2.5m Natural Orange-brown Stony, Gravelly Clay to Dark Grey Boulder Clay
TP SBC003	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP SBC004	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC005	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3m Natural Brownish-Yellow Clay to Dark Grey Boulder Clay
TP SBC006	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3m Natural Brownish-Yellow Clay to Dark Grey Boulder Clay
TP SBC007	0.15m Topsoil 0.15–0.5m Subsoil 0.5–3.5m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP SBC008	0.15m Topsoil 0.15–2m Natural Yellow Stony Clay to Dark Grey Boulder Clay

Trial Pit	Deposit Sequence
	2–5.5m Mudstone
TP SBC009	0.1m Topsoil 0.1–0.2m Subsoil 0.2–1.2m Natural Light-Yellow Clay 1.2–3.5m Dark Grey Boulder Clay
TP SBC010	0.2m Topsoil 0.2–3m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP SBC011	0.2m Topsoil 0.2–3m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP SBC012	0.4m Topsoil 0.4–0.8m Natural Yellow Stony Clay 0.8–3m Dark Grey Boulder Clay
TP SBC013	0.25m Topsoil 0.25–0.35m Subsoil 0.35–0.8m Natural Yellow Stony Clay 0.8–3m Dark Grey Boulder Clay
TP SBC014	0.3m Topsoil 0.3–0.7m Gravelly Subsoil 0.7–1.5m Natural Brownish-Yellow Stony Clay 1.5m Water table encountered
TP SBC015	0.25m Topsoil 0.25–0.35m Subsoil 0.35–0.8m Natural Brownish-Yellow Clay 0.8–3m Dark Grey Boulder Clay
TP SBC016	0.3m Topsoil 0.3–0.70m Natural Yellow Sandy Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC017	0.4m Topsoil 0.3–0.7m Natural Yellow Sandy Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC018	0.5m Topsoil 01, 03 – Fills of pits 02 and 04 02, 04 – Cuts of pits 0.5–0.8m Natural Yellow Clay 0.8–3.5m Dark Grey Boulder Clay
TP SBC019	0.4m Topsoil 0.4–1m Natural Yellow Clay 1–3m Dark Grey Boulder Clay
TP SBC020	0.3m Topsoil 0.3–3m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC021	0.3m Topsoil 0.3–3.5m Natural Yellow Clay to Dark Grey Boulder Clay Sandstone Bedrock outcrop at c.1m at northern edge.
TP SBC022	0.30m Topsoil 0.3–0.70m Natural Yellow Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC023	0.3m Topsoil 0.3–0.70m Natural Yellow Sandy Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC024	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3.5m Natural Yellow Stony Clay to Dark Grey Boulder Clay
TP SBC025	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC026	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC027	0.2m Topsoil 0.2–0.3m Subsoil 0.3–3.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC028	0.3m Topsoil 0.3–3.5m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC029	0.2m Topsoil

Trial Pit	Deposit Sequence
	0.2–0.6m Natural Yellow Clay 0.6–3.5m Dark Grey Boulder Clay
TP SBC030	0.3m Topsoil 0.3–0.6m Natural Yellow Clay 0.6–1.6m Yellowish-Brown Sandy Clay 1.6–3.5m Dark Grey Boulder Clay
TP SBC031	0.2m Topsoil 0.2–3.2m Natural Yellow Clay to Dark Grey Boulder Clay
TP SBC032	0.3m Topsoil 0.3–0.8m Natural Yellow Clay 0.8–3.5m Dark Grey Boulder Clay
TP SBC033	0.4m Topsoil 0.4–1m Natural Yellow Clay 1–3m Dark Grey Boulder Clay
TP SBC034	0.25m Topsoil 0.25–0.70m Natural Yellow Sandy Clay 0.7–3.5m Dark Grey Boulder Clay.
TP SBC035	0.3m Topsoil 0.3–0.5m Subsoil 0.5–0.7m Natural Yellow Clay with lens of Bluish Grey Clay 0.7–1.2m Natural Yellow Sandy Clay 1.2–3.5m Dark Grey Boulder Clay
TP SBC036	0.3m Topsoil 0.3–0.70m Natural Yellow Stony Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC038	0.4m Topsoil 0.4–0.60m Subsoil 0.6–1.2m Natural Yellow Stony Clay 1.2 – 3.5m Dark Grey Boulder Clay
TP SBC039	0.3m Topsoil 0.3–0.70m Natural Yellow Stony Clay 0.7–3.5m Dark Grey Boulder Clay
TP SBC040	0.0.25m Topsoil 0.25–0.55m Subsoil 0.55–1.2m Natural Orange-Grey Sandy Clay 1.2-3.5m Dark Grey Boulder Clay
TP SBC041	0.2m Topsoil 0.2–3m Natural Yellowish-Brown Sandy Clay to Dark Grey Boulder Clay
TP SBC042	0.3m Topsoil 0.3–3.5m Natural Yellow Clay to Dark Grey Boulder Clay 3.5m+ Laminated Sandstone Bedrock
TP SBC043	0.3m Topsoil 0.3–1.2m Natural Brownish-Yellow Sandy Clay 1.2-3.5m Dark Grey Boulder Clay
TP SBC044	0.0.25m Topsoil 0.25–0.55m Subsoil 0.55–1.2m Natural Brownish-Yellow Sandy Clay 1.2-3.5m Dark Grey Boulder Clay

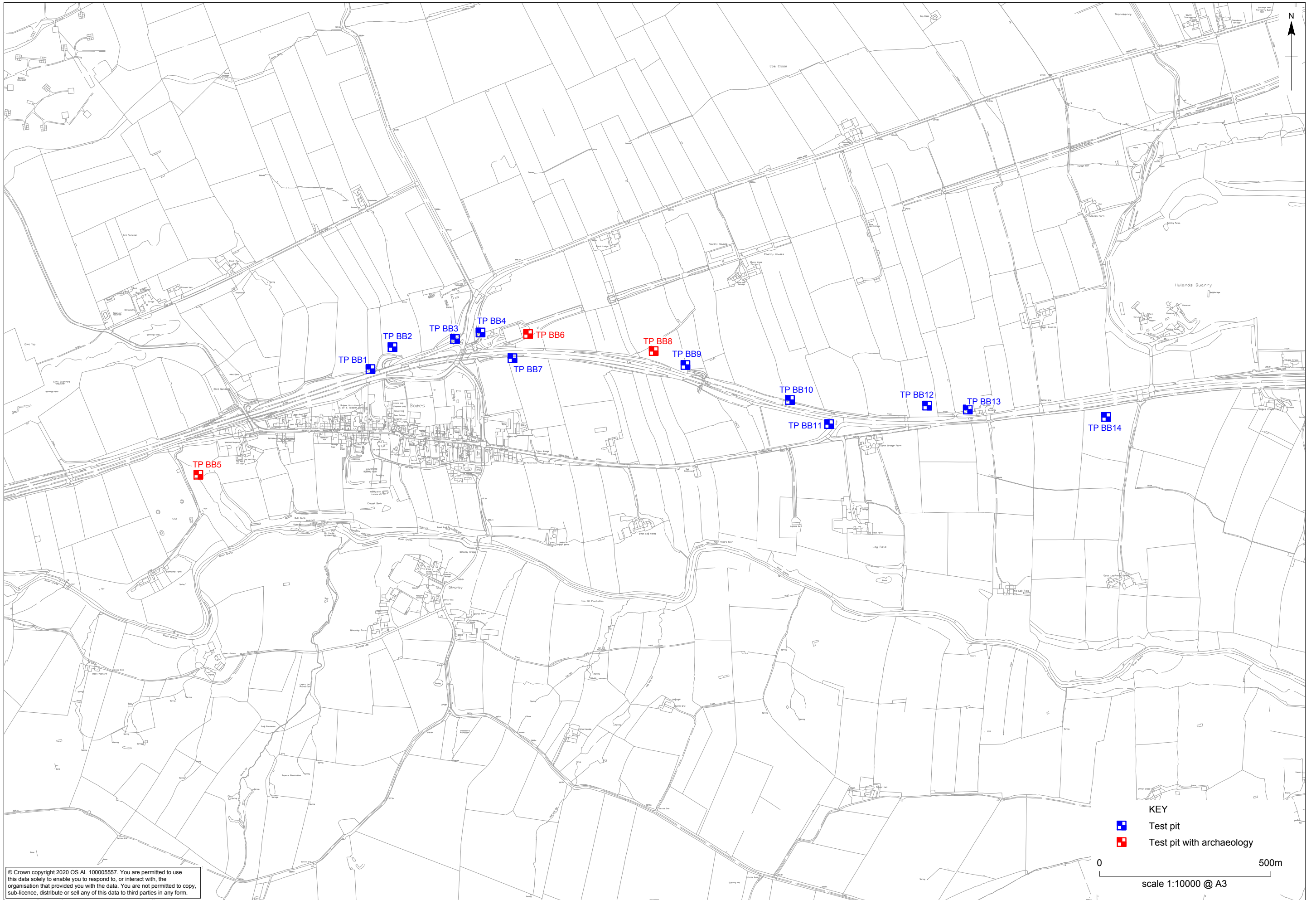


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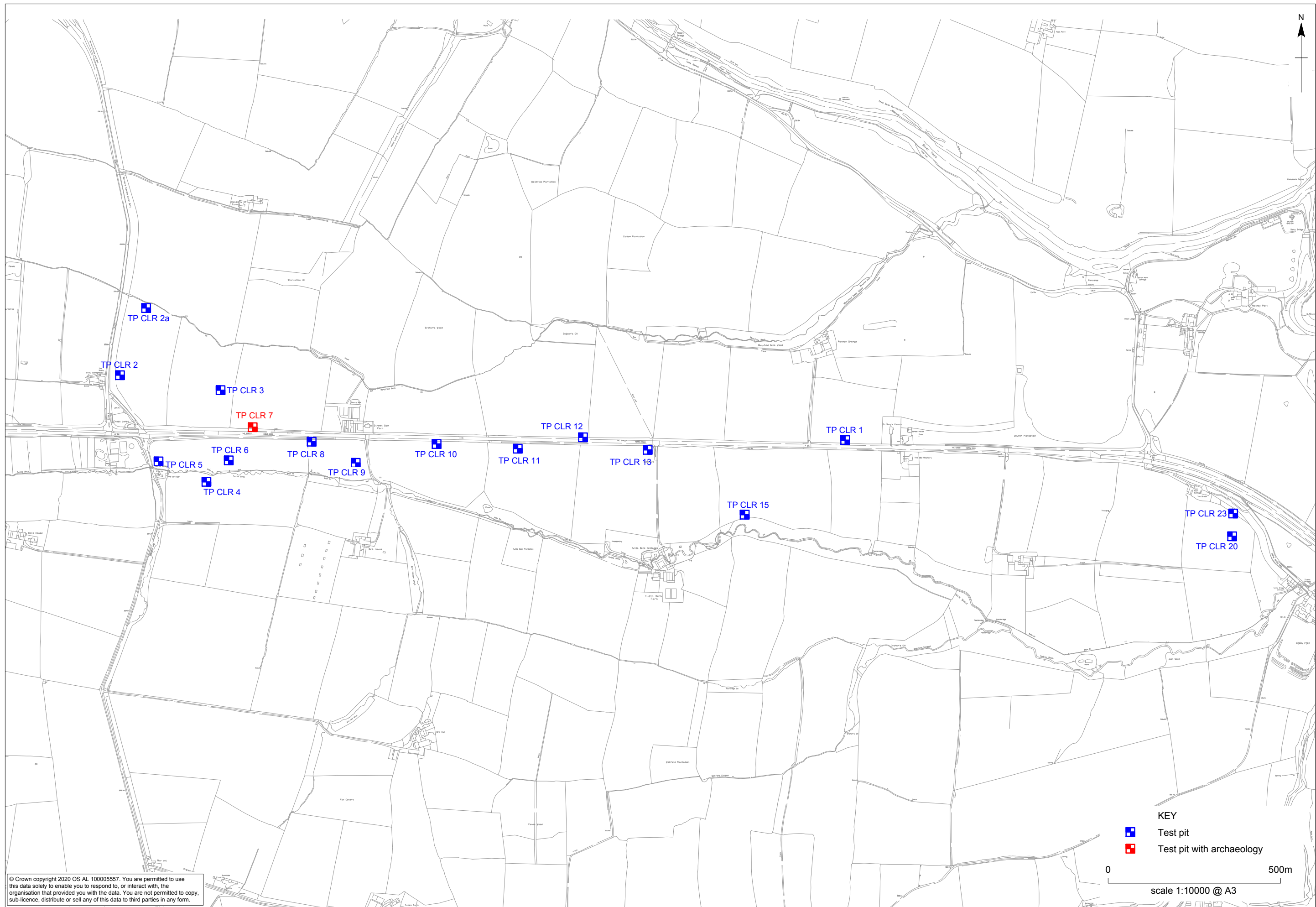
A66 Bowes to Scotch Corner: general location of ground investigations

Figure 1



A66 Bowes to Scotch Corner: location of test pits, Bowes Bypass

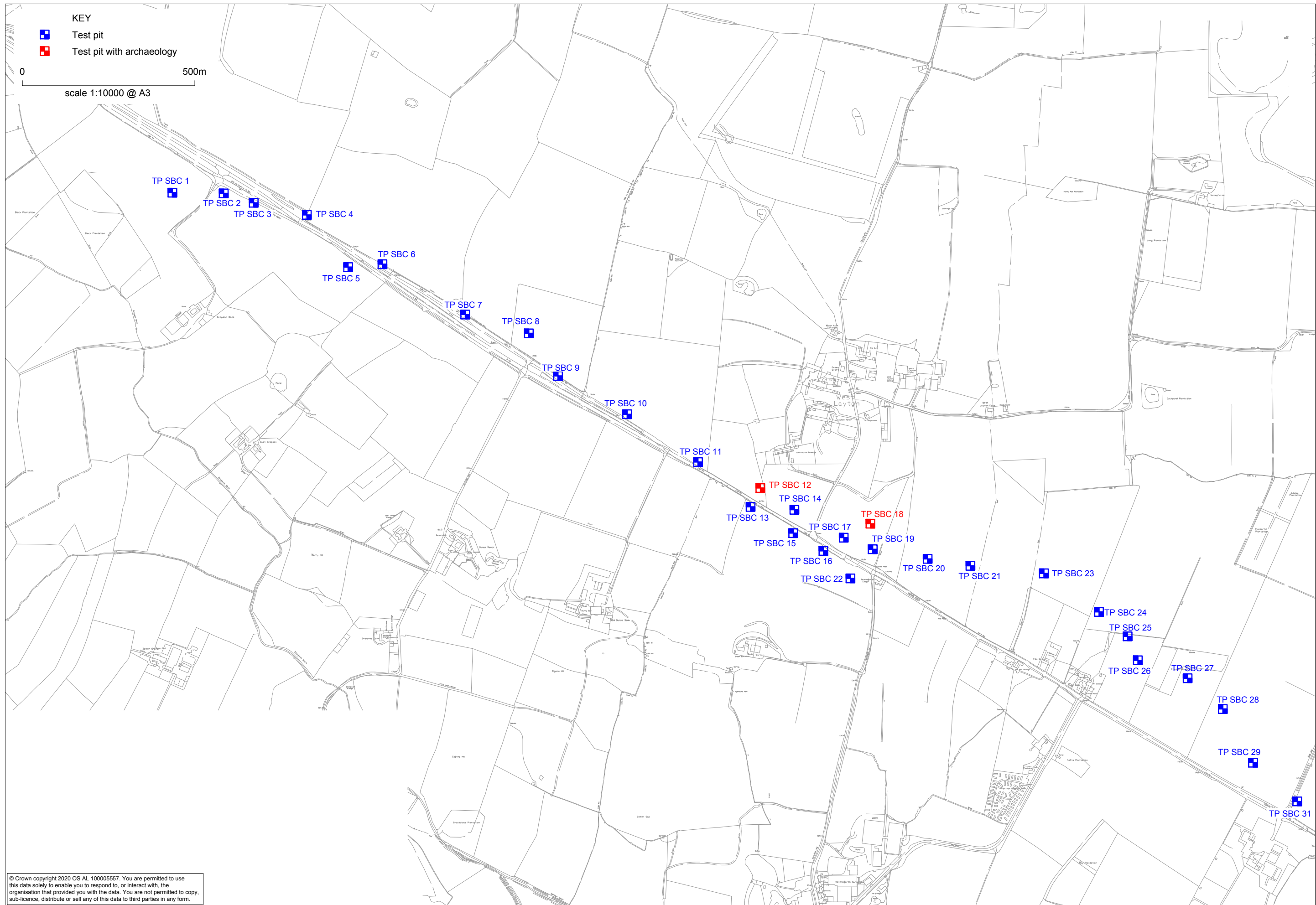
Figure 2



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A66 Bowes to Scotch Corner: location of test pits, Cross Lanes to Greta Bridge

Figure 3

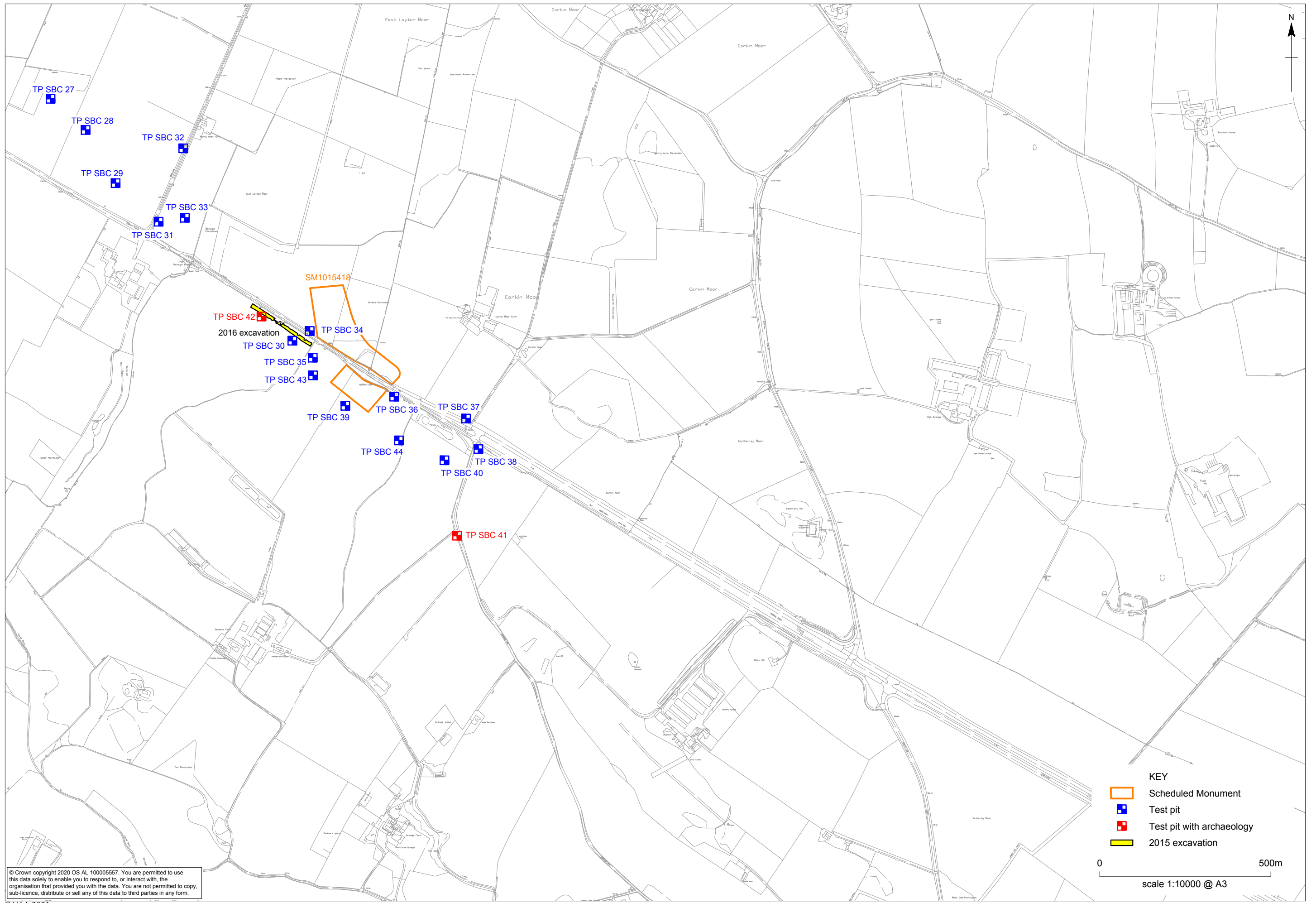


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A66 Bowes to Scotch Corner: location of test pits, Stephen Bank to Carkin Moor (north-west)

Figure 4



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A66 Bowes to Scotch Corner: location of test pits, Stephen Bank to Carkin Moor (south-east)

Figure 5