Archaeological Fieldwork Report

Lincoln Water Treatment Works Newton on Trent Lincolnshire

Geophysics, field walking, contour survey, evaluation and watching brief

oxfordarchaeology east east east

July 2012

Client: Mott MacDonald on behalf of Anglia Water

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Lincoln Water Treatment Works, Newton on Trent, Lincolnshire

Archaeological Field Walking Survey,

Geophysical Survey, Contour Survey,

Trench Evaluation and Watching Brief

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Summary

Between March and May 2011, Oxford Archaeology East carried out a field walking survey, geophysical survey and archaeological evaluation on land adjacent to the A1133, south of Newton on Trent, Lincolnshire. This work was undertaken in advance of a proposed reservoir and water treatment works. Following on from this the route of a proposed pipeline, linking the reservoir and water treatment works to a pumping station by the River Trent, was evaluated in January and April 2012. A further trench was excavated and a watching brief conducted on the route of a new access road leading to the pumping station in May 2012.

The field walking survey covered an area of c.*60ha and resulted in the recovery of a small quantity of worked flints, along with several sherds of Iron Age, Roman and medieval pottery. However, the bulk of the assemblage comprises Post-medieval material. No distinct scatters of material were identified.*

The geophysical survey covered a total area of c.*74ha with both magnetic susceptibility and magnetometry carried out. The magnetometery identified ridge and furrow cultivation across large areas, confirming medieval and post-medieval farming in the area. Potential Iron Age enclosures were identified to the east of the A1133, along with several possible kilns or ovens on the west of the A1133.*

The initial trenching evaluation sampled an area of c.22ha, with the excavation of over 5 linear kilometres of trench. Three prehistoric pits were recorded, along with a large ditch of probable later prehistoric date. In addition, a Roman ditch and oven were identified. Charred bread was recovered from a sample from the fill of the oven and the geophysical survey suggests that the oven is one of many lying along an earlier ditch line. It is therefore possible that these ovens relate to the Roman fort (SM 174) and potential marching camp known nearby. Finds included small quantities of prehistoric and Roman pottery, worked flint and a Roman copper alloy toilet implement.

The second phase of trenching evaluation consisted of 20 trenches, totalling 740m in length. The only feature identified, which was not of recent date, was a Roman gully. One trench was excavated near to the River Trent and revealed over 2.4m of alluvial deposits.

The final phase of evaluation and watching brief included a single trench, 13.5m long across a prominent bank. No dating evidence was recovered from the deposits that formed this feature, but flood deposits were noted on one side. A watching brief on a c.95m length of c.4m wide road corridor failed to find any archaeological finds or features. A contour survey of an area of up-standing ridge and furrow was also conducted at this time.

1 INTRODUCTION

1.1 Location and scope of work

1.1.1 An archaeological evaluation, field walking, contour and geophysical survey was conducted on land adjacent to the A1133, to the south of Newton on Trent, Lincolnshire (SK 828 736).

1.1.2 The work was undertaken in accordance with briefs issued by Louise Jennings of Lincolnshire County Council (LCC), supplemented by Method Statements prepared by OA East and following on from a Desk-Based Assessment produced by Mott MacDonald.

1.1.3 The work was designed to assist in defining the character and extent of any archaeological remains within the proposed development area, in accordance with the guidelines set out in *Planning Policy Statement 5: Planning for the Historic Environment* (Department for Communities and Local Government 2010). The results will enable decisions to be made by LCC, on behalf of the Local Planning Authority, with regard to the treatment of any archaeological remains found.

1.1.4 The proposed development comprises a reservoir, water treatment works and associated structures and pipelines. This Scheme is required to ensure water supply meets future projected demand in the Lincoln and Grantham Planning Zones.

1.1.5 The site archive is currently held by OA East and will be deposited with the appropriate county stores in due course.

1.2 Geology and topography

1.2.1 The area of the proposed reservoir and water treatment works is situated to the east and west of the A1133 which runs south from Newton on Trent towards Newark. The Lincolnshire-Nottinghamshire County boundary forms the southern limit of the site. The western side of the area comprises arable land which rises westward from the road to an escarpment overlooking the River Trent, known as Newton Cliffs. The eastern side of the area comprises open agricultural fields sloping gently downwards from west to east.

1.2.2 The proposed pipeline route continues from the reservoir and water treatment works, to the north, before turning to the west, towards the River Trent. It passes through agricultural fields, around the site of a Roman fort (SM174), which occupies an area of high ground.

1.2.3 Newton Cliffs are part of a series of scarps on the east side of the valley of the River Trent, where the river has incised its course across the Mercia Mudstone dip slope. At Newton Cliffs, the Mercia Mudstone is partly blanketed by wind-blown late Devensian/ early Flandrian Coversands which peter out towards the cliff edge. Augering during targeted archaeological excavations in the early 1980s demonstrated considerable and highly-localised variability in the depth of the Coversand deposits (ranging from 0.33m - 1.4m) in part due to the presence of steep-sided sand-filled fissures in the surface of the underlying Mudstone. The surface of the Mudstone was also littered with pieces of sandstone deriving from the sandstone bands occurring within it (Garton, Phillips and Henson 1989, 83-5).

1.2.4 The valley floor beside the River Trent is sealed by alluvium. From the cliff-top, which rises to 29m OD, the land falls away gently to the east, to only *c.*12m OD on the east side of the A1133. North of the county/parish boundary the cliffs are precipitous,

whereas south of the boundary the fields slope more gently to the floodplain of the Trent Valley.

1.3 Archaeological and historical background

1.3.1 A full assessment of archaeology in the surrounding area, including details of records from the Historic Environment Record (HER), together with features identified through aerial photography, can be found in the desk based assessment (Woodhouse and Hopper 2011) and is not repeated here.

1.3.2 Field walking and excavations were carried out, partly within the current study area, and to the south, during the 1970s and 1980s. These recovered substancial quantities of worked flint of Mesolithic to Bronze Age date, along with earlier prehistoric pottery (Phillips 1989). To the north of the survey area is a Scheduled Monument covering the site of a Roman vexillation fortress (SM 174).

1.4 Acknowledgements

1.4.1 The author would like to thank Josh Williams of Mott MacDonald who commissioned the archaeological work on behalf of Anglian Water. The project was managed by Richard Mortimer. The author directed the fieldwork, with the assistance of Pete Boardman, Louise Bush, Dave Brown, Nathan Chinchen, Brent Culshaw, Tom Eley, Jon House, Toby Knight, Matt Lees, Patrick Moan, Chris Pickard, Pete Schofield, Vicki Skipper and Mark Storey. Site survey was carried out by Louise Bush, Dave Brown and Conan Parsons.

1.4.2 Thanks are also due to Pete Masters of Cranfield University and David Bunn of PCG Geophysics, who, with the assistance of their teams, carried out the geophysical survey.

1.4.3 The illustrations were produced by Louise Bush, with additional figures produced by the author and Lucy Offord. Steve Wadeson analysed the pottery and Anthony Dickson reported on the flint.

1.4.4 The 360 excavator was provided by LOC plant hire and operated by Nick Richardson. The evaluation was monitored by Louise Jennings and Beryl Lott of Lincolnshire County Council and by Jo Everitt and Josh Williams for Anglian Water and Mott MacDonald. Thanks are due to all for their input into the field evaluation.

2 Aims and Methodology

2.1 Aims

2.1.1 The objective of the archaeological evaluations, field walking and geophysical survey was to determine as far as reasonably possible the presence/absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the proposed development area.

2.2 Field Walking Methodology

2.2.1 An area totalling *c.*60 hectares was field walked. This area was divided into seven fields, each of these was assigned a letter from A to G (Fig. 2).

2.2.2 A 50m grid, tied to the Ordnance Survey grid, was laid out using a Leica 1200 GPS. Ten metre transects were measured from this and each field walked on these north-south aligned transects. Artefacts were collected from 2m corridors along these transects at 10m sample intervals.

2.2.3 Each bag of finds was labelled with the field letter, transect number and sample interval number. Conditions were generally good, although occasional bright sunshine and rain reduced visibility.

2.3 Evaluation Methodology

2.3.1 Seventy-nine trenches, totalling 5150 linear metres, were to be excavated in the initial evaluation. These were located partly to provide overall gridded coverage of the area and partly in order to examine archaeological features, and potential features, highlighted by the geophysical survey. A contingency of 350m of trenching was held back in order to give better definition within areas of archaeological interest. Following excavation of the gridded trenches only a single contingency trench was excavated, measuring 18m in length.

2.3.2 Machine excavation was carried out under constant archaeological supervision with a tracked 360^0 excavator using a toothless ditching bucket.

2.3.3 A total of twenty-one trenches, measuring 780 linear metres, were to be opened during the second phase of evaluation. A single trench (40m in length) was not excavated due to difficultly in accessing it. Machine excavation was carried out using a JCB 3CX, with a toothless ditching bucket.

2.3.4 For all evaluation trenching, the site survey was carried out using a Leica 1200 GPS.

2.3.5 Spoil, exposed surfaces and features were scanned with a metal detector. All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.

2.3.6 All archaeological features and deposits were recorded using OA East's *pro-forma* sheets. Trench locations, plans and sections were recorded at appropriate scales and colour and monochrome photographs were taken of all relevant features and deposits.

2.3.7 Bulk soil samples were taken from features with a high charcoal content, as well as those from which the recovery of organic material might prove useful for radiocarbon dating.

2.3.8 Site conditions were generally good, although occasional rain showers hampered excavation.

2.4 Contour Survey Methodology

2.4.1 A contour survey was carried out on an area of upstanding ridge and furrow to the north-west of SM 174 (Fig.1). This area was to be stripped for a temporary compound. The survey was conducted by GTM on a 5m grid using a GPS system. The survey data was analysed by Gary Jones (Oxford Archaeology South). The survey points were interpolated in ArcGIS 9.3.1 using kriging with a 2.5m cell resolution. The resulting surface was then used to create a hillshade model which was subsequently applied to the display. These were then clipped to the area of investigation. Finally, contours were generated within ArcGIS from the elevation model at both 10cm and 20cm intervals.

3 Field Walking Results

3.1 Field Descriptions

Field conditions (Fig. 2)

3.1.1 Table 1 below summarises the land use of each field at the time of survey (Fig 2). This variation had an impact on the visibility of finds and, therefore, influenced the results obtained. A small area (50m by 30m) in the south-west corner of Field B could not be walked, as it was extremely uneven following ploughing.

Field	Condition when Surveyed
A	Short winter wheat (*c.*10cm)
B	Ploughed and weathered
C	Tall winter wheat (*c.*20cm)
D	Tall winter wheat (*c.*20cm)
E	Ploughed and weathered
F	Tall winter wheat (*c.*20cm)
G	Tall winter wheat (*c.*20cm)

Table 1: Field Conditions

Field size

3.1.2 Each field covered a different area, which evidentially affected the number of finds recovered from them. The size of each field is summarised in table 2 below. It was decided to divide the area by fields and not into hectares related to the OS grid as this avoided descriptive units running across different field conditions.

Field	Area in hectares
A	16.7
B	12.0
C	7.7
D	6.7
E	4.7
F	5.1
G	5.6

Table 2: Field size

3.2 Finds Distribution

3.2.1 The finds assemblage recovered from field walking is summarised by field in Table 3 below.

	Struck Flint	Iron Age Pottery	Roman Pottery	Medieval pottery	Post-medieval CBM	Post-medieval pottery	Clay Pipe	Post-medieval Glass	Total
Field A	31	3	0	0	41	33	8	8	123
Field B	115	0	8	5	408	166	61	16	778
Field C	5	0	0	1	12	11	2	0	31
Field D	9	0	0	1	47	12	3	0	72
Field E	18	0	2	2	78	39	5	2	146
Field F	2	0	3	1	90	39	0	1	134
Field G	3	0	1	1	98	41	0	1	145
total	183	3	14	11	774	340	69	28	1429
Percentage	12.81	0.21	0.98	0.77	54.16	23.79	5.53	1.96	100

Table 3: Field walking finds quantification by field

Field A (Figs 3 and 4)

3.2.2 Field A was the largest field, with a total area of 16.7ha. Given its large size relatively few finds were recovered from it, although a high proportion of these were struck flints. Whilst there was a general concentration of flints towards the west of Field A, no distinct clusters of material were discernible.

3.2.3 All three of the sherds of Iron Age pottery recovered during field walking came from Field A, although these were distributed across the field with no obvious concentration.

Field B (Figs 5 and 6)

3.2.4 Field B contained the largest number of finds, largely as a result of it having been recently ploughed. There was a concentration of flints towards the west of the field on a ridge overlooking the River Trent.

3.2.5 There was no clear pattern to the distribution of other finds types in Field B, suggesting that many of them relate to manuring or other agricultural activity, rather then sub-surface archaeological deposits.

Field C (Figs 7 and 8)

3.2.6 In spite of being the third largest field, relatively low numbers of finds were recovered from field C, potentially due to the long crop of winter wheat. There were no significant distributions within any of the finds categories in this field.

Field D (Figs 7 and 8)

3.2.7 Field D contained a sparse assemblage of finds, with no obvious pattern to their spread. Again, the crop of long winter wheat would almost certainly have reduced the number of finds recovered from this field.

Field E (Figs 9 and 10)

3.2.8 Although Field E was the smallest field, it contained the second largest quantity of finds. This was due to the field being ploughed and not under any crop at the time of the survey. However, there were no significant concentrations of any of the finds categories within the field. There was, however, a general trend for post-medieval ceramic building material (CBM) towards the west of the field. The only two sherds of medieval pottery recovered from the field were found at the eastern edge.

Field F (Figs 9 and 10)

3.2.9 Field F contained relatively few finds. However, it had the second largest assemblage of Roman pottery (3 sherds), although these were not found in any concentration.

Field G (Figs 9 and 10)

3.2.10 Field G contained the second largest quantity of CBM but few struck flints, or Roman or medieval pottery sherds. There was no pattern evident in the distribution of any of the object categories in this field.

3.3 Finds Summary (field walking)

Flint (App. B1)

3.3.1 The assemblage was dominated by knapping waste, including cores, decortication flakes, core rejuvenation flakes and trimming flakes, indicating that raw materials were being brought to the site and reduced there. There is also a relatively high proportion of retouched pieces, indicating tool use and discard occurring as well, so the full reduction sequence is represented.

3.3.2 Technologically the assemblage is dominated by blades and blade-like flakes, of Mesolithic or Early Neolithic date. Most of the *c.* ten cores and hand produced blades and the majority of retouched pieces are likely to be of this date. These include serrated blades, two truncated blades, a notched blade and several pieces that appeared edge trimmed.

3.3.3 Later activity is also represented. There is a classic thumbnail scraper of Early Bronze Age date, and also a discoidal core that is likely to be Late Neolithic or Early Bronze Age in date. Many of the competently, but not systematically, produced flakes and also a few cores that are somewhat irregularly worked, are also most likely to belong to later 3rd or early 2nd millennium industries and suggest flintworking during this period was more prevalent than indicated just by the thumbnail scraper and discoidal core alone.

3.3.4 No definite evidence of later 2nd/1st millennium flintwork was noted but it may have been masked by the large quantities of primary core working waste from earlier periods and activity during those periods cannot be discounted.

Iron Age Pottery (App. B2)

3.3.5 Three sherds of probable Iron Age pottery were recovered. These were all heavily-abraded suggesting they had been in the plough soil for some time. They are all in a dark grey fabric with sand temper and are of probable later Iron Age date. One of these, from Field A was a rim sherd, from a small bowl.

Roman Pottery (App. B2)

3.3.6 Fourteen sherds of Roman pottery were recovered, all of which were abraded body sherds. The lack of decorated sherds or rims in the assemblage makes specific dating difficult. The sandy grey fabric from which the majority were made can be broadly dated as 1st to 4th century.

Medieval Pottery (App. B2)

3.3.7 Eleven sherds of medieval pottery were recovered from the survey area. These are all abraded body sherds, with the exception of a single base sherd. Two of the fragments retain small patches of green glaze. It is likely that this pottery is of 12th to 14th century date and its presence is probably the result of manuring.

Post-medieval Pottery (App. B2)

3.3.8 Almost a quarter of all finds recovered were post-medieval pottery sherds. This comprises various types dating between the 16th and 20th centuries. The majority of the pottery is post-medieval redware and post-medieval black glazed ware.

Ceramic Building Material (Nick Gilmour)

3.3.9 By far the greatest quantity of finds, constituting 54% of the total assemblage, was ceramic building material (CBM). Very little of this maintained more then a single surface, making close dating difficult. The vast majority of the CBM is of post-medieval to modern date and likely to derive from hardcore placed on farm tracks and/or manuring scatters. Many fragments are highly fired and slightly curved, suggesting they represent pieces of clay field drain.

3.3.10 It is, however, possible that a few abraded pale orangey red fragments, with coarse sand temper, are earlier in date; potentially Roman. However, none of the fragments recovered could be definitely placed in the Roman period.

Clay Tobacco Pipe (Nick Gilmour)

3.3.11 The scatter of clay tobacco pipe fragments across the site is not unexpected; clay pipes were widely smoked between the 17th and early 20th centuries and were frequently discarded where they broke. Their presence here almost certainly relates to post-medieval farm workers and middening/manuring activities.

Glass (Nick Gilmour)

3.3.12 The majority of the post-medieval glass recovered is of green/brown colour and comes from bottles. Glass bottles came into common use in the mid-17th century and were largely replaced by mould blown bottles in the late 19th century. None of the fragments had any diagnostic features to allow more accurate dating, nor were any stamps present.

4 Trench Evaluation Results

4.1 Introduction

4.1.1 A full description, including dimensions, of each trench is given in Appendix A. The trenches are discussed by field, in accordance with the lettering used for the field walking (Fig. 11). All of the trenches from on the pipeline route and pumping station area are discussed together at the end of this section. Trenches that contained archaeological, natural or geological features of interest are discussed individually at the beginning of the section. Trenches measured between 100m and 5m in length and between 2m and 1.5m in width.

4.2 Trenches in Field A (Figs 11, 12 and 15)

4.2.1 The trenches in Field A were machined to the top of the mudstone deposits, or the top of blown sand deposits, whichever was encountered first.

Trench 1

4.2.2 Trench 1 was machined to the top of natural wind-blown sand deposits apart from at the very southern end of the trench where a deposit (129) overlay the sands. A machine-dug sondage was excavated through this deposit. The deposit was of mid-brownish-grey silty-sand, with occasional small inclusions of clinker and coal. It was deepest at the southern end of the trench, with a maximum thickness of 0.90m and gradually thinned to the north, before petering out *c.*12m from the end of the trench. Deposit 129 most likely represents the remains of a headland, deposited on a previously naturally sloping area. This deposit may also have been partly formed by the reduction of a large bank, which used to run along the county boundary to the south of the trench, but was partly removed some 12 years ago (Mrs Wells pers. comm; current landowner).

Trench 3

4.2.3 Pit **125** (Fig. 15 S.24) was located at the western end of Trench 3. It was sub-rectangular in plan, with steeply sloping sides and a flat base. Pit **125** measured 0.49m wide and 0.24m deep, although its full extent was not revealed in the trench. It was filled by 126, a mid-brownish-grey silty-sand, which contained 8kg of burnt sandstone pebbles and two stuck flints. Pit **125** was cut into the blown sand deposits.

4.2.4 A 1m square test pit (TP5) was dug through the cover sands (124) at the eastern end of the trench. This showed the deposit to be a light-brownish-yellow, slightly silty-sand, with a thickness of 0.60m. No finds were recovered from the test pit, however, a copper alloy object (SF1), part of a Roman toilet set, was recovered from the surface of 124.

Trench 5

4.2.5 Two 1m square test pits (TP6 and TP7) were excavated through the a light-brownish-yellow, slightly silty-sand (313) in this trench. Test pit 6 was located at the southern end of the trench and showed the deposit to be 0.56m thick, no finds were recovered from this. Test Pit 7 was positioned towards the northern end of Trench 5, it was excavated to a depth of 0.58m before the mudstone natural was encountered. An iron object (SF2) was recovered from the surface of Test Pit 7, along with a single flint flake and a fragment of Early Roman pottery (App. B2).

Trench 7

4.2.6 A probable tree bowl (**328**) was located at the western end of this trench. It was irregular in plan, with gently sloping sides and a concave base and measured 0.56m long, 0.50m wide and 0.08m deep. It was filled by 329, a dark-brown, silty-sand, which contained no finds.

4.2.7 A narrow ditch (**320**), on an approximate north-south alignment, was revealed across the eastern end of the trench. Ditch **320** had steeply sloping sides and a flat base, with a maximum width of 0.36m and depth of 0.07m. It was filled by 321, a pale-grey silty-sand, which contained no finds.

Trench 8

4.2.8 Two test pits (TP8 and TP9) were excavated through the sand deposits in this trench. Test pit 8 was located at the southern end of the trench and revealed a periglacial feature (**120**) under the sand deposits. Only a small part of the feature was visible in the test pit, which showed it had gently sloping sides and a depth exceeding 0.40m. The lower fill of this feature (119) was a pale-reddish-brown silty-sand. This was overlain by 118, a pale-greyish-yellow silty-sand; neither fill contained finds.

4.2.9 Test Pit 9 was excavated at the northern end of Trench 8. Originally a hand-excavated, 1m square test pit, this was later expanded by machine, to form an 8m long, 2m wide sondage, in order to investigate a feature revealed below the sand. This feature (**122**) was irregular in plan, with gently sloping sides and a concave base. It was filled by 121, a pale reddish-brown silty-sand, which contained no finds. Feature **122** represents periglacial activity.

4.2.10 Both test pits revealed the same sequence of sand deposits. Above the mudstone natural was 117, a light greyish-red silty-sand, which was overlain by 116, a mid yellowish-brown silty-sand. No finds were recovered from these sand layers.

Trench 9

4.2.11 Ditch **326** was identified, orientated on an approximate north-to-south alignment, across the middle of Trench 9. It was on the same line as Ditch **320**, recorded in Trench 7, and was almost certainly a continuation of it. Ditch **326** was 0.55m wide and 0.16m deep, with steeply-sloping sides and a flat base. It was filled by 327, a pale greyish-brown silty-sand, which contained no finds.

4.2.12 A natural feature (**330**) was recorded just to the west of Ditch **326**. Feature **330** was sub-circular in plan with steeply-sloping sides and an irregular base. It measured 0.56m wide and 0.60m deep. The basal fill (331) was a mid-grey silty-sand, with occasional sandstone inclusions. The upper fill (332) was a pale-grey sand, which contained a single sherd of Early Roman pottery (App. B2).

Trench 16

4.2.13 Pit **36** was located in the centre of Trench 16. It was sub-circular in plan, with steeply sloping sides and a concave base, measuring 0.95m wide and 0.24m deep. Pit **36** was filled by 35, a pale-greyish-yellow sandy-silt, which contained a single large sherd of pottery of Late Neolithic / Early Bronze Age date (App. B2).

4.2.14 Four tree throws (**32**, **34**, **38** and **40**) were also revealed in this trench. These were all irregular in plan with widths between 0.95m and 2.06m and depths between 0.18m and 0.32m. They were all filled by similar deposits of dark brownish-grey sandy-silts. No finds were recovered from any of these features, however, the similarity of the fills to

the topsoil, and their position on a recently grubbed-out field boundary (Mrs. Wells pers. comm.), suggest they were of recent origin.

Trench 22

4.2.15 A 1m square test pit (TP4) was excavated through the sand, towards the south of the trench. The deposit (239) was a pale brownish-yellow silty-sand, which contained no finds. The mudstone natural lay 0.24m below the surface of the sand deposit.

Trench 34

4.2.16 Two 1m square test pits (TP1 and TP2) were excavated through the cover sands in Trench 34. Test Pit 2, close to the middle of the trench, showed two relatively distinct bands of sand: layer 235, a pale brownish-yellow silty-sand, 0.26m deep overlay layer 236, a mid grey-yellow silty-sand 0.19m deep. This in turn overlay the mudstone natural.

4.2.17 Test Pit 1 was located close to where the sand faded out, *c.*20m from the northern end of the trench. This test pit revealed a single layer (235), which was 0.11m deep at this point. No finds were recovered from either of these test pits.

Trench 35

4.2.18 A single test pit (TP10) was positioned at the southern end of Trench 35. This was excavated to a depth of *c.*0.9m deep into the sands (291) at which point further excavation and accurate recording were not possible for safety reasons. However, this did demonstrate a considerable depth of sand, with no evident buried land surfaces within it.

Trench 36

4.2.19 A single test pit (TP3) was excavated at the western end of Trench 36. This was 2m square at the top of the sands and stepped to a 1m square, 1m below the current ground surface. Excavation ceased at a total depth of 1.39m from the current ground surface, due to the unstable nature of the sands.

4.2.20 The sequence of layers in Test Pit 3 revealed layer 230, which was a pale greyish-yellow sand, over 0.27m thick, was overlain by 229, a pale yellow sand, with no inclusions. Above this lay 228, a mid yellowish-red silty-sand. None of these sand deposits contained any finds; it is probable that they filled a large palaeochannel or periglacial feature.

Trenches 2, 4, 6, 10, 12, 14, 15, 17, 18, 19, 20, 21, 24 and 25

4.2.21 These trenches were all machined to natural sand deposits along the southern and western sides of the field; no archaeological features were present in any of them.

4.2.22 Several of these trenches (12, 22, 24, 25, 34 and 35) were positioned across the limit of the sand deposits. These showed that the sand gradually faded out, presumably due to truncation by ploughing.

Trenches 11, 13, 23, 26, 27, 28, 29, 30, 31, 32, 33, 37, 38, 39 and 40

4.2.23 These trenches were all machine excavated to the top of the mudstone natural along the northern and eastern sides of the field. Various sand filled fissures of periglacial origin were noted and/or recorded, along with outcrops of sandstone. In many instances little, or no, subsoil was present.

4.3 Trenches in Field B (Fig. 13)

4.3.1 Trenches in Field B were machined to the top of the mudstone deposits, which showed clear signs of glacial action. A single large ditch was recorded aligned almost due east-west across several trenches in the south of the field. In addition, a Roman oven along with a second, smaller ditch potentially of the same date, were found. A single pit of probable Early Bronze Age date was also recorded, along with numerous natural features.

Trench 41 (Figs 13 and 15)

4.3.2 Ditch **211** (filled by 215-221; Fig. 15, S.41) was aligned east-west and located towards the southern end of Trench 41. It had steeply sloping sides and a flat base, with a width of 2.84m and a depth of 0.90m. The basal fill (221) was a light-greyish-yellow silty-sand, overlying which was 220, a light-grey sandy-clay. Both of these deposits appeared to represent natural infilling of the ditch.

4.3.3 Overlying this was a mid-greyish-yellow sandy-clay, with rare charcoal flecks (219), above which was 218, a mid-grey silty-sand, with occasional sandstone fragment inclusions. This was sealed by a mid-grey silty-sand (217), with occasional patches of unfired clay. This was overlain by 216, a mid-grey silty-clay, with rare sandstone fragment inclusions. The final fill of Ditch **211** was 215, a mid brownish-grey silty sand. These upper deposits were indicative of deliberate backfilling of the ditch. None of these deposits contained any finds.

4.3.4 Oven **210** (filled by 206-209, 212-214; Fig. 15, S.41) was cut into the southern edge of ditch **211**. Oven **210** formed an irregular oval in plan, with vertical sides and a flat base. It had a depth of 0.40m and was 1.40m wide. The sides were lined with deposit 209, a mid-yellowish-brown sandy-clay, with occasional inclusions of sandstone. Set into this lining on the south-east side of the oven, were several flat stones (208). These may have formed part of a flue for the oven, however, this could not be definitively proven as the oven continued beyond the limits of the trench at this point.

4.3.5 Overlaying deposits 209 and 208 was a mid-yellowish-grey silty-sand (214), with occasional unfired clay lumps and rare charcoal inclusions. This was covered by 213, a dark-grey sandy-silt, with rare small burnt clay fragments and charcoal inclusions. Overlaying this was 207, a dark-grey silty-sand with rare charcoal inclusions. Above this was 206, a mid-brownish-grey silty-sand with rare burnt clay fragments and charcoal inclusions. A single sherd of Early Roman pottery (App. B2) was recovered from fill 206.

4.3.6 Covering Ditch **211** and Oven **210** was was a final deposit, 212. This was a mid-greyish-brown silty-sand, which also contained a single sherd of Early Roman pottery (App. B2).

Trench 42 (Fig. 13)

4.3.7 A 2.70m wide ditch was observed towards the southern end of Trench 42. This was on the same east-west alignment as Ditch **211** (in Trench 41) and represents a continuation of this ditch; it was not excavated.

4.3.8 In addition, a small ditch was recorded towards the northern end of the trench. Ditch **304** was 0.40m wide and 0.19m deep, with steeply sloping sides and a concave base. It was filled by 305, a dark brownish-grey silty-sand, which contained two small fragments of ceramic building material. The similarity of fill 305 to the subsoil, together with the

presence of small fragments of wood, strongly suggest a post-medieval to modern date for this feature.

Trench 43

4.3.9 Trench 43 contained a single east-west orientated linear feature (**9**). This had gently sloping sides and a concave base, measuring 0.75m wide and 0.16m deep. It was filled by 8, a mid yellowish-grey silty-sand, which contained no finds. The shallow profile of this feature, together with the subsoil-like fill it contained suggest that it represents a remnant of a ridge and furrow cultivation system.

Trench 44

4.3.10 A single ditch (**306**) was revealed within this trench. It was orientated on a north-northeast to south-southwest alignment and had steeply sloping sides and a flat base, with a flat-bottomed V-shaped profile. Ditch **306** was 0.70m wide and 0.45m deep. The primary fill (307) was mid-grey silty-sand, whilst the upper fill (308) was a mid-brownish-orange silty-sand. Neither fill contained any finds.

Trench 47

4.3.11 A large ditch (**18**) was excavated towards the southern end of Trench 47. Ditch **18** had steeply sloping sides and a flat base and measured 2.80m wide and 0.84m deep. It was aligned east-west and appeared to be a continuation of Ditch **211** excavated in Trench 41 to the west. The primary fill (22) was a mid-blueish-grey silty clay, which was overlain by 21, a dark brownish-grey silty-loam. Above this was 20, a dark-greyish-brown silty loam with occasional sandstone inclusions. The final fill (19) was a mid yellowish-grey silty-sand, with occasional sandstone and rare charcoal inclusions. None of these fills contained any finds.

4.3.12 In contrast to the fill sequence noted in **211** (Trench 41), all of the fills of Ditch **18** appeared to be naturally deposited.

Trench 49

4.3.13 A single ditch was observed running through the middle of this trench. It was on the same east-west alignment and on the same line as the ditch (**211** and **18**) excavated or recorded in Trenches 41, 42 and 47 and represents a continuation of this feature. It was not excavated in this trench.

Trench 52

4.3.14 A small pit (**15**) was excavated at the northern end of Trench 52. It had a diameter of 0.76m and a depth of 0.16m, with gently sloping sides and an irregular base. Pit **15** contained a single fill (14) which was a dark-grey clayey-silt. A single sherd (0.004kg) of pottery of probable Early Bronze Age date was recovered from the upper surviving fill (App. B2).

Trench 56

4.3.15 A single ditch was revealed, aligned east-west, towards the northern end of this trench. It was on the same line as the ditch (**211** and **18**) in Trenches 41, 42, 47 and 49 and represents a continuation of it. It was not excavated in this trench.

4.3.16 A spread of material (109) was observed at the southern end of the trench, comprising a mid greyish-brown silty-sand. Excavation of this material revealed several irregularly

shaped features (**110**, **111** and **112**). The shape in plan and profile of these features strongly suggests they represent tree root disturbance. No finds were recovered from layer 109.

Trenches 45, 46, 50, 51, 53, 54, 55 and 80

4.3.17 Several trenches in Field B contained no archaeological, or recorded geological or natural features. There was little or no subsoil in the majority of the trenches. However, in some (*e.g.* Trenches 51 & 54), towards the bottom of a natural slope, there were relatively deep deposits of subsoil.

4.4 Trenches in Field D (Fig. 11)

Trenches 58, 59, 60, 61, 62, 63, 64, 65, 66 and 67

4.4.1 The majority of these trenches consisted of topsoil directly overlaying the glacially and plough-affected mudstone natural. However, a shallow layer of subsoil survived in the northern end of Trench 65, and in Trench 67, where the deposit machined to was a mid greyish-brown silty clay. A sondage was machine-excavated in the east end of Trench 67, which showed this deposit to be over 0.50m thick. It may represent the fill of a palaeochannel or potentially a large periglacial feature.

4.5 Trenches in Field E (Fig.11)

4.5.1 Trenches in Field E were machined to the top of the mudstone deposits, which showed clear signs of glacial action and plough-truncation. A single sheep burial, of likely late post-medieval / modern date was recorded in a trench close the the A1133. In addition a probable furrow, along with an undated possible posthole, were identified.

Trench 68

4.5.2 A pit (**59**) containing the skeleton of a complete sheep (58) was located towards the northern end of Trench 68. Pit **59** was sub-rectangular in plan, with steeply sloping sides and a flat base, measuring 0.73m wide and 0.22m deep. An articulated sheep (58) was placed into this cut. The condition of the bone, together with cavities noted during excavation, strongly suggests that this burial was late post-medieval or modern in date. Overlaying the skeleton was 57, a mid-greyish-brown clayey-silt, which contained no finds.

Trench 69

4.5.3 Furrow **245** was located in the middle of Trench 69, it was aligned east-west comprising gently sloping sides and an irregualr concave base. It measured 0.80m wide and 0.08m deep and was filled by 244, a mid-brownish-grey silty-clay, which contained no finds.

4.5.4 Towards the southern end of the trench a spread of material (242) was identified. It was a mid brownish-red silty-loam, which contained no finds. It is likely that 242 represents an area of root disturbance.

Trench 70

4.5.5 A single possible posthole (**247**) was located towards the eastern end of Trench 70. It was sub-circular in plan with near vertical sides and a flat base. Posthole **247** measured 0.20m wide and 0.09m deep and was filled by 246, a mid greyish-red silty-clay, which contained no finds.

Trenches 71, 72, 73, 74, 75, 76, 77, 78 and 79

4.5.6 None of these trenches contained any features of archaeological of geological significance.

4.6 Trenches on the pipeline route and pump station site (Figs 14 and 15)

Trench 82

4.6.1 A single tree throw (**420**) was located in this trench. It was sub-circular in plan, with an irregular profile and base. Tree throw **420** was fill by 421, a dark greyish-brown, clayey-silt, which contained no finds.

Trench 83

4.6.2 Trench 83 was located at the base of a steep slope, the current ground surface dropped by 1.73m from east to west along the 20m length of the trench. No archaeological features were identified, however, a series of colluvial deposits was recorded and a machine dug sondage was excavated through them (S.26, Fig. 15). At the bottom of the sequence was deposit 145, a pale grey clay. This may represent the geological horizon, however this could not be confirmed beyond doubt, as no access was possible to the small deep sondage and no further depth could be excavated on safety grounds. The top of deposit 145 was 2.02m below current ground level.

4.6.3 Overlaying deposit 145 was deposit 144, which was a 0.42m deep, mid reddish-brown, silty-clay, which contained no finds. Above this were deposits 143 and then 142, both of which were very similar to 144, but softer. Deposit 143 was 0.48m thick, while 142 was 0.78m thick, giving a total depth of 1.66m of colluvium. A large fragment of a late post-medieval glass bottle was recovered from colluvial deposit 142.

4.6.4 Above these colluvial deposits was layer 141, a dark greyish-brown silty loam. It represented a 0.08m thick buried topsoil and finds of late post-medieval date were recovered from it. This was overlain by the subsoil, 140, which was a mid greyish-brown silty-clay, with a thickness of 0.16m. The uppermost deposit in the sequence was the topsoil (139), which was a dark greyish-brown silty-clay, which was 0.14m thick.

Trench 85

4.6.5 Trench 85 was cut through an upstanding ridge and furrow system. In the area of the trench the base of the furrow was *c*. 0.20m below the top of the ridge. The surviving height of the ridge and furrow is far greater to the east.

4.6.6 Directly above the geological horizon in this trench was deposit 150, a mid brownish-grey, sandy-loam, with a thickness of up to 0.45m. No finds were recovered from this deposit and it represented a colluvial deposit, possibly of just post-glacial origin. This was overlain by a 0.40m thick subsoil (149) and a 0.34m thick topsoil (148).

Trench 86

4.6.7 Trench 86 was excavated through a series of alluvial deposits to a maximum depth of 2.34m (S.27, Fig. 15). The earliest deposit identified was 154; a dark grey clayey-sand, with organic inclusions. This was excavated to a maximum depth of 0.38m, although it continued deeper. Overlaying this was 153, a pale orangey-yellow, slightly silty sand. Deposit 153 sloped noticeably from the south-east to the north-west and had a maximum thickness of 0.42m.

4.6.8 Above this was a 1.56m deep layer of subsoil (152), which was a mid yellowish-brown, sandy-loam. This deep deposit may have represented a series of alluvial or colluvial deposits, however, no clear changes could been seen within it. The final deposit in the sequence was a 0.22m thick topsoil (151), which was a dark greyish-brown silty-loam.

Trench 88

4.6.9 A single ditch (**137**) was recorded on an east-west alignment at the north-eastern end of Trench 88. Ditch **137** (S. 28 Fig. 15) was 0.91m wide and 0.46m deep and had steeply sloping sides, with a concave base. It was filled by 138, a mid reddish-brown, silty-clay. Two abraded sherds of Roman pottery and a single small (1g) fragment of slag were recovered from fill 138.

4.6.10 Ditch **137** appeared to cut deposit 160, which was a mid reddish-brown, sandy-silt. Deposit 160 was equivalent to colluvial layer 150 (Trench 85) and 157 (Trench 87).

Trench 94

4.6.11 A large pit was recorded in Trench 94. This contained a dark and unpleasant smelling deposit, within which were several modern finds. None of the modern finds were retained. The land owner (Mrs Wells) confirmed that this trench was in 'Pit Field', which had contained a marl pit. This would also explain an unnatural drop seen along the field boundaries in the south-east corner of this field. This modern feature may be responsible for the cropmark seen in this area (Fig. 14).

Trench 98

4.6.12 No archaeological features were identified in this trench, in spite of it being located over a cropmark (Fig. 14). It is possible that this cropmark was formed by a slight in-filled depression in the natural, which was observed in this trench. However, this depression was formed by a gradual slope on each side and was not well defined.

Trench 102 (S.14, Fig. 15)

4.6.13 This trench was positioned over a prominent bank which continued from the current flood defence bank on the eastern edge of the River Trent, to the south-east. It stopped at the south-eastern corner of the field in which it was located, where it met the base of a *c.*4m high cliff. In total the bank was *c*. 200m long.

4.6.14 The trench was excavated to the level at which a new access road would be cut and so did not reach geological horizons, or the base of the bank. The lowest deposit identified (79) was a compact, mid yellowish-brown, slightly silty-clay. This was overlain by 78, a mid greyish-brown, silty-clay. Above this was deposit 77, which was the same a deposit 79, a compact, mid yellowish-brown, slightly silty-clay. All three of these deposits (77, 78 and 79) appear to represent part of the original bank, with 77 perhaps being slipped bank material.

4.6.15 Overlaying deposit 77 on the north-east side of the bank was flood deposit 76. This was a mid greyish-brown, silty sand, with occasional yellow sand lenses. Flood deposit 76 was sealed by 75, a mottled pale blueish-grey and mid reddish-brown clay. Deposit 75 represents either collapse from the adjacent cliff face, or deliberately dumped material. The final deposit in the sequence was the topsoil (74) which was a dark brownish-grey, silty loam.

4.6.16 The only find form any of these deposits was a single cattle vertebra, which came from the lowest identified deposit; 79.

Trenches 81, 84, 87, 89, 90, 91, 92, 93, 94, 95, 96, 97, 99, 100 and 101

4.6.17 None of these trenches contained any features of archaeological of geological significance. Trench 89 was not excavated due to difficulties in accessing it.

4.7 Watching Brief on the Access Road

4.7.1 Only part of the route of the new access road to the pumping station required stripping deeper then the topsoil prior to construction. This section was as the road continued up the solpe directly to the west of the scheduled area (SM 174). A watching brief was carried out on all parts of the road where it was stripped to a depth below the topsoil.

4.7.2 The strip for the road was 4m wide and a total length of *c.*95m was watched. The deepest this cut from current ground level was 1.30m. No archaeological finds or features were observed.

4.8 Finds Summary (trenching)

Lithics (App. B1)

4.8.1 A total of 18 struck flints were recovered during the trench evaluation. The majority of the lithics were recovered from topsoil and subsoil deposits (contexts 4, 12, 130, 231, 238, 240, 9999; Table 4), while a small assemblage was recovered from a secure excavated context (126; Table 4).

4.8.2 The topsoil and subsoil assemblage included cores, represented by one keeled, one single platform and one discoidal form. The flake and blade debitage included two secondary and three tertiary removals from a general reduction strategy. Also present was a core trimming flake. Utilised pieces included edge retouched blades and a side and end scraper. The knife form (context 12) was a large flake with extensive semi-invasive acute retouch on the lateral edges. The distal edge was also heavily battered from use. This piece can be attributed a Late Neolithic/Early Bronze Age date.

4.8.3 The small assemblage from Pit **125** included a broken blade and a miscellaneous retouched piece; both undiagnostic to any specific period.

Pottery (App. B2)

4.8.4 A total of 13 sherds, weighing 0.134kg was recovered during the trench evaluation. This is predominantly a Romano-British assemblage in addition to which small numbers of Late Neolithic/Early Bronze Age, Late pre Roman Iron Age (LPRIA) and Saxo-Norman sherds were identified.

4.8.5 The assemblage is small and fragmentary with the majority of the sherds being heavily abraded with little evidence for surface finishes or residues surviving. Small fragment sizes such as these indicate high levels of post-depositional disturbance possibly as a result of ploughing or middening during the Roman and/or post Roman periods. As a result the pottery has an average sherd weight of only 10g suggesting that the majority of the sherds were not found within their site of primary deposition.

Metal objects

4.8.6 A single copper alloy artefact (SF1) was recovered from the surface of the blown sands - part of a Romano-British toilet set.

4.9 Environmental Summary (App. C1)

4.9.1 Three bulk samples were taken from features within the evaluation trenches, in order to assess the quality of preservation of plant remains and their potential to provide useful data as part of any further archaeological investigations. Features sampled were a Late Neolithic/Early Bronze Age pit, a potentially Iron Age ditch and a Roman oven.

4.9.2 Charcoal fragments were retrieved from the Late Neolithic/Early Bronze Age pit and would be suitable for radiocarbon dating if required. The two samples from the Roman oven both contained wood charcoal and fragments of carbonized material that has been identified as bread. The material has a vesicular micro-structure that resembles modern bread and bran fragments are visible.

5 Discussion and Conclusions

5.1 Prehistoric Pits

5.1.1 A total of three prehistoric pits were identified across the site, indicating sporadic activity during this period.

- Pit **125** (Trench 3) contained a significant quantity of burnt sandstone pebbles and a small undiagnostic flint assemblage. This represents a dump of material from a process involving the deliberate heating of stone, such as craft industry or cooking.
- Pit **36** (Trench 16) was filled by a very pale, sterile, deposit. Nevertheless, two sherds of Late Neolithic pottery were recovered from it.
- Pit **15** (Trench 52) was a small feature, with a charcoal rich fill containing a small fragment of probable Early Bronze Age pottery.

5.1.2 These three features are all typical of Neolithic and Early Bronze Age activity, comprising small circular pits and natural features in which material has collected, or been deposited.

5.1.3 Given the findings during the 1970s and 1980s (Phillips 1989), more prehistoric activity might have been expected across the site. However, the majority of the features recorded during the earlier excavations were extremely shallow and it is possible that, in the intervening 30 years, many have been truncated by ploughing. It is also of note that the previous excavations targeted the areas with the densest activity, thus probably providing a maximum concentration of features.

5.1.4 The lack of flint recovered during field walking may partly result from the extensive field walking of the field, both prior to the 1980s fieldwork and through to the present day. Several individuals have visited the site repeatedly and have collected sizeable assemblages of worked flint from the area. This, together with the 36,000 flints recorded prior to the 1980s (Phillips 1989), could have resulted in the majority of the surface material having already been removed.

5.2 Ditch 18

5.2.1 Ditch **18** (equivalent to **211**) was aligned almost east-west and continued across Trenches 42, 41, 47, 49 and 56, along the southern edge of Field B. It was a substantial feature, up to 2.84m wide and 0.90m deep. Although no dating evidence was recovered from this feature, pottery recovered from Oven **210**, which cuts the ditch, suggests the oven is of Early Roman date. Therefore, Ditch **211** is likely to be earlier than Roman.

5.2.2 Although frequently recorded elsewhere in Southern Britain, Bronze Age ditches of this size are not yet known in this region. It is perhaps more likely, given that the feature had not completely infilled by the time the Roman oven was cut into it, that it represents Mid-Late Iron Age activity, perhaps a large boundary ditch. The current field boundary to the south runs parallel to the feature, as does that along the County boundary further south.

5.2.3 Ditch **18** does not appear clearly on the geophysical survey (App. F); which shows the limitations of the method on this type of geology, with frequent furrows obscuring earlier activity.

5.3 Roman Features

5.3.1 Given the presence of the nearby Roman fortress (SM 174) and cropmarks of a potential marching camp (LHER50546) just to the north-west of Field B, more features of Roman date might have been expected within the area. Nevertheless, the presence of Oven **210** in Field B does suggest some Roman activity. This feature was clearly visible on the geophysical survey and is similar to other anomalies noted nearby (App. F). Many of these anomalies appear in lines, and are perhaps following this, and other ditch lines.

5.3.2 Oven **210** contained several fragments of carbonised bread (App. C1), strongly suggesting it represents a bread oven. Bread ovens are often associated with Roman military sites, with bread being the staple food of the Legions (*e.g.* Cook and Dunbar 2008). It is therefore likely that this bread oven was associated with the Roman Vexillation fortress to the north-west, or perhaps more likely with the potential marching camp just outside of Field B.

5.3.3 Ditch **137**, as well as possibly ditch **306**, may represent part of a Roman field system. Both of these were small features and if they do belong to a field system, it cannot have been very extensive as so little of it was identified.

5.4 Ridge and Furrow

5.4.1 Although little ridge and furrow was visible in the base of the evaluation trenches, it was clearly shown on the geophysical survey (App. F). Furrows were identified across the site, orientated on an approximate east-west alignment, perpendicular to the current line of the A1133; the road adjacent to and traversing the site.

5.4.2 In addition upstanding ridge and furrow is present in the field containing Trench 85 (Plate 3). This ridge and furrow system covers a large area of *c.*3.5ha, part of which lies inside the scheduled area (SM 174). A contour survey was conducted over 0.8ha area, covering the site of a temporary compound, which recorded part of this ridge and furrow system (Fig. 16). This showed the furrows to be aligned approximately north-south, parallel to a steep drop. The centre of the ridges were on average *c.*6.5m apart, and they survived to a hight of between 0.09m and 0.32m. The survey also records the upstanding headland perpendicular to the furrows at their northern end, along the current field boundary.

5.4.3 These anomalies are the remains of a ridge and furrow cultivation system, a largely medieval and early post-medieval practice. In large part these furrows are produced by strip ploughing, although sometimes they were deliberately created to improve drainage or for other agricultural benefit.

5.5 Upstanding earthworks

5.5.1 In addition to the ridge and furrow discussed above, a bank survives in the field adjacent to the River Trent, immediately to the south of the A57. This bank is present on the first edition OS map (figure 17). It continues at an angle from the current flood defence bank on the eastern side of the River Trent, to a small (c.4m heigh) cliff, which forms the eastern boundary of this field. It is likely that this bank follows the edge of an old course of the River Trent. A distinct drop and line of trees is shown to the south-west (river side) of the bank on the old series Ordinance Survey map dated 1824. This line of trees was still present until the construction of a pond, some time after 2004, immediately to the south-west of the bank.

5.5.2 A trench was excavated across the bank, where it was to be cut by a new access road. This did not produce any finds, other that a single cattle vertebrae. However, it showed that a flood deposit had built up on its north-east side. This deposit was up to 0.50m thick and was made up of a number of thin lenses of yellow sand, amongst a brown silty-sand.

5.5.3 The lack of finds form the deposits that made up the bank, might indicate that it is not post-medieval in date. If it was post-medieval, then clay pipe fragments, or pottery would be expected. The field walking has shown that there is a general scatter of post-medieval material across this area, which would have been interoperated into the bank. It is, therefore possible that the bank is a medieval or earlier feature. However, with only a small area excavated, which did not reach to the base of the feature, the date remains uncertain.

5.6 Alluvial and Colluvial Deposits

5.6.1 Trench 86 was excavated through a series of alluvial deposits, representing a previous course of the River Trent. It is possible that this is an ancient course, that pre-dates human habitation in this area. However, if it is more recent, then it is possible that cultural material, possibly even organics would survive in these deposits.

5.6.2 The colluvial deposits in Trenches 83 and 84, are located at the base of a steep slope, just outside of a potential Roman fortress (SM 174). It is of note that the upper layers contained later post-medieval material. However, it is surprising that no Roman material at all was recovered from these deposits. The general lack of Roman material in these deposits, and across the site in general may suggest that the fortress was no occupied for an extended period.

5.7 Natural sands

5.7.1 Areas within the deposit of sand recorded across part of Field B (Fig. 11) were excavated in 1977 and 1980 and thought to be aeolian in origin and deposited during the Late Devensian/ Early Flandrian period (Garton, Phillips and Henson 1989, 83). The excavation of ten hand-dug test pits through these deposits as part of the current evaluation has confirmed this interpretation.

5.7.2 Finds were only recovered from within the very uppermost levels of the sands (0 - 50mm), where they were most likely to be intrusive. Objects can easily be moved down into the sands through root action, burrowing or agricultural activity.

5.8 Significance

5.8.1 This programme of field walking, geophysical survey and archaeological evaluation has shown that surprisingly little archaeology survives within the study areas. However, several archaeological features were recorded including Neolithic and Bronze Age pits, a probable Iron Age boundary ditch and one of a group of Early Roman, potentially military, bread ovens. This has the potential to place the nearby Roman fort, a scheduled monument, in some context. Almost 200 struck flints were also recovered, indicating a general background of prehistoric activity in the area.

5.9 Recommendations

5.9.1 Recommendations for any future work based upon this report will be made by the County Archaeology Office.

Appendix A. Trench Descriptions and Context Inventory

Trench 1						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying a headland deposit and natural sands, below which was the mudstone natural.					**Max. depth (m)**	1.20
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
128	Layer	-	0.40	Topsoil	-	-
129	Layer	-	0.90	Headland	-	-
130	Layer	-	0.12	Natural sand	-	-

Trench 2						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.75
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
131	Layer	-	0.35	Topsoil	-	-
132	Layer	-	0.20	Subsoil	-	-
133	Layer	-	>0.20	Natural sand	-	-

Trench 3						
General description					**Orientation**	E-W
Trench consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. It contained a single possible pit, cut into the natural sands. A test pit was dug through the sand.					**Max. depth (m)**	0.50
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
127	Layer	-	0.3	Topsoil	-	-
123	Layer	-	0.2	Subsoil	-	-
124	Layer	-	0.6	Natural sand	Cu alloy sf1	-
125	Cut	0.49	0.24	Possible Pit	-	Prehistoric
126	Fill	0.49	0.24	Fill of 125	Flint, burnt stone	Prehistoric

Trench 4						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.70
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
134	Layer	-	0.40	Topsoil	-	-
135	Layer	-	0.30	Subsoil	-	-
136	Layer	-	>0.20	Natural sands	-	-

Trench 5						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. Two test pits were dug through the sand.					**Max. depth (m)**	0.39
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
315	Layer	-	0.23	Topsoil	-	-
314	Layer	-	0.18	Subsoil	-	-
313	Layer	-	0.56	Natural sands	Flint, CBM, pottery, Fe object sf2	-

Trench 6						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
339	Layer	-	0.29	Topsoil	-	-
340	Layer	-	0.14	Subsoil	-	-
341	Layer	-	>0.18	Natural sand	-	-

Trench 7						
General description					**Orientation**	E-W
Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. Trench contained a small ditch and a natural feature, both visible in the natural sand.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
319	Layer	-	0.28	Topsoil	-	-
318	Layer	-	0.08	Subsoil	-	-
317	Layer	-	>0.10	Natural sand	-	-
320	Cut	0.36	0.07	Ditch	-	-
321	Fill	0.36	0.07	Fill of 320	-	-
328	Cut	0.86	0.08	Natural feature	-	-
329	Fill	0.86	0.08	Fill of 328	-	-

Trench 8						
General description					**Orientation**	N-S
Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. Trench contained two glacial features, visible below the natural sand, in the mudstone. Two test pits were excavated through the sands.					**Max. depth (m)**	1.28
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
115	Layer	-	0.25	Topsoil	-	-
316	Layer	-	0.20	Subsoil	-	-
116	Layer	-	0.34	Natural sand	-	-
117	Layer	-	0.22	Natural sand	-	-
118	Fill	2.05	0.40	Upper fill of 120	-	-
119	Fill	2.05	0.10	Basal fill of 120	-	-
120	Cut	2.05	0.40	Glacial feature	-	-
121	Fill	0.74	0.14	Fill of 122	-	-
122	Cut	0.74	0.14	Glacial feature	-	-

Trench 9						
General description					**Orientation**	E-W
Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. Trench contained a small ditch and a natural feature, both visible in the natural sand.					**Max. depth (m)**	0.60
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
325	Layer	-	0.30	Topsoil	-	-
324	Layer	-	0.11	Subsoil	-	-
323	Layer	-	0.00	Natural sand	-	-
326	Cut	0.55	0.16	Ditch	-	-
327	Fill	0.55	0.16	Fill of 326	-	-
330	Cut	0.56	0.60	Natural feature	-	-
331	Fill	0.56	0.40	Basal fill of 330	-	-
332	Fill	0.56	0.24	Upper fill of 330	Pottery	Roman?

Trench 10						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.48
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
333	Layer	-	0.33	Topsoil	-	-
334	Layer	-	0.12	Subsoil	-	-
335	Layer	-	>0.08	Natural sand	-	-

Trench 11						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.70
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
333	Layer	-	0.40	Topsoil	-	-
334	Layer	-	0.30	Subsoil	-	-

Trench 12						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. The sand faded out *c.* 28m from the southern end of the trench.					**Max. depth (m)**	0.68
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
51	Layer	-	0.40	Topsoil	-	-
52	Layer	-	0.20	Subsoil	-	-
335	Layer	-	>0.10	Natural sand	-	-

Trench 13						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
53	Layer	-	0.40	Topsoil	-	-
54	Layer	-	0.20	Subsoil	-	-

Trench 14						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.47
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
336	Layer	-	0.28	Topsoil	-	-
337	Layer	-	0.18	Subsoil	-	-
338	Layer	-	>0.11	Natural sand	-	-

Trench 15						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.49
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
342	Layer	-	0.3	Topsoil	-	-
343	Layer	-	0.09	Subsoil	-	-
344	Layer	-	>0.12	Natural sands	-	-

Trench 16						
General description					**Orientation**	E-W
Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. A probable prehistoirc pit and four tree throws were cut into the natural sands.					**Max. depth (m)**	0.58
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
41	Layer	-	0.40	Topsoil	-	-
42	Layer	-	0.18	Subsoil	-	-
35	Fill	0.95	0.24	Fill of **36**	Pottery	Late Neolithic / Early Bronze Age
36	Cut	0.95	0.24	Pit	-	Late Neolithic / Early Bronze Age
31	Fill	1.20	0.32	Fill of **32**	-	-
32	Cut	1.20	0.32	Tree bowl	-	-
33	Fill	2.06	0.24	Fill of **33**	-	-
34	Cut	2.06	0.24	Tree bowl	-	-
37	Fill	0.95	0.18	Fill of **38**	-	-
38	Cut	0.95	0.18	Tree bowl	-	-
39	Fill	>1.40	0.32	Fill of **40**	-	-
40	Cut	>1.40	0.32	Tree bowl	-	-

Trench 17						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.56
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
264	Layer	-	0.45	Topsoil	-	-
265	Layer	-	0.10	Subsoil	-	-
266	Layer	-	>0.08	Natural sand	-	-

Trench 18						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.48
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
267	Layer	-	0.39	Topsoil	-	-
268	Layer	-	0.08	Subsoil	-	-
269	Layer	-	>0.10	Natural sand	-	-

Trench 19						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.57
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
270	Layer	-	0.4	Topsoil	-	-
271	Layer	-	0.07	Subsoil	-	-
272	Layer	-	>0.10	Natural sand	-	-

Trench 20						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.55
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
273	Layer	-	0.43	Topsoil	-	-
274	Layer	-	0.09	Subsoil	-	-
275	Layer	-	>0.08	Natural sand	-	-

Trench 21						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural.					**Max. depth (m)**	0.56
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
276	Layer	-	0.41	Topsoil	-	-
277	Layer	-	0.1	Subsoil	-	-
278	Layer	-	>0.06	Natural sand	-	-

Trench 22						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. The sand faded out *c.* 2m from the northern end of the trench. A test pit was excavated through the sand.					**Max. depth (m)**	0.61
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
237	Layer	-	0.41	Topsoil	-	-
238	Layer	-	0.22	Subsoil	-	-
239	Layer	-	0.24	Natural sand	-	-

Trench 23						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.47
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
47	Layer	-	0.35	Topsoil	-	-
48	Layer	-	0.13	Subsoil	-	-

Trench 24						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. The sand faded out *c.*4m from the northern end of the trench					**Max. depth (m)**	0.60
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
45	Layer	-	0.40	Topsoil	-	-
46	Layer	-	0.20	Subsoil	-	-
279	Layer	-	-	Natural sand	-	-

Trench 25						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. The sand faded out *c.*24m from the northern end of the trench					**Max. depth (m)**	
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
43	Layer	-	0.36	Topsoil	-	-
44	Layer	-	0.15	Subsoil	-	-
280	Layer	-	-	Natural sand	-	-

Trench 26						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
281	Layer	-	0.30	Topsoil	-	-
282	Layer	-	0.10	Subsoil	-	-

Trench 27						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.50
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
55	Layer	-	0.30	Topsoil	-	-
56	Layer	-	0.20	Subsoil	-	-

Trench 28						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.45
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
29	Layer	-	0.36	Topsoil	-	-
30	Layer	-	0.10	Subsoil	-	-

Trench 29						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.45
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
25	Layer	-	0.40	Topsoil	-	-
26	Layer	-	0.09	Subsoil	-	-

Trench 30						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.45
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
27	Layer	-	0.35	Topsoil	-	-
28	Layer	-	0.13	Subsoil	-	-

Trench 31						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
283	Layer	-	0.3	Topsoil	-	-
284	Layer	-	0.1	Subsoil	-	-

Trench 32						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.45
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
285	Layer	-	0.30	Topsoil	-	-
286	Layer	-	0.15	Subsoil	-	-

Trench 33						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.61
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
287	Layer	-	0.40	Topsoil	-	-
288	Layer	-	0.21	Subsoil	-	-

Trench 34						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. The sand faded out *c.* 20m from the northern end of the trench. Two test pits were excavated through the sand.					**Max. depth (m)**	0.51
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
333	Layer	-	0.42	Topsoil	-	-
334	Layer	-	0.09	Subsoil	-	-
335	Layer	-	0.26	Natural sand	-	-
336	Layer	-	0.19	Natural sand	-	-

Trench 35						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. The sand faded out *c.* 14m from the northern end of the trench. A test pit was excavated through the sand.					**Max. depth (m)**	0.53
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
289	Layer	-	0.40	Topsoil	-	-
290	Layer	-	0.13	Subsoil	-	-
291	Layer	-	>0.90	Natural sands	-	-

Trench 36						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil and natural sands, below which was the mudstone natural. A test pit was excavated through the sand, this had to be abandoned 1.39m from the current ground surface.					**Max. depth (m)**	0.58
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
231	Layer	-	0.46	Topsoil	-	-
232	Layer	-	0.14	Subsoil	-	-
228	Layer	-	0.36	Natural sand	-	-
229	Layer	-	0.18	Natural sand	-	-
230	Layer	-	>0.27	Natural sand	-	-

Trench 37						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
292	Layer	-	0.33	Topsoil	-	-
293	Layer	-	0.08	Subsoil	-	-

Trench 38						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.42
					Width (m)	2
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
294	Layer	-	0.35	Topsoil	-	-
295	Layer	-	0.07	Subsoil	-	-

Trench 39						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
296	Layer	-	0.30	Topsoil	-	-
297	Layer	-	0.10	Subsoil	-	-

Trench 40						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.30
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
298	Layer	-	0.20	Topsoil	-	-
299	Layer	-	0.10	Subsoil	-	-

Trench 41						
General description					**Orientation**	N-S
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained large ditch, cut into the mudstone natural, and an oven, cut into the top of the ditch.					**Max. depth (m)**	0.46
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
204	Layer	-	0.40	Topsoil	-	-
205	Layer	-	0.06	Subsoil	-	-
212	Layer	>2.00	0.20	Layer covering **210** and **211**	Pottery	Roman
206	Fill	1.45	0.10	Fill of **210**	Pottery	Roman
207	Fill	1.25	0.07	Fill of **210**	-	-
213	Fill	1.25	0.20	Fill of **210**	-	-
214	Fill	1.00	0.08	Fill of **210**	-	-
208	Fill	0.58	0.16	Fill of **210**	-	-
209	Fill	2.30	0.20	Fill of **210**	-	-
210	Cut	2.30	0.40	Oven	-	Roman
215	Fill	2.50	0.24	Fill of **211**	-	-
216	Fill	1.10	0.16	Fill of **211**	-	-
217	Fill	1.05	0.15	Fill of **211**	-	-
218	Fill	1.75	0.14	Fill of **211**	-	-
219	Fill	1.50	0.24	Fill of **211**	-	-
220	Fill	1.75	0.24	Fill of **211**	-	-
221	Fill	1.00	0.16	Fill of **211**	-	-
211	Cut	3.00	0.90	Ditch	-	-

Trench 42						
General description					**Orientation**	N-S
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained large ditch (un-excavated) and a smaller ditch, cut into the mudstone natural.					**Max. depth (m)**	0.52
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
303	Layer	-	0.45	Topsoil	-	-
302	Layer	-	0.12	Subsoil	-	-
305	Fill	0.40	0.19	Fill of **304**	CBM	Post-medieval /Modern
306	Cut	0.40	0.19	Ditch	-	Post-medieval /Modern

Trench 43						
General description					**Orientation**	NW-SE
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a probable furrow, cut into the mudstone natural.					**Max. depth (m)**	0.51
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
6	Layer	-	0.46	Topsoil	-	-
7	Layer	-	0.06	Subsoil	-	-
8	Fill	0.75	0.16	Fill of **9**	-	-
9	Cut	0.75	0.16	Probable furrow	-	Medieval / Post-medieval?

Trench 44						
General description					**Orientation**	E-W
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a single ditch, cut into the mudstone natural.					**Max. depth (m)**	0.44
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
310	Layer	-	0.35	Topsoil	-	-
309	Layer	-	0.10	Subsoil	-	-
308	Fill	0.70	0.20	Fill of **306**	-	-
307	Fill	0.40	0.25	Fill of **306**	-	-
306	Cut	0.70	0.45	Ditch	-	-

Trench 45						
General description					**Orientation**	NW-SE
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.55
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
10	Layer	-	0.45	Topsoil	-	-
11	Layer	-	0.10	Subsoil	-	-

Trench 46						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.57
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
4	Layer	-	0.44	Topsoil	-	-
5	Layer		0.15	Subsoil	-	-

Trench 47						
General description					**Orientation**	N-S
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a single ditch, cut into the mudstone natural.					**Max. depth (m)**	0.59
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
1	Layer	-	0.47	Topsoil	-	-
2	Layer	-	0.15	Subsoil	-	-
19	Fill	2.42	0.36	Fill of **18**	-	-
20	Fill	2.50	0.24	Fill of **18**	-	-
21	Fill	1.08	0.14	Fill of **18**	-	-
22	Fill	1.60	0.30	Fill of **18**	-	-
18	Cut	2.80	0.84	Ditch	-	-

Trench 48						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
201	Layer	-	0.27	Topsoil	-	-
202	Layer	-	0.13	Subsoil	-	-

Trench 49						
General description					**Orientation**	N-S
Consists of topsoil, below which was the mudstone natural. Trench contained large ditch (un-excavated), cut into the mudstone natural.					**Max. depth (m)**	0.46
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
104	Layer	-	0.46	Topsoil	-	-

Trench 50						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
105	Layer	-	0.45	Topsoil	-	-
106	Layer	-	0.15	Subsoil	-	-

Trench 51						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural. The eastern half of the trench was shifted north in order to avoid a large field drain.					**Max. depth (m)**	0.85
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
16	Layer	-	0.4	Topsoil	-	-
17	Layer	-	0.45	Subsoil	-	-

Trench 52						
General description					**Orientation**	N-S
Consists of topsoil, below which was the mudstone natural. Trench contained a small pit, cut into the mudstone natural.					**Max. depth (m)**	0.73
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
16	Layer	-	0.40	Topsoil	-	-
17	Layer	-	0.30	Subsoil	-	-
14	Fill	0.76	0.16	Fill of **15**	-	-
15	Cut	0.76	0.16	Pit	Pottery	Early Bronze Age

Trench 53						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.48
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
312	Layer	-	0.40	Topsoil	-	-
311	Layer	-	0.08	Subsoil	-	-

Trench 54						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	1.00
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
113	Layer	-	0.50	Topsoil	-	-
114	Layer	-	0.50	Subsoil	-	-

Trench 55						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
101	Layer	-	0.40	Topsoil	-	-
102	Layer	-	0.20	Subsoil	-	-

Trench 56						
General description					**Orientation**	
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a single ditch (not excavated), cut into the mudstone natural and an area of tree root disturbance.					**Max. depth (m)**	
					Width (m)	
					Length (m)	
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
107	Layer	-	0.45	Topsoil	-	-
108	Layer	-	0.20	Subsoil	-	-
109	Layer	10.40	0.24	Layer filling and covering **110**, **111** and **112**	-	-
110	Cut	1.10	0.24	Tree bowl	-	-
111	Cut	2.10	0.08	Tree bowl	-	-
112	Cut	0.80	0.12	Tree bowl	-	-

Trench 58						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
401	Layer	-	0.40	Topsoil	-	-

Trench 59						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying the mudstone natural.					**Max. depth (m)**	0.44
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
404	Layer	-	0.44	Topsoil	-	-

Trench 60						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
414	Layer	-	0.38	Topsoil	-	-
415	Layer	-	0.12	Subsoil	-	-

Trench 61						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.48
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
409	Layer	-	0.38	Topsoil	-	-
410	Layer	-	0.12	Subsoil	-	-

Trench 62						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.46
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
407	Layer	-	0.36	Topsoil	-	-
408	Layer	-	0.14	Subsoil	-	-

Trench 63						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.56
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
405	Layer	-	0.40	Topsoil	-	-
406	Layer	-	0.18	Subsoil	-	-

Trench 64						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying the mudstone natural.					**Max. depth (m)**	0.42
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
403	Layer	-	0.42	Topsoil	-	-

Trench 65						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was a silty clay deposit.					**Max. depth (m)**	0.5
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
417	Layer	-	0.38	Topsoil	-	-
418	Layer	-	0.16	Subsoil	-	-
419	Layer	>14.00	>.010	Paelochannel?	-	-

Trench 66						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying the mudstone natural.					**Max. depth (m)**	0.44
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
416	Layer	-	0.44	Topsoil	-	-

Trench 67						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was a silty clay deposit.					**Max. depth (m)**	0.92
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
411	Layer	-	0.40	Topsoil	-	-
412	Layer	-	0.14	Subsoil	-	-
413	Layer	-	>0.40	Paleochannel?	-	-

Trench 68						
General description					**Orientation**	N-S
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a single sheep burial, cut into the mudstone natural.					**Max. depth (m)**	0.95
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
60	Layer	-	0.50	Topsoil	-	-
61	Layer	-	0.50	Subsoil	-	-
57	Fill	0.73	0.22	Fill of **69**	-	-
58	Skeleton	-	-	Sheep skeleton	-	Late post-medieval / Modern
59	Cut	0.73	0.22	Sheep burial	-	Late post-medieval / Modern

Trench 69						
General description					**Orientation**	N-S
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a probable furrow, cut into the mudstone natural and a layer of material, which was probably formed by tree root disturbance					**Max. depth (m)**	0.57
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
240	Layer	-	0.47	Topsoil	-	-
241	Layer	-	0.21	Subsoil	-	-
242	Layer	12.40	0.17	Tree root disturbance	-	-
244	Fill	0.80	0.08	Fill of **245**	-	-
245	Cut	0.80	0.08	Furrow?	-	Medieval / Post-medieval

Trench 70						
General description					**Orientation**	E-W
Consists of topsoil overlaying subsoil, below which was the mudstone natural. Trench contained a possible posthole cut into the mudstone natural					**Max. depth (m)**	0.49
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
248	Layer	-	0.37	Topsoil	-	-
249	Layer	-	0.14	Subsoil	-	-
246	Fill	0.20	0.09	Fill of **247**	-	-
247	Cut	0.20	0.09	Posthole	-	-

Trench 71						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
250	Layer	-	0.4	Topsoil	-	-
251	Layer	-	0.2	Subsoil	-	-

Trench 72						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.75
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
252	Layer	-	0.45	Topsoil	-	-
253	Layer	-	0.30	Subsoil	-	-

Trench 73						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.54
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
347	Layer	-	0.38	Topsoil	-	-
346	Layer	-	0.17	Subsoil	-	-

Trench 74						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.39
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
349	Layer	-	0.30	Topsoil	-	-
348	Layer	-	0.18	Subsoil	-	-

Trench 75						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
254	Layer	-	0.30	Topsoil	-	-
255	Layer	-	0.12	Subsoil	-	-

Trench 76						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.70
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
256	Layer	-	0.40	Topsoil	-	-
257	Layer	-	0.30	Subsoil	-	-

Trench 77						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.55
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
258	Layer	-	0.35	Topsoil	-	-
259	Layer	-	0.20	Subsoil	-	-

Trench 78						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.38
					Width (m)	2
					Length (m)	50
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
260	Layer	-	0.30	Topsoil	-	-
261	Layer	-	0.09	Subsoil	-	-

Trench 79						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.45
					Width (m)	2
					Length (m)	100
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
262	Layer	-	0.30	Topsoil	-	-
263	Layer	-	0.15	Subsoil	-	-

Trench 80						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural. Contingency trench excavated to locate ditch observed in Trench 44, ditch not present.					**Max. depth (m)**	0.52
					Width (m)	2
					Length (m)	18
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
23	Layer	-	0.45	Topsoil	-	-
24	Layer	-	0.07	Subsoil	-	-

Trench 81						
General description					**Orientation**	NE-SW
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	1.5
					Length (m)	35
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
422	Layer	-	0.45	Topsoil	-	-
423	Layer	-	0.15	Subsoil	-	-

Trench 82						
General description					**Orientation**	NW-SE
Trench contained a single tree throw. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	1.5
					Length (m)	65
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
424	Layer	-	0.45	Topsoil	-	-
425	Layer	-	0.15	Subsoil	-	-
420	Cut	0.50	0.25	Tree Throw	-	-
421	Fill	0.50	0.25	Fill of **420**	-	-

Trench 83						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was a series of colluvial deposits.					**Max. depth (m)**	2.30
					Width (m)	1.6
					Length (m)	20
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
139	Layer	-	0.14	Topsoil	-	-
140	Layer	-	0.16	Subsoil	-	-
141	Layer	-	0.08	Buried topsoil	CBM, glass	Late Post-medieval
142	Layer	-	0.76	Colluvium	Glass	Late Post-medieval
143	Layer	-	0.48	Colluvium	-	-
144	Layer	-	0.42	Coluvium	-	-
145	Layer	-	>0.28	Natural?	-	-

Trench 84						
General description					**Orientation**	ESE-WSW
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	1.03
					Width (m)	1.6
					Length (m)	20
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
146	Layer	-	0.50	Topsoil	-	-
147	Layer	-	0.66	Subsoil	-	-

Trench 85						
General description					**Orientation**	NNW-SSE
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was a layer of colluvium and the mudstone natural.					**Max. depth (m)**	0.94
					Width (m)	1.6
					Length (m)	30
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
148	Layer	-	0.34	Topsoil	-	-
149	Layer	-	0.40	Subsoil	-	-
150	Layer	-	0.45	Colluvium	-	-

Trench 86						
General description					**Orientation**	NW-SE
Trench cut into deep alluvial deposits.					**Max. depth (m)**	2.34
					Width (m)	1.6
					Length (m)	5
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
151	Layer	-	0.22	Topsoil	-	-
152	Layer	-	1.56	Subsoil	-	-
153	Layer	-	0.42	Alluvium	-	-
154	Layer	-	>0.38	Alluvium	-	-

Trench 87						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was a layer of colluvium and the mudstone natural.					**Max. depth (m)**	0.81
					Width (m)	1.6
					Length (m)	30
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
155	Layer	-	0.39	Topsoil	-	-
156	Layer	-	0.27	Subsoil	-	-
157	Layer	-	0.17	Colluvium	-	-

Trench 88						
General description					**Orientation**	NE-SW
Trench contained a single ditch. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.69
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
158	Layer	-	0.37	Topsoil	-	-
159	Layer	-	0.12	Subsoil	-	-
160	Layer	-	0.25	Colluvium	-	-
137	Cut	0.91	0.46	Ditch	-	Roman
138	Fill	0.91	0.46	Fill of **137**	2 sherds pottery, slag fragment	Roman

Trench 89		
General description	**Orientation**	-
Trench not excavated due to difficulty of access	**Max. depth (m)**	-
	Width (m)	-
	Length (m)	-

Trench 90						
General description					**Orientation**	NW-SE
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.73
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
161	Layer	-	0.36	Topsoil	-	-
162	Layer	-	0.37	Subsoil	-	-

Trench 91						
General description					**Orientation**	NE-SW
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.60
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
163	Layer	-	0.29	Topsoil	-	-
164	Layer	-	0.31	Subsoil	-	-

Trench 92						
General description					**Orientation**	NW-SE
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.79
					Width (m)	1.6
					Length (m)	30
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
165	Layer	-	0.32	Topsoil	-	-
166	Layer	-	0.47	Subsoil	-	-

Trench 93						
General description					**Orientation**	NE-SW
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the sand natural.					**Max. depth (m)**	0.71
					Width (m)	1.6
					Length (m)	30
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
167	Layer	-	0.30	Topsoil	-	-
168	Layer	-	0.41	Subsoil	-	-

Trench 94						
General description					**Orientation**	E-W
Trench exposed a large modern pit, no finds kept.					**Max. depth (m)**	0.37
					Width (m)	1.6
					Length (m)	20
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
169	Layer	-	0.35	Topsoil	-	-
170	Layer	-	0.02	Subsoil	-	-

Trench 95						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.36
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
171	Layer	-	0.26	Topsoil	-	-
172	Layer	-	0.11	Subsoil	-	-

Trench 96						
General description					**Orientation**	NW-SE
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.51
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
173	Layer	-	0.36	Topsoil	-	-
174	Layer	-	0.16	Subsoil	-	-

Trench 97						
General description					**Orientation**	NE-SW
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.40
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
175	Layer	-	0.28	Topsoil	-	-
176	Layer	-	0.13	Subsoil	-	-

Trench 98						
General description					**Orientation**	N-S
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.48
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
177	Layer	-	0.35	Topsoil	-	-
178	Layer	-	0.18	Subsoil	-	-

Trench 99						
General description					**Orientation**	NW-SE
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.49
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
179	Layer	-	0.29	Topsoil	-	-
180	Layer	-	0.22	Subsoil	-	-

Trench 100						
General description					**Orientation**	E-W
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.42
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
181	Layer	-	0.31	Topsoil	-	-
182	Layer	-	0.12	Subsoil	-	-

Trench 101						
General description					**Orientation**	NE-SW
Trench devoid of archaeology. Consists of topsoil overlaying subsoil, below which was the mudstone natural.					**Max. depth (m)**	0.44
					Width (m)	1.6
					Length (m)	40
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
183	Layer	-	0.32	Topsoil	-	-
184	Layer	-	0.12	Subsoil	-	-

Trench 102						
General description					**Orientation**	NE-SW
Trench excavated through upstanding bank. Geological horizons were not reached					**Max. depth (m)**	1.3
					Width (m)	1.6
					Length (m)	13.5
Contexts						
context no	**type**	**Width (m)**	**Depth (m)**	**comment**	**finds**	**date**
74	Layer	-	0.08	Topsoil	-	-
75	Layer	-	>0.80	Re-deposited natural	-	-
76	Layer	6.20	0.50	Flood deposit	-	-
77	Layer	3.58	>0.50	Bank deposit	-	-
78	Layer	7.90	0.70	Bank deposit	-	-
79	Layer	4.1	>0.40	Bank deposit	Bone	-

Appendix B. Finds Reports

B.1 Lithics

By Antony Dickson

Introduction and methodology

B.1.1 For the purposes of this report individual artefacts were scanned and then assigned to a category within a simple lithic classification system (Table 4). No metrical analysis or detailed recording was undertaken during the preliminary identification.

B.1.2 A total of 192 struck lithics (also recorded were six natural pieces of stone, two sherds of pottery and one shard of glass, which are not discussed in this report) was recovered during archaeological investigations at site XLILWT11 (see Table 4). The majority of the lithics were recovered from unstratified topsoil deposits during field walking surveys (Fields A to G; Table 4). A smaller number were recovered from topsoil and subsoil deposits during evaluation (contexts 4, 12, 130, 231, 238, 240, 9999; Table 4), while a small assemblage was recovered from a secure excavated context (126; Table 4).

B.1.3 All the lithic artefacts were made on flint which varied in quality. In general the flint was fairly homogenous in character across all the field walking/context assemblages although the material varied in colour through greyish/bluish white, various shades of greyish brown/grey and a blackish blue fine grained material. In terms of provenance the majority of this material has close parallels in colour and texture with raw material derived from chalk and glacial till deposits in North-Eastern Lincolnshire and East Yorkshire (Henson 1985). There are fifteen reworked patinated pieces within the overall assemblage and there are also eighteen burnt pieces (the majority from Field B: ten pieces). Where present the patination tends to be of a greyish white or light brown colour, however four artefacts (including E13.6 a blade fragment and B20.13 a large flake with evidence for opposed working on its dorsal face) have a deep orangish brown patina similar to that seen on artefacts of some age: Mesolithic or earlier.

B.1.4 The assemblage contains a high number of pieces which have succumbed to post-depositional damage including plough strikes and thermal fractures.

Results

B.1.5 **Field A (Table 4)**: The cores included two opposed platform, one burnt discoidal and one single platform types and they were associated with the removal of flakes and blades. On technological grounds they show evidence for reduction strategies which can be ascribed a broad date spanning the Neolithic and/or Bronze Age. However, one of the opposed platform cores (A11.15) was associated with the removal of narrow blades and could be Late Mesolithic in date. Also present were three core fragments which cannot be assigned to any identifiable reduction strategy. The chunk is also irregularly worked and undiagnostic to any specific reduction process. The blades were all broken and the flakes included six tertiary and four secondary pieces. A core trimming flake and a possible core tablet were also recorded within the flake category. The scraper was a possible fragment from an unidentifiable form. Simple utilised pieces included a blade and a flake with consistent small irregular scarring along lateral edges which indicated they had been used.

B.1.6 **Field B (Table 4)**: The cores included four discoidal, two with platforms at right angles, two opposed, two keeled, two single platform types and an undiagnostic core fragment.

The two single platform cores (B48.14 and B63.13) were blade cores: one cylindrical in form and the other comprising a pebble worked back into the body of the raw material leaving a cortex surface behind the principle flaked face. Both these characteristics probably reflect Late Mesolithic stone working. The remainder of the core types can only be ascribed to a general date range spanning the Early Neolithic through to the Bronze Age. One of the chunks could be an undiagnostic core fragment, while the remainder represent irregularly flaked pieces. Of the blade and flake debitage only 23 pieces were complete and they chiefly represented secondary and tertiary removals from a general reduction sequence. One of the flakes was a core trimming piece (B57.1) and three where thermal fractures. A core rejuvenation flake (B50.7) was also identified. This was a core tablet and could be associated with Late Mesolithic/Early Neolithic stone working traditions. Utilised pieces and formal tools included miscellaneous retouched blades and flakes (blades and flakes with patches of retouch on their edges representing expedient tool manufacture), notched pieces, worn edge blades and flakes and four end scrapers. One of the latter (B46.8) was made on the end of a blade and could be Late Mesolithic/Early Neolithic in date. There was also a broad blade with a worn and smoothed surface on the right lateral edge at the proximal end (B56.11). The polished surface appears to have been created by using the piece as a rubber: fine striations are visible on the surface of the polish and the edge is almost worn flat. The opposite lateral edge has possible inverse abrupt retouch (could also be edge damage from post depositional processes). A probable damaged gun flint of a likely post medieval date or later was also recorded.

B.1.7 **Field C (Table 4)**: The flakes and blades were all tertiary removals while the chunk was irregularly flaked.

B.1.8 **Field D (Table 4)**: The core was an undiagnostic fragment. Only one of the flakes and blades was complete and represented a secondary removal. The only formal tool was a side scraper.

B.1.9 **Field E (Table 4)**: The cores represented a flaked flake worked as a single platform core and an undiagnostic fragment. The chunks were all irregular flaked pieces. All the flakes and blades were damaged apart from on tertiary removal. Simple tools were represented by miscellaneous retouched flakes and blades.

B.1.10 **Field F (Table 4)**: An irregularly worked chunk and a secondary flake make up this small field assemblage.

B.1.11 **Field G (Table 4)**: Beyond the irregularly flaked chunk and a broken flake the only other artefact was a knife form (G22.11). This piece was the proximal end of primary blade/flake with semi invasive acute retouch on the left lateral edge. The opposite lateral edge still retained its cortex covering.

B.1.12 **Contexts 4, 12, 130, 231, 238, 240, 9999 (Table 4)**: The cores were represented by one keeled, one single platform and one discoidal form. The flake and blade debitage included two secondary and three tertiary removals from a general reduction strategy. Also present was a core trimming flake. Utilised pieces included edge retouched blades and a side and end scraper. The knife form (context 12) was a large flake with extensive semi-invasive acute retouch on the lateral edges. The distal edge was also heavily battered from use. This piece can be attributed with a Late Neolithic/Early Bronze Age date.

B.1.13 **Context 126 (Table 4)**: The small assemblage from this context included a broken blade and a miscellaneous retouched piece; both undiagnostic to any specific period.

Field/ Context	Blade	Chunk	Core	Core rejuvenation	Flake	Gun flint	Knife form	bladeMisc retouched	Misc retouched flake	Notch	Polished blade	Scraper	Utilised blade	Utilised flake	Total
Field A	4	1	7		15							1	1	1	30
Field B	10	7	13	1	46	1		4	16	2	1	4	3		108
Field C	1	1			3										5
Field D	1	1	1		6							1			10
Field E	4	3	2		5			1	1						16
Field F		1			1										2
Field G		1			1		1								3
4												1			1
12							1								1
126	1								1						2
130			1		1										2
231					1										1
238	1		2												3
240								1							1
9999	1				3			2							6
313					1										1
Total	24	15	26	1	83	1	2	7	18	2	1	7	4	1	192

Table 4: Number and type of lithics.

Conclusion

B.1.14 In chronological terms the assemblage, as a whole, contains diagnostic pieces (some cores, scrapers and one of the knife forms) which can be attributed to reduction strategies associated with Late Mesolithic through to Early Bronze Age stone working traditions. In that respect the assemblages represent a palimpsest of activity spanning a broad period of prehistoric activity. Interestingly the flake and blade debitage mainly comprises large, broad flakes with broad platforms and very little evidence for platform preparation suggesting that most of them were associated with unstructured reduction strategies attributable to the Late Neolithic and Bronze Age periods. When complete, blades were broad in form (> 8mm in width): the bladelets or narrow blades which would have supported the evidence for narrow flake and blade production shown by some of the cores was lacking from the assemblage. This phenomenon could be down to the fact that the area, in which the present archaeological investigations took place, has seen prolonged lithic collection over a number of years (Phillips 1989). In that respect the assemblage would perhaps provide clearer interpretable results when seen in corroboration with the lithic material recovered from this earlier collection activity.

B.2 The Late Neolithic, Late Iron Age, Romano-British and Saxo-Norman Pottery

By Stephen Wadeson

Introduction

B.2.1 A total of thirteen sherds, weighing 0.134kg was recovered. This is predominantly a Romano-British assemblage in addition to which a small amount of Late Neolithic/Early Bronze Age, Late pre Roman Iron Age (LPRIA) and Saxo-Norman sherds were identified (Table 5).

B.2.2 The assemblage is small and fragmentary with the majority of the sherds heavily abraded with little evidence for surface finishes or residues surviving. Small fragment sizes such as these indicate high levels of post-depositional disturbance possibly the result of ploughing or middening during the Roman and/or post Roman periods. As a result the pottery has an average sherd weight of only *c*.10g suggesting that the majority of the sherds were not found within their site of primary deposition.

Ceramic Period	Sherd Count	Weight (kg)	Weight (%)	MSW (g)
Late Neolithic/EBA	4	0.021	15.4	5.3
LPRIA	1	0.022	16.2	22.0
Romano-British	7	0.040	29.6	5.7
Saxo-Norman	1	0.052	38.8	52.0
Total	**13**	**0.135**	**100**	

Table 5: Quantity and weight of pottery by ceramic period

Methodology

B.2.3 The assemblage was examined in accordance with the guidelines set down by the Study Group for Roman Pottery (Webster 1976; Darling 2004; Willis 2004). The total assemblage was studied and a preliminary catalogue was prepared. The sherds were examined using a magnifying lens (x10 magnification) and were divided into fabric groups defined on the basis of inclusion types present. The fabric codes are descriptive and abbreviated by the main letters of the title (Sandy grey ware = SGW) vessel form was also recorded.

B.2.4 The site archive is currently held by OA East and will be deposited with the appropriate county stores in due course.

Quantification

B.2.5 All sherds have been counted, classified and weighed to the nearest whole gram. Decoration and abrasion were also noted and a spot date has been provided for each individual sherd and context.

Late Neolithic, Early Bronze Age pottery

B.2.6 Excavations produced four small, abraded fragments (*c*.15% by weight) of Late Neolithic/Early Bronze Age pottery from an vessel of undiagnostic form. Recovered from the fill of pit **36**, Trench 16, the sherds were produced in a grog and organic temper of which the largest fragment is decorated with two parallel lines consisting of fingernail impressions.

The Late Pre Roman Iron Age Pottery

B.2.7 A single undiagnostic, sandy reduced ware sherd of LPRIA (MC1 BC to MC1 AD) pottery was recovered from the top of the wind blown sand layer in Trench 34. A distinctly transitional fabric it is a darker, coarser (often thicker) predecessor of the more Romanised sandy reduced ware, typical of the Early Roman period onwards. Due to the fragmentary nature of the sherd, however, it is not possible to date the fragment more closely.

The Romano-British Pottery

B.2.8 Of the remaining assemblage, seven sherds, (c.29% by weight) are of Romano-British date. The majority of these, three sherds are typical of locally produced (but unsourced) domestic coarse wares produced from the mid-1st to mid/late-2nd centuries AD. Recovered from Trench 41, these include two sandy grey ware sherds, the first a single undiagnostic sherd from the fill of oven **210** while the second is a rim sherd from a straight sided dish recovered from the layer sealing the oven. Two further heavily abraded sherds came from ditch **137** in Trench 88, these are also local domestic sandy grey ware. In addition a small heavily abraded sherd of Verulamium type ware was recovered from the layer of wind blown sand in Trench 5.

B.2.9 The remaining two sherds consist of Samian fine wares recovered from the topsoil of Trench 69 and subsoil of Trench 36. Heavily abraded both sherds were produced at Lezoux (AD 120-200), Central Gaul (Tomber and Dore 1998, 32).

The Saxo-Norman Pottery (Carol Fletcher)

B.2.10 Trench 68 produced the only remains of Saxo-Norman pottery recovered from site, a single large rim sherd (*c*.39% by weight) from a Torskey ware bowl with a thumbed rim edge. Bowls of this type became common from the late 10th century onwards however the rim fragment recovered appears to be a later example and may date from the later 11th to early 12th centuries AD.

Pottery from Field Walking

B.2.11 In addition to the assemblage from the evaluation trenches, 28 sherds of pottery of Iron Age to medieval date were recovered from field walking. Three sherds of probable Iron Age pottery were recovered. These were all heavily abraded suggesting they had been in the plough soil for some time. They are all in a dark grey fabric with sand temper and are of probable later Iron Age date. One of these, from field A was a rim sherd, from a small bowl.

5.9.2 Fourteen sherds of Roman pottery were recovered, all of which were abraded body sherds. The lack of decorated sherds or rims in the assemblage makes specific dating difficult. The sandy grey fabric from which the majority were made can be of 1st to 4th century date.

B.2.12 Eleven sherds of medieval pottery were recovered from the survey area. These are all abraded body sherds, with the exception of a single base sherd. Two of the fragments retain small patches of green glaze. It is likely that this pottery is of 12th to 14th century date and is probably the result of manuring.

Discussion

B.2.13 This is a small assemblage spanning a wide chronological period from the Late Neolithic to the late 11th, early 12th centuries suggesting continuous activity in the area

over a long period of time. Due to the fragmented and heavily abraded nature of the assemblage however it is almost certain that the majority of the sherds are residual with only a few sherds recovered from stratified contexts. This has made the assemblage difficult to assess beyond providing basic dating information.

B.2.14 The majority of the assemblage is Romano-British in date and where dates are more certain most can be dated from the mid 1st to mid/late 2nd centuries.

B.2.15 The small number of sherds recovered is common on many rural sites and although not the focus of settlement activity would suggest there is an as yet un-located Romano-British settlement or farmstead near to the proposed development.

The Prehistoric, Romano-British and Saxo-Norman pottery catalogue

Context	Fabric	Dsc	Vessel form	Qty	Weight (Kg)	Fabric Date	Comments
035	Grog & Organic temper	U		4	0.021	Late Neolithic/ Early BA	Incised finger nail decoration
060	Torksey ware	R	Bowl	1	0.052	LC11/EC12	
138	SGW	U		2	0.013	MC1-M/LC2	Heavily Abraded
206	SGW	U		1	0.007	MC1-M/LC2	Heavily Abraded
212	SGW	R	Dish	1	0.012	MC1-M/LC2	
235	SRW (Oxidised Surfaces)	U		1	0.022	LMC1BC-EMC1AD	
240	SACG (Lezoux)	U		1	0.003	120-200AD	Heavily Abraded, ?Footring
313	VER TYPE	U		1	0.002	MC1-M/LC2	Heavily Abraded
332	SACG (Lezoux)	R	?Bowl	1	0.003	120-200AD	Heavily Abraded

Appendix C. Environmental Reports

C.1 Environmental samples

By Rachel Fosberry

Introduction and methods

C.1.1 Three bulk samples were taken from features within the evaluated areas of the Lincoln Water Treatment site in order to assess the quality of preservation of plant remains and their potential to provide useful data as part of further archaeological investigations. Features sampled include a late Neolithic/Early Bronze Age pit and a Roman oven.

C.1.2 The total volume (up to forty litres) of each sample were processed by water flotation (using a modified Siraff three-tank system) for the recovery of charred plant remains, dating evidence and any other artefactual evidence that might be present. The flot was collected in a 0.3mm nylon mesh and the residue was washed through a 0.5mm sieve. Both flot and residue were allowed to air dry. The dried residue was passed through 5mm and 2mm sieves and a magnet was dragged through each resulting fraction prior to sorting for artefacts. Any artefacts present were noted and reintegrated with the hand-excavated finds. The flot was examined under a binocular microscope at x16 magnification and the presence of any plant remains or other artefacts are noted on Table 6. Identification of plant remains is with reference to the Digital Seed Atlas of the Netherlands (Cappers *et al* 2006) and the authors' own reference collection.

Results

Sample No.	Context No.	Cut No.	Feature Type	Flot Contents	Residue Contents
1	14	15	pit	Charcoal only	No finds
21	207	210	oven	Abundant charcoal, carbonized bread	No finds
22	213	210	oven	Charcoal, small fragment of carbonized bread	No finds

Table 6: Environmental samples results

Discussion

C.1.3 Preservation is by carbonization. Charcoal fragments were retrieved from the Late Neolithic/Early Bronze Age pit and would be suitable for radiocarbon dating if required. The two samples from the Roman oven both contained wood charcoal and fragments of carbonized material that has been identified as bread. The material has a vesicular micro-structure that resembles modern bread and bran fragments are visible.

Further Work and Methods Statement

C.1.4 Bread rarely survives in the archaeological record despite being a staple food since the Neolithic (Samuel, 2002). The fragments recovered from Roman ovens at the Lincoln Water Treatment site strongly suggest that bread was being baked alongside the former marching camp to feed the military. The geophysical survey indicates that there are several of these ovens indicating large-scale production.

C.1.5 If further excavations are planned for this area, it is recommended that a schedule for environmental sampling should be appended to the updated project design. By extensive sampling the nature of food production and local economy could be investigated.

Appendix D. Bibliography

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Appendix E. OASIS Report Form

All fields are required unless they are not applicable.

Project Details

OASIS Number	oxfordar3-102068		
Project Name	Lincoln Water Treatment works, Newton on trent, Lincolnshire		
Project Dates (fieldwork) Start	28-03-2011	Finish	21-05-2011
Previous Work (by OA East)	No	Future Work	Unknown

Project Reference Codes

Site Code	LWTN11	Planning App. No.	n/a
HER No.		Related HER/OASIS No.	n/a

Type of Project/Techniques Used

Prompt	Direction from Local Planning Authority - PPS 5
Development Type	Service Infrastructure

Please select all techniques used:

☐ Aerial Photography - interpretation	☐ Grab-Sampling	☐ Remote Operated Vehicle Survey
☐ Aerial Photography - new	☐ Gravity-Core	☒ Sample Trenches
☐ Annotated Sketch	☐ Laser Scanning	☐ Survey/Recording Of Fabric/Structure
☐ Augering	☒ Measured Survey	☒ Targeted Trenches
☐ Dendrochronological Survey	☒ Metal Detectors	☐ Test Pits
☐ Documentary Search	☐ Phosphate Survey	☐ Topographic Survey
☒ Environmental Sampling	☐ Photogrammetric Survey	☐ Vibro-core
☒ Fieldwalking	☒ Photographic Survey	☒ Visual Inspection (Initial Site Visit)
☒ Geophysical Survey	☐ Rectified Photography	

Monument Types/Significant Finds & Their Periods

List feature types using the NMR Monument Type Thesaurus and significant finds using the MDA Object type Thesaurus together with their respective periods. If no features/finds were found, please state “none”.

Monument	Period	Object	Period
pit	Late Prehistoric -4k to 43	pottery	Late Prehistoric -4k to 43
ditch	Late Prehistoric -4k to 43	pottery	Roman 43 to 410
ditch	Roman 43 to 410	lithics	Mesolithic -10k to -4k
oven	Roman 43 to 410	lithics	Late Prehistoric -4k to 43

Project Location

County	Lincolnshire	Site Address (including postcode if possible)	
District	West Lindsey	Land of A1133 South of Newton on Trent Lincolnshire	
Parish	Newton on Trent		
HER	Lincolshire		
Study Area	74ha	National Grid Reference	SK 828 736

Project Originators

Organisation	OA EAST
Project Brief Originator	
Project Design Originator	Richard Mortimer
Project Manager	Richard Mortimer
Supervisor	Nick Gilmour

Project Archives

Physical Archive	Digital Archive	Paper Archive
Lincolnshire county stores	OA East, Bar Hill	Lincolshire county stores
LCNCC 2011:51	XLILWT11	LCNCC 2011:51

Archive Contents/Media

	Physical Contents	Digital Contents	Paper Contents
Animal Bones	☐	☐	☐
Ceramics	☒	☒	☒
Environmental	☒	☒	☒
Glass	☒	☒	☒
Human Bones	☐	☐	☐
Industrial	☐	☐	☐
Leather	☐	☐	☐
Metal	☒	☒	☒
Stratigraphic		☐	☐
Survey		☒	☐
Textiles	☐	☐	☐
Wood	☐	☐	☐
Worked Bone	☐	☐	☐
Worked Stone/Lithic	☒	☒	☒
None	☐	☐	☐
Other	☐	☐	☐

Digital Media	Paper Media
☐ Database	☐ Aerial Photos
☐ GIS	☒ Context Sheet
☒ Geophysics	☒ Correspondence
☒ Images	☒ Diary
☒ Illustrations	☐ Drawing
☐ Moving Image	☐ Manuscript
☐ Spreadsheets	☐ Map
☒ Survey	☐ Matrices
☒ Text	☐ Microfilm
☐ Virtual Reality	☒ Misc.
	☐ Research/Notes
	☒ Photos
	☒ Plans
	☒ Report
	☒ Sections
	☒ Survey

Appendix F. Geophysical survey

Cranfield UNIVERSITY

GEOPHYSICAL SURVEY OF LAND EAST AND WEST OF THE A1133, SOUTH OF NEWTON-ON-TRENT, LINCOLNSHIRE

Cranfield Forensic Institute Report No. 2011/0501

Roland Wessling
Charlie Enright

31/05/2011

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Abstract

A fluxgate gradiometer survey was conducted on land at Newton-on-Trent. The area to be surveyed is situated to the east and west of the A1133 which runs south from Newton-on-Trent.

The survey took place in March 2011 on behalf of Oxford Archaeology as part of a planning proposal for future development.

A total of c. 74 hectares was surveyed over the entire area proposed for development.

The magnetic survey results have produced some anomalies of an archaeological interest as well as some modern disturbances.

All fields on the eastern side of the A1133 displayed evidence of the medieval farming system of ridge and furrow. A number of linear features have also been detected that are likely to represent Iron Age ditched enclosures.

1 Introduction

OA East commissioned the Centre for Archaeological and Forensic Analysis, Cranfield University to undertake a fluxgate gradiometer survey on land proposed for development at Newton-on-Trent in the District of West Lindsey, Lincolnshire. This work was carried out in March 2011.

It has been proposed by Anglican Water Services Ltd (AWS) to construct a new Water Treatment Works (WTW), Raw Water Reservoir (RWR), Intake Pumping Station (IPS) and associated pipelines on land at Newton-On-Trent in the District of West Lindsey, Lincolnshire (SK 828 736). The purpose of this survey was to assist in defining the character and extent of any archaeological remains that may exist in the area for the proposed development.Figure

The survey methodology described in this report was based on guidelines set out in the English Heritage document *'Geophysical Survey in Archaeological Field Evaluation'* (EH 2008).

2 Location and Description

The information contained within sections 2 and 3 of this report are mainly based on information supplied by Mott MacDonald.

The site is located on the east and west of the A1133 which runs south from Newton-on-Trent. The Lincolnshire-Nottinghamshire County boundary forms the southern boundary to the site. The western side of the area comprises arable land, which rises westward from the road to an escarpment overlooking the River Trent, known as Newton Cliffs. The eastern side of the area comprises open agricultural fields sloping gently downwards from west to east.

The underlying geology is comprised of Mercia mudstone. The superficial geology is not recorded for most of surveyed area. Part of Field E and Field G are described as Holme Pierrepont sand and gravel.

Mercia mudstone is described as ‘dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite widespread; sandstones are also present.’ (British Geological Survey, 2011).

Holme Pierrepont sand is described as ‘predominantly cold-phase sands and gravels that underlie the Holme Pierrepont Terrace. Generally pinkish, poorly sorted and compositionally rather immature matrix-supported, sandy, trough-cross bedded (braided river) gravels with syndepositional ice-wedge casts. Gravel dominated by rounded pebbles of "Bunter" quartz/quartzite (typically c.80%), plus flint, Triassic and Upper Carboniferous sandstone, Lower Carboniferous cherts, etc, and other "exotic" lithogies. Forms a fairly well preserved terrace typically 1 to 2m above the floodplain in the upper and middle Trent, with the deposits extending beneath those of the younger Hemington Terrace and the floodplain alluvium.’ (British Geological Survey, 2011).

3 Background Information

The proposed scheme lies in an area of high archaeological potential relating to the prehistoric and Roman periods. Extensive field walking conducted between 1964 and 1982 on the cliffs east of the River Trent resulted in the recording of over 30,000

prehistoric artefacts, mostly struck flints but also Mesolithic pits and possible Neolithic/Bronze Age structures.

In the late 1970's/ early 1980's targeted excavation was conducted on four small open areas, focusing principally on the densest concentrations of artefact finds. This field work identified evidence of early and later Mesolithic flint knapping and possible Mesolithic pits; Neolithic flint work pits and structural features which may have been of Neolithic date; and early Bronze Age flints and two pits containing Beaker and rusticated pottery and nine small features arranged in an apparently trapezoidal plan may have formed a prehistoric structure.

Aerial photography has identified evidence of multi-ditch boundaries possibly dating from the later prehistoric period, located to the south east of Newton-on-Trent (AP18, AP23 and AP30). Within these boundaries is a series of trackways, field boundaries and enclosures of possible Iron Age or Roman date (AP17, AP20 and AP24). Throughout the area scatters of possible pits have been detected which may indicate the occupation of the area.

The WTW and RWR site also lies to the south of a Roman Vexillation Fort (Scheduled Monument LI 174). The proposed pipeline runs along the northern and eastern boundaries of the fort. Despite no obvious remains surviving above ground, to the south of the main fort are crop marks identified through aerial photography which may represent a possible fort precursor or Roman marching camp. If this is present then it may partially underlie the proposed RWR pipeline.

4 Methodology

Magnetometry is a non-invasive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (e.g. pits, ditches, kilns and occasionally stone walls). By surveying the soil surface, geophysical operators can identify areas of varying magnetic properties and by presenting the data in various graphical formats, identify features that share morphological affinities with diagnostic archaeological as well as more modern structures (Clark 1990).

In order to minimise the influence of variations in the earth's magnetic field, a gradiometer was used. A gradiometer is a combination of at least two magnetometers, which are mounted vertically. While the upper sensor measures the earth's magnetic field, the lower sensor measures the earth's magnetic field and any influence the soil has on it. By subtracting the two values measured from each other, the soil's magnetic properties are isolated.

A detailed survey was conducted using a Bartington Grad 601 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data was processed using *Archeosurveyorv*.2.5.7.19. The results were plotted as greyscale and trace plot images (Figure 4 to Figure 39, page 20 to 55).

The enhanced data was processed by using zero-mean functions to correct the unevenness of the image in order to produce a smoother graphical appearance. It was also processed using an algorithm to remove magnetic spikes, thereby reducing extreme readings caused by stray iron fragments and spurious effects due to the inherent magnetism of soils. The data was also clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous material.

5 Interpretation of Results

A detailed fluxgate gradiometer survey was carried out within the proposed development area covering ca. 74 hectares.

The survey has recorded some significant archaeological anomalies mostly associated to Iron Age ditched enclosures.

A series of isolated individual anomalies have been observed to occur across the entire survey area (Pink circles). These reflect areas of modern ferrous debris such as brick and tile fragments as well as horse shoes and plough shares, which lie just below or on the surface of plough soil.

The effects of the medieval ridge and furrow farming system have also left a profound impact in the area as the remains of these have been detected in number of the fields (Green dashed lines).

5.1 Field A

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 4: Field A - Grey scale and trace plots of raw and enhanced data, page 20.

For an illustration of below interpretation, please see Figure 5: Field A - Enhanced data and interpretation, page 21.

In the west of the survey area two large areas of high magnetism were detected (green squares). It is unlikely that these will represent anything of the archaeological interest and are more likely to resolve as nothing more than a trend in the underlying geology.

Rectilinear anomalies in the north eastern edge of the field (red lines) denote the outline of possible Iron Aged ditched enclosures.

5.2 Field B

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 6: Field B - Grey scale and trace plots of raw and enhanced data, page 22.

For an illustration of below interpretation, please see Figure 7: Field B - Enhanced data and interpretation, page 23.

Located along the western boundary a high magnetic disturbance has been detected. This could be caused by ferrous debris in the hedge row.

Located in the north eastern corner of this field a high magnetic rectilinear anomaly has been detected (Blue circle). Field walking results in this particular area noted a

substantial amount of modern brick debris. Therefore this anomaly most likely represents the existence of a modern brick structure.

In the west of the survey area two large areas of high magnetism were detected (green squares). As in Field A, these are unlikely to be of archaeological interest and the response is probably a cause of the underlying geology.

A network of rectilinear anomalies has been detected in the south eastern corner of the field (red lines). These are most likely to denote more ditched enclosures.

5.3 Field C

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 8: Field C - Grey scale and trace plots of raw and enhanced data, page 24.

For an illustration of below interpretation, please see Figure 9: Field C - Enhanced data and interpretation, page 25.

The red line highlights a linear feature located in the western area of the field

The red line is used to highlight linear features located in the western area of the field. This is unlikely to be anything natural due to its shape and is likely to be the result of a modern drain.

In the North Western area of the survey area a large area of high magnetism was detected (green square). It is unlikely that this will represent anything of archaeological interest and are more likely to resolve as nothing more than a trend in the underlying geology.

5.4 Field D

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 10: Field D - Grey scale and trace plots of raw and enhanced data, page 26.

For an illustration of below interpretation, please see Figure 11: Field D - Enhanced data and interpretation, page 27.

Field D contained relatively few features of archaeological interest in comparison to the other fields surveyed. The most prominent anomalies are produced as a result of ridge and furrow (examples green dashed lines).

5.5 Field E

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 12: Field E - Grey scale and trace plots of raw and enhanced data, page 28.

For an illustration of below interpretation, please see Figure 13: Field E - Enhanced data and interpretation, page 29.

It appears that in this field there is a shift in the geology as one travels east to west. This change occurs at the point at which a distinct linear anomaly can be observed (orange line). This anomaly could represent a vault line or glacial crack.

5.6 Field F

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 14: Field F - Grey scale and trace plots of raw and enhanced data, page 30.

For an illustration of below interpretation, please see Figure 15: Field F - Enhanced data and interpretation, page 31.

The survey area is relatively quiet in terms of anomalies that may provide evidence of archaeological activity. The area of high magnetism in the south eastern corner of the field (blue line) is likely to be a result of magnetic interference by a fence. Other anomalies labelled include sighs of ferrous spikes (pink circles) and evidence of ridge and furrow (green dashed lines).

5.7 Field G

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 16: Field G - Grey scale and trace plots of raw and enhanced data, page 32.

For an illustration of below interpretation, please see Figure 17: Field G - Enhanced data and interpretation, page 33.

A number of magnetic peaks have been detected throughout this field. The pink circles (Figure 17) represent individual dipolar anomalies. The blue squares highlight areas displaying a speckled magnetic effect. These anomalies may result from manure scatters.

5.8 Field H

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 18: Field H - Grey scale and trace plots of raw and enhanced data, page 34.

For an illustration of below interpretation, please see Figure 19: Field H - Enhanced data and interpretation, page 35.

Located in the eastern half of this field a large triangular anomaly has been detected (red lines). Judging by its distinct shape it is feasible to suggest that this is some form of drainage and unlikely to be of archaeological interest.

A series of individual positive magnetic anomalies (Orange square) possibly indicate the presence of pit-like features that may be of archaeological origin but they could also represent natural features within the underlying geology.

Located in the north western region of the field, is an area of strong magnetic readings (blue square). This probably denotes an area of burning, possibly a kiln.

5.9 Field I

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 20: Field I - Grey scale and trace plots of raw and enhanced data, page 36.

For an illustration of below interpretation, please see Figure 21: Field I - Enhanced data and interpretation, page 37.

The area indicated with the blue line represents an area of magnetic disturbance which is a direct result of close proximity to ferrous items in the field boundary (i.e. metal fence).

The positive magnetic anomaly that runs the length of the field (yellow dashed line) close to the northern boundary may denote the ploughed out remains of a former field boundary.

The red line marks an area containing a series of dipolar anomalies. This strong magnetic signature is probably the result of modern services.

5.10 Field J

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 22: Field J - Grey scale and trace plots of raw and enhanced data, page 38.

For an illustration of below interpretation, please see Figure 23: Field J - Enhanced data and interpretation, page 39.

A strong dipolar anomaly was recorded in the north eastern corner of the field. This could indicate an area of burning or some form of industrial activity such as a kiln-like feature. The magnetic signatures of this feature display two double peaks, a characteristic of such features.

5.11 Field K

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 24: Field K - Grey scale and trace plots of raw and enhanced data, page 40.

For an illustration of below interpretation, please see Figure 25: Field K - Enhanced data and interpretation, page 41.

As in previous fields a strong dipolar magnetic anomaly has been detected close to the northern boundary. When examining the magnetic signature a twin peak is observed, a characteristic response produced by areas of burning. Suggesting this may be a kiln-like feature.

5.12 Field L

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 26: Field L - Grey scale and trace plots of raw and enhanced data, page 42.

For an illustration of below interpretation, please see Figure 27: Field L - Enhanced data and interpretation, page 43.

Close to the Eastern boundary of this survey area a strong magnetic anomaly has been observed, possibly an area of burning or kiln. Looking at the magnetic signature of this anomaly it has been noted that it shares characteristics common to that produced by kilns.

5.13 Field M

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 28: Field M - Grey scale and trace plots of raw and enhanced data, page 44.

For an illustration of below interpretation, please see Figure 29: Field M - Enhanced data and interpretation, page 45.

Close to the northern border of this field a strong dipolar anomaly has been detected (red circle). This response is typical of a kiln-like feature. This is further supported by the twin peaks produced in the magnetic signature.

5.14 Field N

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 30: Field N - Grey scale and trace plots of raw and enhanced data, page 46.

For an illustration of below interpretation, please see Figure 31: Field N - Enhanced data and interpretation, page 47.

This survey area contains little evidence of archaeological activity. The most significant anomalies in this area are ferrous spikes probably caused by modern debris. The green boxes are highlighting areas of crackling in the geology and are not of archaeological interest.

The red linear line denotes a feature that may be result of a plough furrow.

5.15 Field O

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 32: Field O - Grey scale and trace plots of raw and enhanced data, page 48.

For an illustration of below interpretation, please see Figure 33: Field O - Enhanced data and interpretation, page 49.

Located in the northern region of this field are three short sections of dipolar anomalies (red dashed lines). They produce a very strong signature and are unlikely to be of archaeological interest. Perhaps service trenches or modern pits.

On the western edge of the field the green line indicates the presence of a possible ridge furrow.

The area highlighted with the green circle is likely to be caused by the underlying geology as opposed to anything of archaeological interest.

5.16 Field P

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 34: Field P - Grey scale and trace plots of raw and enhanced data, page 50.

For an illustration of below interpretation, please see Figure 35: Field P - Enhanced data and interpretation, page 51.

This field contains little signs of archaeological interest. The most prominent features are the result of ferrous debris and ridge and furrow.

5.17 Field Q

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 36: Field Q- Grey scale and trace plots of raw and enhanced data, page 52.

For an illustration of below interpretation, please see Figure 37: Field Q - Enhanced data and interpretation, page 53.

As the previous survey area this field again appears to contain little evidence of archaeology. The pink circles denote iron spikes caused by ferrous debris and the green lines denote evidence of ridge and furrow. The area of high magnetism highlighted by the blue box is probably the result of modern magnetic interference.

5.18 Field R

A comparison of the raw data, the trace plot of the raw data and the enhanced data can be found in Figure 38: Field R - Grey scale and trace plots of raw and enhanced data, page 54.

For an illustration of below interpretation, please see Figure 39: Field R - Enhanced data and interpretation, page 55.

On the western edge of this survey area the curved linear anomaly (brown line) which lies close to the current position of the river this is produced by an embankment.

The land slopes steeply towards the river at the point of the irregular linear anomaly (brown line) towards the middle of the survey area. This anomaly may be the result of an erosion feature such as a drainage gully.

The red line represents features that are probably service pipes. The two features are aligned and may be the same pipe, possibly for water as it appears to run towards the river.

The green line highlights an area of high magnetism creating a speckled effect which is a result of a track way still present in the landscape.

6 Conclusions

The survey has identified a number of possibly significant archaeological anomalies. Although the surveyed area presents a considerable amount of magnetic noise (ferrous litter that is most likely to be modern) and some features are is more consistent with geological anomalies rather than manmade (archaeological or modern), there are also a number of features that require further investigation. The fact that some of those features seem more faint than expected indicate that they are either partly ploughed out or at some depth. Systematic ground trothing through test trenches and pits will shed light on this question.

To the west of the A1133 the majority of these anomalies would appear to be associated to Iron Age enclosures and ridge and furrow farming systems. On the survey to the east of the A1133 a number of anomalies have been detected that reflect areas of prolonged burning or kiln-like features.

It is feasible to suggest that based on these results the area has been the site of industrial activity and/or human occupation, which may or may not be associated to the Roman fort.

It is concluded that the site is likely to contain remains of archaeological importance. Therefore, the archaeological potential could be regarded as high and further archaeological investigation would be the next logical step to resolve some of the more significant anomalies; especially to which period they date to and their relationship to the Roman fort, if any.

The area coved in this survey is very considerable. More detailed analysis of specific sub-sections may be required, in order to assist any ground trothing strategy.

7 Acknowledgements

The Cranfield Forensic Institute would like to thank Richard Mortimer and Nick Gilmour from Oxford Archaeology East for the commission of this report.

8 Bibliography

British Geological Survey, 2011, map for Newton-on-Trent on http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html

Clark, A.J., 1990, Seeing Beneath the Soil. London: Batsford

Appendix A: Overview Map

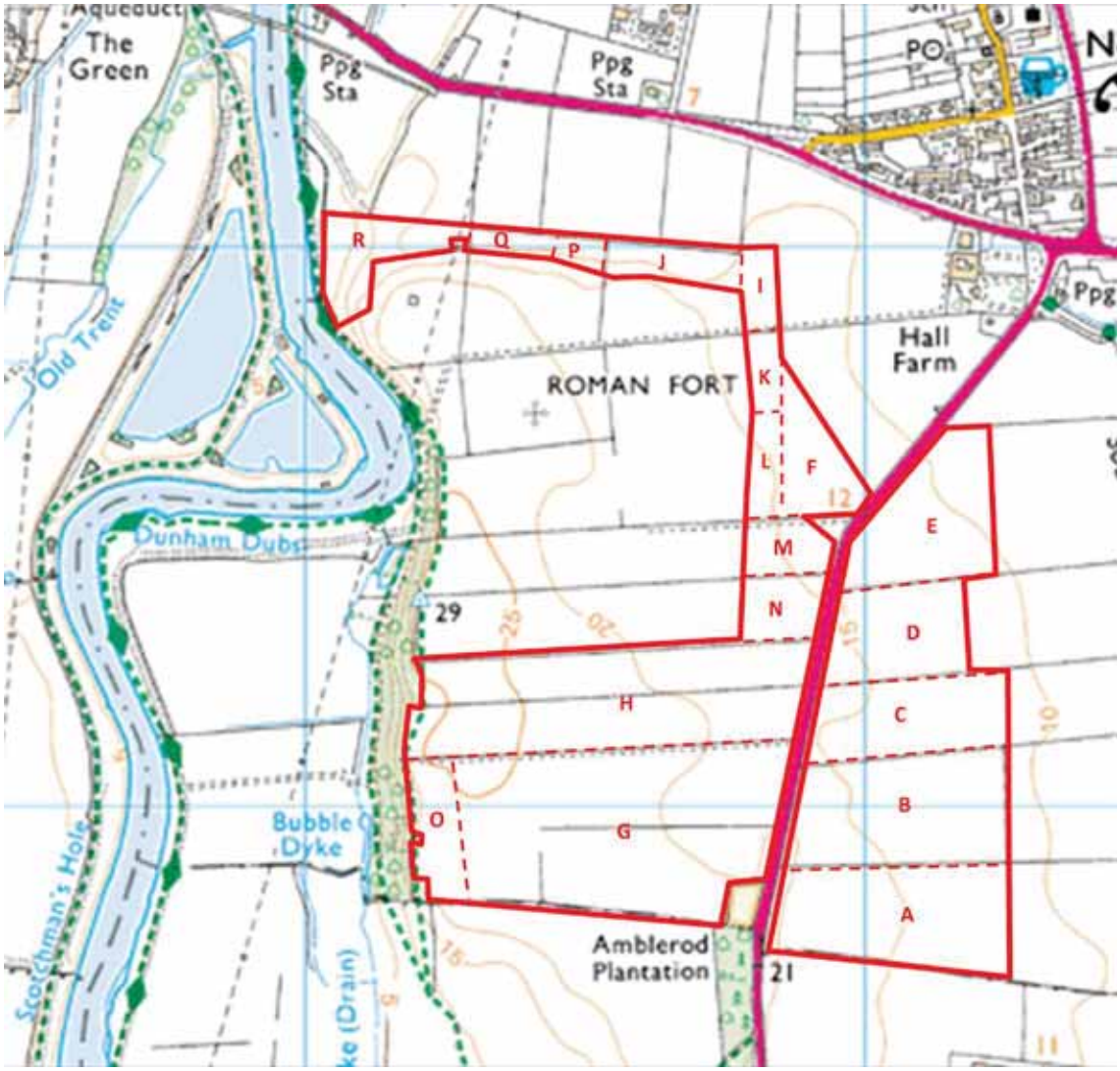

Figure 1: Overview map of surveyed area (Crown Copyright 2011 Ordnance Survey Map; Grid reference at centre: SK 824 734 GB)

Appendix B: Overview Survey Data

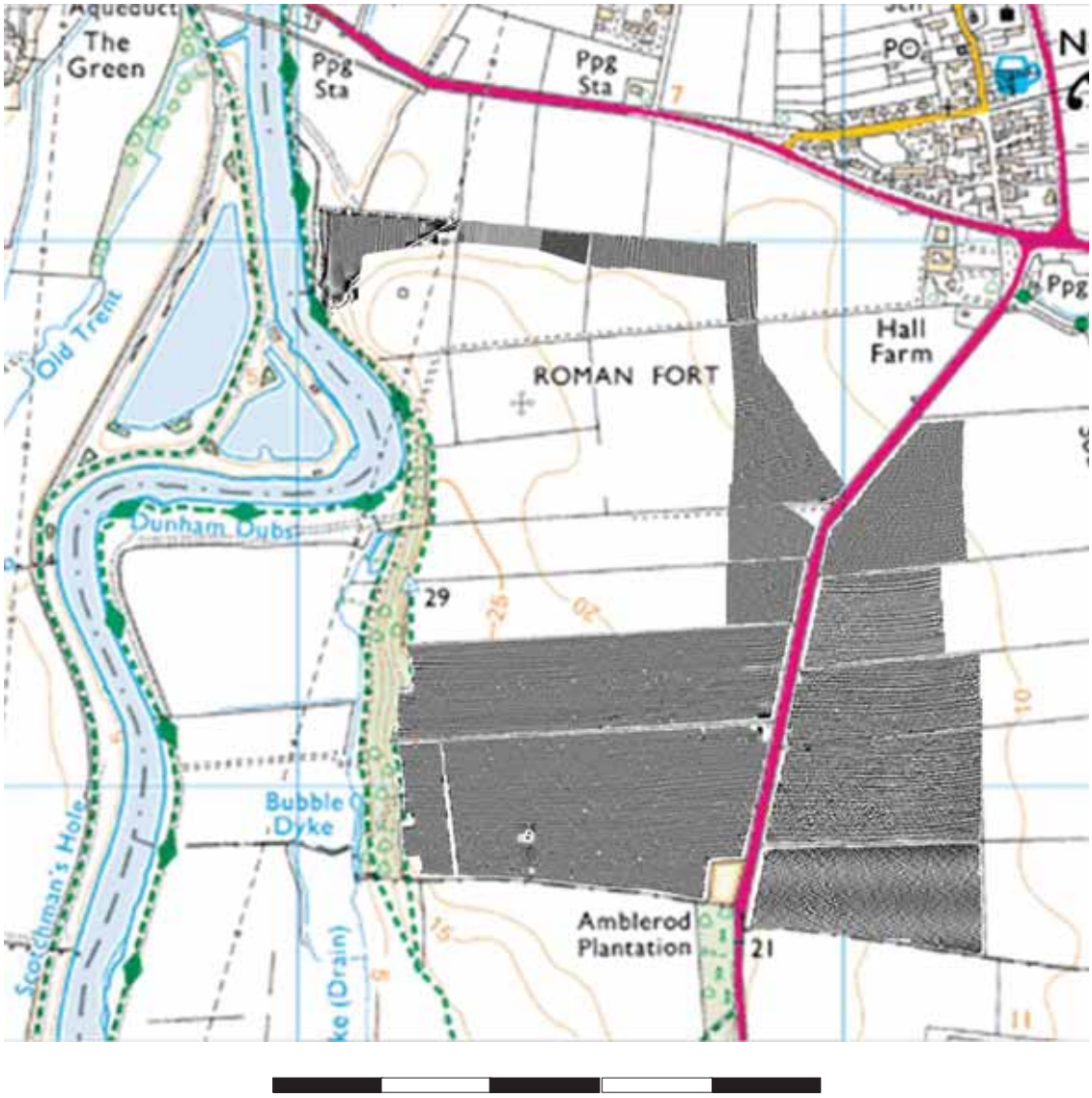

Figure 2: Overview of surveyed data (Crown Copyright 2011 Ordnance Survey Map; Grid reference at centre: SK 824 734 GB)

Appendix C: Overview Interpretation

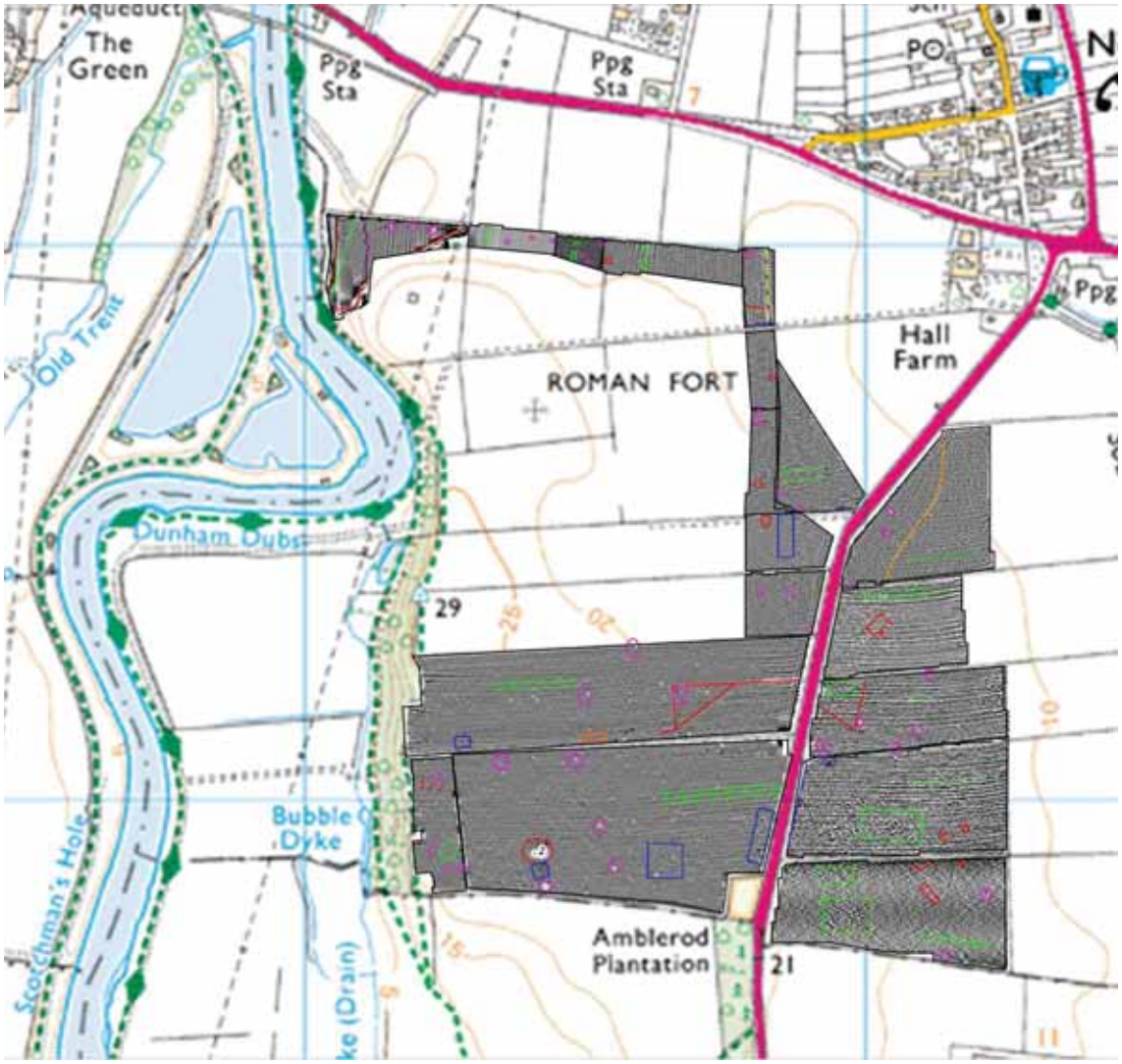

Figure 3: Overview of identified features (Crown Copyright 2011 Ordnance Survey Map; Grid reference at centre: SK 824 734 GB)

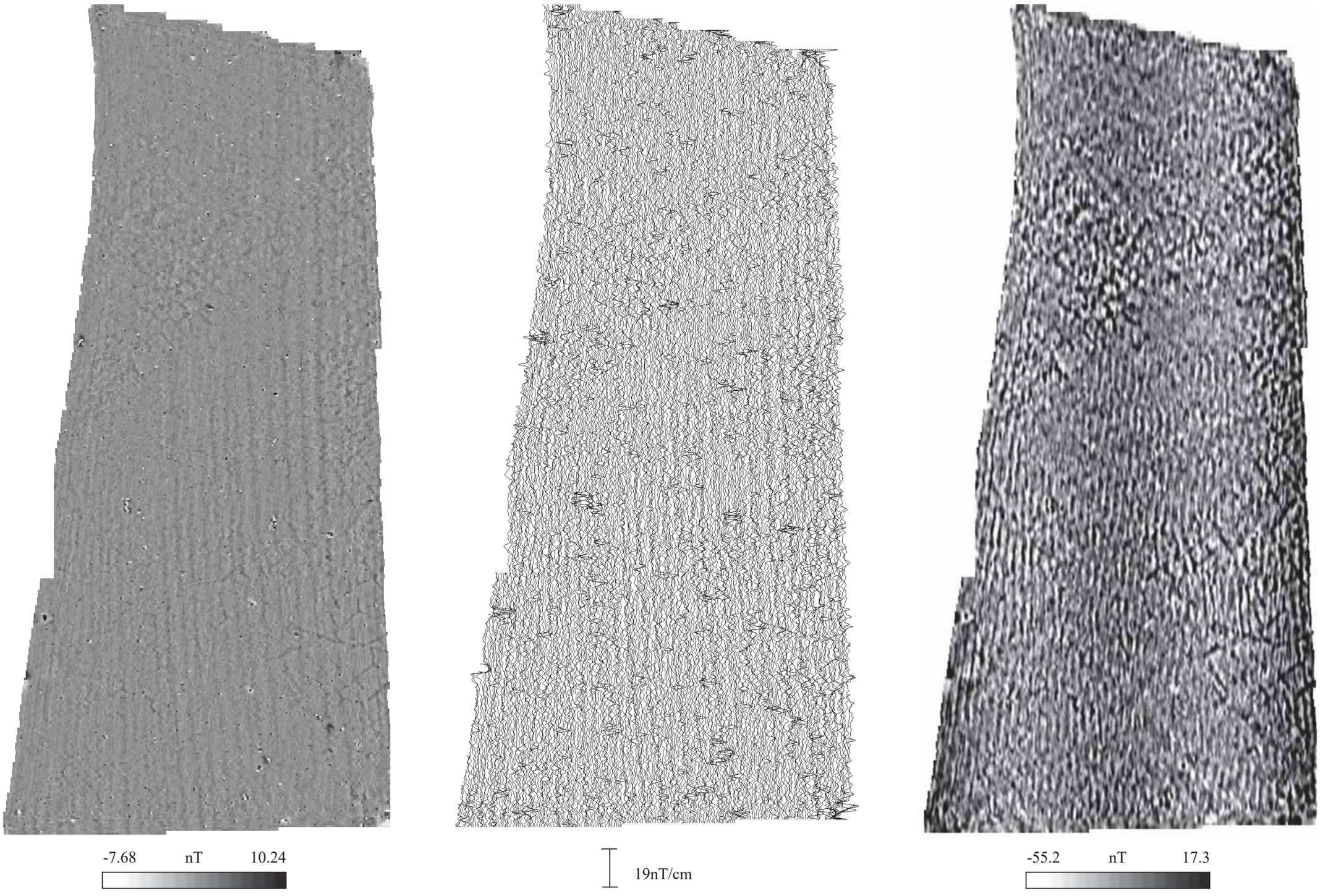

Figure 4: Field A - Grey scale and trace plots of raw and enhanced data

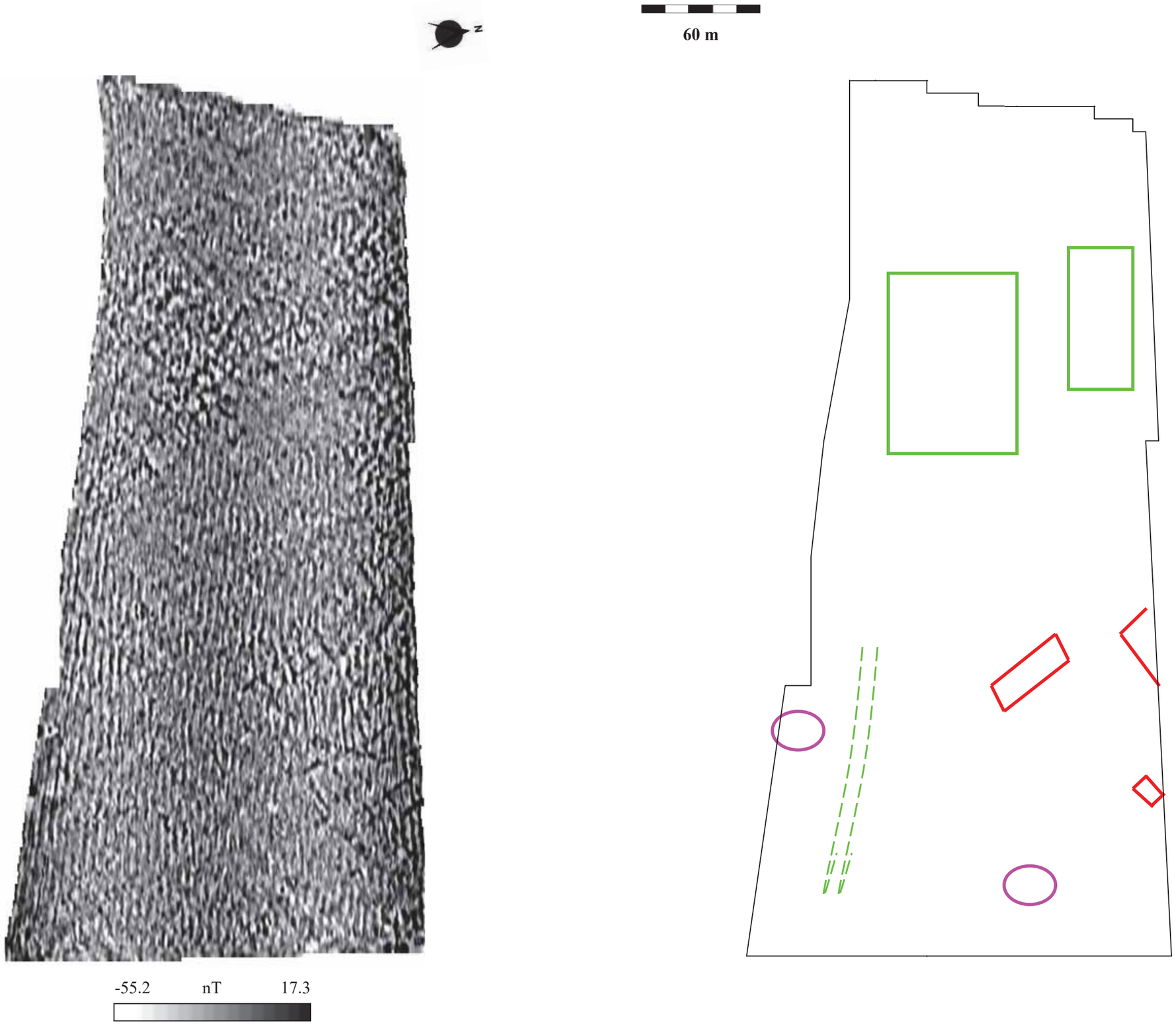

Figure 5: Field A - Enhanced data and interpretation

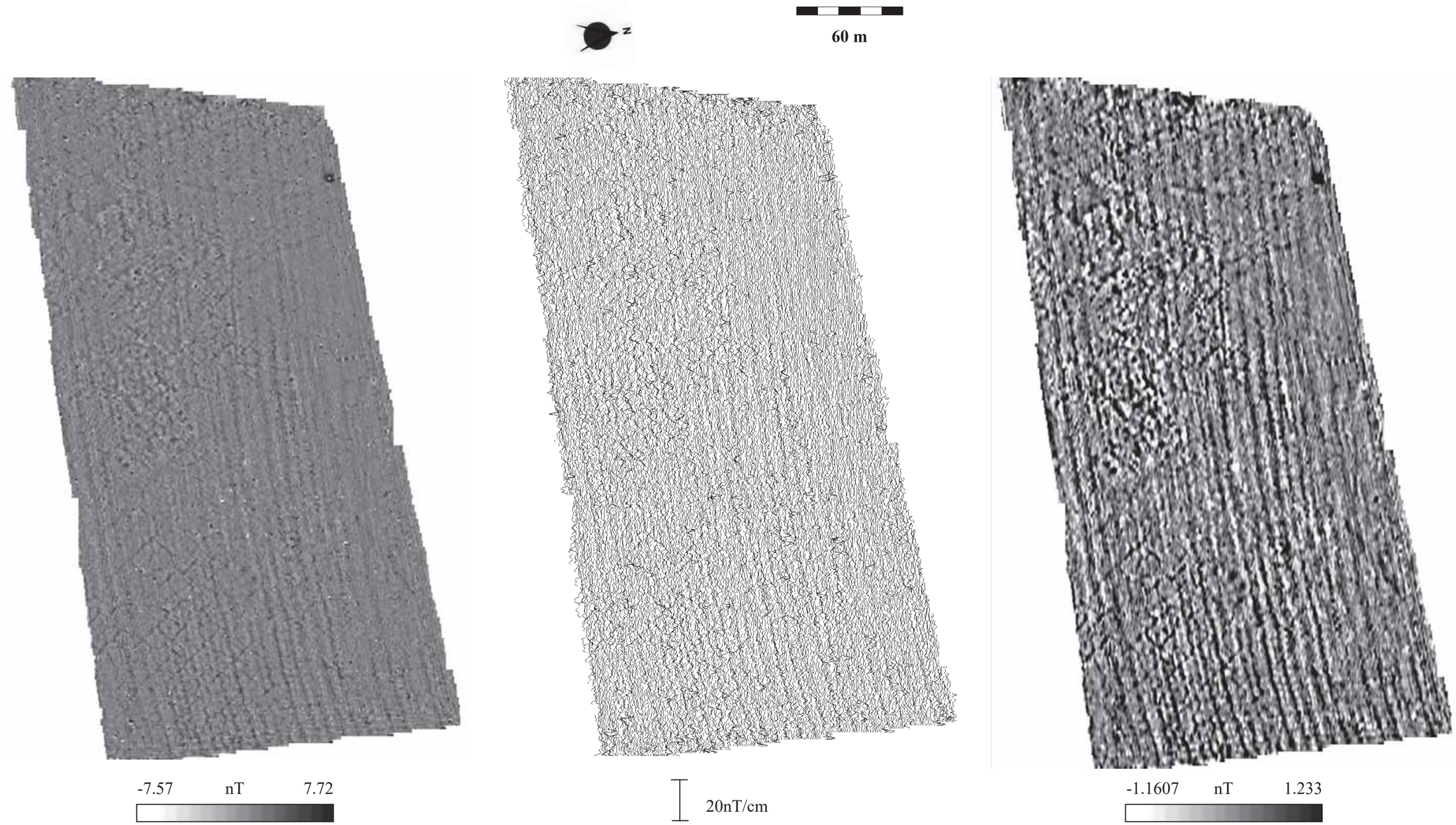

Figure 6: Field B - Grey scale and trace plots of raw and enhanced data

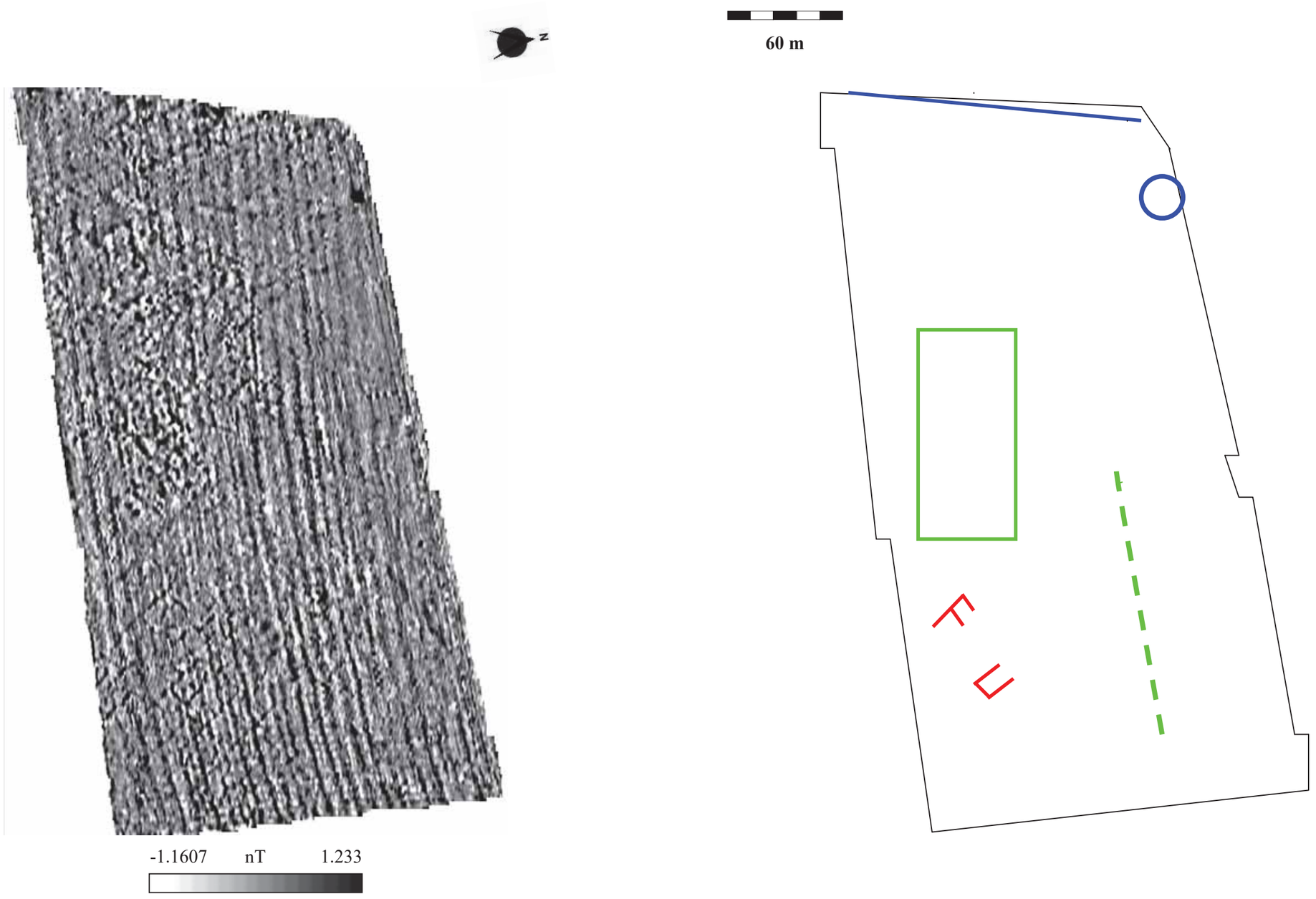

Figure 7: Field B - Enhanced data and interpretation

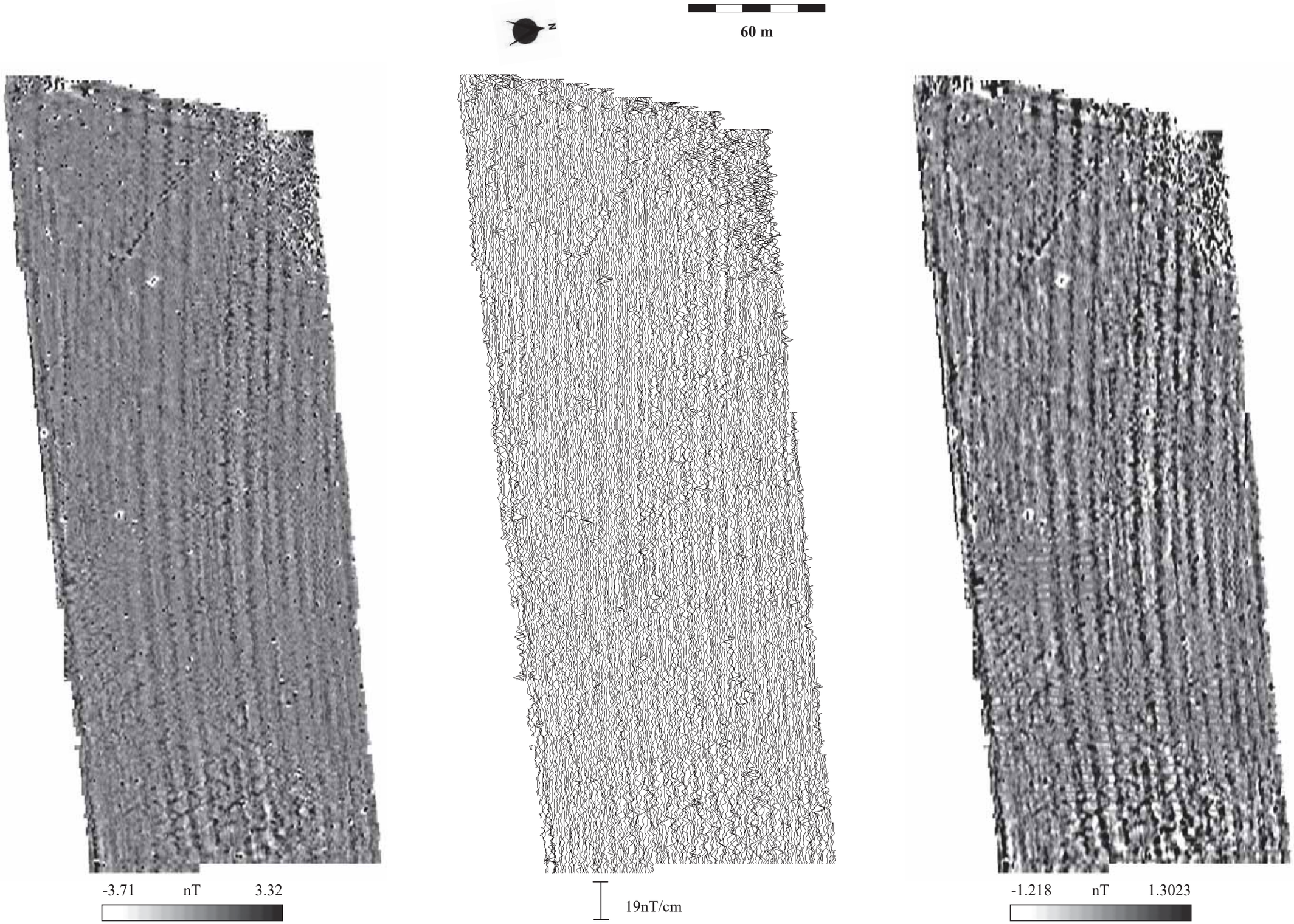

Figure 8: Field C - Grey scale and trace plots of raw and enhanced data

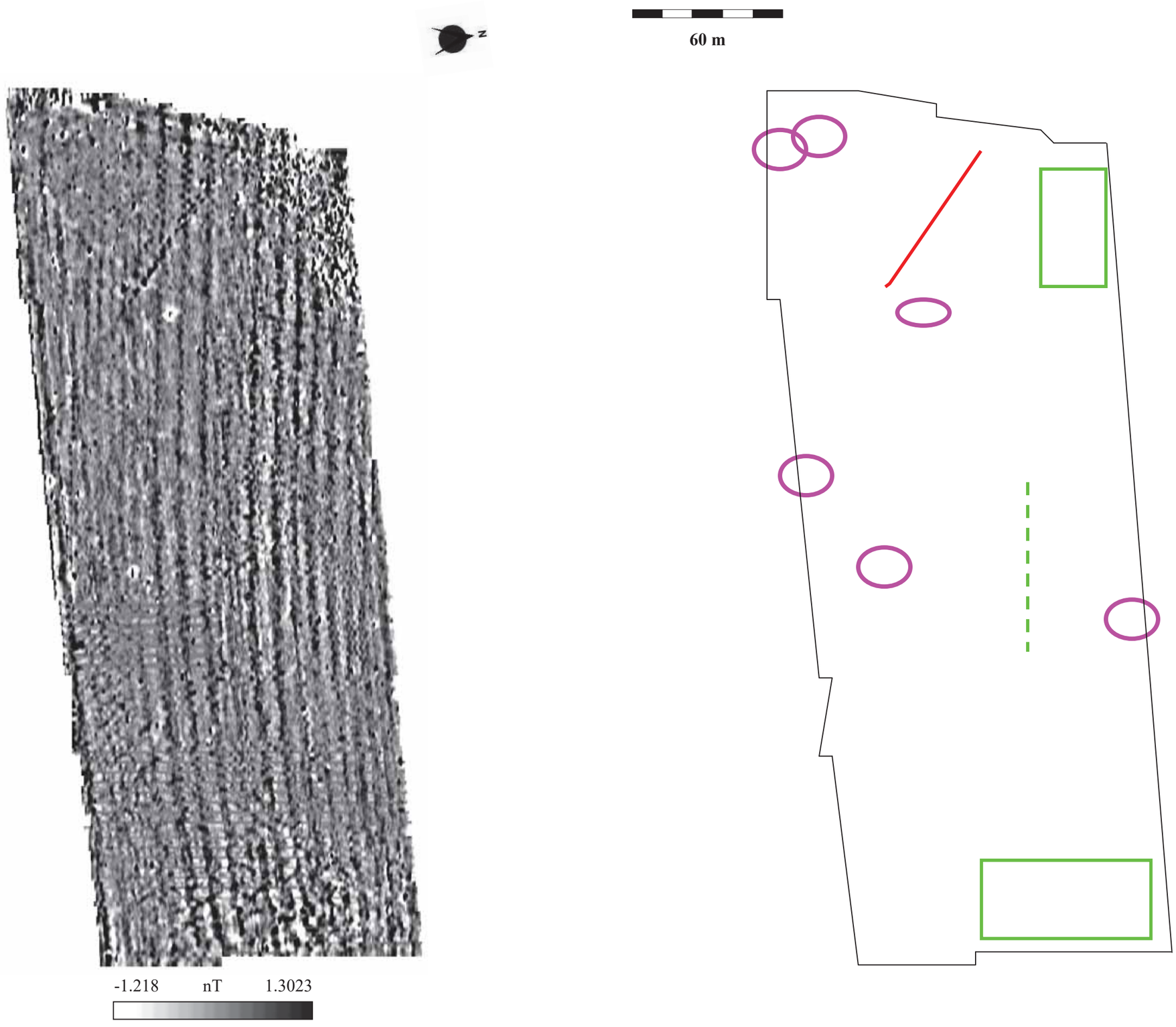

Figure 9: Field C - Enhanced data and interpretation

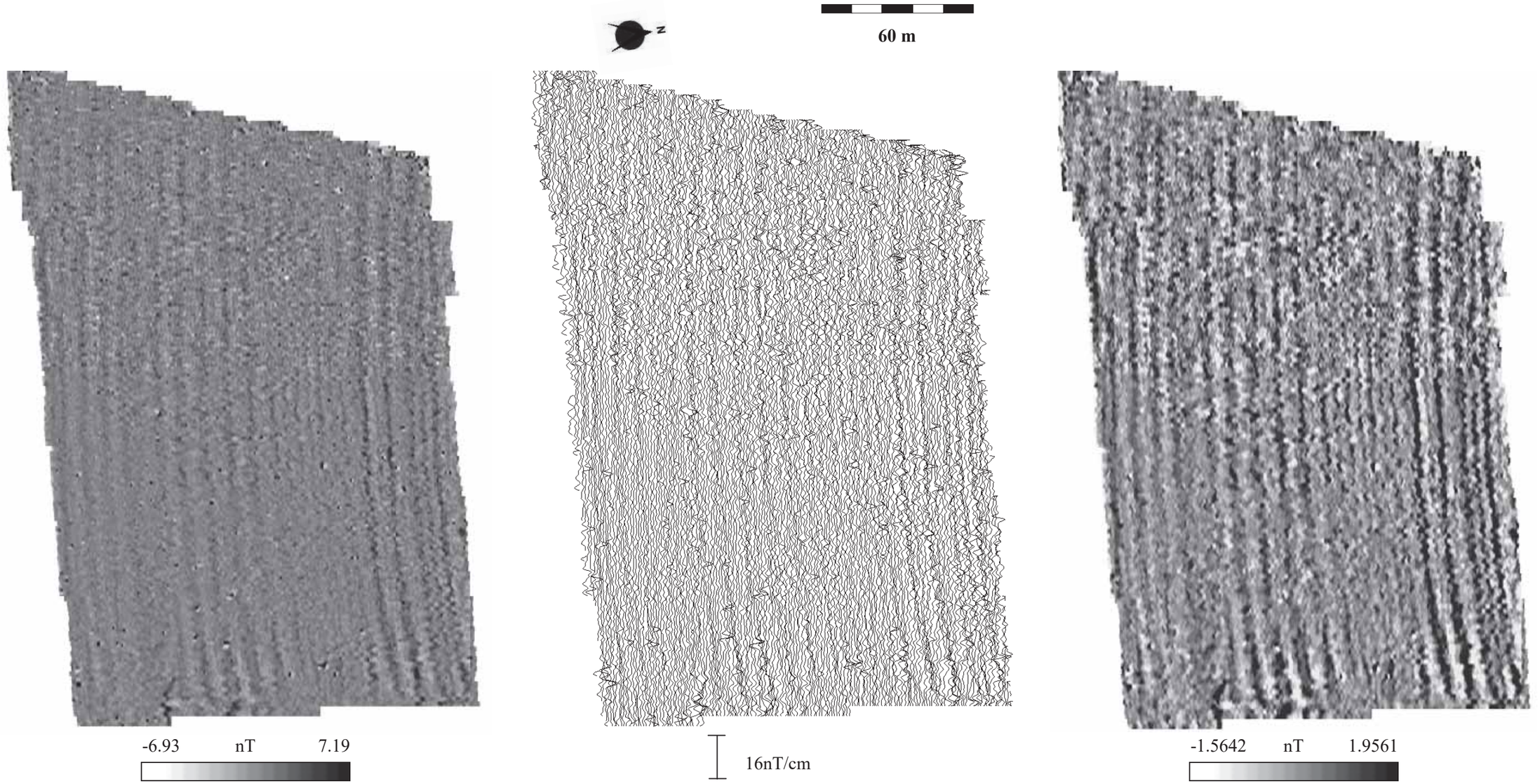

Figure 10: Field D - Grey scale and trace plots of raw and enhanced data

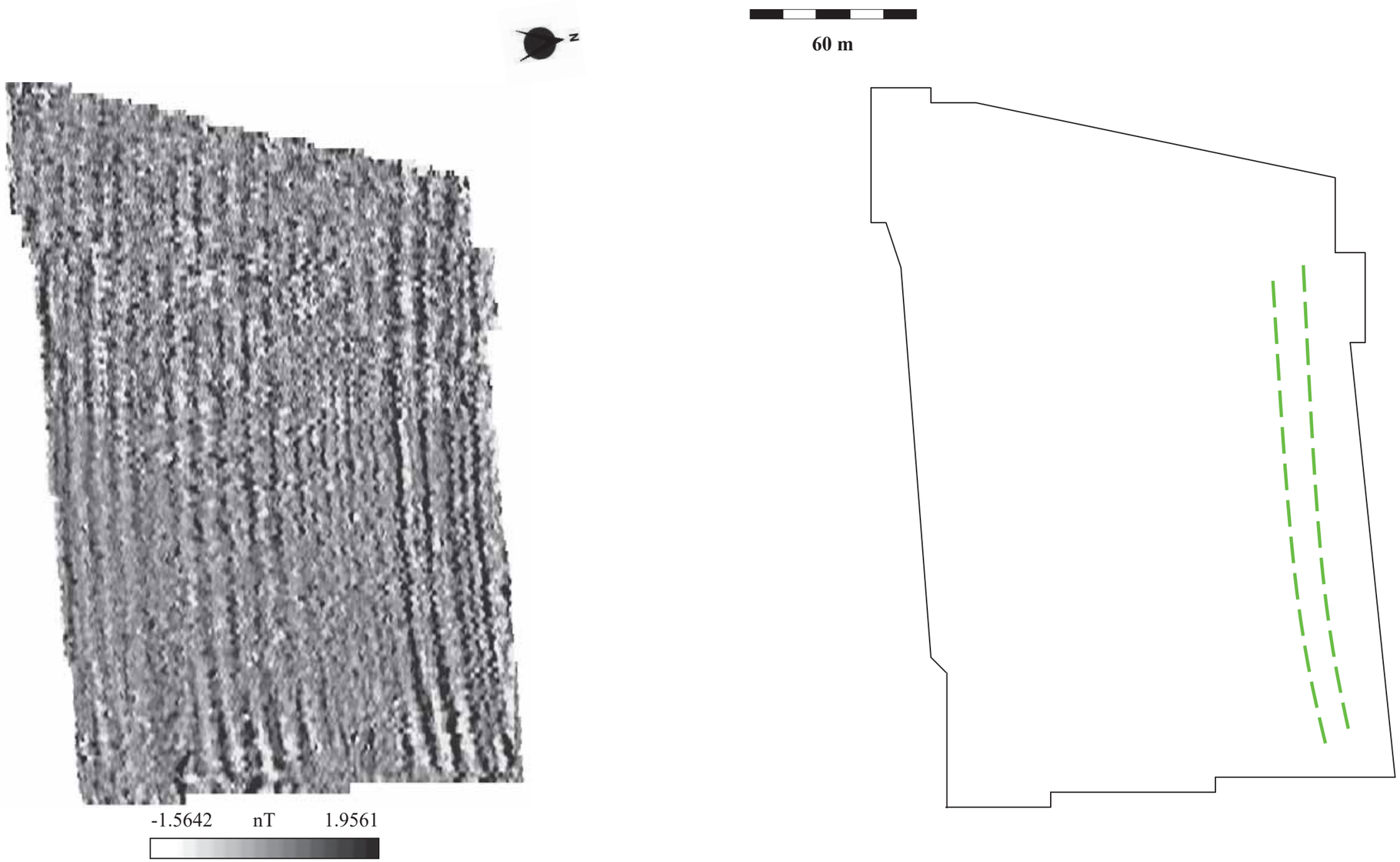

Figure 11: Field D - Enhanced data and interpretation

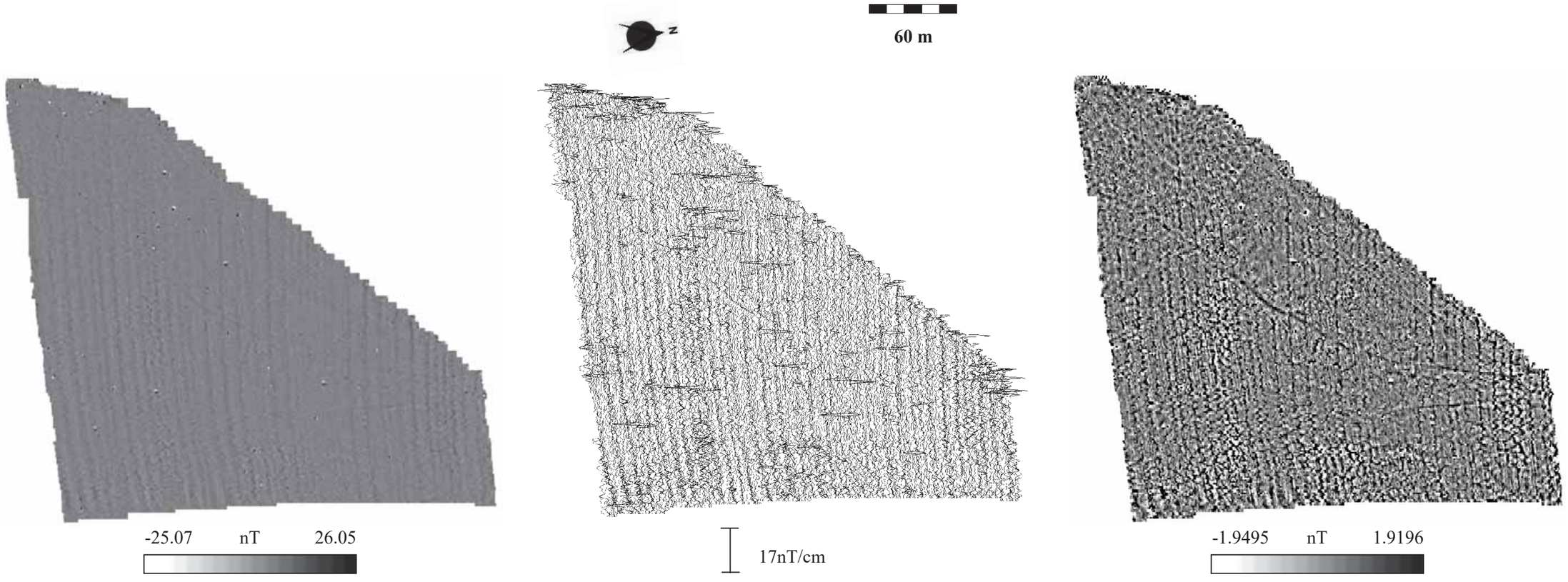

Figure 12: Field E - Grey scale and trace plots of raw and enhanced data

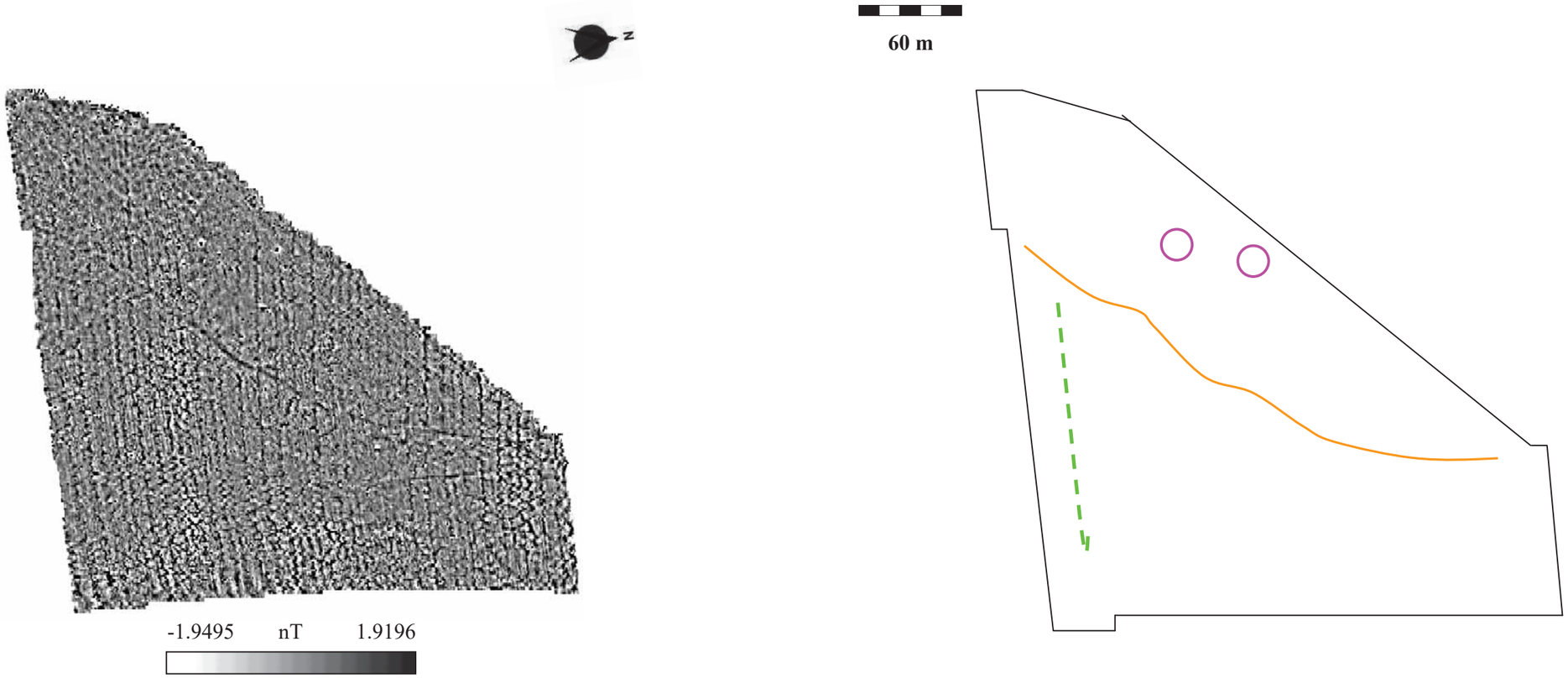

Figure 13: Field E - Enhanced data and interpretation

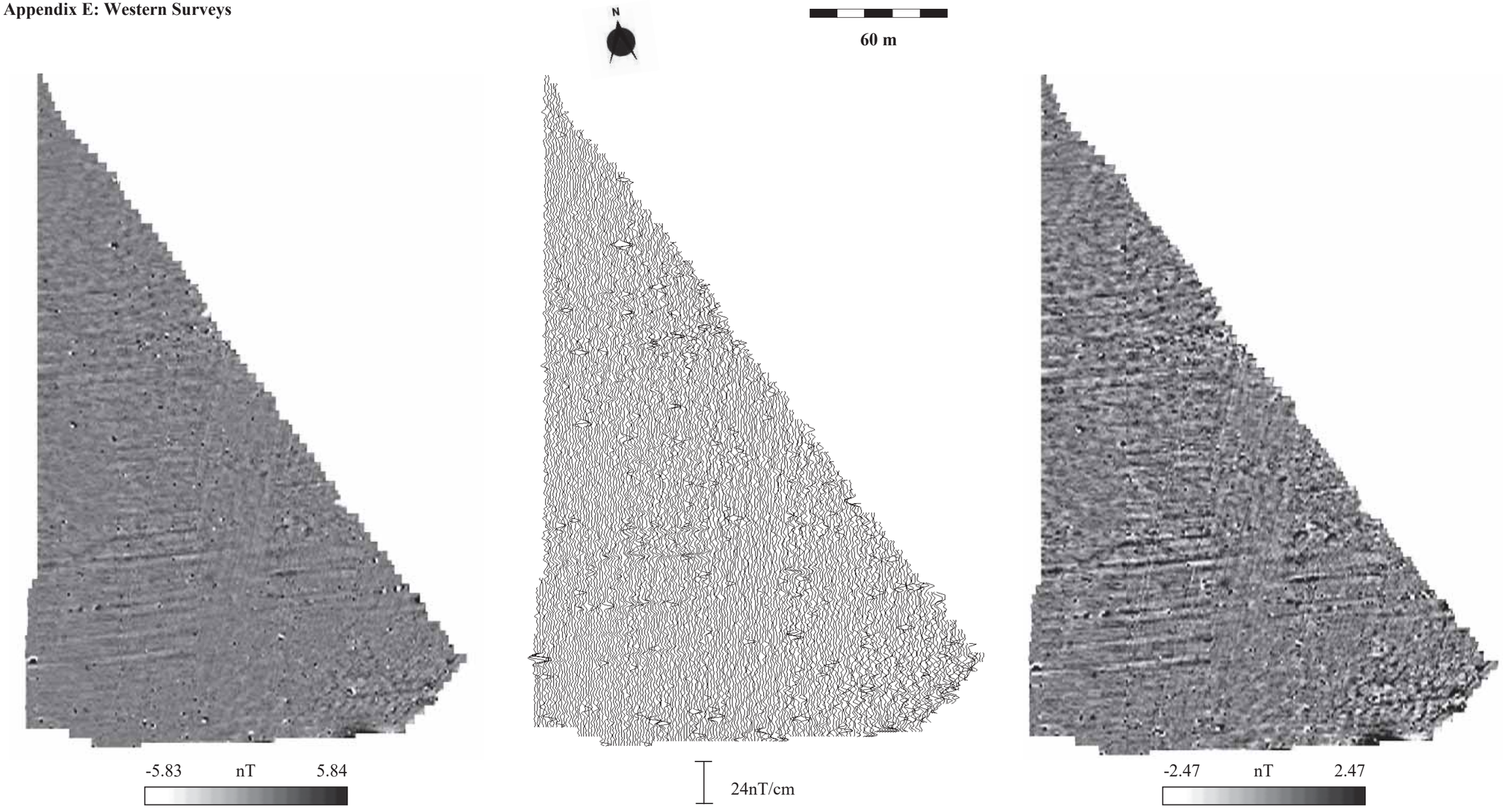

Figure 14: Field F - Grey scale and trace plots of raw and enhanced data

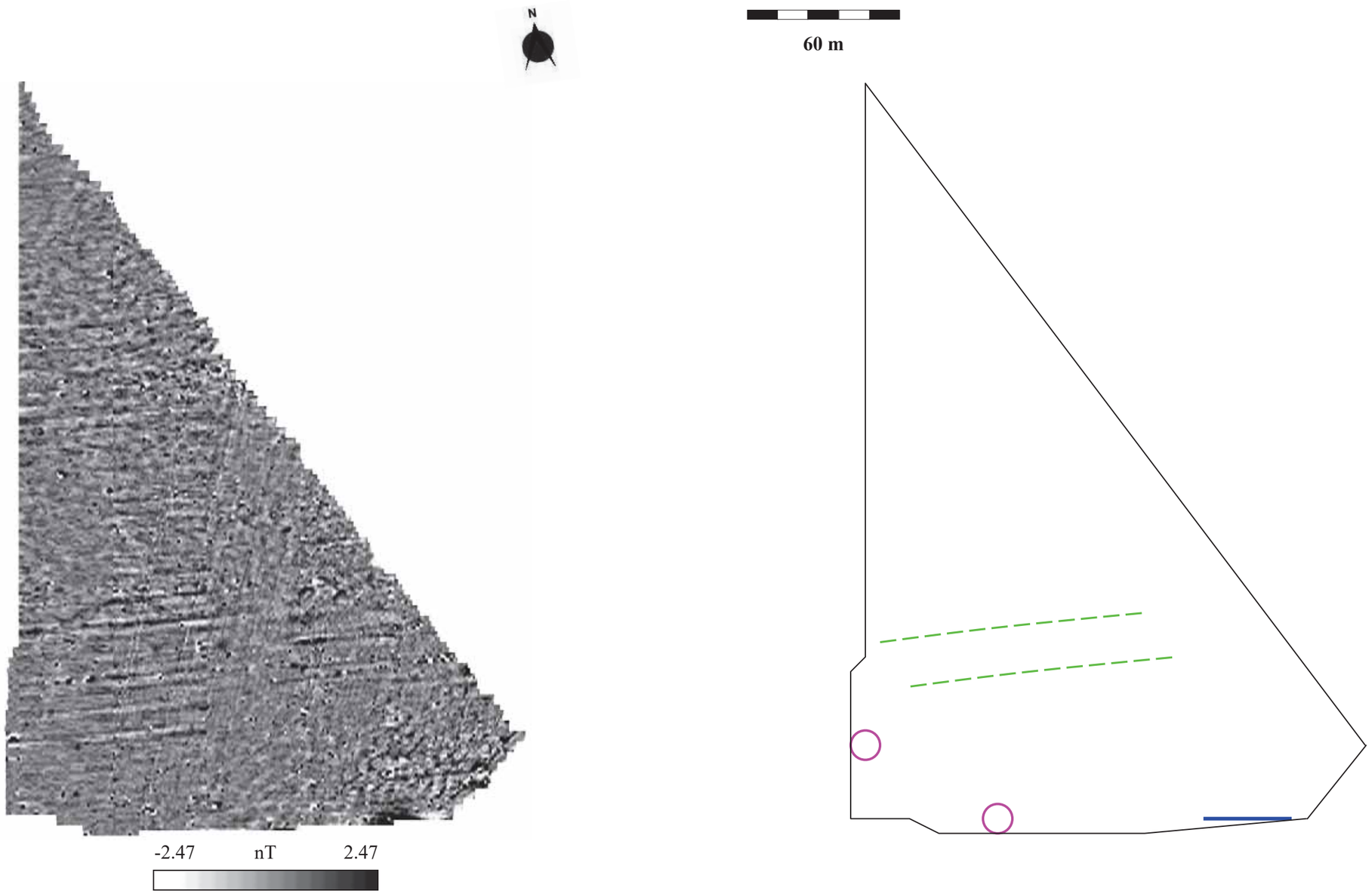

Figure 15: Field F - Enhanced data and interpretation

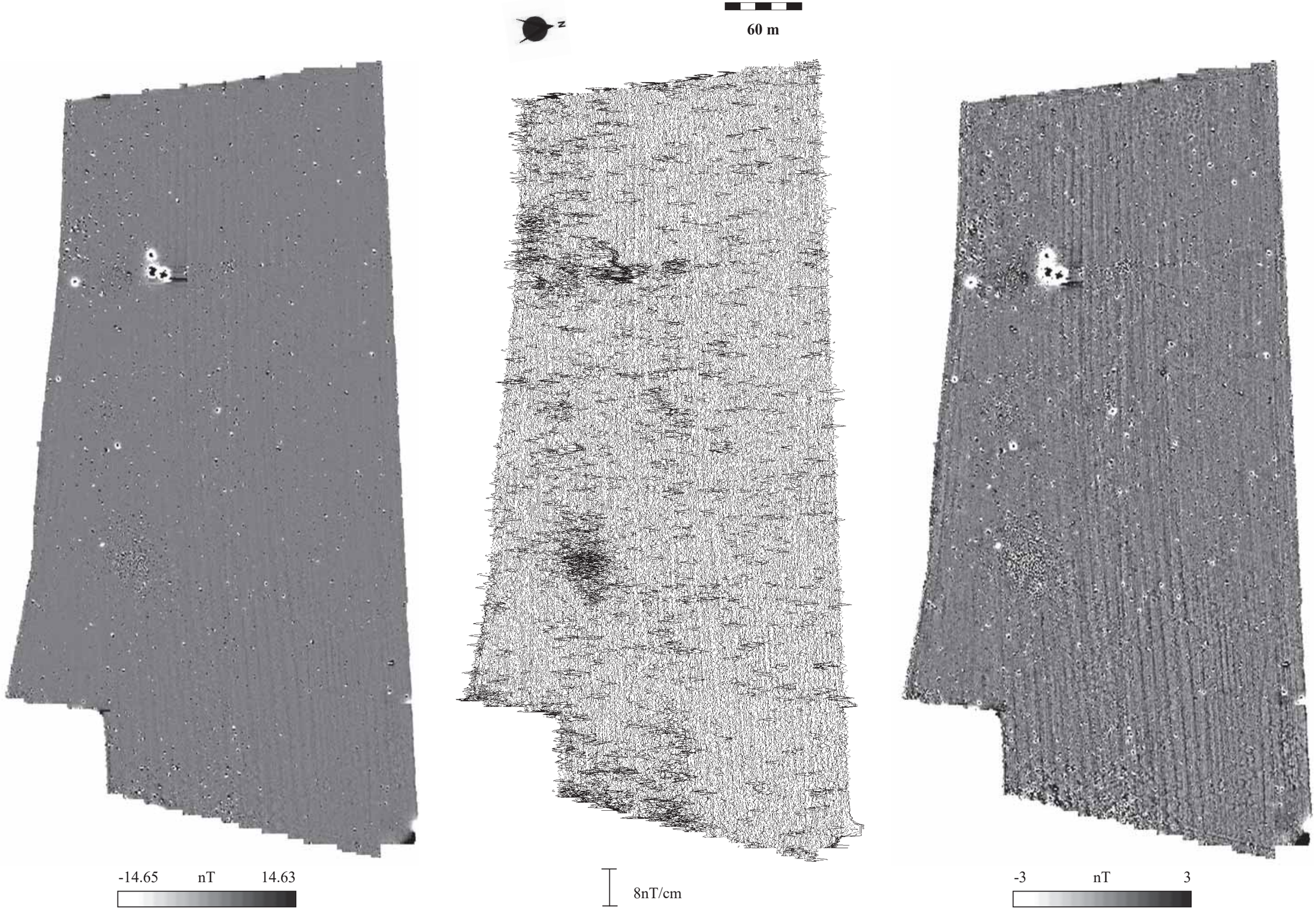

Figure 16: Field G - Grey scale and trace plots of raw and enhanced data

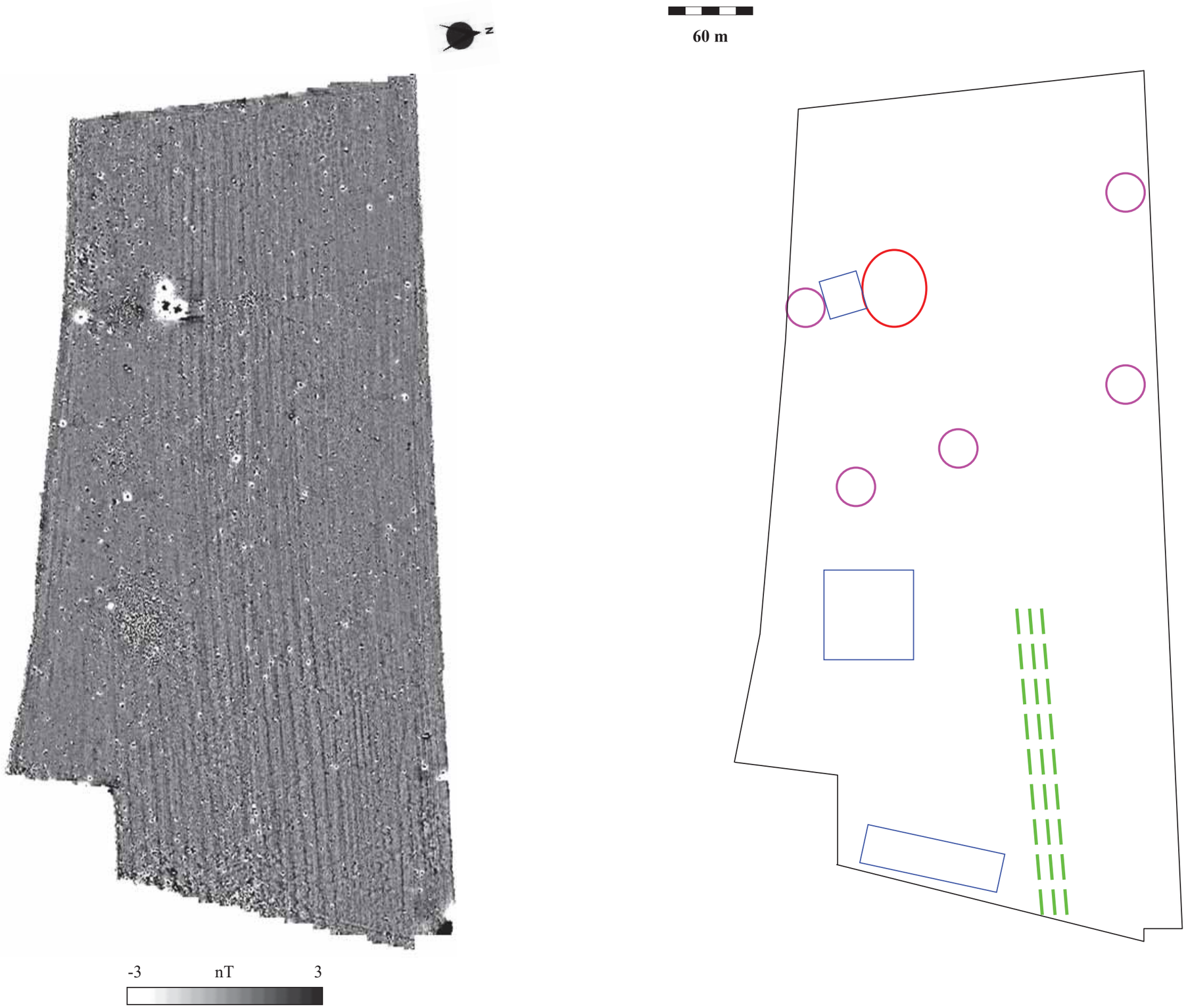

Figure 17: Field G - Enhanced data and interpretation

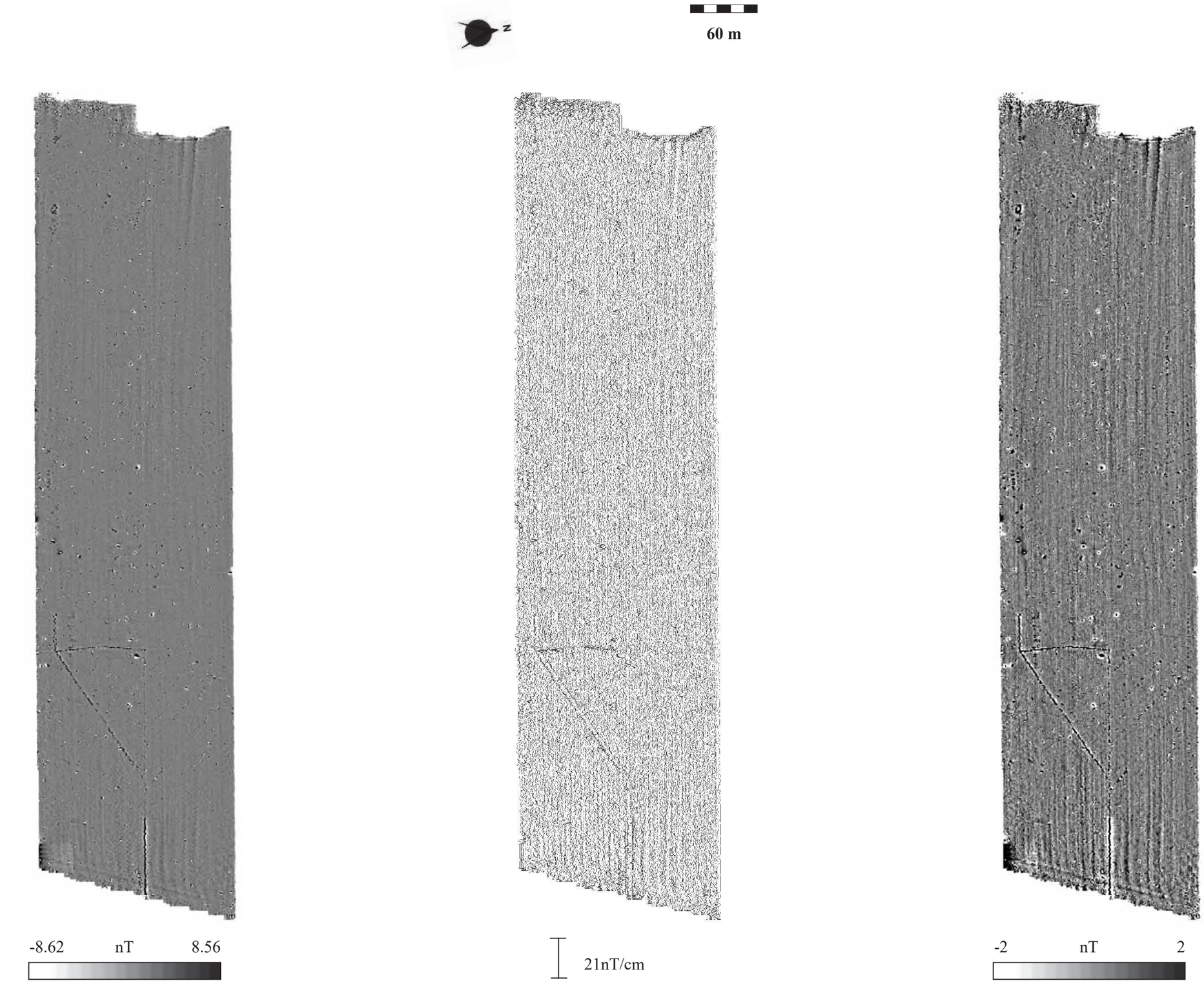

Figure 18: Field H - Grey scale and trace plots of raw and enhanced data

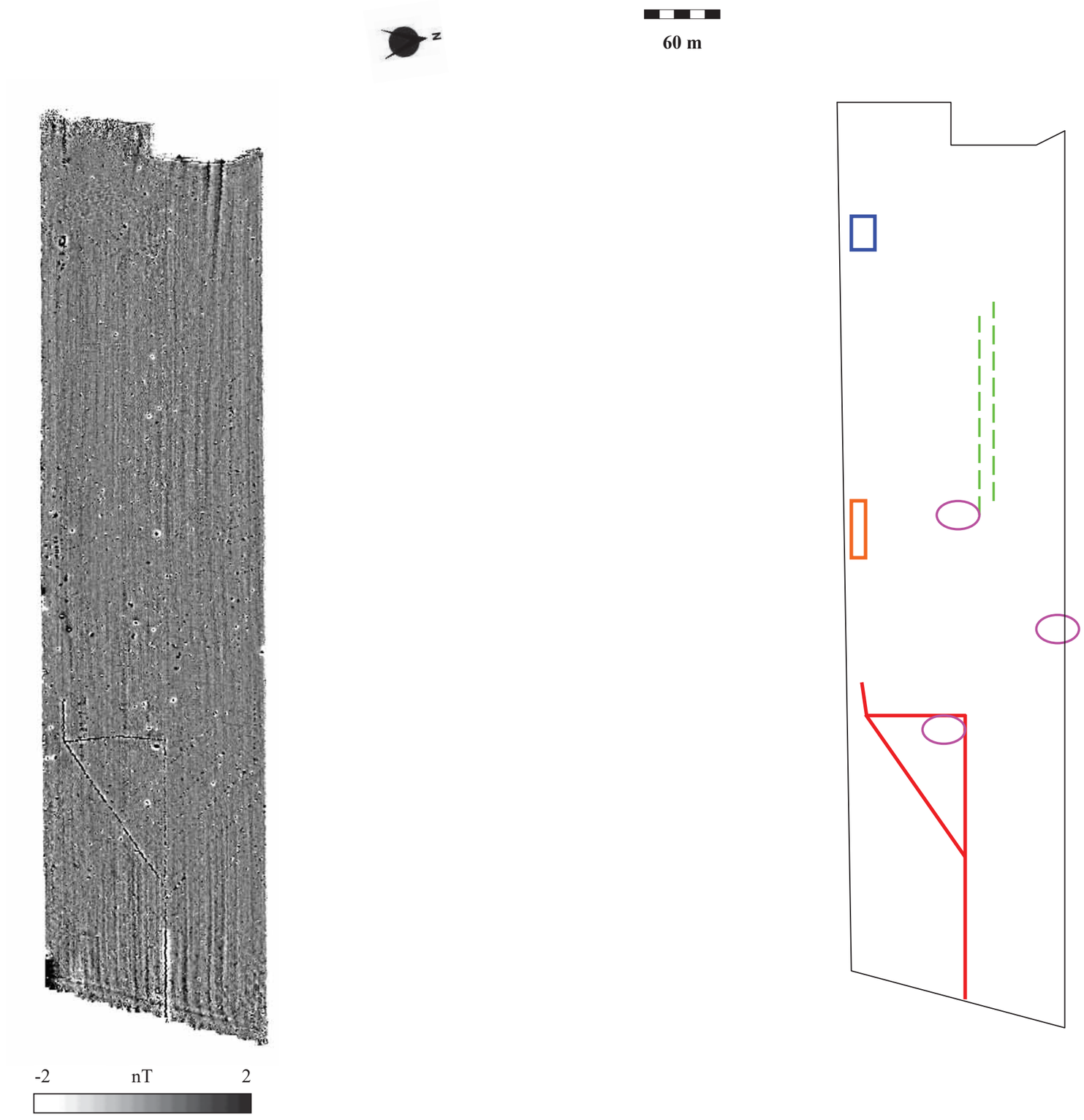

Figure 19: Field H - Enhanced data and interpretation

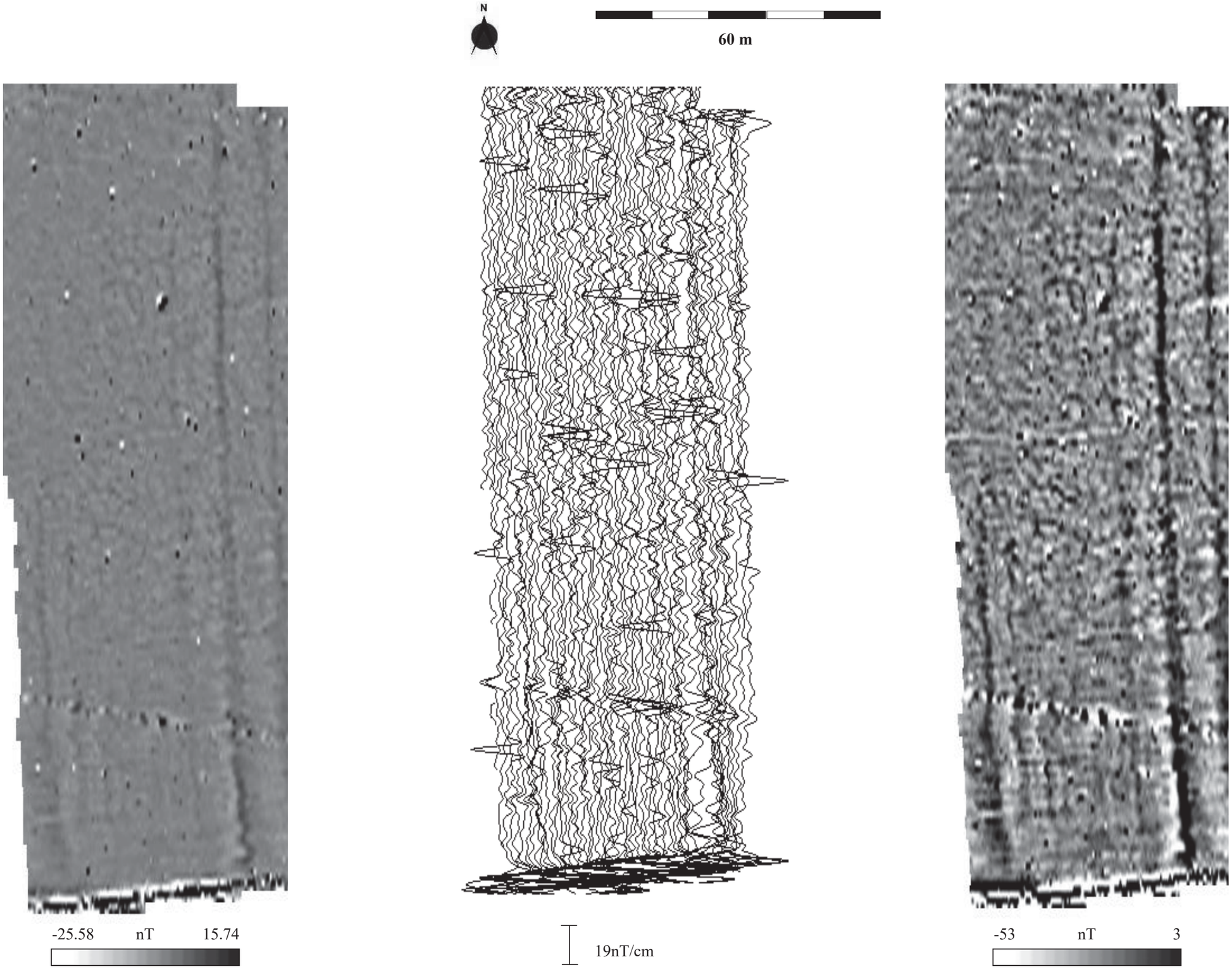

Figure 20: Field I - Grey scale and trace plots of raw and enhanced data

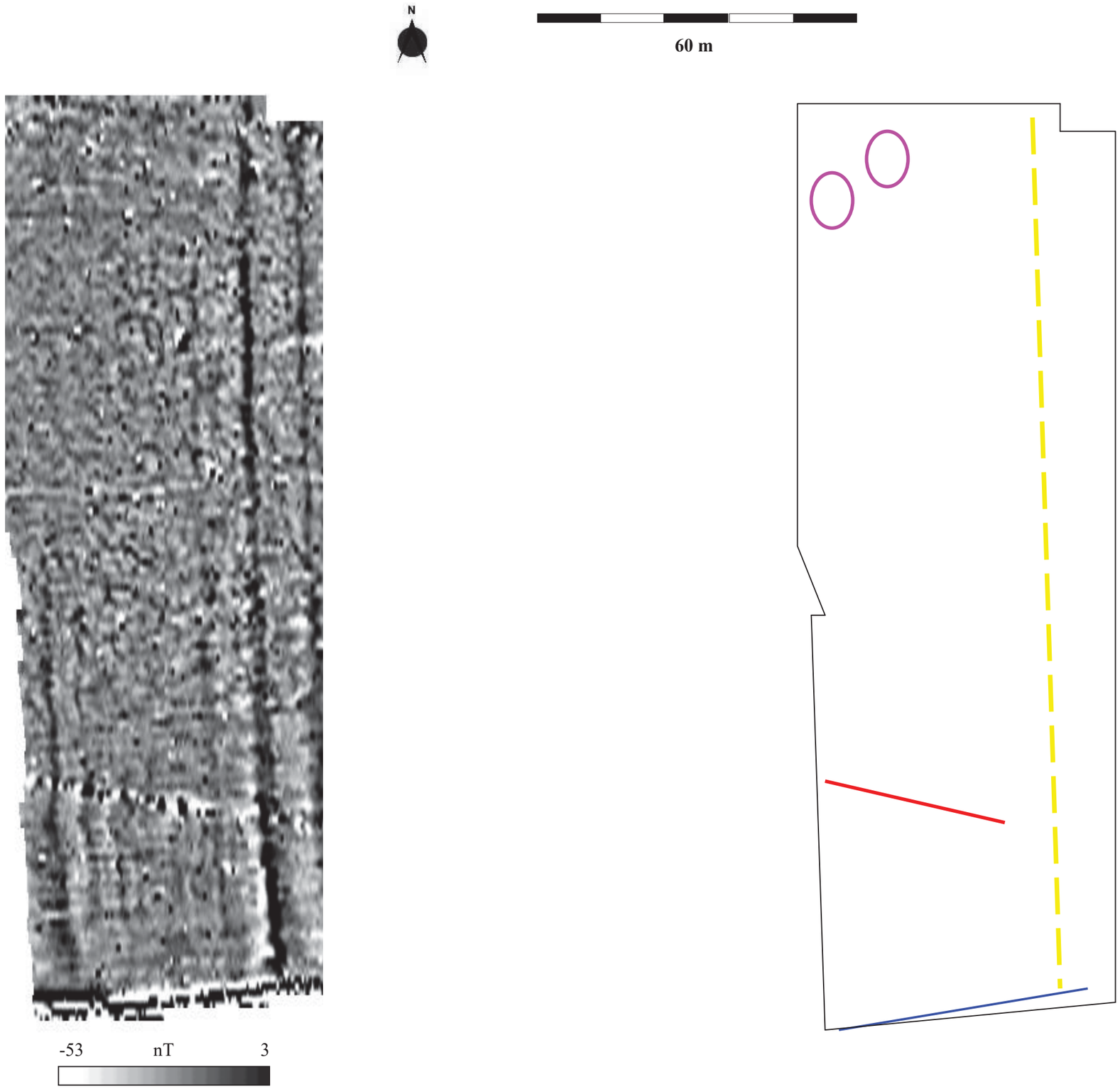

Figure 21: Field I - Enhanced data and interpretation

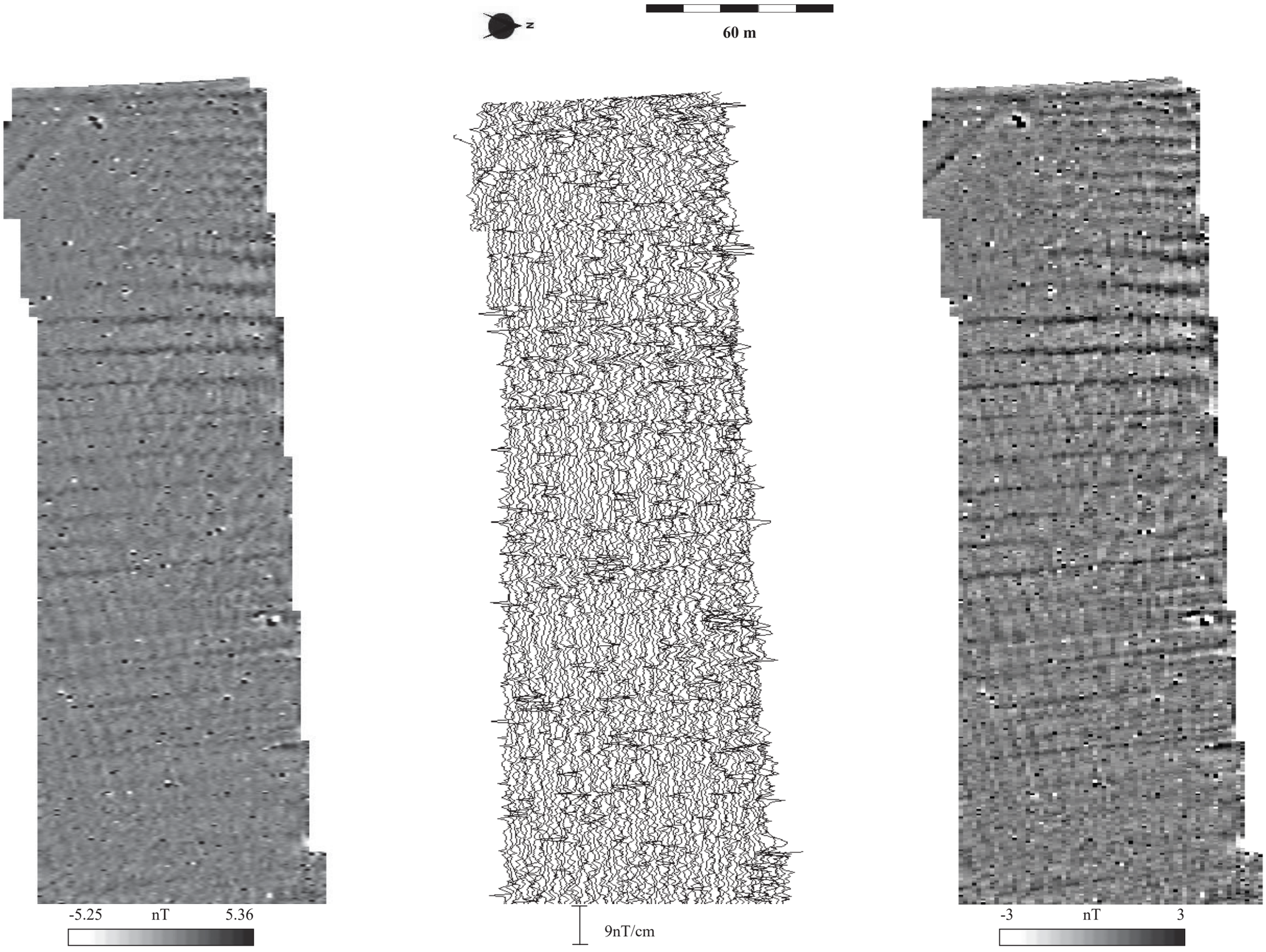

Figure 22: Field J - Grey scale and trace plots of raw and enhanced data

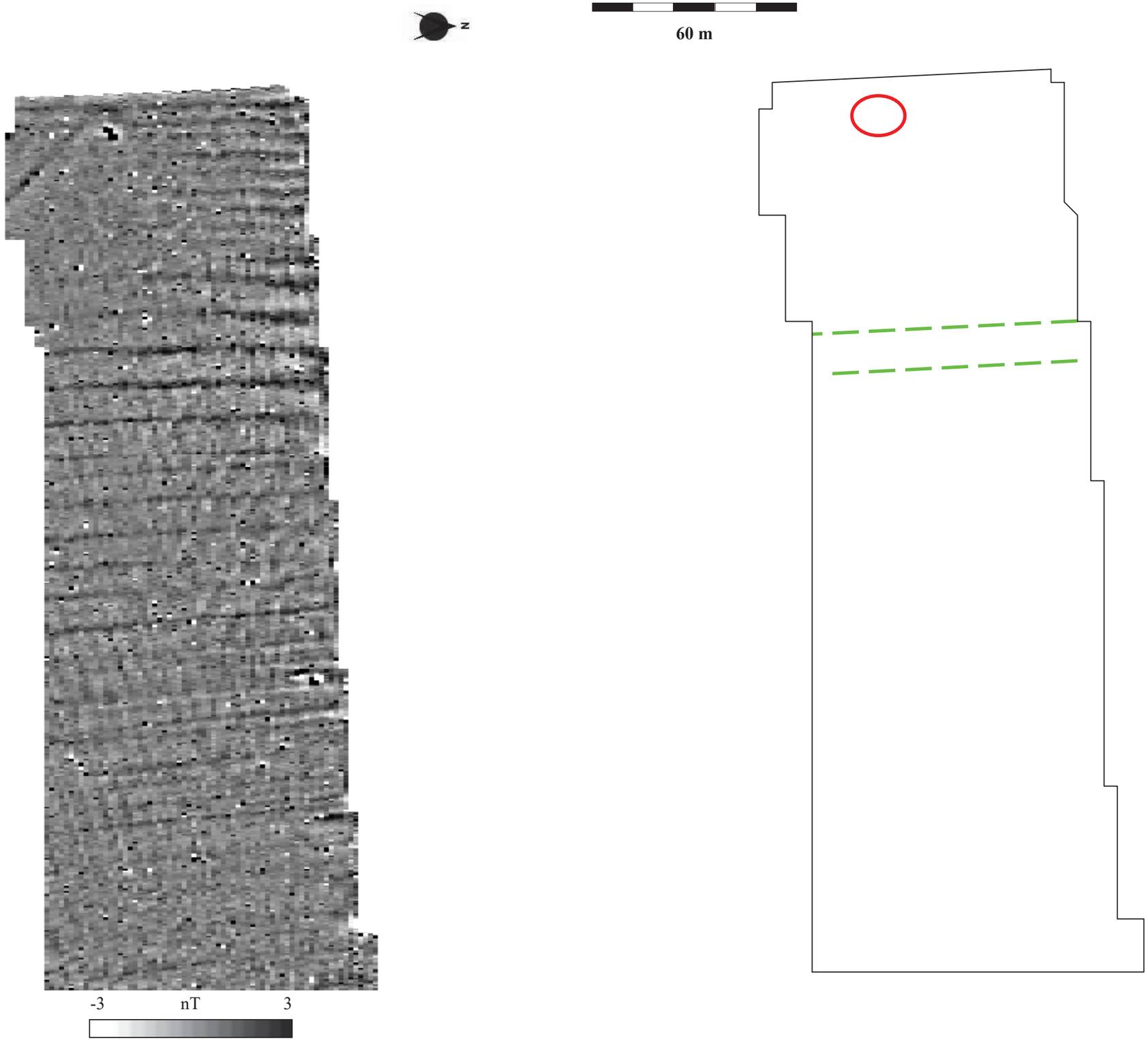

Figure 23: Field J - Enhanced data and interpretation

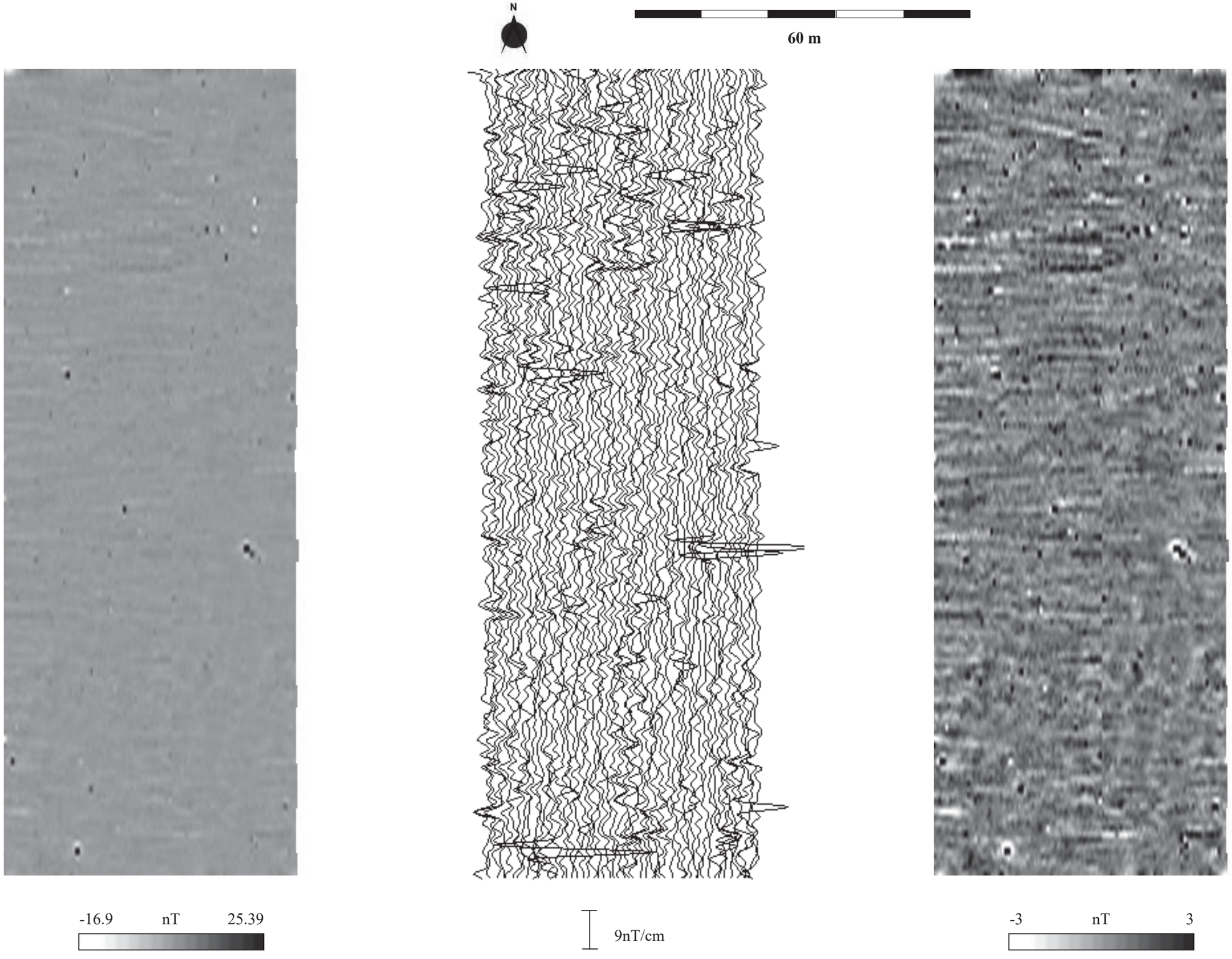

Figure 24: Field K - Grey scale and trace plots of raw and enhanced data

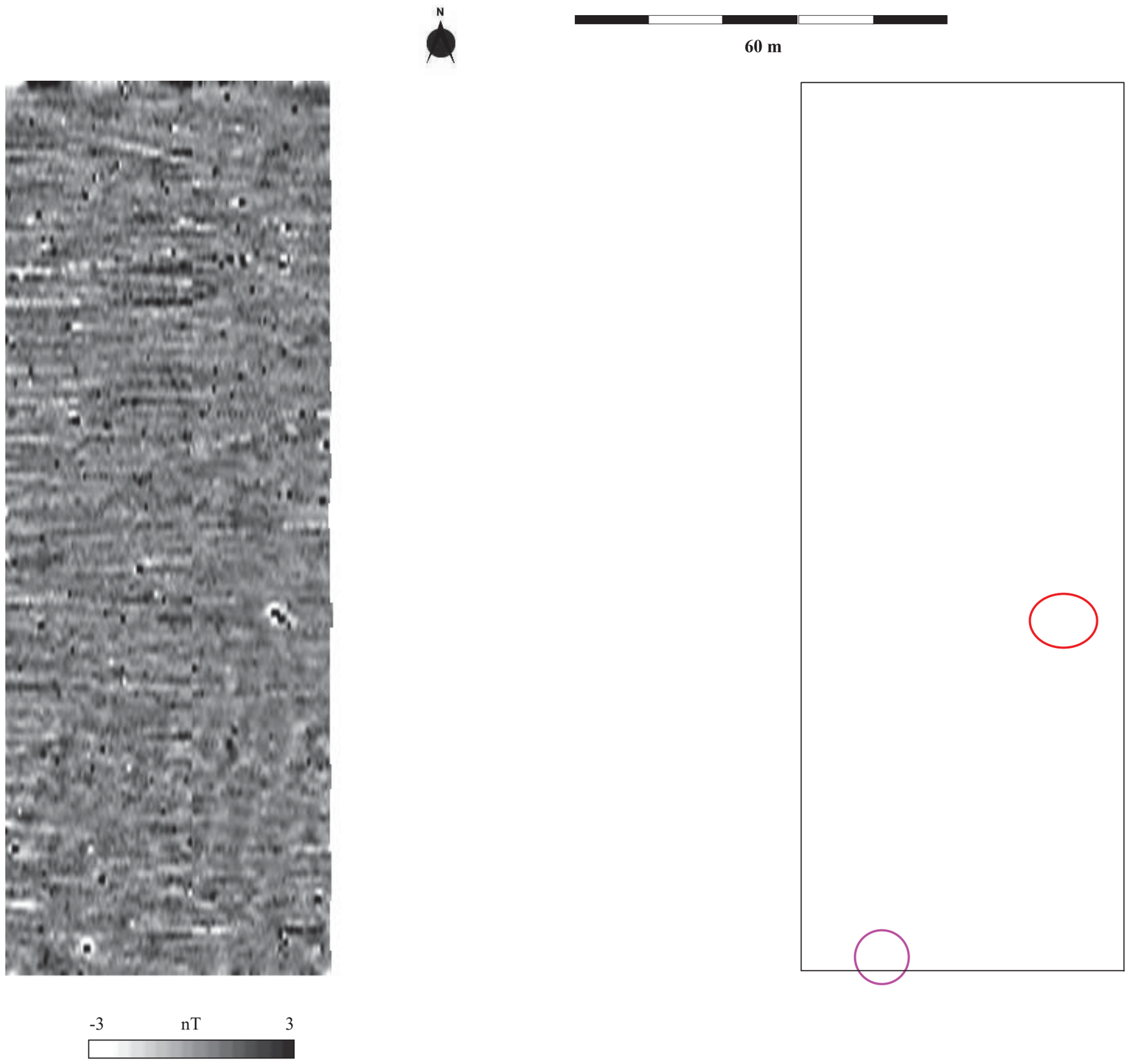

Figure 25: Field K - Enhanced data and interpretation

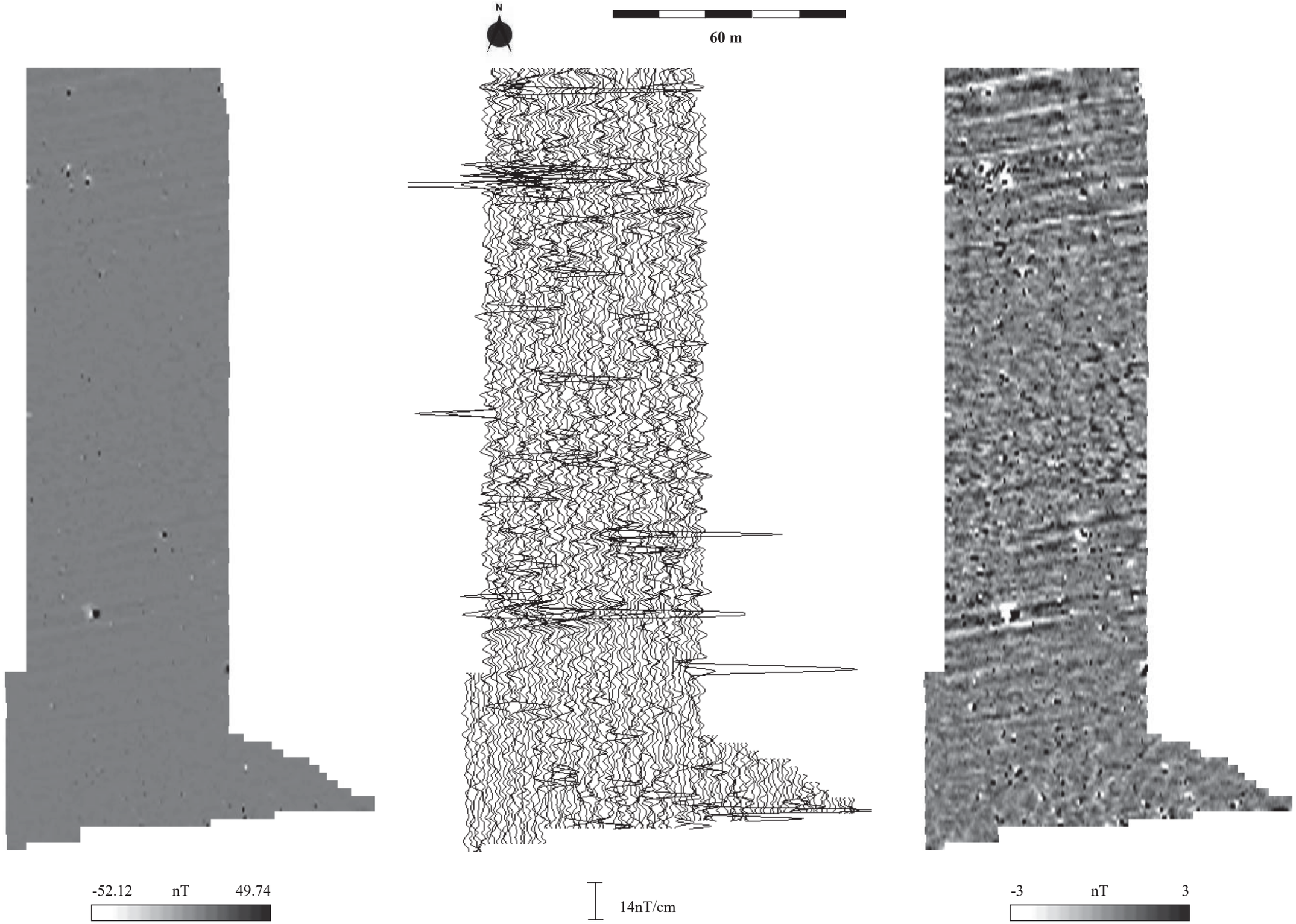

Figure 26: Field L - Grey scale and trace plots of raw and enhanced data

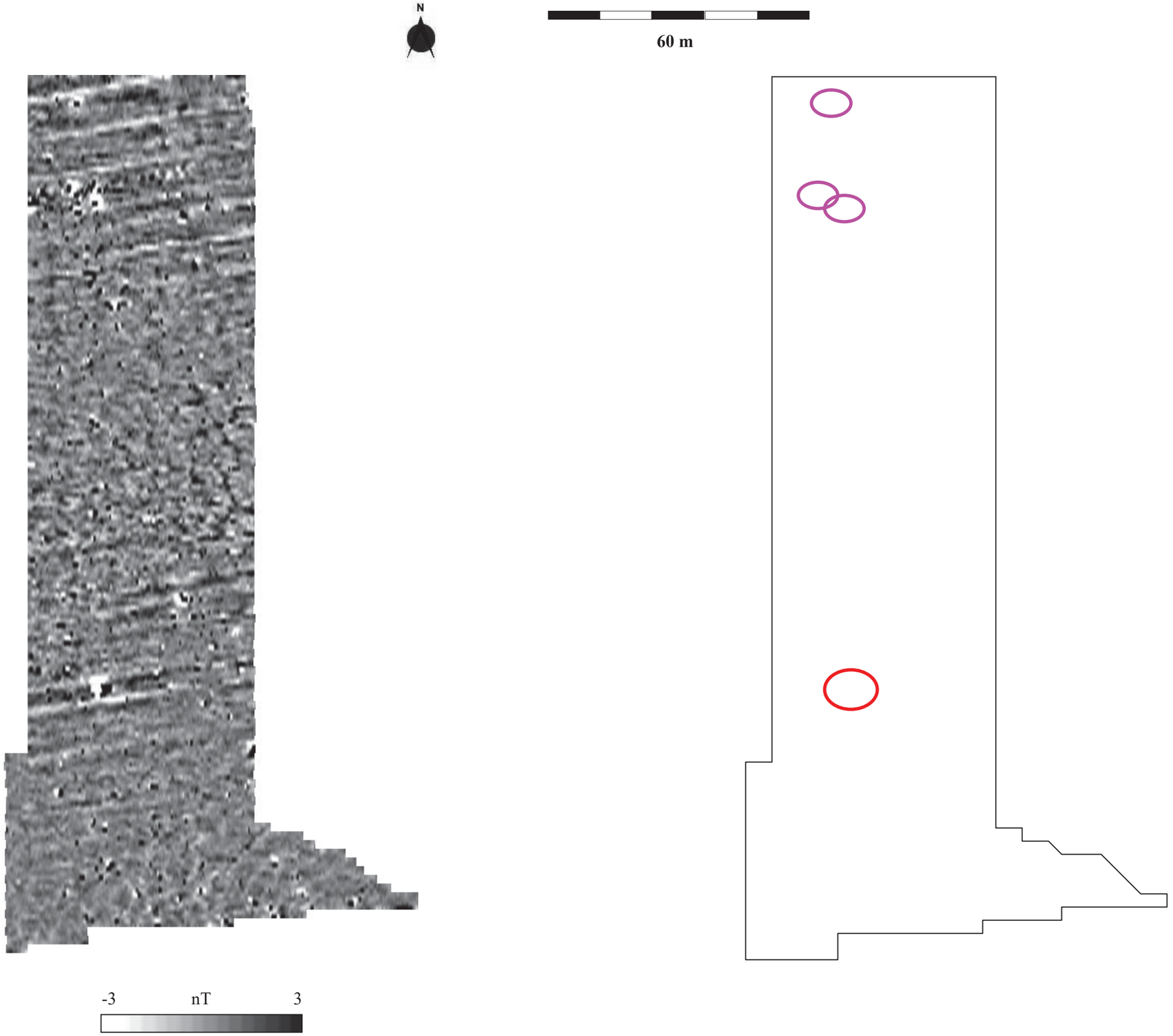

Figure 27: Field L - Enhanced data and interpretation

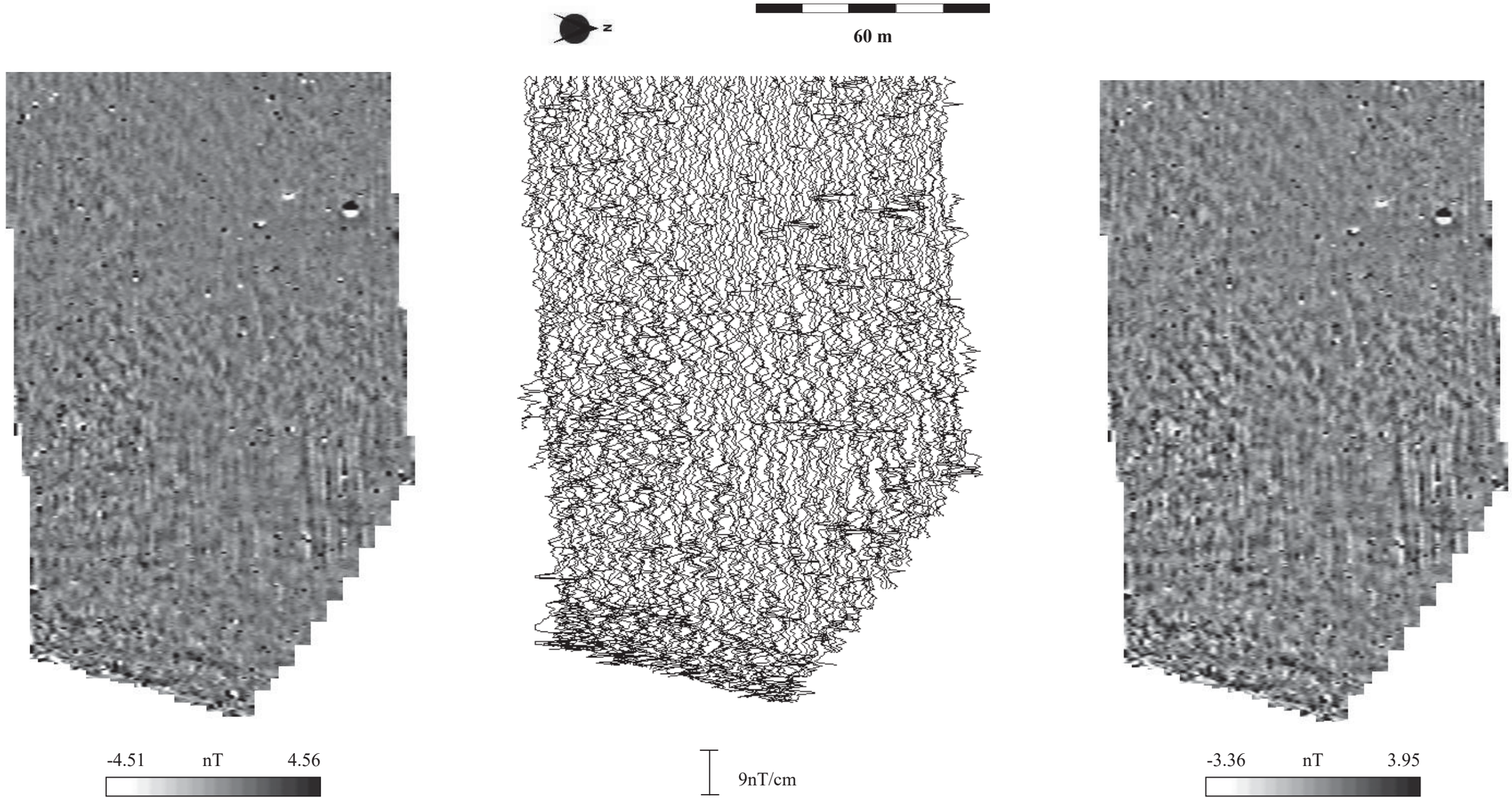

Figure 28: Field M - Grey scale and trace plots of raw and enhanced data

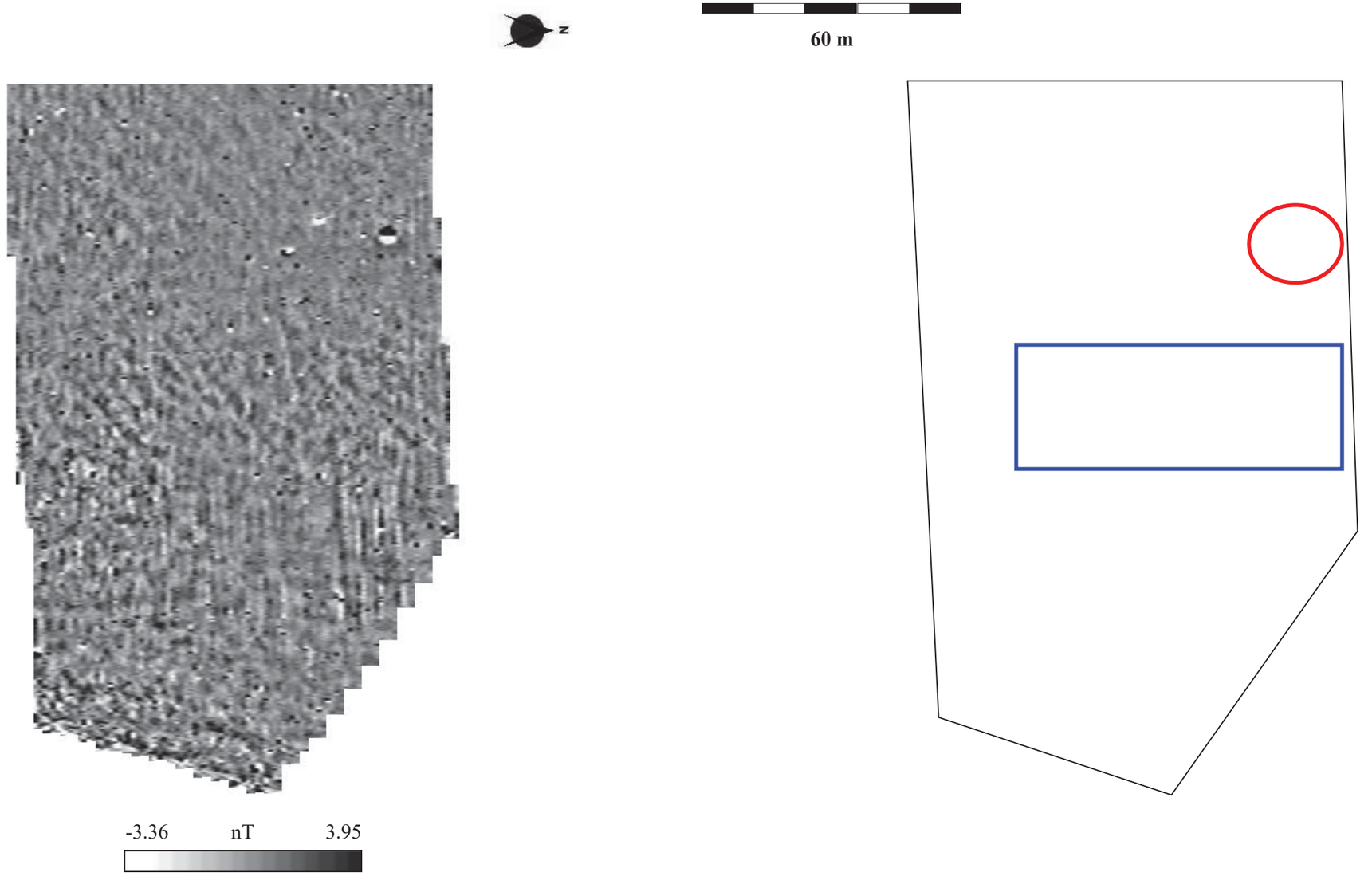

Figure 29: Field M - Enhanced data and interpretation

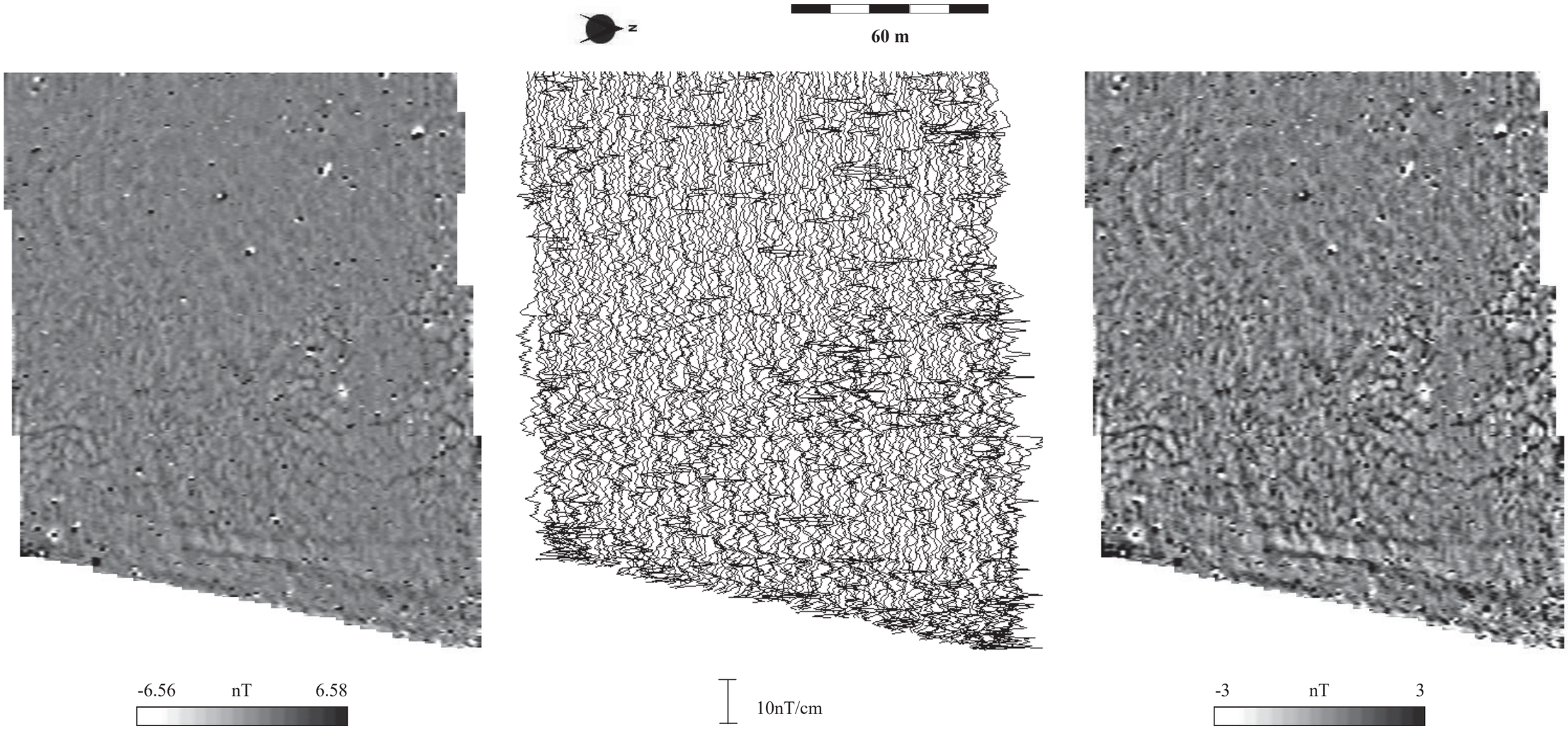

Figure 30: Field N - Grey scale and trace plots of raw and enhanced data

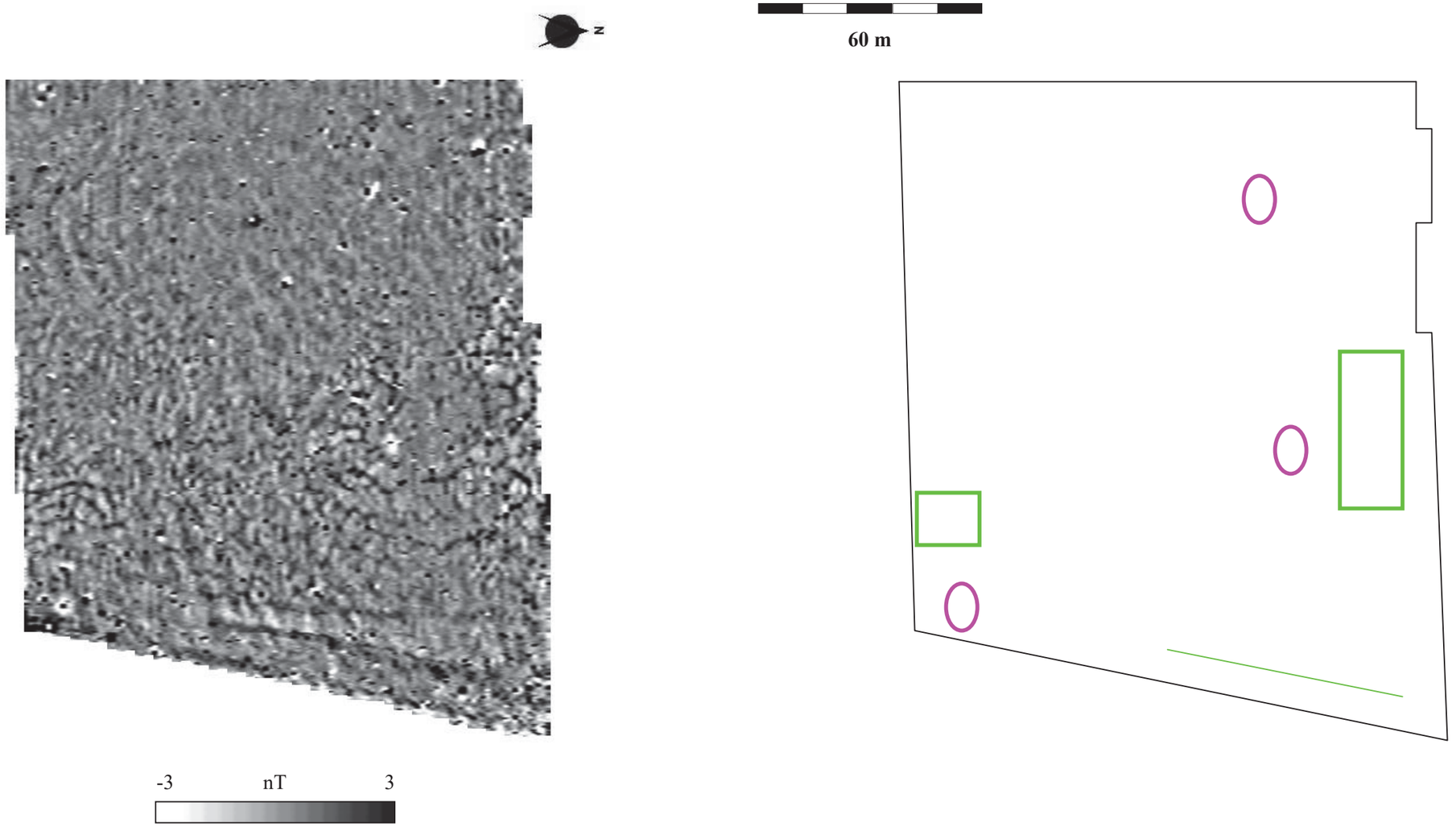

Figure 31: Field N - Enhanced data and interpretation

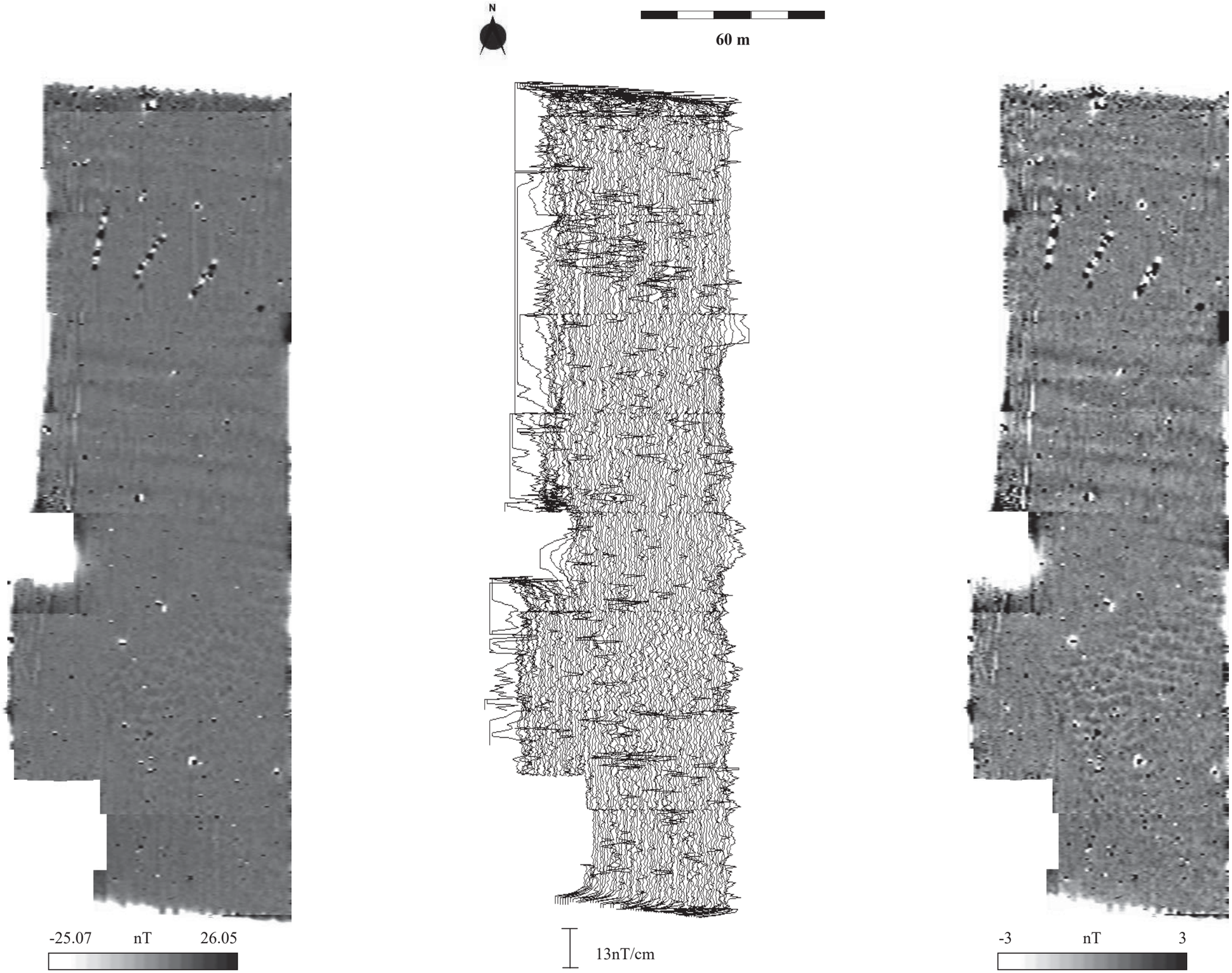

Figure 32: Field O - Grey scale and trace plots of raw and enhanced data

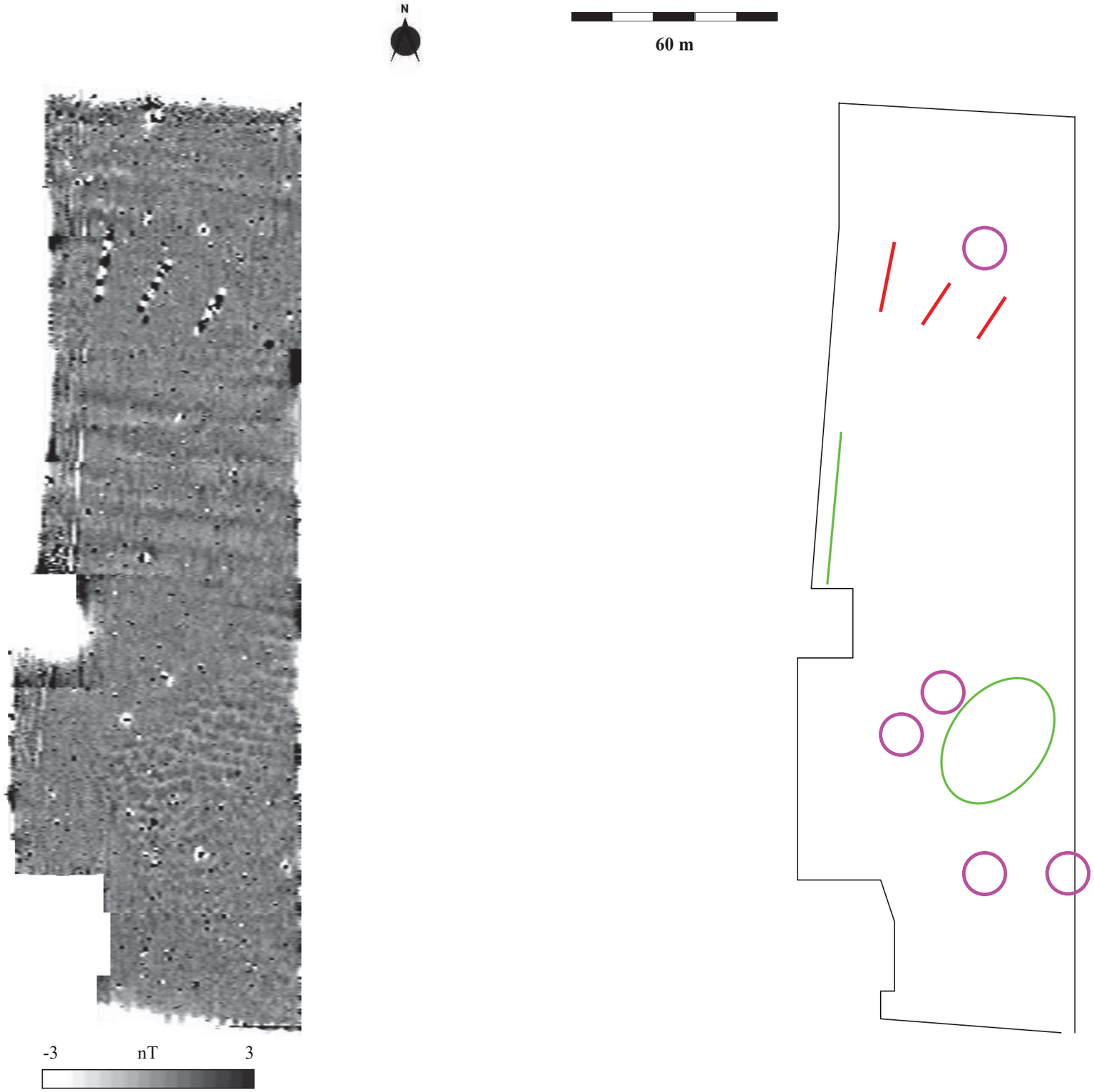

Figure 33: Field O - Enhanced data and interpretation

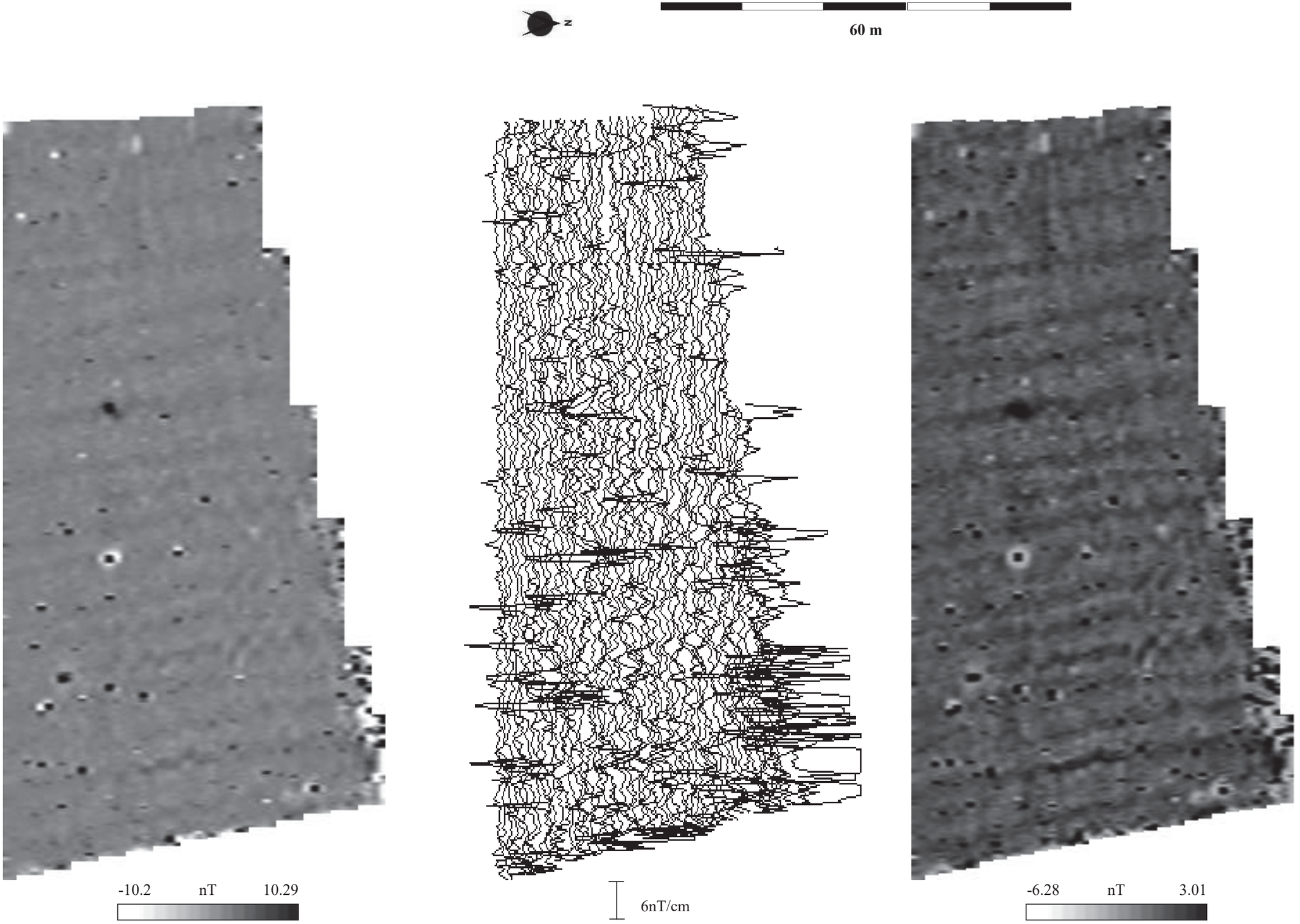

Figure 34: Field P - Grey scale and trace plots of raw and enhanced data

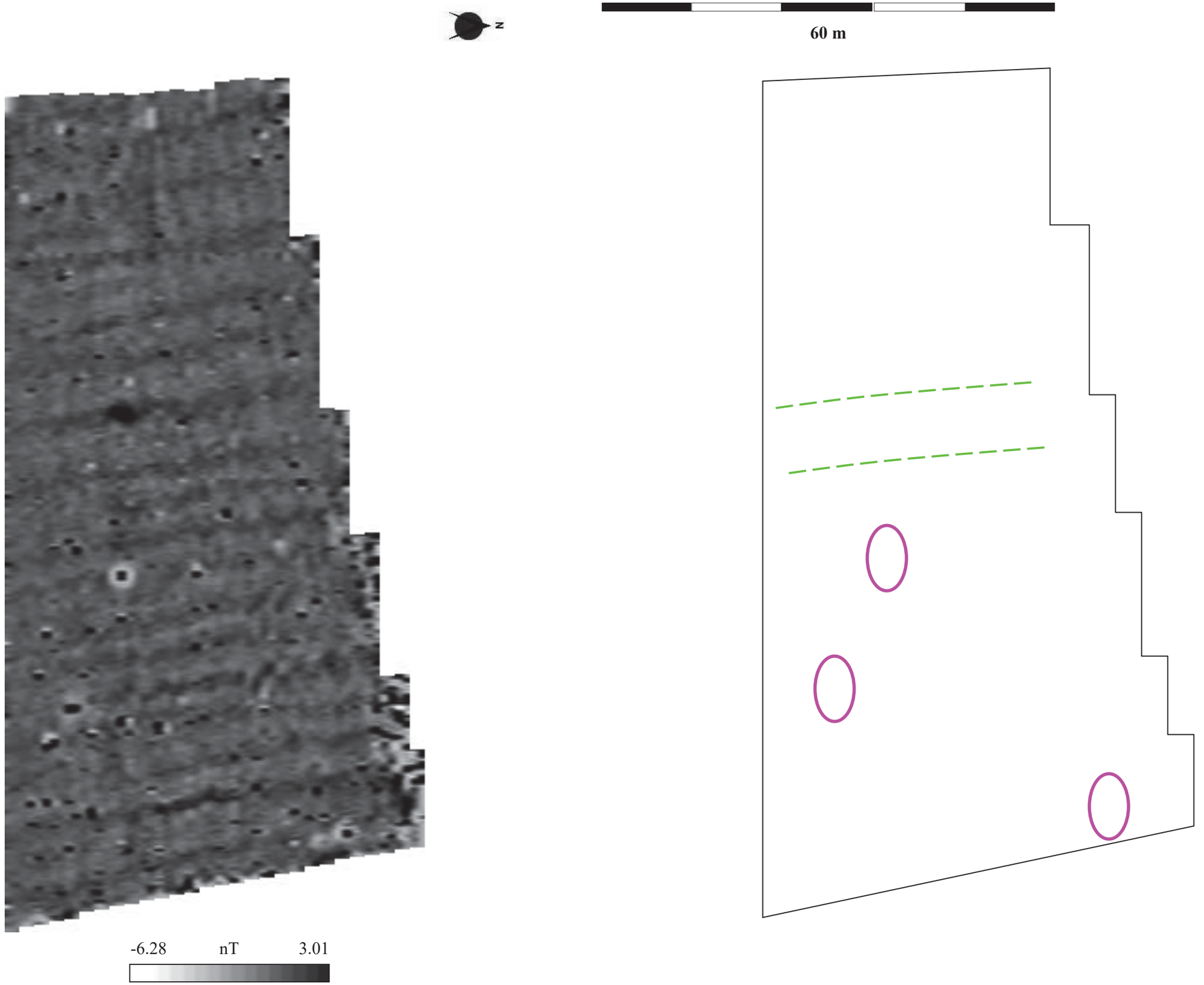

Figure 35: Field P - Enhanced data and interpretation

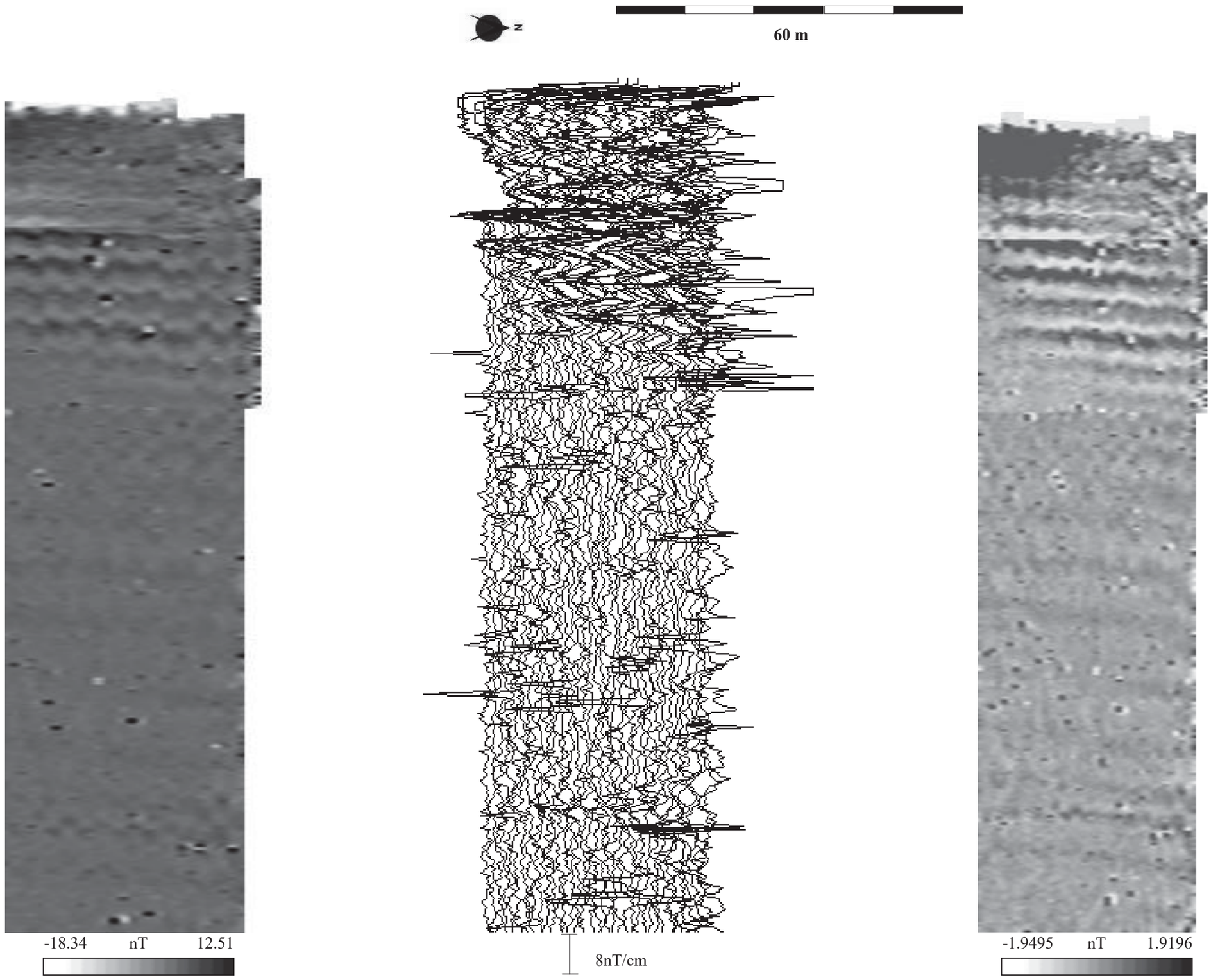

Figure 36: Field Q- Grey scale and trace plots of raw and enhanced data

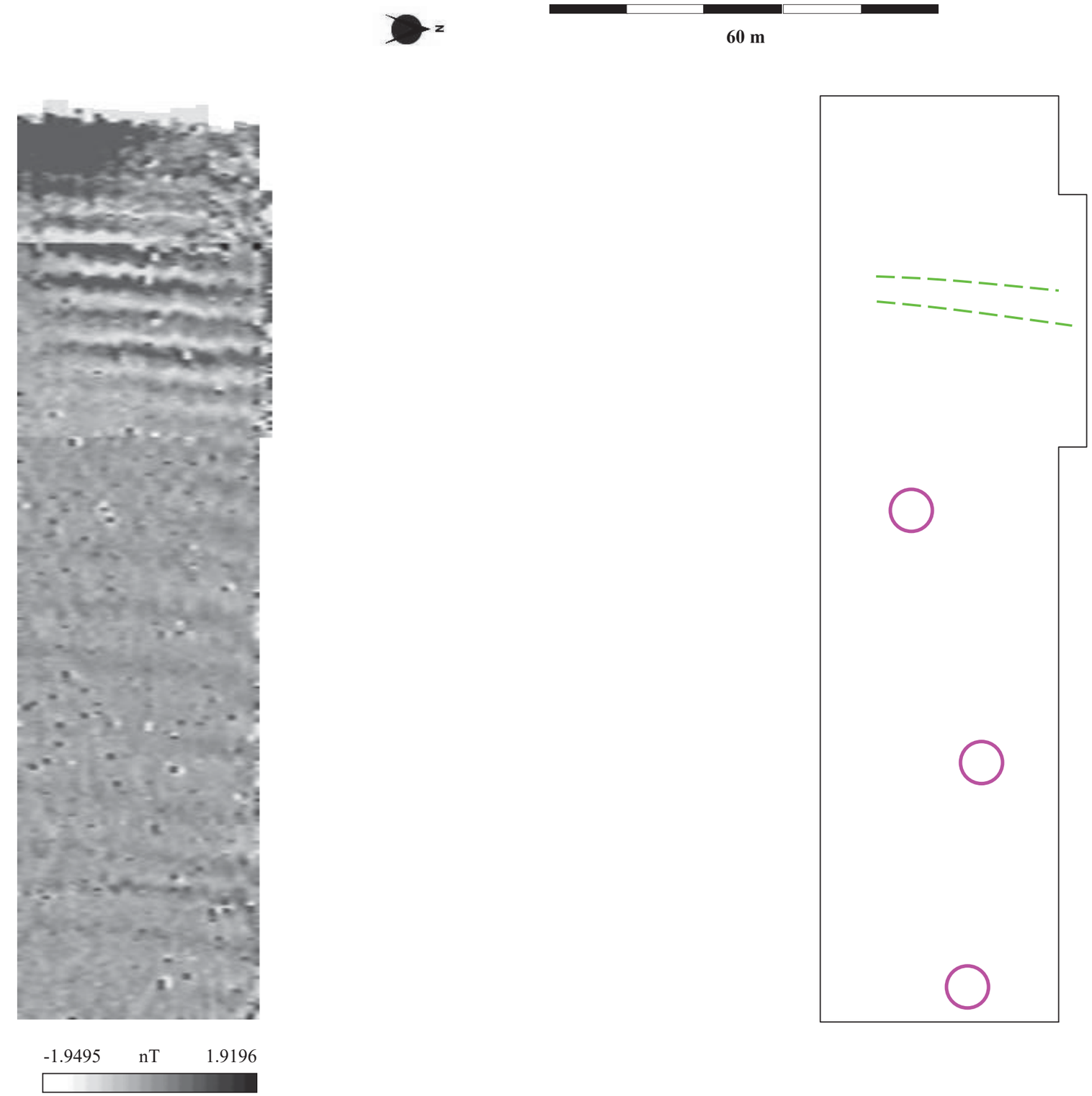

Figure 37: Field Q - Enhanced data and interpretation

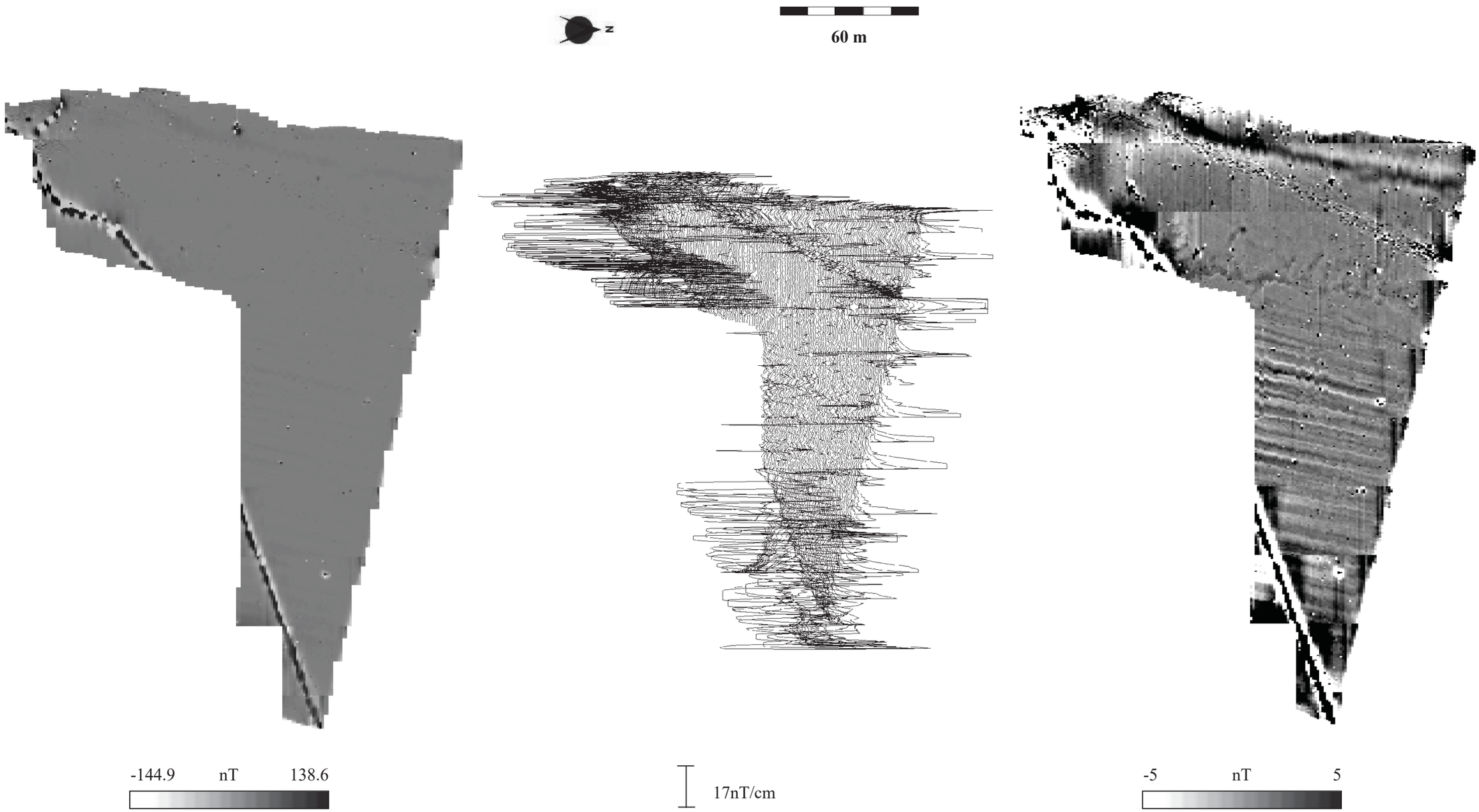

Figure 38: Field R - Grey scale and trace plots of raw and enhanced data

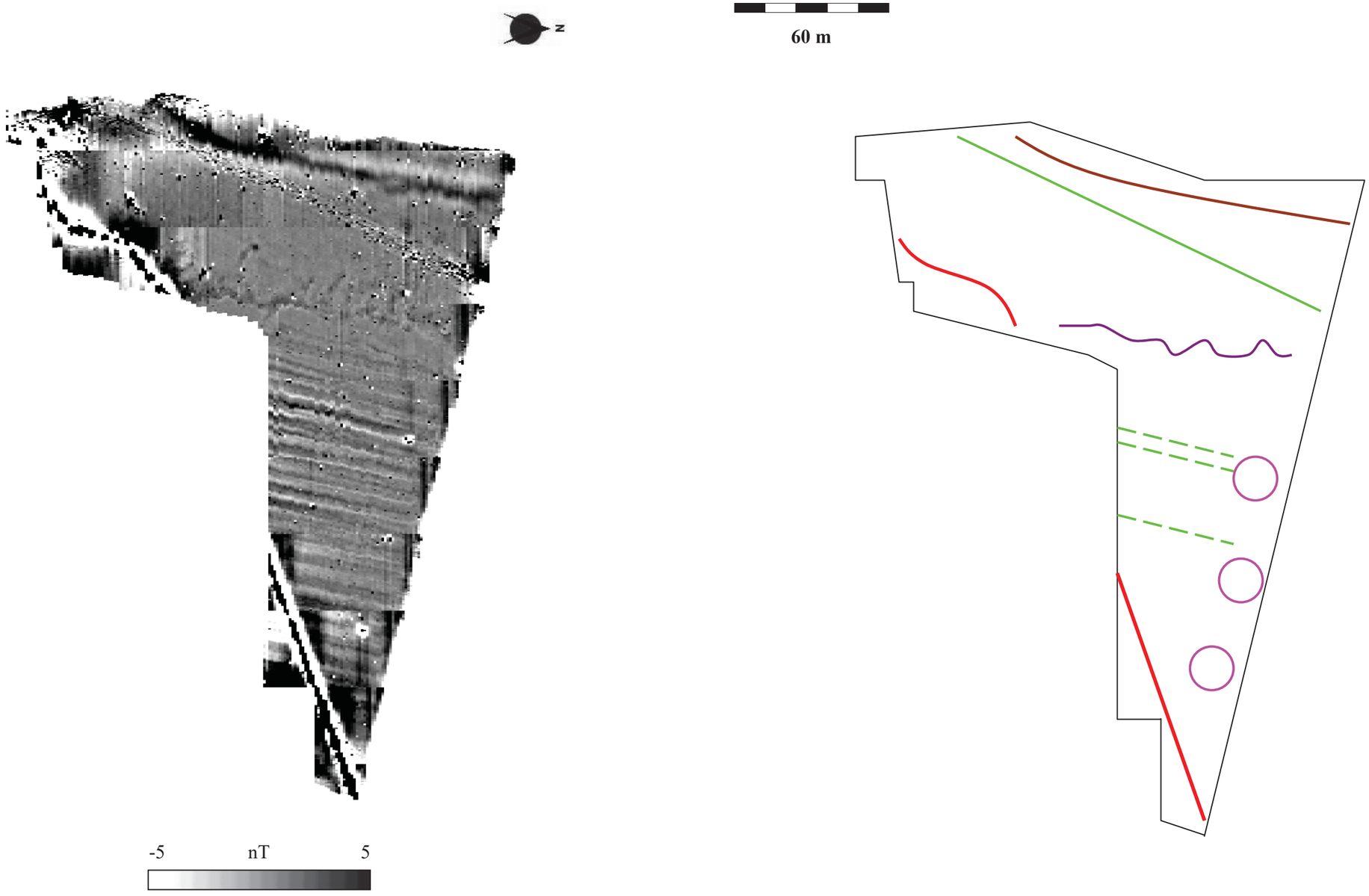

Figure 39: Field R - Enhanced data and interpretation

Figure 1: Site location map, showing reservoir and water treatment works (orange) and pipeline route, pumping station and compound area (blue) with field walking areas (grey A-G), contour survey and trenches (red)

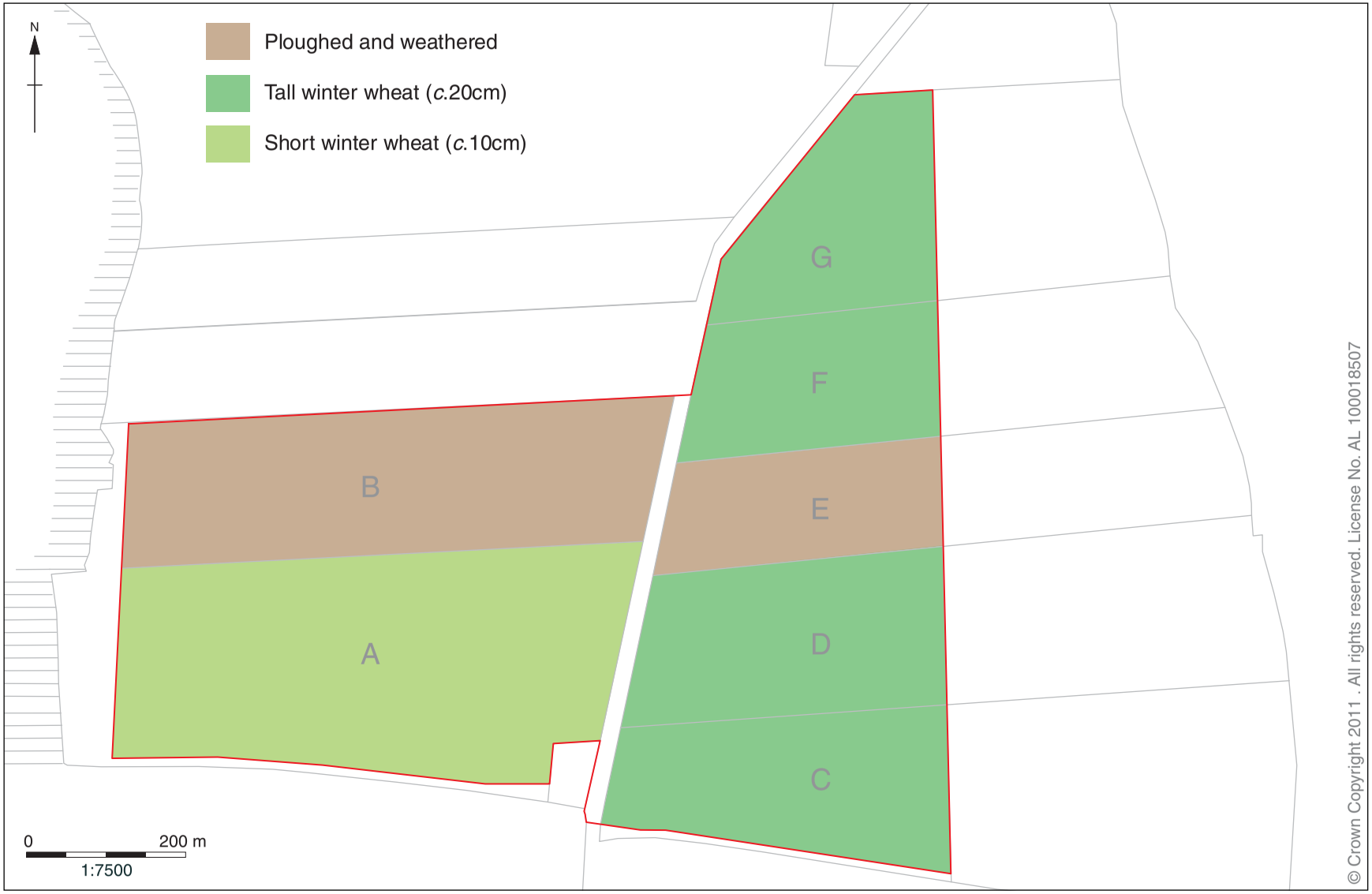

Figure 2: Fieldwalking field conditions

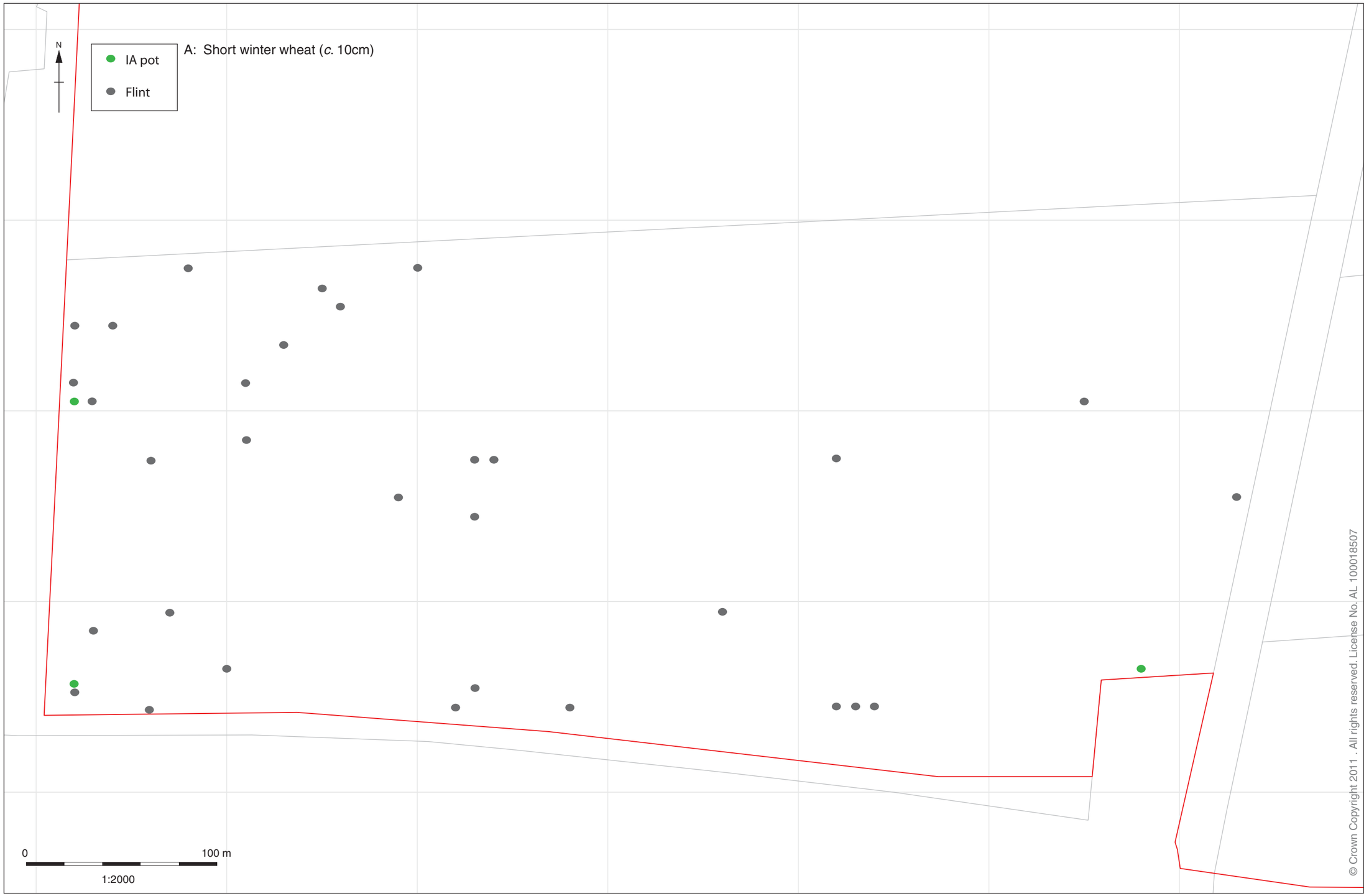

Figure 3: Field A fieldwalking; Prehistoric and Roman

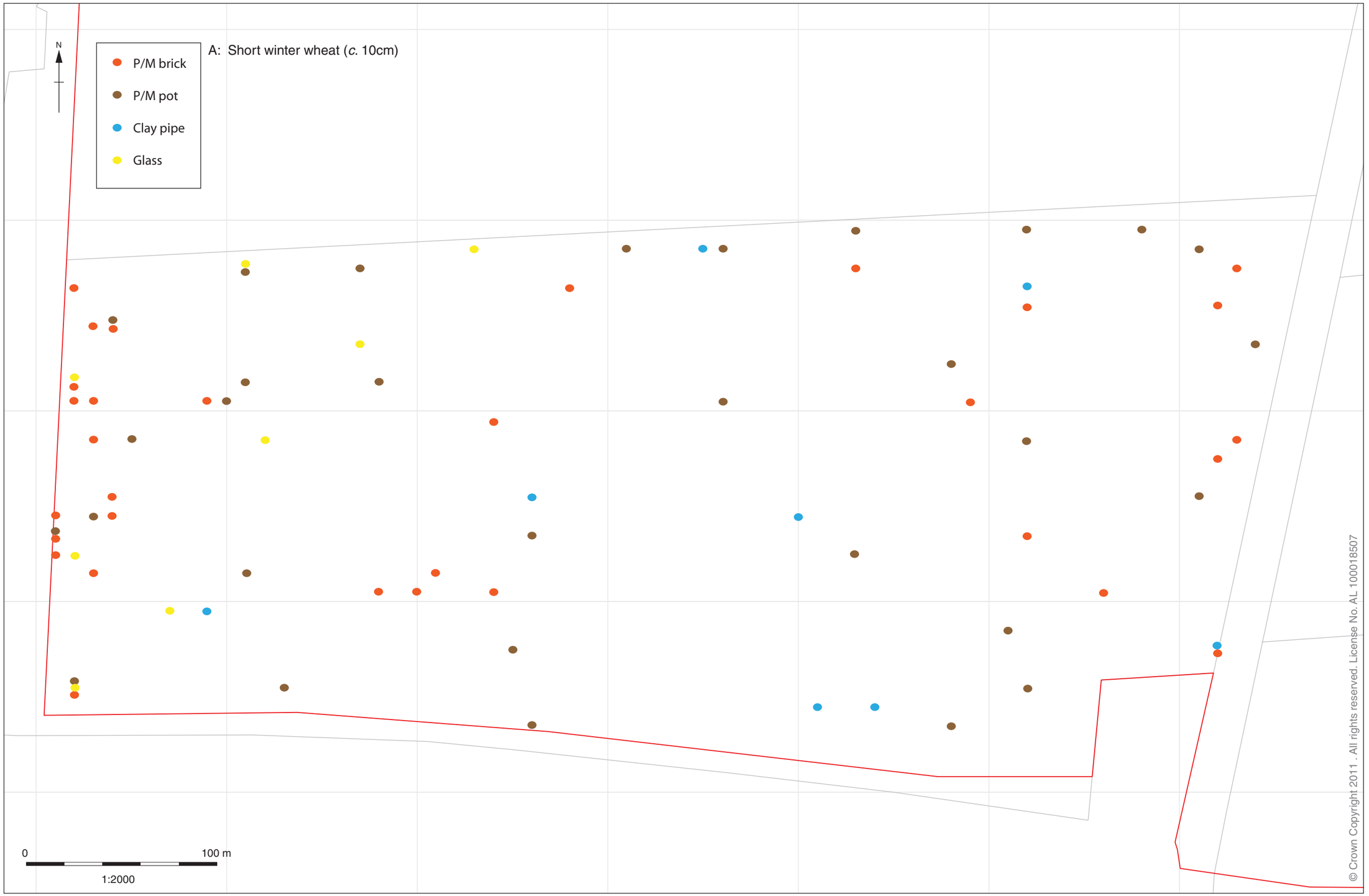

Figure 4: Field A fieldwalking; medieval to modern

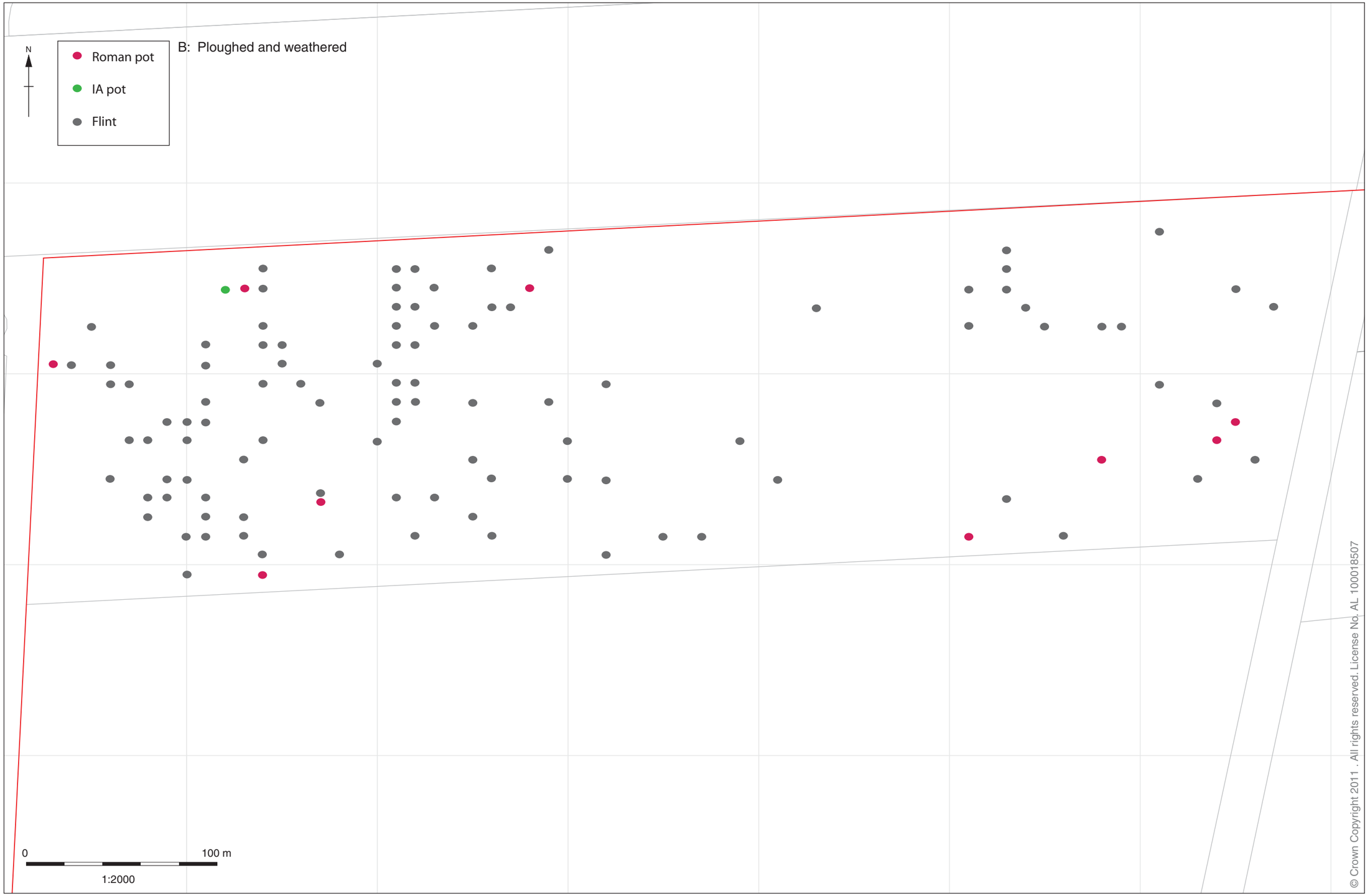

Figure 5: Field B fieldwalking; Prehistoric and Roman

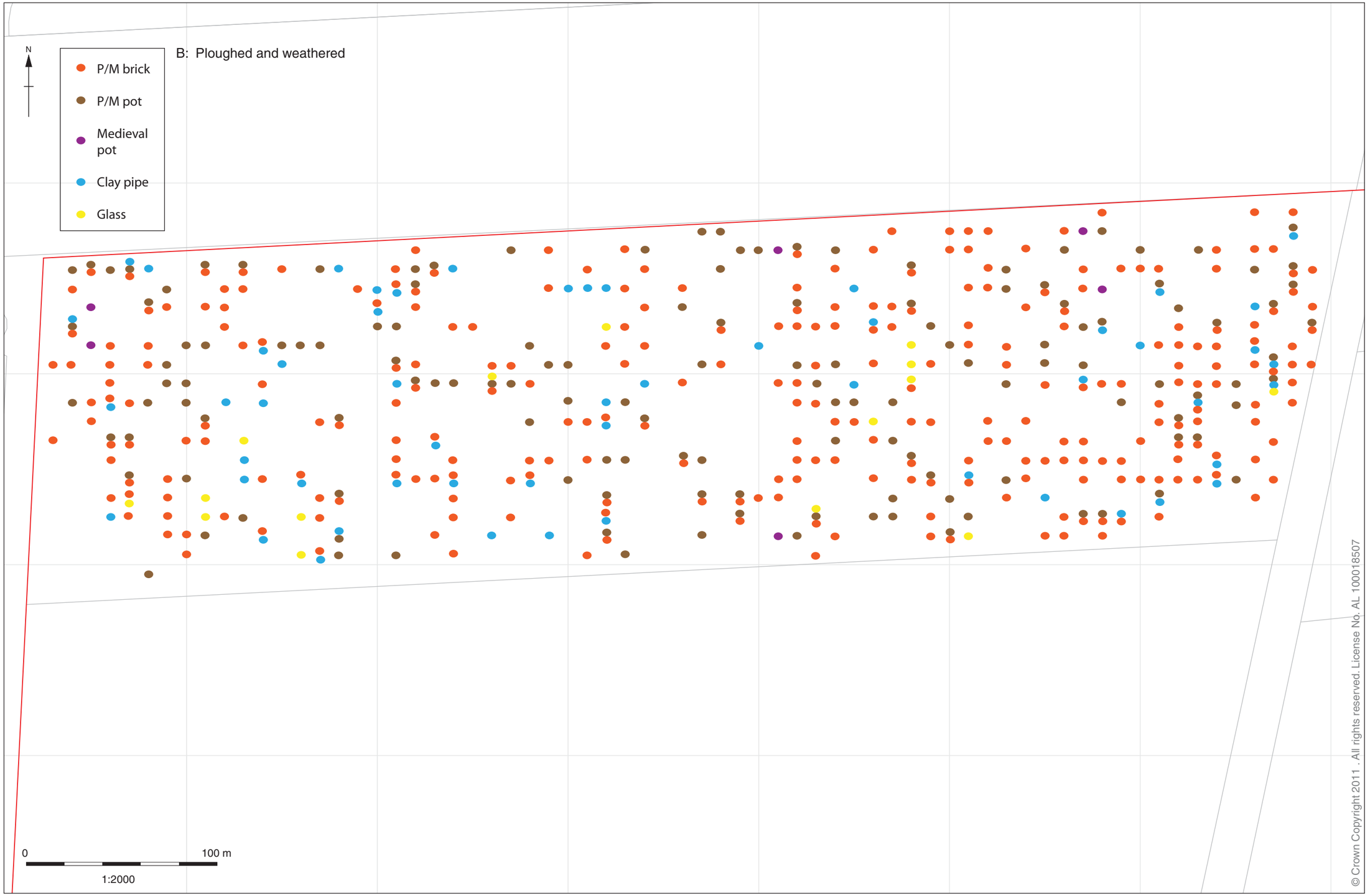

Figure 6: Field B fieldwalking; medeival to modern

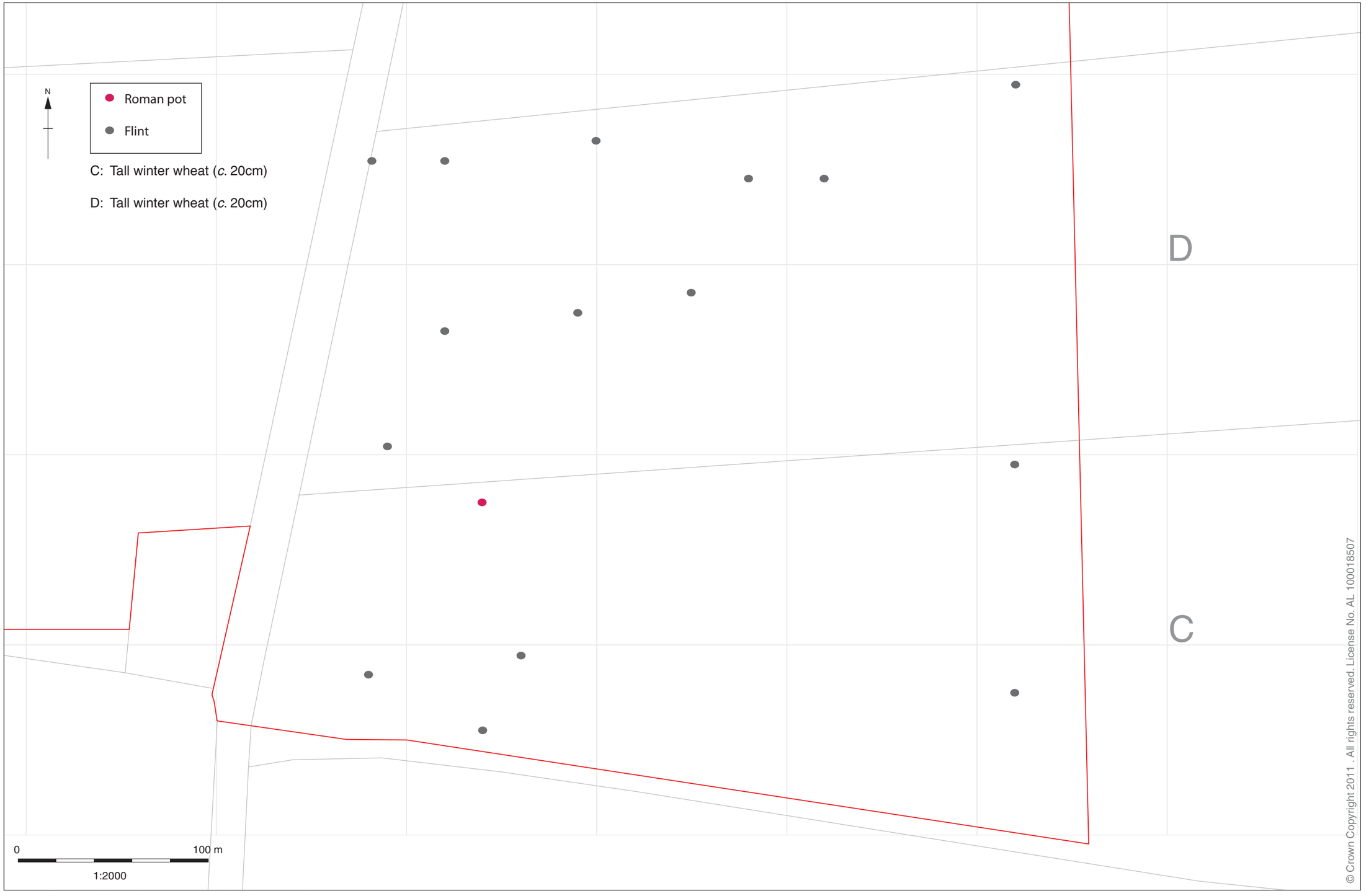

Figure 7: Fields C and D fieldwalking; Prehistoric and Roman

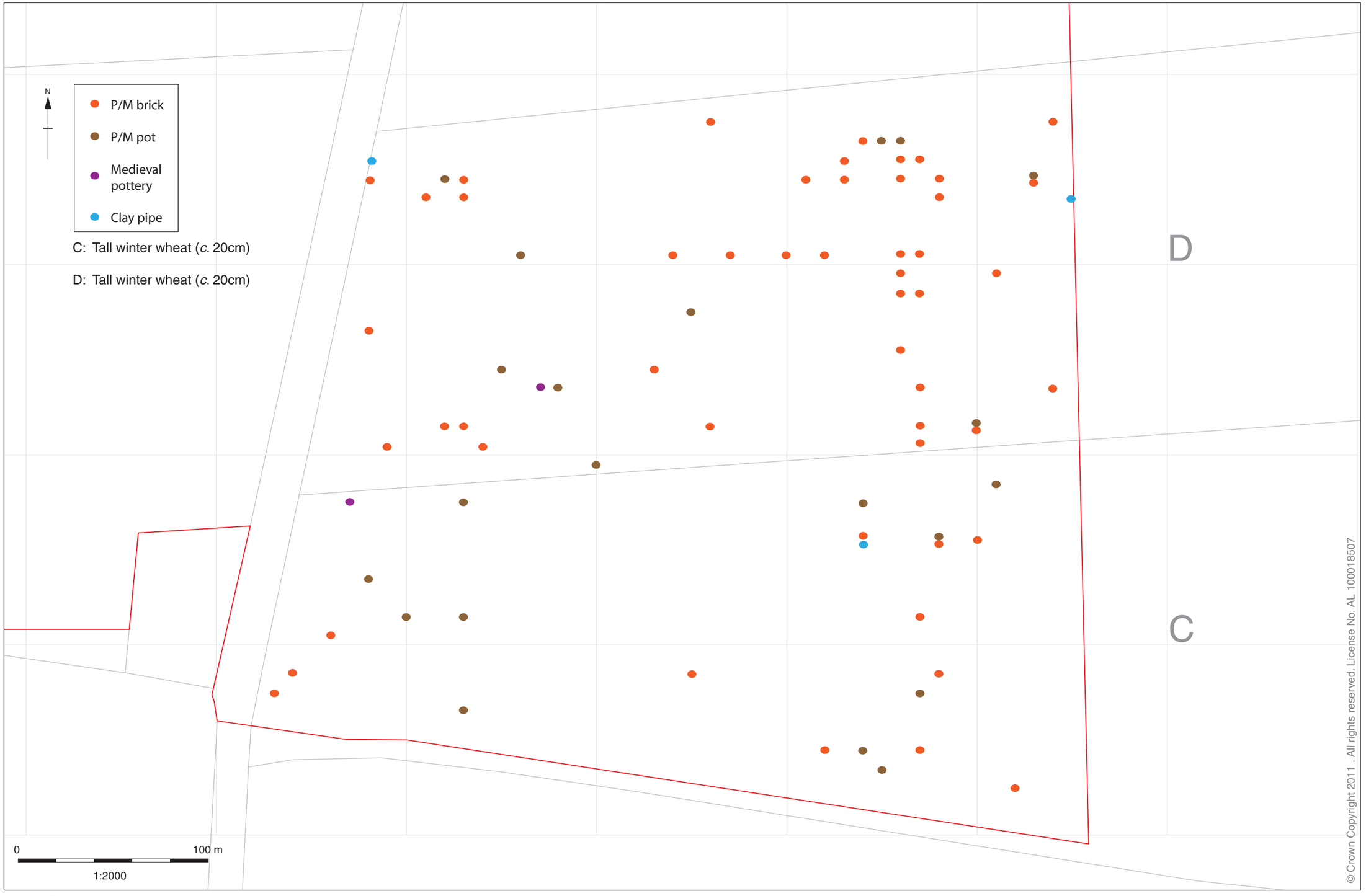

Figure 8: Fields C and D fieldwalking; medieval to modern

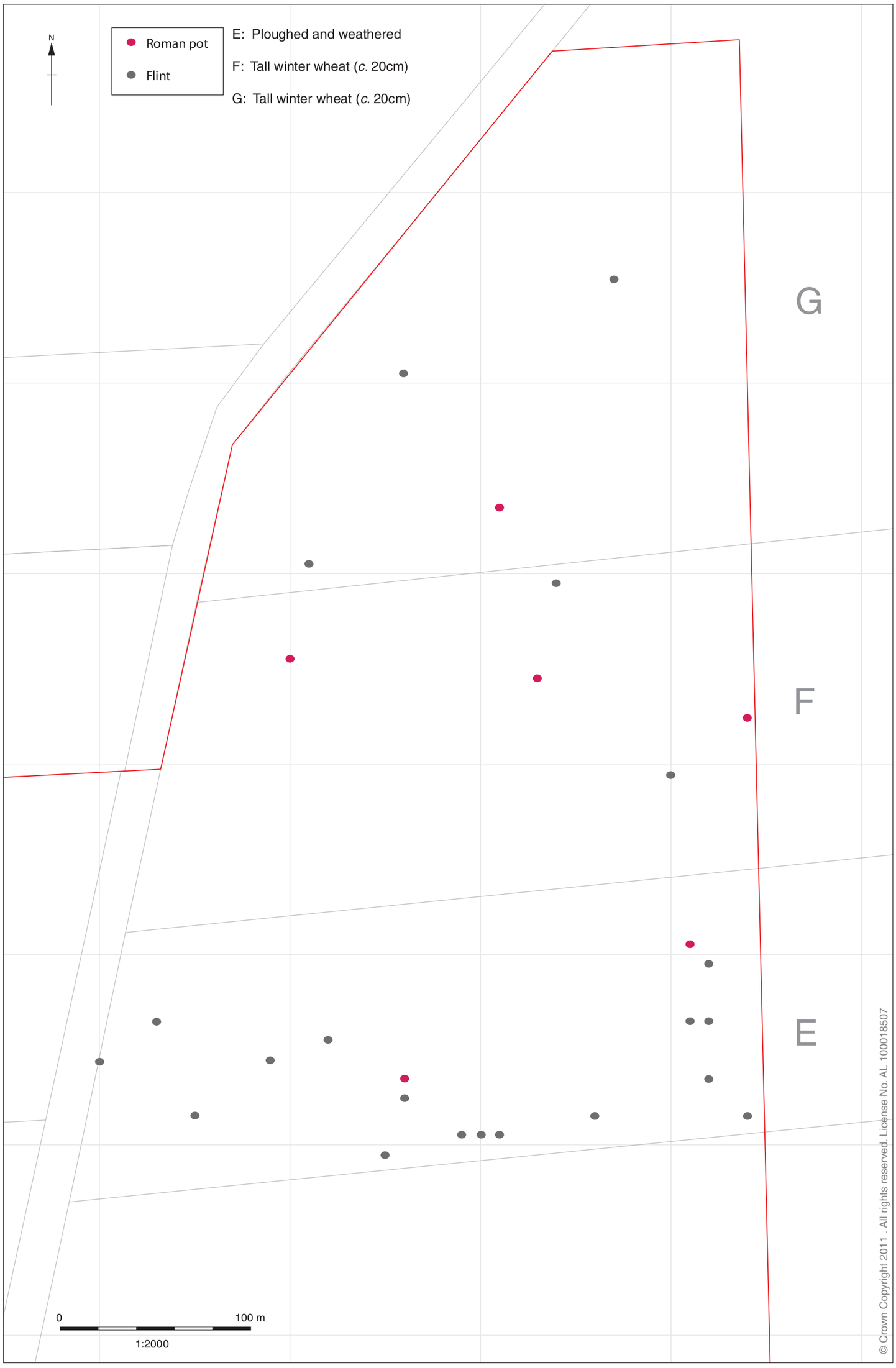

Figure 9: Fields E, F and G Fieldwalking; Prehistoric and Roman

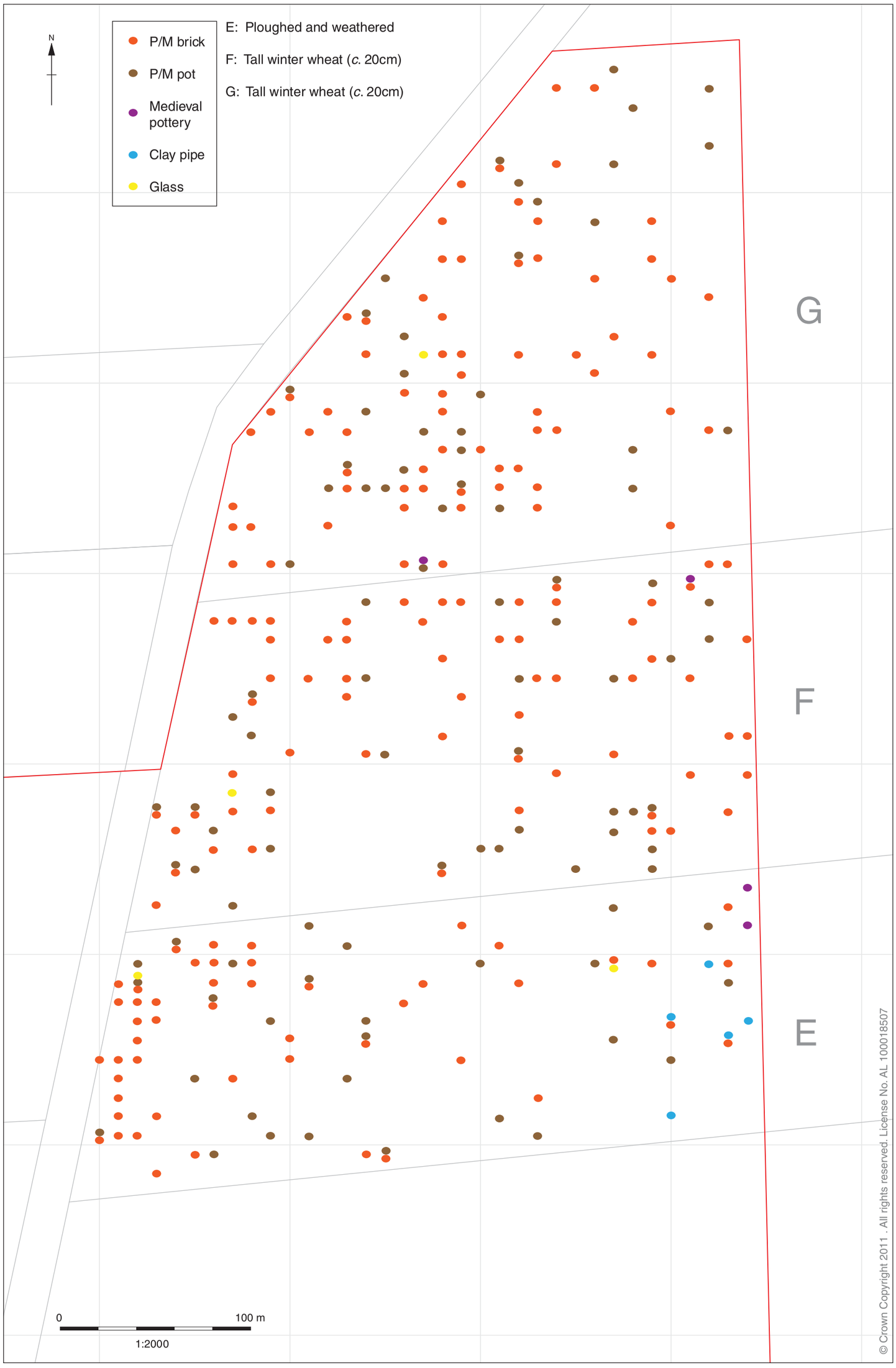

Figure 10: Fields E, F and G Fieldwalking; medieval to modern

Figure 11: Trench plan, resovoir amd water treatment works area

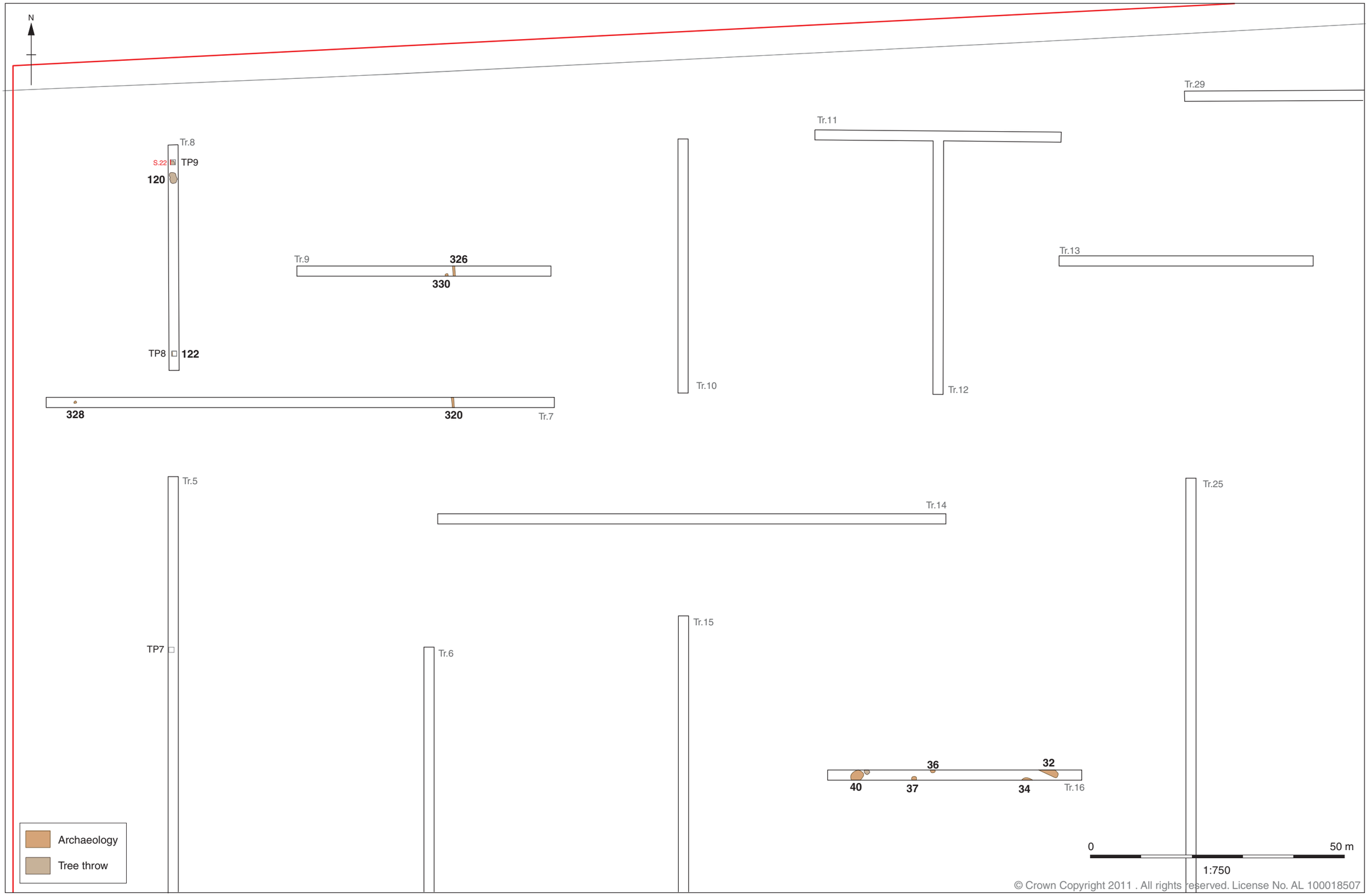

Figure 12: Field A

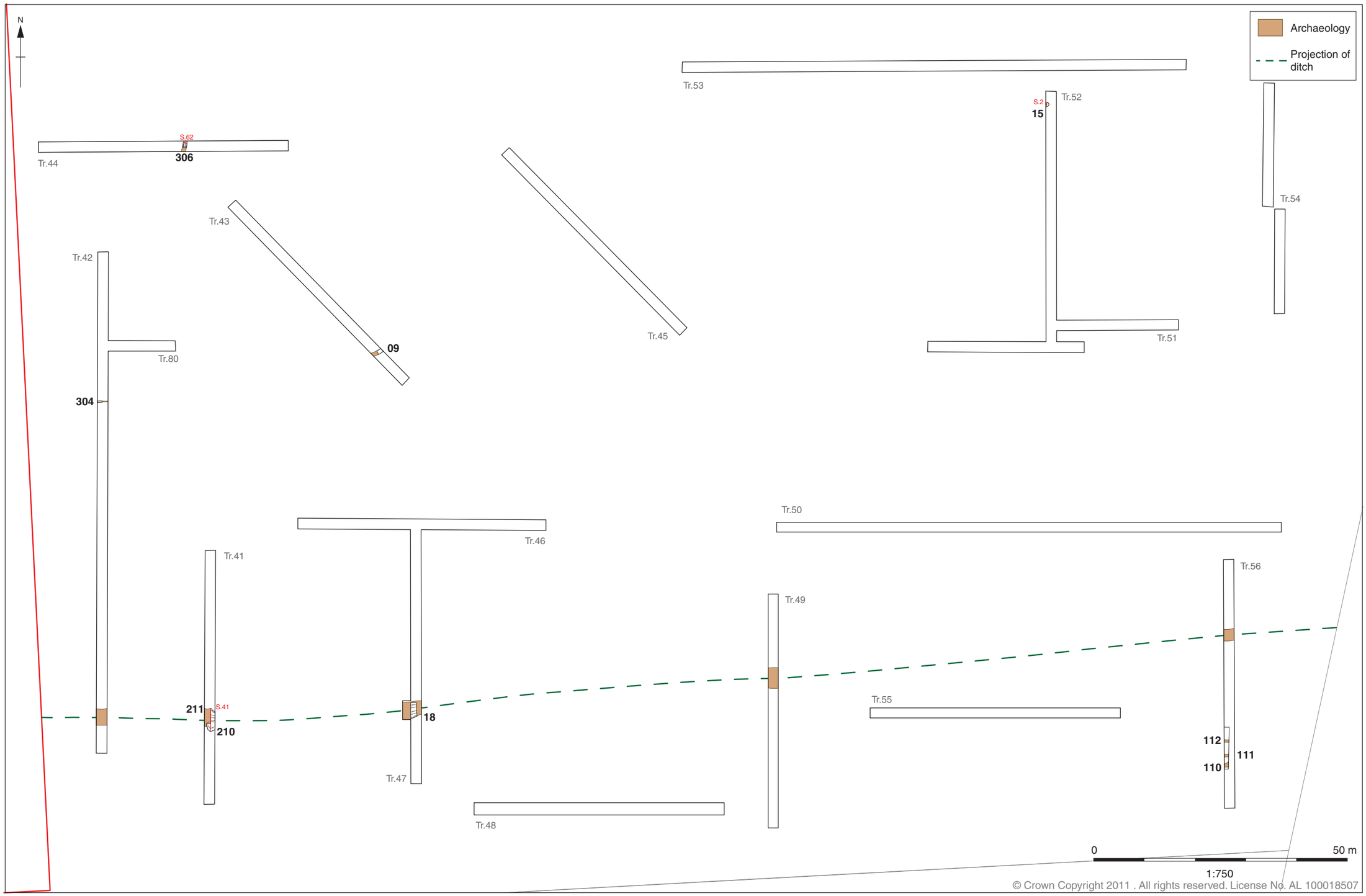

Figure 13: Field B

Figure 14: Trench plan, pipeline route, pumping station and compound area in relation to mapped cropmark features

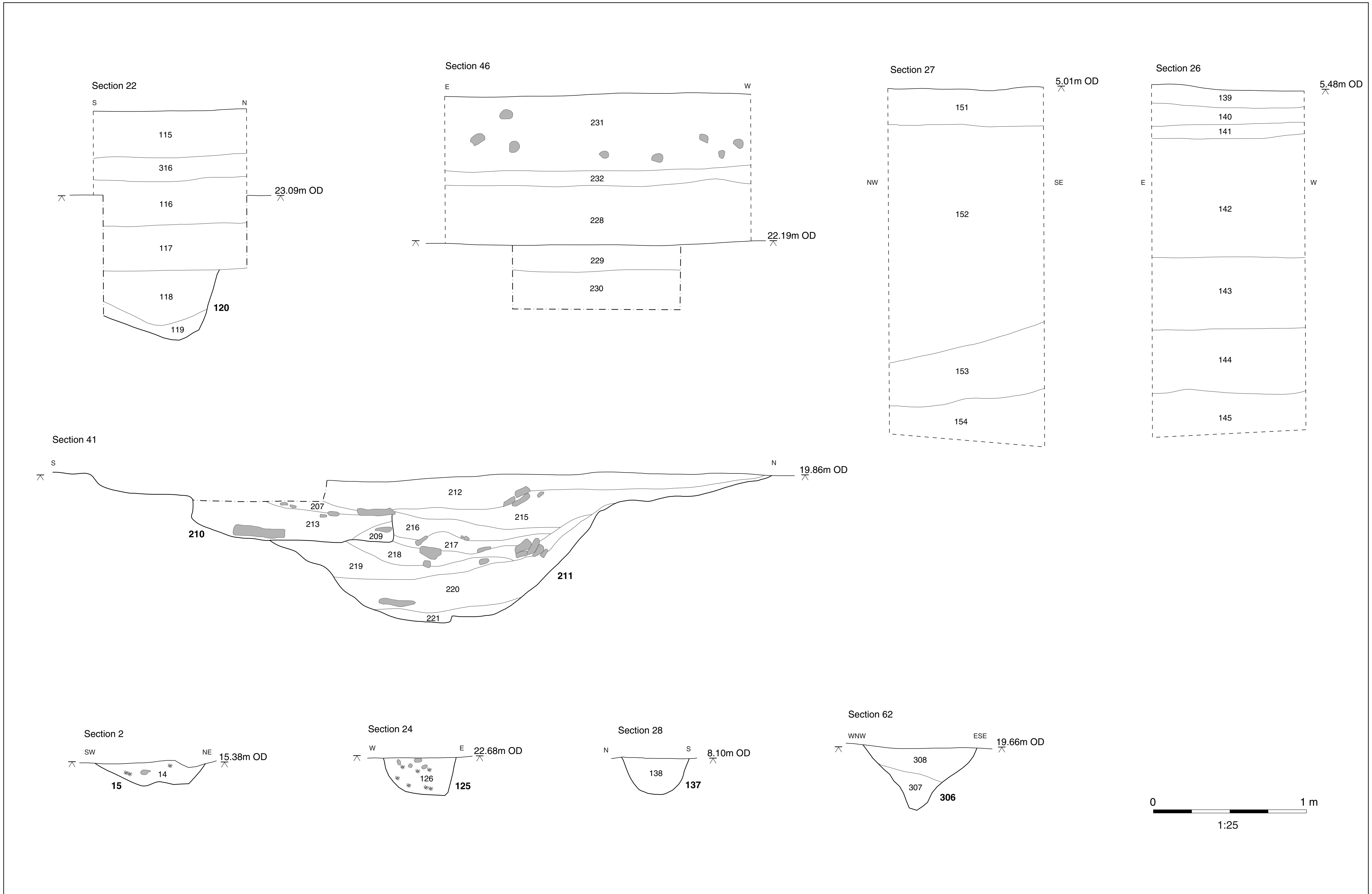

Figure 15: Selected sections

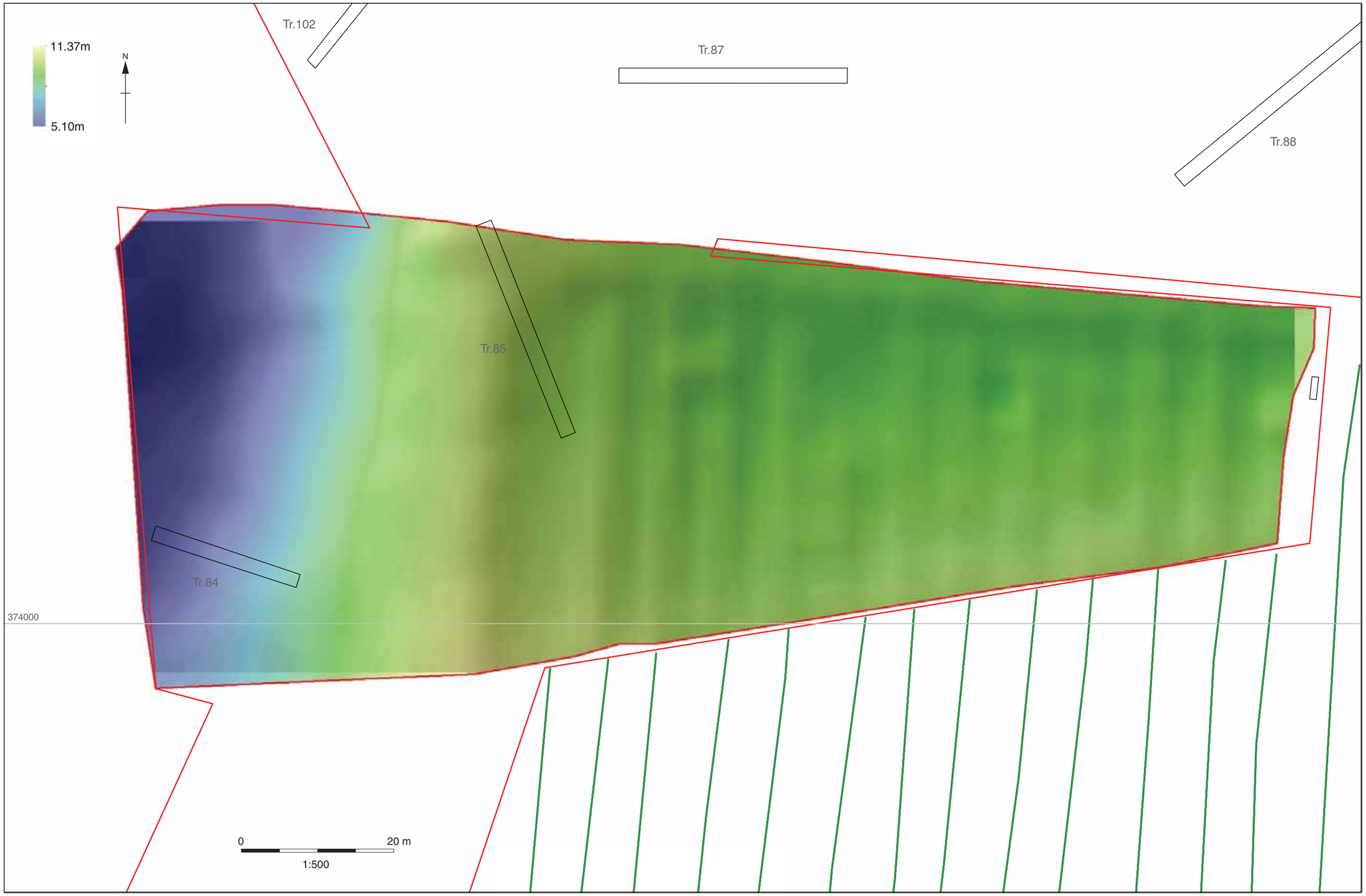

Figure 16: Countour map showing ridge and furrow

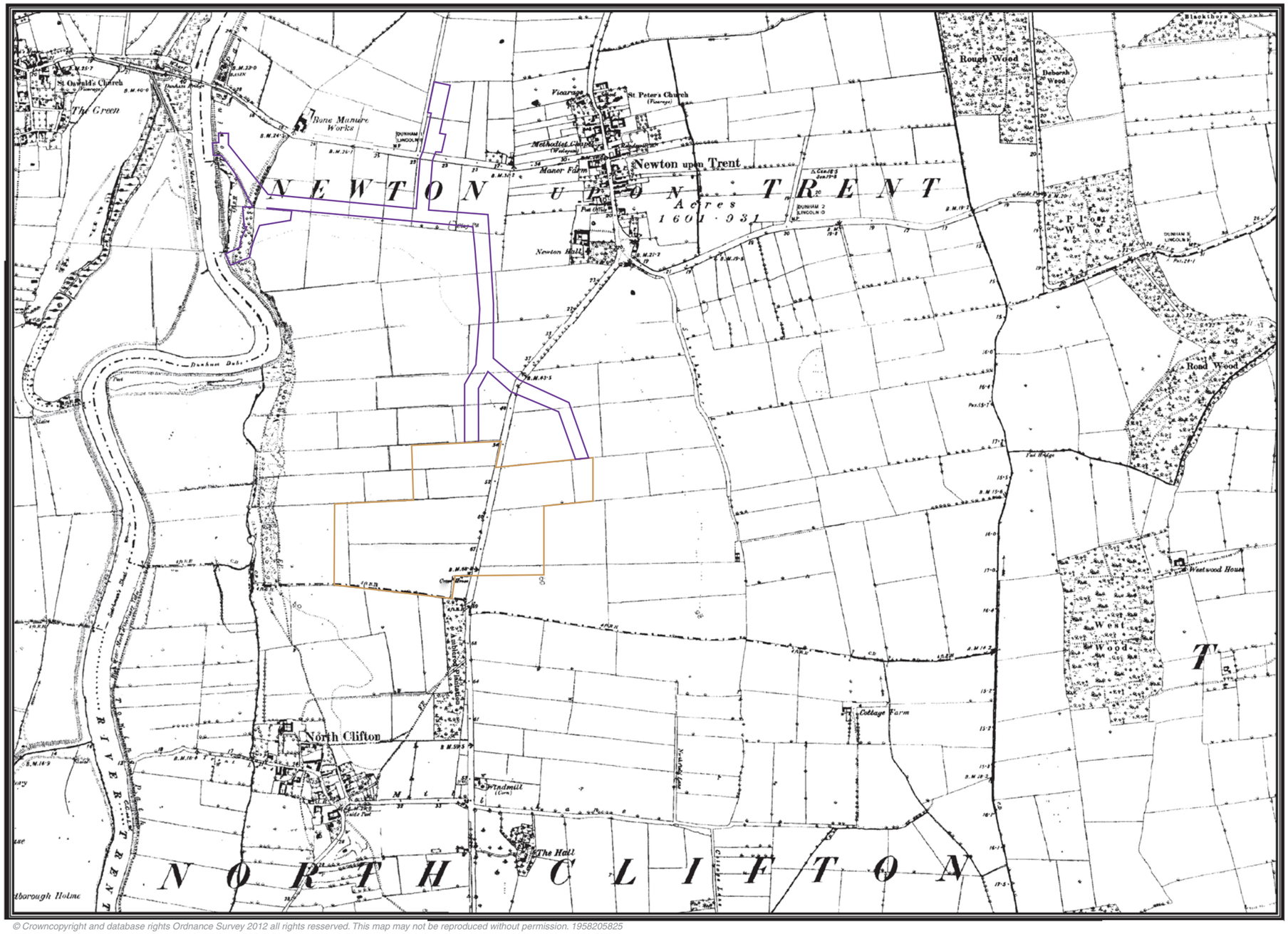

Figure 17: First Edition OS map (1887-1891) with development area

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