

The Possible Roman Road at Kirkhaugh, South Tyne Valley

Excavation Report, Sept 2022

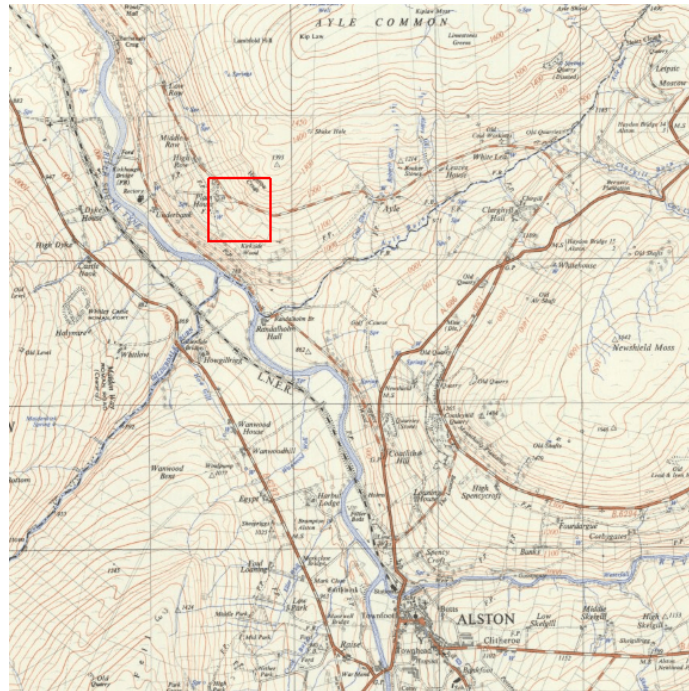


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Document compiled by Martin Green.

Version 1.7 (Jan 2023)



Drone photographs and GPS data by Stephen Eastmead (eastmead.com)

Site location: **NY70664930**, in the South Tyne valley, Northumberland.

It lies 700m east of Kirkhaugh church and 3km north of Alston (Cumbria) and is 344m above sea level.

The site is on private farm-land with no public access. OS map (1951) shown above.

The Corbridge to Whitley Castle Roman road has the **RRRA/Margary index number RR840(x)**

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Cover image: View of site at start of excavation, looking west over South Tyne Valley



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1 INTRODUCTION

This report describes an excavation carried out from 25th-29th September 2022, to investigate the probable Roman road between the Roman forts at Corbridge and Whitley Castle (Epiacum). Epiacum is 3km north-west of Alston in the South Tyne valley. The excavation was by **Altogether Archaeology** (AA), a community archaeology group for the North Pennines and surrounding area. This group takes its name from a previous North Pennine AONB Partnership archaeology project, but is an independent group. It is a Registered Charitable Incorporated Organisation (Number 1188483) run by volunteers and with about 120 members. Information about AA is given at <https://altogetherarchaeology.org>, where reports of all previous surveys and excavations are available on the Reports page.

Lidar images (aerial laser scans), of much of England became available without cost, supplied by the Environment Agency. Lidar shows subtle variations in the land surface and is an ideal way of locating structures, such as old roads. As a result, part of the course of the road was located by members of Altogether Archaeology, and an excavation in 2016 of two sections to the south of Hexham confirmed that it was probably a Roman road. The road had been independently noted by members of the RRRA (Roman Roads Research Association), who identified more sections of it further to the west. These included a section near Catton where the road descended to the East Allen and a stretch along the hillside at Kirkhaugh, parallel to the modern minor road through Ayle. The Roman road, it is suggested, then descended to cross the South Tyne, where undated stone bridge abutments can be seen, before climbing to reach Whitley Castle.

At Kirkhaugh, lidar shows a straight ridge running for 400m in a west-north-west direction across fields about 70m to the south of a minor road leading to Ayle. The ridge is about 6m wide, with (in places) possible road-side ditches, giving a total width of the feature of up to 9m. This is a possible size and configuration for a Roman road, but further assessment was only possible by excavation.

A Project Design for the excavation (Green 2021) was produced. Background information from the Project Design is repeated in this document which thus supersedes it.



2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

2.1 Antiquarians

The road journey in Roman times between the two forts at Corbridge and Whitley Castle was possible by travelling west from Corbridge along the Hadrian's Wall corridor then south down the South Tyne valley using the Maiden Way Roman road. Antiquarians suggested that there was also a *direct* Roman road between the forts, running to the south of Hexham, then crossing the East and West Allen Valleys before passing over high ground and dropping into South Tyne valley.

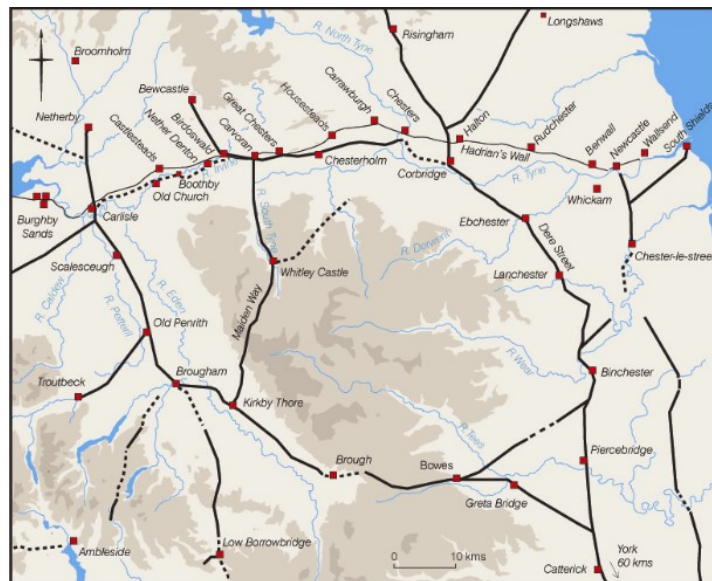


Figure 1: Roman road network map of Northern England (Historic England).

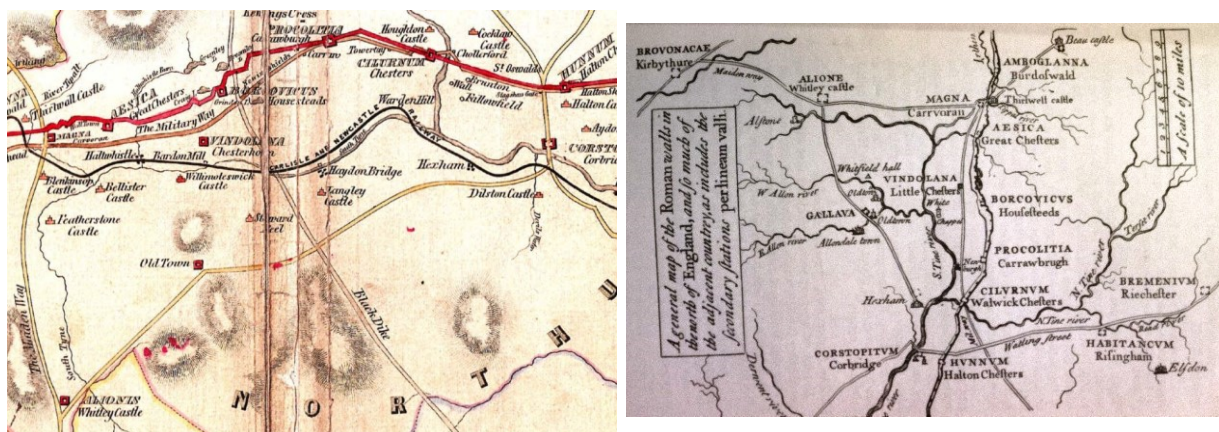


Figure 2: Old maps. On left: Collingwood Bruce (1851). On right: Horsley (1732) with north to right.

Fuller details of historic/antiquarian research are given in the reports on the 2016 excavation of the section of the road near Hexham (Green 2016, Green and Finch 2017). Figure 1 shows the generally accepted map of the Roman road network of Northern England, before recent discoveries. Part of the Corbridge to Whitley Castle road is shown, but as a dotted line as it was unconfirmed. Older



antiquarians were confident enough to produce maps with the road's course marked in full, as shown in Figure 2, despite there being no surviving stretches above ground.

2.2 Lidar information

English Heritage carried out a survey of the area around Alston (Went and Ainsworth 2009). This survey used specially commissioned lidar data as one method for examining the landscape. The possibility of a Roman road crossing the South Tyne valley to Whitley Castle was recognised but no evidence for it was found in the survey area. A later community-based lidar survey (Ainsworth 2016) looked at the Allen Valleys but found no Roman roads, although its coverage area didn't include the section of the road later identified south of Hexham. This was discovered when members of AA investigated the rural landscape between Allendale and Hexham, although not looking for Roman features in particular. They used the free-of-charge Environment Agency lidar data which had recently become available.

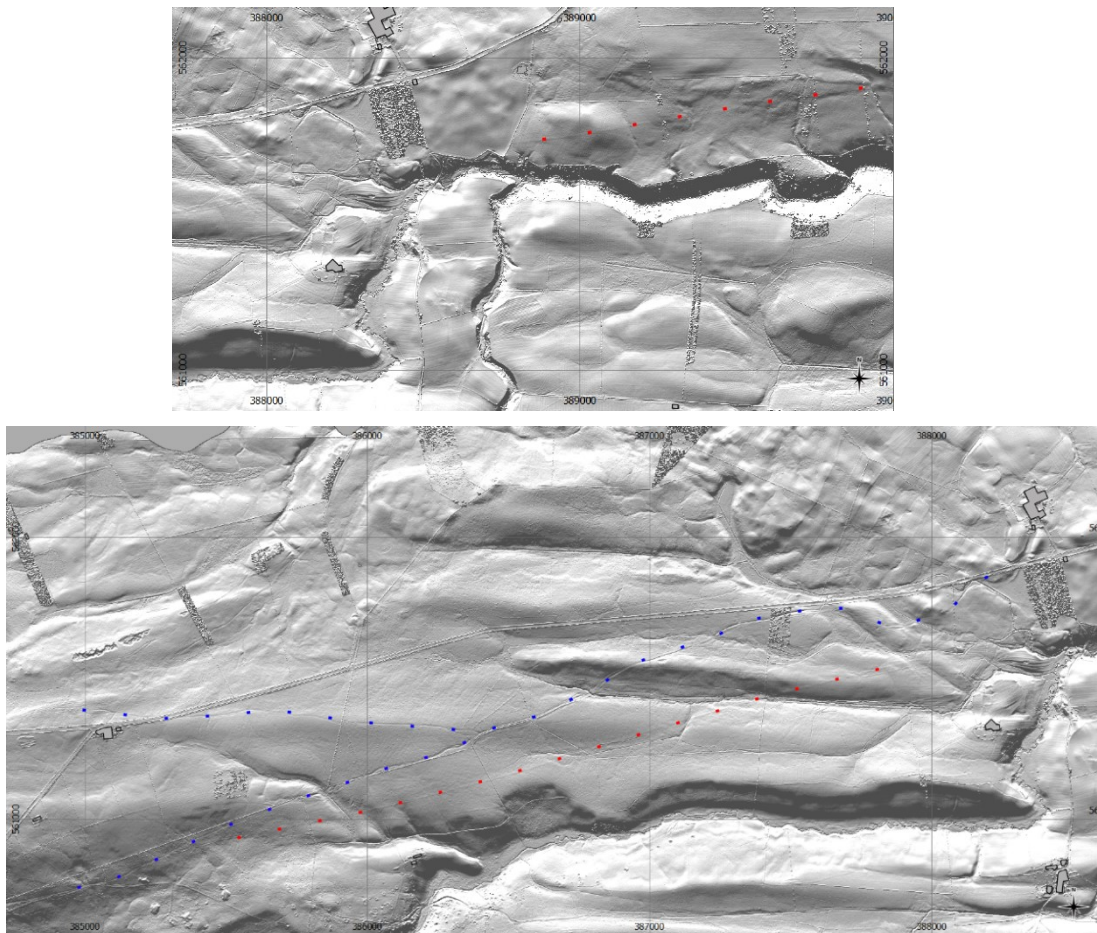
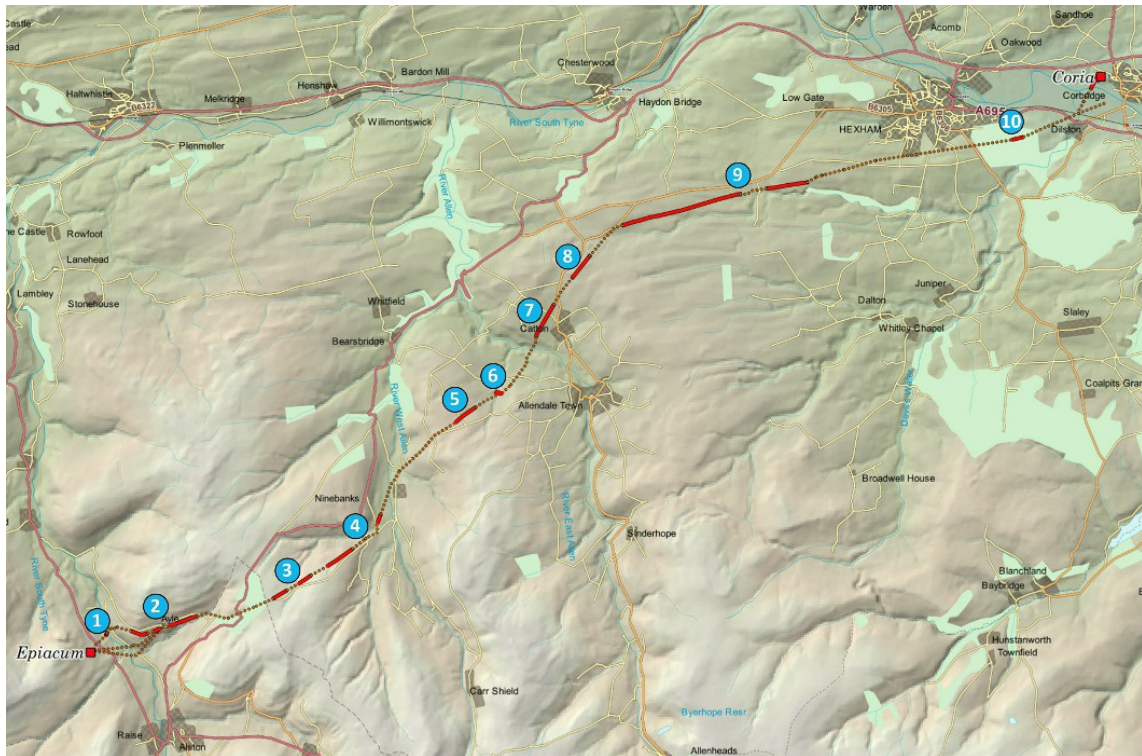


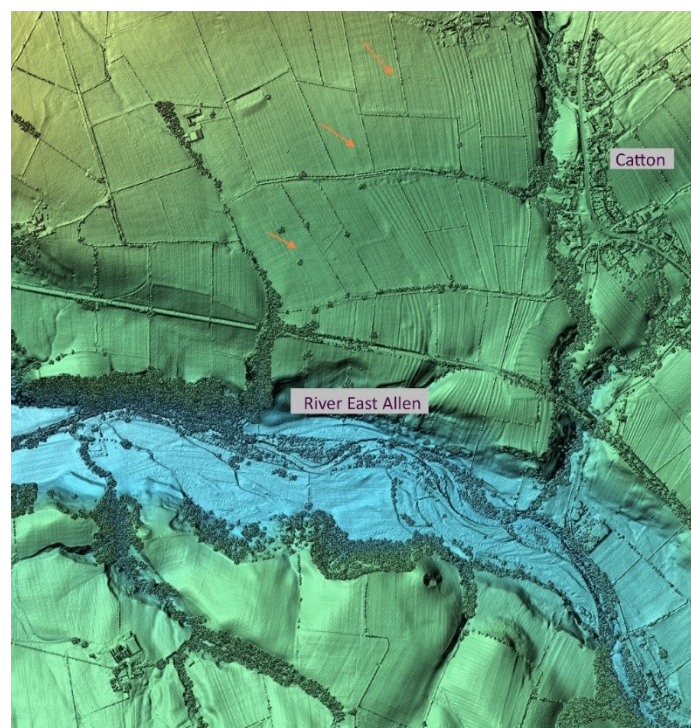
Figure 3: The sections of the road to the south-west of Hexham, Roman road marked by red dots and OS grid shown. At top: Eastern section. On right: Western section.

Also making use of the newly available data, the RRRRA published a paper indicating that more sections of the road could be seen further south-west on suitably processed images (Toller and Haken 2017). Their map of the possible road sections is shown in Figure 4. The Margary index number RR840(x) has been allocated to the road (RRRA 2021, p352).



**Figure 4: The map of the Roman road by the RRA (Toller and Haken 2017).
The AA 2016 excavation examined the two sections labelled “9”. The Kirkhaugh section is “2”.**

The sections marked on this map are of varying degrees of certainty, but some, such as that near Catton “7” (see below) and at Kirkhaugh, show well on lidar, see Figure 5 (below).



**Figure 5: Lidar image of the section of possible Roman road near Catton (orange arrows).
Lidar DSM local elevation mode. Image by Stephen Eastmead.**



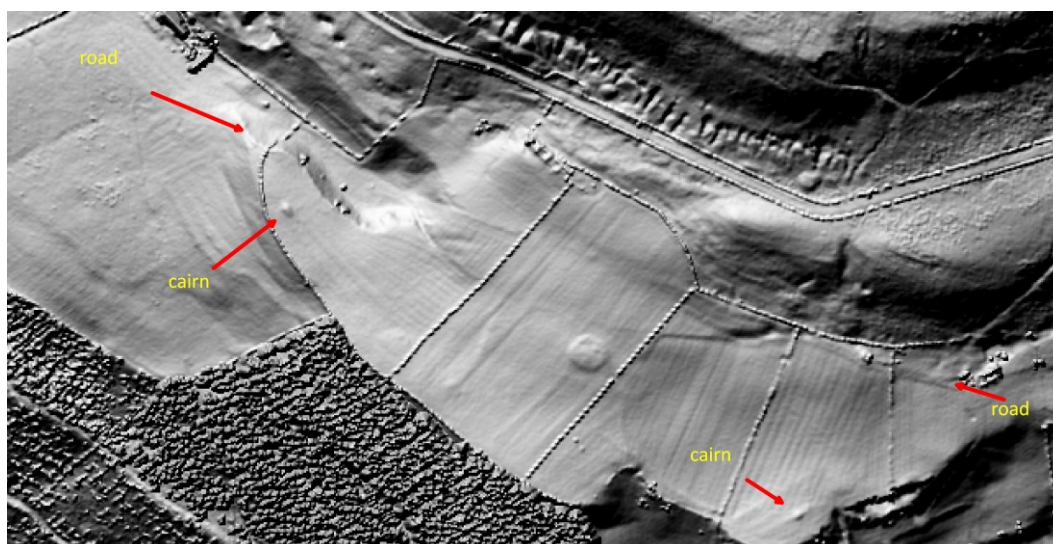


Figure 6: Lidar image of the section of possible Roman road near Kirkhaugh.

Lidar local-relief mode. Image by Stephen Eastmead.

The lidar image of the Kirkhaugh section shows it running along a level terrace at about 340m altitude on the hillside above Kirkhaugh in the bottom of the South Tyne valley. This section is about 400m long, of which the eastern half is beside or under field walls. Also shown on the lidar image are the Bronze Age cairns and the minor modern road to Ayle, running between stone walls 70m north of the Roman road. At the top of the image a line of pits runs along the hillside: These are labelled on the first edition (1860) Ordnance Survey map as coal pits, but on the second (1895) as lead workings. It is probable that they were coal pits as they run along a horizontal seam, outcropping on the hillside. Nearby at Ayle, coal-mining continued into the 21st century.

The road, seen on lidar, is in general a ridge approximately 6m wide, sometimes with roadside ditches. This ridge looks a possible “agger”, the causeway which provided the base for Roman roads. The details of Roman road construction varied between sites, at least partly depending on local availability of building materials: this is discussed in more detail in the 2016 excavation report (Green 2016). Although the section south of Hexham proved on excavation to have a width of about 6m between kerbstones, other sections of the same road would not necessarily have the same form.

2.3 A bridge over the South Tyne?

Near Kirkhaugh there are ruined masonry bridge abutments by the South Tyne (at NY69964925). Birley (1950) writes that his attention was drawn to them twenty years previously by R.C. Bosanquet. These are a scheduled monument (HE Research Record Monument Number 13735, NMR number NY64NE3). The record notes that no evidence has been found of a medieval or later bridge at that location and that the abutments are on the line of the suspected Roman road. The English Heritage survey of Whitley Castle (Went and Ainsworth 2009) comments: *“The mound of crude stonework stranded by the movement of the South Tyne to the north-east of the fort is clearly the abutment of a medieval or later packhorse bridge rather than a Roman crossing, but the rest of the supposed Roman road less easy to dismiss”*.

There are zig-zag tracks down to the location (Birley 1950, Toller and Haken 2017), making it likely that there was a bridge or ford there, but still leaving the dating of the abutments unclear. Even if the abutments are post-Roman, it doesn’t exclude the possibility that there was a previous Roman bridge at that location, especially since even after destruction by a flood, a bridge would be rebuilt in



the same place to avoid building new access tracks. Of course, if there were a Roman bridge there, it still doesn't prove the existence of the Roman road onwards to Corbridge; a bridge may have been built just to access the resources (agricultural? lead mines?) on the opposite side of the South Tyne.

One difficulty is that English Heritage's Whitley Castle survey, and the subsequent Miner-Farmer landscape survey of the area around Whitley Castle and Alston (Oakey, Radford and Knight 2012), both failed to find any evidence of a road running eastwards from the fort across the South Tyne valley. This was despite use of aerial photographs, lidar images and geophysics. The road may not have led directly to the fort, but have joined the Maiden Way to the north (or south) of it, thus not appearing on the limited geophysics available.

2.4 Other archaeology of area

The Miner-Farmer survey showed that the area is rich in archaeological features, including a series of Iron Age / Romano-British settlements and field systems. In particular, about 100m south of the line of the possible Roman road at Kirkhaugh, are three cairns (Monument Number 15072, NMR NY74NW6). Excavation in the 1930s, and re-excavation recently, shows that they are early Bronze Age burial cairns (Maryon 1936, Fitzpatrick 2015). They are sited prominently on the edge of the natural terrace. There are no other known archaeological features from the Bronze Age (or earlier) nearby. The proximity to a possible Roman road seems a co-incidence as they were already 2,000 years old when the Roman army arrived, so their significance would have been long-forgotten.

About 500m to the north-west are the earthwork remains of a field system on the hillside (Monument Number 1536956, NMR NY74NW273). This system is undated, but probably was in existence in the Iron Age, and remained in use into the Roman period. In this area of the South Tyne Valley, the Miner-Farmer survey suggested that the much of the land up to 400m altitude was already in agricultural use by the start of the Roman occupation, with farmers living in small farmsteads along each side of the valley. There is a well-preserved enclosed Iron Age / Romano-British farmstead at NY71284907, 650m south-east of the site (Oakey, Radford and Knight 2012, aerial photograph on p21).

As well as the two cairns to the south of the possible road, there is a flat-topped round turf-covered mound, seen midway between the two Bronze Age cairns (Figure 6) at NY70734921. It is 23m in diameter and has at least one small mound on its top. It seems to overlie the plough ridging, so when the cairns were investigated this structure was assessed as being a relic of mining (or other industrial process). However, there are no obvious shafts nearby and it is an unusual shape for a spoil-heap. Thus, its nature is unclear. It is close to where two tracks cross on the first edition OS map (Figure 7).

2.5 Geology

The bedrock in South Tynedale is entirely Carboniferous, formed, as in most of the North Pennines and Yorkshire Dales, of alternating beds of sandstones, limestones, shale, and coal. The differing hardness of these horizontal strata gives rise to the natural terracing of the hillsides. The supposed Roman road at Kirkhaugh runs along a bench formed by the Great Limestone, a thick layer of massive limestone at the bottom of the Middle Carboniferous sequence of rock. The excavations of the nearby cairn confirmed that it rested on limestone bedrock. The old coal diggings just higher on the hillside will have exploited the seam of coal often found just above the Great Limestone.



Two limekilns are shown on the first edition OS map (Figure 7: SE and SW of Low Field) on the edge of the limestone terrace, presumably using limestone quarried from its face and local coal from the workings on the hillside a short distance to the north. More information can be found at the British Geological Survey www.bgs.ac.uk.

2.6 Old maps and geophysics

The first edition Ordnance Survey map (1860) shows a landscape little different to that of the present day. The field boundaries are similar to the modern ones, and there is nothing marked on the line of the Roman road, nor are the cairns marked. The second edition (1895) is similar.

As part of the recent re-excavation of the nearby cairn, a geophysical survey was carried out of the area around the cairn (ASDU 2014). This survey was not extensive enough to include the line of the road and did not suggest there were any Roman features near the cairn.

The plan below shows the first edition OS map and the geophysics magnetometry data (bounded by a thin orange line) superimposed on the same lidar image used in Figure 6.

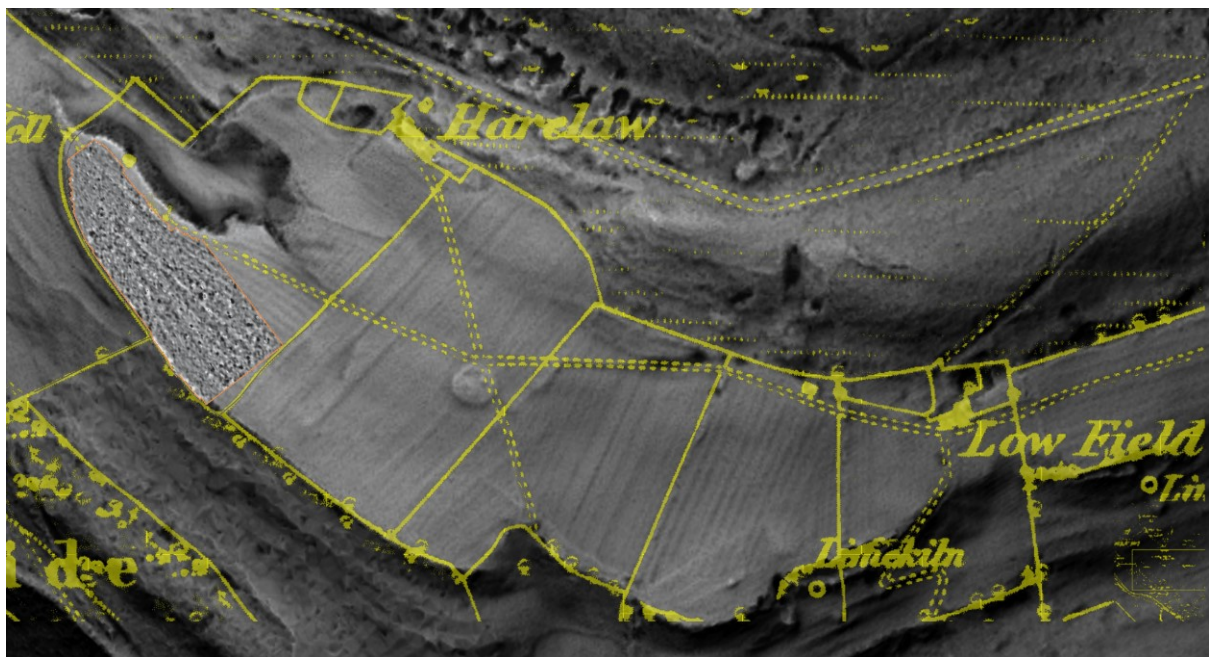


Figure 7: Geophysics survey (outlined in orange) and the first edition OS map (in yellow) superimposed on lidar image (same image as in Figure 6).

Harelaw is marked on the map on the south side of the modern road. This exists as the ruins of a large three-cell building, probably a farmhouse with barn or byre at one end, although it may have also served as a mine building when the adjacent coal seams were being worked. It is unlabelled on the 2nd edition OS map (1895), so presumably already abandoned.

2.7 The findings of the excavation of the road as it crosses Hexham Fell

AA's excavation of the road south of Hexham (Green 2016, Green and Finch 2017) consisted of five trenches, each 2m wide, across a 250m stretch of the road. An additional two trenches were excavated across another section of the road 3km further east. The road was immediately under about 20cm of topsoil. The road surface consisted simply of cobble-stones placed directly on the subsoil (presumably after the topsoil had been cleared from the course of the road). No gravel, flagstones, or other surface material was found over the cobble-stones, so the road surface may have been simply topsoil rammed back onto the cobble-stones. In some trenches there was evidence of larger stones acting as kerbstones along the edge of the 6m wide road surface. In Trench 1 only 4m of the gap between the kerbstones had been cobbled, perhaps indicating that the road construction was incomplete: see Figure 8 below.

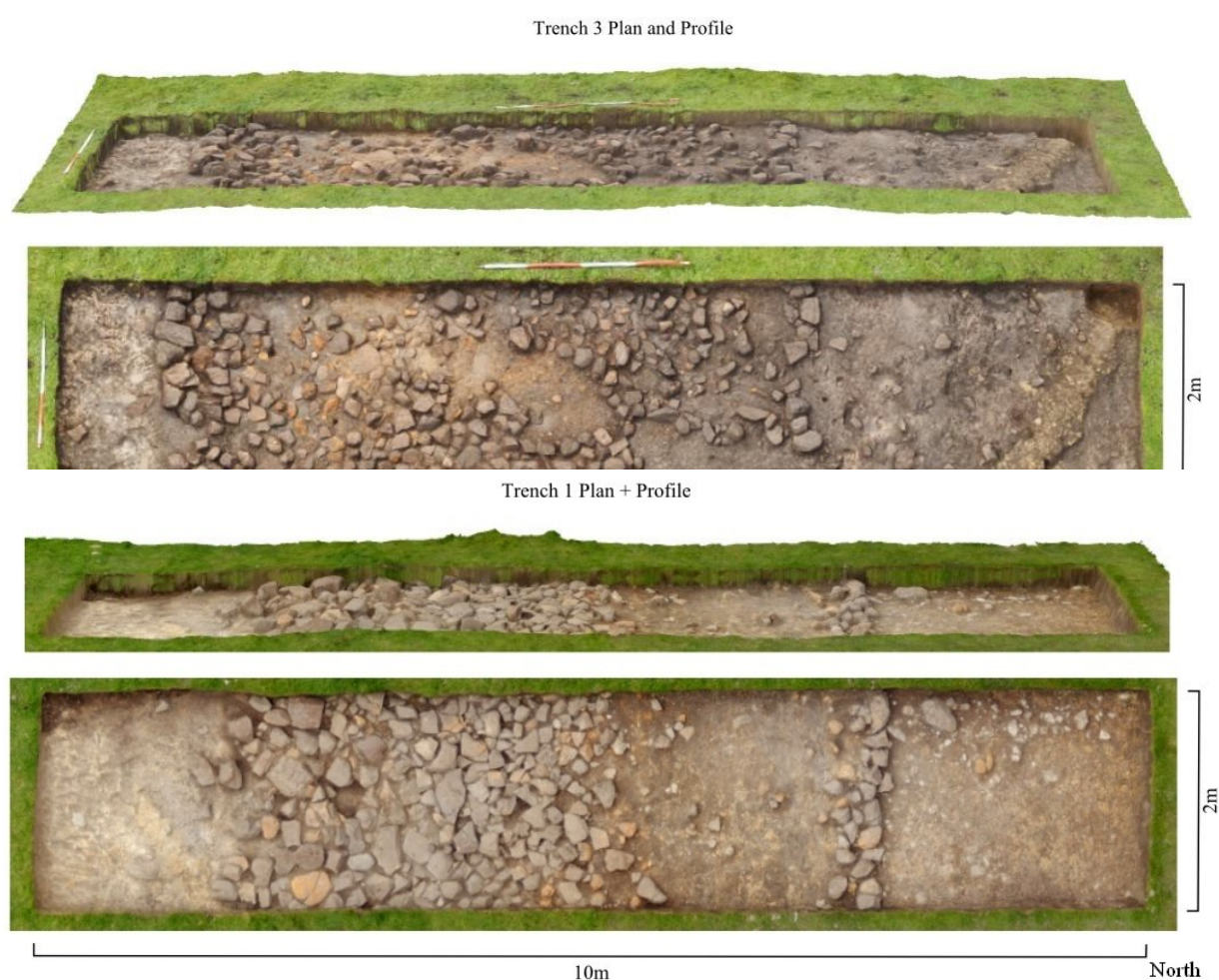


Figure 8: Two of the trenches of the 2016 excavations (from Green 2016). A vertical and oblique photogrammetry view is shown for each trench. Photogrammetry by Stephen Eastmead.

Roman roads vary in method of construction, partly because of availability of building material, but also can change for no apparent reasons over short distances (see Green 2016 for discussion of this). For the ground surface to be altered (and hence visible on lidar images), then there must be something to be found by excavation (but not necessarily a Roman road!). Alternative processes producing a ridge visible on lidar include: a ruined field-wall, a back-filled pipeline trench, a plough

headland (where ploughs drop soil as they turn at the edge of a field), an old road (but not Roman), dumping of quarry spoil.

Studies of the Roman road system of England have previously concentrated on the major roads; recently, with the availability of lidar data, it has become possible to investigate the network of minor roads that must have existed to transport agricultural and other goods. To what extent the road system was adapted from pre-existing Iron Age roads or newly built, remains unclear. In the Iron Age, carts were in common use and goods traded widely, so roads certainly existed before the Roman army arrived.

3 THE EXCAVATION

3.1 Aims

One item of the Research Agenda of the North Pennines Archaeological Research Framework (Frodsham 2017) is to clarify the existence and nature of Roman roads in the North Pennines. The aims of the investigation of the possible Roman road at Kirkhaugh were therefore:

- To ground-truth the lidar data which suggest, but do not prove, a Roman road
- To determine the structure of the Roman road (if present) so that it can be compared with the section already excavated and other excavated road sections in Northern England
- To collect finds and samples to determine the date of construction and usage of the road

3.2 The trenches

Five trenches were excavated. Four of these were sited to cross the centre-line of the possible road agger (as seen on lidar) at right angles. The other one (Trench 5) investigated a probable holloway running diagonally down the slope south of the line of the road.

At the request of the farmers, excavation took place only in the field of rough pasture to the SW of the ruined building of Harelaw. This was to avoid disturbance to the better quality hayfields further east. The location of the trenches is shown on Figures 9 (wide, medium, and close-up views).

Trench 1: This was 11m long across the road (of which 5m was to the north of the centre-line). It was 3m wide, narrowing to 2m from 1m north of the centre-line. Subsequently, a 1m wide extension was excavated southwards so the trench was ultimately 13m long.

Trench 2: This was 6m long (of which 2m was north of the centre-line) and 2m wide. It was sited to the west of Trench 1 with a 15m gap between them.

Trench 3: This was 6m long (of which 1m was north of the centre-line) and 1m wide. It was between Trenches 1 and 2, with a gap of 8m between it and Trench 2.

Trench 4: This was 2m long and 1m wide. Its northern edge was 2.5m south of the centre-line. It was between Trenches 2 and 3, with a gap of 5m between it and Trench 2.

Trench 5: This was 2m long and 1m wide. It was excavated 20m south-west of Trench 2, in the bottom of a holloway seen on lidar (and visible on the ground). The aim was to ascertain if this was a diversion of the road, to allow an easier descent into the dry valley to the west.



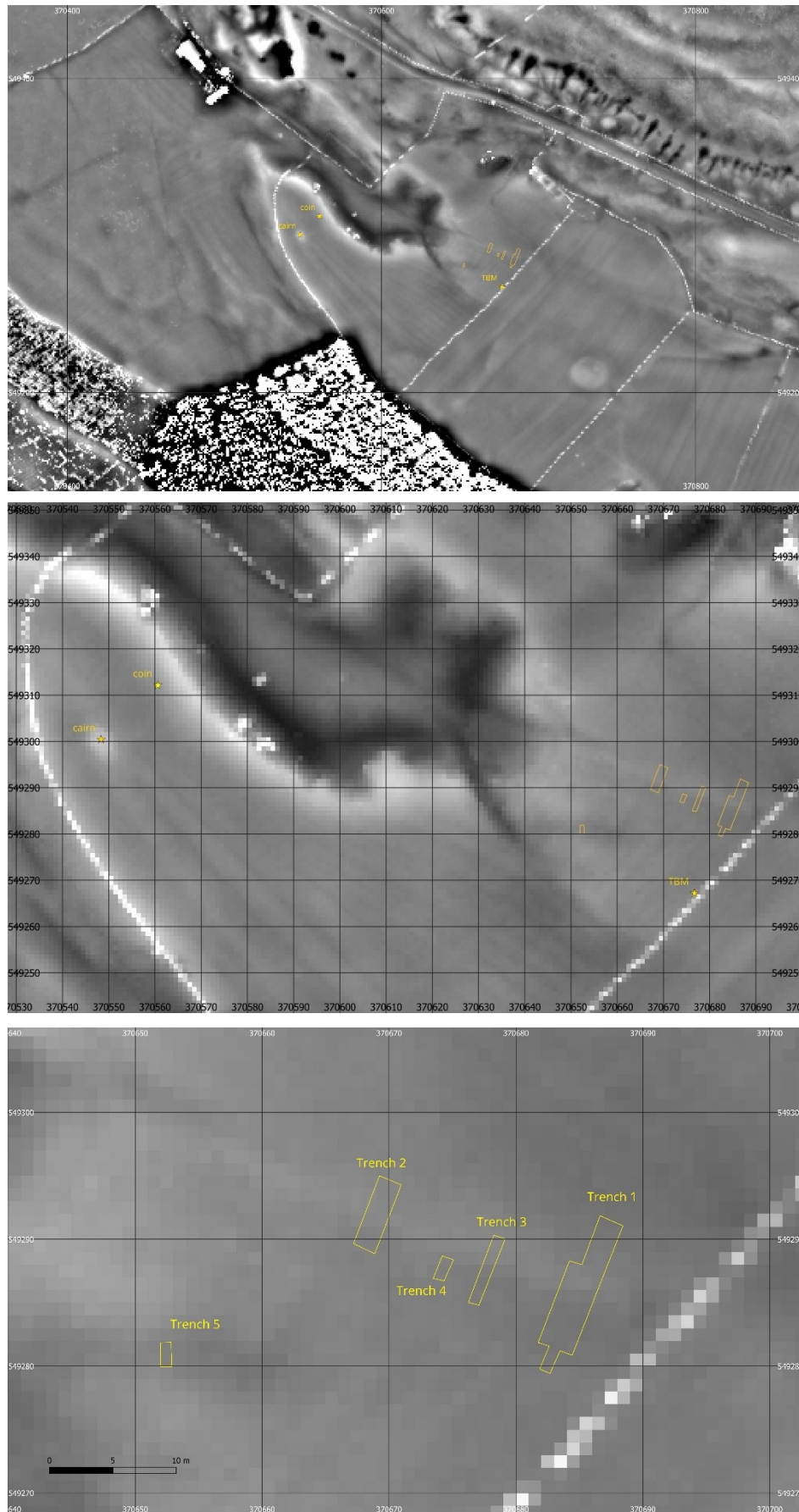


Figure 9: The location of the trenches superimposed on lidar. Successively enlarged views.



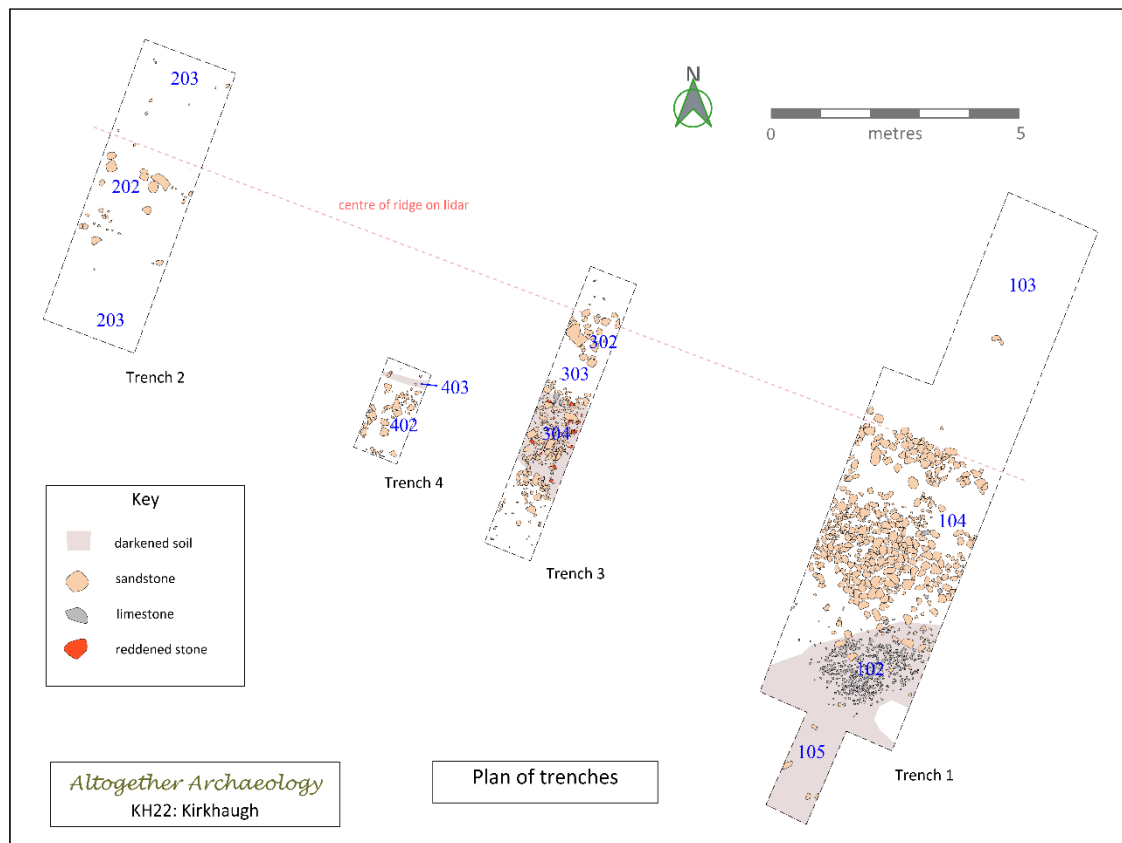


Figure 10: Plan of Trenches. This is reproduced as a full-page image in Appendix 5



Figure 11: Oblique drone photograph, looking west, of Trenches 1 to 4

All trenches were dug by hand. Turf was removed and stacked separately to soil. All finds were recorded and retained. A photographic record was kept, including series of photographs to allow photogrammetry of the trenches. At the end of the dig, drone photographs were taken and a survey grade GPS used to record the trench positions. A dumpy level was used to record levels along the trenches.

In the following trench descriptions, context numbers are given in italics. Contexts are described in more detail in the context table in Appendix 2, and the finds from each context are indicated.

3.3 Trench 1 findings

This trench was the largest and easternmost of the four excavated across the line of the ridge seen on lidar. It extended 5m to the north of the centre line of the ridge and 8m to the south.

The topsoil *101* over the trench yielded a range of post-medieval finds including slag, coal, cinder, potsherds, iron nails, and several pieces of clay pipe stem. Immediately under the topsoil was a spread of angular stones *104* up to 20cm in size forming a single layer over the underlying clayey loam *103*. The stones were almost all sandstone, with a few limestone. They formed a band 4m wide across the trench. In parts the stones were closely packed, particularly along the northern margin of the spread (approximately along the mid-line of the ridge seen on lidar) and, further south, in a 2m wide band across the trench. However, the stones at the northern margin were similar in size to those of the rest of the context, and not aligned into a kerb. There was no evidence of wear or rutting. There were some lumps of charcoal between the stones, but otherwise no finds.

South of stones *104* was another spread of a single layer of stones. These were mostly limestone, and were smaller (up to 5cm). They formed a patch about 2m x 1.5m, abutting and intermingling with *104*.



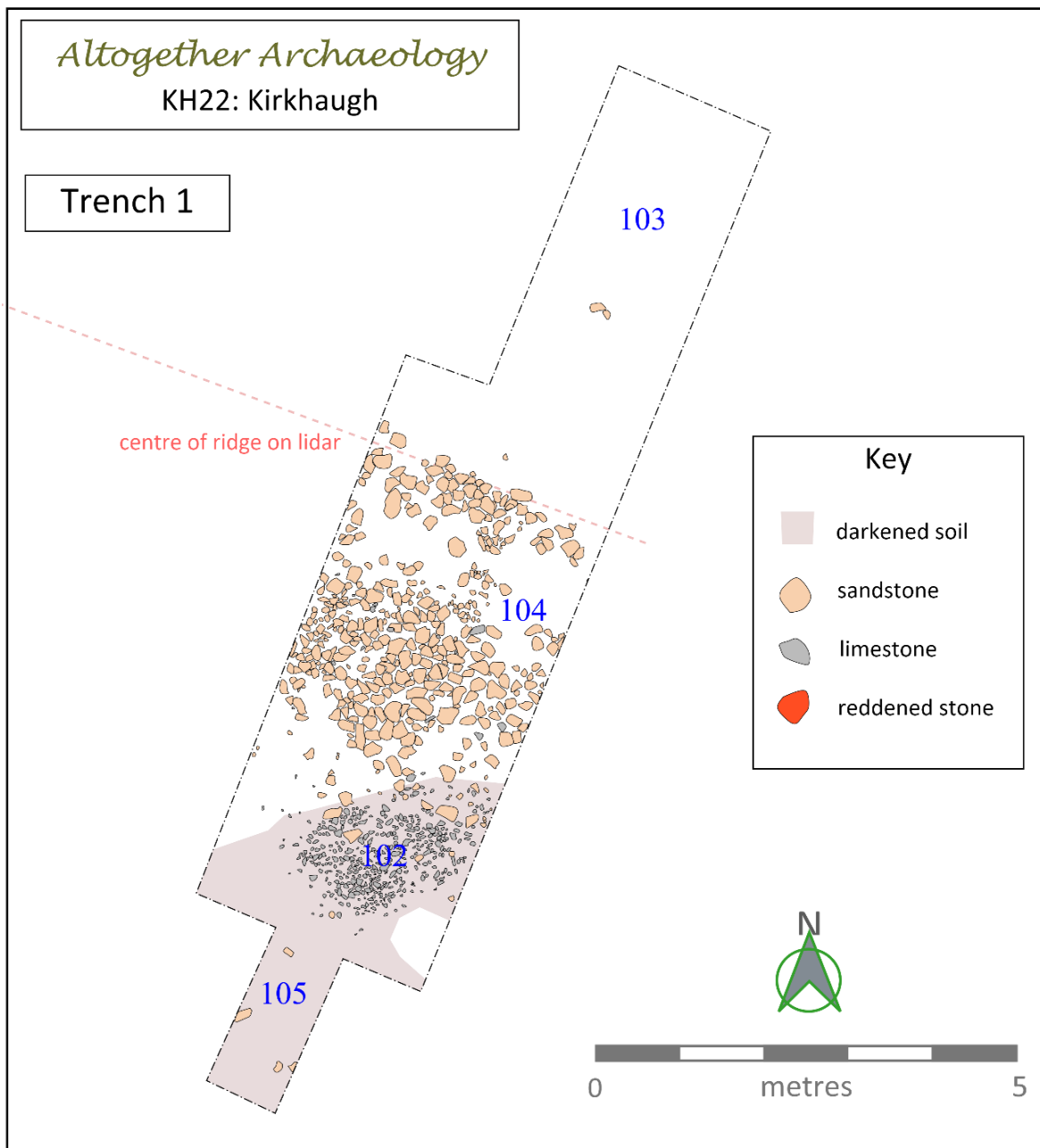


Figure 12: Plan of Trench 1

Underneath 102, and extending a further 2.5m to the southern margin of the trench, was a dark brown sandy/loamy deposit 105 containing many small fragments of coal and ash. This layer was 8cm thick at its southern edge, becoming progressively thinner further north. It overlay the same clay soil 103 as in the rest of the trench.

The northern part of the trench was devoid of any features. A sondage was dug on the east side of the trench, crossing the centre line of the lidar ridge. It reached the underlying glacial till natural at about 55cm below the surface. The glacial till 106 was orange clay with small pieces of rotted sandstone and some patches of grey clay.

There was no sign of an agger or any ditches. Another sondage was dug in the southern extension of the trench to determine the thickness of dark layer 105. At the end of the excavation, the stony layer 104 was removed to retrieve any finds and to confirm that there were no underlying features.



Figure 12: Trench 1 drone photograph on last day of excavation. North is to the left. Stones in the eastern 1m of the trench have already been removed to allow digging of a sondage.

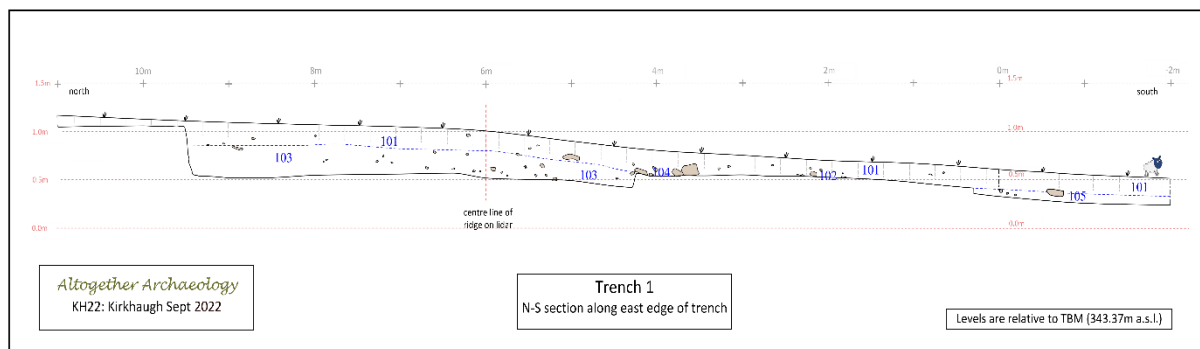


Figure 13: Section along east side of Trench 1 (continuing along the side of the 2m southern extension). A larger version of this diagram is given in Appendix 5.



Figure 14: Trench 1, looking north. Photograph was taken before trench was extended westward from 2m to 3m wide, and before southern extension excavated. Nearest the camera is spread of small limestone stones 102. Beyond this is spread of larger sandstone stones 104.



Figure 15: Section along west side of southern extension of Trench 1. The dark coal-rich deposit 105 is seen along the bottom 8cm of the section.

3.4 Trench 2 findings

Trench 2 was the easternmost of the trenches across the centre line of the ridge on lidar, extending 2m north of the line and 4m south. It was 2m wide. The topsoil, 201, contained post-medieval finds: charcoal, an iron hook, and a clay pipe stem.

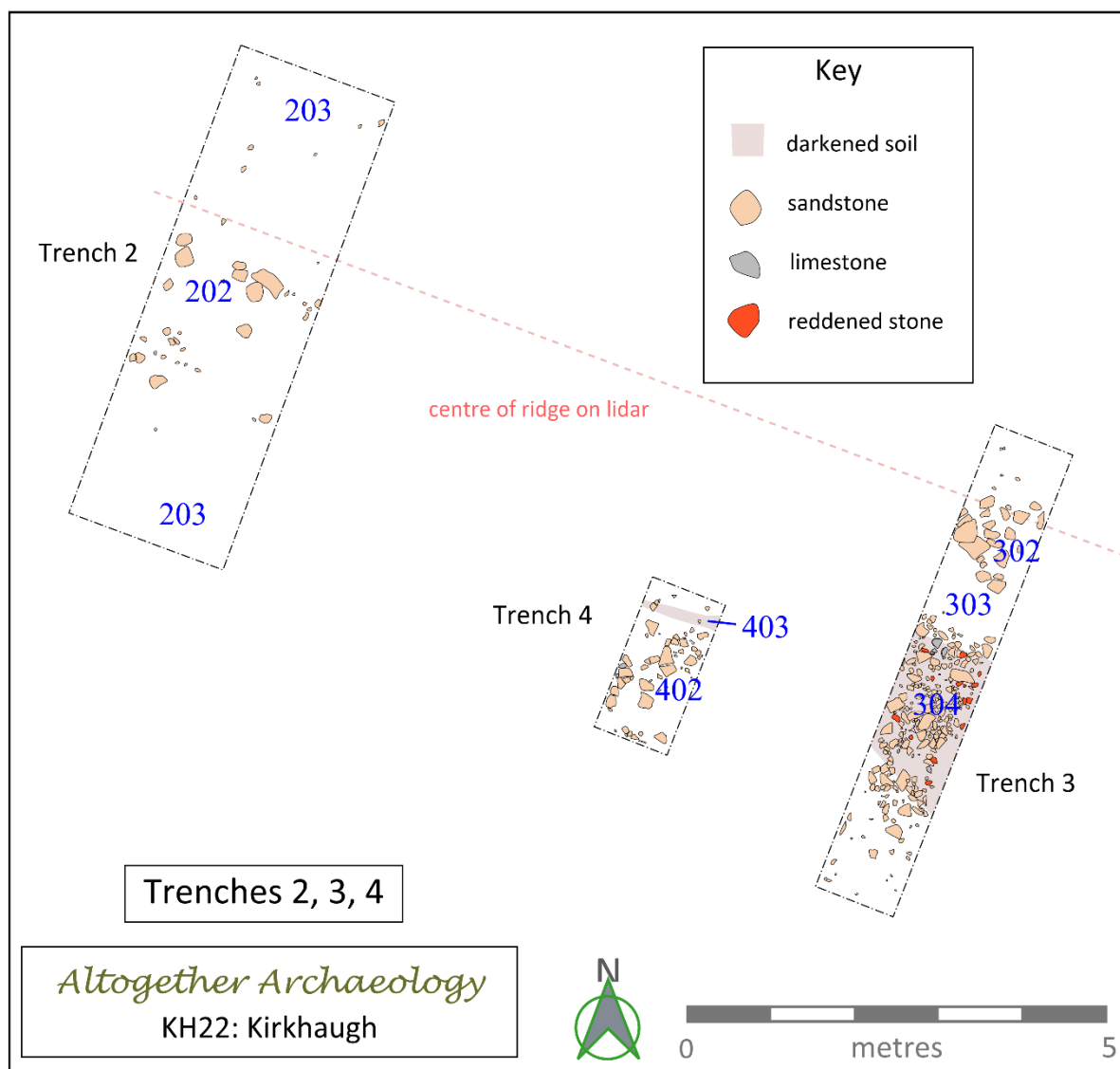


Figure 16: Plan of Trenches 2, 3 and 4

Below the topsoil was a sparse irregular band of sandstone stones 202 across the trench about 0.5m south of the centre line of the ridge on lidar. These stones were similar to the spread of stones 204 in Trench 1. The western third of the trench was excavated to a deeper level, removing clay rich soil 203 (equivalent to 103 in Trench 1) but only similar stones were found in a very sparse band 1.5m across. There were no finds below the topsoil.





Figure 17: Trench 2 drone photograph on last day of excavation. North is to the left.

3.5 Trench 3 findings

Trench 3 was excavated between Trenches 1 and 2 in view of the major difference between the findings in those two trenches. It was 6m long (of which 1m was north of the centre line of the ridge seen on lidar) and 1m wide. The topsoil *301* contained some post-medieval potsherds, six pieces of clay pipe stem, and small pieces of slag.

Below the topsoil was an irregular band of stones *302*. It was 1m wide across the trench with its northern edge along the centre line of the ridge seen on lidar. The stones were similar to those seen in the spread *104* in Trench 1. South of this was a 1m wide gap, and then a 2.5m wide band of stones *304* across the trench. These were mostly sandstone, up to 25cm in size, but a few were of limestone, and scattered through the context there were pieces of sandstone reddened by heat. The stones were in a matrix of dark sandy soil with frequent pieces of slag and coal. There were no artefacts found.



Figure 18: Trench 3 drone photograph on last day of excavation. North is to the left.

Underlying the stones *302* and *304* was *303*, the same clay-rich soil below topsoil as in the other trenches.



Figure 19: Trench 3 looking north

3.6 Trench 4 findings

Trench 4 was a 2m x 1m test-pit excavated between Trenches 2 and 3 in view of the very different findings in those two trenches. Its north edge was 2m south of the centre line of the ridge seen on lidar, so it was placed to determine whether the stony deposit 304 in Trench 3 extended further west.

The topsoil 401 contained a fragment of a clay pipe bowl, iron nails, small pieces of slag. Under the topsoil was a sparse spread of stones across most of the trench. These were sandstone and similar to 104 in Trench 1 in size and angularity. The matrix was loamy, with no evidence of coal, burning, or slag, so very different to the deposit 304 in Trench 3 centred only 3m to the east. The deposit contained a lump of charcoal between the stones, but no other finds. At the north and south ends of the trench, stones were very sparse, but there was a thin dark deposit (10cm to 15cm wide and 1cm thick) running across the trench 30cm from its north edge 403. This contained numerous small fragments of coal and ash, appearing similar to deposit 105 in Trench 1.



Figure 20: Trench 4 drone photograph. North is to the left



Figure 21: Band of coal-rich deposit 403 at north end of Trench 4

3.7 Trench 5 findings

Trench 5 was a 2m x 1m test-pit placed across a holloway which ran east-west across the field south of the ridge seen on lidar: see the lowest image in Figure 9. It was excavated to check the possibility that the road had been diverted via this route to make an easier (less steep) descent into the dry valley to the west of the excavation site.

The topsoil 501 included cinder, a post-medieval potsherd, a clay pipe stem, and a brass rifle cartridge case (10mm external diameter, 13mm diameter base ring). Nothing was found in the clay-rich soil 502 below topsoil.

4 DISCUSSION

On the lidar image (Figure 9), there is a ridge, a possible agger of a Roman road. Close inspection shows that probably at some time this was a field boundary. On its south side there is a 5m wide blank strip, to the south of which are 30m long cultivation ridges. These are 4m apart and run north-east to south-west (so not at right angles to the “road” ridge). Such narrow straight ridges are normally interpreted as being post-medieval, usually 18th century or later. South of this area of



narrow ridges is a larger area of broader, more curving, ridges on a different orientation, stretching to the edge of the terrace. These are probably earlier: medieval or early modern. A medieval date is supported by the finding of a Henry III penny by metal detection in this area during the excavation (position shown on Figure 9). To the north of the "road" ridge there are very faint narrow cultivation ridges running in a different direction: north-west to south-east. Thus, on both sides of the "road" ridge there are narrow cultivation ridges which run in different directions (neither of which are at right-angles to the ridge). There is a "blank" 5m wide gap to the south of the ridge, it is unclear to what extent there is a blank gap on its north side.

The excavation revealed a surprisingly complex picture, but there were no structures found that can be identified as a likely Roman road. There was no sign of an agger in the sections. Nor were there any ditches (though many Roman roads don't have ditches on both sides, and if present, ditches may be a substantial distance from the road). The ridge seen on lidar, on excavation corresponded to an irregular narrow band of stones seen in the three trenches crossing the ridge: 1, 2, and 3. Possibly these were deposited as clearance stones at a field margin when the land either side was being ploughed. To the south of the ridge there was a spread of stones in Trench 1 that may have been laid to form a rough track, but this did not continue in the trenches further west. On its south side was a patch of smaller limestone stones 102, presumably debris from quarrying for lime-burning. The underlying dark, coal-rich deposit 105, may also have been debris associated with lime burning.

The spread of stones south of the ridge was also present further west in Trench 3, but very different in nature, in that it now contained some heat reddened stones and pieces of coal and slag. Again, the most likely source for this was waste from lime-burning. It may have been deliberately deposited to form a rough track along the edge of the field between the field boundary and the cultivation ridges. However, no evidence of a track was seen in Trench 2, so either the track had curved further south, or no metalling of its surface was needed there. Of course, the waste may just have been dumped at the field edge to dispose of it on the unploughed headland.

The number of clay pipe stems found seems greater than expected for an upland agricultural field, presumably due to the industrial/mining activity in the area. Pipe smoking became common in the middle of the 17th century. A line of surface coal workings extends along the hillside only 100m to the north of the site. There are two limekilns shown on the first edition OS map (Figure 7) at the edge of the limestone terrace, south-east and south-west of Low Field. These are large "draw kilns", typically late 18th or 19th century. However, there would also have been (often earlier), "clamp kilns" which are less substantial, so usually not surviving as identifiable structures. The limestone and coal were burned together in an enclosed heap (Brooks 2014, Robertson 1999). Lime-burning in kilns produces slag as well as cinders from the coal (Nisbet 2006).

Limestone for the kilns would have been quarried from the edge of the terrace and possibly the sides of the dry valley cutting into the terrace to the west of the site. In addition, lidar shows that there is a limestone quarry on the terrace, 200m to the north-west (where another limekiln is marked on the first edition OS map). Sandstone must also have been quarried in the vicinity to construct the farm buildings and the many stone walls in the area.

Of course, failure to find a "classic" Roman road structure (such as excavated south of Hexham: 6m wide with kerbstones) doesn't disprove the hypothesis that a Roman road ran along the terrace. It may have followed a different course (perhaps bending to give the best approach to a descent into the valley). Or the extensive agricultural, mining and industrial activity may have destroyed it. In any case, minor Roman roads may be narrower and have a wide variation in form, making definite identification difficult.



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Metal detection by Audrey Battersby and Vince Scott.



Figure 2: Medieval Henry III penny found by metal detection at NY7056049312, 120m west of the trenches

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7 APPENDIX 1: DRONE PHOTOGRAPHS OF TRENCHES (LARGE SIZE)



Trench 1. North at top. the stones on the eastern 1m of the trench have been removed and a sondage dug.





Trench 2 (on left) and Trench 3 (on right).
North at top in both images.



Trench 4 (on left) and Trench 5 (on right).

North at top (Trench 4).

8 APPENDIX 2: TABLE OF CONTEXTS AND FINDS

This context table includes details of the finds in each context

Context #	Type	Trench	Is above	Is below	Adjoins	Description
101	topsoil	1	102 103 104 106			Topsoil: mid-brown sandy silty loam. Infrequent small stones. Finds: flint flake, clay pigeon, glass (uncoloured bottle, blue-green handle of stopper(?)), glazed slipware, 18 th cent earthenware, clay pipe stems (3), Fe nails (3), Fe chisel (?), slag, coal, cinder
102	deposit	1	103 106	101	104	Single layer of small (3cm to 5cm) stones, nearly all limestone, in an oval spread 1.5m x 2.5m near south end of trench (see plan). At same level as stones 104 and mingled with them at the intersection. No finds
103	deposit	1	106	102 101 104 105		Subsoil layer below plough-soil 101 Orange-brown, clayey loam. Infrequent small stones. No finds
104	deposit	1	103	101	102	Single layer of angular stones (4cm to 20cm). Nearly all sandstone, a few limestone. In a 4m wide band E-W across trench, broader on the west side No kerbstones. Close packed in parts, but with large empty areas towards the north (see plan). No wear or rutting. Finds: charcoal lumps (between stones).
105	deposit	1	103	102 101		Dark brown sandy deposit with frequent small fragments of coal, and some small fragments of CBM. Under the layer of stones 102 at south end of trench. Layer becomes thicker (max 8cm) to the south. Finds: small fragments of coal, ash & CBM
106	natural	1		103		Glacial deposit: Clay, yellow with grey patches, some fragment of rotted sandstone. Below all other contexts. No finds
201	topsoil	2	202			Topsoil similar to 101 Finds: pot, pipe stem (1), Fe hook. charcoal lumps
202	deposit	2	203	201		Layer of stones in band across trench, similar to 104, but narrower band and sparser. No finds.
203	deposit	2		202		Clay-rich subsoil, similar to 103. No finds



Context #	Type	Trench	Is above	Is below	Adjoins	Description
301	topsoil	3	302 303 304			Topsoil, similar to 101 Finds: pot, pipe stems (6), slag
302	deposit	3	303	301		Band of stones across N end of trench, similar to 104, but narrower band. No finds.
303	deposit	3		301 302 304		Clay-rich subsoil, similar to 103. No finds
304	deposit	3	303	301		Band of angular stones across middle of trench. Mostly sandstone, a few of which are burnt (reddened), and also a few limestone stones. In a matrix of dark loam, with frequent small pieces of coal, and slag. Finds: Slag, including large lump, coal. .
401	topsoil	4				Topsoil similar to 101 Finds: Slag, Fe nails (2), clay pipe bowl, pot/CBM.
402	deposit	4				Layer of stones in centre and south of trench, similar to 104, but sparser. All sandstone. Finds: charcoal lumps between stones (20cm deep).
403	deposit	4				Thin layer band of dark loam with small coal fragments and ash, running across N end of trench. 10cm – 15cm wide. No slag. No finds
404	deposit	4				Clay-rich subsoil, similar to 103. No finds
501	topsoil	5				Topsoil similar to 101 Finds: Cinder clay pipe stem (1), pot, cinder, brass rifle cartridge case.(approx 10mm diam cylinder, 13mm base)
502	deposit	5				Clay-rich subsoil, similar to 103. No finds



9 APPENDIX 3: LEVELS

Levels measured by dumpy level. TBM position and altitude measured by surveying grade GPS
All measurements shown are in metres.

Temporary Bench Mark (TBM): position NY7067749267 height a.s.l. 343.37m

Trench 1			
Distance from south end	height grass east side of trench	height in east side of trench	height in centre of trench
0	0.61	0.41	0.37
1	0.68	0.48	0.41
2	0.70	0.56	0.44
3	0.76	0.55	0.52
4	0.85	0.43	0.59
5	0.95	0.49	0.72
6	1.04	0.57	0.67
7	1.08	0.56	0.70
8	1.07	0.51	0.70
9	1.10	1.03	0.94
10	1.17	1.02	0.95
11	1.20	1.10	1.01
Trench 2			
Distance from south end	height grass west side of trench	height in west side of trench	height in centre of trench
0	-0.12	-0.34	-0.21
1	-0.05	-0.32	-0.09
2	0.04	-0.10	-0.04
3	0.18	-0.16	0.03
4	0.21	-0.12	0.09
5	0.20	-0.06	0.09
6	0.26	-0.06	0.14
Trench 3			
Distance from south end	height grass east side of trench	height in east side of trench	height in centre of trench
0	0.33	0.15	0.16
1	0.39	0.23	0.22
2	0.39	0.20	0.21
3	0.45	0.32	0.28
4	0.64	0.43	0.43
5	0.74	0.53	0.57
6	0.73	0.54	0.51
Trench 4			
Distance from south end	height grass east side of trench	height in east side of trench	height in centre of trench
0	0.28	0.09	0.11
1	0.33	0.13	0.10
2	0.35	0.14	0.13



10 APPENDIX 4: TRENCH GPS CO-ORDINATES

The point names are the trench numbers followed by the corners of the trench, in order. Co-ordinates are Ordnance Survey eastings and northings. Positions should be accurate to 0.1m, heights accurate to 0.2m.

Point name	Easting (m)	Northing (m)	Height (m)
T1-1	370686.24	549292.60	344.45
T1-2	370688.01	549291.80	344.49
T1-3	370684.04	549281.65	343.89
T1-4	370683.08	549281.95	343.73
T1-5	370682.30	549280.17	343.70
T1-6	370681.48	549280.52	343.69
T1-7	370682.27	549282.33	343.65
T1-8	370681.36	549282.71	343.57
T1-9	370683.85	549289.07	343.94
T1-10	370684.80	549288.80	343.91
T2-1	370668.82	549295.76	343.05
T2-2	370670.55	549295.11	343.56
T2-3	370668.49	549289.60	343.13
T2-4	370666.81	549290.43	342.68
T3-1	370677.86	549291.18	344.00
T3-2	370678.75	549290.86	344.01
T3-3	370676.70	549285.62	343.29
T3-4	370675.84	549285.84	343.36
T4-1	370673.80	549289.50	343.56
T4-2	370674.63	549289.22	343.57
T4-3	370673.94	549287.50	343.49
T4-4	370673.10	549287.74	343.48
T5-1	370652.46	549282.62	341.32
T5-2	370652.47	549280.72	341.40
T5-3	370651.59	549280.71	341.24
T5-4	370651.57	549282.60	341.29
HENRY III Coin	370560.63	549312.13	335.31
KH Cairn	370548.35	549300.41	336.15
TBM	370676.73	549267.18	343.22
TBM2	370676.65	549267.18	343.52



11 APPENDIX 5: PLAN OF TRENCHES AND SECTION

