



Hardknott to Ambleside Roman Road - Blackhall Farm

CUMBRIA

Archaeological Survey



Oxford Archaeology North

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SUMMARY

Oxford Archaeology North (OA North) was commissioned by The National Trust to undertake an archaeological survey of a section of the Hardknott to Ambleside Roman Road that extends between Blackhall Farm and Cockley Beck Bridge (NY 23784 00994 – 24648 01700). The survey was intended to provide a mitigative record of the Roman road, prior to a programme of track repair comprising the addition of a top-dressing layer. The land is statutorily protected as a scheduled monument (AM 22902) and the work will inform an application for Scheduled Monument Consent to undertake maintenance of the road.

The line of the Hardknott / Ambleside Roman road extends along Wrynose Bottom and for the most part takes a different line from the modern road. The area has not been agriculturally improved and so the road survives on the surface as an earthwork. The only section of the Roman road that coincides with a modern day route way is the track between Cockley Beck and Blackhall Farm, and is the subject of the present investigation. With no evidence of a prehistoric routeway, as a precursor to the Roman road, the road appears to have been specifically constructed in order to link the Roman forts of Ambleside and Ravenglass.

The remains of the Roman road were discernible as a low, grassed linear mound that was easily identifiable in the eastern section but became indistinct in places to the south-west of Blackhall Farm. The road was clearly designed to be as level as the terrain would allow, with a gradient of only 1:60 in the central section of the survey area and the terraced areas at the north-eastern end appeared to represent parts of the road that had been built up, artificially, in order to achieve this.

Due to the status of the Roman road as a scheduled monument, there has been a reluctance in the past to engage in any major resurfacing that might be potentially damaging to areas of archaeological interest. As a result, the section of the monument between the modern road to the east and Hardknott Gill to the west has become severely eroded. Large areas of the roadway that had once been used by vehicles were being bypassed by sinuous sections of the track in order to avoid exposed stones that might cause vehicle damage. These areas, having lost protective turf coverage, were also subject to water erosion. The western stretch of the road, south-west of Hardknott Gill, was no longer visible where it coincided with the modern farmyard hardstanding and hay storage. Otherwise the line of the Roman road was only being used by infrequent off-road vehicles and was not suffering severe erosion. The eastern end of the road, between the modern Wrynose Bottom road and Moasdale Beck, was well preserved, but is being used as an occasional parking place.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank Jamie Lund, archaeologist at The National Trust for commissioning the project, and for considerable support and advice in the course of the project. We would also like to thank the tenant farmer of Blackhall Farm for his support and for putting up with the inevitable disruption during the survey.

The field survey was undertaken by Jamie Quartermaine, and Alastair Vannan. The report was written by Alastair Vannan, and the illustrations were by Marie Rowland. The report was edited by Jamie Quartermaine, who also managed the project.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 Oxford Archaeology North (OA North) was commissioned by The National Trust to undertake an archaeological survey of a section of the Hardknott to Ambleside Roman Road that extends between Blackhall Farm and Cockley Beck Bridge (NY 23784 00994 – 24648 01700) (Fig 1). The survey was intended to provide a mitigative record of the Roman road, prior to a programme of track repair comprising the addition of a top-dressing layer. The land is statutorily protected as a scheduled monument (SM 22902) and the work will inform an application for Scheduled Monument Consent to undertake maintenance of the road.
- 1.1.2 The survey was undertaken on the 6th, 7th, and 9th of November 2006 and this report provides the results of that survey and an impact statement of the proposed development upon the historic fabric.

2. METHODOLOGY

2.1 PROJECT DESIGN

- 2.1.1 The survey of Hardknott Roman Road was undertaken in accordance with a project design prepared by OA North (*Appendix 2*), which was itself in accordance with a project brief by The National Trust (*Appendix 1*). The project design included a programme of watching brief during the excavation of culverts across the line of the Roman road, but in the event, it was found that it was not necessary to insert additional drains across the road and, consequently, no watching brief was undertaken. Also, it was found that there were no sections / pot holes that were sufficiently large to warrant cleaning a section and drawing, consequently this element was omitted from the programme. In all other respects the work was undertaken in accordance with the project design.

2.2 TOPOGRAPHIC SURVEY

- 2.2.1 *Instrument Survey*: a level 3 survey (OA North 2002a), equivalent to RCHM(E) level 3, was undertaken of the study area. Survey control was established over the site by closed traverse and internally was accurate to +/- 15mm; the control network was located onto the Ordnance Survey National Grid by locating the site to the current field boundaries shown on the Ordnance Survey 1:10,000 base map.
- 2.2.2 *Detail Survey*: the surface features were surveyed by EDM tacheometry using a total station linked to a data logger, the accuracy of detail generation being appropriate for a 1:500 output. The digital data was transferred onto a portable computer for manipulation and later transferred to other digital or hard mediums. Film plots were outputted via a plotter. The archaeological detail was drawn up in the field as a dimensioned drawing on the plots with respect to survey markers.
- 2.2.3 A series of four profiles were surveyed across the line of the Roman road, and were converted in AutoCAD to vertical sections; the Z axis was exaggerated by a factor of two in order to emphasise the profile of the road.
- 2.2.4 The survey drawings were generated within a CAD system and were merged with Ordnance Survey Landline Data loaned, under licence, to the present project by the National Trust.

2.3 ARCHIVE

- 2.3.1 A full professional archive has been compiled in accordance with the project design (*Appendix 1*), and in accordance with current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited with the National Trust on completion of the project.

3. BACKGROUND

3.1 HARDKNOTT / AMBLESIDE ROMAN ROAD - INTRODUCTION

- 3.1.1 **Topographic Setting:** the study area comprised the section of Roman road between Moasdale Beck to the east and the intake wall of Blackhall Farm to the west (Fig 1). This stretch of the road had a north-east to south-west alignment and was approximately 1116m in length, passing through undulating grazing land to the north of the River Duddon (Plate 31). This section of road line extends just above the Wrynose Bottom valley floor, and the area is characterised by very steep sided valley sides, and an extremely rugged terrain. Despite this, the main section of the road has a uniform gradient of only 1:60, reflecting a very considered careful choice of route and a limited amount of embankment.
- 3.1.2 The line of the road for the most part takes a different line from that of the modern road; the area has not been agriculturally improved and so the road survives on the surface as an earthwork. The only section of the Roman road that coincides with a modern routeway is the track between Cockley Beck and Blackhall Farm, and is the section presently under investigation. Richmond (1949) (Fig 2) records that at that date the farm track was nine feet (2.74 m) wide and meandered across the top of the twenty feet (6.10 m) wide mound of the Roman road. Attempts in the past have been made to protect the Roman fabric by the application of a top dressing of crushed stone. This is now eroding, warranting the proposed repair and maintenance of the track.

3.2 ROMAN PERIOD

- 3.2.1 With no evidence of a prehistoric routeway, as a precursor to the Roman road, the road appears to have been specifically constructed in order to link the Roman fort at Ambleside (Collingwood 1914) with the fortlet at Ravenglass (Potter 1979). The fort at Ambleside was constructed between AD 90–100 (Bidwell *et al* 1999), but it was not until *c*AD 119, during the early Hadrianic period, that the route westwards to the coast, *via* the Hardknott pass, appears to have become significant. At this time Hardknott fort was constructed (Bidwell *et al* 1999, 69), apparently to defend the vulnerable route inland from the coast (*op cit*, 72). At a similar date, *c* AD 120, the first structural phase of building at Ravenglass began with the construction of a fortlet (Potter 1979, 18).
- 3.2.2 Rather than seeing the Roman road as a two phase initiative, initially being a means to service the fort at Hardknott before being subsequently extended to reach the fortlet at Ravenglass, the similar foundation dates suggest that the Hardknott fort, Ravenglass fortlet, and the road were constructed contemporaneously, in order to create, and protect a direct overland route between the coast and Ambleside. Indeed, it has been suggested (Bidwell *et al* 1999, 66) that the fort at Hardknott became obsolete, and was abandoned, when the fortlet at Ravenglass was replaced by a fort capable of defending the eastward pass. However, construction of the fort at Ravenglass began in *c*AD 130 (Potter 1979) and the Hardknott fort was not abandoned until *c*AD 150 (Bidwell *et al* 1999), the transfer of responsibility for the defence of the Hardknott route was clearly not immediate.

The sequence of the occupation of these forts reinforces the idea that Hardknott fort existed in order to protect the road route rather than the road having been built primarily to service the fort. Indeed, the largely unpopulated nature of the locale (*op cit*, 69), suggests that Hardknott fort may have been otherwise unnecessary. The road is likely to have remained in use until at least the late fourth century, as coins from the forts at Ravenglass and Ambleside show that they were occupied until at least AD 364 (Collingwood 1914; Potter 1979) and Potter (1979) suggests that Ravenglass may still have been in use after AD 383.

- 3.2.3 There is a limited amount of settlement in the area during this period, but this is of undoubted Iron Age character. The survey at Barnscar (Quartermaine and Leech forthcoming), on the South-West Fells, demonstrated a complex enclosed settlement with an associated field system that was superimposed onto an earlier field system, that was presumed to be of Bronze Age date. A trench was excavated within the settlement by G de G Sieveking in about 1957, and produced a Romano-British brooch (C Richardson pers comm).
- 3.2.4 Closer to Hardknott, but still on the South West Fells, is a settlement at Brantrake Moss, which has two unenclosed round houses, each with an associated stock enclosure, and all contained with a small field system. Palaeobotanic work by Winifred Pennington demonstrated that pollen spectra, from beneath a field bank, correlates to a dated pollen diagram from Devoke Water and indicates dates of *c* cal AD 200 and cal AD 580 (Pearsall and Pennington 1973, 234-5). Both these examples demonstrate native settlement on the marginal lands in the area during the Roman period, and would suggest that the lowlands were equally exploited.

3.3 POST-ROMAN / EARLY MEDIEVAL

- 3.3.1 **Pollen Evidence:** the pollen evidence from nearby Devoke Water (Pennington 1964; 1965 and 1970) indicates that there was considerable clearance and agricultural activity within the wider region during the Roman and subsequent periods. Radiocarbon assay (NPL 117-120; Pennington 1970; Callow and Hassall 1969) of a clearance episode within the core provides dates of cal AD 148-679 (1585±130 BP; NPL-119) and cal AD 129-666 (1620±130 BP; NPL-120). The episode was associated with evidence of cereal pollen in the uplands (Pennington 1970), suggesting cultivation and land-use in the environs of Devoke Water in the Romano-British period, continuing into the early medieval period.
- 3.3.2 Both at Devoke Water and nearby Tewit Moss, following the Romano-British period there was what appears to have been a slight and brief regeneration of the woodland, seemingly in the seventh or eighth century AD, but to all intents and purposes, from the early medieval period onwards, through to the present, the pollen diagrams suggest that the landscape remained cleared with only some secondary woodland. This reflects the continued grazing of the uplands since this period, but not necessarily intensive farming in the vicinity of Devoke Water. However, the episode of cultivation indicated by cereal pollen extended into the early medieval period and would suggest that, at least for part of the second half of the first millennium AD, there was some arable farming practised in the environs and is an indication of more intensive agricultural activity in the environs.
- 3.3.3 The palaeobotanic evidence is reinforced by the excavation of a clearance cairn near Devoke Water (Quartermaine and Leech forthcoming). It was expected that

the clearance cairn would have a Bronze Age date, but when a buried soil horizon was subject to radiocarbon assay they produced dates of cal AD 662-979 and cal AD 977-1219. This would indicate early medieval stone clearance activity on the marginal uplands to the south-west of the Duddon Valley.

- 3.3.4 **Place-Names:** the palynological evidence is reinforced by place-name evidence. The existence of *thwaite* place-names in the surrounding areas, such as Waberthwaite, Tilberthwaite, and Farthwaite, demonstrate widespread Scandinavian influence in the region with the *thveit* root denoting a woodland clearing (Higham 1986). These place-names are, therefore, suggestive of initial Scandinavian settlement that would have required woodland clearance, although some may be post-Conquest in origin, as by this time such place-name elements had become part of the local dialect (*ibid*).
- 3.3.5 **Sculpture:** there is further evidence for early medieval settlement of the wider area surrounding the Hardknott pass in the late first millennium from sculpted stone, such as stone crosses (Bailey and Cramp 1988). Some of these crosses, such as that from Irton, date to the Anglian period (eighth and ninth centuries) whilst others, such as those from Waberthwaite and Gosforth, date to the Viking period of the tenth and eleventh centuries (Bailey 1980). It is suggested (Newman 2006) that the 28 earlier sculptures represent Anglian monastic endeavours, whereas the much greater number of 111 later pieces were the product of an incoming Viking aristocracy.
- 3.3.6 **Thingmount:** the presence of Norse settlement activity is further supported by the discovery of a Norse *Thing* mound at Thingmount, on land adjacent to Fell Foot Farm, Little Langdale (Quartermaine and Krupa 1994). The purpose of a *Thing* was as a moot mound for large communities where matters of law and administration could be engaged, and was essentially a Houses of Parliament and old Bailey rolled into one. It served as a medium for the physical reinforcement of social structure by the strict ordering of attendees position on the different terraces of the mound (Quartermaine and Krupa 1994), and is a tradition still observed at the Tynwald mound on the Isle of Man (Tynwald 2006). The *Thing*, typically served a large community comprising the inhabitants of several Norse estates, and such mounds were typically in the centre of settlement areas and on lines of good communication, so that the dispersed communities could easily come together. In the case of the Thingmount, in Little Langdale, it is in the centre of the Lake District, and is on the line of the principle natural communication route, the Hardknott / Wrynose passes that provided access from West Cumbria, which was clearly an area of significant Norse settlement.
- 3.3.7 The evidence provided by place-names and stone sculpture as signifiers of population density in the late first millennium, considered together with the role of the *thing* mound as an important social and political centralising mechanism, suggests that the east to west routeway remained active, and vital, during the Norse period and that the Roman road may have constituted at least parts of it.

3.4 LATER MEDIEVAL / POST-MEDIEVAL

- 3.4.1 It is evident that by the time of the earliest map that shows roads, Donald's map of 1777 (Fig 3), the line of the modern road had superseded the line of the Roman road. It is likely that the Hardknott / Wrynose communication route continued to

be used through the early medieval and medieval period, so there has to be a reason why the well engineered Roman road was abandoned in favour of a more sinuous route. The reason for the divergence of the routes may simply be that the Roman road was too well engineered, being relatively straight which required multiple crossings of the Duddon and other major becks, that would typically have utilised wooden bridges. Following the inevitable decay of the wooden Roman bridges over the river, it is almost certain the traffic was diverted over an alternative route that allowed for far fewer and fordable crossings of the rivers/becks. Certainly, the modern line may not be straight or have a uniform gradient, but does have only a single crossing of the Duddon at Cockley Beck. This new route would have rendered whole portions of the Roman road obsolete, as, for the most part, it was on the opposite side of the Duddon from its Roman precursor.

- 3.4.2 The definite use, or reuse, of the Roman road, beyond the Roman period, is demonstrated only by the occasional convergence of the modern and Roman roads and by the reuse of the section of road targeted for this survey as an access trackway for Blackhall Farm, which remains in current use. This trackway was first shown on the Greenwood map of 1830/4 (Fig 4), although 'Black Hall' was shown as early as 1610 on John Speed's map of Cumberland, and indeed was the only settlement in the valley depicted. As this early building is situated on the line of the Roman road, it raises the question of whether portions of the Roman road had remained in use throughout the medieval period and up until the initial founding of Blackhall, which probably had its origins in the medieval period. The siting of Blackhall on a part of the Roman road, that does not in any way equate with the route of the modern road, suggests that this section of the road remained in use as a thoroughfare until at least the medieval period. This section does not cross any significant becks or rivers, so the divergence of the modern route away from the Roman was not because of the difficulty of water crossings. The question is therefore raised as to why the modern road bypasses Blackhall farm to the north, taking a far more difficult and dangerous route than that of the original Roman road.

4. TOPOGRAPHIC SURVEY

4.1 GENERAL DESCRIPTION

- 4.1.1 **Basic Form:** the remains of the Roman road consisted of an *agger* (Fig 5); the top of which varied between 6m and 6.8m in width with a height of between 0.25m and 0.75m (Plate 4) (Figs 12 and 13). The *agger* was discernible as a low, grassed linear mound that was easily identifiable in the eastern section (Figs 6 and 7) but it became more indistinct in places, particularly to the south of Blackhall Farm. In places, the land to the south of the road sloped sharply away to the river (Plate 12) although the southern edge of the *agger* was still generally discernible from the southward hill-slope. It was clearly evident that the line of the road had been deliberately embanked to form a uniform gradient for the road surface, which was only 1:60 in the central section of the survey area. The terraced, embanked areas at the north-eastern end had evidently been artificially built up to achieve this (Figs 6 and 7). For ease of description, photographic position numbers have been used to cross reference individual sections of the road. Photographs from all photo positions have been included, in a sequence from the north-east end of the road to the south-west end; however, not all photographs are referred to in the text.
- 4.1.2 **Bridge Crossing of Mosedale Beck:** At the eastern end of the survey area (Fig 6; photo positions 36–41), the Roman road was truncated by the modern road and to the east of this truncation was the terminal of a former bridge abutment for a crossing of Mosedale Beck. The *agger* at this point was 5.6m wide at the top and 8.3m wide at the base. The sharply defined *agger* ended abruptly, approximately 2m from the steep edge of the beck at a point that was too deep and obstructed by large rocks for any fordable crossing to have been possible once the bridge had gone out of use (Plate 1); no sign of any fabric associated with the bridge was visible and it was concluded that any superstructure had been of timber construction. Approximately 4m to the north of this bridging point, the beck was forded by a modern farm track, and may have represented an eastward continuation of the route, once the Roman bridge had no longer been usable (Plate 2). Although the modern track avoided the course of the Roman road, thus alleviating the routine wear of the road fabric, the grassed *agger* has been used as a scenic parking point by through-traffic and, as such, has received some wear.
- 4.1.3 **Central Section of Agger:** the large central section of the road was still in use as the base for the modern farm track (Plate 22), although the modern track was generally about half as wide as the *agger* and meandered slightly over the length of the road, generally preserving a margin of grassed *agger* along the road edges. This sinuous track-way had been gradually established by the avoidance of the larger patches of exposed stones along the route. These water-worn stones appeared to represent the original cobbled foundation course for the *agger*, that had become exposed by the erosion of the overlying, lighter road fabric by vehicle-wear and water action. This was evident both by the observation of the large size of the cobbles and by their position at a depth of approximately 0.20m below the surface of the *agger*. There were numerous patches of these exposed cobbles over the length of this central portion (Plate 18), with around 20 of them being particularly pronounced and varying between sub-ovoid patches

approximately 1m in diameter and elongated areas in excess of 12m long and 2m wide. The avoidance of these exposed cobbles had caused the road to become more severely worn along the course most regularly taken, and had resulted in plainly visible tyre-rutting and numerous potholes (Plate 10). There were in excess of 36 potholes, raging from approximately 0.75–8m in length, that had caused significant disturbance and damage to even these lower foundation courses of the road fabric (Plate 29). In numerous areas, particularly along the tyre ruts, the remains of gravel patches were visible indicating previous attempts to consolidate / repair the surface of the track. The absence of cobbles in some of the eroded areas suggests that any loose stones that may have represented a risk to vehicle tyres and caused a reduction in ground clearance may have been removed from the trackway.

- 4.1.4 **Side Drains:** the central section of the Roman road (Figs 6-9, photo positions 1–26), bounded by the modern road to the east and Hardknott Gill to the west, was the best preserved, and longest, part of the road, being clearly discernible throughout. Some truncation of the northern edge of the road has occurred when drainage ditches were dug, parallel to this edge, in the eastern section of the study area. Initial speculation had suggested that these ditches might represent recut Roman roadside ditches; however, they clearly relate to the modern drainage, indeed, to the east of the access gate to Blackhall, near the modern road (Fig 6, photo positions 1–5), up-cast material from these ditches had been deposited on top of the *agger* in sufficient quantities to suggest ditch digging, rather than cleaning. To the immediate south-west of the cross drain at photo position 14 (Fig 7), where the modern road side ditch diverts underneath the road, there is no indication of any former ditch continuing the line along the north side of the road. Indeed, for much of its length, there are no ditches along the northern side of the road. The land to the immediate north of the road is characterised by mire, and reflects that over a considerable period of time the raised road *agger* has acted like a dam preventing the drainage of the water to the river. There is also an absence of a ditch on the southern side of the road, but this is of little surprise as the ground drops away here until it reaches the river. As the ground on the southern side is naturally well drained, and there is no need for a drainage ditch.
- 4.1.5 There was clearly a need for drainage ditches on the northern side, and it is perhaps surprising that the Romans did not accord with their conventional road building design and place a ditch along the northern side. The explanation is that they probably did but because of the build up of mire against the *agger*, the ditches were most likely the first elements to fill, and now they are no longer evident as surface features. This possibility is potentially reinforced by the seeming presence of original cross drains, which are discussed further in *Section 4.1.6*.
- 4.1.6 **Cross Drains:** other areas of disturbance to the road in this area were the result of drains having been installed beneath the trackway to aid in the drainage of the land to the north. There were three such drains (Figs 7, 9 and 10) (photo positions 14 and 24–5), the truncating portions of which ran perpendicular to the road. Eight linear features of uncertain purpose, consisting of rows of stones laid perpendicularly across the road, had been exposed by the wearing of the road fabric. The most visible of these was of double thickness construction and 0.36m wide (photo position 16 (Fig 7)) and they appeared to be approximately flush with the cobbled road fabric. One possible purpose for these linear features was as mechanisms to divert running water from the road, or they are perhaps the remains

of cross drains. The presence of a camber to the *agger*, however, as well as the position of these stone lines beneath the level of the upper road fabric, suggests that they would only have been a useful feature during the earliest phase of the road when the cobbled foundation was laid. The relationship between these cross features and the cobbles would suggest that they were broadly contemporary.

- 4.1.7 At a point approximately halfway between Mosedale Beck and Hardknott Gill (Fig 8, photo position 19a) some modification had taken place that consisted of the widening of the road to create a short projecting shoulder and the addition of a rectangular (as observed) bed of gravel. This may simply represent the dumping of surface material, rather than a planned passing-place or lay-by. The absence of any soil build up over this gravel bed, would suggest that its deposition was of relatively recent origin.
- 4.1.8 **Quarry Pits:** running parallel and to the south of the central section of the road, was a line of sub-ovoid, putative quarry pits up to 5m in diameter (Figs 7-10, photo positions 12–25). Although eight such pits were mentioned by Richmond (1949, 23), a total of eighteen were observed during this survey and, as Richmond surmised, bog and foliage growth may have disguised more.
- 4.1.9 **Western Section:** the road became more difficult to trace in the western section of the survey area, to the west of Hardknott Gill (Figs 10 and 11, photo positions 28–35). Although the road must have crossed the beck at this point, there was no obvious bridge abutment as there had been for the Mosedale Beck crossing. However, the *agger* was observed to continue westwards, albeit very slight and with erosion from the gill obscuring much of it. The modern track diverted to the north of the Roman road at the eastern side of the gill (Fig 10, photo positions 26–7) and, therefore, the western section of the road was not subject to erosion from heavy vehicle use. Continuing west, the road ran under a west-north-west by east-south-east dry-stone wall that accentuated the slight nature of the *agger* profile by its replication in the line of the wall-top. Westwards, the road remained vague and its projected line ran underneath a silage storage area before appearing as a more substantial terraced embankment as it climbed the gradient towards Roundly Beck (Plate 38) (Figs 10 and 11, photo positions 30–3). In this area the road showed clear evidence of having been used by off-road vehicles.
- 4.1.10 The road crossed Roundly Beck by a ford which was clearly artificial as it had a substantial retaining wall of large dry-stone construction (Plate 37) along its south-eastern side. The line of the road south-west of the ford is slightly uncertain, but it appears to have a relatively straight course and diverges from the modern track, taking a more northerly path towards the intake wall. At the point of intersection between the wall and the road, the intake clearly dog-legs, and may reflect that the wall formerly crossed perpendicular to the line of the road, and hence a former crossing of the road survives as a dog-leg in the wall. Beyond the wall the road follows the line of a modern farm track and takes a line diagonally up the slope, towards a series of switch-backs beyond the area of investigation.
- 4.1.11 To the south-west of Blackhall Farm, a building platform was visible a short distance to the south of the line of the road; it was 18.5m x 10.15m in size and c 0.75m in height. There was no visible masonry associated with the platform, suggesting that this had been either a timber structure or a comprehensively deconstructed stone building. This was evidently a now relict and large building platform, and given its proximity to the present day Blackhall Farm, there is the

possibility that this was an earlier component structure of the farm. Given that this is the only building in the valley depicted on Speed's map of 1610, it raises the possibility that the farm extended back into the medieval period. As such, the form of the building platform could easily correspond with the position of the original farmhouse that preceded the present post-medieval farm. A grassed trackway ran north, along the eastern side of the platform, to meet with the current routeway between the buildings at Blackhall at a point near to the course of the Roman road.

5. CONCLUSIONS

5.1 ROAD CONSTRUCTION

- 5.1.1 The Roman road comprised a cambered *agger* the top of which was between 6 m and 6.80m wide and between 0.25m and 0.75m high built over a foundation of water-worn cobbles; the source of some of these cobbles appeared to have been the quarry pits that lined the road, particularly on the southern side. However, as the *agger* was substantially grassed over and the cobbled areas were only visible in the areas that had been worn by the modern farm track, the precise nature of the road fabric overlying the cobbles could not be discerned. The only visible ditches that ran parallel to the road were confined to the northern side of the north-eastern end of the road, and displayed clear indications of modern cut and deposition; there was no evidence that these had a more ancient origin. Although, it can be inferred that there must have been a Roman ditch on the northern side of the road, given that there are indications of probable cross-drains as part of the original construction (*Section 4.1.5*); it is tentatively concluded that any ditch has been filled by the mire that occupies the northern side of the road. The slope down to the river, to the south of the road, would have precluded the need for ditches on the southern side.
- 5.1.2 At the south-western end of the survey area (to the south-west of the Blackhall Farm) the *agger* became less obvious and the road followed the course of a stretch of natural, or partially modified, terracing before crossing a well constructed, and clearly old, ford. This ford is the only old water crossing on the line of the road that is still in use and, as this stretch of Roundly Beck was not wide enough to have warranted a bridge, it is probable that this was of Roman construction.
- 5.1.3 The southern edge of the *agger*, particularly at the north-eastern end of the area, was very well defined and this line was also utilised by a modern post and wire fence. Any possibility that the line of the road was accentuated by long-term differential erosion along the fence line, can be dismissed as the first edition OS mapping of 1867 clearly showed that this road edge corresponds with the present line and that this was not in use as a boundary at that time.

5.2 THE LINE OF THE ROAD

- 5.2.1 This stretch of the Roman road would have included three waterway crossings: Moasdale Beck; Hardknott Gill; and Roundly Beck. Although the retained ford over Roundly Beck remained navigable, the other two crossings would have required bridges; there is what appears to be a bridge abutment on the western side of Moasdale Beck but no indication of any abutments at the Hardknott Gill crossing. This tendency to regularly bridge waterways, in order to allow the course of the road to remain as straight as possible, may provide a reason for the abandonment of the Roman road following the Romano-British period. As the bridges fell into disrepair, the pack horse routes, in their place, would have utilised fords, necessitating the adoption of a new line to utilise natural ford crossings and to minimise the numbers of water crossings. This was demonstrated within the study area by the continued use of the ford over Moasdale Beck which lay to the immediate north of the former bridging point. Indeed, the only other

diversion from the Roman road line by the modern farm track occurred at the bridging point over Hardknott Gill, where the modern track diverted to the north and avoided the broad and steep stream banks at that junction.

- 5.2.2 It is, therefore, suggested that the reason for the almost total divergence of the modern road (first depicted in 1777 by Donald) (Fig 3) away from the line of the Roman road was that it followed the line of a former pack horse route that utilised fordable river crossings rather than straight road-lines. It is, however, very clear that the modern road utilised the post-medieval Cockley Beck Bridge over the River Duddon (Plate 2), rather than the previously mentioned ford to the north of the former Roman bridging point. This appears to have been to allow traffic on the modern Hardknott Pass to directly access the road to Dunnerdale, to the south, rather than being diverted eastwards along the north side of the River Duddon until the most western ford crossing point was reached and then being forced to double back to Cockley Beck.
- 5.2.3 It is, though, unclear as to why the original, gradually ascending, route of the Roman road westwards from Blackhall Farm towards Hardknott Fort was ignored in favour of the infamous modern road route that winds around steep and exposed hairpin bends. The Roman route was still in use, at least in part, by off-road vehicles at the time of the survey and there are no river crossings along the route that would have forced a change of route.

5.3 IMPACT

- 5.3.1 Due to the status of the Roman road as a scheduled monument, there has been a reluctance in the past to engage in any major resurfacing of the road that might be potentially damaging to areas of archaeological interest. As a result, the section of road, between the modern road to the east and Hardknott Gill to the west, has become severely eroded. Deep tyre ruts have exposed, and compromised the solidity of, the original cobbled hardstanding of the *agger*, in places having reduced this foundation layer to deep potholes with little sign of the original road fabric remaining. The raised central line, between the tyre ruts, was often seen to consist of exposed cobbles, the overlying metalling having been removed by a combination of vehicle wear and subsequent water erosion. Large areas of the roadway that had once been used by vehicles were being bypassed by sinuous sections of the track in order to avoid exposed stones that might cause vehicle damage. These areas, having lost protective turf coverage, were subject to water erosion and occasional vehicle intrusion, and correspondingly suffered further exposure of the cobble foundation (Plate 20). Modern drain cutting has truncated part of the northern road edge, at the eastern end of the road, and several drains have been cut perpendicularly across the road. The western stretch of the road, south-west of Hardknott Gill, was no longer visible where it coincided with the modern farmyard hardstanding and hay storage, but elsewhere this section was only being used by infrequent off-road vehicles and was not suffering severe erosion. The eastern end of the road, between the modern road and Moasdale Beck, was well preserved, but was being used for occasional parking; this has had a corresponding impact on the turf and to a lesser extent the underlying road metalling.

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APPENDIX 2
PROJECT DESIGN

September 2006

OXFORD
ARCHAEOLOGY
NORTH

BLACKHALL FARM ROMAN ROAD

DUDDON

CUMBRIA

ARCHAEOLOGICAL SURVEY AND EXCAVATION

Proposals

The following project design is offered in response to a request from The National Trust for an archaeological survey and watching brief / excavation of the Roman Road at Blackhall Farm, Duddon, Cumbria.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

1.1.1 This project design is offered in response to a request by The National Trust for an archaeological survey of a section (780m long) of the Hardknott / Ambleside Roman Road that extends between Blackhall Farm and Cockley Beck Bridge (NY 2397 0122 – 2463 0168). The survey is intended to inform the design of a programme of track repair intended to preserve the underlying Roman Road).

1.2 BACKGROUND

1.2.1 Hardknott – Ambleside Roman Road: the line of the Hardknott / Ambleside Roman road extends along Wrynose Bottom and for the most part takes a different line from the modern road. The area has not been agriculturally improved and so the road for the most part survives on the surface as an earthwork. The only section of the Roman road that coincides with a modern road / track is the track between Cockley Beck and Blackhall, which is the section that is the subject of the present investigation. Richmond (1949) records that at that date the farm track was 9foot wide and meandered across the top of the 20foot wide mound of the Roman road. Attempts in the past have been made to protect the Roman fabric by the application of a top dressing of crushed stone. This is now eroding, warranting the proposed repair and maintenance of the track.

1.2.3 The present programme of recording is required to inform a consolidation programme to repair the erosion across the site and to provide a mitigative record of the site in advance and during the works.

1.3 OXFORD ARCHAEOLOGY NORTH (OA NORTH) (FORMERLY LANCASTER UNIVERSITY ARCHAEOLOGICAL UNIT)

1.3.1 Oxford Archaeology North (OA North) has considerable experience of the evaluation, survey and excavation of sites of all periods, having undertaken a great number of small and large scale projects during the past 19 years. One of its particular specialisms is in the sphere of landscape recording and assessment. OAN has the professional expertise and resource to undertake the project detailed below to a high level of quality and efficiency. OA North is registered with the Institute of Field Archaeologists, and its members of staff adhere to the IFA Code of Conduct.

1.3.2 Since 1982 OA North has been undertaking extensive upland landscape surveys throughout Northern England which include the Lake District National Park Survey, the Torver Common surveys (Lake District), Haweswater and Thirlmere estate surveys (Lake District), that of Lyme Park (Peak District), the whole of the Arnside / Silverdale AONB, much of the Forest of Bowland AONB and a multitude of smaller landscape projects. OAN can therefore claim to be one of the foremost specialists in the field of upland landscape recording. In particular OA North has undertaken an extensive identification survey for LDNPA of land immediately west of the site (Hardknott Forest and Grassguards Survey (OA North 2002). OA North has undertaken numerous excavations and surveys of sections of Roman Roads from around the region, and includes the probable Roman timber constructed ford crossing of the Lune (OA North 2006).

2. OBJECTIVES

2.1 The objectives of the programme are the survey of the Roman Road, and the modern track. The recording of Roman fabric within potholes and the supervision / recording during the excavation of three culverts across the road. The programme has been designed in accordance with a brief by Jamie Lund of The National Trust, to provide an appropriate level of archaeological survey, within its broader context. The required stages to achieve these ends are as follows:

2.2 EARTHWORK SURVEY

2.2.1 A topographic survey will record the Roman road, the modern track, areas of disturbance / erosion, and quarry pits. It will include profiles across the road and modern farm track and will include spot heights (AOD) along the road tied into a permanent bench mark.

2.3 SECTION ANALYSIS

2.3.1 The areas of erosion will be closely examined for archaeological features and roman road fabric in particular. Drawings will be produced of sections across features of archaeological interest.

2.4 PHOTOGRAPHIC SURVEY

- 2.4.1 A photographic record will be compiled for the archaeological features and erosion scars within the study area.

2.5 WATCHING BRIEF

- 2.5.1 A watching brief will be maintained during the excavation of three culverts across the modern track. If possible a section through the Roman road make-up will be recorded.

2.6 REPORT

- 2.6.1 A written summary report will present the results of the programme and will provide some context for the Roman communications in the area.

3. METHODS STATEMENT

- 3.1 The following work programme is submitted in line with the stages and objectives of the archaeological work summarised above.

3.2 EARTHWORK SURVEY

- 3.2.1 It is proposed to undertake a level 3 survey (see OA North survey levels, *Appendix 1*) of the Roman road. The survey will include the full extent of the site and will be at 1:500 scale. It will include the Roman road mound (agger) and evidence for any road side ditches. In addition any quarry pits, as originally described by Richmond (1949), will be recorded. The survey will record the modern topography to provide an appropriate context for the archaeological detail and in particular will record the modern track. It will record areas of erosion / potholes, especially if they have exposed earlier road fabric.

- 3.2.2 The survey will record spot heights along the length of the road, and will record the surface prior to any track repair. The survey will be precisely located with respect to a permanent survey control marker, which can be used as a reference for monitoring the heights of the track during and subsequent to the track repair. A series of profiles will be surveyed across the Roman Road and modern track, and the locations of these profiles will be determined so as to record those sections with best survival of early fabric.

- 3.2.2 **Survey Control:** survey control will be established over the site by closed traverse and internally will be accurate to ± 15 mm. It is proposed that the control network will be located onto the Ordnance Survey National Grid by the use of Differential Global Positioning Survey (GPS), which will locate to an accuracy of ± 0.05 m (the use of this technique will be subject to receiving survey correction signals in the Duddon valley).

- 3.2.3 **Detail Survey:** the surface features will be surveyed by EDM tacheometry techniques. The total station will be linked to a data logger and the digital data will be transferred onto a portable computer for manipulation and later transfer to other digital or hard mediums. Survey plots will be output via a plotter and the archaeological detail will be drawn up in the field as a dimensioned drawing on the plots with respect to survey markers. Most topographic detail will also be surveyed, particularly if it is archaeologically significant or is in the vicinity of archaeological features. The survey drawings will be generated within a CAD system and can be output at any scale, and can also be provided in digital format for incorporation within a GIS system. The output of the CAD mapping will allow its adaptation for presentational purposes. This stage of the survey will involve a detailed assessment of the site and its general context and will be undertaken by an experienced landscape archaeologist.

3.3 SECTION RECORDING

- 3.3.1 A detailed examination will be undertaken for any archaeological features exposed in the eroded sections or pot holes. Any features identified will be subject to detailed survey and, where appropriate, will be recorded as a section. No excavation will be undertaken, although the sections will be subject to limited cleaning in order to clarify the sectional content. The final section drawings will be produced within a CAD system and will be presented as detail drawings.

3.4 PHOTOGRAPHIC RECORDING

- 3.4.1 In conjunction with the archaeological survey a photographic archive will be generated, which will record significant features, erosion scars and general landscape views. It will include photographs of the erosion scars and the archaeological features revealed. Photography will be undertaken using black and

white film for general record shots as well as digital photography for archaeological detail and features. The photographs will be accompanied by a photographic index record.

3.5 WATCHING BRIEF

- 3.5.1 **Methodology:** a programme of field observation will be undertaken during the excavation of the culverts across the line of the modern track. This will accurately record the location, extent, and character of any surviving archaeological features. This work will comprise the observation of the process of excavation for these works, the systematic examination of any subsoil horizons exposed during the course of works, and the accurate recording of all archaeological features and horizons, and any artefacts, identified during observation. In addition, if possible, a section across the line of the Roman Road will be produced
- 3.5.2 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). All archaeological information collected in the course of fieldwork will be recorded in standardised form, and will include accurate national grid references. Features will be planned accurately at appropriate scales and annotated on to a large scale plan provided by the Client. A photographic record will be undertaken simultaneously. The recording techniques and procedures employed by OA North for such detailed recording represent current best practice.
- 3.5.3 It is assumed that OA North will have the authority to stop works to enable the recording of the archaeological features. In normal circumstances, field recording will also include a continual process of analysis, evaluation, and interpretation of the data, in order to establish the necessity for any further more detailed recording that may prove essential.

3.6 REPORT

- 3.6.1 **Archive:** the results of Stages 3.1-5 will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects, 2nd edition, 1991*). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. It will include summary processing and analysis of any features and finds recovered during fieldwork. This archive can be provided in the English Heritage Central Archaeology Service format, both as a printed document and on computer disks as Ascii files, and a synthesis (in the form of the index to the archive and the report) will be deposited with the National Trust.
- 3.6.3 **Report:** six bound copies of a written summary report will be submitted to the National Trust. The report will include a copy of this project design, and indications of any agreed departure from that design. It will present, summarise, and interpret the results of the programme detailed above and will include a full index of archaeological features identified in the course of the project, together with appropriate illustrations, including a map of known or suspected sites identified within or immediately adjacent to the study area. It will also include a complete bibliography of sources from which the data has been derived, and a list of further sources identified during the programme of work, but not examined in detail.
- 3.6.4 This report will examine the significance of the landscape within a national and regional context. It will specifically present the evidence for the survival of the Roman road and will examine it within the context of other sections of this and other Roman roads in the county. Illustrative material will include a location map, and survey plans; it can be tailored to the specific requests of the client (eg particular scales etc), subject to discussion. The report will be in the same basic format as this project design.
- 3.6.5 **Confidentiality:** the report is designed as a document for the specific use of the client, for the particular purpose as defined in the project brief and this project design, and should be treated as such; it is not suitable for publication as an academic report, or otherwise, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

3.7 OTHER MATTERS

- 3.7.1 **Access:** liaison for basic site access will be undertaken through the National Trust.
- 3.7.2 **Health and Safety:** full regard will, of course, be given to all constraints (services etc) during the excavation of the trenches, as well as to all Health and Safety considerations. OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing

Conference of Archaeological Unit Managers (1991) and risk assessments are implemented for all projects.

- 3.7.3 **Insurance:** the insurance in respect of claims for personal injury to or the death of any person under a contract of service with the unit and arising out of an in the course of such person's employment shall comply with the employers' liability (Compulsory Insurance) Act 1969 and any statutory orders made there under. For all other claims to cover the liability of OA North, in respect of personal injury or damage to property by negligence of OA North or any of its employees, there applies the insurance cover of £ 10m for any one occurrence or series of occurrences arising out of one event.

3.7 PROJECT MONITORING

- 3.7.1 **The National Trust:** any proposed changes to the project brief or the project design will be agreed with the National Trust Archaeologist. OA North will arrange a preliminary meeting, if required.

4. WORK TIMETABLE

The phases of work will comprise:

4.1 Survey

A two day period is required for the topographic survey

4.2 Sections Recording

A two day period is required to undertake the section recording

4.3 Watching Brief

The timetable is subject to that of the National Staff excavating the culverts

4.3 Prepare Survey Report

An 8 day period would be required to complete this element.

- 4.4 OA North can execute projects at very short notice once an agreement has been signed with the client.

4.5 STAFF

- 4.5.1 The project will be under the management of **Jamie Quartermaine BA DipSurv** (OA North Project Manager) to whom all correspondence should be addressed. He will supervise the survey and will monitor the progress of the project ensuring adherence to all agreed programmes and timetables. He will also provide technical back-up, advice, and will have editorial control over the compilation of the full report. He has many years experience of surveying upland landscapes, particularly in the Lake District and Yorkshire Dales National Parks.

APPENDIX 3

ARCHIVE PHOTOGRAPH LIST

- 1) North-west facing shot of exposed cobble patch (IMG_1.JPG)
- 1a) South-west facing general shot of road and Black Hall farm track (IMG_1a.JPG)
- 2) North-west facing shot of exposed cobble patch (IMG_2.JPG)
- 3) North-east facing shot of exposed cobbles between tyre ruts (poor photo) (IMG_3.JPG)
- 4) South-west facing shot of cobbles and a pothole (IMG_4.JPG)
- 5) South-east facing shot of large pothole (IMG_5.JPG)
- 6) North-east facing shot of a group of potholes (IMG_6.JPG)
- 7) North-east facing shot of a pothole (poor photo) (IMG_7.JPG)
- 8) North-east facing shot of a large pothole (IMG_8.JPG)
- 8a) South-east facing shot of southern hill-slope and *agger* edge (IMG_8a.JPG)
- 9) South-west facing general shot of road, track and potholes (IMG_9.JPG)
- 9a) South-west facing shot of a pothole (IMG_9a.JPG)
- 10) North-east facing shot of a group of potholes (IMG_10.JPG)
- 11) North-east facing shot of a group of potholes (IMG_11.JPG)
- 12) North-east facing shot of a group of potholes and the wider context of the road (IMG_12.JPG)
- 13) North-east facing shot of a group of potholes (IMG_13.JPG)
- 13a) North-east facing close-up shot of a pothole (IMG_13a.JPG)
- 14) North-east facing shot of exposed cobble patch and nearby potholes (IMG_14.JPG)
- 15) North-east facing shot of exposed cobbles between tyre ruts (IMG_15.JPG)
- 16) North-east facing shot of large area of exposed cobbles (IMG_6.JPG)
- 17) North-east facing shot of exposed cobbles (IMG_17.JPG)
- 17a) North-east facing shot of wider area of cobbles in shot 17 (IMG_17a.JPG)
- 17b) South-west facing general shot of road (IMG_17b.JPG)

- 17c) North-east facing general shot of road (IMG_17c.JPG)
- 18) North-east facing general shot of track diverting to avoid exposed cobble patch (IMG_18.JPG)
- 18a) North-east facing detail shot of cobble patch avoided by track route (IMG_18a.JPG)
- 19) North facing shot of stony accumulation (IMG_19.JPG)
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- 23) North-east facing shot of dry pothole (IMG_23.JPG)
- 24) North-east facing shot of broad area of wear caused by farm track (IMG_24.JPG)
- 24a) West facing general shot of broad area of wear caused by farm track (IMG_24a.JPG)
- 25) North-east facing shot of large pothole (IMG_25.JPG)
- 26) North-east facing shot of exposed cobbles between tyre ruts (IMG_26.JPG)
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- 27a) North-east facing general shot of road and track (IMG_27a.JPG)
- 28) North-east facing shot in area of bridging point (poor photo) (IMG_28.JPG)
- 29) North-east facing shot of grassed *agger* with overlying wall (IMG_29.JPG)
- 30) South-west facing general shot of grassed *agger* running towards silage (IMG_30.JPG)
- 31) West facing shot of grassed *agger* and field track (IMG_31.JPG)
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- 33c) South-west facing shot of the diverging quad track (IMG_33c.JPG)
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- 35a) North-east facing shot of intake wall (IMG_35a.JPG)
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- 36a) North-east facing shot of the section through the *agger* as truncated by the modern road at the eastern end of the survey area (same as 36) (IMG_36a.JPG)
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- 38) North-east facing shot of the bridging point over Moasdale Beck (IMG_38.JPG)
- 39) South-east facing shot of the bridging point over Moasdale Beck (IMG_39.JPG)
- 40) South-east facing shot of the bridging point over Moasdale Beck (IMG_40.JPG)
- 41) South-west facing shot of the bridging point over Moasdale Beck (IMG_41.JPG)
- 41a) South-west facing shot of the bridging point over Moasdale Beck (IMG_41a.JPG)

ILLUSTRATIONS

FIGURES

- Figure 1: Site Location
- Figure 2: Site Location, showing line of Roman Road (after Richmond 1949)
- Figure 3: Donald's Cumberland map of 1777
- Figure 4: Excerpt from Greenwood's Cumberland map of 1830 /4 showing the Roman road as an access track for Blackhall Farm
- Figure 5: The extent of the Roman road survey showing the detailed map locations
- Figure 6: Eastern part of the survey of the Roman road with photograph locations
- Figure 7: Detail of the survey of the Roman road showing photograph locations
- Figure 8: Central detailed survey map of Roman road showing photograph locations
- Figure 9: Central detailed survey map of roman road showing photograph locations
- Figure 10: Blackhall Farm detailed survey map of Roman road showing photograph locations
- Figure 11: Western detailed survey map of Roman road showing photograph locations
- Figure 12: Profiles across the line of the Roman road with no exaggeration of the vertical axis
- Figure 13: Profiles across the line of the Roman road with 2x exaggeration of the vertical axis

PLATES

- Plate 1: South-west facing view of the bridging point over Mosedale Beck (photo position 41)
- Plate 2: Three successive routes; the modern ford in the foreground, the low *agger* mound bridging point in the centre, and Cockley Beck bridge, carrying the modern road, in the background (photo position 40)
- Plate 3: View along the *agger* towards the putative bridge abutment (photo position 38)
- Plate 4: The *agger* mound in the eastern section of the survey area with the modern road in the foreground (photo position 36)
- Plate 5: View of road surface looking south-west (photo position 1)
- Plate 6: Exposed section of large cobbles (Photo position 2)
- Plate 7: North-east view along the road (photo position 3)
- Plate 8: Area of exposed cobbles and pot hole (photo position 4)
- Plate 9: Area of large erosion scar (photo position 5)
- Plate 10: A typical group of potholes along the track (photo position 6)

- Plate 11: Area of erosion at photo position 7
- Plate 12: The steep drop along the southern side of the road (photo position 8)
- Plate 13: Area of increased erosion at the gate to Blackhall Farm (photo position 9)
- Plate 14: Erosion scars on the eastern part of the track (photo position 10)
- Plate 15: Track pot holes looking north-east (photo position 11)
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- Plate 20: A broad area of erosion revealing an extensive cobbled patch (photo position 16)
- Plate 21: A general view of the road, looking south-west, from photo position 17
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- Plate 24: Section of road in moderate repair, with cobbles standing proud in the centre of the track (photo position 20)
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- Plate 28: The line of the track, showing the north side of the agger, looking east (photo position 24)
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- Plate 31: An overall view of the eastern section of the road looking north-east (photo position 27a)
- Plate 32: The putative and indistinct line of the Roman road, to the immediate south-west of the Hardknott Gill crossing (photo position 28)
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- Plate 35: The line of the raised embankment at the western end of the study area looking south-west (photo position 31)
- Plate 36: The line of embanked road leading up to the Roundley Beck crossing, looking south-west (photo position 32)
- Plate 37: The substantial ford retaining wall at Roundley Beck (photo position 33a)

Plate 38: The road earthwork crossing Roundly Beck by the ford (photo position 34)

Plate 39: The line of the Roman road following the line of a modern track on the northern side of the enclosure wall (photo position 35)

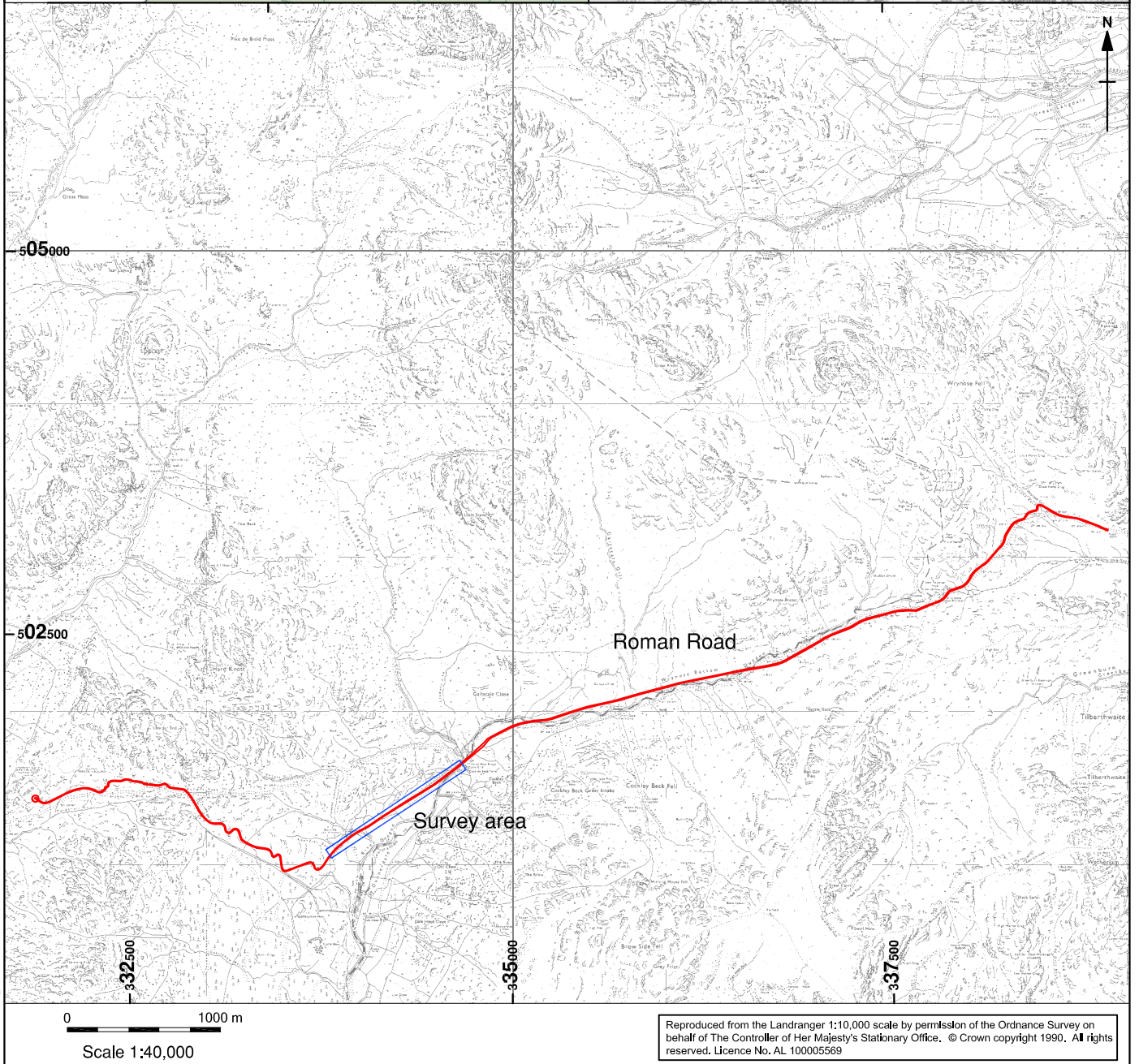
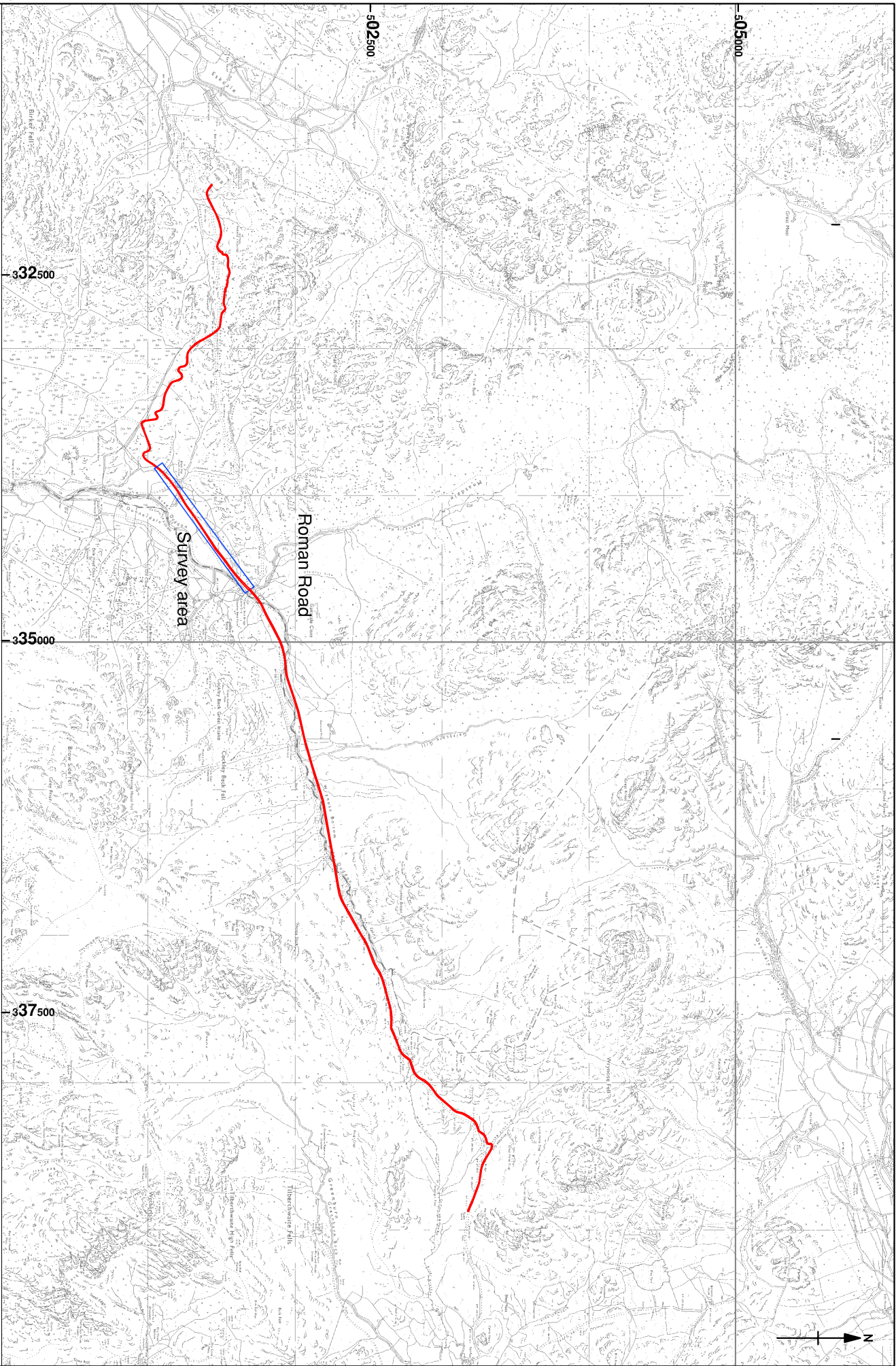


Figure 1: Site Location



0 1000 m
Scale 1:35,000



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Figure 2: Site Location, showing line of Roman Road (after Richmond 1949)



Fig. 3: Donald's Cumberland map of 1777



Fig 4: Excerpt from Greenwood's Cumberland map of 1830 /4 showing the Roman road as an access track for Blackhall Farm

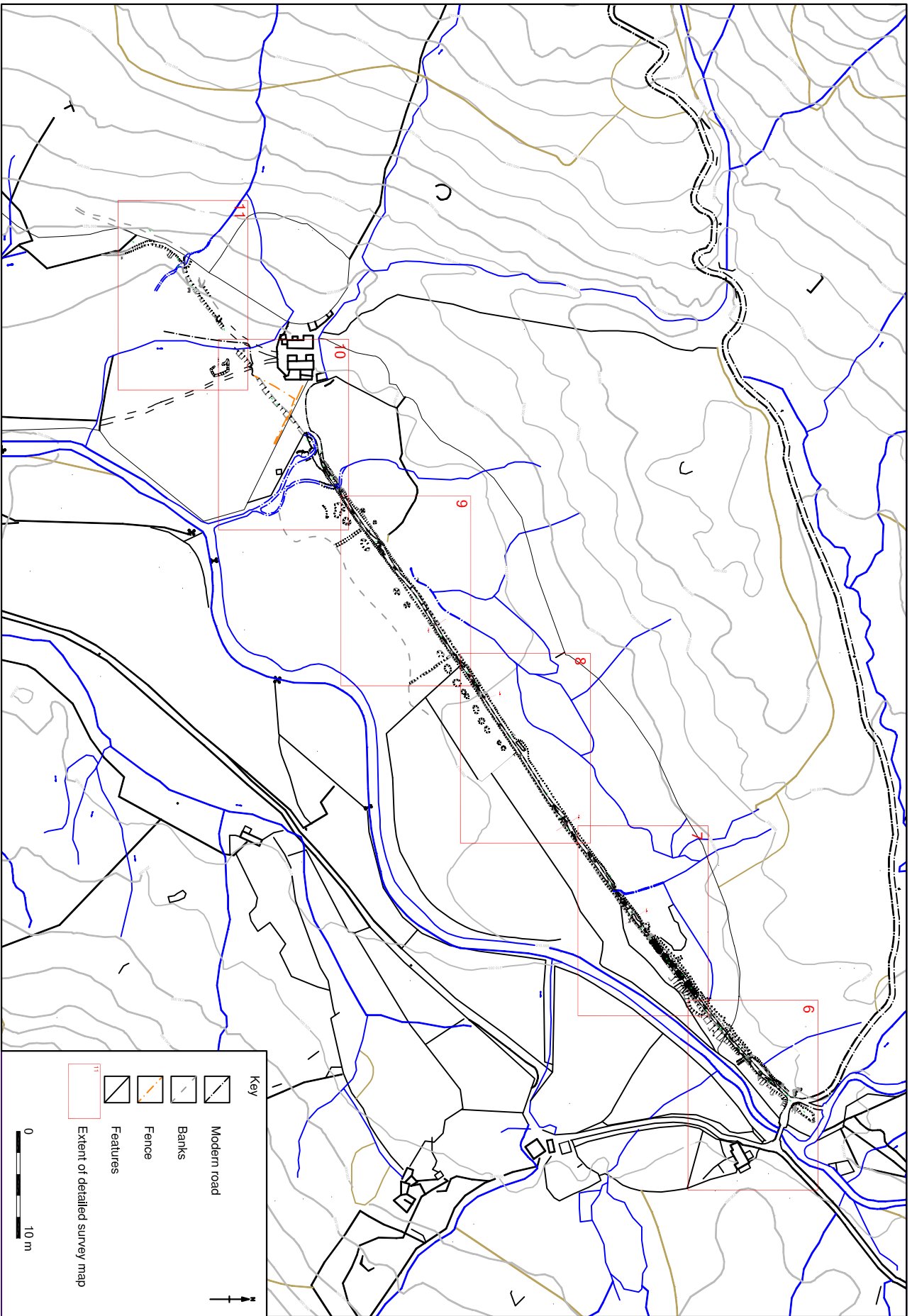


Figure 5: The extent of the Roman road survey showing the detailed map locations

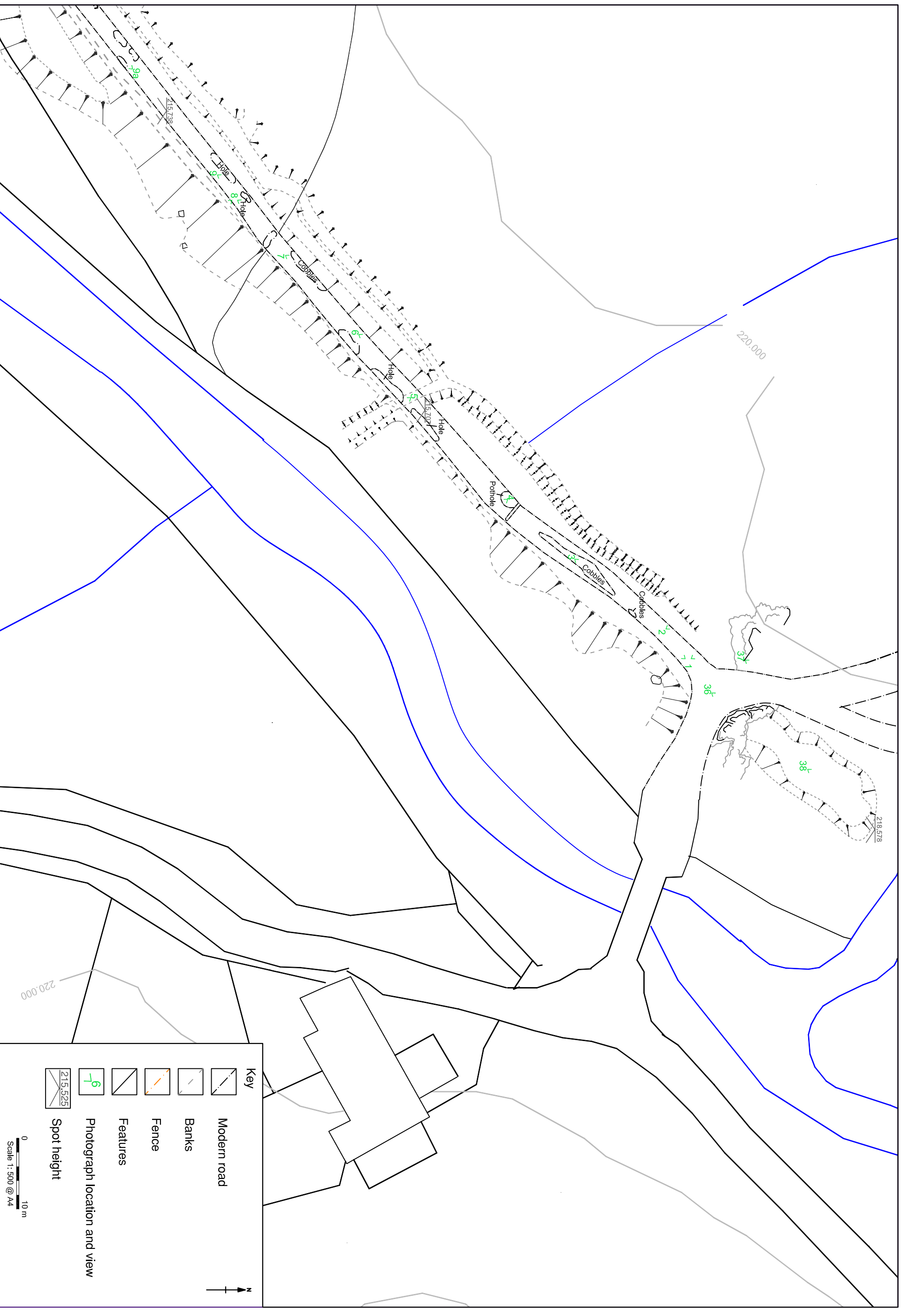


Figure 6: Eastern part of the survey of the Roman road with photograph locations

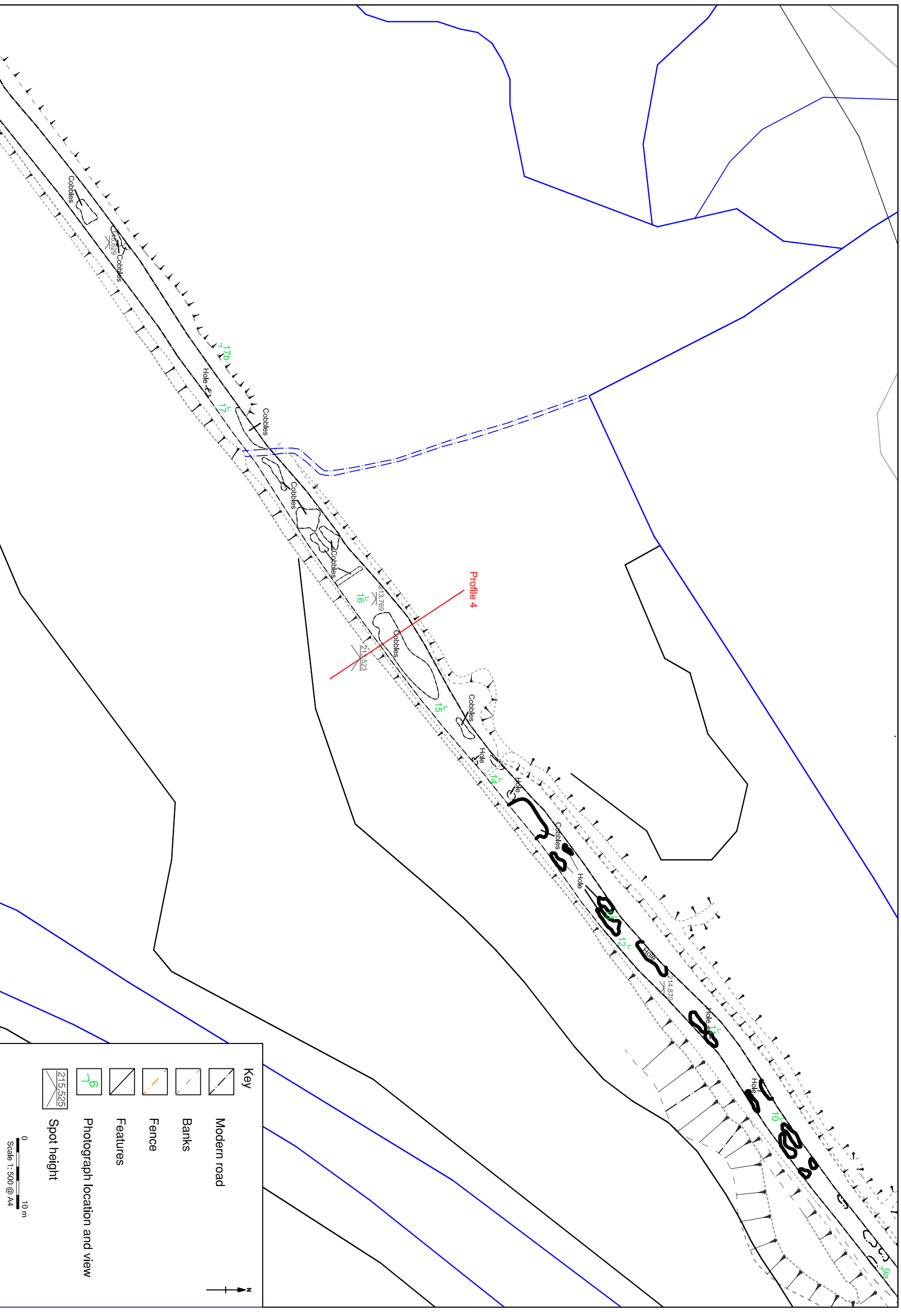


Figure 7 : Detail of the survey of the Roman road showing photograph locations

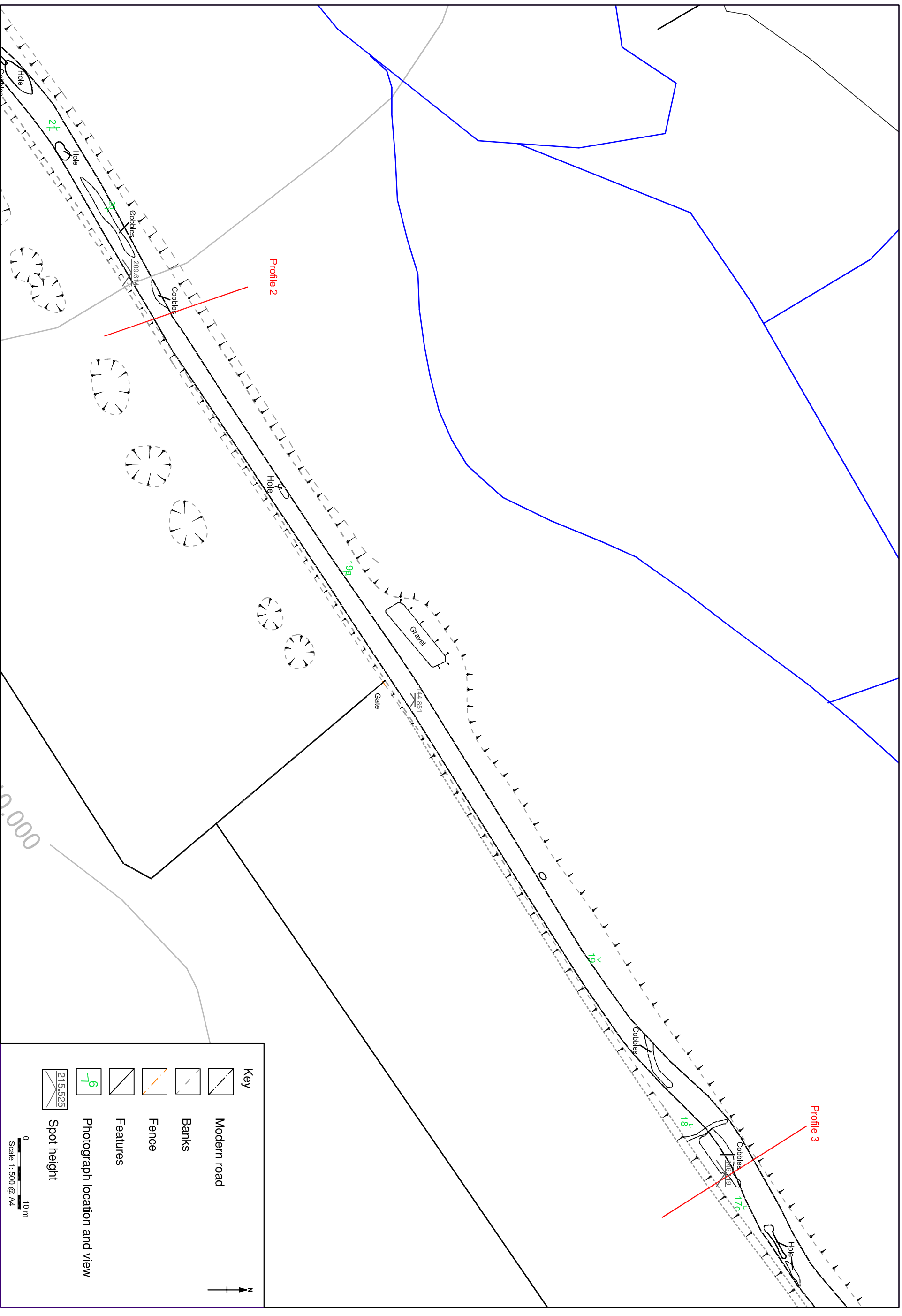


Figure 8: Central detailed survey map of Roman road showing photograph locations

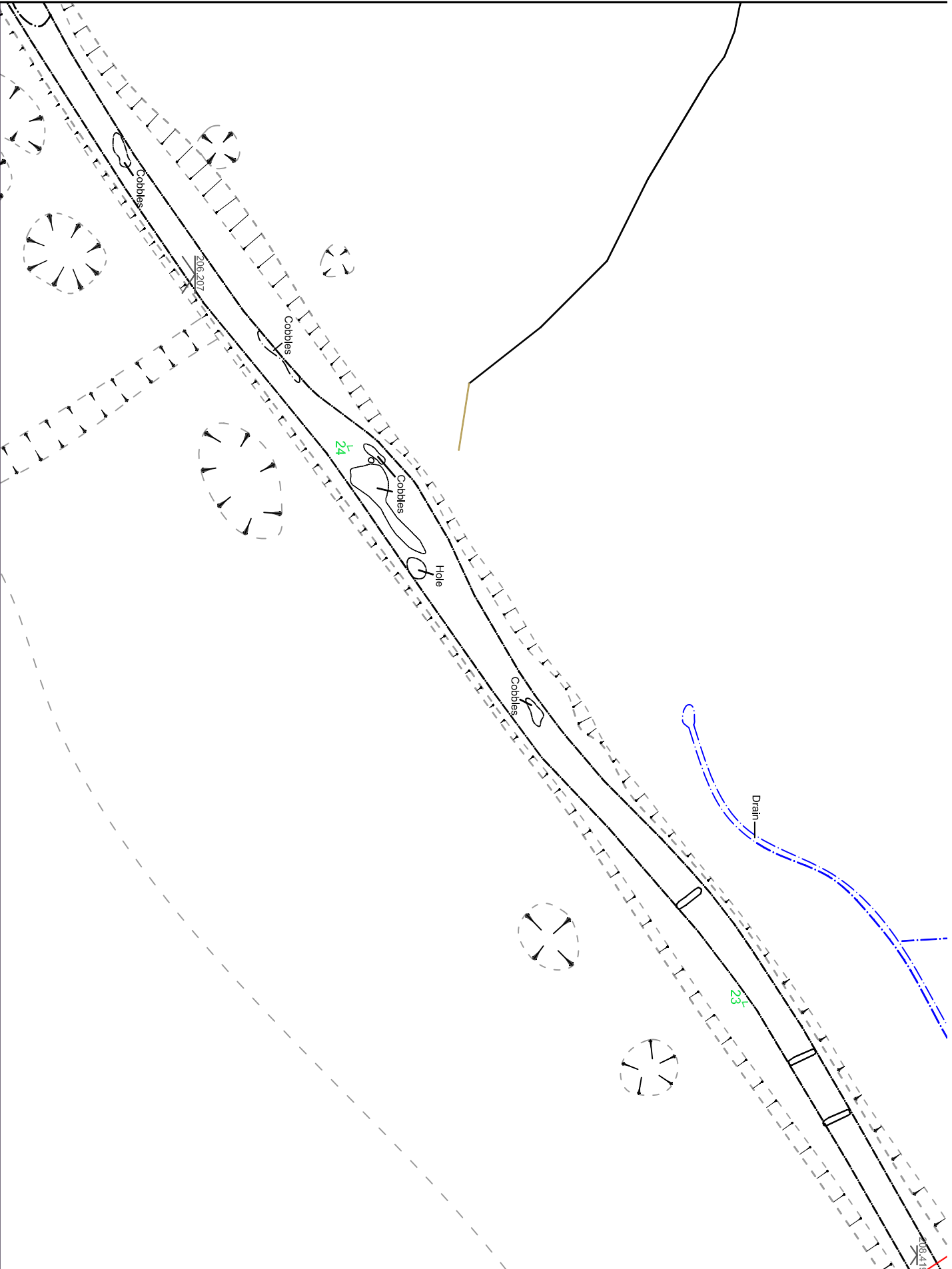


Figure 9: Central detailed survey map of roman road showing photograph location

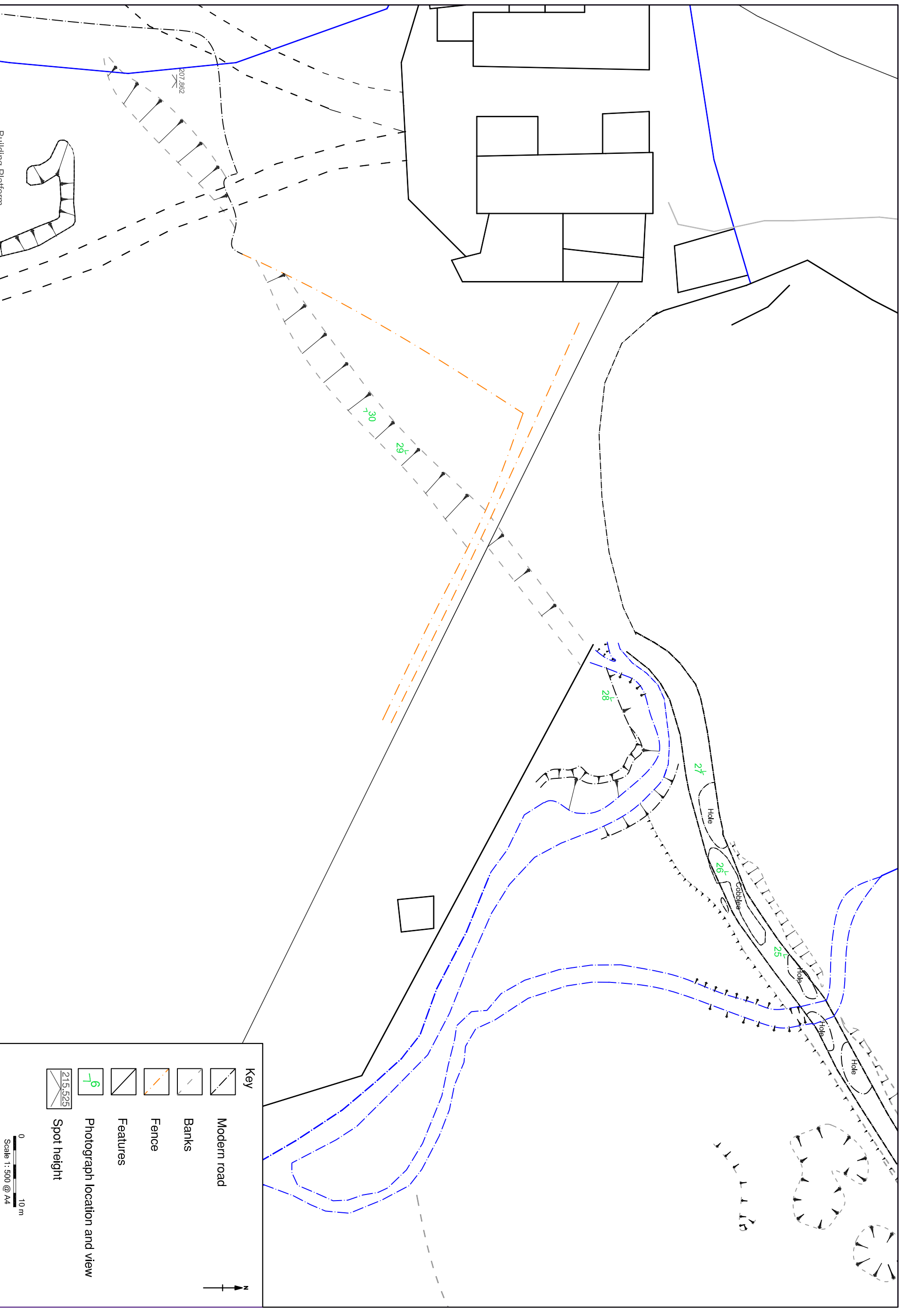


Figure 10: Blackhall Farm detailed survey map of Roman road showing photograph locations

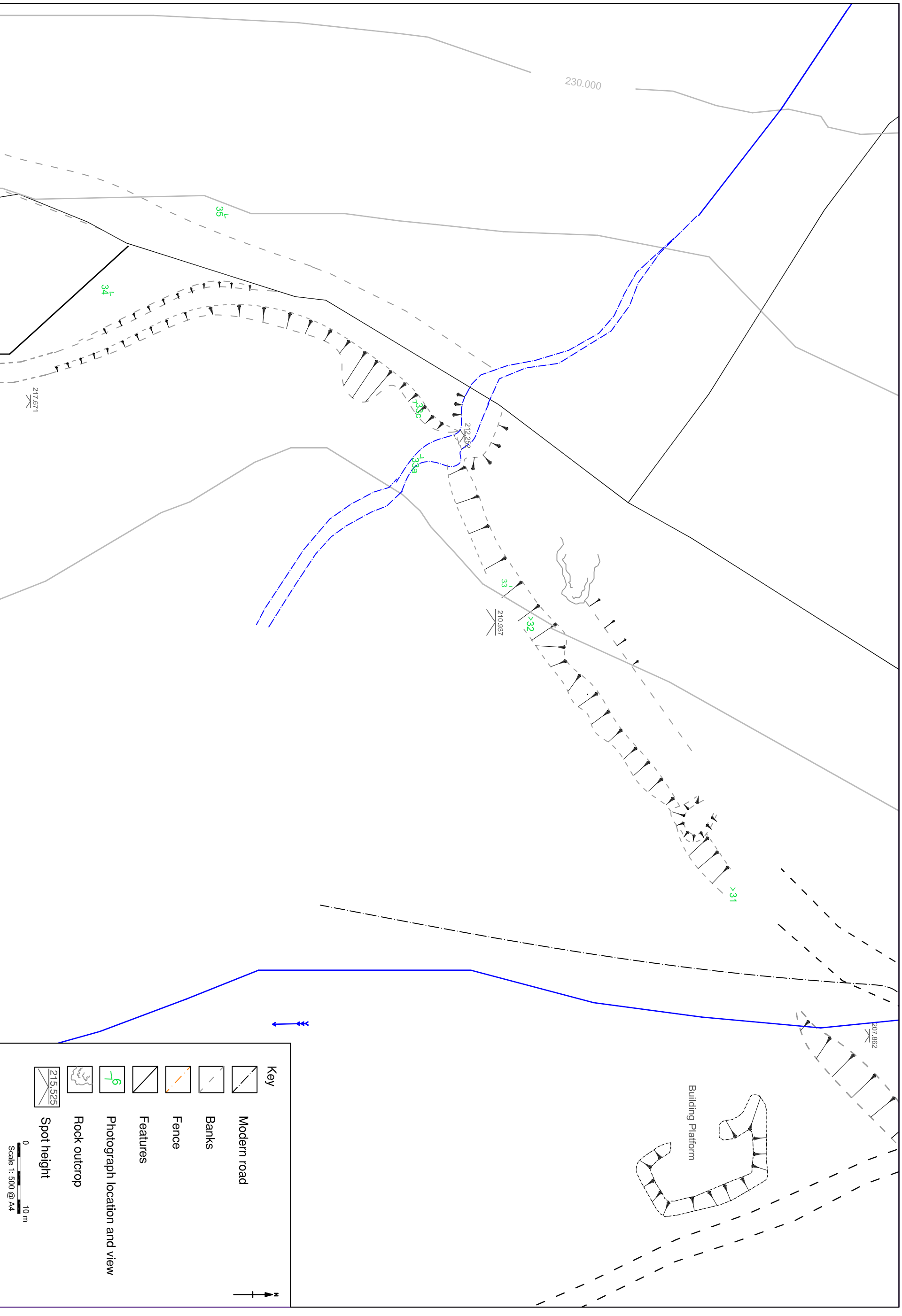


Figure 11: Western detailed survey map of Roman road showing photograph locations

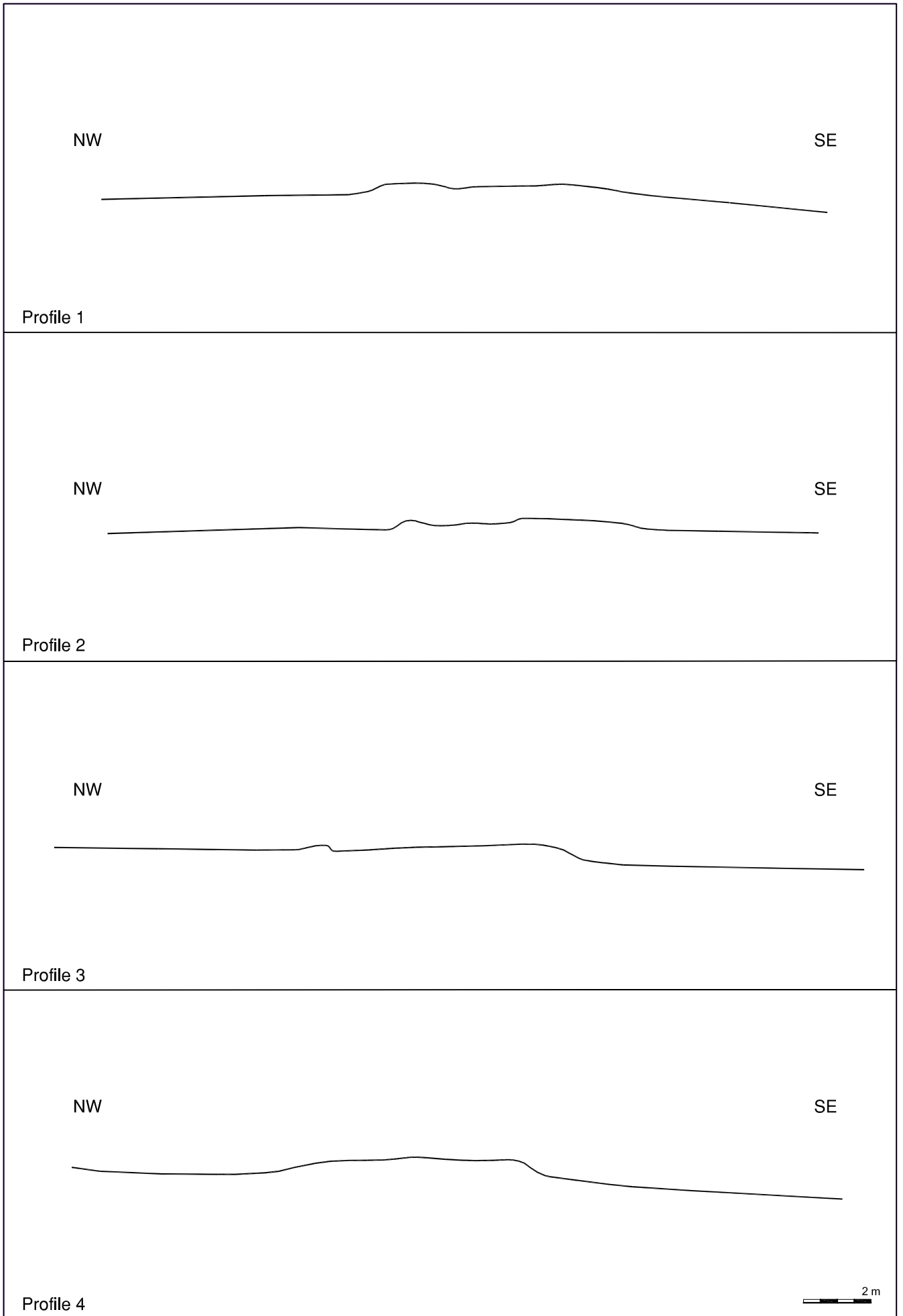


Fig 12: Profiles across the line of the Roman road with no exaggeration of the vertical axis

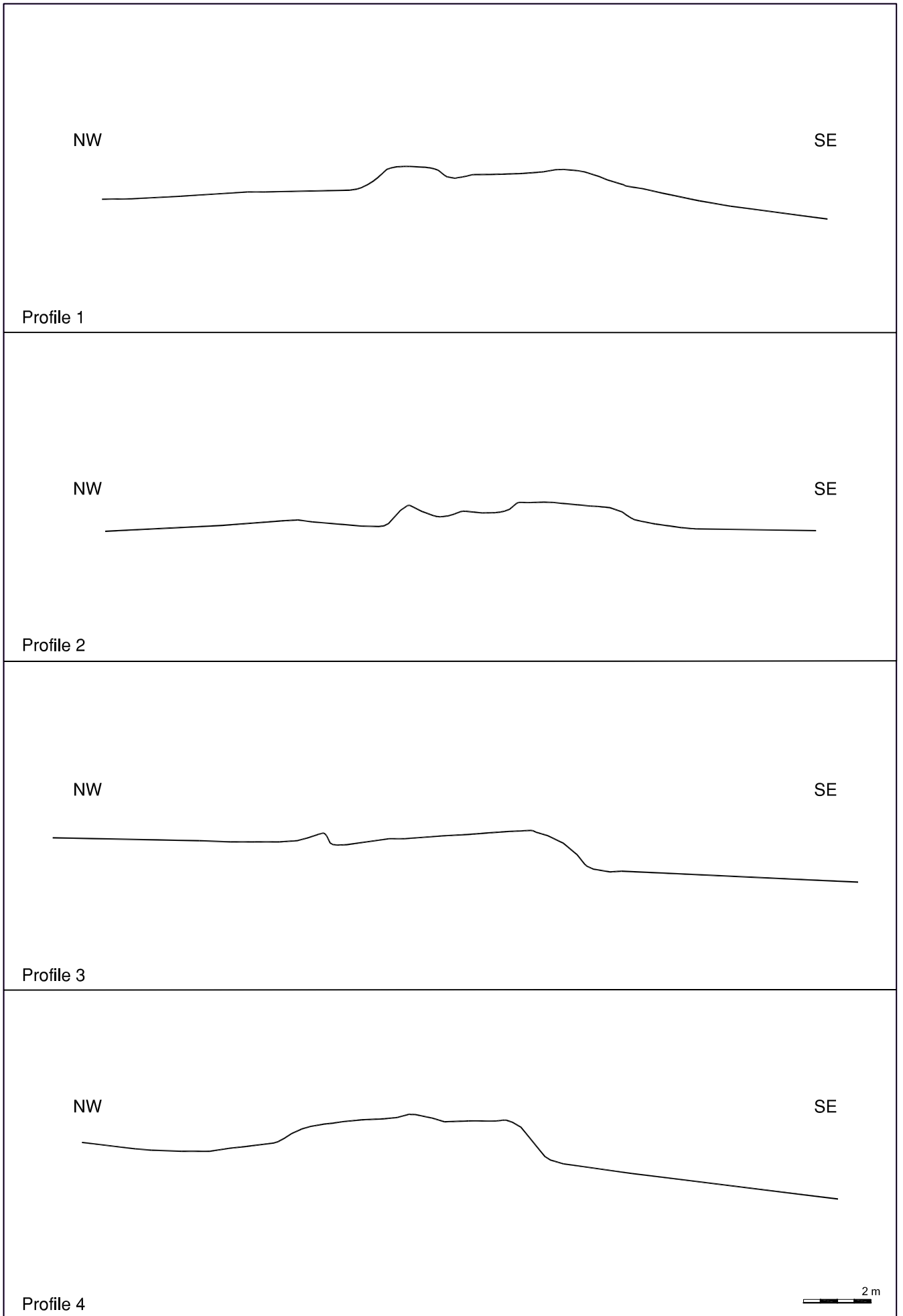


Fig 13: Profiles across the line of the Roman road with 2x exaggeration of the vertical axis



Plate 1: South-west facing view of the bridging point over Moasdale Beck (photo position 41)



Plate 2: Three successive routes; the modern ford in the foreground, the low *agger* mound bridging point in the centre, and Cockley Beck bridge, carrying the modern road, in the background (photo position 40)



Plate 3: View along the *agger* towards the putative bridge abutment (photo position 38)



Plate 4: The *agger* mound in the eastern section of the survey area with the modern road in the foreground (photo position 36)



Plate 5: view of road surface looking south-west (photo position 1)



Plate 6: exposed section of large cobbles (Photo position 2)



Plate 7: North-east view along the road (photo position 3)



Plate 8: Area of exposed cobbles and pot hole (photo position 4)



Plate 9: Area of large erosion scar (photo position 5)



Plate 10: A typical group of potholes along the track (photo position 6)



Plate 11: Area of erosion at photo position 7

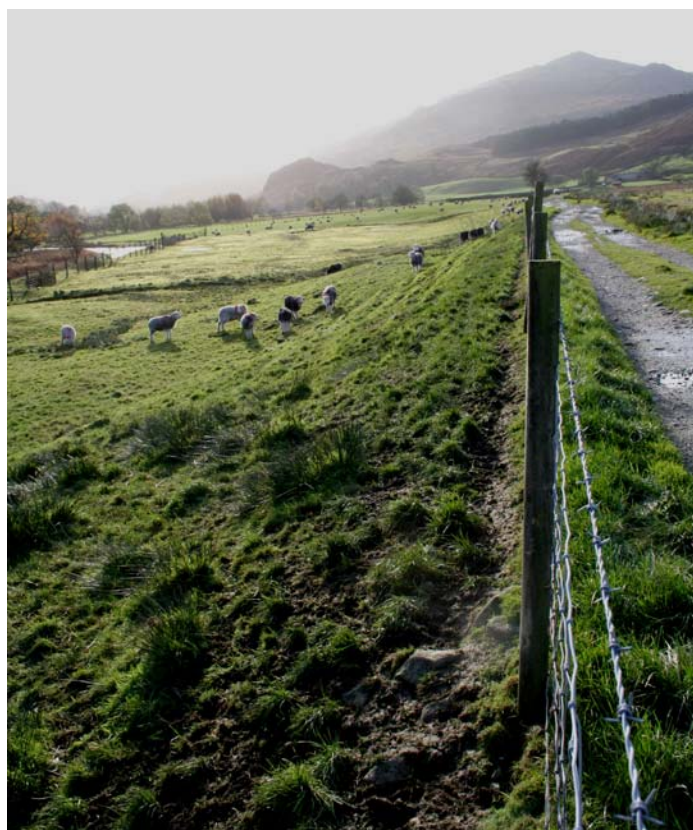


Plate 12: The steep drop along the southern side of the road (photo position 8)



Plate 13: Area of increased erosion at the gate to Blackhall Farm (photo position 9)



Plate 14: Erosion scars on the eastern part of the track (photo position 10)



Plate 15: Track pot holes looking north-east (photo position 11)



Plate 16: An extensive area of surface erosion at photo position 12, looking north-east



Plate 17: Detail of surface erosion at photo position 13



Plate 18: Cobbles exposed by vehicle wear with an absence of similar material, due to further erosion, in the pothole in the foreground (photo position 14)



Plate 19: Exposure of foundation cobbles in the middle of the track at photo position 15



Plate 20: A broad area of erosion revealing an extensive cobbled patch (photo position 16)



Plate 21: A general view of the road, looking south-west, from photo position 17



Plate 22: A wide view showing the gradual shifting of the line of the modern track and the exposed cobbles in the centre of the picture (photo position 18)



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Plate 39: The line of the Roman road following the line of a modern track on the northern side of the enclosure wall (photo position 35)