

Geophysical Surveys of Three Long Barrows near Chettle, Dorset



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1 Summary

This report describes the results of geophysical surveys at three scheduled long barrows near Chettle in Dorset.

The first survey was of a small long barrow near Thickthorn Farm, where an oval shaped ploughed out mound still exists. The survey was able to clarify the ditch plan and confirm that this long barrow does not have a U-shaped ditch, and so is not a 'Cranborne Chase' type of long barrow as previously suggested by some authors. The survey also hints at a possible two-phase element to the side ditches.

The second survey was adjacent to the Chettle House Long Barrow, a very long monument which is well preserved despite two 18th Century interventions. This survey was able to clarify the character of the southern flanking ditch, which extends beyond the western end of the current mound, helping to confirm that the end of the mound has been ploughed away. The ditch also has a very regular shape, although a slight deviation part way along hints at two phases of construction.

Finally, the third survey to the east of the sizeable mound of Chettle Long Barrow confirmed the location and character of the ditch, which was less regular in nature, reflecting the more irregular form of the mound.

Mound form is not always a good indicator of the original form and shape of long barrows, due to the erosion, destruction, and reconfiguration of extant mounds over the thousands of years of their existence. Ditches are less prone to alteration, and together, these three surveys have been able to characterise the ditch plans, showing that despite the three long barrows being in relatively close proximity to each other, their ditch form shows remarkable diversity.

2 Introduction

This report sets out the results of geophysical surveys at three Neolithic long barrows: Thickthorn Farm Long Barrow, Chettle House Long Barrow and Chettle Long Barrow. These monuments are clustered around the village of Chettle, in the county of Dorset. They occupy elevated positions on chalk ridges, as shown in Figure 1 and Figure 2, and are in an area of marked Neolithic activity, most clearly evidenced by the nearby terminal of the Dorset Cursus, and its associated long barrows.

One of the long barrows, Thickthorn Farm, has been severely eroded through ploughing, but the other two are relatively well preserved, with well-defined mounds, despite being subject to 18th Century investigation. All three barrows are scheduled monuments, and the surveys were subject to a Section 42 licence from Historic England.

The primary aim of the surveys was to locate and define the shape of the ditches associated with the long barrows, as well as to look for the presence of any associated features. Long barrow ditches can give more detailed clues to the form and size of a monument; mounds can be subject to alteration through later activity, such as antiquarian investigation, quarrying and erosion through agricultural activity. In contrast, ditches are protected under the ground and so are more likely to retain their original shape.

Each of the surveys will be described in a separate section, followed by a comparative discussion of the results.

3 Thickthorn Farm Long Barrow

3.1 The Site

This long barrow is situated 1 km east of the village of Chettle, in the parish of Tarrant Hinton, in the county of Dorset (Figure 3). It is set on a prominent chalk ridge, orientated north-west to south-east, which sits between the Gussage and Crichel valleys. The site is at an elevation of 88m above the Ordnance Datum, and the solid geology is 'Newhaven Chalk Formation – Chalk', with no drift geology recorded by the British Geological Survey. The National Grid reference is ST 96452 13163 (grid coordinates are 396452, 113163).

The monument is situated in the corner of an arable field behind Thickthorn Farm. This corner of the field is not under active cultivation, instead being covered by rough grass and thorn bushes. The barrow is visible as a low elongated mound, which shows clearly on Lidar (Figure 4), with dimensions (as measured on Lidar) of 32m by 21m. The mound is just under 1m high, although this measurement, from Lidar, is somewhat subjective. A review of aerial photographs indicates the mound was previously subject to arable cultivation, and therefore eroded and spread by ploughing. The mound is orientated north-west to south-east, sharing the orientation of the ridge on which it sits. A slight depression to the south-west of the mound may indicate the former presence of a ditch.

3.2 The Archaeological Background

There is relatively little reference to the Thickthorn Farm Long Barrow in the archaeological literature. It appears to have escaped antiquarian investigation, and was first identified as a long barrow by Crawford and Keiller (1928, 31), who spotted the side ditches from the air on 14th July 1924, and described it as follows:

'The tumulus marked on Dorset 15 NW in the extreme NE corner of Tarrant Hinton parish, a few yards NW of Thick Thorn Farm, was observed, and was considered, from the character of the side ditches, to be an undoubted long barrow. This had not previously been suggested, but the opinion was forced upon one from its appearance from the air.' Crawford and Keiller (1928, 31)

In his inventory of Dorset Barrows, Grinsell (1959, 81) listed the barrow as Tarrant Hinton 1, with dimensions of 100 ft by 60 ft, and a height of 3 ft, suggesting the mound had already been eroded, probably through ploughing, as he also described it as 'on arable'.

The barrow was scheduled in 1960 and has a List Entry Number of 1002816. The scheduling includes two nearby bowl barrows in addition to the long barrow. RCHME (1972, 100) listed the barrow as 'Tarrant Hinton 25' in their inventory of historical monuments in Dorset.

The shape of the ditches has been subject to varying interpretation. RCHME (1972, 100) stated *"there are traces of a ditch, which seems to have encircled the mound"*. In an influential paper analysing the relationship of long barrows to the Dorset Cursus, Bradley et al (1984, Figure 7.1) classified the barrow as of U-ditched type; this classification was perpetuated in the seminal volume on the prehistory of Cranborne Chase by Barrett et al (1991, Figure 2.4). However, an oblique aerial photograph published in the RCHME Bokerley Dyke volume (Bowen 1990, Plate 17) shows parch marks of clear side ditches, which appear to be broad and fairly short in nature. A linear ditch is also seen to skirt the south of the mound, and this, in combination with the side ditches, may have given the impression of a U-shaped ditch in crop marks with less clarity.

The barrow is positioned on the top of a chalk ridge which was the focus for considerable Early Neolithic activity. Just 850m to the south-east there is the southern terminal of the Dorset Cursus, a

huge monument which stretches for 10km, cutting across several chalk ridges and valleys. The southern terminal of the cursus has itself survived as a significant bank, far larger than any other part of the cursus, and it has even been mooted that it may have been subject to aggrandisement to mirror the two adjacent long barrows, which are also aligned along the ridge, just to the south of the cursus terminal (Bradley 1986, 7; Field & McOmish 2016, 75-77). One of these barrows, Thickthorn Down Long Barrow, was excavated in the 1930s (Drew & Piggott 1936) and found to have an irregular U-shaped ditch, a common characteristic of long barrows on Cranborne Chase, leading to the term 'Cranborne Chase type' being used for this form of ditch.

Just 1300m to the south-east of Thickthorn Down, another long barrow, named by RCHME as Gussage St Michael 10, is located on the same chalk ridge. Despite being ploughed out, recent geophysical survey by Avon Valley Archaeological Society (AVAS) has shown that this barrow is very similar in size and ditch shape to that excavated at Thickthorn Down, with the survey results again suggesting an irregular ditch, perhaps cut as a series of interconnecting pits (Gill 2021, 145-150).

From its location on this ridge, the Thickthorn Farm Long Barrow looks out to the east and north-east across to the village of Chettle, close to which are located the Chettle and Chettle House long barrows, both the subject of surveys described in this report. The barrow is therefore part of an important cluster of Early Neolithic monuments.

3.3 The Objectives of the Survey

The aims of the geophysical survey were:

1. To establish the shape and arrangement of the ditches associated with the long barrow. As described above, this long barrow has been classified by several authors as a U-ditched example, but one aerial photograph suggests more conventional side ditches with no continuation around the end of the mound. It was hoped that geophysical survey would help to clarify this situation.
2. To clarify the relationship of the long barrow with nearby linear ditches.
3. To look for the presence of any internal features below the mound, such as a mortuary structure, enclosure, or evidence of revetment.
4. To look for any associated features in the immediate vicinity of the long barrow.
5. To provide morphological information which would allow a comparison with the form of other long barrows in the area.

3.4 The Survey

The survey took place on the 18th April 2021, and was subject to a Section 42 Licence granted by Historic England. The survey area was covered by thick tufts of grass and scattered thorn bushes and brambles. Weather conditions were bright, sunny and warm. During the survey the temperature fluctuated significantly, which may have been the cause of some drift in the readings of the gradiometer.

3.5 Method

The survey area was divided into five full and three partial 20m grid squares, set out using tapes and triangulation. The location of the grid squares in relation to the mound is shown in Figure 4. There were areas close to the eastern and southern field boundaries that were difficult to survey due to thorn bushes and brambles, hence the limited area surveyed to the south of the barrow mound, and the slightly irregular boundary of the survey area to the east.

A Geoscan FM36 gradiometer was used to perform the survey. This was set up to take readings every 0.25m along a traverse, with a traverse interval of 1m. A parallel (unidirectional) survey strategy was employed. The machine was operated by one experienced user, and assistance was provided by three further team members. A line with one metre markings was used to assist the operator in precisely controlling the speed of capture for a traverse.

The data was downloaded and processed using the Snuffler software package. Figure 5 shows a plot of minimally enhanced data, with a linear greyscale range of +/- 4.0nT chosen to allow most effective visualisation. The variability in readings for some of the squares is a result of instrument drift.

Figure 6 shows a plot of enhanced data. This involved applying the 'Multi Zero Mean Line' destripe filter available in Snuffler, followed by two passes of horizontal interpolation. The data is displayed using a linear greyscale ranging from -2.0 to +2.0 nT.

Figure 7 provides a different linear greyscale range for the same data, this time -5.0 to +5.0nT, which allows likely ferrous signals to be distinguished.

3.6 Results

A graphical summary of the significant magnetic anomalies is provided in Figure 8, with anomalies given alphabetic identifiers for ease of reference in the text below. Two linear anomalies (A and B) bracket the remaining mound and it is almost certain these represent the original quarry ditches for the long barrow. The northern ditch (B) appears shorter than its southern counterpart (A), and it is possible that another linear anomaly (C) could represent a further quarry ditch for the long barrow. Anomaly C is slightly offset from B, has a similar width and regularity, and continues in a similar direction along the north-eastern side of the mound. The combined length of anomalies B and C along the northern edge of the mound is similar to the length of A along the southern side of the mound. There is also a noteworthy slight discontinuity in the southern ditch (Figure 8) which may suggest more than one phase of construction.

A long linear feature (D and E) skirts the south of the mound, and it is likely anomaly F represents a continuation of this feature. Aerial photographs (for example, Bowen 1990, Plate 17) suggest the presence of a long linear ditch which deviates slightly to pass the southern side of the barrow, and D, E and F almost certainly represent this feature. There appears to be a small break in the ditch between D and E, and a large, probably ferrous anomaly (G) obscures the detail of the ditch between E and F.

A further linear feature (H), most probably a ditch, is located adjacent to F. Although it could be related to a phase of mound building or modification, its orientation and position do not lend themselves to this explanation. Crop marks on aerial photographs (for example, Bowen 1990, Plate 17) indicate a second linear ditch approaching the mound from the north-east. Its exact course is obscured by the modern road to the east of the survey area, but it is possible that feature H represents the end of this linear ditch.

There is a general scatter of smaller mainly positive anomalies across the survey area; it is possible these could be archaeological in nature. There is no obvious pattern to the distribution of these anomalies.

3.7 Discussion

The survey has been successful in allowing the shape of the long barrow ditches to be characterised, a key objective. It is interesting that these ditch anomalies do not have the width suggested by the

aerial photograph in the RCHME Bokerley Dyke volume (Bowen 1990, Plate 17). This could be explained by the magnetic response being concentrated in the centre of the ditch, perhaps at a lower and narrower part of the ditch. However, it is perhaps more likely that the specific crop mark shown in the aerial photograph is wider than the actual ditch, perhaps with the vegetation in the general vicinity of the underground ditch being widely affected by the moisture conditions in the soil. A similar phenomenon was encountered with the survey of Gussage St Michael 10 long barrow, where certain aerial photographs gave the appearance of a very wide ditch, but one specific aerial photograph depicted much tighter ditch crop marks, backed up by the gradiometer survey where the ditches were at most 4.5m wide (Gill 2021, 149).

In clearly defining the plan of the ditches, the survey has also helped to confirm that the Thickthorn Farm long barrow is not of the U-shaped variety, despite being identified as such in several publications. It is interesting that out of the four long barrows positioned on the same ridge as the southern terminal of the Dorset Cursus, Thickthorn Farm is the only long barrow to not exhibit a U-shaped ditch plan. It is also noteworthy that the ditches of the latter barrow appear more uniform than either Gussage St Michael 10, or the Thickthorn Down long barrow, characterised via geophysical survey and excavation respectively, and which possessed very irregular ditches suggestive of construction via interconnecting pits.

Another key feature of the survey results for the Thickthorn Farm Long Barrow is the possible existence of two separate sections of long barrow ditch to the north, and the suggestion of a discontinuity in the ditch to the south. This provides strong evidence for two phases in the digging of the ditches, although it is not possible to tell whether one phase directly followed another, perhaps with a short break in construction of the barrow, or whether a second phase served to modify, aggrandise or re-cap with chalk an existing mound.

Between the side ditches of the long barrow, the geophysics results did not reveal any internal features, such as a mound revetment or mortuary structure. This echoes both Gussage St Michael 10, where no obvious features were picked up by magnetometer survey, and Thickthorn Down, where excavation found no direct traces of this type of feature, although a possible turf structure was mooted, more recently thought to be an artefact of the construction technique of the mound (Bradley & Entwistle 1985, 174).

The 3D model in Figure 9 helps to visualise the relationship of the long barrow ditches with the extant mound, and suggests the mound has spread up to and partly over the flanking ditches.

Finally, the only other clear feature in the direct vicinity of the mound is the presence of a linear ditch, seen in aerial photographs to deviate around the long barrow, suggesting this linear feature belongs to a later period. Crop marks suggest a second linear points to the same southern side of the mound and has possibly been picked up in the survey results. These are probably linear boundary ditches which were often aligned on pre-existing barrows providing points of reference in the landscape.

The survey has helped to clarify the likely extent of the archaeological features associated with the mound. Figure 10 shows that the current scheduled area just incorporates the main ditches associated with the mound, although it just fails to incorporate the short offset section of ditch to the north-east of the mound, which, as described above, might represent a separate phase of construction.

4 Chettle House Long Barrow

4.1 The Site

This long barrow is situated 500m south of Chettle village, in the parish of Chettle, in the county of Dorset (Figure 11). It takes its name from the nearby Chettle House. It is set on a chalk spur, orientated east to west, and set between two chalk valleys which branch from the Cichel valley (Figure 1). The site is at an elevation of 86m above the Ordnance Datum, and the solid geology is 'Newhaven Chalk Formation – Chalk', with no drift geology recorded by the British Geological Survey. The National Grid reference is ST 95071 12800 (grid coordinates 395071, 112800).

The monument is situated in a small pasture field. Aerial photographs show that the area around the mound was taken out of cultivation sometime after 2014, with an aerial photograph of that year showing arable cultivation on three sides of the mound.

The mound is relatively well preserved; it is 85m in length, 19m wide at its eastern end and 17m wide at its western end. At its eastern end it is at most 2.6m high, while at the western end it is slightly lower at 2.45m. All these measurements are from Lidar DTM data (Figure 12). The mound is orientated east-north-east, sharing the same general orientation of the ridge on which it sits. There are two clear depressions in the mound which are discussed below.

There are no signs of any side ditches adjacent to the mound.

4.2 The Archaeological Background

We are fortunate to have a reference to 18th Century diggings into the barrow in a journal kept by Sir Joseph Banks (1900, 144-5), entitled 'Journal of an Excursion to Eastbury and Bristol &c. in May and June, 1767', and reproduced in the Proceedings of the Dorset Natural History and Archaeological Society in 1900. The entry pertaining to the barrow is included below:

'... ventured out towards Chettle in which parish is situate a tolerable house ... was agreeably surprised by finding within two fields of the house, another Barrow of exactly the same construction as that found yesterday, only larger, it being 100 paces in length: its bearings were also different, it being pretty near East and West. It had visibly been opened in two places, which made me curious to enquire what had been found. Upon my asking, the young Mr Chafin informed me that his father had opened it about forty years ago. One opening at the Eastern extremity he carried down a little way below the surface of the real ground, when he found many bones, brass heads of spears and some coin, all of which were sent up to Lord Pembroke. The other, situate about one third of the whole length of the barrow, more to the westward, was never carried deep enough, so nothing was discovered in it.' (Banks 1900, 144-5)

It is likely that evidence of these interventions survives as the two depressions in the surface of the mound, visible in the Lidar plot (Figure 12). The bones and other artefacts probably represent a later intrusive burial into the extant mound, perhaps of the Anglo-Saxon period.

A further skeleton was discovered in 1776, described as follows:

'About 1776, the sheep having made a scrape on the side of this barrow, near the summit, and the earth having moulded away, a human skeleton was discovered: it lay on its back, was four feet long, and was quite perfect, though remarkably small, and quite even-judged to have been female' (Extract from Hutchins volume 2 in Warne 1866, 2)

Given this 'scrape' was near the summit of the barrow, it is likely this is again a later intrusive burial.

The barrow was listed as a scheduled monument in 1926 and has a List Entry Number of 1013792 (Historic England 2021a).

In his inventory of Dorset Barrows, Grinsell (1959, 77) listed the barrow with the identifier 'Chettle 1', and noted that the west end of the mound had been reduced by ploughing. RCHME (1972, 13) listed the barrow as 'Chettle 16' in their inventory of historical monuments in Dorset, and it is again noted that the west end has been 'much reduced by ploughing'. The Historic England (2021a) scheduled monument list entry provides more detail on the possible truncation of the west end of the mound, noting the mound '*clearly extends westwards into the arable field for possibly a further 15m, where it is visible as a slight rise of chalky soil*'.

4.3 The Objectives of the Survey

The aims of the geophysical survey were to examine the immediate vicinity of the mound in order to:

1. Establish the shape and arrangement of the ditches of the long barrow, and understand how they relate to the mound. As described above, no ditches are visible as earthworks.
2. Determine the length of the monument. As described above, it is thought the west end of the barrow has been truncated by ploughing.
3. Look for any associated features in the immediate vicinity of the long barrow.
4. Provide morphological information which would allow a comparison with the form of other long barrows in the area.

4.4 The Survey

The survey was undertaken on two separate dates: 9th May 2021 in the pasture field to the south and west of the mound, and 19th September 2021 in the arable field to the north of the mound. Ground conditions for survey were in general good, apart from to the immediate south of the mound, where deep animal burrows, uneven ground and patches of thick vegetation hindered the surveyor.

4.5 Method

The survey area was divided into 20m grid squares, set out using tapes and triangulation. The location of the grid squares in relation to the mound is shown in Figure 13. The uneven edge to the survey extent to the south of the mound was due to the difficult ground conditions described in the previous section.

A Geoscan FM36 gradiometer was used to perform the survey. This was set up to take readings every 0.25m along a traverse, with a traverse interval of 1m. A parallel (unidirectional) survey strategy was employed. The machine was operated by one experienced user, and assistance was provided by further team members. A line with one metre markings was used to assist the operator in precisely controlling the speed of capture for a traverse.

The data was downloaded and processed using the Snuffler software package. Figure 14 shows a plot of minimally enhanced data, with a linear greyscale range of +/- 4.0nT chosen to allow most effective visualisation. The variability in readings for some of the squares is a result of instrument drift.

Figure 15 shows a plot of enhanced data. This involved applying the 'Multi Zero Mean Line' destripe filter available in Snuffler, followed by two passes of horizontal interpolation. The data is displayed using a linear greyscale ranging from -2.0 to +2.0 nT.

Figure 16 provides a different linear greyscale range for the same data, this time -5.0 to +5.0nT, which allows likely ferrous signals to be distinguished.

4.6 Results

A graphical summary of the significant magnetic anomalies is provided in Figure 17, with anomalies given alphabetic identifiers for ease of reference in the text below. A long linear anomaly (A) can be seen just to the south of, and parallel with, the mound. This is clearly the southern flanking ditch of the long barrow. It is 98m long, and about 4m wide. To the east, in locations B and C, the response from the feature is more irregular. This is probably due to the disturbed nature of the ground in this area, due to animal burrowing. These were also locations of thicker vegetation, making it more difficult for the surveyor to walk, and so it is possible the gradiometer was displaced from a constant distance and vertical angle from the ground, which might have caused readings to vary.

The flanking ditch is in general very regular in plan. It can be seen to extend west about 11m past the end of the mound. This supports the suggestion that the mound has been truncated by ploughing, as described in section 4.2.

The ditch appears to change direction slightly about 30m from the west end (position D in Figure 17), and at this point there is also a subtle change in the uniformity of the ditch, with it being more regular to the west. This is most clear in the processed results shown in Figure 15, and even more obvious when looking along the ditch in the 3D reconstructions shown in Figure 18. This change in the character of the ditch is mirrored by the hint of a slight change in the axis of the mound at this point, close to the more westerly 18th Century excavation (Figure 15 and Figure 18). Together this suggests two possible phases of construction.

In the field to the north of the barrow, there is no evidence of a flanking ditch. It is unfortunate that a barbed wire fence is aligned parallel with the north side of the mound, and it is likely the ditch lies just under and south of this fence. It was not possible to survey with the gradiometer to the south of the fence due to thick vegetation and very uneven ground.

A further linear positive magnetic anomaly (E) is positioned at an oblique angle to the west of the long barrow. The strong response from this feature ends close to where the mound would have originally terminated, prior to erosion from ploughing. It is possible this is a later linear boundary ditch aligned on the barrow mound. Feature E appears to continue as a very faint response (F) to the north-east of this point.

A further linear anomaly (G) crosses the extreme west of the survey area. This feature has a similar width to linear E and could represent another linear boundary. Just to the north of this feature, a large and strong anomaly (H), as seen in Figure 16, was caused by a static piece of farm machinery.

4.7 Discussion

The survey has been successful in defining the southern flanking ditch of the Chettle House Long Barrow. This ditch is at least 98m long; the eastern end cannot be distinguished, but it is likely it terminated close to the edge of the survey, where the mound also terminates. The extension of the ditch to the west of the extant mound helps to corroborate reports of a section of the mound being

destroyed by ploughing (see section 4.2). Assuming the mound was a similar length to the ditch, the survey results suggest approximately 11m of the mound has been lost to ploughing.

The clarity of response from the southern ditch has allowed subtle changes in character and orientation to be discerned, with the possibility of two phases of construction which may also be reflected in the extant mound.

It is unfortunate that the northern ditch was not picked up in the survey area; it may be possible to undertake a resistance survey, which would be unaffected by the barbed wire fence, to try to locate this ditch.

It is interesting that the possible linear boundary ditch picked up in the survey appears to be aligned on one end of the mound. As at Thickthorn Farm, it is another example of later boundaries being aligned on much earlier extant monuments which provided fixed points in the landscape.

The survey has helped to clarify the true extent of features directly associated with the long barrow. Figure 19 shows that the current area of the scheduled monument fails to incorporate the west end of the southern ditch. The eroded west end of the mound is also outside the scheduled area.

5 Chettle Long Barrow

5.1 The Site

This long barrow is situated 1500m west of Chettle village, on the boundary of the parishes of Chettle and Tarrant Gunville, in the county of Dorset (Figure 20). It is set on a chalk ridge, orientated north-north-west (Figure 1). The site is at an elevation of 116m above the Ordnance Datum, and the solid geology is 'Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated)', with no drift geology recorded by the British Geological Survey. The National Grid reference is ST 93734 13550 (grid coordinates 393734, 113550).

The monument is situated at the north-east corner of the former Eastbury Park, and sits in an area of rough thickly vegetated ground between two arable fields.

The substantial mound is relatively well preserved, despite being irregular in nature (Figure 21). A longitudinal profile of the mound from raw Lidar DTM data suggests a mound length of about 66m (Figure 22), which contrasts with the length of 58m given in the scheduled listing (Historic England 2021b). The width of the mound varies due to its irregular nature but appears to be about 27m wide as measured from Lidar, again contrasting with the listing, where it is given as 22m (Historic England 2021b). Similarly for the height of the mound, Lidar suggest a maximum height of 4.5m, whereas the listing notes a maximum height of 3m. It is likely these discrepancies result in part from the subjective nature of taking measurements of mounds that are not clear in their definition.

The longitudinal profile of the mound (Figure 22) also shows the unevenness of the top of the mound, with two clear peaks in height. The orientation of the mound is seen in Figure 21 to twist slightly between these peaks, suggesting either a two-phase construction, or later alteration or erosion of the mound. Reference to the 25-inch Ordnance Survey map surveyed in 1886 (Figure 23) suggests the latter explanation is possible; it shows how the parish boundary switches from one side of the mound to the other between the peaks in the mound, and a track appears to cross the mound at this point.

The mound is orientated south-south-east, sharing the same general orientation of the ridge on which it sits.

There is a wide shallow depression in the field to the east of the mound, visible in the Lidar plot (Figure 21); the listing notes *'an oval hollow recorded in the arable field on the north-east side of the mound, which is 50m long, by 14.5m wide and 0.6m deep, probably represents a flanking ditch'* (Historic England 2021b). It also refers to a shallower hollow along the south-west side of the barrow, again possibly a flanking ditch.

5.2 The Archaeological Background

Chettle Long Barrow is mentioned in the same 18th Century journal which described excavations into the Chettle House Long Barrow. In the entry for 16th May 1767, the barrow is described as follows:

'... went in search of a barrow which the Bishop of Carlisle had informed me was somewhere in this neighbourhood. Found it at the N. corner of the Park, its construction very singular, being a bank of about 60 paces in length and 15 broad, NE by N and SW by W. A small part of one end was within the pail that had been opened, and a grotto made in the hollow. We were told that when it was opened a number of bones were found. I was exceedingly desirous of opening the other end, which was in a sheep walk without the pails, but upon inquiring whose property it was, had the mortification to be told that it belonged to an estate now upon sale, the owner of which was in London; was therefore obliged to give over all thoughts of it.' (Banks 1900, 144)

In this case it is not possible to tell whether the bones were from primary or secondary internments in the barrow.

The barrow was listed as a scheduled monument in 1926 and has a List Entry Number of 1014821 (Historic England 2021b).

In his inventory of Dorset Barrows, Grinsell (1959, 78) listed the barrow with the identifier 'Chettle 2'. RCHME (1972, 13) listed the barrow as 'Chettle 15' in their inventory of historical monuments in Dorset.

5.3 The Objectives of the Survey

Permission had been gained to undertake a survey in the arable field immediately to the east side of the mound. The aims of the geophysical survey were to:

1. Establish the shape and arrangement of the ditch to the east of the long barrow.
2. Determine the length of the ditch and its relationship with the mound. It was hoped this would assist in understanding the original length of the mound, and aid in interpreting the irregular nature of the mound.
3. To look for any associated features in the immediate vicinity of the long barrow.
4. To provide morphological information which would allow a comparison with the form of other long barrows in the area.

5.4 Method

The survey area was divided into 20m grid squares, set out using tapes and triangulation. The location of the grid squares in relation to the mound is shown in Figure 21.

A Geoscan FM36 gradiometer was used to perform the survey. This was set up to take readings every 0.25m along a traverse, with a traverse interval of 1m. A parallel (unidirectional) survey strategy was employed. The machine was operated by one experienced user, and assistance was

provided by further team members. A line with one metre markings was used to assist the operator in precisely controlling the speed of capture for a traverse.

The data was downloaded and processed using the Snuffler software package. Figure 24 shows a plot of minimally enhanced data, with a linear greyscale range of +/- 4.0nT chosen to allow most effective visualisation. The variability in readings for some of the squares is a result of instrument drift.

Figure 25 shows a plot of enhanced data. This involved applying the 'Multi Zero Mean Line' destripe filter available in Snuffler, followed by two passes of horizontal interpolation. The data is displayed using a linear greyscale ranging from -2.5 to +2.5 nT.

Figure 26 provides a different linear greyscale range for the same data, this time -5.0 to +5.0nT, which allows likely ferrous signals to be distinguished.

5.5 Results

A graphical summary of the significant magnetic anomalies is provided in Figure 27, with anomalies given alphabetic identifiers for ease of reference in the text below. A long positive linear anomaly (A) parallel to the east edge of the mound clearly represents the flanking ditch of the long barrow. It is 52m long and at its widest about 6m. The ditch is shorter than the existing mound, particularly to the south.

The northern part of the ditch appears to have slightly different orientation to the section of ditch to the south, the change in direction occurring close to where A is marked in Figure 27. There is also a suggestion that the northern section of ditch is slightly wider than that to the south, with a more bulbous end.

It is interesting to compare this ditch shape to the form of the mound. As discussed in section 5.1, and as can be seen in Figure 25, the axis of the mound twists slightly between its two highest points, and it is noteworthy that the ditch mirrors this, also shifting direction slightly at the same general location. This suggests the construction of the long barrow could have been in two phases, and the irregular nature of the mound may not be entirely due to modification during historic times, as discussed in section 5.1.

As mentioned in section 5.1, there is a wide 14.5m shallow hollow to the north-east of the mound which has been posited to mark the remains of the flanking ditch. The ditch response indicated in the results (Figure 25) suggests a much narrower ditch than this, and although the ditch anomaly occupies the same general location as the earthwork depression, there is little evidence for correlation between the two features.

Severe magnetic disturbance can be seen in Figure 25 across much of the survey area, which has in all likelihood masked any smaller responses from archaeological features. A couple of minor anomalies (B and C) have been marked on Figure 27. The magnetic disturbance also makes it hard to accurately discern the edges of the ditch; the visualisation in Figure 26 helps to reduce the noise, and it is apparent that the ditch edges are fairly uniform, apart from where the slight change of direction occurs.

5.6 Discussion

This survey has been successful in defining the flanking ditch of the long barrow, which from the survey appears to be 52m long and a maximum of 6m wide. The ditch is shorter than the mound, and

much narrower than that postulated from the wide shallow depression that exists adjacent to the mound. Given the bulk of the mound, this suggests the ditch may have been of significant depth if the flanking ditches acted as sources of mound material.

The survey has allowed a subtle change in the direction of the ditch to be discerned, and given this is mirrored in the mound axis, provides good evidence for a possible two-phase construction; multiple phases are also hinted at in the other surveys in this report. The survey has therefore been successful in questioning the assumption that the irregularity of the mound is entirely due to more modern modification and disturbance, through historic intervention, and the existence of a boundary and track crossing the mound.

The cause of the magnetic disturbance across the survey area is not known. Spreading of green waste was suspected, but the tenant farmer was not aware of any green waste being spread on the field.

Figure 29 shows the scheduled area overlaid on the survey results. It is clear the scheduling fails to incorporate a southern section of the long barrow ditch.

6 General Discussion

Despite their close proximity, the three long barrows surveyed exhibit very contrasting mound forms. At Thickthorn Farm, following ploughing, the mound is short and oval shaped. The well preserved, regular, trapezoidal mound of the Chettle House Long Barrow is of very different character, and the irregular and potentially reconfigured mound of Chettle Long Barrow is different again. A key objective of the surveys was to examine the shape and plan of surviving flanking ditches, in order to allow a more nuanced comparison of the likely character of the long barrows; long barrow ditches are less prone to modification, erosion and destruction and therefore more likely to reflect the original features of the long barrow. This is borne out by the flanking ditch at Chettle House extending past the end of the current mound, demonstrating historic attrition of the mound through ploughing.

Figure 30 shows a comparison of the survey results for the three long barrows, all at the same scale. At a general level, as was seen with the mounds, the ditches are very different in character. Thickthorn Farm Long Barrow has short, wide set, slightly curving ditches which contrast sharply with the very long straight uniform ditch surveyed at Chettle House Long Barrow. The Chettle Long Barrow ditch is less regular than the latter.

Thickthorn Farm Long Barrow sits on the same chalk ridge as Thickthorn Down Long Barrow and the Gussage St Michael 10 long barrow. Excavation (Drew and Piggot 1936, Plate 16) and geophysical survey (Gill 2021, Figure 13) have shown the ditches of these latter barrows to be remarkably similar in plan, with a causewayed U-shaped ditch which is irregular in nature. Despite the similar size and oval shaped mound at Thickthorn Farm, the survey results suggest the ditches are different in character, with no return around one end to form a U-shape. The ditches of all three barrows around Chettle are also more regular in outline, contrasting with the irregular sinuous nature of the U-shaped ditches of the Thickthorn Down and Gussage St Michael 10 barrows.

It is noteworthy that, for all three long barrows, there are hints of more than one phase of construction. At Thickthorn Farm this manifests itself in a slight discontinuity in the south-western ditch, and two close but separate ditches to the north-east. At the Chettle House and Chettle long barrows, slight deviations in the ditch suggest possible multiple phases, and these may be reflected

in the axis of the mounds. The findings add to the evidence of multi-phase construction of long barrows on Cranborne Chase; excavation of Gussage Cow Down long barrow 78 showed two phases of mound building (French et al 2007, Figure 3.8), and there has been much discussion of the various phases of mound construction at Wor Barrow, summarised by Loveday (2006, 48-51).

Two of the long barrow surveys picked up long linear anomalies in the vicinity of the mounds that are likely to be later linear boundary ditches. At Thickthorn Farm, the anomaly lines up perfectly with a linear ditch crop mark which is seen to deviate around the southern side of the barrow. A second linear ditch crop mark also appears to approach the barrow and may have been detected in the survey results. At Chettle House Long Barrow, a strong linear anomaly appears to be aligned on the original end of the mound. The results provide further evidence of the later use of long barrows as durable reference points in the landscape.

7 Conclusion

Surveys of the three long barrows that cluster around Chettle have proved very successful in adding to our knowledge of the nature and character of long barrows on Cranborne Chase. These surveys have allowed the ditch plans of the three long barrows to be compared and contrasted.

At Chettle House Long Barrow, the northern ditch appears to be obscured beneath rough ground and a barbed wire fence, and would repay further investigation by alternative methods, such as resistivity survey. At Chettle Long Barrow, the two sides of the monument are under different land ownership, and it would be beneficial to gain permission to survey the west side of the mound, where accessible.

The surveys have helped to define the extent of the ditches associated with the barrows, and it has been noticed that, for the Chettle and Chettle House Long Barrows, parts of the ditches fall outside the scheduled protected areas (Figure 29 and Figure 19 respectively). At Thickthorn Farm, a ditch possibly associated with a phase of mound construction falls partly outside the scheduled area (Figure 10).

The results from this survey provide a valuable addition to the relatively small but growing corpus of well-defined long barrow ditch plans. The findings will hopefully feed into wider analysis of the character of long barrows both on Cranborne Chase, and further afield.

8 Acknowledgements

The FM36 gradiometer was made available to AVAS through the LoCATE project, a joint initiative run by Bournemouth University and the New Forest National Park Authority aimed at providing local heritage groups with access to, and training in, advanced geophysics equipment.

Thanks go to the team of AVAS volunteers who assisted with the laying out of grids and the moving of survey lines, as well as undertaking the actual surveys using the gradiometer.

AVAS would like to thank the landowners, Tom and Rosamond Sweet-Escott (Chettle House Long Barrow) and the Chettle Estate (Chettle and Thickthorn Farm Long Barrows) for granting permission to undertake the surveys, and Alice Favre, Chettle Estate Manager, for liaising with tenant farmers. Thanks also go to staff at Historic England for granting the Section 42 licences.

9 Figures

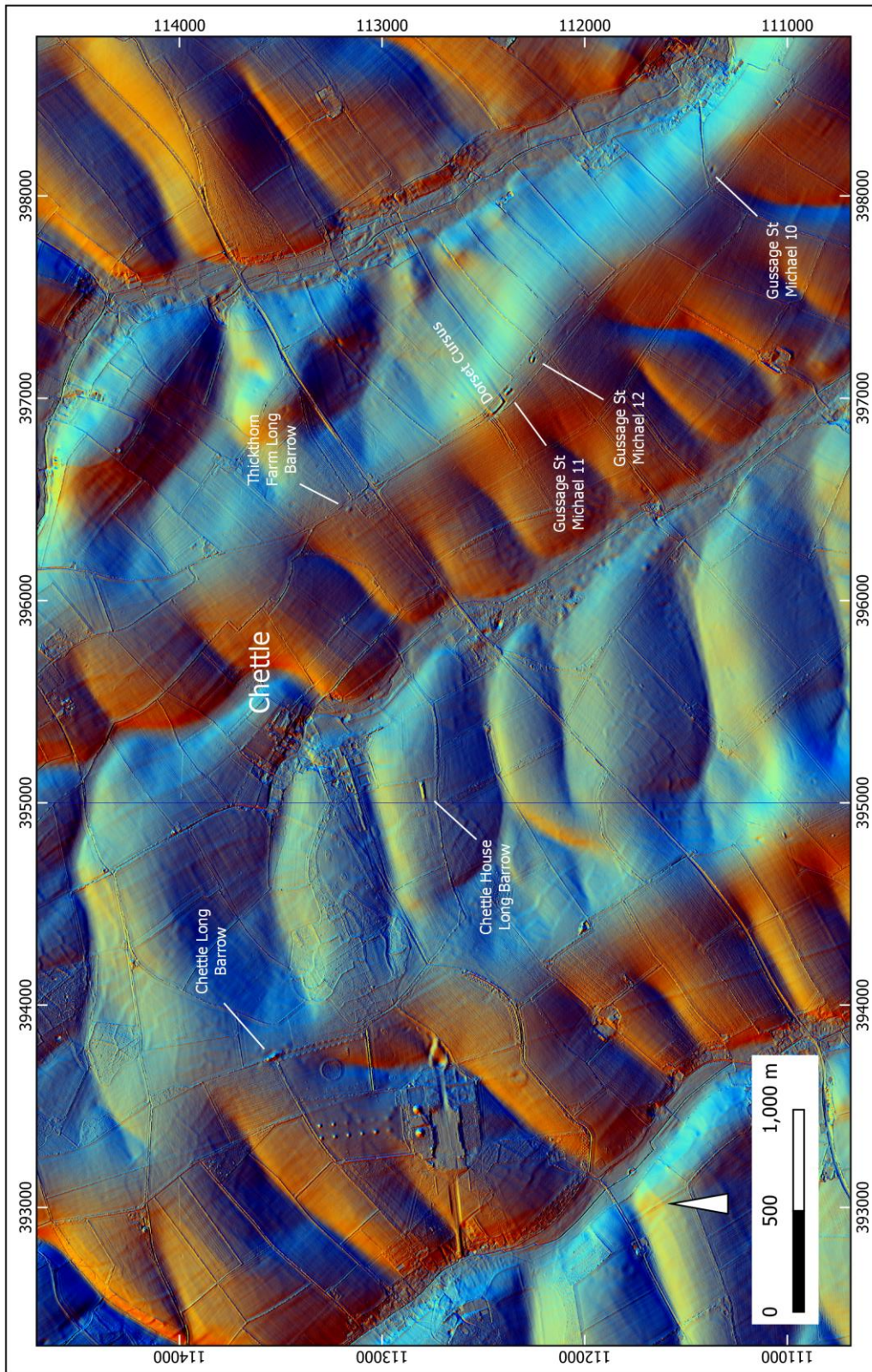


Figure 1: Long barrows in the vicinity of Chettle, shown on Lidar (1m DTM). Contains public sector information licensed under the Open Government Licence v3.0

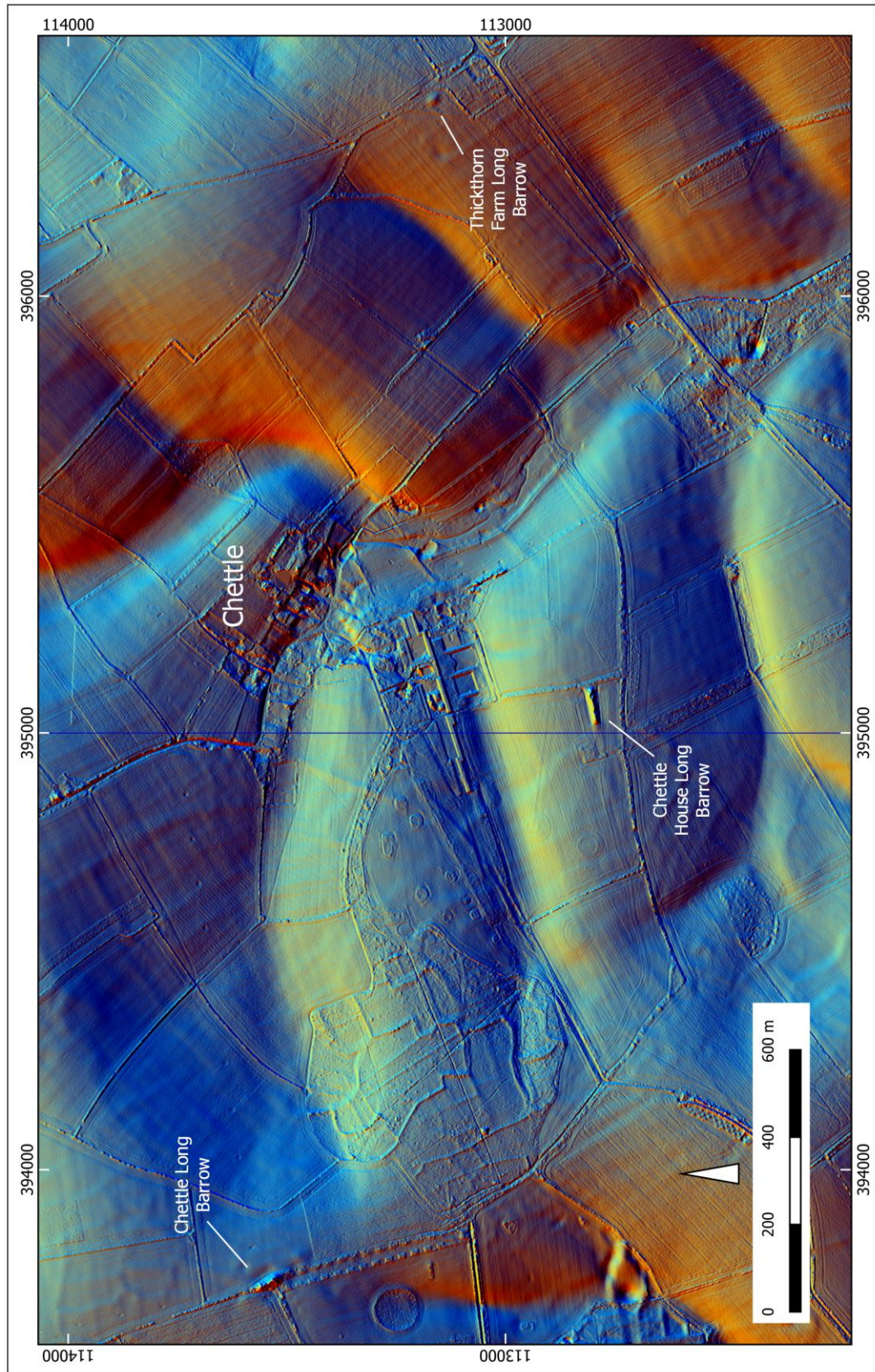


Figure 2: Locations of the three long barrows surveyed, with a Lidar (1m DTM) backdrop. Contains public sector information licensed under the Open Government Licence v3.0

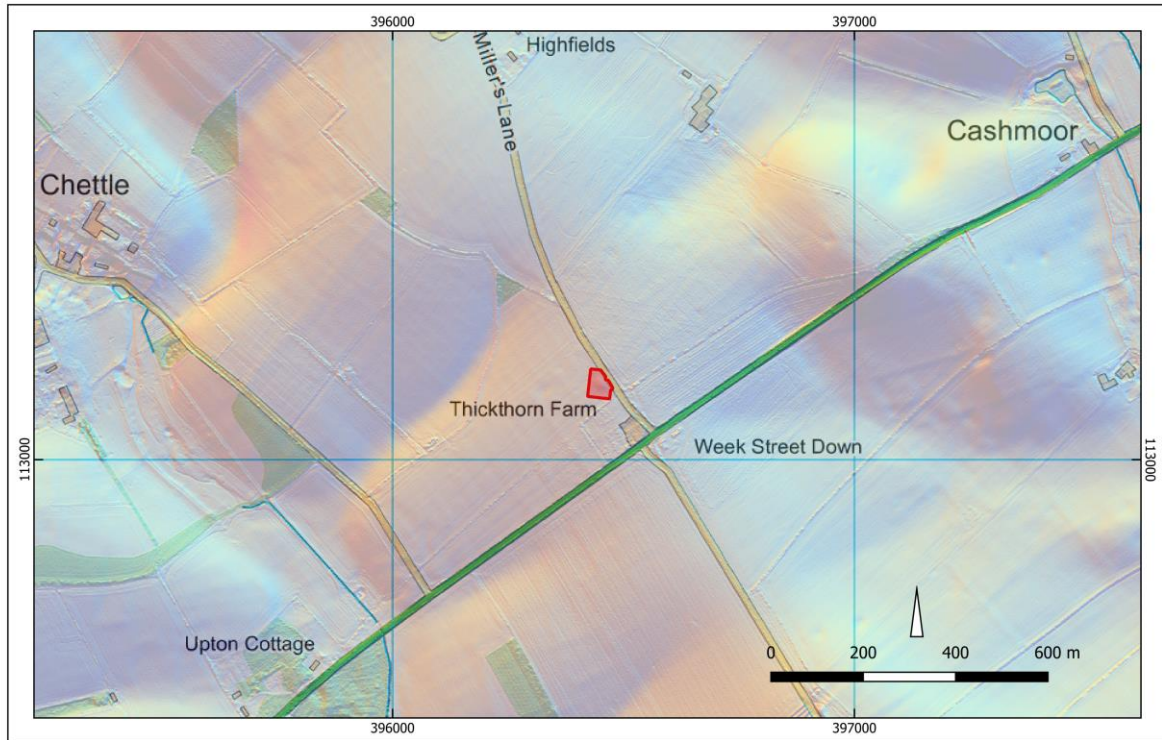


Figure 3: Thickthorn Farm Long Barrow: location of the survey area (shown in red). Contains public sector information licensed under the Open Government Licence v3.0. Contains OS data © Crown Copyright and database right 2021.

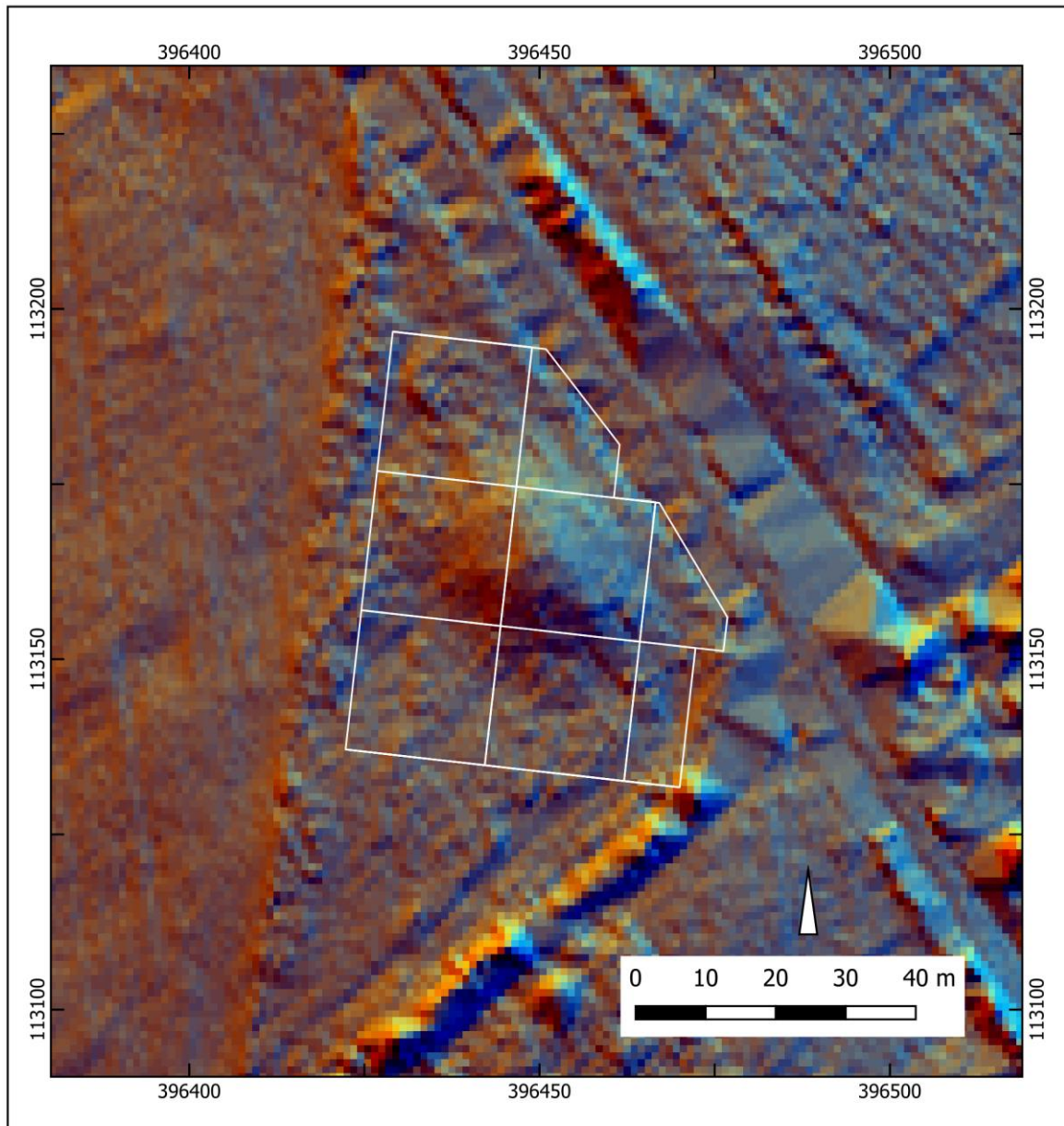


Figure 4: Thickthorn Farm Long Barrow: surveyed grid squares with a Lidar backdrop (multi-direction hillshade of 1m DTM). Contains public sector information licensed under the Open Government Licence v3.0.

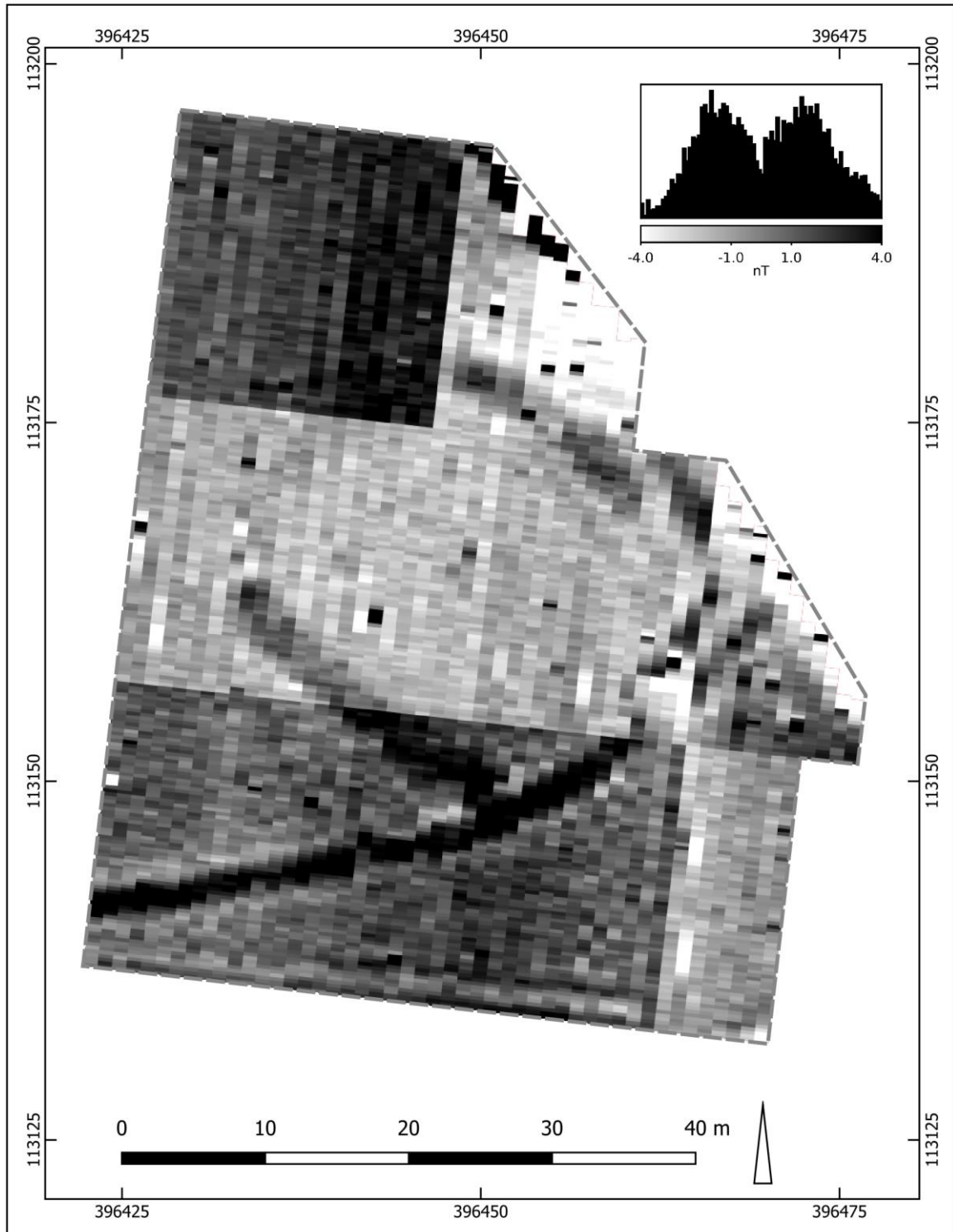


Figure 5: Thickthorn Farm Long Barrow: minimally enhanced data of gradiometer survey, linear greyscale -4.0 to +4.0nT

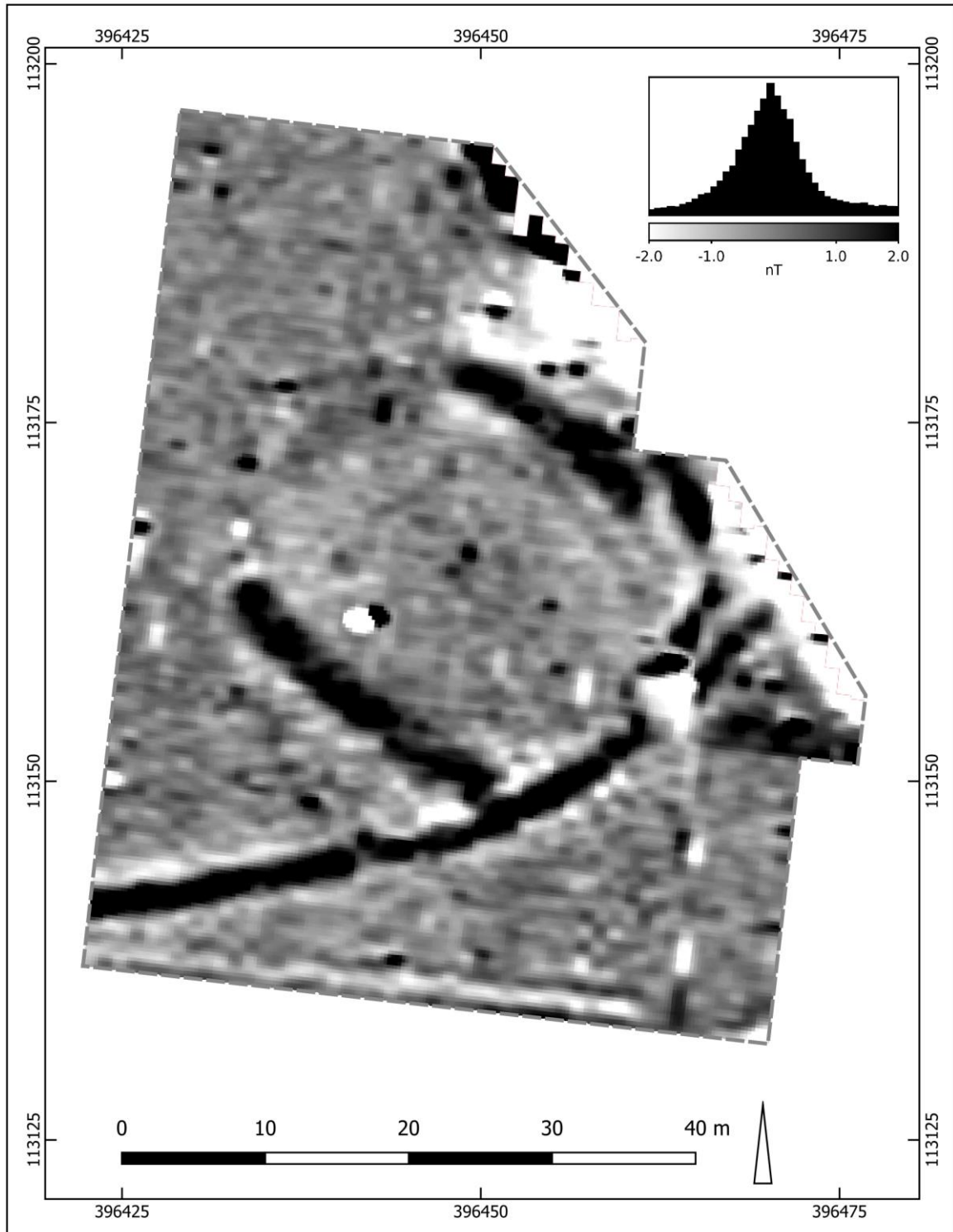


Figure 6: Thickthorn Farm Long Barrow: processed results: de-striped and interpolated. Linear greyscale, display range -2.0 to +2.0nT.

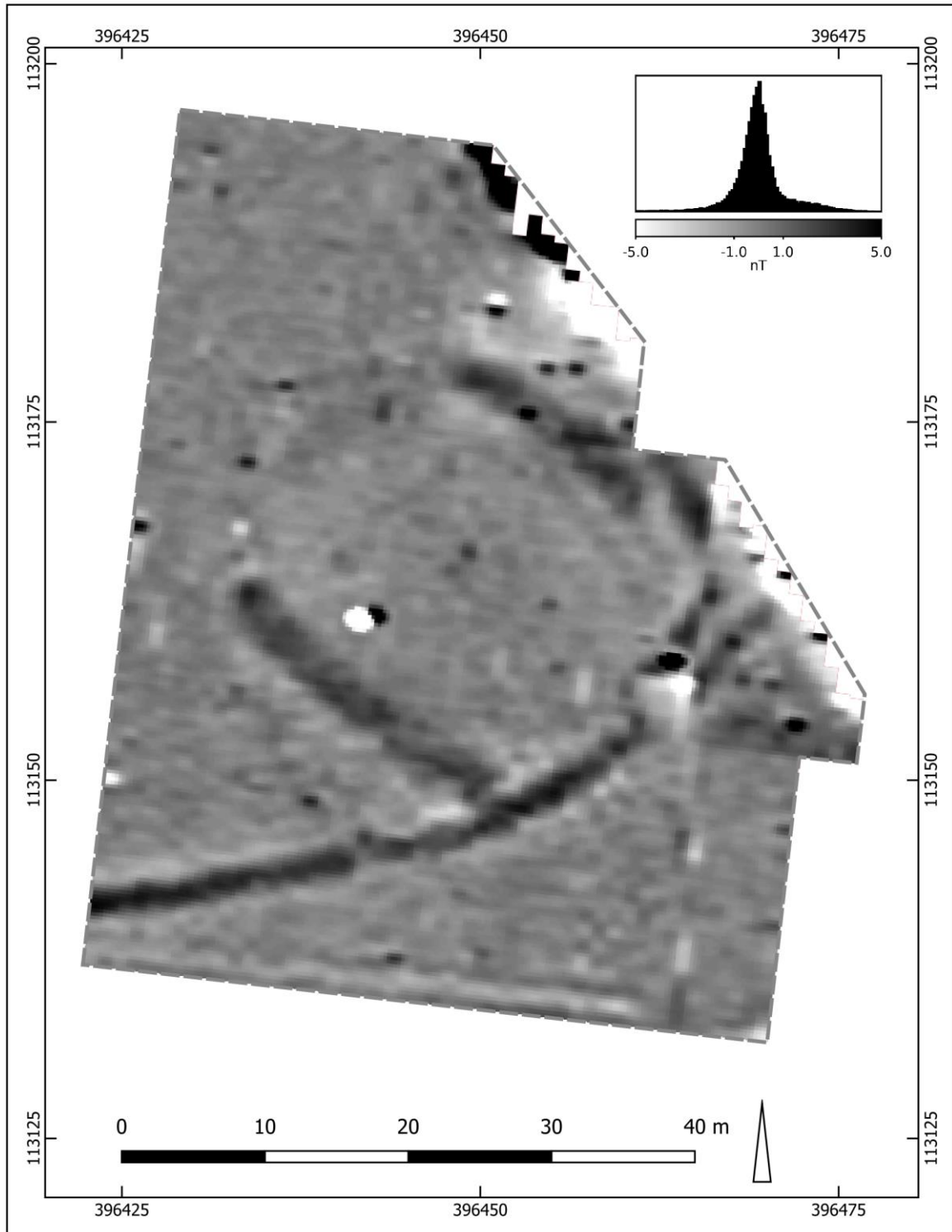


Figure 7: Thickthorn Farm Long Barrow: processed results: de-striped and interpolated. Linear greyscale, display range -5.0 to +5.0nT. Allows ferrous signals to be distinguished more clearly.

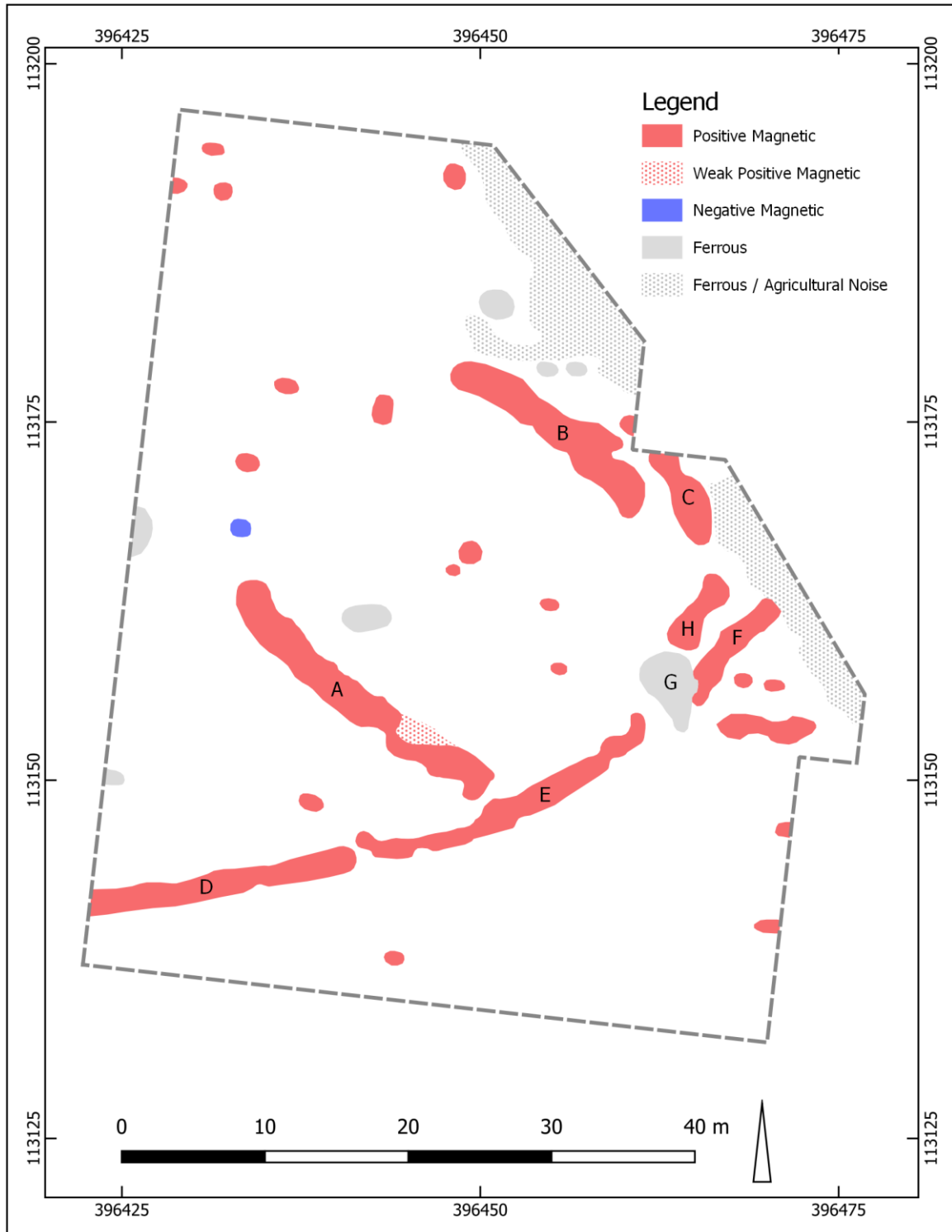


Figure 8: Thickthorn Farm Long Barrow: interpretation of geophysics results

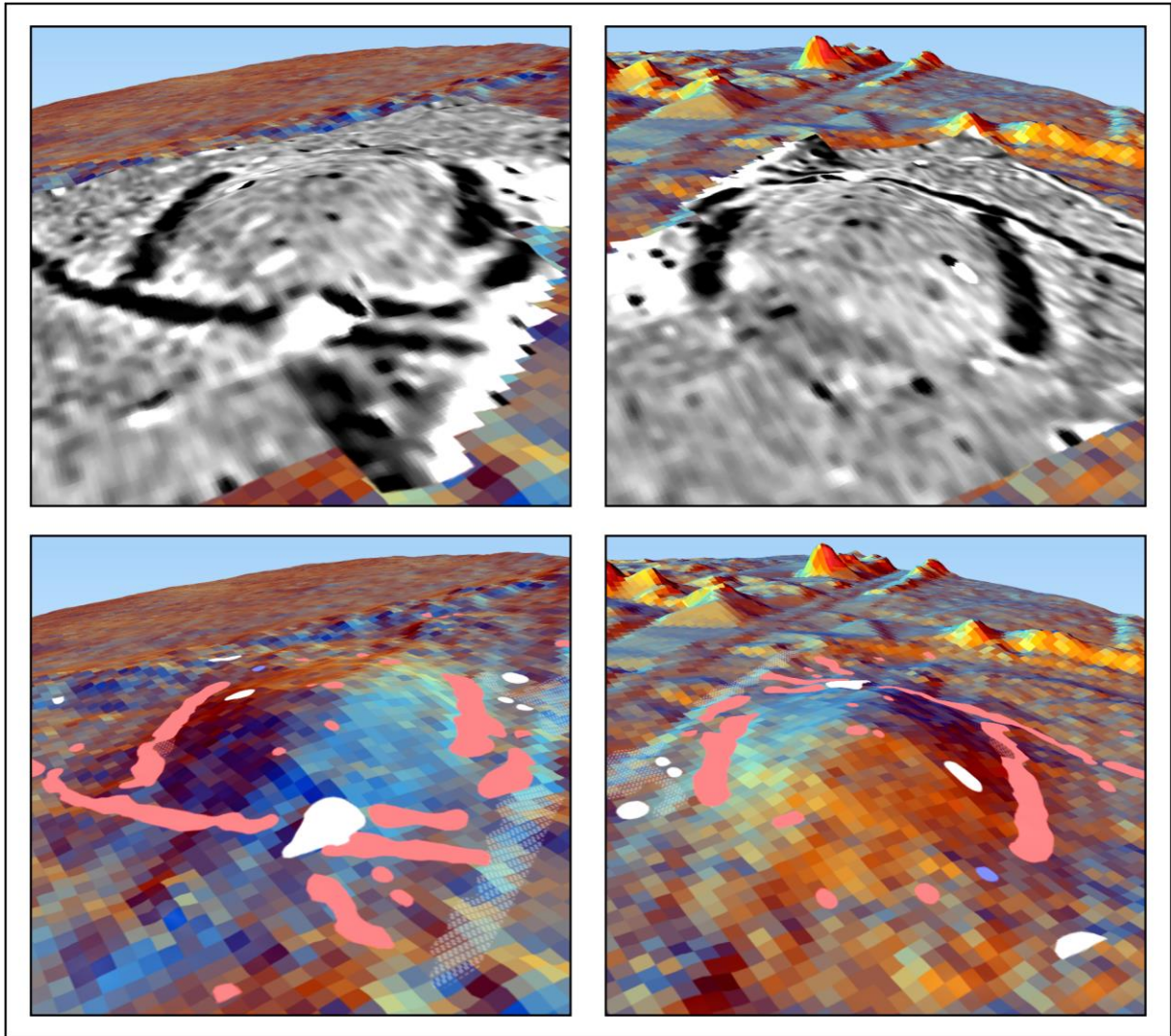


Figure 9: Thickthorn Farm Long Barrow: geophysics results draped onto 3D model derived from Lidar 1m DTM. Vertical exaggeration x6. Contains public sector information licensed under the Open Government Licence v3.0.

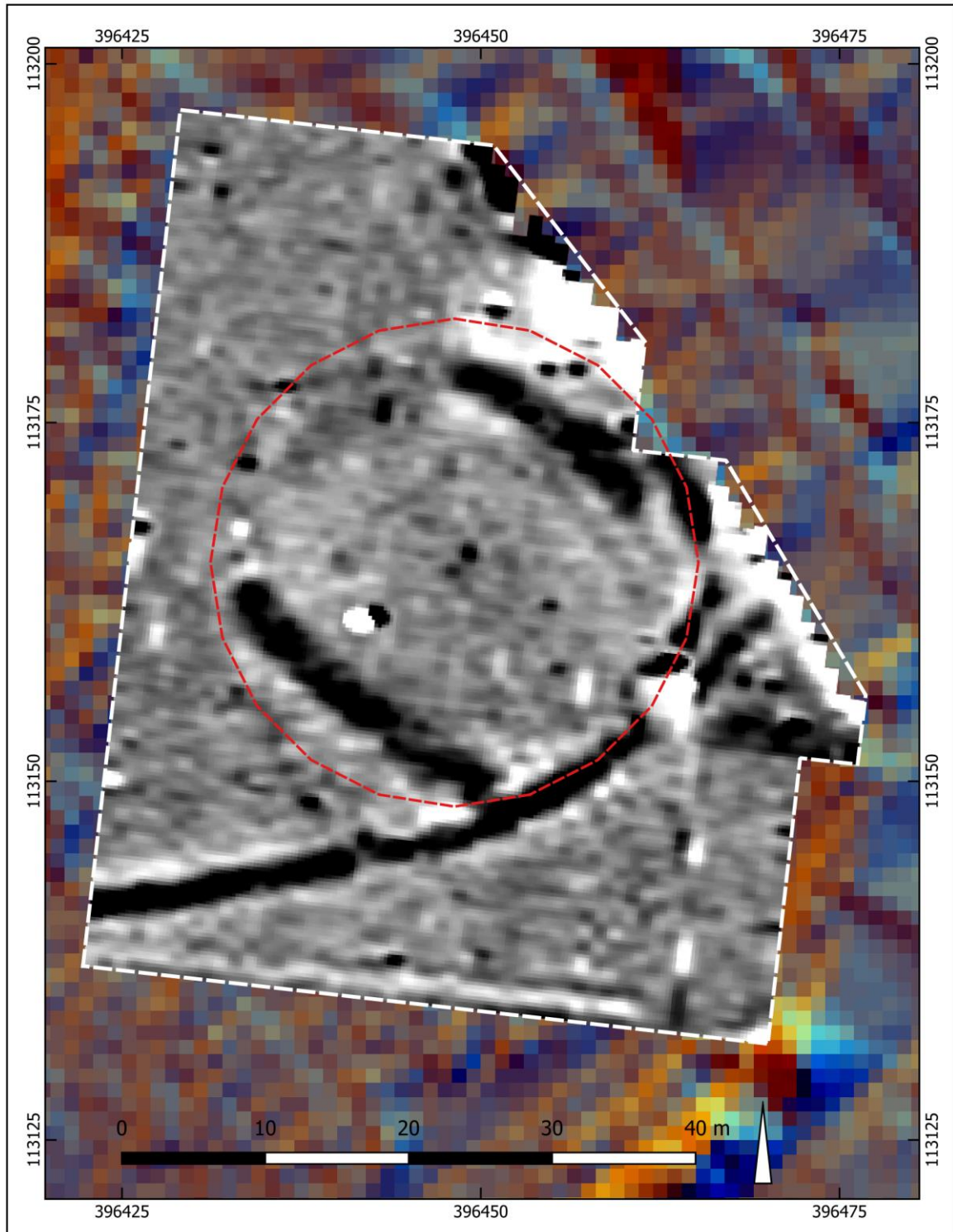


Figure 10: Thickthorn Farm Long Barrow: scheduled area (red dashed line) in relation to survey results

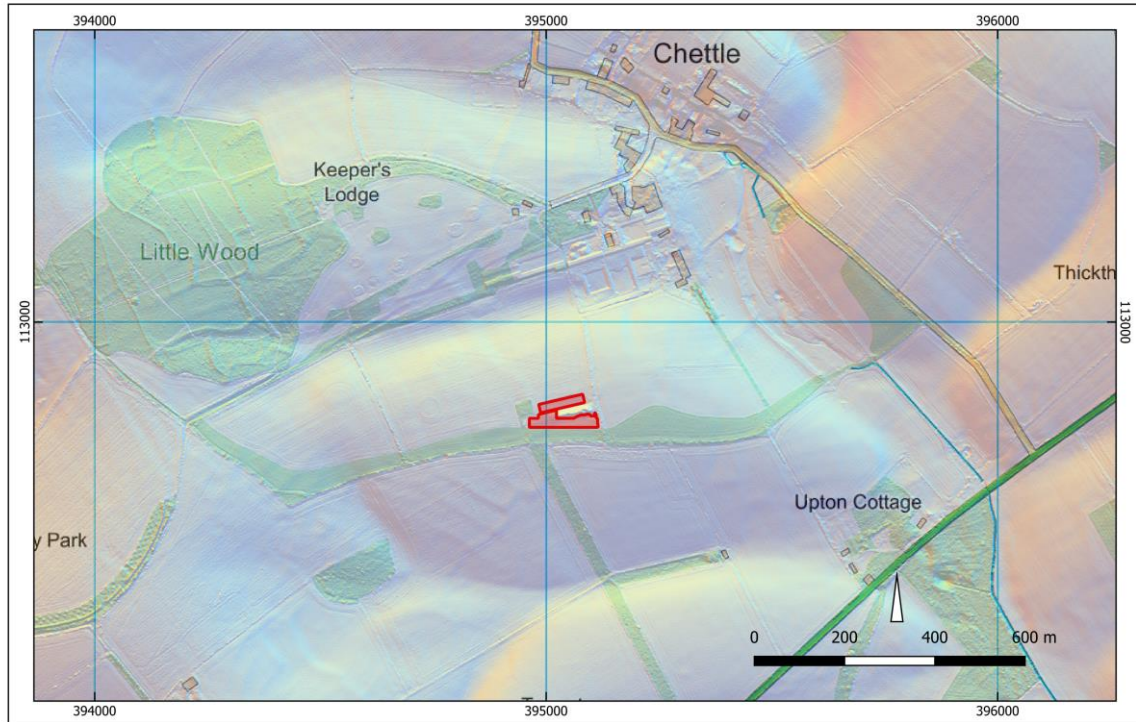


Figure 11: Chettle House Long Barrow: location of the survey area (shown in red). Contains public sector information licensed under the Open Government Licence v3.0. Contains OS data © Crown Copyright and database right 2021.



Figure 12: Chettle House Long Barrow: hillshade of 1m DTM. Contains public sector information licensed under the Open Government Licence v3.0.



Figure 13: Chettle House Long Barrow: surveyed grid squares with a Lidar backdrop. Contains public sector information licensed under the Open Government Licence v3.0.

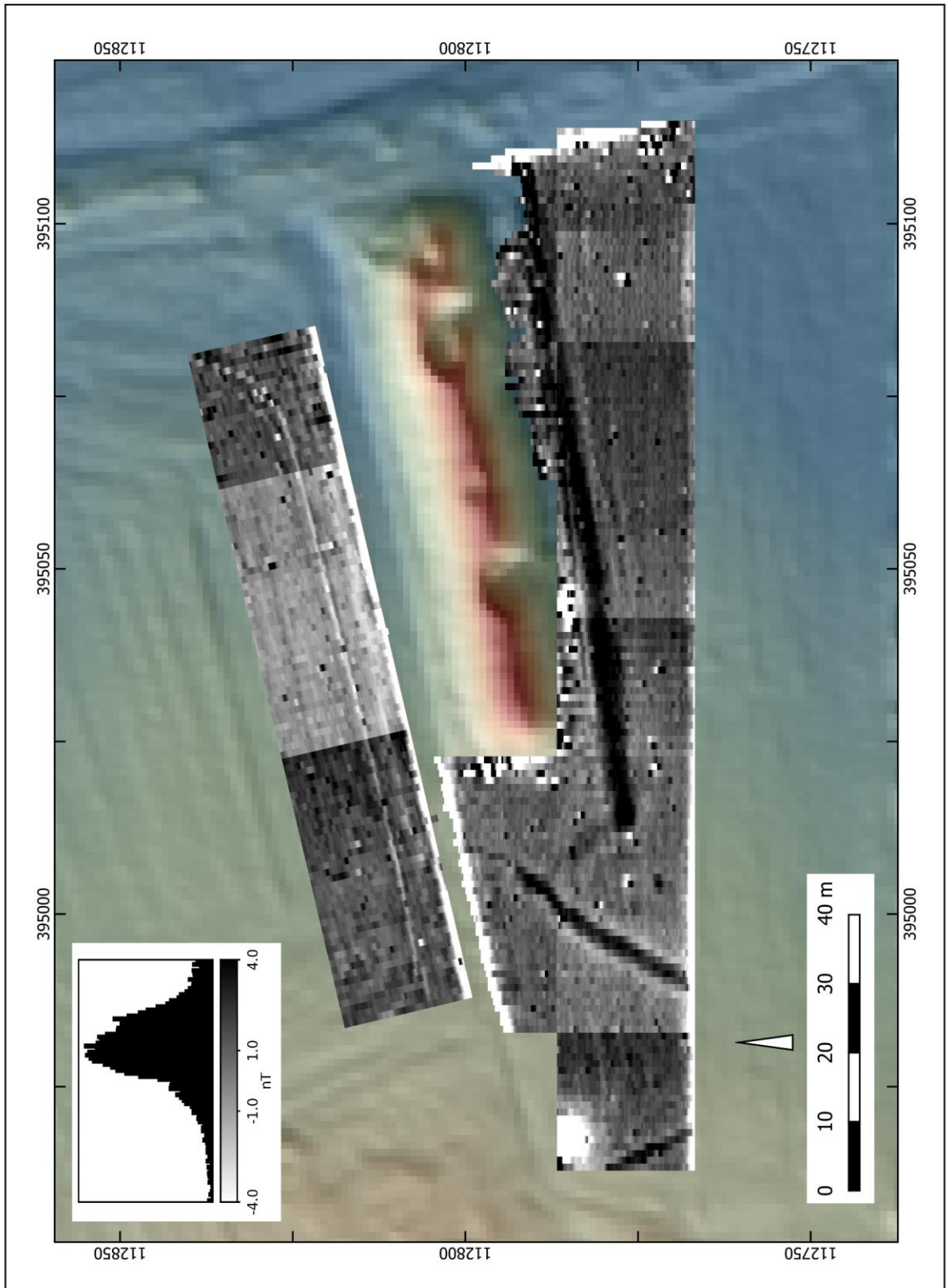


Figure 14: Chettle House Long Barrow: minimally enhanced data of gradiometer survey, linear greyscale -4.0 to +4.0nT



Figure 15: Chettle House Long Barrow: processed results: de-striped and interpolated. Linear greyscale, display range -2.0 to +2.0nT.



Figure 16: Chettle House Long Barrow: processed results: de-striped and interpolated. Linear greyscale, display range -5.0 to +5.0nT. Allows ferrous signals to be distinguished more clearly.

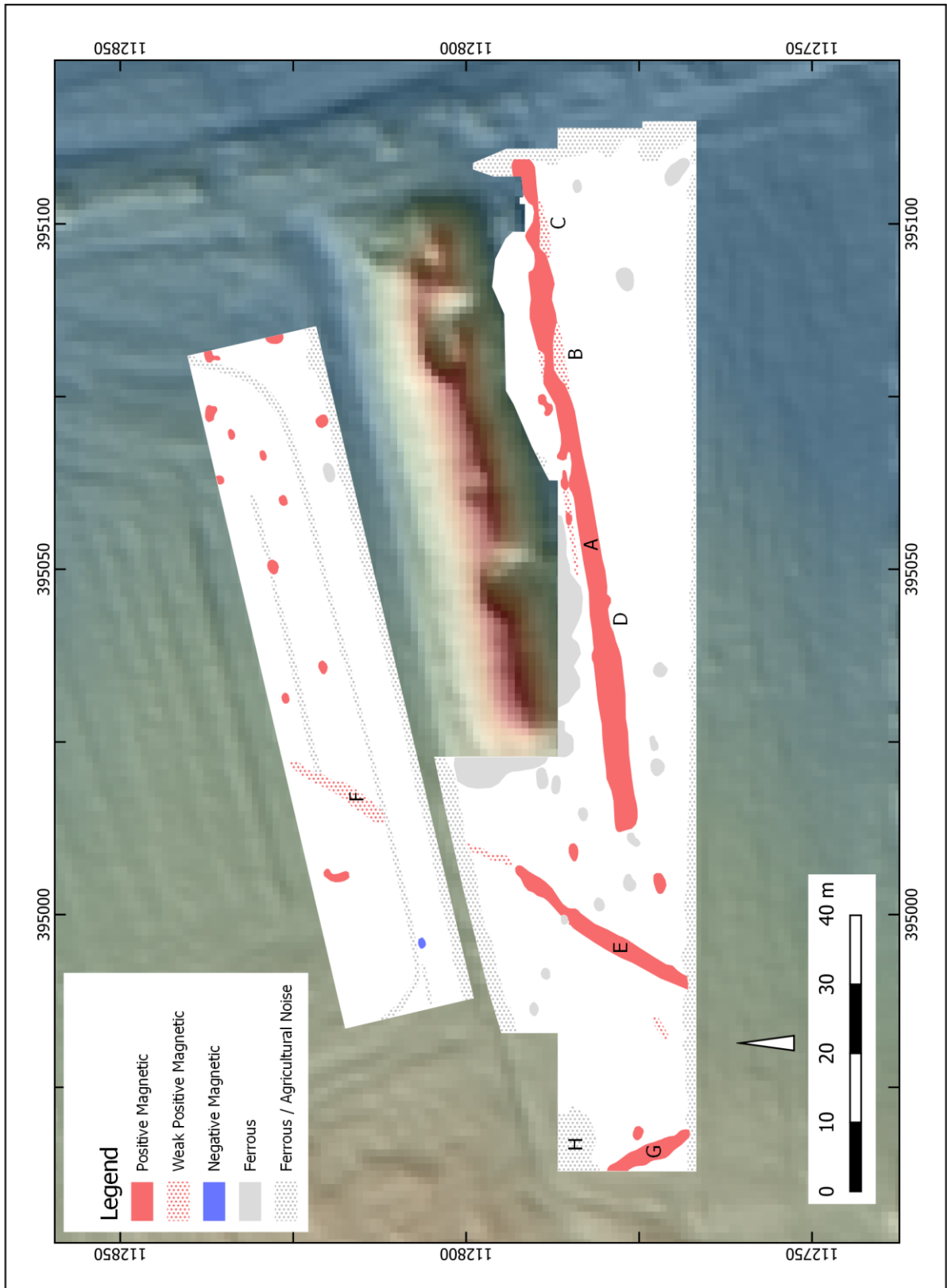


Figure 17: Chettle House Long Barrow: interpretation of geophysics results

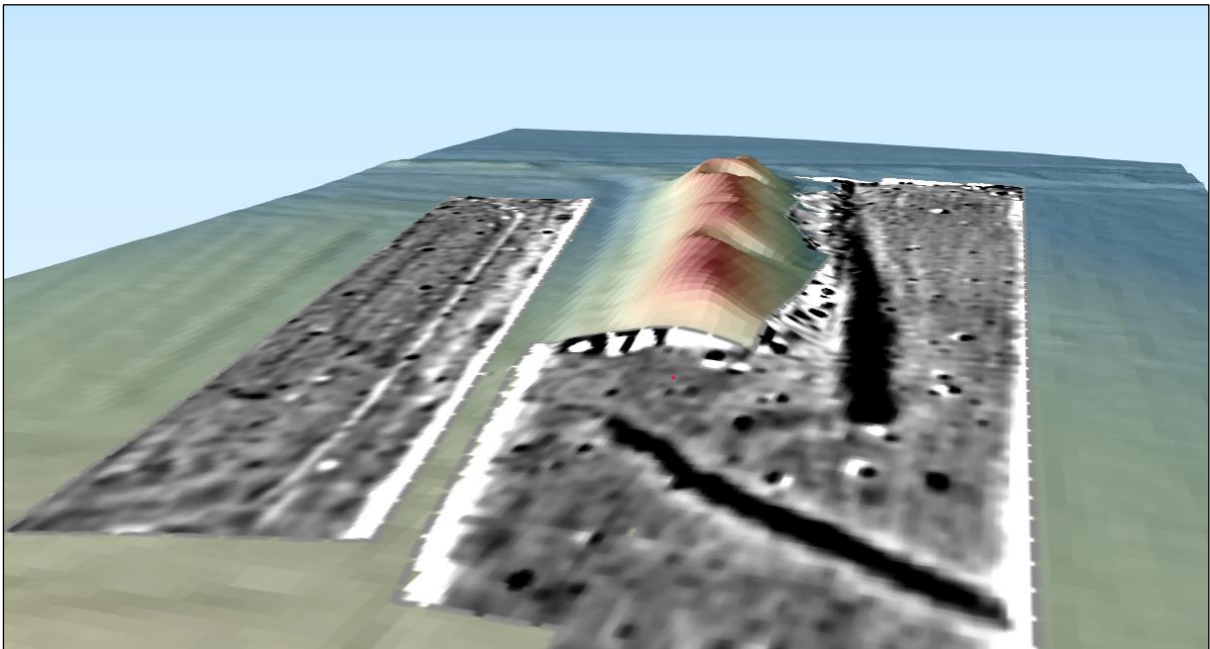
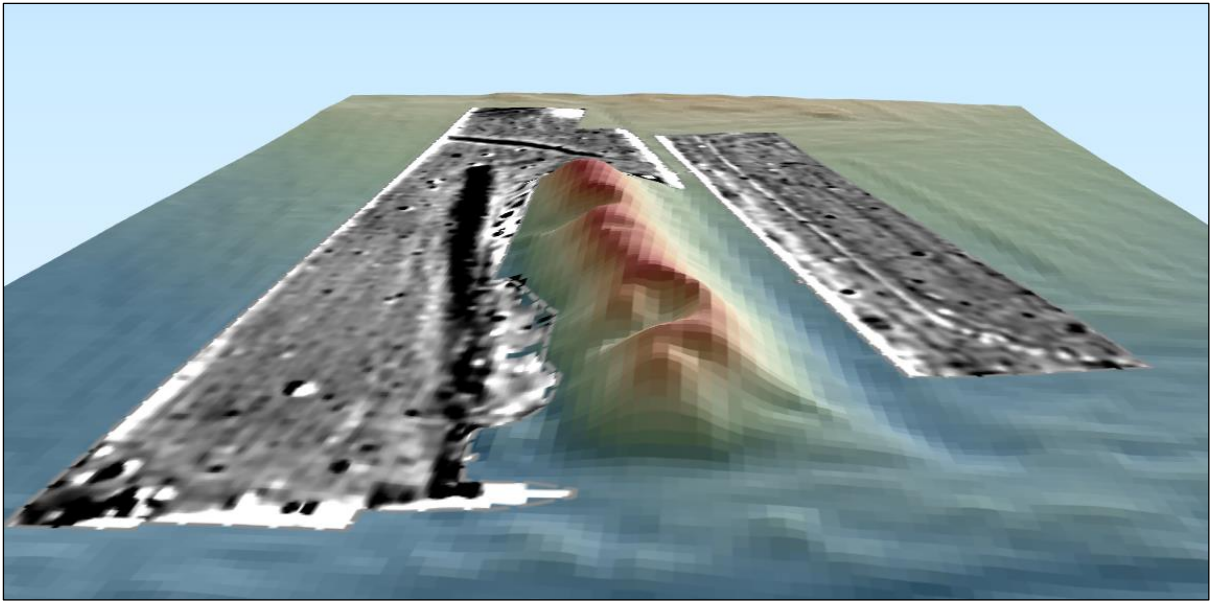


Figure 18: Chettle House Long Barrow: geophysics results draped onto 3D model derived from Lidar 1m DTM. Vertical exaggeration x2. Contains public sector information licensed under the Open Government Licence v3.0.



Figure 19: Chettle House Long Barrow: scheduled area (red dashed line) in relation to survey results

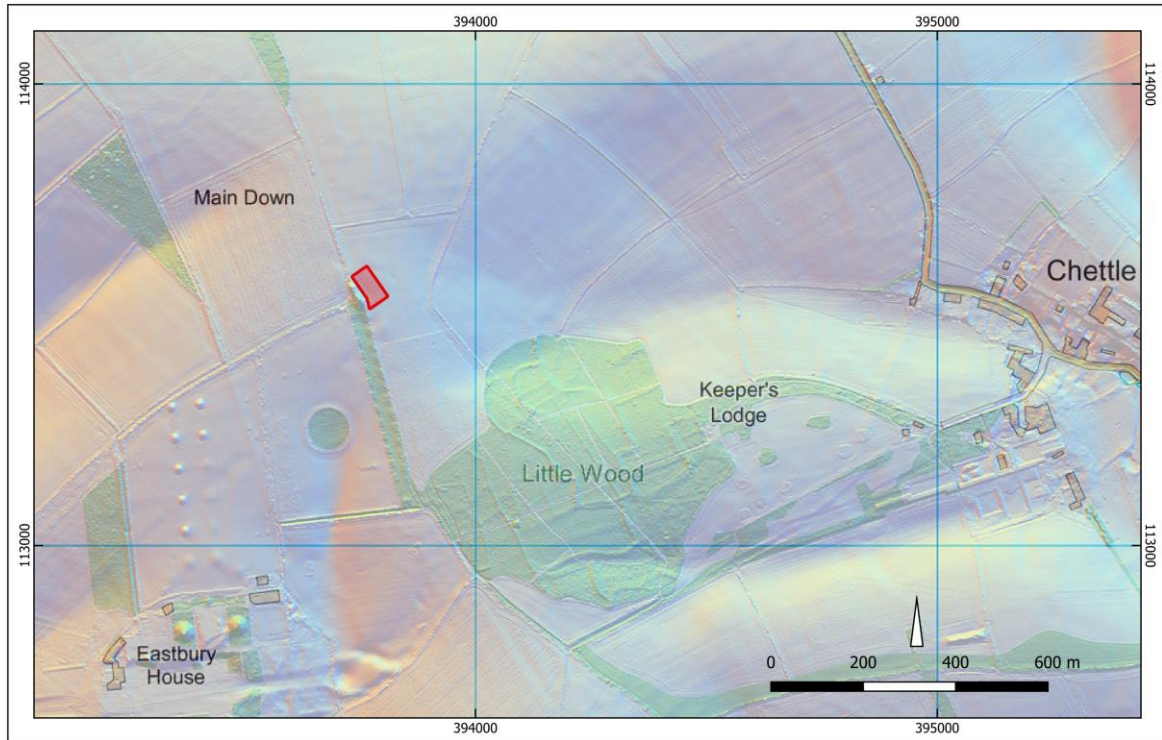


Figure 20: Chettle Long Barrow: location of the survey area (shown in red). Contains public sector information licensed under the Open Government Licence v3.0. Contains OS data © Crown Copyright and database right 2021.

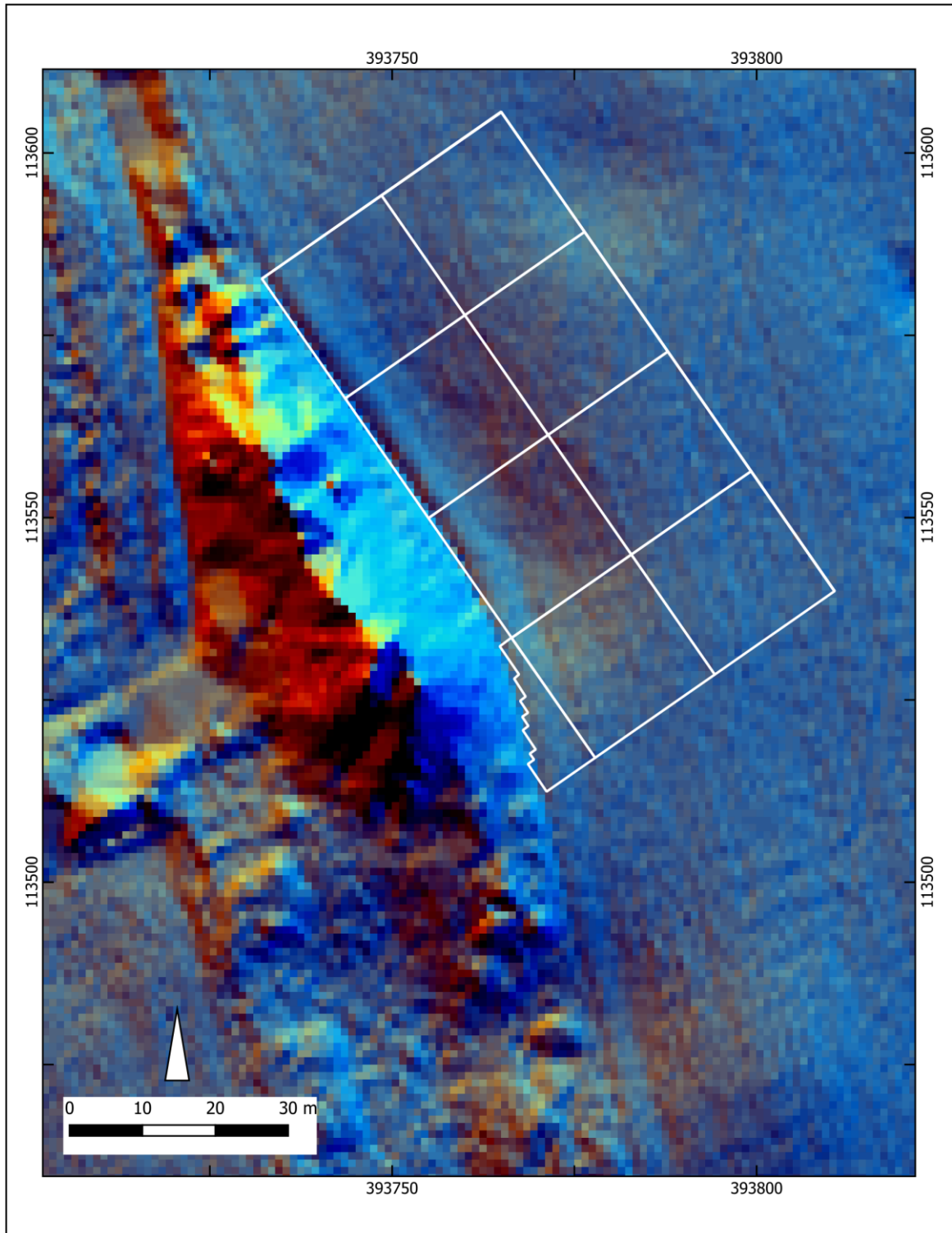


Figure 21: Chettle Long Barrow: surveyed grid squares with a Lidar backdrop (multi-direction hillshade of 1m DTM). Contains public sector information licensed under the Open Government Licence v3.0.

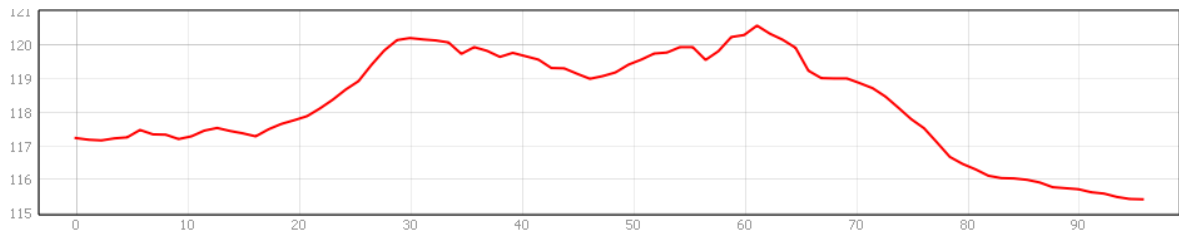


Figure 22: Chettle Long Barrow: longitudinal profile of the mound derived from Lidar 1m DTM. North end of the mound is to the left of the graph, units in metres

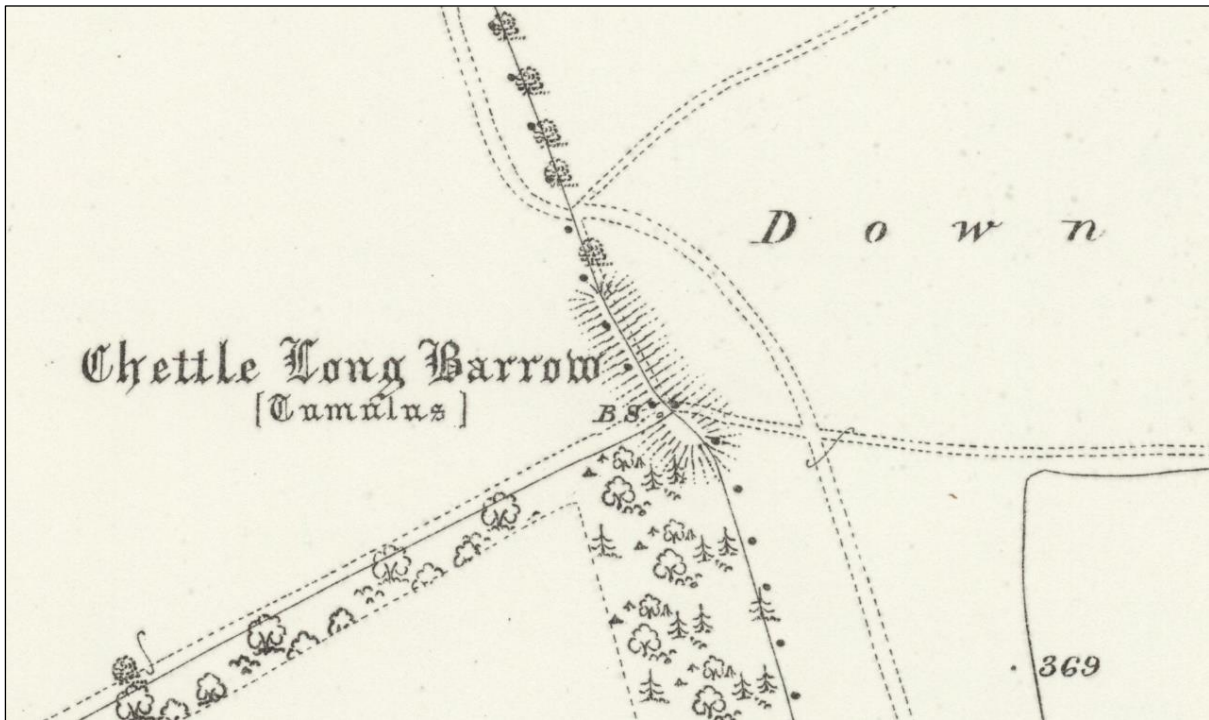


Figure 23: Chettle Long Barrow: Ordnance Survey 25-inch map, surveyed 1886, published 1887

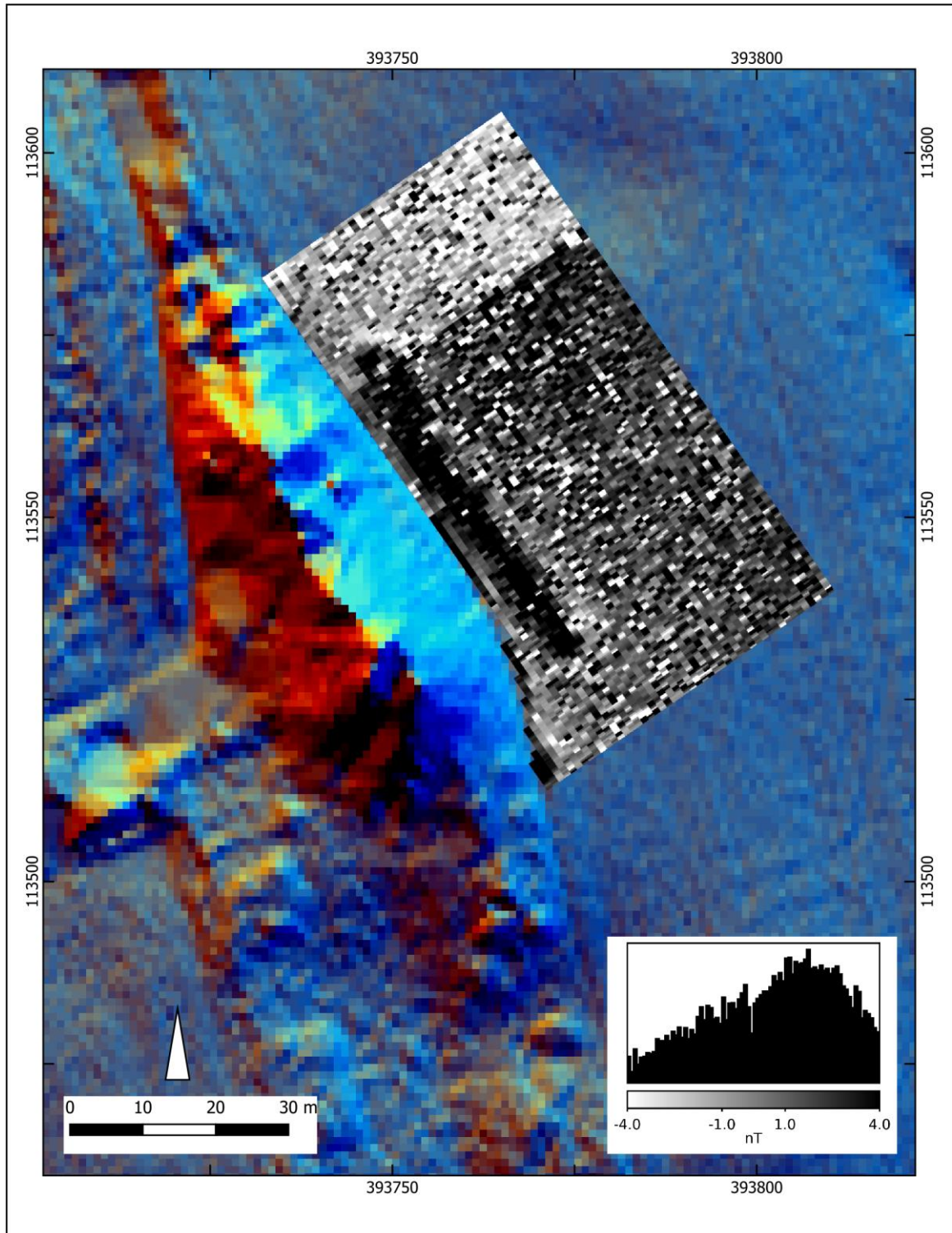


Figure 24: Chettle Long Barrow: minimally enhanced data of gradiometer survey, linear greyscale -4.0 to +4.0nT

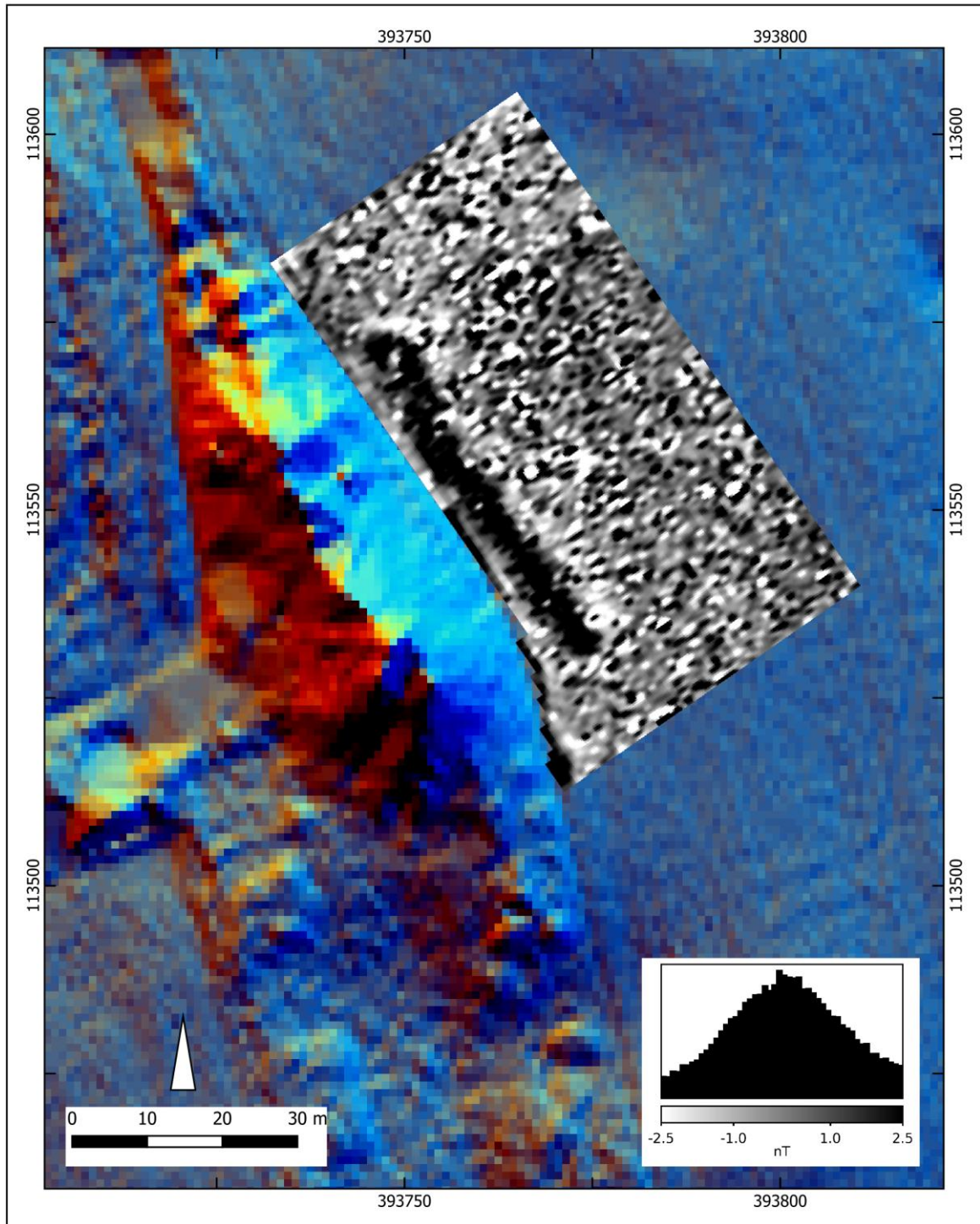


Figure 25: Chettle Long Barrow: processed results: de-striped and interpolated. Linear greyscale, display range -2.5 to $+2.5$ nT.

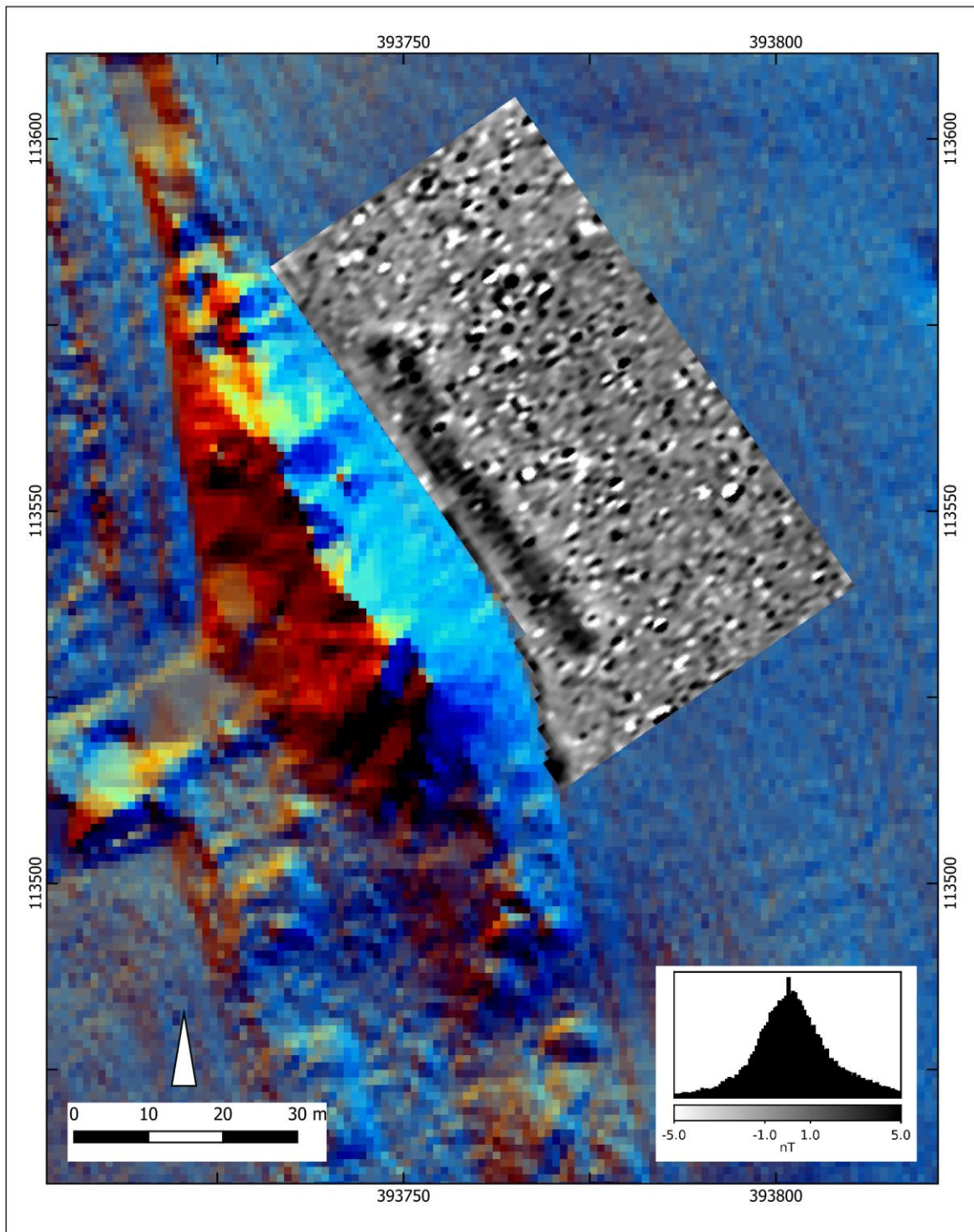


Figure 26: Chettle Long Barrow: processed results: de-striped and interpolated. Linear greyscale, display range -5.0 to +5.0nT. Allows ferrous signals to be distinguished more clearly.

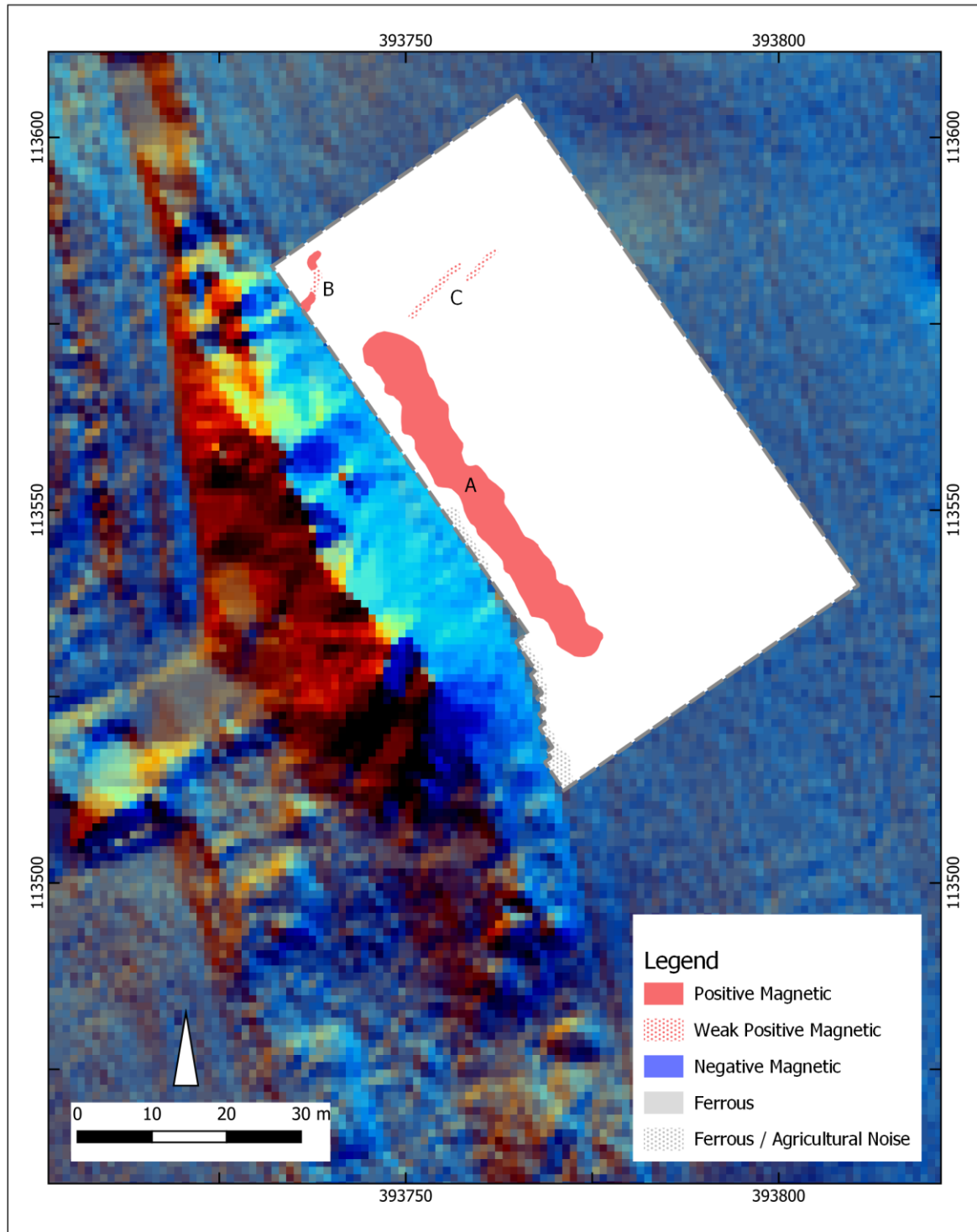


Figure 27: Chettle Long Barrow: interpretation of geophysics results

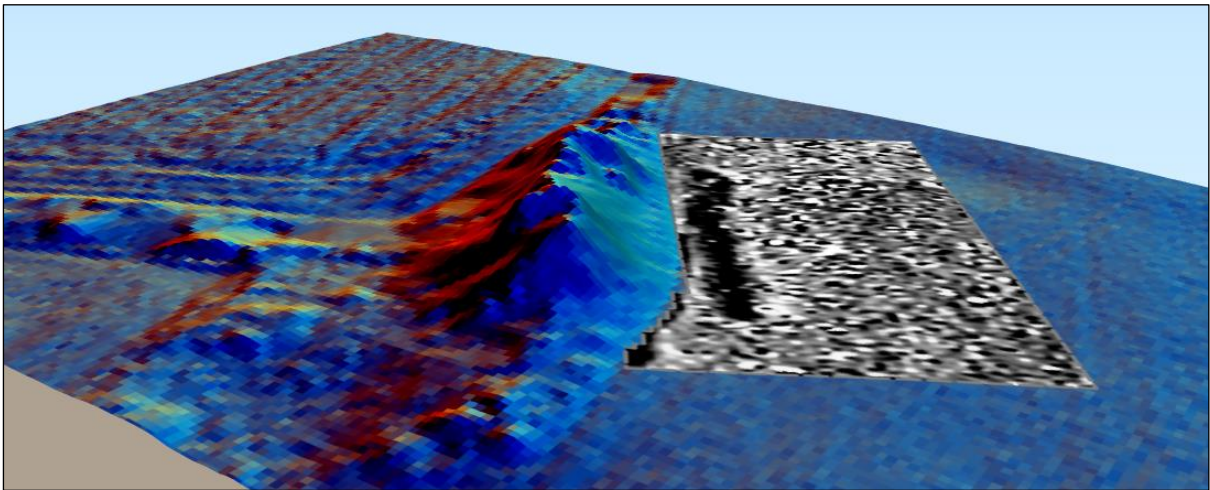
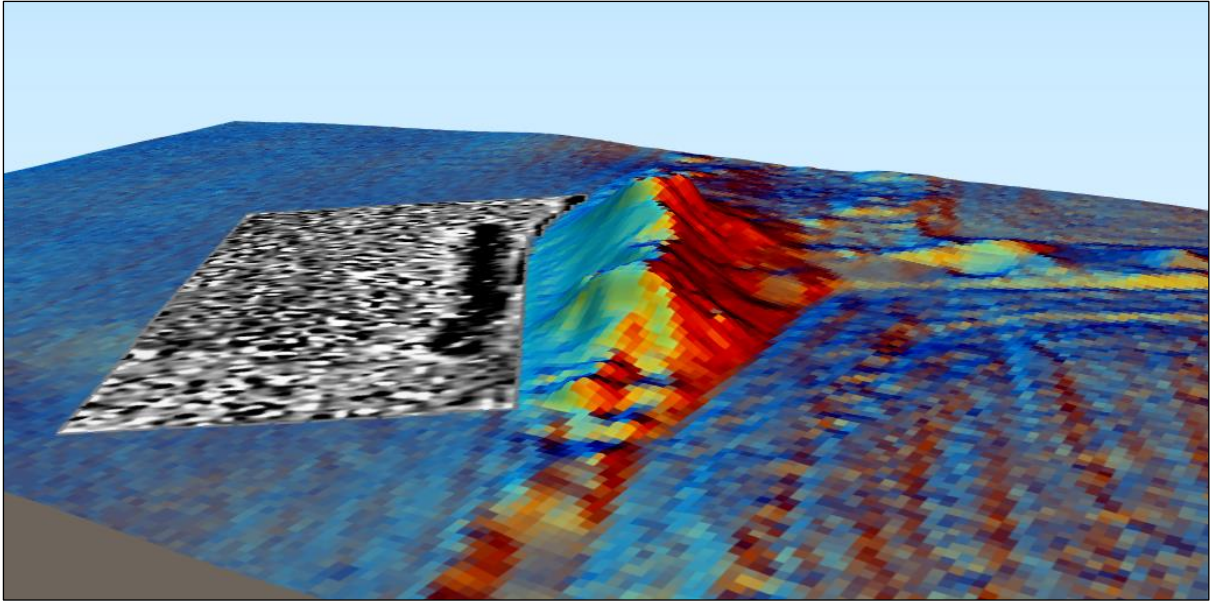


Figure 28: Chettle Long Barrow: geophysics results draped onto 3D model derived from Lidar 1m DTM. Vertical exaggeration x2. Contains public sector information licensed under the Open Government Licence v3.0.

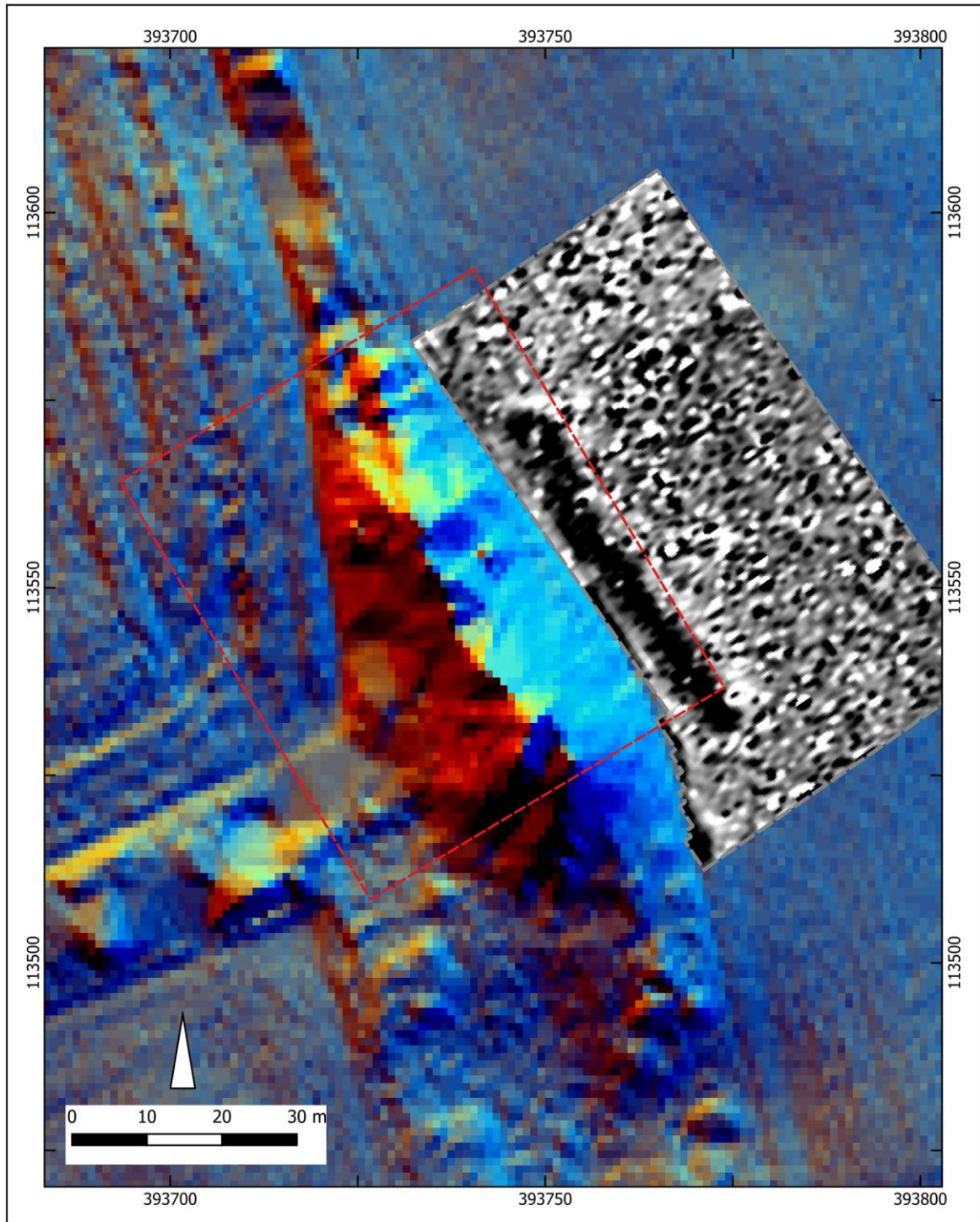


Figure 29: Chettle Long Barrow: scheduled area (red dashed line) in relation to survey results

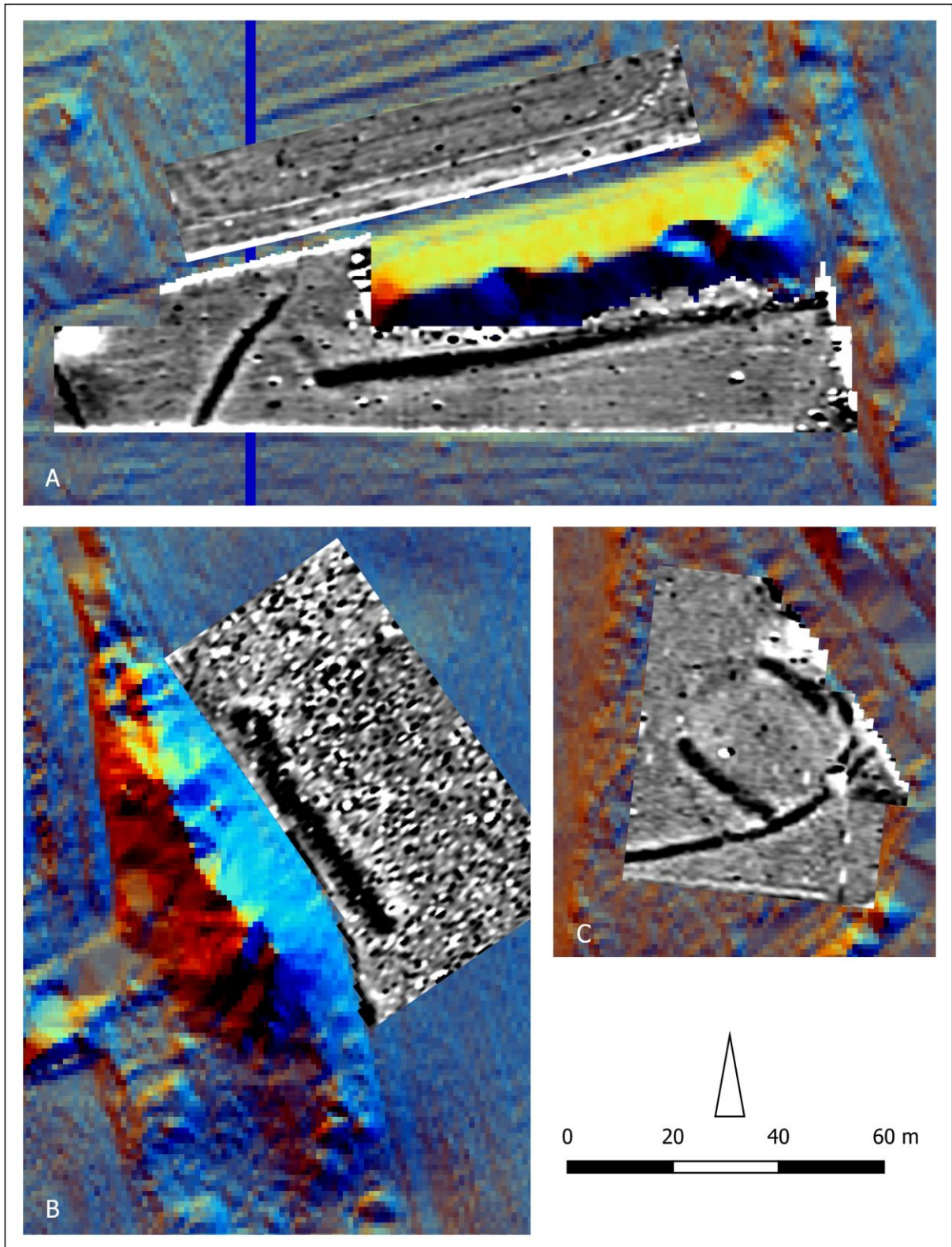


Figure 30: Comparison of the survey results, all at the same scale. A = Chettle House Long Barrow, B = Chettle Long Barrow and C= Thickthorn Farm Long Barrow. Contains public sector information licensed under the Open Government Licence v3.0

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