Bleakmoor Hill, Northumberland

Earthwork Survey

Looking north across one of the 'ring grooves' within the palisaded enclosure.

ARS Ltd Report 2016/184
December 2016

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EXECUTIVE SUMMARY

Prepared on behalf of: *Tarmac Ltd*
Planning Authority: *Northumberland County Council*
Date of Fieldwork: *December 2016*
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Site central NGR: *NY 86327 53932*

Archaeological Research Services Ltd (ARS Ltd) was commissioned by Tarmac to carry out an earthwork survey at the Bleakmoor Hill Palisaded Enclosure Scheduled Monument (NHLE no. 1008562). The earthwork survey area was centred at NT 396008 608805 and covers an area of c.2.2 ha.

The aim of the programme of works was to investigate the site of the Bleakmoor Hill palisaded enclosure and its immediate environs to identify the presence, extent and character of visible earthwork remains on the site, and to help inform the most suitable locations for any subsequent evaluation trenching and to underpin evidence-based discussion of the site with Historic England and the Northumberland National Park Authority.

A number of previous phases of work have been undertaken at the quarry in advance of quarry extensions including the production of desk-based assessments, some low-level surface survey and evaluation trenching. This is described in more detail in the 'Preliminary Heritage Statement' (Archaeological Research Services Ltd 2016). Following discussion with the Historic England Inspector and the Northumberland National Park Archaeologist, it was agreed that systematic close-spaced geophysical survey and earthwork survey was appropriate as an initial stage of work that could be used to inform a subsequent programme of targeted evaluation trenching. The resulting information from these studies will be used to inform discussion and decision-making in relation to the status of the Bleakmoor Hill palisaded enclosure and other archaeological remains in its environs.

A total of 42 features were identified and recorded during the earthwork survey.

The earthworks recorded during the survey displayed varying degrees of preservation. Historic quarrying and at least two separate phases of agricultural activity have taken their toll on the visible archaeological remains and have reduced many features so that they only survive as very subtle surface features.

The palisaded enclosure and its internal features in particular have suffered heavily due to mutilation caused by ploughing, evidenced by the fact that the southern side of the perimeter has been completely levelled. The palisade slot is better preserved on its north-eastern side but is barely more than a parch mark on its western side. Similarly, the internal features were primarily noted on the ground as parchmarks denoting ring groove features, as opposed to being recognised as obvious, concave ring groove ditches. The aerial photography of the site shows the palisade and internal features quite clearly, but many of the features are caused by parchmarks and not upstanding remains and hence the aerial imagery gives a false impression of the extent to which upstanding remains survive on the site. Google Earth imagery from 2002 demonstrates the extent of past farming (probably medieval) activity in the form of wide ridge and furrow extending along the contours from east to west across the entire site, including over the palisaded enclosure and its internal features.

The ring bank feature, Feature 14, survives as an upstanding feature and is better defined than the palisade slot and stands to a maximum height of 0.4m, although it too has experienced some mutilation. This has resulted in a discontinuous appearance to the ring bank itself with uneven preservation around its circuit. The nature of this feature currently remains unknown but possible uses could include its use as a sheep stell, a ring bank burial cairn or some other feature possibly associated with past quarrying or agricultural activity.

The number of probable clearance cairns recorded in the study area displayed average to good preservation however some, such as Feature 8 which survives as little more than a spread of stones, demonstrate that these features too have been mutilated and partially flattened by ploughing. These small cairns are likely the product of farming activity and may relate to earlier episodes of farming, possibly even prehistoric farming in some cases.

In order to understand the character, date, extent and condition of preservation of features within the study area evaluation excavation employing hand-dug evaluation trenches is recommended as the most appropriate method. This will allow for observations made by the surveys to be adequately tested.

1. INTRODUCTION

1.1 Archaeological Research Services Ltd (ARS Ltd) was commissioned by Tarmac to carry out an earthwork survey at the Bleakmoor Hill Palisaded Enclosure Scheduled Monument (NHLE no. 1008562). The earthwork survey area was centred at NT 396008 608805 and covers an area of *c*.2.2 ha (Figure 1).

1.2 The underlying solid geology of the PDA comprises a 'red porphyritic andesite intrusion' which occurs in the ground as a batholith. No superficial deposits have been recorded (BGS 2016).

1.3 The earthwork survey was carried out alongside magnetometry and resistivity geophysical surveys which aimed to investigate the extent and character of sub-surface remains.

2. AIMS AND OBJECTIVES

2.1 The aim of the programme of works was to investigate the site of the Bleakmoor Hill palisaded enclosure and its immediate environs to produce information on the extent and character of visible earthwork remains and to help inform the most suitable locations for evaluation trenches and to underpin evidence-based discussion of the site with Historic England and the Northumberland National Park Authority.

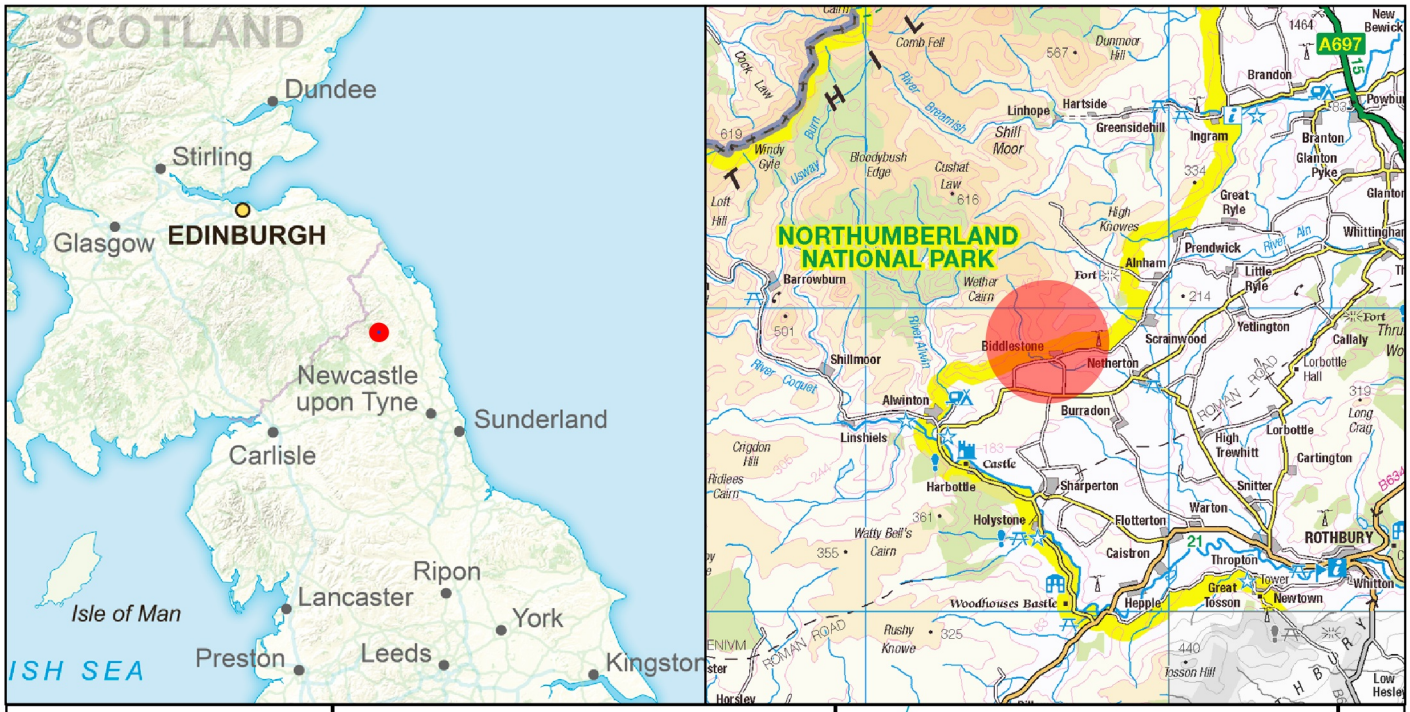
2.2 The objective of the earthwork survey was to undertake a detailed georeferenced survey of the palisaded enclosure and its environs and to produce a hachure plan showing all visible archaeological remains accompanied by text description and digital photography.

3. METHODOLOGY

3.1 A systematic survey was undertaken within and around the area of the Scheduled Monument to Historic England's *Understanding the Archaeology of Landscapes: A Guide to Good Recording Practice* Level 2 standard (Ainsworth *et al*. 2007) and in accordance with the Chartered Institute for Archaeologists (CIfA) *Code of Conduct* (2014a) and the methodology provided in the written scheme of investigation (Appendix II).

3.2 The survey located all visible earthwork features within the Scheduled Monument area and its environs. The survey employed a survey grade Leica 1200 GPS unit to create georeferenced control points from which a drawn, measured hachure plan was then created in the field by hand using tapes to add additional detail as appropriate. Typically, if satellite connections are clear, the GPS gave accuracies to within a few centimetres, but when the signal was strong sub-centimetre accuracy was possible. Archaeological conventions were used to denote archaeological and natural features within the survey area and where archaeological features intersected the physical relationship was examined and recorded.

3.3 All archaeological features were numbered using a consecutive numbering system with accompanying digital photographs and text records for each feature.



Site name: Harden Quarry, Northumberland
Date: December 2016
Drawn by: PC
Scale: Varies

Key:
Earthwork survey area
Scheduled Monument

N

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Figure 1:
Site location

4. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

4.1 A number of previous phases of work have been undertaken at the quarry in advance of quarry extensions including the production of desk-based assessments, some low-level surface survey and evaluation trenching. This is described in more detail in the 'Preliminary Heritage Statement' produced by Archaeological Research Services Ltd (2016). Following consultations with Historic England and the Northumberland National Park Archaeologist, it was agreed that systematic close-spaced geophysical survey and earthwork survey was required to inform a programme of evaluation trenching which together can inform discussion and decision-making in relation to the Bleakmoor Hill palisaded enclosure and other remains in its environs.

5. RESULTS

5.1 A total of 42 features were identified and recorded during the earthwork survey on Bleakmoor Hill (Figure 2). These are discussed below and are accompanied by plans and photographs within the text.

5.2 Many of the features discussed below are also visible in Google Earth imagery from 2002 and 2016, although some of the features identified on the imagery were not discernible on the ground (Figure 3 and Figure 4).

5.3 A number of sheep tracks were noted on the ground during the earthwork survey and should not be mistaken for archaeological features (Figure 5). When ground truthed as part of this survey, some of the features mapped in the earlier aerial photograph transcription that accompanied the 'Preliminary Heritage Assessment' proved not to be archaeological, but sheep tracks/informal paths.

Figure 2: Overall earthwork survey plan, scale = 1:1250 at A3

Key:

- Archaeological feature
- Natural slope
- Reed bed possibly indicating location of buried archaeological feature
- Current extent of Harden Quarry
- Fenceline
- Ridge and furrow
- Stream bed
- Projected line of feature mapped from Google Earth imagery
- Natural stone/placed orthostat
- Track
- Ridge and furrow mapped from Google Earth imagery

N

395900 396000 396100 396200

609000 608900 608800

Harden Quarry

0 100m

Figure 3. Google Earth image of the site 2016.

Figure 4. Google image of the site 2002.

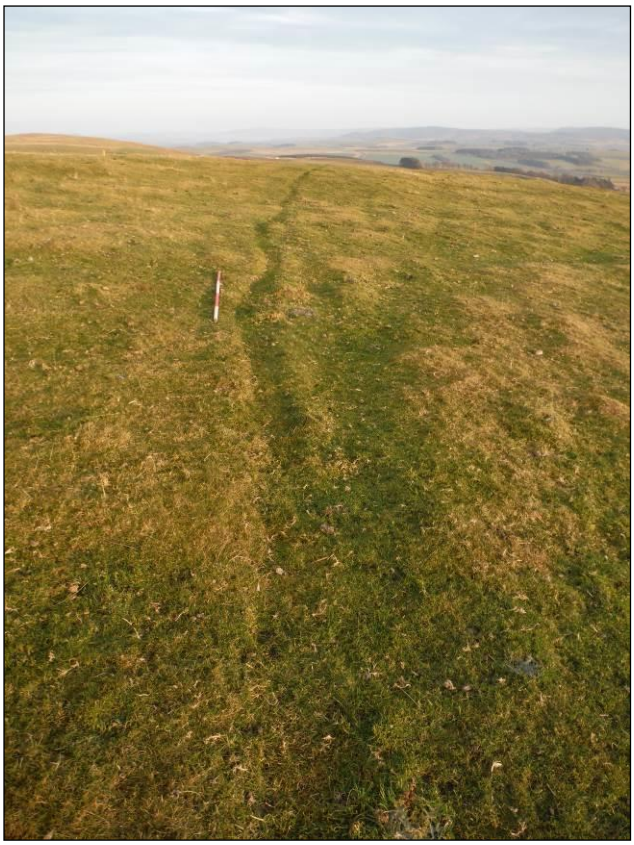

Figure 5. Sheep track. Scale = 2m.

Feature 1a Palisaded Enclosure Construction Slot

5.4 Feature 1a consists of the partially-mutilated remains of an ovoid palisade construction slot (Figure 6, Figure 7, Figure 8 and Figure 9). The enclosure occupies a relatively flat, high area of the field which would have been specifically chosen in order to take advantage of the watercourse to the north, for the provision of fresh water, as well as the natural barrier that it would have provided. On its south side the enclosure slopes gently to the south. The palisaded enclosure is orientated roughly east-west along its longest axis with a probable entrance located on the north-east side. The palisaded enclosure has been heavily mutilated by ridge and furrow cultivation, as can be observed on Figure 4, which probably occurred in the medieval period given that the traces of this ridge and furrow agriculture is broad, sinuous and follows the contours. The southern side of the palisaded enclosure has no surface remains visible due to it being most heavily truncated on this side. The surface remains of the palisade slot grade out until they are imperceptible on the ground on the southern side. The palisade construction slot is best-preserved on the eastern side where it has a maximum depth of 0.3m and a maximum width of 2m although these dimensions are much less elsewhere (Figure 8). For example, on its western side, the palisade slot measures 0.9m in width and 0.1m in depth. On the south-western side, before the construction slot grades out altogether, it is barely recognisable as an earthwork and is instead visible as a parch mark with only very slight surface expression (Figure 9). Internally the enclosure measures 70m x 49m from east to west and north to south respectively. Where the slot is best-preserved the hints of a small inner bank, measuring a maximum of 0.2m high, were noted on the ground which was presumably created using the up-cast from the creation of the construction slot. Until dating evidence is obtained the enclosure,

and the features within it, remain of unknown age and could be anything from Late Bronze Age to Romano-British in date (Waddington and Brown 2016).

5.5 What appears to be an embellished entranceway exists where the palisade construction slot is best-preserved, on the north-east side. In this location the slot is wider than elsewhere and a number of depressions suggest that large posts, and possibly a gate, may once have stood there. This could be confirmed through intrusive archaeological investigation.

5.6 Despite the mutilation that the palisade construction slot has suffered, it is probable that it was never of considerable size. The construction slot is almost certainly rock-cut, although its relatively narrow size suggests it would have only ever held the timbers of a relatively low stockade intended primarily to enclose and protect a settlement, and possibly livestock, from wild animals as opposed to being a defended site.

5.7 The palisaded enclosure contains a number of circular ring grooves which no doubt represent the remains of structures. The form and function of these structures remains unknown although some are no doubt houses, others, however could be barns or workshops. It is not clear from surface survey which structures were standing at the same time, although there are clearly overlapping buildings at the north-east side of the enclosure (ring groove buildings 1m, 1n, 1o). The internal features are described below.

Figure 6: Detailed earthwork survey plan of the palisade enclosure and internal and associated features, scale = 1:250 at A3

Key:

- Archaeological feature
- Natural slope
- Reed bed possibly indicating location of buried archaeological feature
- Ridge and furrow mapped from Google Earth imagery

N

396000

608850

1a
1b
1c
1d
1e
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1i
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1l
1m
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1o
2

0 25m

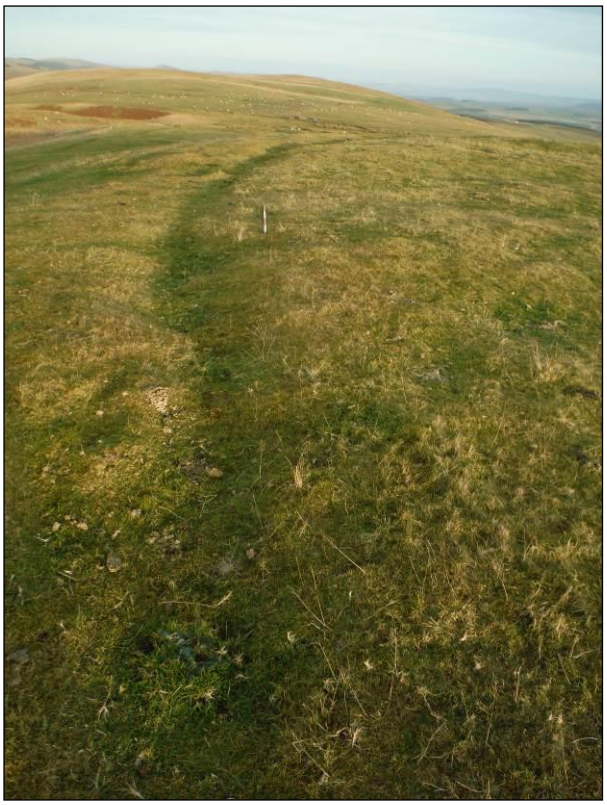


Figure 7. Feature 1a Palisaded Enclosure slot, looking north-east along the northern side of the palisaded enclosure where it is better preserved. Scale = 2m.

Figure 8. Feature 1a Palisaded Enclosure slot, looking north along the eastern side of the palisaded enclosure where it is better preserved. Scale = 2m.

Figure 9. Feature 1a palisaded enclosure slot, looking north-north-east along the western side of the palisaded enclosure where it is not as well preserved. Scale = 2m.

Figure 10. View across the southern side of the palisaded enclosure Feature 1a, looking south-west, showing the lack of an earthwork and/or parchmark. Scale = 1m.

Feature 1b Pit

5.8 Feature 1b is a possible pit located within the confines of the palisaded enclosure. The kidney-shaped pit is located within the south-east quadrant of the enclosure and does not appear to be associated with any of the ring-groove structures in particular. The pit measures 5.4 x 3m and is orientated from north-west to south-east. The pit has a maximum depth of 0.48m.

Feature 1c and Feature 1d Double Ring Groove

5.9 Features 1c and 1d represent a double ring grooved structure and consist of two concentric circular ring grooves located within the south-west quadrant of the palisaded enclosure (Figure 11). Feature 1c is the innermost ring groove, surrounded by Feature 1d. The features each consist of a very shallow partial circular ring groove primarily visible as a parchmark on the ground rather than as upstanding features, although there is some slight surface expression. Feature 1c is an almost complete circle with an apparent entrance on the south-east side. The earthwork measures 5.6m internally in diameter and the groove has a maximum width of 1.13m and a depth of 0.05m.

5.10 Feature 1d is more incomplete than Feature 1c although it was not apparent on the ground whether this was due to mutilation or whether it has always had more of a semi-circular form. The earthwork measures 9.3m in diameter, internally, and the groove has a maximum width of 0.66m and a depth of 0.05m. The groove of Feature 1d is noticeably narrower than that of Feature 1c.

5.11 It is possible that a small patch of reeds located within the confines of Feature 1c represent a buried archaeological feature such as a pit of hearth. Similarly, a larger circular patch of reeds is located to the north of Features 1c and 1d and could indicate the location of a well (Figure 11) or other feature that contains wet sediments.

Figure 11. Features 1c and 1d, ring groove structures, looking north. Note the small patch of weeds in the centre of the ring groove and the larger patch beyond. Scale = 2m + 1m.

Feature 1e Ring Groove

5.12 Feature 1e is an incomplete circular ring groove located at the far western side of the palisaded enclosure and is visible on the ground primarily as a parch mark, although there is some slight surface expression (Figure 12). The feature measures 5.5m in diameter, internally, and has a very shallow ditch measuring 0.7m wide and *c.*0.05m deep with an entrance to the south-east. It is possible that the entrance has suffered some mutilation which has caused it to seem wider than it actually is.

Figure 12. Feature 1e, ring groove structure looking north-east. Scale = 2m + 1m.

Feature 1f and F1g Ring Grooves

5.13 Features 1f and 1g are two semi-circular ring grooves located towards the north-western inner edge of the palisaded enclosure (Figure 13). Ring groove 1f measures 5.63m in diameter, internally, and has a maximum ditch width of 1m while ring groove 1g measures 3.2m in diameter, internally, and has a ditch measuring 0.9m wide. Both ring grooves are visible primarily as parchmarks although they each have slight surface expressions measuring 0.05m deep. Neither ring groove has a visible north-western side, possibly due to mutilation, so that they each appear to form a 'u' shape. The north-east end of ring groove 1f and the south-west end of ring groove 1g meet to form an uneven lowercase 'w' shape. It is possible that these earthworks could represent the remains of stock pens.

Figure 13. Features 1f and 1g, ring groove structures, looking north. Scale = 2m + 1m.

Feature 1h and Feature 1i Ring Groove

5.14 Feature 1h is a ring groove located centrally within the enclosure (Figure 14). The feature has a maximum internal diameter of 9.5m and a maximum ditch width of 1.23m and is primarily visible as a parch mark although there is a slight surface expression measuring 0.05m deep. There is an entrance on the south-east side of the feature and a possible pit, Feature 1i, located towards the north-east. The pit measures 2.5m x 2m and may be the remains of a pit or hearth.

Figure 14. Feature 1h, ring groove structure, looking north. Scale = 2m + 1m.

Feature 1j Linear Ditch

5.15 Feature 1j is a very shallow linear ditch feature running from Feature 1h towards Feature 1k in a north-easterly direction (Figure 15). The ditch measures 9.88m long, 0.76m wide and 0.1m deep below the surrounding land surface. It is possible that this ditch was created through years of continued use as a track way, or that it held a fence which separated parts of the interior of the enclosure.

Figure 15. Feature 1j, linear ditch, looking north-west. Scale = 2m + 1m.

Feature 1k and feature 1l Ring Groove and Internal Pit

5.16 Feature 1k is a sub-circular ring groove surviving primarily as a parch mark located at the northern edge of the enclosure (Figure 16). The ring groove has an internal diameter of 6.3m, a maximum ditch width of 0.64m and a maximum depth of 0.05m. There was no obvious entrance identified on the ground. Feature 1l is a possible pit or hearth located within the confines of ring groove 1l. The pit is ovoid and measures 0.75 x 0.69m and survives primarily as a parch mark.

Figure 16. Feature 1k, ring groove structure, looking north. Scale = 2m + 1m.

Features 1m, Feature 1n and Feature 1o Ring Grooves

5.17 Features 1m, 1n and 1o are three mutilated ring grooves intercutting each other and therefore representing different phases of construction (Figure 17). The ring grooves each have a maximum depth of 0.2m. Feature 1m is the semi-circular remains of a ring groove and has a maximum internal diameter of 13.9m and a maximum ditch width of 0.81m. Feature 1m is cut by, and is therefore earlier than, Feature 1o which is a ring groove earthwork that has been mutilated on its eastern side. Feature 1m has a maximum internal diameter of 9.66m and a maximum ditch width of 0.85m. The south-western side has been completely mutilated and was not visible at all on the ground.

5.18 Feature 1n is also cut by, and is also therefore earlier than, Feature 1o. Ring groove feature 1n is a circular ditch which has been mutilated on the south-western side and has a maximum internal diameter of 7.92m and a ditch width of 0.95m.

5.19 Feature 1o has a maximum internal diameter of 9.7m and a maximum ditch width of 0.83m (Figure 18). The entire eastern side of the ditch has been mutilated leaving a semi-circular earthwork.

Figure 17. Features 1m, 1n and 1o intersecting, looking north. Scale = 2m + 1m.

Figure 18. Feature 1o, ring groove structure, looking north. Scale = 2m + 1m.

Feature 2 Ovoid Mound

5.20 Feature 2 is an ovoid, turf-covered, mound located adjacent to the external south-western side of the palisade construction slot (Figure 2, Figure 6 and Figure 19). This feature measures 6.7 from north-west to south-east and 2.8m from south-west to north-east and has a maximum height of 0.5m above the surrounding ground surface. It appeared on the ground that the palisade slot cut Feature 2 and therefore that Feature 2 is earlier, however it cannot be ruled out from surface survey alone, that this feature is associated with the palisade. There is no evidence to suggest that the mound was constructed using stones.

Figure 19. Feature 2, ovoid mound truncated by palisaded enclosure ditch Feature 1a, looking south. Scale = 2m.

Feature 3 Sub-Circular Mound

5.21 Feature 3 is a sub-circular mound located towards the southern extent of the proposed quarry extension area (Figure 2, Figure 20 and Figure 27). The mound measures 12.4 from east to west and 5.03m from north to south and has a maximum height of 1.4m. There was no visible evidence that the mound had been constructed using stones but this cannot be ruled out. This feature has been identified previously both by HSLS' earthwork survey (numbered as Feature 38) and by T&WMS (1996). There is potential possibility that this feature could be a clearance cairn or perhaps even a burial mound of Bronze Age or Neolithic origin.

Figure 20. Feature 3, a possible barrow, looking west. Scale = 2m.

Feature 4 Cairn

5.22 Feature 4 is a small, low, sub-circular cairn located 27m to the north of mound Feature 3 (Figure 2, Figure 21 and Figure 27). The cairn measures 4.5 x 3.75m and has a maximum height of 0.46m above the surrounding ground surface. The cairn has an uneven surface and a number of stones protruding through the turf which indicate that it is most probably a clearance cairn, possibly of prehistoric date.

5.23 This feature was identified by HSLS as Feature 38.

Figure 21. Feature 4 Cairn, looking north-west. Scale = 2m.

Feature 5 Cairn

5.24 Feature 5 is a small, low, circular mound located at the south-eastern extent of linear bank Feature 6 (Figure 2, Figure 22 and Figure 27). The mound measures 2.58 x 2.53m and has a maximum height of 0.25m above the surrounding land surface. A number of stones protrude through the turf indicating that this is most likely to be a clearance cairn, possibly of Bronze Age date.

5.25 Feature 5 was identified in the earthwork survey by HSLS as Feature 4.

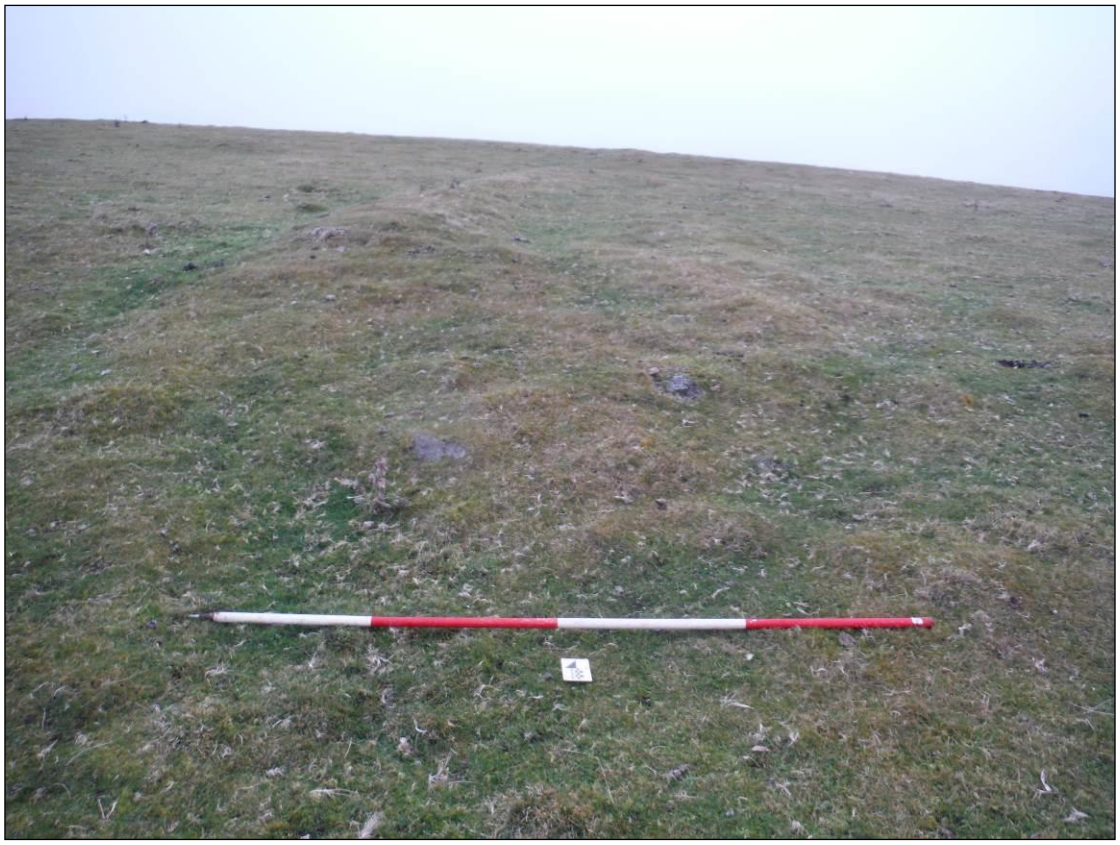


Figure 22. Feature 5 Cairn, looking north. Scale = 2m.

Feature 6 Linear Bank

5.26 Feature 6 is a low, linear bank running from north to south towards the southern extent of the proposed quarry extension area (Figure 2, Figure 23 and Figure 49). The bank has a maximum, visible, surviving length of 32m, a maximum width of 2.17m and a height of 0.33m. The earthwork is uneven and has been mutilated along its length by livestock and vehicles. It can be seen to extend further to the south towards the current quarry extent on aerial photographs although this was not visible on the ground.

5.27 This earthwork was identified by HSLS' earthwork survey as Feature 5 and it is thought to possibly be contemporary with the palisaded enclosure (Waddington and Brown 2016).

Figure 23. Feature 6 Linear Bank, looking south. Scale = 2m + 1m.

Feature 7 Cairn

5.28 Feature 7 is another small, low mound abutting the eastern side of bank Feature 6 (Figure 2, Figure 24 and Figure 27). Feature 7 is a regular circular mound and measures 2.97 x 3.04m with a maximum height of 0.25m. This is also thought to be a clearance cairn, possibly of Bronze Age date, post-dating Feature 6.

5.29 Feature 7 was identified in HSLS' earthwork survey as Feature 6.

Figure 24. Feature 7 Cairn, looking north. Scale = 2m.

Feature 8 Cairn

5.30 Feature 8 is a truncated, low, ovoid spread of stones which most probably represents the mutilated remains of a clearance cairn, possibly of prehistoric date (Figure 2, Figure 25 and Figure 27). The feature measures 3.8 x 2.8m and has a maximum height of 0.15m.

5.31 Feature 8 was identified in the HSLS earthwork survey as Feature 7.

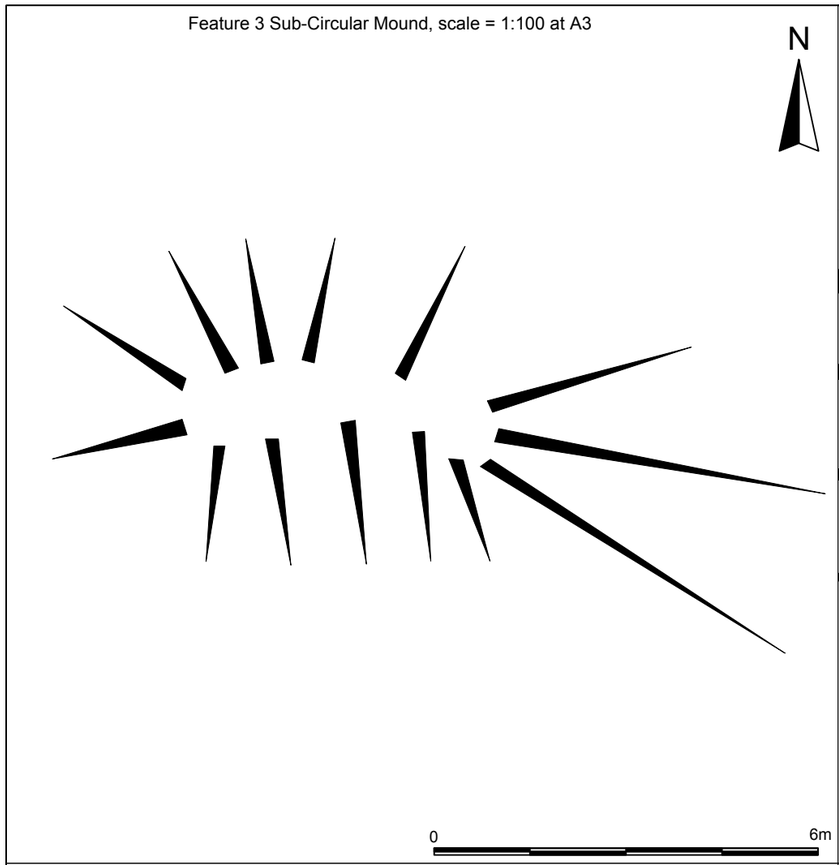
Figure 25. Feature 8 Cairn, looking south. Scale = 2m.

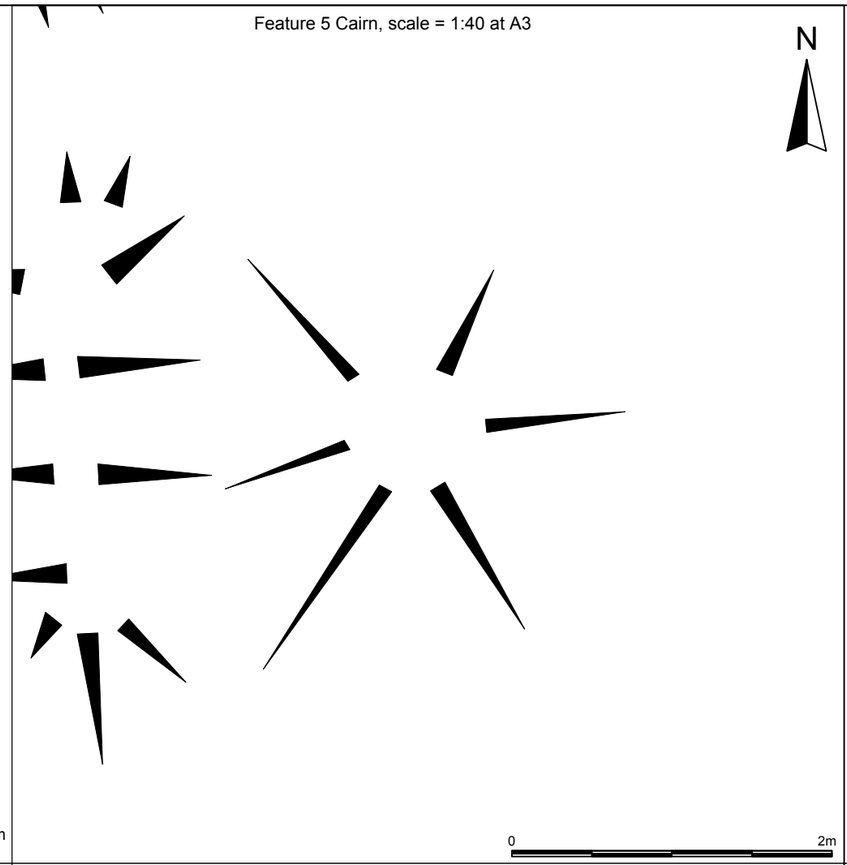
Feature 9 Cairn

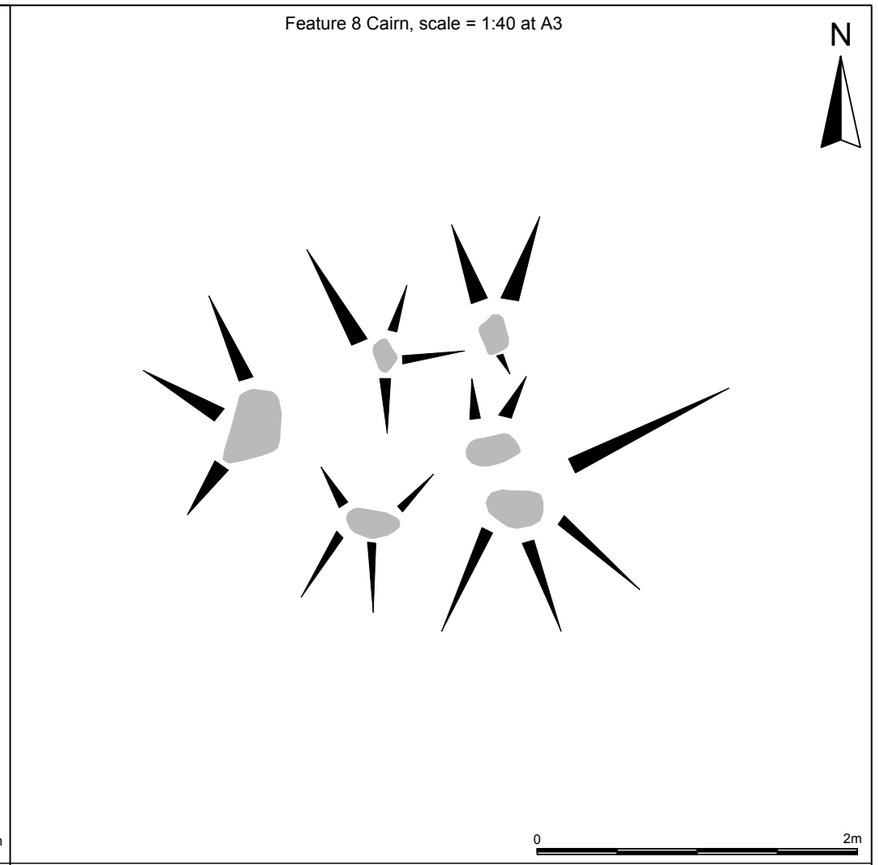
5.32 Feature 9 is a low, regular mound located to the north of cairn Feature 8 (Figure 2, Figure 26 and Figure 27). Feature 9 is likely to be a clearance cairn, possibly of Bronze Age date. It measures 3.4m in diameter and has a maximum height of 0.4m.

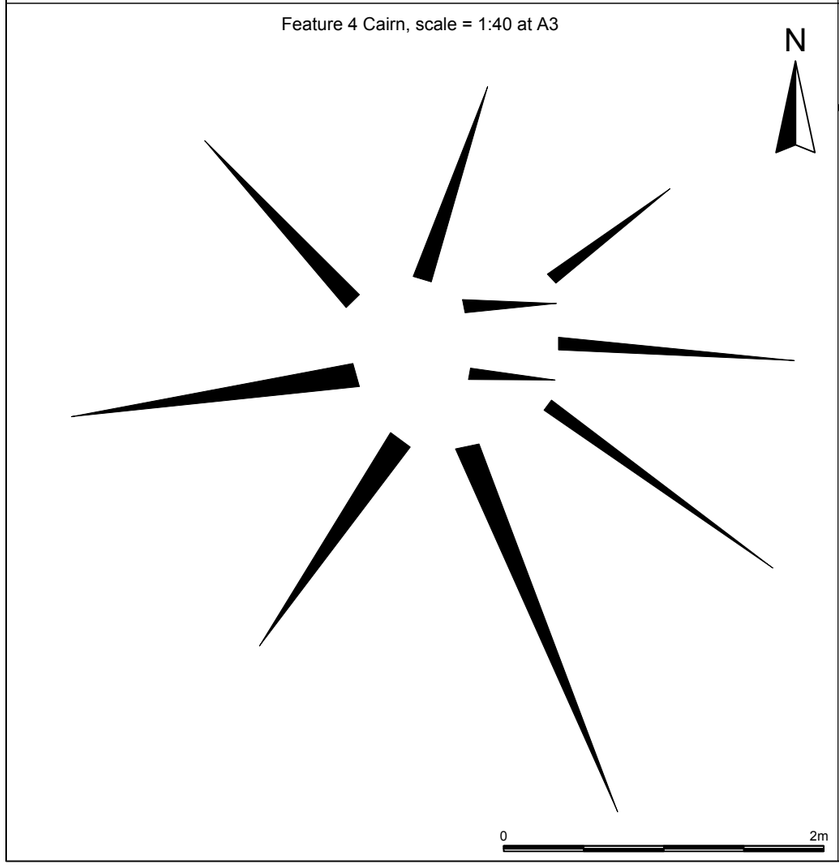
5.33 Feature 9 was identified in HSLS' earthwork survey as Feature 16.

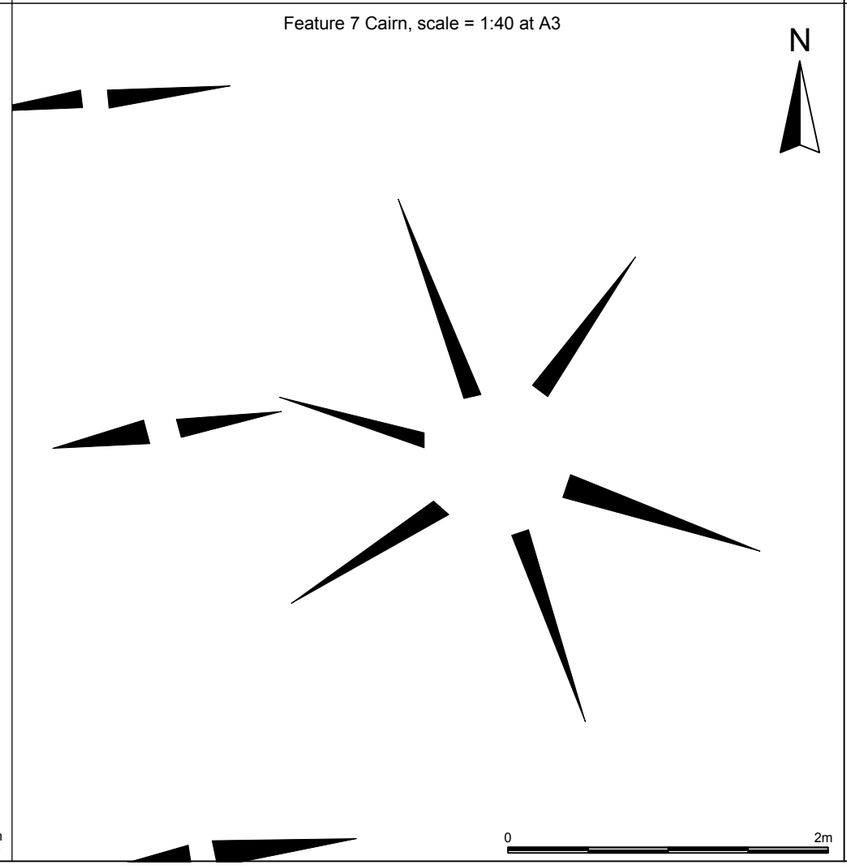
Figure 26. Feature 9 Cairn, looking north-west. Scale = 2m.











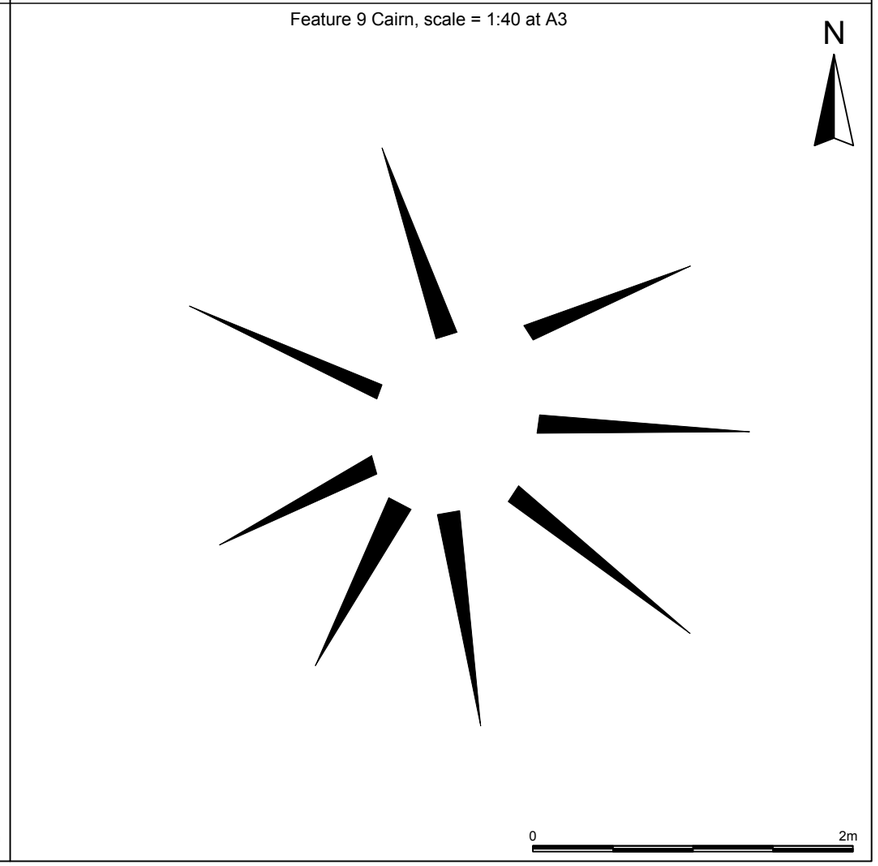


Figure 27. Individual plans of Features 3, 4, 5, 7, 8 and 9. Various scales.

Feature 10 Cairn

5.34 Feature 10 is another probable clearance cairn located to the east of mound Feature 9 (Figure 2, Figure 28 and Figure 47). It measures 4.92 x 4.96m and has a maximum height of 0.6m. This feature is possibly of Bronze Age date.

Figure 28. Feature 10 Cairn, looking north. Scale = 2m.

Feature 11 and Feature 12 Sub-Circular Mounds

5.35 Features 11 and 12 are both sub-circular mounds located to the north-east of the palisaded enclosure, adjacent to the enclosure entrance (Figure 2 and Figure 29). Feature 11 is an ovoid mound measuring 10.92 from north-east to south-west and 8.84m from north-west to south-east and has a maximum height of 2.3m. Feature 12 is more elongated and measures 24.8 from north-east to south-west and 6.3m from north-west to south-east with a maximum height of 1.8m.

5.36 It is possible that these features are man-made mounds created through historic quarrying activity or, alternatively, that they were created in order to make use of the natural contours and form a route which would have led towards the palisade entrance from the east. This can only be tested through invasive archaeological investigation.

Figure 29. Features 11 and 12 Sub-Circular Mounds, looking south-west. Scale = 2m.

Feature 13 Stone Orthostat

5.37 Feature 13 is a small upright stone orthostat located at the western extent of the survey area (Figure 2 and Figure 30). This was identified by the HSLS earthwork survey and at that time there were more examples that were noted within what is now the quarry and which are no longer extant.

5.38 The orthostat (Feature 13) was identified by HSLS as Feature 20 and is thought to have been intentionally erected (Waddington and Brown 2016).

Figure 30. Feature 13 Orthostat. Scale = 1m.

Feature 14 Ring Bank

5.39 Feature 14 is a probable ring bank located on the western side of the survey area on the highest part of the field (Figure 2, Figure 31 and Figure 32). This feature consists of a sub-circular turf-covered stone bank measuring 9.09 x 6.9m internally. The bank measures a maximum of 1.7m in width and has a maximum height of 0.4m above the surrounding ground surface. The form of the bank is not clear due to it being turf-covered. The feature has definitely suffered some mutilation, evidenced by areas where it has been flattened almost to ground level. The perimeter bank is of uneven height and preservation along its circuit.

5.40 It is possible that this feature is a form of stock enclosure, however it is also possible that it is a form of prehistoric ring cairn or some kind of structure associated with past agricultural or quarrying activity. Feature 14 was identified during HSLS' earthwork survey as Feature 27. The true form, function and date of this structure can only be established by recourse to evaluation or excavation.

Figure 31. Feature 14 Ring Bank, looking north-west. Scale = 2m.

Feature 14 Ring Bank, scale = 1:50 at A3

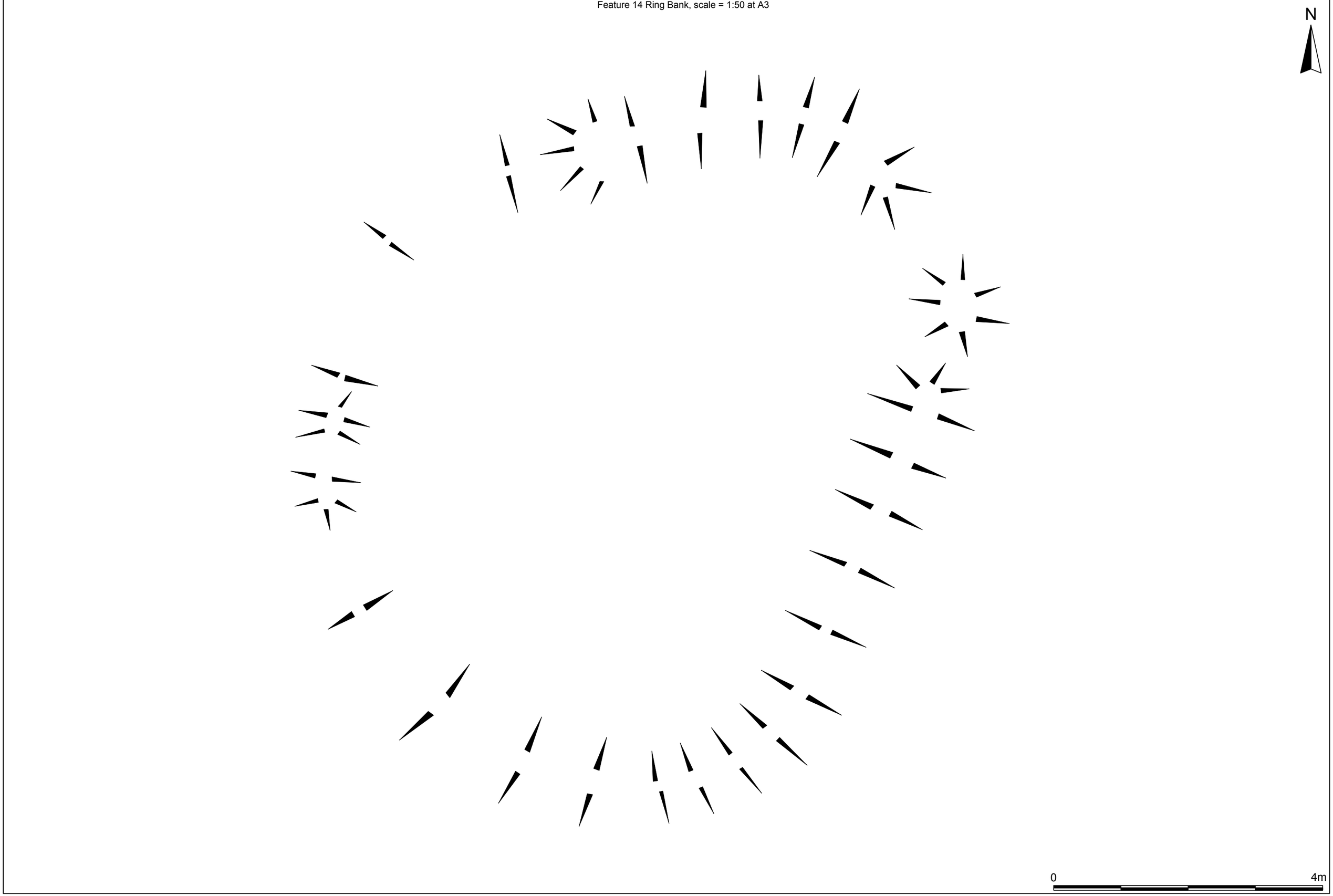


Figure 32. Individual plans of Feature 14 Ring Bank. Scale = 1:50 at A3.

Feature 15 and Feature 16 Orthostats

5.41 Features 15 and 16 are two additional exposed stones that are located close to Feature 13. Stone Feature 15 is thought to be natural and the origin of Feature 16 is unknown (Figure 2, Figure 33 and Figure 34). If they are intentionally set orthostats they may be associated with stone Feature 13, and if this is the case then they could have only formed part of a very low feature which is not consistent with the known prehistoric stone settings elsewhere in Northumberland.

Figure 33. Feature 15 Orthostat. Scale = 1m.

Figure 34. Feature 16 Orthostat. Scale = 1m.

Feature 17 Cairn

5.42 Feature 17 is a probable clearance cairn, possibly of Bronze Age date, located towards the eastern extent of the survey area, in close proximity to a number of other clearance cairns (Figure 2, Figure 35 and Figure 47). Feature 17 measures 3.5 from north-west to south-east and 2.8m from north-east to south-west and has a maximum height of 0.32m. The mound has been flattened slightly on one side, most probably due to vehicles driving across it or by livestock.

Figure 35. Feature 17 Cairn, looking south. Scale = 2m.

Feature 18 Cairn

5.43 Feature 18 is a probable clearance cairn, possibly of Bronze Age date, located 13.6m to the north-east of Feature 17 (Figure 2, Figure 36 and Figure 47). Feature 18 measures 2.6 x 2.4m and has a maximum height of 0.22m above the surrounding ground surface.

Figure 36. Feature 18 Cairn, looking south. Scale = 2m.

Feature 19 Small Ring Bank

5.44 Feature 19 is a very small circular ring bank feature that can best be described as a small mound with a depression in the centre (Figure 2, Figure 37 and Figure 47). It measures 2.82m externally and 0.65m internally with a maximum height of 0.15m above the surrounding ground surface. The function of this feature is unknown.

Figure 37. Feature 19 Small Ring Bank, looking north-east. Scale = 2m.

Feature 20 Quarry

5.45 Feature 20 is an oval-shaped scoop in the hillside which has been created by quarrying of the natural stone (Figure 2, Figure 38 and Figure 40). The quarry scoop measures 8.7 x 11.2m and has a maximum depth of 3m below the surrounding ground surface. The exposed quarried edge faces south-south-east and there is a large amount of loose, quarried stone in the base of the scoop. The lack of overgrowth covering the stones indicates that the quarrying took place during the post-medieval period and may have been used for field walls or banks that can be seen further down the southern slope of Bleakmoor Hill.

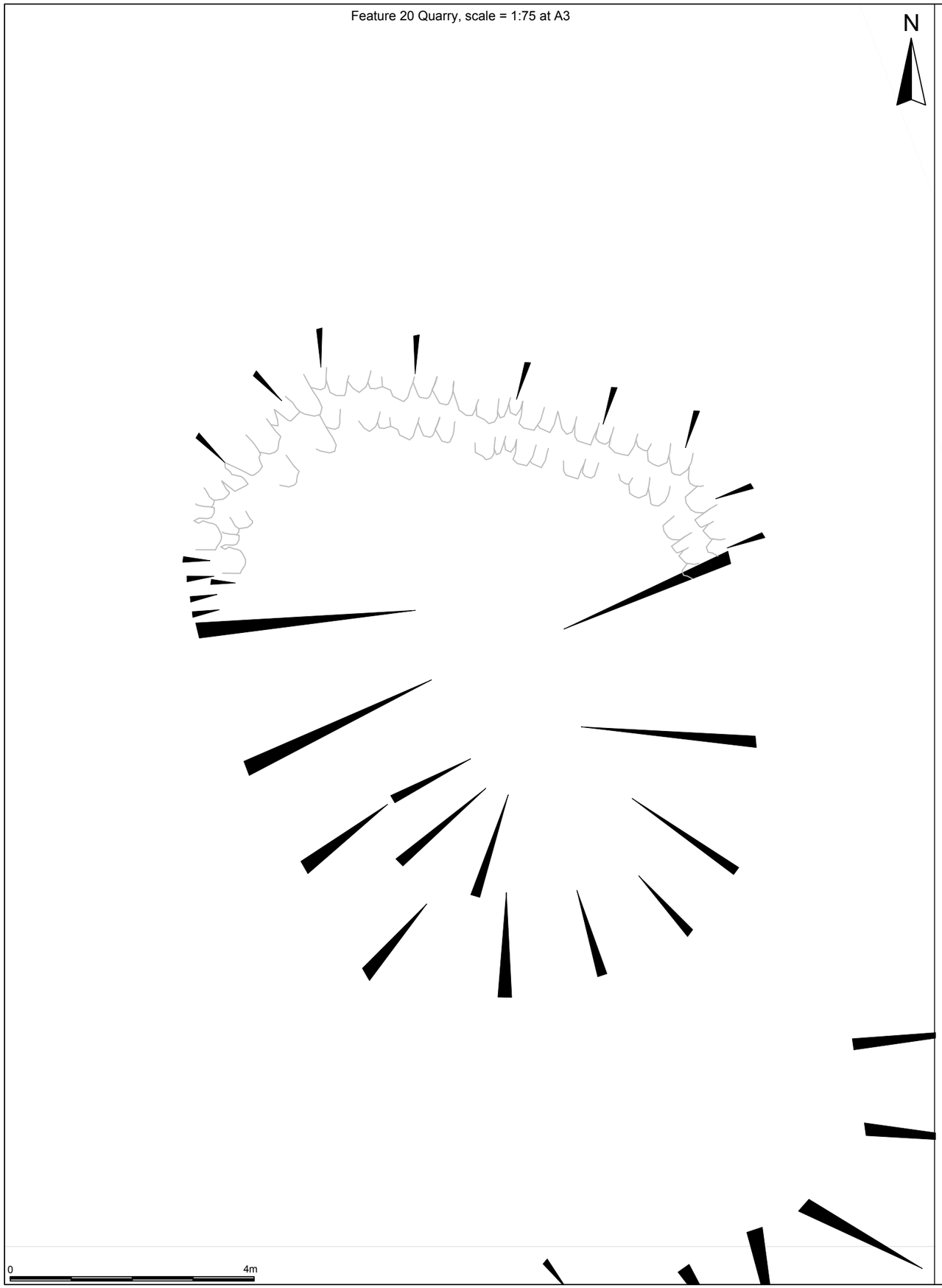
Figure 38. Feature 20 Quarry, looking north. Scale = 2m.

Feature 21 Possible Quarry

5.46 Feature 21 is another possible quarrying scoop although it is less pronounced and may be natural slumping of the hillside (Figure 2, Figure 39 and Figure 40). It consists of a natural outcrop of exposed rock measuring 11.2m from north-east to south-west and 3.5m from south-east to north-west. This interpretation is tentative.

Figure 39. Feature 21 Quarry, looking north. Scale = 2m.

Feature 20 Quarry, scale = 1:75 at A3



Feature 21 Quarry, scale = 1:75 at A3

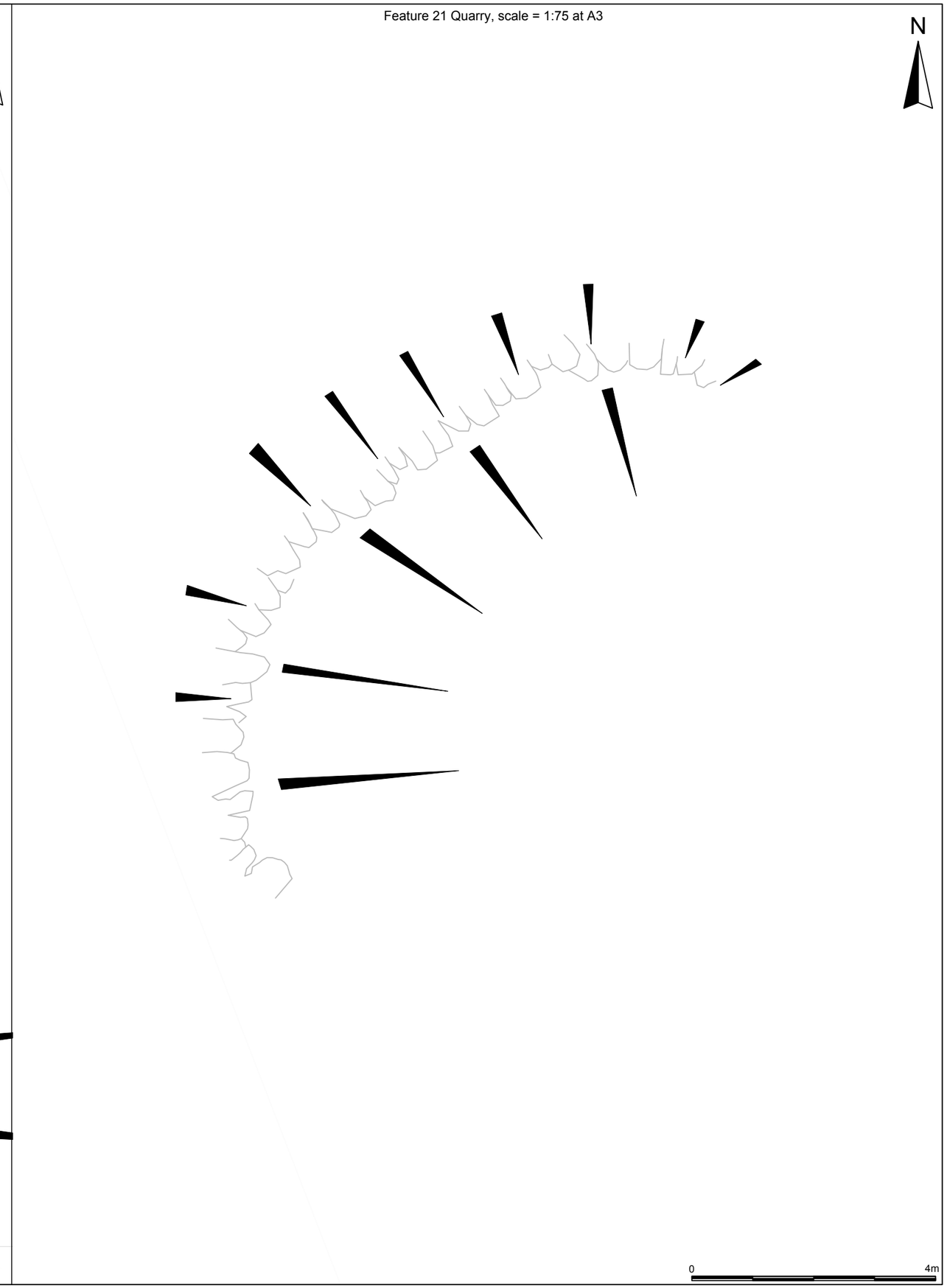


Figure 40. Individual plans of Quarry Features 20 and 21. Scale = 1:75 at A3.

Feature 22 Linear Bank and Ditch

5.47 Feature 22 is a linear bank and ditch running from south-west to north-east at the south-eastern extent of the proposed quarry extension area (Figure 2, Figure 41 and Figure 42). The earthwork has a maximum length of 157m and a width of 4.9m. The earthwork consists of a low bank rising from the south with a ditch running parallel to it on its north-western side. The bank has a maximum height of 0.6m whilst the ditch has a maximum depth of 0.42m. The earthwork has been truncated by, and is therefore earlier than, disturbance associated with quarry scoop Feature 20. Fairly well-preserved ridge and furrow earthworks, Feature 30, (Figure 43) were noted to the south of this earthwork running from north-west to south-east and it is possible that the bank and ditch is an associated field boundary perhaps used to keep livestock out of the cultivated area.

Figure 41. Feature 22 Linear Bank and Ditch, looking south-east.

Figure 42. Feature 22 Linear Bank and Ditch, looking east. Scale = 2m.

Figure 43. Ridge and furrow earthworks, looking south-east.

Feature 23 Cairn

5.48 Feature 23 is a probable clearance cairn, possibly of Bronze Age date, located to the north of Feature 22 (Figure 2, Figure 44 and Figure 47). The cairn measures 5m from north-west to south-east and 3m from north-east to south-west and has a maximum height of 0.4m above the surrounding ground surface. The uneven surface of this feature indicates that it is constructed of loose stones.

Figure 44. Feature 23 Cairn, looking south-west. Scale = 2m.

Feature 24 Linear Ditch

5.49 Feature 24 is a shallow, wide linear ditch running from north-west to south-east at the south-eastern extent of the site that appears to be truncating linear bank Feature 22 (Figure 2, Figure 45). Linear ditch Feature 24 measures 46m in length and has a maximum width of 6m and a depth of 0.5m. It is possible that Feature 24 is also part of a field system and is associated with linear bank Feature 22.

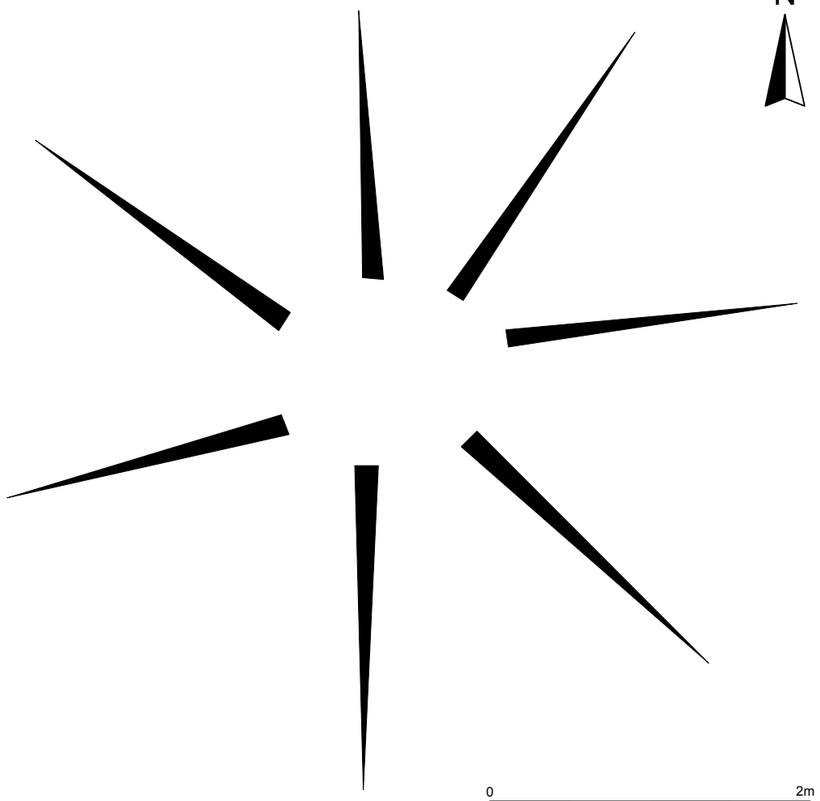
Figure 45. Feature 24 Linear ditch, looking north-west. Scale = 2m.

Feature 25 Cairn

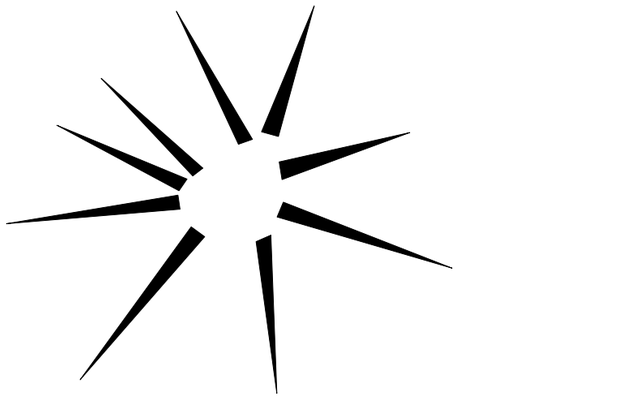
5.50 Feature 25 is a probable clearance cairn, possibly of Bronze Age date, that has been truncated by later linear bank and ditch Feature 22 (Figure 2, Figure 46 and Figure 47). It measures 2.6m4 x 4.37m and has a maximum height of 0.3m above the surrounding ground surface.

Figure 46. Feature 25 Cairn, looking north. Scale = 2m.

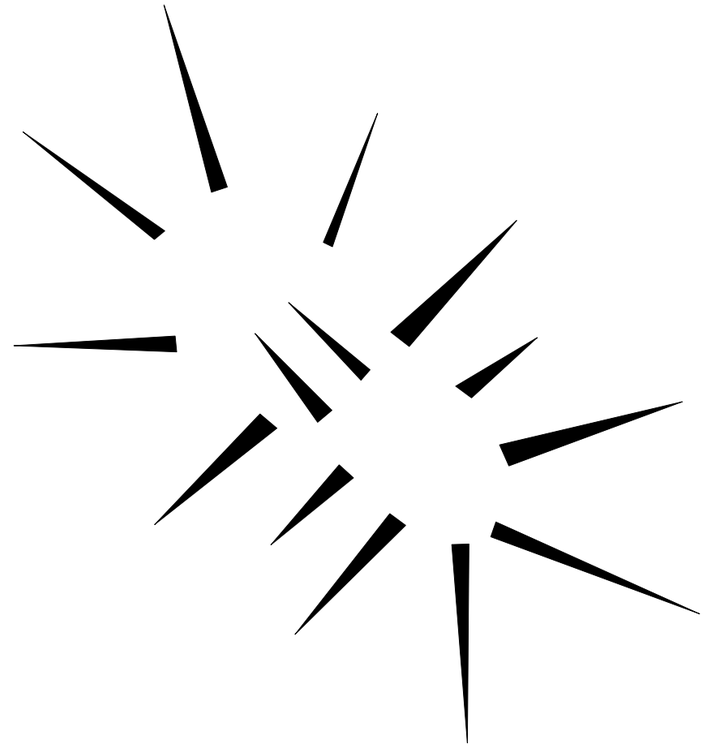
Feature 10 Cairn, scale = 1:40 at A3



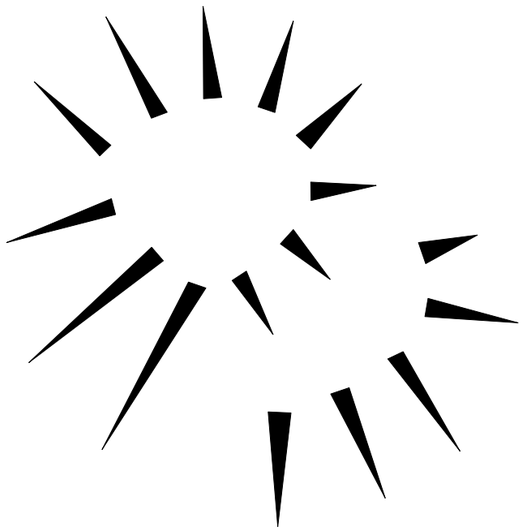
Feature 18 Cairn, scale = 1:40 at A3



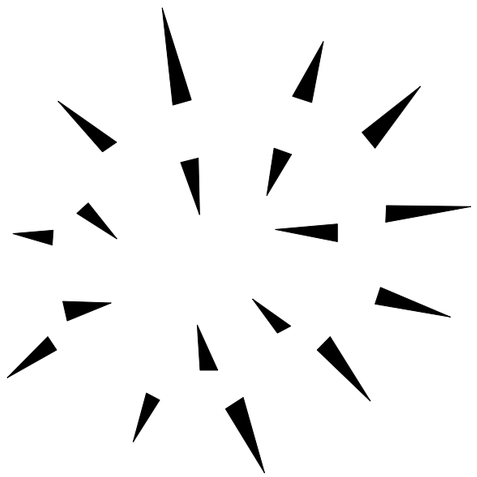
Feature 23 Cairn, scale = 1:40 at A3



Feature 17 Cairn, scale = 1:40 at A3



Feature 19 Small Ring Bank, scale = 1:40 at A3



Feature 25 Cairn, scale = 1:40 at A3

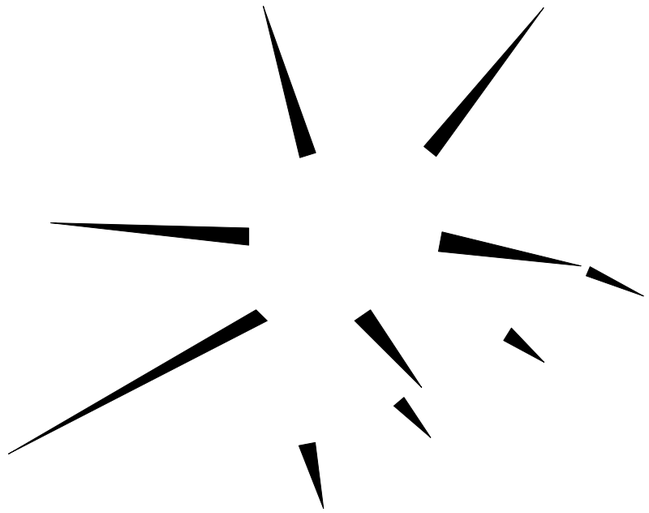


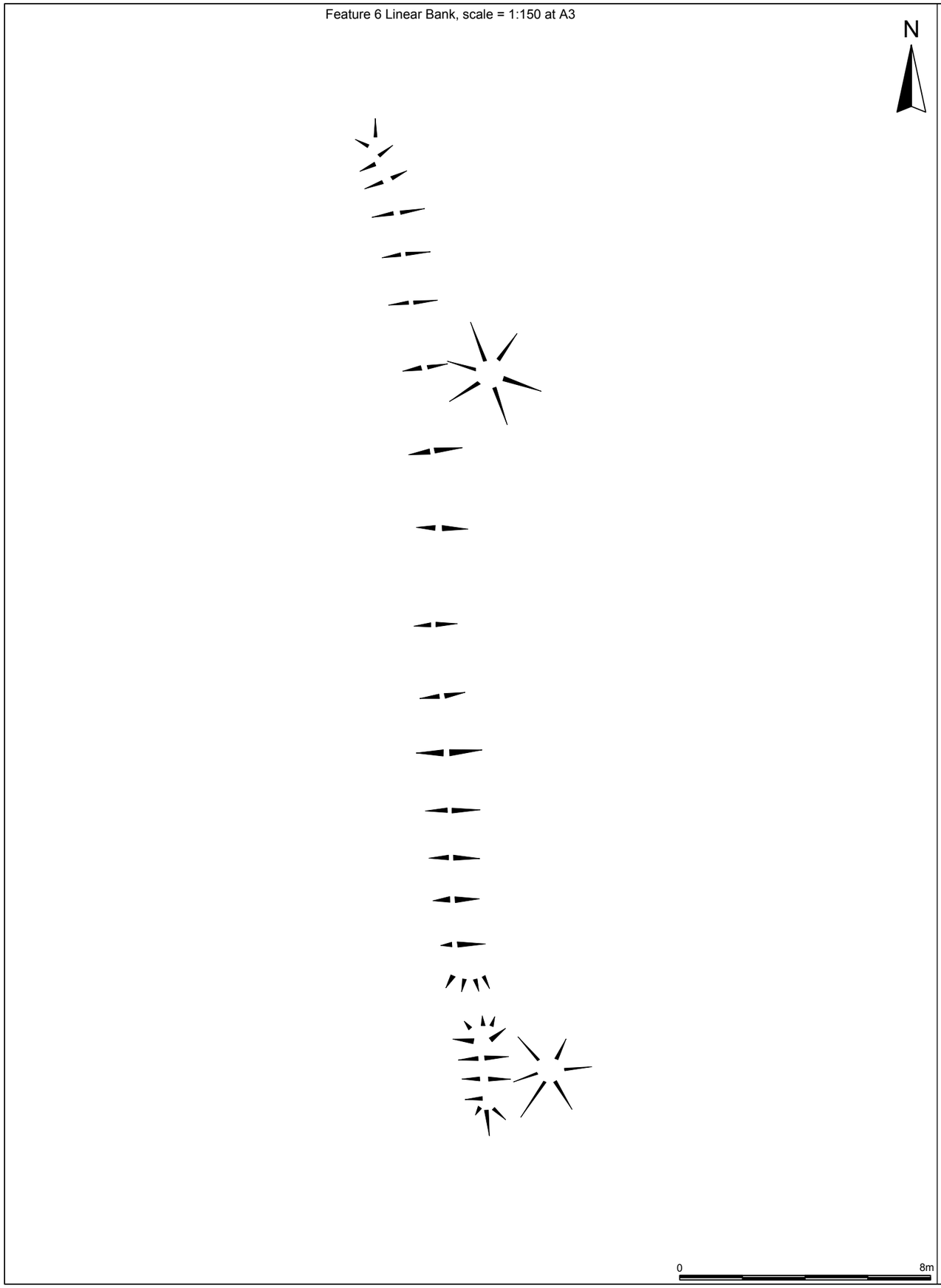
Figure 47. Individual plans of Features 10, 17, 18, 19, 23 and 25. Various scales.

Feature 26 Linear Bank

5.51 Feature 26 is a low, linear bank located at the northern extent of the proposed quarry extension (Figure 2, Figure 48 and Figure 49). The feature measures 18m in length and has a maximum width of 1.97m and a height of 0.5m. This feature has been heavily mutilated in parts and it is quite probable that it forms part of a wider feature which is no longer visible on the ground.

Figure 48. Feature 26 Linear Bank, looking north. Scale = 2m.

Feature 6 Linear Bank, scale = 1:150 at A3



Feature 26 Linear Bank, scale = 1:100 at A3

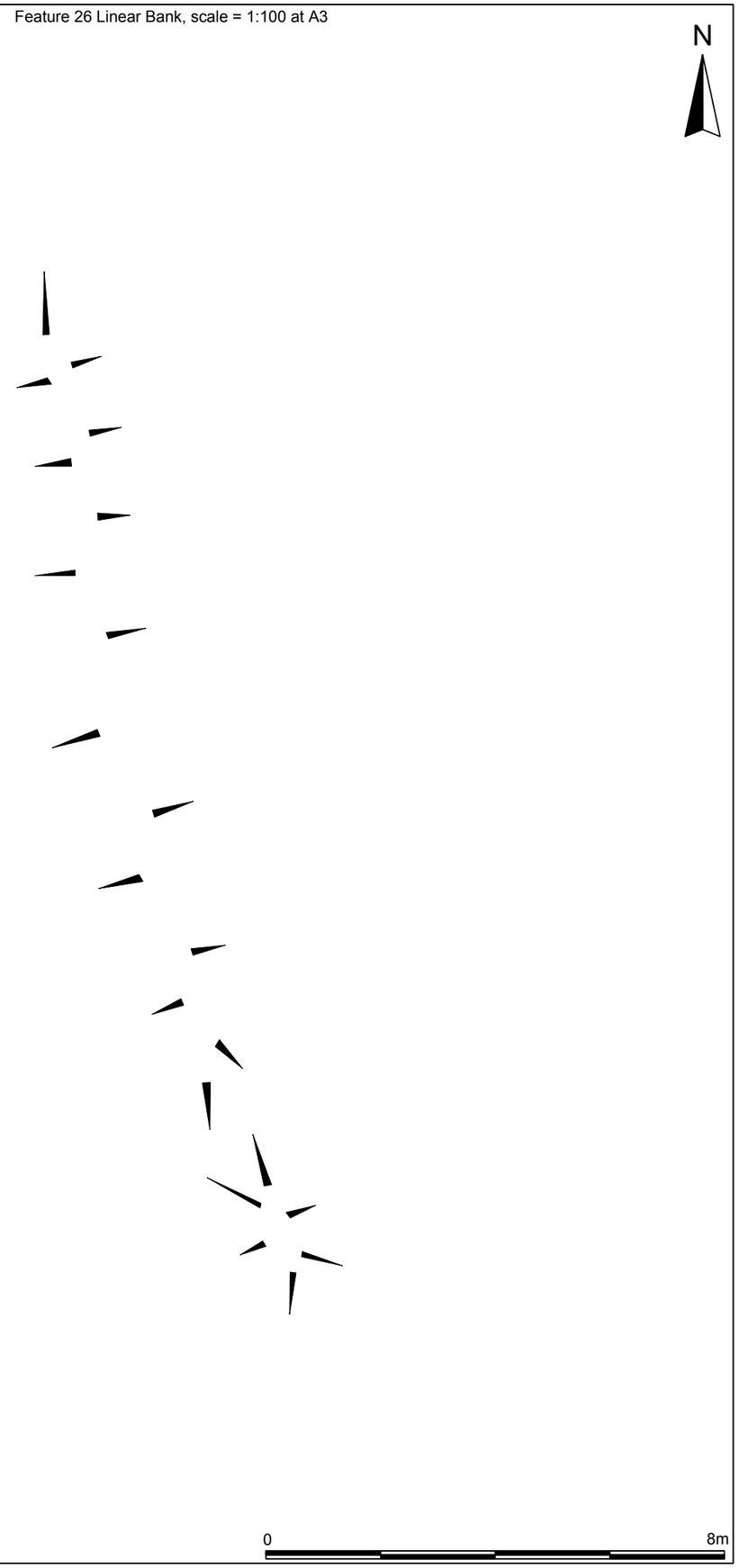


Figure 49. Linear bank Features 6 and 26. Various scales.

Features 27 and 28 Ditches

5.52 Ditch features 27 and 28 are located on the northern side of the stream bed which bounds the site to the north (Figure 2 and Figure 50). These features each consist of a low ditch running from the field in a southerly direction towards the edge of the stream. It is possible that these earthworks have been created by people and animals crossing the stream at this point or accessing it for water.

Figure 50. Features 27 and 28 Ditches, looking north-west.

Feature 29 Wide Ridge and Furrow

5.53 Ridge and furrow earthworks, aside from those mentioned previously and recorded during the earthwork survey, have been recorded elsewhere on the site from Google Earth imagery dating from 2002 (Figure 2 and Figure 4). This ridge and furrow is much wider than the upstanding ridge and furrow that can be seen elsewhere on the ground today (Feature 30). The wide ridge an furrow measures approximately 9m from ridge top to ridge top, and runs in a south-west to north-east direction across the site, parallel with the contours and has a sinuous alignment. Typically, this type of ridge and furrow dates to the medieval period. The width of the ridge and furrow indicates that it is older than the narrower, straighter and better preserved examples (Feature 30). The wide ridge and furrow appears to have has affected all the archaeological remains of Bleakmoor Hill and has evidently mutilated both the palisaded enclosure (Feature 1) and the ring bank (Feature 14). This wider ridge and furrow may never have been particularly deeply cut because the ground has been subsequently levelled,

presumably when the land was given over to livestock farming in more recent times, as it is now barely visible and only identifiable on satellite imagery as parchmarks.

Feature 30 Narrow Ridge and Furrow

5.54 The narrower ridge and furrow still visible as upstanding earthworks occupies the south-east corner of the site and runs in a north-north-west to south-south-east direction (Figure 2, Figure 3 and Figure 43). These earthworks measure, on average, 4.3m wide from ridge top to ridge top. The narrow nature of these ridge and furrow earthworks indicates that they are much later than, and therefore cut, the parchmark ridge and furrow mentioned above (Feature 29).

6. DISCUSSION

6.1 The features recorded by the survey displayed varying degrees of preservation and upstanding surface survival. Historic quarrying and at least two separate phases of agricultural practice have taken their toll on the visible archaeological remains and have rendered many of them very subtle earthworks.

6.2 The palisaded enclosure and its internal features in particular have suffered heavily due to mutilation caused by medieval ploughing, evidenced by the fact that the southern side of the palisade construction slot has been levelled leaving no surface remains visible on the ground. The palisade slot is better preserved on its north-eastern side but is barely more than a parch mark on its western side. Similarly, the internal features were primarily noted on the ground as parchmarks visible as darker but stunted growth of grass forming the footprints of the ring groove features, as opposed to being recognised as obvious, concave ring grooves. Google Earth imagery from 2002 (Figure 4) demonstrates the extent of past ridge and furrow earthworks spanning from east to west across the site, including the palisaded enclosure and its internal features.

6.3 It is probable that the later, straighter and narrow ridge and furrow (Feature 30), visible as earthworks on the ground, is associated with Feature 22 which is a linear bank and parallel ditch and which presumably acted as a boundary delineating the ploughed area from the higher outfield. This ridge and furrow most probably belongs to a post-medieval or Victorian phase of agricultural activity on the site.

6.4 The ring bank (Feature 14) has survived as an upstanding feature and is better defined than the palisaded enclosure and stands to a maximum height of 0.4m above the surrounding ground surface, although it too has been mutilated by the medieval ridge and furrow to a degree. This has resulted in a discontinuous appearance to the ring bank.

6.5 The various probable clearance cairns recorded in the survey area displayed average to good preservation however some, such as Feature 8 which survive as little more than a low spread of stones, appear to have always been very low, or that they have been mutilated and flattened by ploughing.

6.6 The excavation of targeted, hand-dug evaluation trenches would be the best method for enhancing, testing and furthering understanding of the archaeological remains identified by the survey and also for exploring areas where remains may exist but for which no surface traces are now evident.

7. PUBLICITY, CONFIDENTIALITY AND COPYRIGHT

7.1 Any publicity will be handled by the client.

7.2 Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

8. STATEMENT OF INDEMNITY

8.1 All statements and opinions contained within this report arising from the works undertaken were offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

9. REFERENCES

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Websites

British Geological Survey Online. *http://www.bgs.ac.uk/data/databases.html*

APPENDIX I: WRITTEN SCHEME OF INVESTIGATION

Harden Quarry, Northumberland

Written Scheme of Investigation for an Earthwork Survey

November 2016

The Eco Centre, Windmill Way, Hebburn, Tyne and Wear

www.archaeologicalresearchservices.com

Prepared on behalf of:	Tarmac
Date of compilation:	November 2016
Compiled by:	Philippa Cockburn
Planning Reference:	N/A
Local Authority:	Northumberland National Park and Historic England
Site central NGR:	NT 96063 08866

CONTENTS

1. INTRODUCTION

1.1 Archaeological Research Services Ltd (ARS Ltd) was commissioned by Tarmac to produce a Written Scheme of Investigation (WSI) for an earthwork survey at the Bleakmoor Hill Palisaded Enclosure Scheduled Monument (NHLE no. 1008562). The earthwork survey area is centred at NT 396008 608805 and covers an area of *c*.2.2 ha (Figure 1).

1.2 The underlying solid geology of the PDA comprises a 'red porphyritic andesite intrusion' which occurs in the ground as a batholith. No superficial deposits have been recorded (BGS 2016).

1.3 This document comprises a WSI which describes the method of investigation to be used by ARS Ltd for surveying the area of the site for an earthwork survey (*c.*2.2 ha).

1.4 The aim of the programme of works is to investigate the site of the Bleakmoor Hill palisaded enclosure and its immediate environs to produce information to inform on the extent and character of visible earthwork remains with a view to informing on the presence and survival of archaeological remains on the site, the most suitable locations for evaluation trenching and to underpin evidence-based discussion of the scheduled status of the site with Historic England and the Northumberland National Park Authority.

2. ARCHAEOLOGICAL BACKGROUND

2.1 A number of previous phases of work have been undertaken at the quarry in advance of quarry extensions including the production of desk-based assessments, some low-level surface survey and evaluation trenching. This is described in more detail in the 'Preliminary Heritage Statement' produced by Archaeological Research Services Ltd in 2016. Following consultations with the Historic England Inspector and the Northumberland National Park Archaeologist, it was agreed that systematic close-spaced geophysical survey and earthwork survey is required to inform a programme of evaluation trenching which together can inform discussion and decision-making on the scheduled status of the Bleakmoor Hill palisaded enclosure.

3. AIMS AND OBJECTIVES

3.1 Earthwork Survey Aims and Objectives

3.1.1 The project aims to investigate the site of the Bleakmoor Hill Palisaded Enclosure and its immediate environs to produce information to inform on the extent and character of the earthwork remains.

3.1.2 The objective of the earthwork survey is to assess the distribution and extent of the remains to help inform a suitable evaluation trenching strategy for the monument and any other significant archaeological remains within any potential quarry extension area.

4. EARTHWORK SURVEY RECORDING

4.1 A systematic survey will be undertaken within and around the area of the Scheduled Monument to Historic England's *Understanding the Archaeology of Landscapes: A Guide to Good Recording Practice* Level 2 standard (Ainsworth *et al*. 2007) and in accordance with the Chartered Institute for Archaeologists (CIfA) *Code of Conduct* (2014a).

4.2 The survey will locate all visible earthwork features within the Scheduled Monument area and its environs. The survey will use a survey grade Leica 1200 GPS unit to create georeferenced control points from which a drawn, measured hachure plan will then be created by hand. Typically, if satellite connections are clear, this instrument will give accuracies to within a few centimetres, but if the signal is strong then sub-centimetre accuracy is possible. Archaeological conventions will be used to denote archaeological and natural features within the survey area and where archaeological features intersect the physical relationship will be examined and recorded.

4.3 All archaeological features will be numbered using a consecutive numbering system with accompanying digital photographs and text records for each feature.

5. Earthwork Survey Report

5.1 A report will be produced which will include background information, a summary of the works carried out, and a description and interpretation of the findings. The report will also include a georeferenced location plan showing the identified features with respect to the current extent of the quarry.

5.2 Archaeological Research Services Ltd will complete the online OASIS form at http://ads.ahds.ac.uk/project/oasis prior to commencement of the project and will complete the relevant forms on completion of the project.

6. Monitoring Arrangements

6.1 Should a monitoring visit be required then arrangements will be made for access.

7. Staffing

7.1 The Project Manager for the geophysical survey will be Tony Brennan, Operations Manager at ARS Ltd. The Site Surveyors will be Dr Clive Waddington and Philippa Cockburn BA.

8. General Items

8.1 Health and Safety

8.1.1 All work will be carried out in accordance with The Health and Safety at Work Act 1974. Specific health and safety policies exist for all our workplaces and all staff employed will be made aware of the policy and any relevant issues. The particular risks involved with this project will be assessed, recorded and relevant mitigation measures put in place as part of a full risk assessment, which will be compiled in advance of fieldwork and will be read and signed by all on-site operatives. ARS Ltd retains Peninsula as its expert health and safety

consultants.

8.2 Insurance Cover

8.2.1 ARS Ltd has full insurance cover for employee liability public liability, professional indemnity and all-risks cover.

9. REFERENCES

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APPENDIX I: FIGURES

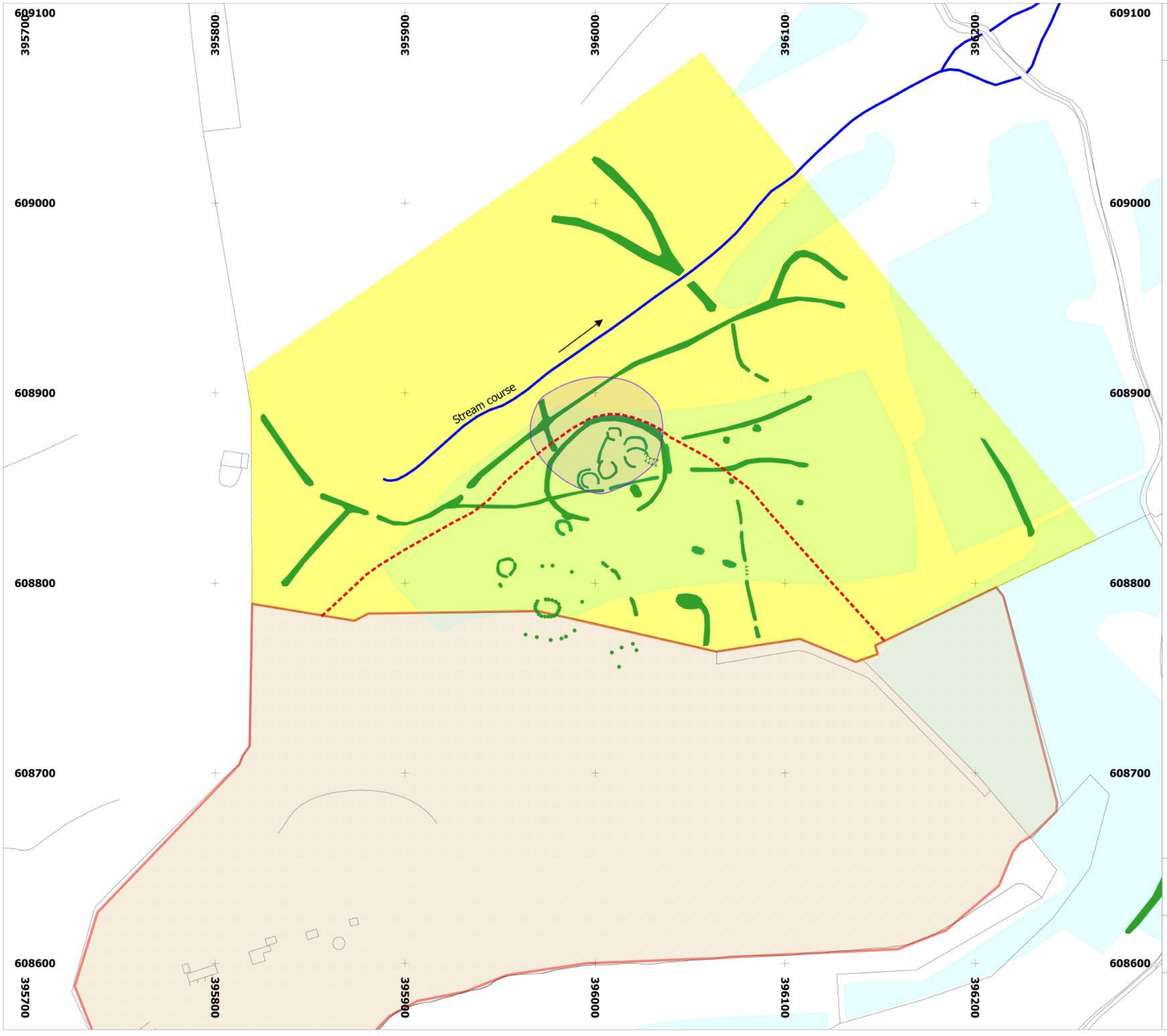

Figure 1 - Earthwork survey area

- Possible extent of mineral reserve (to be confirmed by drilliing)
- Current edge of quarry
- Known archaeology and suspected remains
- Rig and furrow
- Area of Scheduled Monument mapping
- Stream course
- Earthwork survey area

0 20 40 60 80 100 m

N

Site name: Harden Quarry
Date: November 2016
Drawn by: AB
Scale: 1:2000 @ A3

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