Report of Results from Geophysical Survey at Buckland Rings.

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CONTENTS

1. SUMMARY OF RESULTS

Over a total of 6 days, between Wednesday 26th April – Thursday 4th of May, the New Forest National Park Authority (NFNPA), along with students from Bournemouth University and NFNPA volunteers undertook a geophysical survey of Buckland Rings Hillfort. The objective was to use non-intrusive geophysical techniques to establish the presence/absence of any archaeological deposits within and around Buckland Rings hillfort.

Initial results show the presence of seven internal roundhouses, roughly 8-10 meters in diameter, as well as pits and ditches associated with occupation, these were all previously unknown. The results also show the locations of the Hawkes excavation trenches, which took place in 1935 (Hawkes 1936) and confirmed the presence of an in-turned entrance.

To the east of the hillfort entrance, results revealed potential medieval field systems, which were also previously un-recorded. This corresponds with findings from a small excavation in 1985 by the West Hampshire Water Company to lay a pipeline and with preliminary trenches that were excavated for an electric cable, observed by the New Forest National Park Authority in 2016. 146 sherds of pottery were discovered, which were all medieval in date (Frank Green, excavation report in preparation).

Amongst the field systems towards the south, there was also a circular feature that could be pre-historic in date.

2. INTRODUCTION

2.1 Site Location

Buckland Rings Hillfort, Lymington and Pennington, New Forest, Hampshire.

Centred on NGR SZ 31487 96850.

2.1.2 Geology

The underlying bed rock geology of the site is sand from the Barton Sand Formation in the east, and Headon and Osbourne beds (undifferentiated) in the west of the site, see Figure 4. (British Geological Survey 2011). The site lies on a flat-topped upstanding knoll, 90 feet above sea-level, situated on a gravelly ridge that extends from Burley down to the Lymington river (Hawkes 1936).

2.2 Site Description

HER No: 21843.

Scheduled Ancient Monument List entry No: 1008706.

The Hillfort's location comprises of part open grass land within the New Forest National Park, approximately 750m west of Lymington River, and under 1km north of Lymington Town, between the roads leading to Brockenhurst and Sway (Hawkes 1936), see Figure 1. The current land use for the survey area is open grassland on the urban fringe surrounding Lymington.

The site is defined as a small multivallate hillfort, such forts are characterized as "fortified enclosures of varying shape, generally between 1ha and 5ha in size and located on hilltops" (Historic England 2017). Buckland Rings is just less than 6 hectares, so slightly larger than average.

2.2.1 Reasons for Survey

The survey was intended to use non-intrusive geophysical techniques to establish the presence/absence of any archaeological deposits within the hillfort and its surrounding area.

By using non-intrusive geophysical techniques, any evidence of internal features within the fortress will potentially be revealed. This could include; timber or stone round houses; four and six post structures interpreted as raised granaries, roads, pits, gullies, hearths and a variety of scattered post and stake holes (Historic England 2017).

Due to ploughing there were no upstanding earthworks in the interior to indicate the Hillforts original purpose, therefore geophysical survey was hoped to give further

archaeological insight about the site, as features would still remain visible beneath the surface (Historic England 2017).

The Historic Buildings and Monuments Commission for England carried out a geophysical survey of Buckland Rings to help inform the future management strategy for the site. However the results were unable to provide conclusive evidence about the utilisation and occupation of the Hillfort (Payne 1993). The survey did reveal part of the eastern ramparts that were ploughed away in more recent years. It was hoped that further geophysical survey conducted by a Bartington Grad601-2 dual fluxgate gradiometer system, would provide a higher resolution of recording and yield more conclusive results.

2.2.2 Archaeological Background and Previous Fieldwork

Buckland Rings is featured on Tithe maps from 1842, which show the extent of the feature and also the original roads that have cut into its western side.

Previously the site had been named as Buckland Castle or the Rings in a letter from Mr. Thomas Wright and James Theobald concerning two ancient camps in Hampshire, from the Philosophical Transactions of the Royal Society 1744 (Marsh 1991). The Hillfort was thought to have been Roman, principally as a station belonging to Aurelius Ambrosuis, due to the sites proximity to Ambrose Dock (Marsh 1991).

Buckland Rings Hillfort is featured in the 1st Edition County Series Maps (1853-1904) and is mapped as “Buckland Rings Roman Camp (remains of)”. In 1885 the term ‘Roman’ was removed from the maps published by Ordnance Survey after being advised by The Hampshire Field club that the site was Prehistoric (Champion 1987).

Excavations by C F C Hawkes at Buckland Rings in 1934 took sections across the defences in 5 places (Hawkes 1936). Findings from the excavations revealed that the entrance was in-turned, which is no longer visible at ground level, due to cultivation. There was also evidence of large postholes indicating the Hillfort was gated.

An occupation-hollow near the entrance was also excavated which contained burnt flints, charcoal, pottery and bits of Iron. Trial cuttings were made in search of more traces of occupation but none were found (Hawkes 1936). However, this occupational hollow was later disputed by Close-Brooks, who noticed some mistakes in the original plans, and states that the feature may have instead been evidence of a circular house platform, which were not recognised at the time of the excavation (Close-Brookes 2012).

The findings from the excavation lead to the date of the occupation at Buckland Rings being put at the late pre-Roman Iron Age (Hawkes 1936). However the

excavation also showed evidence of earlier prehistoric occupation of the site, mainly in the form of Neolithic and Bronze Age worked stone and Flint (Hawkes 1936).

In August 1985 there was a small excavation by the West Hampshire Water Company to lay two new pipelines in a small area alongside Buckland Rings, see Figure 2. (Cook 1985). A trench approximately 90cm wide was cut by machine and items were collected from the top soil (Cook 1985). Small pottery fragments and broken tile were recovered. There were also pieces of 19th century bottle glass and numerous iron objects. All of the finds indicated to the area being a site of medieval occupation (Cook 1985).

In 1987 an application was received by the New Forest District Council to build a leisure-hotel on the site of Buckland Rings. Permission was refused, with reasons including destruction to the ancient monument (Champion 1987). In 1989 Chilworth Estates agreed to sell Buckland Rings to the County Council, who still have ownership today.

In April 1993 The Historic Buildings and Monuments Commission for England carried out a geophysical survey of Buckland Rings, see Figure 3 (Payne 1993). The survey was conducted to help inform the future management strategy for the site; however the results were unable to provide conclusive evidence about the utilisation and occupation of the interior of the Hillfort (Payne 1993). The survey did pick up some of the fortification features and previously excavated areas by CFC Hawkes. The methods used were Magnetometry using a Geoscan FM36 fluxgate gradiometer and Magnetic Susceptibility using a Bartington MS2-D search loop connected to a MS2 susceptibility meter (Payne 1993).

In January 2016 the New Forest National Park Archaeologist observed preliminary trenches for an electric cable, close to the A337, just east of the Buckland Rings Hillfort. A small hand dug trench was also excavated 200 meters to the east of the scheduled area. A total of 146 sherds of medieval pottery were recovered. Analysis by Dr AD Russel suggested the pottery came from a long-lived medieval settlement nearby, as all of the pottery was domestic in character (Frank Green, excavation report in preparation). Previous observations of replacement electric cables in 2011 by the National park Archaeologist adjacent to the southern-most fence separating the monument from the adjacent field revealed no archaeological evidence (Frank Green Personal Communication).

3. METHODS

The survey was conducted between Wednesday 25th - Friday 27th April and Tuesday 2nd - Thursday 4th May 2017. The weather conditions were fair.

Permissions were applied for on 3rd April 2017, and approved on 4th April 2017 by Historic England's Assistant Inspector of Ancient Monuments for the South East, David Wilkinson. Case No: SL00157771.

The total area covered was 4.3ha, this covered 5 different areas: inside the hillfort, to the east of the entrance, a garden situated in the west of the hillfort, next to the southern ramparts and on an adjacent hilltop to the south of the hillfort, see Figure 5.

The intended survey area was split into 20m by 20m grids. These grids were set out using a Leica GS15 Smart Rover GNSS. Positional accuracy is around 10-20mm using this system.

Survey results were collected using a Bartington Grad601 Single Axis Magnetic Field Gradiometer System (fluxgate gradiometer). For this arrangement the two fluxgate sensors are mounted vertically on a frame at 1m apart, and the magnetic gradient is measured between the two sensors at 0.125m intervals, meaning there were 8 readings taken per metre.

All of the grids were aligned north to south, and each grid was started from the southwest corner and traversed heading north, in parallel formation.

4. RESULTS

4.1 Inside Hillfort

Overall there is quite a lot of modern ferrous litter visible in the survey, causing some dipoles in the data. Most of the anomalies are still distinguishable. The eastern ramparts, which were flattened by cultivation, are visible in the results, and the in-turned entrance mentioned in Hawkes' excavation is visible (Hawkes 1936) *Figure 6*. The trenches Hawkes excavated are also visible, with one at the entrance of the Hillfort, and two at the west-centre of the Hillfort, see Figure 7.

There is a circular anomaly in the very north-west corner **[A1]**, which is only partially visible due to the cut off of the edge of the survey, this has a low magnetic response. There are six other circular anomalies, one to the north of the Hawkes trenches **[A2]**, one in the centre of the hillfort **[A3]** and one in the southern area of the hillfort **[A4]**. **[A5]** lies north-west of **[A4]**, with **[A6]** and **[A7]** directly south in close proximity of one another on the very edge of the survey area, see Figure 8. However these anomalies all have a high magnetic response. All of the circular anomalies discussed share a diameter size of approximately 10 metres.

There are also internal linear anomalies showing up in the data. One L-shaped anomaly **[A8]** is cut through by the two Hawkes excavations in the centre of the hillfort. The second makes a square shape **[A9]** which is also central to the hillfort, see Figure 9.

With regards to interpretation of the results, starting with the circular anomalies, see Figure 8, the difference in the magnetic response of **[A1]** could be due to different fills within the features, as previously mentioned there are two different geology types within the survey area *Figure 4*. All of the circular anomalies highlighted are most likely evidence of roundhouses, due to their shape, size and location inside the Hillfort. This would indicate Buckland Rings being occupied during the Iron Age. While there are not many of these roundhouse anomalies, and for a settlement of this size there would usually be more, this could be due to a) damage/loss of evidence through ploughing or b) the settlement being made up more of post built roundhouses, as these are more difficult to detect in the results, especially due to the modern ferrous waste. This would support findings from Close-Brooks that the occupational hollow excavated by Hawkes was potentially a circular house platform instead (2012).

Either way it seems unlikely that the seven features detected make up the entire number of the Hillforts domestic structures.

Figure 9 shows **[A8]** as low magnetic response surrounded by high magnetic response which could be associated with ditches flanking a bank (Gater and Gaffney 2003). Potentially this is representative of a ditch, used for containing animals, or making boundaries between areas inside the hillfort. These types of features are

common in areas of Iron Age settlement. **[A9]** could also represent some form of enclosure ditch for containing livestock.

4.2 East of Entrance

The most visible anomalies in the data are to the east, outside of the Hillfort ramparts, in an area not covered by the 1993 geophysics survey. This shows linear anomalies covering an area of 1.2ha **[A10]**. This area of anomalies probably extends out further outside of the survey, see Figure 10. Within the linear anomalies there are quite a number of small circular anomalies **[A11]** featuring high and low magnetic responses, highlighted in Figure 11.

Just outside of the south-west of the entrance there is a thin circular anomaly **[A12]** with faint high and low magnetic responses which is approximately 20 meters diameter, see Figure 12.

[A10] produced strong readings of high and low magnetic response, and appear relatively undisturbed by the agricultural activity that took place previously. These could potentially be field systems, which are notoriously difficult to date (Gater and Gaffney 2003). However, this was also the area that was observed for an electric cable trench by the New Forest, which revealed 146 sherds of medieval pottery (Frank Green, excavation report in preparation), which would indicate the field systems being medieval in date.

[A11] would appear to be a number of pits inside **[A10]**, and due to their placement are most likely from a similar date, which would suggest that the site had a settlement function (Gater and Gaffney 2003). This would correspond with findings from the analysis by Dr AD Russel of the pottery sherds discovered at the site suggesting the pottery came from a long-lived medieval settlement (Frank Green, excavation report in preparation).

[A12] is noticeably fainter in the results than **[A10]** and **[A11]** and is more similar to the features detected within the hillfort **[A1-7]**. It is unclear from the results if the field systems cut into **[A12]**, however it would appear likely that this is an earlier, possibly prehistoric feature, which was later built over by **[A10-11]**.

4.3 Survey adjacent to southern ramparts

Just outside of the main Hillfort survey area, along the outside of the south-eastern corner ramparts a small survey of 10 grids was undertaken. The survey shows some irregular lines, running east-west and approximately 5m wide, with high to low high readings, see Figure 14, and also one very thin line of low readings, also running roughly east-west, see Figure 15.

The larger irregular lines could potentially be filled ditches, burrowed to create the banks that form the ramparts around the Hillfort. Their close proximity and size, approximately 5m diameter, would indicate this. The thinner line is likely to be from

modern activity, such as electric cable lines, as this would correspond with the OS map, see Figure 15.

4.4 Survey located on adjacent hilltop

Small survey of 3 grids, a further 80m south on the hill facing Buckland Rings, see Figure 13.Nothing of note was identified here with some spikes in the data indicating modern ferrous waste.

4.5 Buckland Rings Cottage Garden

As part of the work conducted inside the Hillfort, one of the gardens of the houses situated at the far south-west corner of the Hillfort, was included in the investigation, see Figure 16. It was a very small area, only two partial grids were completed. The results show some areas of spiked high and low readings which is most likely modern ferrous material.

5. CONCLUSION

The original objective of the survey was to use non-intrusive geophysical techniques to establish the presence/absence of any archaeological deposits within the survey area at the Hillfort at Buckland Rings. This objective has been partially achieved, with results showing evidence of Iron Age and potential medieval occupation on the site, which was previously unknown, however confirmation of these finds would need to be further evidenced with excavation.

The implications of the results could mean a more detailed future management strategy for the site, as this was the intention for the geophysical work undertaken in 1993, but results were unable to provide any more knowledge to the site. The potential medieval field systems in particular are evidence of a longer phase settlement at Buckland Rings and would be an interesting area for further investigation.

6. FURTHER RECOMMENDATIONS

To improve and enhance the knowledge already collected by the geophysical survey and previous archaeological work undertaken, a small targeted research excavation could provide key dating evidence. This could confirm or contradict the current assumptions about Buckland Rings.

Investigating one of the round features **[A1-A7]** would confirm the presence/approximate date of the potential roundhouses, without excessive excavation.

Another area to target would be the potential pits within the field systems **[A11]** as this could provide dating evidence, hopefully provide evidence of what sort of activities were being under taken in the area just outside of the Hillfort and could potentially confirm the multi-phasing chronology of the Hillfort.

7. ACKNOWLEDGEMENTS

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I would also like to thank Tim Kermode and Annabel Kermode for allowing us to survey in their garden and kindly supplying the volunteers with tea.

Also a huge thank you to Frank Green (NFNPA), Professor Kate Welham (BU) and Paul Cheetham (BU).

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9. LIST OF FIGURES

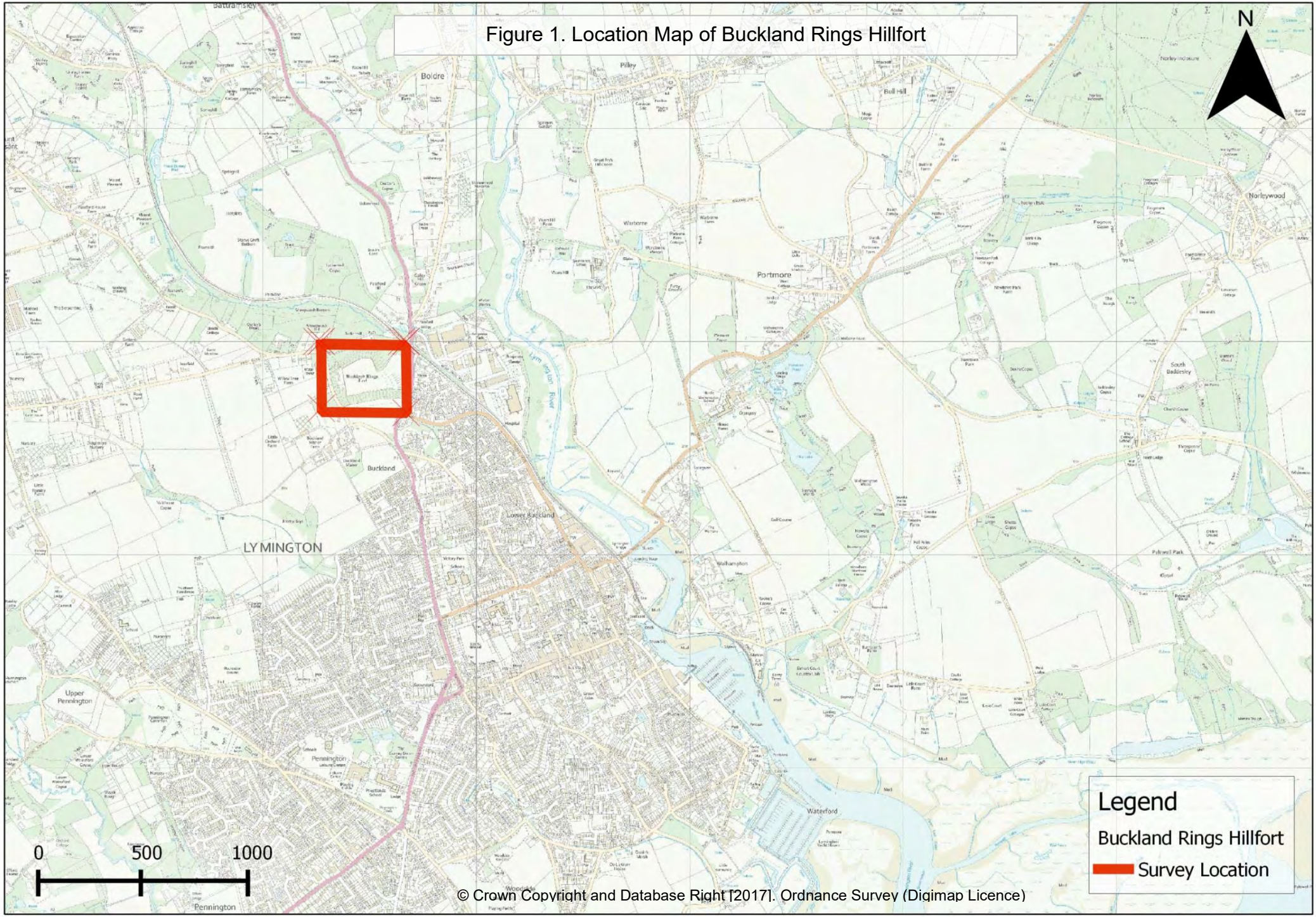
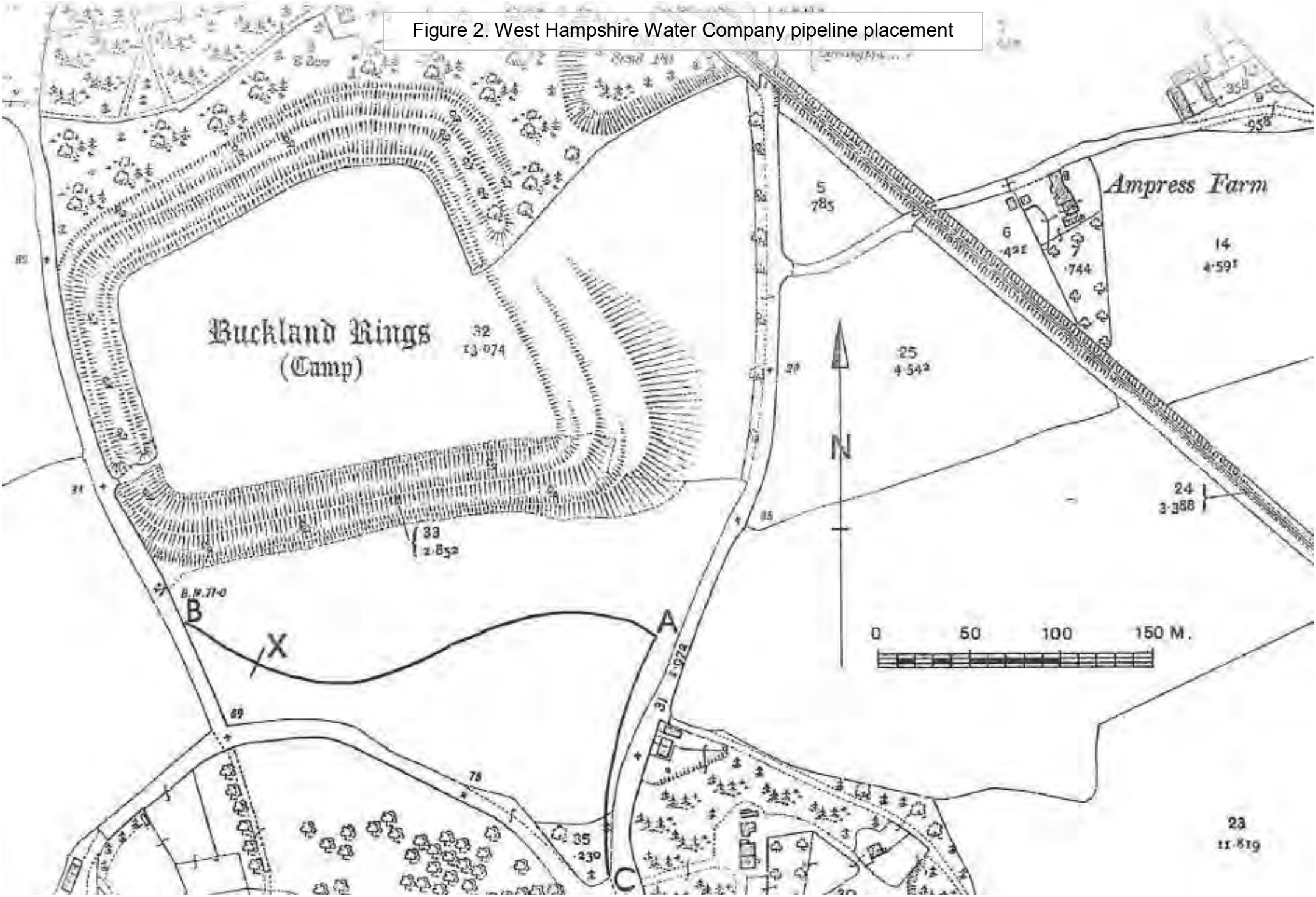


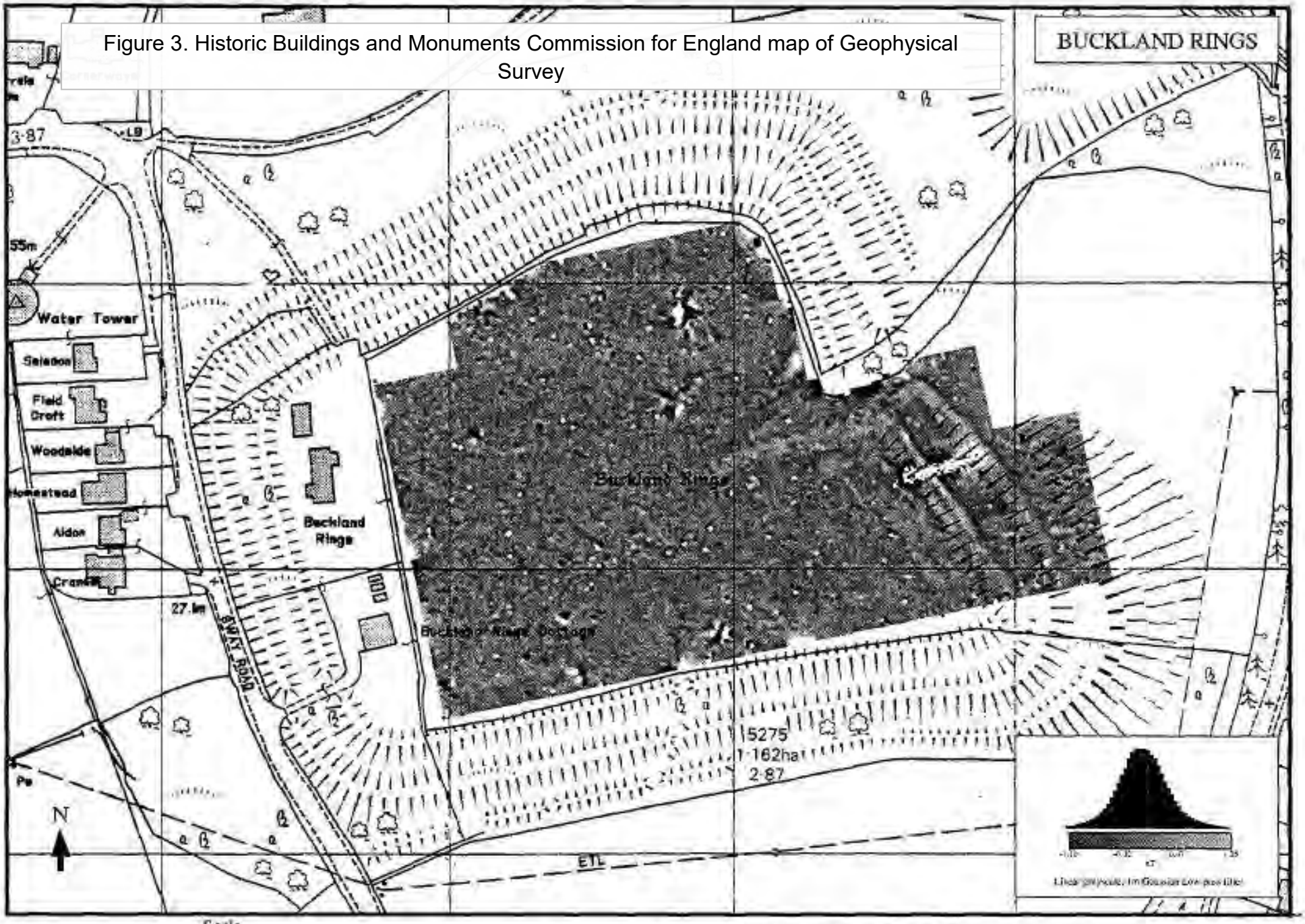
Figure 1. Location Map of Buckland Rings Hillfort
N
Boldre
Pilley
Bull Hill
Norleywood
Portmore
Warborne
Buckland
Lower Buckland
LY MINGTON
Walhampton
Waterford
Upper Pennington
Pennington
South Baddesley
Pylewell Park
0
500
1000
Legend
Buckland Rings Hillfort
Survey Location
© Crown Copyright and Database Right [2017]. Ordnance Survey (Digimap Licence)

Figure 2. West Hampshire Water Company pipeline placement



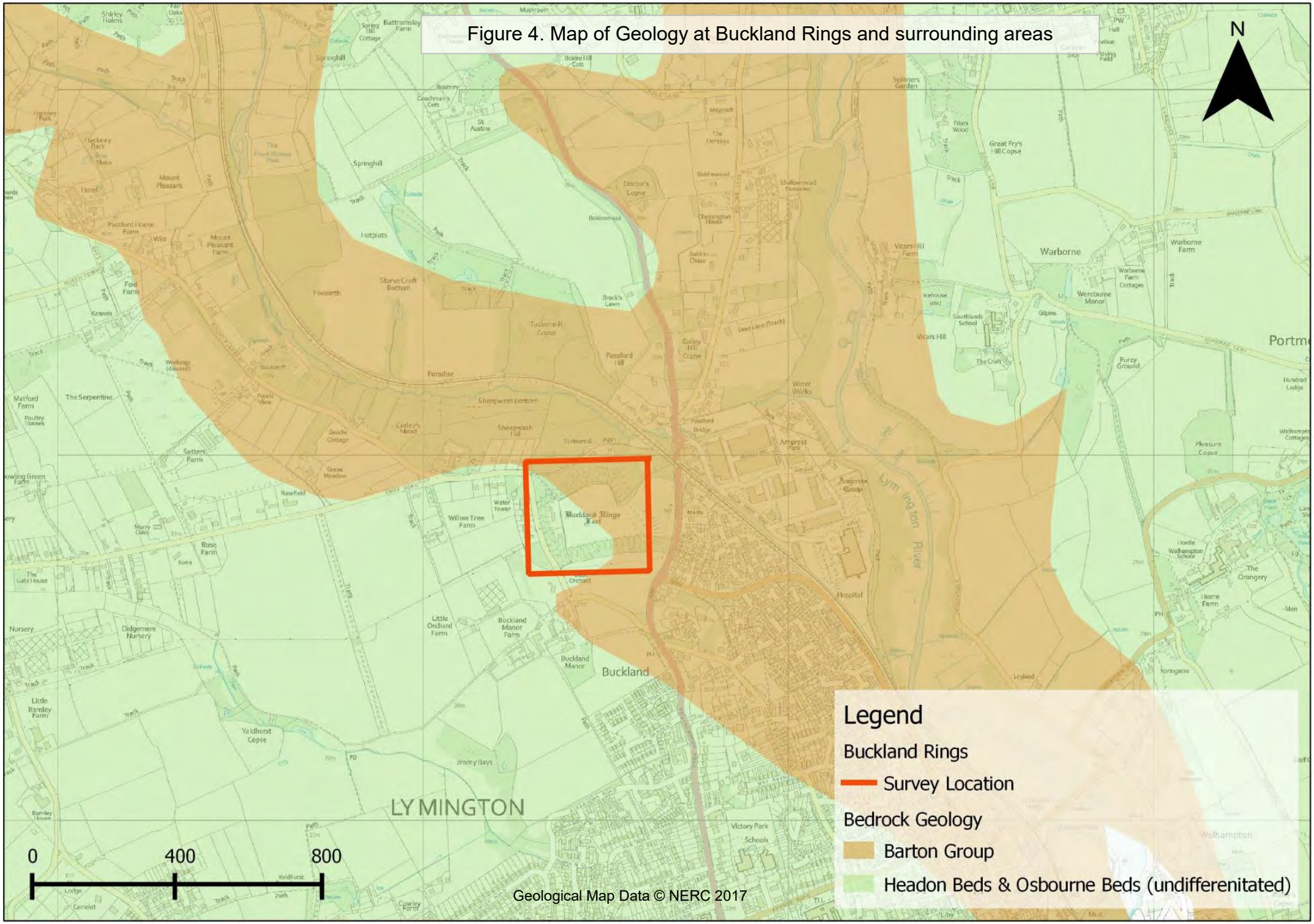
PLAN (2)

Figure 3. Historic Buildings and Monuments Commission for England map of Geophysical Survey



Greyscale plot of enhanced data superimposed on plan of hillfort

Figure 4. Map of Geology at Buckland Rings and surrounding areas



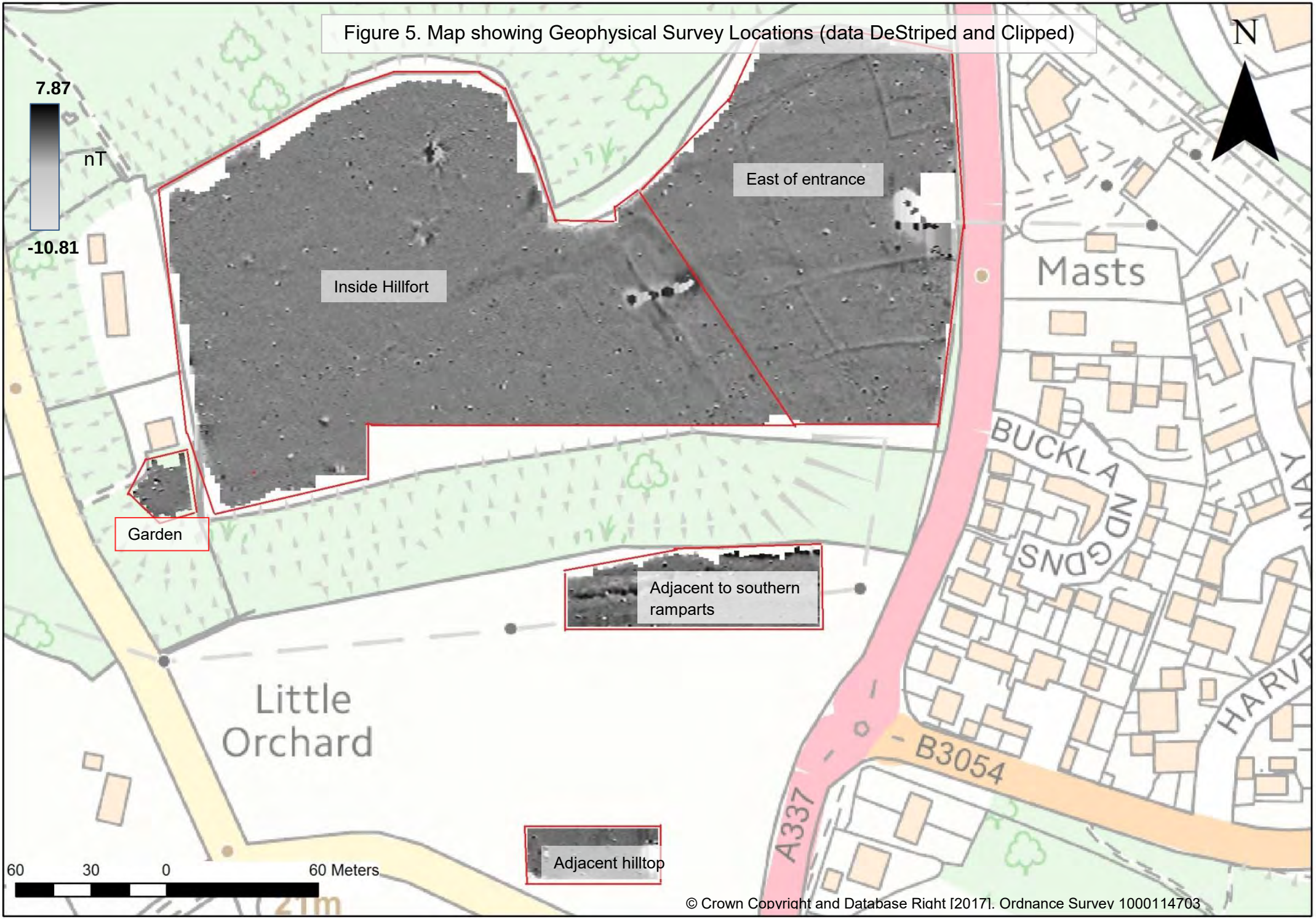


Figure 5. Map showing Geophysical Survey Locations (data DeStriped and Clipped)
7.87
nT
-10.81
Inside Hillfort
East of entrance
Garden
Adjacent to southern ramparts
Adjacent hilltop
Masts
BUCKLANDS
Little Orchard
A337
B3054
N
60 30 0 60 Meters
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703


Figure 6. Map showing in-turned entrance (data DeStriped and Clipped)
2
nT
-2
N
0
40
80
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703


Figure 7. Map showing Hawkes Excavations (data DeStriped and Clipped)
2
nT
-2
N
0
40
80
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703


Figure 8. Map highlighting roundhouses (data DeStriped and Clipped)
2
nT
-2
N
[A1]
[A2]
[A3]
[A4]
[A5]
[A6]
[A7]
0
40
80
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703


Figure 9. Map highlighting linear internal features (data DeStriped and Clipped)
2
nT
-2
N
[A8]
[A9]
0
40
80
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703


Figure 10. Map highlighting eastern field boundaries (data DeStriped and Clipped)
2
nT
-2
N
[A10]
0
40
80
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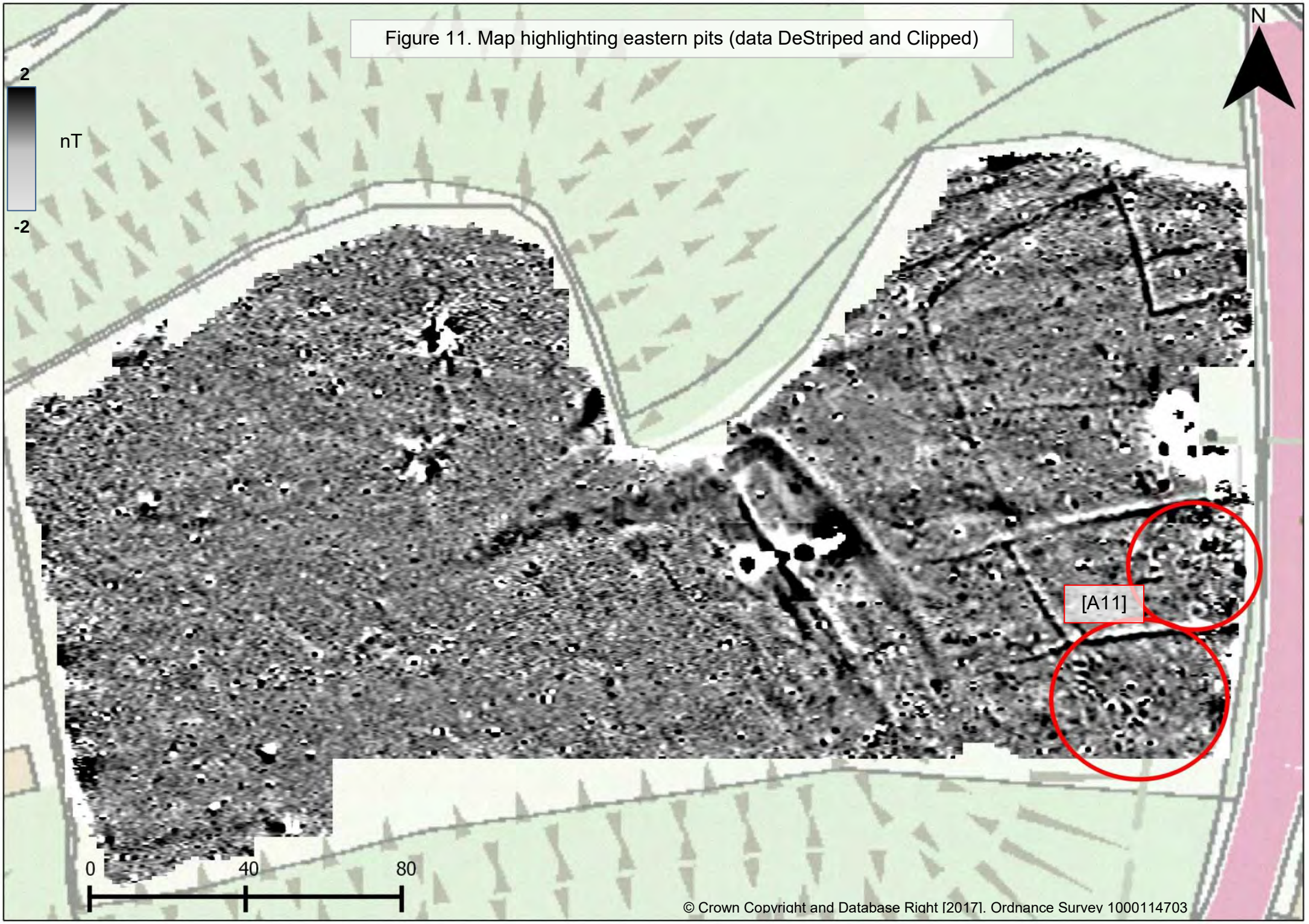
Figure 11. Map highlighting eastern pits (data DeStriped and Clipped)
2
nT
-2
N
[A11]
0
40
80
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Figure 12. Map highlighting eastern thin circular anomaly (data DeStriped and Clipped)
2
nT
-2
N
[A12]
0
40
80
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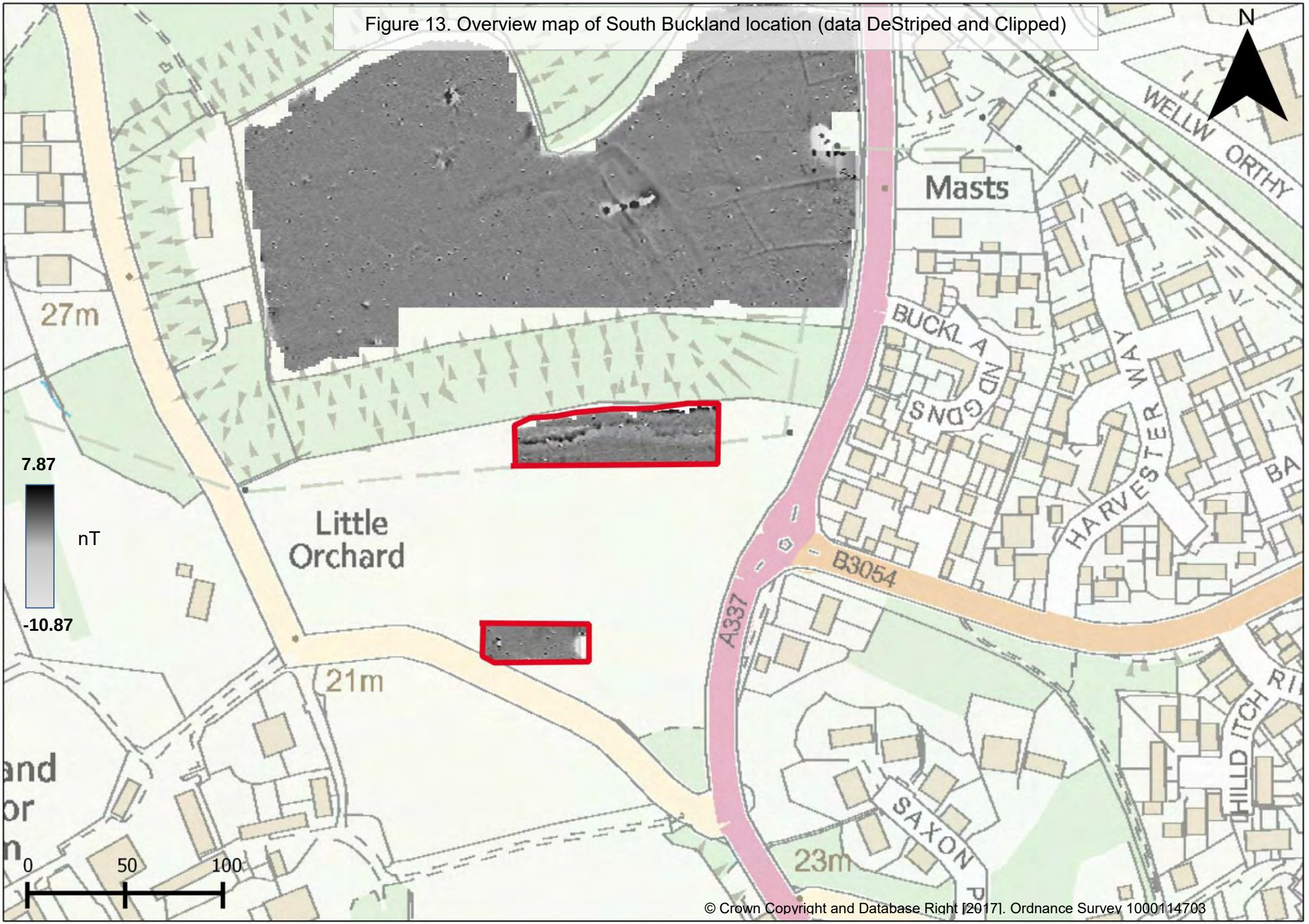
Figure 13. Overview map of South Buckland location (data DeStriped and Clipped)
N
Masts
WELLW ORTHY
27m
BUCKL A ND GDNS
HARVESTER WAY
Little Orchard
B3054
A337
21m
23m
SAXON
7.87
nT
-10.87
0
50
100
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703

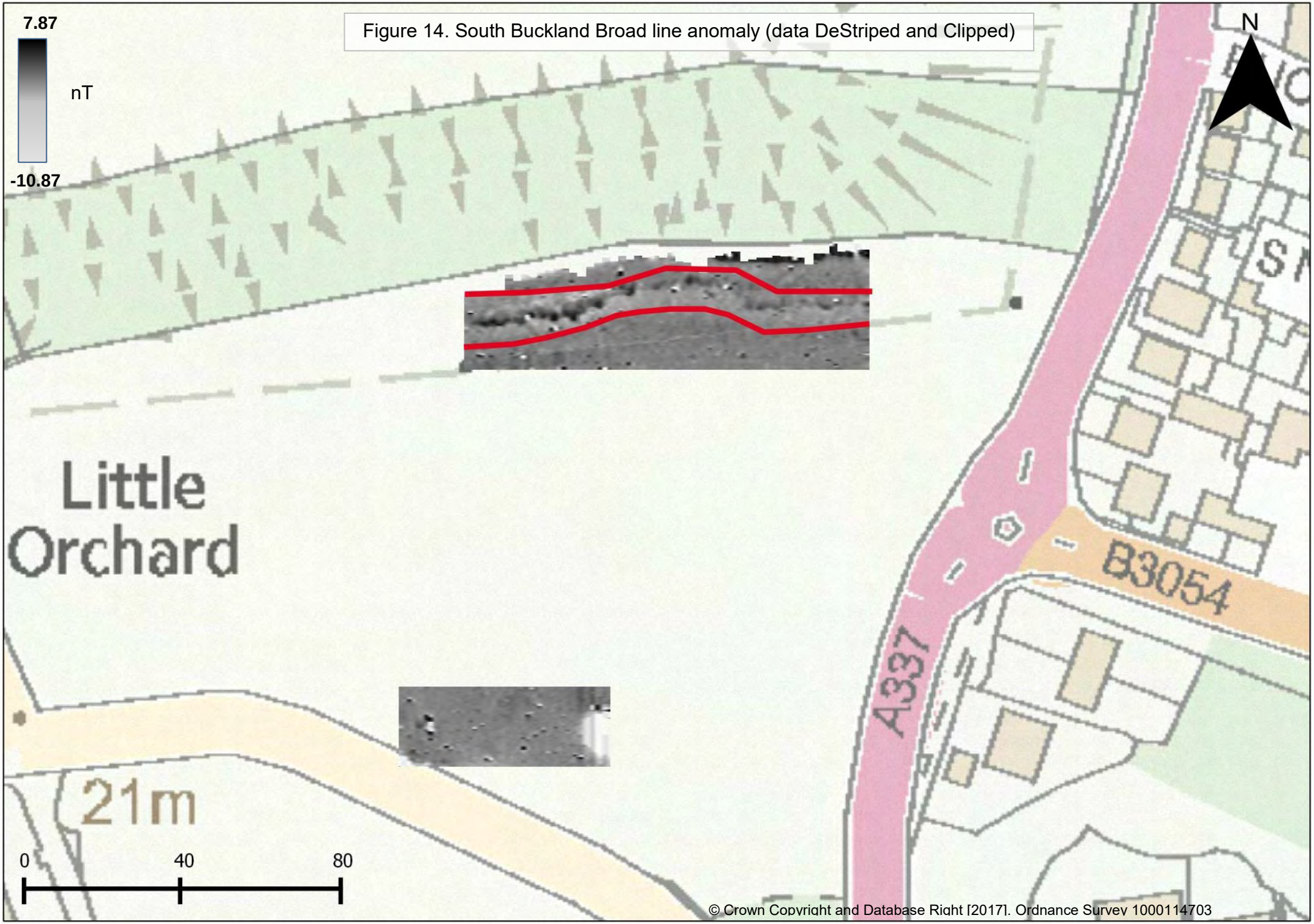

Figure 14. South Buckland Broad line anomaly (data DeStriped and Clipped)


Figure 15. South Buckland thin line anomaly (data DeStriped and Clipped)
N
7.87
nT
-10.81
Little
rchard
BUCKL
SNO
A337
B3054
0
40
80
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703


Figure 16. Buckland Rings Cottage Garden map (data DeStriped and Clipped)
7.87
nT
-10.81
N
Masts
BUCKLA
NDGNS
Little
Orchard
A337
B3054
60 30 0 60 Meters
© Crown Copyright and Database Right [2017]. Ordnance Survey 1000114703

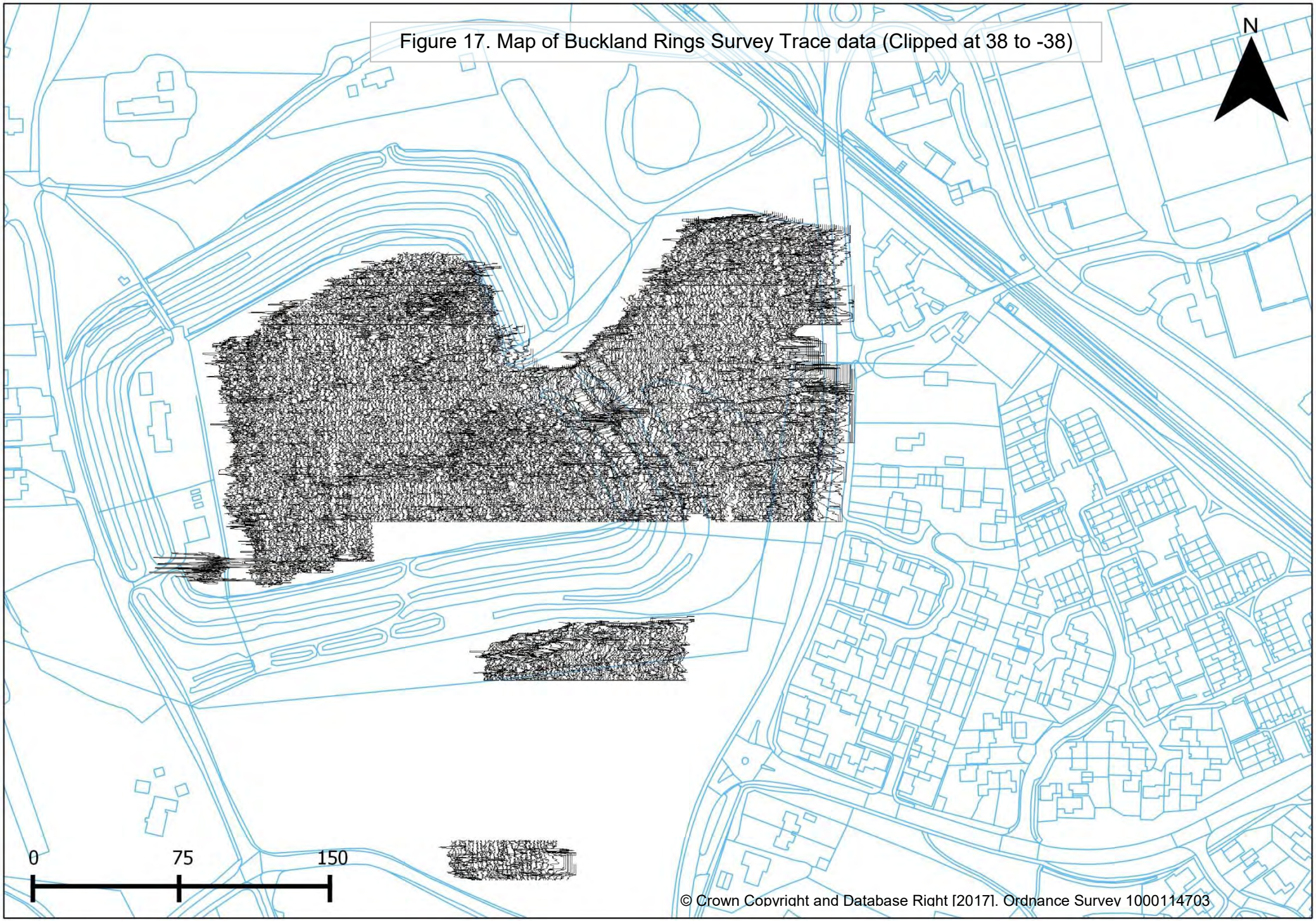

Figure 17. Map of Buckland Rings Survey Trace data (Clipped at 38 to -38)

Figure 18. Map of Buckland Rings Survey Raw data (Clipped)