highways england

A303 Stonehenge

Amesbury to Berwick Down

Geophysical Survey Report: Phase 4

April 2019

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Executive Summary

This document details the results of the fourth phase of geophysical survey undertaken as part of the Scheme. The geophysical surveys reported here investigated primarily land between Berwick Down in the west and the A360 in the east, plus land at Rollestone Corner ('the site'). Where the potential for scheme impacts on archaeology was identified by the geophysical survey, further investigation was carried out, as reported separately[1].

The results of the Phase 4 geophysical survey were reported in the Environmental Statement (ES) submitted with the application for development consent dated October 2018 and were taken into account in the identification of the baseline and approach to mitigation and in the assessment of likely significant effects. Paragraphs 6.6.13 to 6.6.31 of the ES summarise the results of the fieldwork, and paragraphs 6.6.80 to 6.6.93, Appendix 6.2 and Figure 6.8 of the ES describe the archaeological baseline for the site. Section 6.8 of the ES describes the approach to mitigation of archaeological impacts and section 6.9 and tables 6.10, 6.11 and 6.12 set out the assessment of likely significant effects: paragraph 6.9.25 refers to the geophysical surveys. This document details the results already reflected in the ES.

The geophysical survey has identified a diverse range and high density of anomalies of archaeological origin across the Scheme. The anomalies are primarily ditch and pit-like features, which take several forms and date to a variety of periods. Many of these correspond with known archaeological remains that have been previously identified by previous investigations. These represent complexes of prehistoric monuments, settlement activity, and fields systems. In addition, several previously unrecorded archaeological features have been identified, as well as evidence for historic land management.

The salient archaeological features that have been identified within each of the survey areas are summarised below;

NW7[2] (Longbarrow Junction north)

- Part of a scheduled sub-rectangular enclosure and round barrow (NHLE 1011048) (area NW7c)
- Part of an undated boundary ditch in two of these areas (NW7a; NW7c). This relates to features previously recorded in 2017 and a scheduled continuation of this feature to the south-west of Longbarrow roundabout (NHLE no. 1010837).
- A large number of linear anomalies correspond with cropmarks on aerial photographs. It is likely that these form part of an extensive field system set out perpendicular to the Romano-British settlement on Winterbourne Stoke Down (NHLE no. 1015222).

[1] Archaeological Evaluation Report: Winterbourne Stoke West, report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0003;
• Electrical Resistance Tomography and Borehole Survey Report (WSB West), report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0005;
• Archaeological Evaluation Report: Winterbourne Stoke East, report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0004; and
• Ploughzone Artefact Sampling and Trial Trench Evaluation: Rollestone Corner, report reference HE551506-AMW-HER-Z2_SR_B20_Z-RP-LH-0001.
[2] ES paras 6.6.33 and 6.6.91 refer to the geophysical survey undertaken here

- Areas NW7a and NW7b now lie outside of the proposed DCO boundary, as does part of NW7d.

NW8[3] (Parsonage Down north)

- An arching curvi-linear anomaly, which corresponds with a cropmark recorded in the WSHER. This is associated with the probable later prehistoric and/or Romano-British settlement on High Down, recorded to the north-east of the area.
- Numerous other linear anomalies on a co-axial alignment. These are associated with extensive field systems and lynchets of varying form. They are likely to date broadly to the later prehistoric to Roman period, following a pattern observed across large swathes of Salisbury Plain.
- Evidence for ridge and furrow ploughing has also been identified across the area.
- Part of NW8a now lies outside the proposed DCO boundary.

NW9[4] (Parsonage Down south)

- Within NW9a a circular and a penannular feature relate to a pair of closely spaced ring ditches, previously identified from aerial photographs. They are thought to be associated with round barrows of probable Bronze Age origin, although it is speculated that the penannular anomaly to the south may relate to a hengiform monument and could perhaps be earlier in origin.
- A further, ring-ditch and a previously unidentified pond barrow has been hypothesised in the south-west of the area.
- A small ovoid enclosure and numerous pit-like anomalies have also been identified.
- Within NW9b, the remains of a large probable round barrow, and part of a second were located. These are surrounded by a recti-linear enclosure and numerous pit-like features.
- Numerous linear anomalies associated with lynchet features and a co-axial field system also correlate with previously recorded cropmarks.

NW10[5] (Winterbourne Stoke Bypass east)

- A group of five probable ring ditches/barrows. Three of these were previously identified from aerial photographs and two further examples are intersected by the existing route of the A303.
- Evidence for a probable enclosure, wider field system, and ridge and furrow ploughing.
- Numerous pit and ditch-like features, as well as part of a post -medieval water meadow system alongside the River Till have also been revealed.

NW11[6] (Berwick Down west)

- The remains of part of an extensive later prehistoric – Romano-British field system in the eastern-most part of the area.
- A recti-linear arrangement of anomalies corresponds to a post-medieval pond visible on historic mapping of the area.

Rollestone Corner[7]

[3] ES para 6.6.86 refers to the geophysical survey undertaken here
[4] ES para 6.6.86 refers to the geophysical survey undertaken here
[5] ES para 6.6.86 refers to the geophysical survey undertaken here
[6] ES para 6.6.82 refers to the geophysical survey undertaken here
[7] ES para 6.6.50 refers to the geophysical survey undertaken here

- A large area of strong dipolar magnetic responses has been tenuously associated with a possible barrow that may have been backfilled or covered with ferrous material.
- A possible chalk extraction pit of medieval or post-medieval origin has been hypothesised.
- The survey area at Rollestone Corner west of the B3086 now lies outside the proposed DCO boundary.

Overall, the survey was particularly successful at identifying funerary monuments and field systems of probable prehistoric origin. In addition, it showed that a high density of archaeological features, potentially of national and international significance, are located immediately outside of the Stonehenge WHS. Comparisons with previous phases of survey demonstrated that the Phase 4 work provided clearer and more accurately located archaeological information and the capability to detect small and weakly magnetised features with greater confidence.

1 Introduction

1.1 Project background

1.1.1 Wessex Archaeology Ltd has been appointed as Archaeological Contractor by AECOM Mace WSP Joint Venture (AmW, the Technical Partner) on behalf of Highways England (the Employer) to undertake a programme of archaeological evaluation for the A303 Stonehenge project ('the Scheme').

1.1.2 An Archaeological Evaluation Strategy Report (AESR) [1] sets out the general and specific principles guiding the strategies for field-based investigations. An Overarching Written Scheme of Investigation (OWSI) [2] accompanying the AESR details the methods and techniques employed during the archaeological evaluation. The AESR and OWSI were approved by the Heritage Monitoring and Advisory Group (HMAG: comprising representatives of Wiltshire Council Archaeology Service, the National Trust and Historic England).

1.1.3 This report details the results of the fourth phase of geophysical survey undertaken as part of the Scheme. The geophysical surveys reported here investigated primarily land between Berwick Down in the west and the A360 in the east, plus land at Rollestone Corner ('the site'). In order to avoid confusion with previous phases of geophysical survey, the area and anomaly numbers referred to throughout this document relate to a continuation of the system utilised in previous surveys undertaken in 2016 and 2017 [3] [4] [5].

1.2 Scope of the document

1.2.1 The results of the Phase 4 geophysical survey were reported in the Environmental Statement (ES) and were taken into account in the identification of the baseline and approach to mitigation and in the assessment of likely significant effects. Paragraphs 6.6.13 to 6.6.31 of the ES summarise the results of the fieldwork, and paragraphs 6.6.80 to 6.6.93, Appendix 6.2 and Figure 6.8 of the ES describe the archaeological baseline for the site. Section 6.8 of the ES describes the approach to mitigation of archaeological impacts and section 6.9 and Tables 6.10, 6.11 and 6.12 set out the assessment of likely significant effects: paragraph 6.9.25 refers to the geophysical surveys.

1.2.2 This document details the results of the Phase 4 geophysical survey undertaken between January and June 2018. Where relevant, the report notes the limitations of the survey, the data collected and the interpretation put forward: these limitations do not affect the baseline conditions, assessment of effects and mitigation approach identified in the ES. Where the potential for scheme impacts on archaeology was identified by the geophysical survey, further investigation was carried out, as reported in the following reports:

- Archaeological Evaluation Report: Winterbourne Stoke West, report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0003;
- Electrical Resistance Tomography and Borehole Survey Report (WSB West), report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0005;
- Archaeological Evaluation Report: Winterbourne Stoke East, report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0004; and

- Ploughzone Artefact Sampling and Trial Trench Evaluation: Rollestone Corner, report reference HE551506-AMW-HER-Z2_SR_B20_Z-RP-LH-0001.

2 Site Description

2.1 Location, topography and geology

2.1.1 The part of the proposed scheme covered by this geophysical survey incorporates six areas (NW7 – NW11 and Rollestone Corner) located within the provisional Development Consent Order (DCO) limits ('the Red Line Boundary'). This extends north of the existing A303 and covers a 6 km stretch of the proposed scheme (**Figure 1**).

2.1.2 The majority of the areas surveyed in this Phase 4 are located outside, and to the west of the Stonehenge, Avebury and Associated Sites World Heritage Site (WHS).

2.1.3 The most easterly point (NGR 409940, 141570) is located in NW7, directly north-east of Longbarrow roundabout. After a short gap, where geophysical survey work has previously been undertaken [5], the survey covers a larger area to the north of Winterbourne Stoke (NW8, NW9, NW10). The most westerly point (NGR 404170, 140230) is located 350 m west of Yarnbury Camp at NW11.

2.1.4 An additional area, 2.7 km north of Longbarrow roundabout, at Rollestone Corner is also included within the survey. This is located either side of the existing route of the B3086, which marks the western boundary of the WHS.

2.1.5 A more detailed description of the location, topography, and geology of each area is included in the results section. It is intended that each relevant section can be utilised as a 'standalone' summary of the results for each survey area.

2.2 Archaeological background

Introduction

2.2.1 A Historic Environment Baseline Assessment [6] has presented the known and potential archaeological baseline for the proposed A303 Amesbury to Berwick Down road improvement scheme. The study area for this covered a 500 m wide corridor either side of the DCO limits and considered all heritage assets up to and including the 20th century. Relevant parts of this are summarised below, and for ease of comprehension, an archaeological background for each survey area is also provided within the results section.

Summary of the archaeological resource

2.2.2 The Stonehenge landscape has long been the focus of intense archaeological scrutiny, although it has traditionally been the more conspicuous Neolithic and Bronze Age funerary and ceremonial monuments within the WHS that have formed the focus of much of this investigation. However, the boundary of the WHS encompasses only the core of what was once a much more extensive and unified prehistoric cultural landscape.

2.2.3 Although only part of one of the survey areas is located within the WHS (RC02), the remaining sites are situated west of the WHS boundary and are located within a landscape containing nationally and regionally important multi-period archaeology. In particular, the area is known for its significant Neolithic and Bronze Age activity including numerous funerary monuments.

2.2.4 The areas adjacent to this stretch of the A303 also contain known archaeology dating from the Early Prehistoric through to the 20th century. Within and outside the WHS, along the line of the Scheme, are also later Iron Age and Roman sites including the hillforts of Yarnbury Camp and other known settlement areas. Winterbourne Stoke is recorded in the 1086 Domesday Survey and is likely to have earlier Early Medieval origins.

Recent Investigations in the area

2.2.5 A high density of archaeological features, potentially of national and international significance in terms of their contribution to the WHS's 'Outstanding Universal Value', were identified close to the current A303 by the Historic England National Mapping Programme (NMP) project. Much of the data on known archaeological remains from this area is derived from aerial sources.

2.2.6 A major programme of investigations, including trial trenching, fieldwalking, test pitting and geophysical surveys, was carried out during the 1990s and early 2000s in association with earlier proposals for road improvement works on the A303 [7]. Extensive surveys in association with the A303 Stonehenge Improvements have demonstrated the potential for the presence of archaeological remains (e.g. [8, 8] [9] [10] [11] [12]). In addition, the WHS Research Framework has been compiled and updated [13] [14] [15], and numerous major research projects have been carried out, such as the Stonehenge Riverside Project and the Stonehenge Hidden Landscapes Project [16] More recently large scale geophysical research has provided extensive and detailed mapping of the archaeological landscape [17] [18] [19].

2.2.7 Three previous phases of detailed gradiometer survey and ground penetrating radar (GPR) survey have been conducted over fifteen areas along the route of the A303 [3] [4] [5] [20]. This formed part of a programme of archaeological works undertaken along the A303 between Amesbury and Berwick Down to inform the PCF Stage 2 Options Assessment Phase for the A303 improvement scheme. Each phase was successful in detecting a high density of geophysical anomalies of archaeological interest, much of which corresponded with known remains derived from aerial sources. These remains represent complexes of prehistoric funerary monuments, evidence for field systems, settlement, Romano-British buildings, and a variety of other archaeologically significant features.

2.2.8 Archaeological evaluation of two areas (SW1 and SW2) comprised a total of 67 trenches, 35 within SW1 and 32 within SW2. Notable features that were investigated included two early Neolithic long barrows, a small penannular ditched monument containing Beaker pottery, and the early 20th century Larkhill Military Light Railway.

2.2.9 A more extensive description of the known archaeological resource within the individual survey sites is detailed at the beginning of the results section for each area.

3 Methodology

3.1 Introduction

3.1.1 The Geophysical survey of each of the areas adhered to the methodology set out below, prepared in accordance with guidelines and recommendations published by Historic England [21], European Archaeological Council [22], and by the Chartered Institute for Archaeologists [23]. A consideration of how these methods compare to previous geophysical investigations in the area is included in **Appendix A**.

3.2 Aims and objectives

3.2.1 The aims of the geophysical surveys (gradiometer, ground penetrating radar and/or resistivity) were:

- To provide information about the nature and interpretation of any anomalies identified.
- To determine the presence, absence and extent of buried archaeological features.
- To contribute to the next stage of the iterative archaeological evaluation strategy, defining suitable targets for the archaeological trial trenching, which was then carried out where there was the potential for scheme impacts[8].
- To establish the extent and character of potential archaeological anomalies and provide an interpretation of the results in their local, regional, national or international context.
- To produce this interpretive report on the findings of the fieldwork and to inform the development of an archaeological mitigation strategy for the Scheme[9].

3.3 Fieldwork methodology

3.3.1 Detailed gradiometer survey was undertaken across the entirety of the site. Any areas identified as a result this that were deemed to contain significant archaeological potential were investigated further by targeted earth resistance survey and/or GPR survey, depending on the suitability of ground conditions, in agreement with HMAG/WCAS.

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[8] • Archaeological Evaluation Report: Winterbourne Stoke West, report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0003;
• Electrical Resistance Tomography and Borehole Survey Report (WSB West), report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0005;
• Archaeological Evaluation Report: Winterbourne Stoke East, report reference HE551506-AMW-EHR-Z1_GN_000_Z-RP-LH-0004;
• Ploughzone Artefact Collection and Trial Trench Evaluation: Longbarrow Junction, report reference HE551506-AMW-EHR-Z2_JN_L00_Z-RO-LH-0001; and
• Ploughzone Artefact Sampling and Trial Trench Evaluation: Rollestone Corner, report reference HE551506-AMW-HER-Z2_SR_B20_Z-RP-LH-0001.

[9] The approach to archaeological mitigation for the Scheme is set out in section 6.8 of the ES

3.3.2 A brief description of each survey technique is provided below. Further details of the specific geophysical and survey equipment, methods and processing are described in **Appendix B - D**.

3.4 Survey specification

3.4.1 The navigation display on the cart-based gradiometer system provides real-time positioning enabling full site coverage without the need to set up individual grid nodes across the survey areas. However, to ensure survey accuracy, the boundaries of the survey extent were established using a using a Leica Viva RTK GNSS instrument at regular intervals.

3.4.2 For the Earth Resistance and GPR surveys, individual survey grid nodes were established at regular intervals using a Leica Viva RTK GNSS instrument.

3.4.3 Both methods are precise to approximately 0.02 m and therefore exceed Historic England recommendations [21].

Gradiometer Survey

3.4.4 The detailed gradiometer survey was undertaken over all areas using Bartington Grad-01-1000L gradiometers at 1 m intervals mounted on a non-magnetic cart with an effective sensitivity of 0.03 nT. Data were collected at a rate of 10 hz, producing intervals of *c.* 0.15 m along transects spaced 3.5 m apart.

Earth Resistance Survey

3.4.5 The detailed earth resistance data was collected at 0.5 m intervals along transects spaced 1 m apart, using a Geoscan Research RM15 instrument, in accordance with Historic England recommendations (2008). Data was collected using a parallel twin probe configuration in the zigzag method.

GPR Survey

3.4.6 The GPR survey was conducted using a Malå RAMAC/GPR XV11 monitor and control unit with a shielded antenna. This was mounted on a rough terrain cart which is fitted with an odometer to measure horizontal distance along the ground surface. This was deployed across all the GPR areas with data collected along traverses spaced 0.5 m apart. Data with the 500 MHz antenna were collected every 0.03 m with an effective time window of 60 ns. This was collected in the zigzag method except for a couple of lines where space restrictions or obstacles required a parallel data collection method.

3.4.7 Field tests of the antennae frequency have been undertaken during previous phases of geophysical survey on the Scheme using a 500, 400 and 250 MHz antenna in accordance with European Archaeological Council [22] and Historic England guidelines [21]. This established that the 500 MHz antenna was likely to provide the suitable information regarding the nature of archaeological remains within each area and therefore no further survey was undertaken using alternative antennae.

3.5 Data processing

Gradiometer Survey

3.5.1 Data from the survey was subject to minimal data correction processes. These comprise a 'Destripe' function (±5 nT thresholds), applied to correct for any variation between the sensors, and an interpolation used to grid the data and discard overlaps where transects have been collected very close together.

Earth Resistance Survey

3.5.2 Data from the earth resistance survey was also subject to minimal data correction processes. These comprise a despike filter to remove erroneous data caused by poor contact resistance, and an edge-match function to remove offsets caused by successive remote probe movements necessary with the twin probe configuration. These two steps are generally applied to all survey areas; further processing, including interpolation and high-pass filtering, has also been undertaken, and will be presented in addition to the minimally processed data.

GPR Survey

3.5.3 Data from the survey were subjected to common GPR correction processes. These comprise amplitude and wobble correction of the radar profile to correct for variance in temperature and soil moisture content, background, and bandpass filtering to remove noise in the data from the surrounding area, and XYZ mean line to correct for mosaic effects from variance in the day-to-day conditions during the survey. These steps were applied to all the GPR datasets.

3.5.4 The approximate depth conversions of each area have been calculated on the assumption that the GPR pulse through the ground is travelling at a certain velocity. It is possible to determine more precisely the average velocity of the GPR pulse through the ground if previously excavated features at known depths can be identified in the data; however, this is rarely possible. Instead, the radargrams were analysed for suitable hyperbolic reflections, which can be used to determine the velocity of the GPR pulse through the subsurface deposits. The measured signal travel times can then be converted to depths. The approximate depth conversions for each area are shown in **Appendix E** (Table 2 - 5).

3.6 Survey limitations and reliability of results

3.6.1 Each geophysical survey technique deployed as part of this project has limitations. The successful detection of archaeological features is dependent on their material properties and conditions of the site. For example, some features produce anomalies that are below the detection threshold of the equipment, or do not exhibit sufficiently strong contrast to be confidently identified from the background response. In addition, geophysical data cannot be used as 'negative evidence' [22], and if there is a dearth of geophysical anomalies it does not necessarily follow that there is a lack of archaeological features. However, numerous geophysical and archaeological investigations within and surrounding the area covered by the Scheme have shown the efficacy of these techniques. As such the probability that geophysical anomalies interpreted as 'archaeology' are associated with such remains is high, particularly where this is corroborated by supplementary evidence such as aerial photographs, historic mapping, archaeological investigations and additional geophysical techniques.

3.6.2 To ensure that the highest quality data was collected each member of the survey team was suitably qualified and competent for their respective project role. All staff have received in-house training to operate each item of survey equipment to ensure All staff involved in the interpretation and management of the survey data have extensive experience of geophysical survey in archaeology and related fields. They are associate members of the Chartered Institute for Archaeologists or higher and Wessex archaeology is also a member of International Society for Archaeological Prospection (ISAP) which is also an international organisation that promotes best practice in archaeological geophysics. Where possible, the expertise of other specialists at Wessex Archaeology was also sought to aid the interpretation.

4 Geophysical survey results and interpretation

4.1 Introduction

4.1.1 Each geophysical survey area is discussed individually in the following section. A brief description of the location, topography, and geology is provided, as well as a site specific archaeological background. Specific reference is also made to the ground coverage and conditions at the time of survey.

4.1.2 For ease of reference, each survey area is referred to independently, beginning in the east, at NW7 and heading west towards NW11, and followed by the area to the north-east at Rollestone corner.

Gradiometer Survey

4.1.3 The detailed gradiometer survey was deployed over the entirety of the scheme, covering a total of 192.4 ha. This was undertaken in stages to allow for access to be agreed and changes in ground conditions to occur. Work began on the 8th of January 2018 and continued uninterrupted until the 1st of March. From this point to the 12th of April the survey was carried out on intermittent days, with a more continuous phase resuming until the 3rd of May. Several other days were also required to complete the survey by the 4th of June.

4.1.4 The conditions at the time of survey were generally good across the Scheme. However, during the earliest part of the year there were several days where torrential rain and snow prevented fieldwork, or where the ground conditions were too wet/sticky to manoeuvre the equipment. All the fields were either covered with stubble, grass, or a short crop, and were largely clear, with only minor obstructions preventing survey. Where larger impediments prevented survey, such as manure piles, rivers, waterlogged areas or overgrown vegetation, they are referred to in the following results section.

4.1.5 For each of the areas, results are presented as a series of greyscale plots, and archaeological interpretations at a scale of 1:2000 (**Figures 2** – **21**). The data are displayed at -2 nT (white) to +3 nT (black) for the greyscale images. The interpretation of the datasets highlights the presence of potential archaeological anomalies, ferrous, burnt, or fired objects, and magnetic trends (**Figures 22** – **41**). Full definitions of the interpretation terms used in this report are provided in **Appendix E**. In addition, the results and interpretations of the previous phases of survey are also presented for ease of reference.

4.1.6 Numerous ferrous anomalies are visible throughout the datasets. These are presumed to be modern in provenance and are not referred to further, unless considered relevant to the archaeological interpretation.

4.1.7 It should be noted that small, weakly magnetised features may produce responses that are below the detection threshold of magnetometers. It may therefore be the case that more archaeological features are present than have been identified through geophysical survey.

4.1.8 Gradiometer survey may not detect all services present on site. This report and accompanying illustrations should not be used as the sole source for service identification and appropriate equipment (e.g. CAT and Genny) should be used.

Earth Resistance Survey

4.1.9 The earth resistance survey was undertaken in two locations where anomalies deemed to have significant archaeological potential were identified (NW7d and NW10e; Resistance Areas 1 and 2).

4.1.10 Results are presented as greyscale plots, and archaeological interpretations at a scale of 1:1000 (**Figures 42** and **43**). For Resistance Area 1, the data are displayed at +37 Ω (white) to +51 Ω (black). For Resistance Area 2, the data are shown at +38 Ω (white) to +57 Ω (black). The interpretation of the datasets highlights the presence of potential archaeological anomalies, natural features, and areas of high and low resistance. Full definitions of the interpretation terms used in this report are provided in **Appendix F**.

GPR Survey

4.1.11 The GPR survey was undertaken over three areas, with one located in NW7d, NW9b, and NW10e (GPR Areas 20 – 22). These were selected due to significant archaeology being identified in the areas by the preceding detailed gradiometer survey.

4.1.12 The 500 MHz antenna used in this survey has the potential of detecting features to a depth of 2-3 m in optimal conditions, although the total depth reached varies depending on the specific conditions of each area.

4.1.13 For ease of interpretation, the most representative timeslices have been selected for presentation with the interpretation image detailing the salient results from each relevant timeslice *c.* 0.14 m in thickness. This is then followed by a graphical summary of all the timeslices to provide a more complete understanding of how these anomalies may relate to each other.

4.1.14 The GPR survey has identified point reflectors, planar returns, and curvilinear responses, along with anomalous areas of high and low amplitude. Results are presented as a series of greyscale timeslices, and archaeological interpretations at a scale of 1:1500 (**Figure 44** – **49**). The greyscale plots display black representing high amplitude responses and white relating to low amplitude responses.

4.1.15 All features are described in terms of their geophysical character and three-dimensional form. It is important to stipulate that all the depths referred to in this report are approximate levels below the current ground surface. The interpretation of the GPR data highlights the presence of potential archaeological features,

possible archaeological features, and high amplitude responses alongside a series of linear trends. Full definitions of the interpretation terms used in this report are provided in **Appendix F**.

4.1.16 It should be noted that small or waterlogged features may produce responses that are below the detection threshold of the GPR antenna. Excessive disturbance can also impede the ability of geophysical techniques to detect archaeology. It may therefore be the case that more archaeological features are present than have been identified through the geophysical survey.

4.2 NW7 (Longbarrow Junction north)

Site location, topography, and geology

4.2.1 NW7 is the easternmost area in this Phase 4 of the geophysical survey and covers a total area of 16.1 ha. It comprises four irregularly shaped areas surrounding a large block of land that was previously surveyed by Wessex Archaeology [5] during 2017 (NW5). It is located 2.3 km west of Stonehenge, 1.4 km east of Winterbourne Stoke and 6 km west of Amesbury (**Figure 1**). Areas NW7a and NW7b now lie outside of the proposed DCO boundary, as does part of NW7d. NW7c lies wholly within the proposed DCO boundary.

4.2.2 Each area (NW7a – d) is located in a separate field, covering a combined total of 16.1 ha. The southernmost (NW7c) is located directly north of the current route of the A303, and the other three are all located north of the previously surveyed area.

4.2.3 There is a relatively steep slope in NW7a form the south-eastern corner (107 m above Ordnance Datum (aOD) to the north and north-east at c. 92 m aOD. In NW7b there is a gradual slope from the north (100 m aOD) to the south (95 m aOD). Both NW7c and NW7d are relatively flat at around 101 m aOD and 103 m aOD respectively.

4.2.4 The solid geology comprises Jurassic Chalk of the Seaford Formation. There is also a band of head deposits of clay, silt, sand, and gravel, which traverses the north-eastern edge of NW7a on a roughly east-west orientation [24].

4.2.5 The soils underlying the southern field (NW7c) are likely to consist of brown rendzinas of the 343h (Andover 1) association. The three northern areas (NW7a, b and d) are likely humic rendzinas of the 341 (Icknield) association [25]. Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Archaeological background

4.2.6 NW7 is located immediately west of the WHS and contains a single scheduled monument, as well as numerous features known from previous investigations.

4.2.7 The scheduled monument is a sub-rectangular enclosure and round barrow (NHLE no. 1011048). It is visible on aerial photographs and was confirmed by geophysical survey [8] [3] (SW3; 4200). The enclosure is bisected in the centre by the A303 and is located close to the southern edge of NW7c.

4.2.8 On the opposite side of the A360, directly to the east of NW7c, is a prominent long barrow at Longbarrow which is thought to date to the Neolithic period (NHLE no. 1011841). This forms the origin and focal point of a substantial round barrow cemetery known as the Winterbourne Stoke crossroads group (NHLE No. 1011841; 1011843; 1011047). It contains 22 round barrows, including 14 bowl barrows, three bell barrows, two disc barrows, two pond barrows, and a saucer barrow. This also includes a bowl barrow located 15 m west of NW7d (NHLE no. 1008949).

4.2.9 An undated boundary ditch has been mapped from cropmarks traversing part of NW7a and NW7c on a north-west to south-east alignment. This was also identified in the geophysical survey of the intervening area in 2017 [5] (NW5; **8104**). A continuation of the feature to the south-west of Longbarrow junction is a scheduled monument (NHLE no. 1010837). A trench excavated through a section of the feature in the early 2000s revealed a very large ditch, the fills of which produced animal bone, worked flint and burnt flint, and a single sherd of Roman pottery from its upper fills [26].The feature was subject to further excavation in 2013 immediately to the south-west of the junction. This established that the ditch was 4.6 m wide and 1.5 m deep [27].

4.2.10 Numerous weak anomalies were identified during a geophysical survey in 1999 [8]. These were partially confirmed by more recent geophysical survey in 2016 [5] and are likely to be of archaeological interest, although the weak nature of the responses means that their interpretation is uncertain.

4.2.11 Further gradiometer and GPR surveys were undertaken in 2017 in land parcel NW5 (effectively surrounded by areas a-d of NW7). The anomalies identified by the detailed gradiometer survey were primarily ditch-like features of several different forms and periods. These largely corresponded with known archaeological remains identified from aerial sources and represent complexes of prehistoric funerary monuments. Evidence was also identified for field systems, settlement, and a variety of other archaeological features. Several former field boundaries correlate with Ordnance Survey mapping and aerial photography for the scheme. Areas of increased magnetic response, superficial geological deposits, agricultural ploughing trends, and numerous modern services were also located [5].

4.2.12 The GPR survey in NW5 was targeted over a single area. It was positioned over a previously unidentified probable Bronze Age round barrow. The results of this GPR survey supported the initial interpretation and provided detail regarding its likely character and state of preservation [5].

4.2.13 A large number of cropmarks are recorded to the north of NW7. This forms part of an extensive field system set out perpendicular to, and therefore presumably contemporary with, the Romano-British settlement on Winterbourne Stoke Down (NHLE no. 1015222).

4.2.14 A large expanse of land to the north-east of the Longbarrow Junction was used for the establishment of the Stonehenge Airfield (MWI12606), which operated between 1917 and 1919 and functioned as a finishing school for pilots and observers in both day and night bombing. The area to the west and south of Longbarrow Junction formed Oatlands Airfield (MWI6984). This was a grass

airfield, which opened in 1941 as a training unit for fighter reconnaissance squadrons. Use of the site from 1942 was intermittent and the site was closed in 1946 [28].

Gradiometer survey results and interpretation

4.2.15 The gradiometer survey was undertaken by Wessex Archaeology's in-house geophysics team between the 8th and 16th of February 2018. Field conditions at the time of survey were generally good, being largely covered with short rapeseed crop or stubble. At the western edge of NW7a, a *c.* 30 m wide area of tall crops was not possible to survey. Additionally, in the north-western corner of NW7b, an overgrown area and a large pile of haylage also prevented survey.

NW7a

4.2.16 Close to the north-western corner of the field at NW7a (**Figure 22**), a curvi-linear anomaly has been identified (**11000**). This is characterised by a weakly positive magnetic response in a circular arrangement. This is most likely associated with a ring-ditch with an internal diameter of 7.5 m. The ditch itself is fragmentary in the north-east but is consistently 1.5 m wide across the rest of the feature. It is possible that the incomplete nature of this has been caused by plough damage, as there are numerous linear ploughing trends recorded in this area. It is also plausible that this could represent a genuine break in the feature, such as a causeway. It is considered most likely that this is a previously unrecorded Bronze Age round barrow.

4.2.17 Traversing the southern part of the area, on an approximate east-west alignment, is a moderately strong, positive linear anomaly (**11001**). This extends for 150 m within NW7a, continuing eastwards into a previously surveyed area (NW5; **8104**) and into NW7c (**11019**) further to the south-east. It is 3 m in width and surrounded by a weakly negative response on both the northern and southern edges of the anomaly. It is likely this represents a ditch-like feature, while the negative response may suggest the presence of a bank on either side. This feature corresponds with an undated boundary ditch that has been mapped from aerial photography and forms part of a more extensive feature which may have its origins in the Bronze Age.

4.2.18 30 m to the north of **11001**, is a weakly positive linear anomaly (**11002**). This is orientated north-east to south-west and extends for 30 m. This turns approximately 90 degrees at the north-eastern end of the feature and continues for a further 4 m on a more westerly trajectory. The anomaly is 1.3 m wide and is most likely associated with a ditch-like feature of uncertain origin. This is not recorded in the Wiltshire and Swindon Historic Environment Record (WSHER) but is positioned roughly perpendicular to several linear features recorded to the west.

4.2.19 On a parallel alignment to **11002**, there is a further linear anomaly (**11003**). This is 85 m in length, 1.8 m wide, and is characterised by a moderately weak positive magnetic response. It is most likely a ditch-like feature and may be associated with a more southerly extension of an extensive probable Romano-British field system recorded to the north of the area.

4.2.20 Extending east from the south-western end of **11003**, are two parallel negative linear anomalies at **11004**. These are 1.5 m wide and are in a 20 m wide area of very slightly increased magnetic response. They are separated by 5 m and extend

for 185 m on a west-north-west to east-south-east alignment. The two negative responses could be associated with bank features. It is possible that this could be associated with a trackway, but it is considered most likely to be associated with a field boundary of unknown date. Given that this feature is perpendicular and in close proximity to **11003**, it is possible it forms part of a wider field system. However, the different form and magnetic response may suggest that they are not of contemporary origin.

4.2.21 35 m to the south of **11003** there are two shorter parallel linear anomalies (**11005**). These are separated by 5.5 m and are weakly positive. The northernmost of these extends for 28 m and the longer of the two for 45 m. These are also situated on a west-north-west to east-south-east alignment and may therefore be associated with **11003**. However, as these features are very weak and fragmentary, it is likely that they are heavily ploughed down.

4.2.22 There are three regularly spaced weakly positive linear anomalies situated on a north-south alignment. The most westerly of these (**11006**) is 85 m long and 1.5 m wide. 83 m to the west of this is a further linear feature (**11007**). This is more amorphous, 2.5 m wide, and 72 m in length. A similar linear feature has also been identified 85 m to the west at **11008**. This extends for 69 m and is closer to 2 m wide. All three of these features curve slightly towards the east in the northern extent but are most likely associated with ditch-like features. Despite slight discrepancies in the size and form of these, the regular spacing suggests that these form part of a field system. As these are on a similar alignment to the existing field boundaries at the site, it is probable that they are of relatively recent origin.

4.2.23 There is a faint curvi-linear anomaly at **11009**. It is very intermittent and is not visible in the north-eastern extent, however a semi-circular form can be identified in the south. This has an internal diameter of 20 m and may be associated with the fragmentary remains of a ring-ditch of unknown date. However, the weak response may suggest that this feature could also be of natural origin, and it is not possible therefore to provide a confident interpretation for this anomaly.

4.2.24 Numerous discrete positive anomalies have been recorded across NW7a. These are generally circular or sub-circular in form and measure between 1.5 and 4 m in diameter. For the most part, they are not distributed in an easily identifiable arrangement, but may be associated with pit-like features. At **11010** and **11011** there are notable clusters of these anomalies in small semi-circular arrangements, but it is not clear from these results what this may represent in archaeological terms. Furthermore, it is equally plausible that many of these relate to natural undulations in the underlying chalk bedrock.

4.2.25 Close to the northern boundary of the site there is a weakly positive linear anomaly on a curving west-north-west to east-south-east alignment (**11012**). This extends for 200 m and is approximately 3.5 m wide. It is probable that this is a ditch-like feature, although it is not clear how it is associated with other such features in the area. As this is positioned orthogonally in respect to similar features to the south (**11003**; **11004**), it is possible it is associated with an undated field system. However, the location of this near a change in topography and superficial geology, suggests that it could also be natural in origin.

4.2.26 To the immediate north of **11011**, and to the south of the existing field boundary, there is an amorphous band of weakly positive and negative magnetic response (**11013**). This is interpreted as superficial geology and correlates with recorded head deposits of clay, silt, sand, and gravel on geological mapping for the area (BGS 2018).

NW7b

4.2.27 Extending from the western limit of NW7b is a 30 m long alignment of discrete positive anomalies (**Figure 22**; **11014**). This is positioned on a north-east to south-west alignment and is interpreted as possible archaeology. It is possible that this may be associated with a short pit-alignment, however the limited size and isolated location of the feature makes it difficult to provide a more specific interpretation.

4.2.28 There are several other sub-circular positive anomalies visible across NW7b, which are interpreted as pit-like features. However, as these lack any discernible form it is equally likely that they relate to natural undulations in the chalk bedrock.

4.2.29 Adjacent to the northern boundary of the survey area, there is a small area of increased magnetic response (**11015**). This is thought to be associated with a dump of modern material located in this area.

NW7c

4.2.30 Directly north of the southern boundary of NW7c is a moderately strong positive, curvi-linear anomaly (**Figure 23**; **11016**). This is situated on an arching east-west alignment and covers an 80 x 20 m area. It is representative of a substantial ditch like feature measuring 3.8 m in width. This is surrounded by a weakly negative magnetic response, which might be suggestive of remnant bank material on both the northern and southern edge. It is truncated by the existing route of the A303 to the south, but clearly relates to a rectilinear anomaly of similar character that was identified in a previous geophysical survey (SW3, **4200** [3]). Together these features form a 75 x 100 m rounded enclosure. This has been previously identified in aerial photographs of the area and relates to a scheduled Bronze Age enclosure (NHLE no. 1011048). The WSHER suggests that this may represent a small settlement; however, there are no anomalies within the enclosure that are consistent with this. It is possible that the disturbance caused by the road has prevented the detection of any internal features.

4.2.31 3.5 m north-west of the enclosure at **11016**, is a fragmented circular arrangement of weakly positive anomalies (**11017**). This has an internal diameter of 14 m and is comprised of five elongated oval features on the north, eastern, and south-eastern side. These are between 1 to 2 m wide and 3.5 to 7 m in length. In the south-east, there are five smaller, circular pit-like anomalies which have a diameter between 1 to 2.5 m. The circular arrangement is suggestive of a Bronze Age barrow, and it has previously been interpreted as such in geophysical survey results from 1994 [29]. The ditch appears to be more fragmentary within these more recently collected gradiometer survey results. It is possible that this is due to repeated ploughing since the previous survey. However, it is also possible that the increased resolution of this survey has provided more detail regarding the dimensions of these features.

4.2.32 Approximately 22 m to the north-west of the **11017**, there is a moderately positive circular anomaly (**11018**). This is 5 m in diameter and surrounded by a weakly negative response on the outer edge. This is most likely associated with a large pit-like feature of uncertain date. The proximity to the rounded enclosure at **11016**, may suggest it is associated with contemporary settlement activity.

4.2.33 Traversing the site on a north-west to south-east alignment, is a substantial ditch-like feature at **11019**. This is characterised by moderately strong positive magnetic values and is surrounded by a negative response on the northern and southern edges that suggest the presence of a bank on either side. Within NW7c, the ditch itself is 135 m in length and 3.2 m wide. In the south-eastern extent, it turns towards a more southerly trajectory for a short distance and likely continues beyond the survey extent towards the scheduled linear boundary (NHLE no. 1010837) which runs from south-east of Longbarrow roundabout to Wilsford Down. The feature also visibly continues to the west into a previously surveyed area (NW5; **8104**) and into NW7a (**11001**). This corresponds with an undated boundary ditch that has been mapped from aerial photographs and forms part of a more extensive feature which may have its origins in the Bronze Age.

4.2.34 Extending north-north-east from the southern boundary of the survey area is a linear anomaly at **11020**. This extends for 80 m and appears to be interrupted in the centre by **11019**. It is approximately 2 m wide and represented by weakly positive magnetic values. It is interpreted as a ditch-like feature and correlates with a feature previously identified by geophysical survey and aerial photography in the area. As it is perpendicular to **11019**, and parallel with other linear features identified in the vicinity, it is likely that this forms part of a wider field system of unknown date.

4.2.35 A further weakly positive linear anomaly has been identified that originates from the junction of **11019** and **11020**, heading towards the north-east (**11021**). This is 94 m in length and 2.5 m wide, although there is a 2.7 m break in the south-eastern part of this. This is representative of a ditch-like feature that was identified in a previous geophysical survey undertaken in 1994 [29] and aerial photographs of the area. It is notable that the alignment and origin of the feature corresponds with the change in direction identified in the south-eastern part of **11019**. Although it is not clear whether these features are of the same date, it is probable that they existed contemporaneously.

4.2.36 There are numerous sub-circular pit like anomalies visible across the area, but few of these display any easily identifiable layout. There is a short linear arrangement of such features situated on a north-east to south-west alignment along the south-eastern edge of the field (**11022**), but these are not clearly associated with archaeological features. These are all interpreted as possible archaeology but could equally be associated with natural undulations in the chalk bedrock.

4.2.37 8 m inside of the eastern edge of the survey there is a 7 m wide area of strongly positive and negative magnetic response (**11023**). This follows the alignment of the western boundary of the field, parallel to the route of the A360. This type of response is characteristic of made ground and is likely associated with a track of modern origin. It also corresponds with a similar feature to the north, that was identified in a previous geophysical survey (NW5, **8128** [5])

NW7d

4.2.38 In the northernmost tip of NW7d (**Figure 24**), there is a short, weakly positive linear anomaly (**11024**). This measures 17 x 3 m and is situated on a roughly north-east to south-west alignment. On the southern edge there is a corresponding weakly negative response, suggesting this may relate to a possible ditch and bank feature. It is possible this is associated with an extensive field system that may have its origins in the later prehistoric to Romano-British period and has been mapped from aerial photography to the immediate west.

4.2.39 Directly north of **11024**, part of a large pit has been plotted from aerial photographs. This has not been clearly identified by this geophysical survey, however it is probable that the location of this feature may be situated further to the north-west, beyond the survey extents.

4.2.40 Crossing the southern part of NW7d, a former field boundary has been identified at **13025**. This is characterised by an east-west aligned arrangement of ferrous anomalies extending for 53 m. This likely continues beyond the survey extent towards the west. It is visible on historic OS mapping of the area dating from 1939 and is continually present on aerial photographs until around 2003.

Earth resistance survey results and interpretation

Resistance Area 1

4.2.41 The earth resistance survey was situated in NW7c over an irregularly shaped area in the southern-central part of the field, to the north-west of Longbarrow roundabout (**Figure 42**). This covers an undated boundary ditch (**11019**), as well as the scheduled enclosure (**11016**) and barrow (**11017**) that has been identified in the gradiometer survey (NHLE no. 1010837).

4.2.42 A total area of 1.4 ha was covered, and several high and low resistance anomalies have been identified. Most of these are associated with the features located by the gradiometer survey.

4.2.43 At the southern boundary of the area, a low resistance curvi-linear anomaly has been identified (**11100**). This forms an east – west aligned crescent covering an 85 x 25 m area. The anomaly has a width of 3 – 4 m and is indicative of a ditch feature. It is not clear whether a 7.5 m gap in the west of the anomaly is contemporary with the construction of the ditch, perhaps an entrance to an enclosure, or the result of plough damage. However, the previous gradiometer survey shows the ditch as a continuous anomaly (**11016**). This would suggest the feature was once a complete ditch and that the gap is caused by ploughing.

4.2.44 This feature relates to the scheduled Bronze Age enclosure (NHLE number: 1011048), but the barrow which is also included within this scheduling is not visible in the earth resistance data. This was visible in the gradiometer survey as a fragmented circular arrangement of weakly positive anomalies (**11017**) and it is therefore likely that the feature is too poorly defined to be successfully identified within the resistance data. This may suggest that the feature has been significantly affected by modern ploughing.

4.2.45 To the north-east of **11100**, a low resistance linear anomaly traverses the area on a north-west to south-east alignment (**11101**). The anomaly has a width of

between 4.5 and 5.5 m and is indicative of a ditch feature. This corresponds with an anomaly identified by the previous gradiometer survey (**11019**). The only significant difference is that in the eastern extent the anomaly appears to turn more sharply towards the south, perhaps suggesting a less rounded corner on this side of the enclosure.

4.2.46 High and low resistance linear anomalies have been identified running parallel to the southern boundary of the area (**11102**). These anomalies relate to a modern trackway and/or set-aside, which was present in this area at the time of survey. Where this meets the northern edge of the enclosure ditch (**11100**) it is not clear whether the anomaly seen in the data is caused by the track or the ditch. Both features create a similar anomaly, making it difficult to differentiate between the two. However, the gradiometer data more clearly shows the ditch continuing the route shown by the earth resistance data.

4.2.47 A single discrete high resistance anomaly has been identified in the south-west of the area (**11103**). This has a diameter of 4.5 m and indicates an area of drier ground. It is possible that this represents a pit of possible archaeological origin, although other nearby cut features (**11100** and **11101**) are seen as low resistance anomalies. As such, it is more likely that this represents natural variation in the underlying chalk bedrock.

4.2.48 The area covered by this survey also includes a 5 m diameter circular positive anomaly in the gradiometer data (**11018**). This is not reciprocated in the earth resistance data. It is possible that the feature identified at **11018** is filled with a material of a similar character to that of the natural chalk bedrock and therefore does not produce a sufficiently strong contrast.

4.2.49 The two further linear anomalies which were located in the western part of this area by the gradiometer survey (**11020**; **11021**) are visible as weak, low resistance, linear trends at **11104** and **11105**. They are, however, very poorly defined which may suggest that they are relatively limited in their extents or damaged by modern ploughing.

GPR survey results and interpretation

GPR Area 20

4.2.50 The GPR survey was undertaken across the same area as the earth resistance survey in NW7c (**Figure 44**; **47**). This covers part of the undated boundary ditch (**11019**; **11101**) as well as the scheduled enclosure (**11016**; **11100**) and barrow (**11017**) that have been identified by the other geophysical survey techniques (NHLE no. 1010837).

4.2.51 The GPR survey was successful in identifying numerous high and low amplitude responses throughout the dataset. Many of these are likely to be associated with archaeological remains and support the interpretation of the gradiometer and earth resistance surveys. A total depth of 2.39 m was achieved and there were no obstacles preventing the collection of the survey data.

4.2.52 The uppermost timeslices are dominated by a series of high amplitude linear trends. In the southern part of the area these are situated on an approximate east – west alignment, and to the north they are orientated north – south. These are

visible from the first timeslice, nearest the ground surface, until Timeslice 6 (0.59 – 0.74 m). These are associated with modern ploughing furrows and correspond with a similar arrangement of features identified in the gradiometer data, as well as being visible on the ground surface.

4.2.53 Within Timeslice 6 (0.59 – 0.74 m) two intermittent linear anomalies can be identified. The first of these (**11200**) is orientated on a north-west to south-east orientation, and the second (**11201**) is on a north-north-east to south-south-west alignment. These are characterised by a high amplitude response and are present within the data until Timeslice 10 (0.95 – 1.09 m). They are perhaps most clearly visualised in Timeslice 8 (0.83 – 0.97 m) where two 1.5 m wide anomalies extend for 55 m and 46 m respectively. It is possible that the shortest of these (**11201**) continues further to the south, but this is very poorly defined. These are associated with ditch-like features and correspond with other similarly interpreted anomalies identified in the gradiometer (**11020**; **11021**) and earth resistance data (**11104**; **11105**). The limited depth and fragmentary nature of the response within the GPR data, may suggest that they are significantly affected by modern agricultural activity, such as ploughing.

4.2.54 In the north-western corner of Area 20, there is high amplitude anomaly (**11202**). This is approximately 5 – 6 m in diameter and is faintly visible until Timeslice 7 (0.75 – 0.81 m), after which point it is impossible to clearly identify. This corresponds to a similarly sized circular anomaly located in the gradiometer survey (**11018**), which was not detected in the earth resistance survey. Within the GPR results it is a ring-shaped anomaly with the central area being characterised by a low amplitude response. It is possible that this feature is in fact associated with a relatively small ring-ditch feature, as opposed to a pit. However, it is considered more likely that this response has been caused by a differential composition of the fill of the feature and is therefore considered a probable pit. The limited depth and clarity of the anomaly, however, make this difficult to confirm.

4.2.55 At **11203**, there is a series of high amplitude responses which follow the alignment of the southern boundary of the field. These correspond to an area of set aside and a trackway located in this area of the site that were also identified in the earth resistance survey (**11002**).

4.2.56 In the north-eastern part of the survey there are a series of parallel linear trends on a north-west to south-east alignment (**11204**). A smaller number of these are also located to the south at **11205**. These are poorly defined but are evenly spaced 2 – 3 m apart. They are visible from Timeslice 9 (0.95 – 1.09 m) to Timeslice 13 (1.42 m – 1.56 m) but are very indistinct. Similar trends were noted in the gradiometer survey of the area, and it is possible that they are associated with remnants of an early phase of agricultural activity, such as ridge and furrow ploughing.

4.2.57 Close to the southern boundary of the site a large curvi-linear anomaly has been clearly detected within the GPR survey (**11206**). This occupies an 85 x 20 m area and is roughly orientated on an east – west alignment in a crescent shape. It is 4 m wide and varies in the nature of the response as it descends. It can be identified within Timeslice 6 (0.59 – 0.74 m), but it is more distinct as a strong high amplitude response from Timeslice 7 (0.71 - 0.85 m) through to Timeslice 11 (1.06 – 1.21 m). Throughout the deeper Timeslices it is visible as a faint low amplitude response until Timeslice 20 (2.24 - 2.39 m). This is associated with the scheduled

Bronze Age enclosure ditch (NHLE number: 1011048), which has been previously noted in geophysical survey and aerial photographs. The variable nature of the response is likely attributable the composition of the fill. The results correspond well with the interpretation of the gradiometer and earth resistance data where similar features were identified (**11016; 11100**). However, there is no indication of a gap on the western edge of this ditch, nor is there any additional perceptible internal features.

4.2.58 Within the gradiometer survey of this area, an intermittent circular feature was identified (**11017**). This is thought to be associated with the fragmentary remains of a ring-ditch associated with a Bronze Age round barrow. This was not detected within the earth resistance survey but can be seen within the GPR survey as two weak low amplitude curvi-linear trends. These are most clearly visible within Timeslice 6 (**11207**; 0.59 m – 0.74 m) but cannot be clearly identified beyond Timeslice 8 (0.83 – 0.97 m). This suggests that this probable round barrow does not extend to any great depth and it is likely heavily ploughed down.

4.2.59 Approximately 40 m north-east of **11206**, a north-west to south-east aligned linear anomaly has been identified (**11208**). This corresponds with a broad ditch like feature that was in the gradiometer (**11019**) and earth resistance survey (**11101**). It is faintly visible in the upper timeslices as an area of slightly higher amplitude, as well as some poorly defined linear trends. However, this is difficult to identify against the background response. From Timeslice 10 (0.95 – 1.09 m), it is possible to identify a faint low amplitude response, which becomes clearer from Timeslice 13 (1.42 – 1.56 m). Within this it is possible to identify a clear 5 m wide anomaly, which extends for a distance of 98 m across the survey area. This continues throughout the remainder of the dataset, to Timeslice 20 (2.24 - 2.39 m), reducing slightly in width as it descends. The consistency of the response within these lower time-slices suggests that the ditch is broad and extends to a significant depth.

4.2.60 Three broad amorphous bands of high amplitude responses can be seen traversing GPR Area 20 on a north-east to south-west alignment (**11209** – **11211**). These are irregular in form and also shift laterally from the north-west to the south-east as they descend through the timeslices. They are visible between Timeslice 6 (0.83 – 0.97 m) until the final timeslice (Timeslice 20 2.24 – 2.39 m). These are also visible in the associated radargrams and are thought to be associated with local geomorphology, where dipping bands of weathering, marl, or flint bedding within the chalk appear as a series of high amplitude reflectors.

4.2.61 Across the area there are several isolated high amplitude responses that might be associated with pit-like features. Some correlate with the location of weakly positive anomalies in the gradiometer survey that are also interpreted as such. However, there are also several areas of high amplitude which are do not, and it is likely that these features are natural in origin, probably being associated with large stones or similar. Furthermore, many of the pit-like anomalies in the gradiometer survey cannot be clearly attributed to responses in the GPR survey. It is therefore not possible to suggest whether many of these subtler anomalies are of archaeological or natural origin.

4.3 NW8 (Parsonage Down north)

Site location, topography, and geology

4.3.1 NW8 covers 35.1 ha and is approximately 1 km south of the village of Rollestone and 750 m north-west of Winterbourne Stoke. It comprises three irregularly shaped fields surrounding Homanton Farm and Cherry Lodge (NW8a – NW8c), and two roughly rectangular fields to the east (NW8d; NW8e) (Figure 1). Part of NW8a now lies outside the proposed DCO boundary.

4.3.2 The site is on a slight incline sloping from north to south. The highest point is in the north-east corner of NW8e at 116 m aOD and the lowest is in the centre of the southern boundary of NW8c at 84 m aOD.

4.3.3 The solid geology comprises Jurassic Chalk of the Seaford Formation, and superficial head deposits of clay, silt, sand, and gravel, are recorded along the southern edge of the western fields [24].

4.3.4 The soils underlying the site are likely to consist of brown rendzinas of the 343h (Andover 1) and 343i (Andover 2) association [25]. Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Archaeological background

4.3.5 NW8 is located 2.7 km outside of the western perimeter of the WHS and contains no scheduled monuments. Although the core of the WHS contains an abundance of Neolithic and Bronze Age ceremonial and funerary monuments, there are generally fewer in this part of the scheme. However, 400 m east of NW8 is the Winterbourne Stoke West round barrow cemetery and the Coniger enclosure (NHLE no. 1015019). This contains well preserved examples of the majority of identified types of round barrow and a linear boundary surrounding this. At a later date, part of the barrow cemetery was incorporated within an earthwork enclosure. This may reflect the use of the barrows as part of a warren that may date to the medieval and post-medieval period.

4.3.6 In the north-east corner of NW8e is an arching curvi-linear cropmark which is recorded in the WSHER as being associated with a settlement containing Romano-British pottery and coins. Directly north-east of NW8 is a probable later prehistoric and/or Romano-British settlement on High Down. In the field to the north of NW8d, is also large oval shaped enclosure which is visible on aerial photographs.

4.3.7 Numerous cropmarks associated with a field system have been previously recorded across NW8 from aerial photographs. These are predominantly orientated on a north-south/east-west rectilinear system and are possibly associated with an extensive area of co-axial field systems and lynchets. The field systems and lynchets are likely to date broadly to the later prehistoric to Roman period, following a pattern observed across large swathes of Salisbury Plain. These field systems may also incorporate some elements derived from considerably later episodes of land division, including medieval lynchets and strip fields, and Post Medieval field boundaries.

Gradiometer survey results and interpretation

4.3.8 The gradiometer survey was undertaken by Wessex Archaeology's in-house geophysics team between the 12th and 22nd of February 2018. Field conditions at the time of survey were generally good, although there were periods of very heavy rainfall. The westernmost field (NW8a) was pasture and contained numerous cattle feeders that prevented the collection of survey data. There were also several deep wheel ruts associated with the recent transportation of silage. The central and eastern fields were covered with a short wheat crop or grass. A set of overhead cables traversed the northern portion of the western fields on an east-west alignment. Each area was surrounded by a metal fence.

4.3.9 In the north-eastern corner of the most easterly field (NW8e) (**Figure 27**), there is a moderately strong positive linear anomaly (**12000**). This is likely associated with a ditch-like feature. The anomaly is visible for a total distance of 240 m and is consistently 2.5 m wide. It extends south from the northern boundary of the site for 95 m, before arching towards a more easterly trajectory, and continuing for a further 145 m. On both sides of the ditch, there is a weak negative response. Although, this is more pronounced on the northern and eastern edge of the feature, it is probable that this is associated with bank material on either side of the feature. The arrangement of this anomaly forms an irregularly shaped enclosure that correlates with the possible Romano-British settlement recorded in the WSHER.

4.3.10 Extending south from the south-western corner of **12000** is a weaker positive linear anomaly that extends for 120 m and is 1.5 m wide (**12001**). This may represent a continuation of **12000**, but the different character of the anomaly suggests that it may relate to a different feature or phase. As such it is most likely that this is associated with the probable field system that has been identified to the west (**12006** – **12022**).

4.3.11 In the north of this field, there is a 20 m long, linear positive anomaly (**12002**). This is situated on an east-west alignment and is 2 m wide. This may represent a further ditch-like feature associated with the enclosure at **12000**. However, the close proximity to the disturbance caused by the metal perimeter fencing and the presence of a modern service at the eastern edge of the field makes this difficult to confirm.

4.3.12 Within **12000**, there are numerous weakly positive anomalies that are likely to be associated with pit-like features. These are predominantly circular or sub-circular in form and between 1 m and 3 m in diameter. At **12003**, there is a small cluster of these anomalies that are slightly stronger and more regular. They are located in an area where a curvi-linear feature has been previously identified from aerial photographs. Although there is a very weakly positive linear trend that may be attributable to this, this is not clearly manifested within the results of this geophysical survey. It is possible that the feature identified by aerial photographs has been significantly ploughed down.

4.3.13 Directly to the south of **12000**, there is a cluster of similar pit-like anomalies (**12004**). As these are directly outside of the enclosure at **12000**, it is likely that they are associated with archaeological remains. However, as they are not distributed in any obvious pattern, it is not possible to provide a more specific interpretation

4.3.14 9 m inside of **12000**, is a concentration of large, moderately strong positive anomalies (**12005**). These are irregular in form and are surrounded by a weakly negative response. Together they cover an 18 x 9 m rectangular area that is roughly orientated on a north-east to south-west alignment. This is interpreted as archaeology and is most likely associated with a large area of pitting. The shape, size and character of the anomaly may suggest that it is associated with an extraction pit. However, it is not clear whether this is contemporaneous with **12000**.

4.3.15 Across the entirety of NW8 there is a series of linear anomalies. The responses of these vary in strength, shape, and size but all of them conform to a consistent orthogonal arrangement.

4.3.16 Situated on an approximate east-west orientation are four broken alignments of linear anomalies (**12006** – **12015**) (**Figures 25** – **27**). These traverse the western three-quarters of the area and are separated by 80 - 85 m. The most northerly of these is composed of two parts (**12006** and **12007**), being broken in the centre by the buildings at Homanton Farm and Cherry Lodge. This extends for a combined total distance of 450 m. The eastern part (**12007**) comprises a pair of parallel positive and negative linear bands, separated by 6 m. To the south of this there are two further east-west aligned groups of linear anomalies (**12008** – **12010** and **12011** – **12014**) which extend 600 m and 800 m respectively. At the eastern end of **12014**, the anomaly turns approximately ninety degrees and heads towards a more southerly trajectory for a further 135 m. Along the southern edge of NW8, a group of linear anomalies is visible, extending 235 m (**12015**). Each of the four groups of anomalies are characterised by a 5 m – 10 m wide band of weakly positive and negative magnetic response. The negative response is always situated on the northern (upslope) edge of the positive, with the alignment being perpendicular to the topography of the area. It is likely that the positive response is associated with a ditch-like element to the feature, with the negative values being attributable to a probable bank. The definition between the two responses is clear, but the outer edges of the feature are more diffuse, suggesting that they are more poorly defined. This type of response is suggestive of lynchet features, where there is a very gradual break of slope on the outer edge of the feature and a more pronounced 'terrace' on the inside.

4.3.17 It is likely that these groups of east-west aligned lynchet features (**12006** – **12015**) relate to the extensive remains of a field system that has been identified across Salisbury Plain via geophysical survey and assessments of aerial photographs. These are only occasionally dated through excavation but are likely to represent large scale land division spanning the Mid-Late Bronze Age through to the Roman period.

4.3.18 To the north-east of **12006** – **12015**, there are four short linear anomalies (**12016** – **12019**). These are characterised by both weakly positive and negative magnetic responses and are also likely to be associated with lynchet, or ditch and bank features. They are similarly broad, measuring 4 – 8 m wide, and extend 45 to 80 m in length. These are probably associated with the same field system, but the difference in length and staggered positioning is suggestive of a 'brickwork' layout. Such an arrangement is often associated with a field system of Late Iron Age – Romano-British date. Given the proximity to the probable Romano-British remains

at **12000**, 125 m to the east, it is plausible that elements of the field system may also date to this period.

4.3.19 Traversing the easternmost field (NW8e) (**Figure 27**), are several north-south aligned linear anomalies that are likely associated with ditch-like features. These are 3 – 5 m wide and are characterised by weakly magnetic values. **12020** is the longest of these, measuring 180 m in length. There are two visible breaks which divide the feature for distances of 7 and 15 m. After a gap of 70 m, a further linear anomaly is visible to the south (**12021**), extending 100 m. Both these features are parallel to the western part of **12000** and **12001**. Although these features are perpendicular to many of the linear anomalies to the west (**12006** – **12019**), the difference in size and magnetic response suggests a different phase or function.

4.3.20 At **12022**, there is a 90 m long weakly positive linear anomaly which is broken in the centre by a 12.5 m gap. This is closely aligned to the north-south orientated element of **12013** and is therefore likely to be associated with the extensive field system at **12005** – **12016**.

4.3.21 In the south-west of NW8e, there are several weakly positive linear anomalies. The clearest of these is located 12 m east of **12021** at **12023**. This is orientated on a north-north-west to south-south-east alignment, extends for 185 m, and is 2 m wide. Directly east of this are numerous weak parallel linear trends. These are relatively regularly spaced, 10 – 15 m apart. It is probable that this forms part of a field system, however the close spacing may suggest that this is associated with ridge and furrow ploughing.

4.3.22 In the centre of NW8e there is an isolated 33 m long, 1 m wide linear anomaly (**12024**). This is characterised by weakly positive magnetic values and is orientated on a north-south alignment. It is likely that this is associated with a short ditch-like feature of an unknown date.

4.3.23 Across the remainder of the area (**Figures 25** – **27**) there are further weakly positive linear anomalies on an approximate east-west alignment (**12025** – **12028**). The south-westernmost example is 52 m long and 1 m wide (**12025**). 125 m north of this is **12026**, which is 65 m long by 4 m wide. In the western field, there are two east-west aligned linear anomalies.

4.3.24 In the south-east of NW8a (**Figure 25**), **12027** is 80 m long and 4 m – 6 m wide. In the north-east of this field is a further 100 m long and 3 m wide anomaly (**12028**). These are both interpreted as possible archaeology as the weaker response prevents a more confident interpretation. However, these are probably ditch-like features and may be associated with the extensive field system identified at **12005** – **12019**.

4.3.25 In addition, there are numerous weakly positive and negative linear trends recorded across the entirety of NW8. These are predominantly located on the same alignment as the field system (**12005** – **12019**) and may be associated with the heavily ploughed down remains of further divisions within this. However, the weak nature of the magnetic response makes it more difficult to determine the origin of these features.

4.3.26 A variety of pit-like anomalies are visible across NW8. These are generally circular or sub-circular in form and are characterised by weak to moderate positive magnetic responses. They measure 1 – 4 m in diameter and are interpreted as possible archaeological features. The majority of these are not distributed in a fashion that is suggestive of specific archaeological features. However, there are a few clusters of anomalies that could be of increased archaeological interest. For example, at **12029** and **12030** (**Figures 25** and **26**) there are curvi-linear arrangements of weakly positive anomalies. These form incomplete circular shapes with internal diameters of 10 m and 5 m respectively. It is possible that these could be associated with the heavily ploughed down remains of ring-ditches. However, the poorly defined, weak nature of the response makes confident interpretation of these features difficult.

4.3.27 There are also concentrated areas of pit-like anomalies at **12031** and **12032**. These are located directly north of some of the probable lynchet features (**12011** and **12013**) and may therefore be associated with this phase of activity. Despite this, it is not obvious what this cluster of features may represent in archaeological terms, and it is equally possible that this may simply be associated with natural undulations in the underlying chalk bedrock.

4.3.28 Running roughly parallel with the field boundary between NW8a and NW8b (**Figure 25**), is a weakly positive linear anomaly (**12033**). This is 87 m in length and 1 m wide on a north-south alignment. This is most likely associated with a ditch like feature. The proximity to the existing field boundary, suggests that it is a drainage ditch at the edge of this field. However, given the widespread nature of linear features in the surrounding area, and archaeological interpretation cannot be ruled out.

4.3.29 To the east of **12033**, there is a north-south aligned area of increased magnetic response at **12034**. This is characterised by a moderately strong dipolar response, which is flanked on either side by weakly positive linear anomalies. It extends for 200 m and is 10 m wide. This correlates with a former field boundary and track that is recorded on historic Ordnance Survey (OS) mapping dating to 1889. At the southern end of this there is a wider area of increased magnetic response covering a 21 x 14 m area. This relates to a possible structural feature visible on mapping of the same date. It is probable that this is associated with a small reservoir or sheepfold, but further investigation would be required to confirm this.

4.3.30 Across the two westernmost fields (NW8a and NW8b) (**Figure 25**), south-west of Cherry Lodge, there are numerous parallel weakly positive linear anomalies orientated on a north-south alignment. These are spaced 8 – 10 m apart and are on the same orientation as the existing field boundaries. These are thought to indicate medieval/post-medieval ridge and furrow ploughing across the area.

4.3.31 Traversing the two eastern fields (NW8d and NW8e) (**Figure 27**) is an amorphous, weakly positive linear anomaly (**12035**). This is 315 m in length and is situated on a north-east to south-west alignment. It is 9 m wide, widening to 20 m in the southern extent. This correlates with recorded Head deposits of clay, sand, silt, and gravel [24].

4.3.32 Along the southern edge of NW8a (**Figure 25**), there is a further amorphous band of weakly positive and negative magnetic response (**12036**). This measures 185 x

15 m but is very poorly defined. This is also interpreted as superficial geology, though it is located slightly north of an east-west aligned Head deposit of clay, sand, silt, and, gravel [24].

4.3.33 Protruding into the survey area from the south-west corner of NW8a are two sets of weakly negative parallel linear trends. The longest of these (**12037**) is 275 m long and orientated north-east to south-west. At **12038**, a similar 225 m long example is also recorded on a more easterly trajectory. These are both 3 m in width and attributable to modern agricultural vehicle tracks that were present on the surface during the survey.

4.3.34 At **12039** and **12040**, there are two circular strong dipolar responses. These are associated with modern metal cattle feeders in the area. To the south and east of **12040**, there are two 7 m diameter circular, negative anomalies. Whilst these could conceivably be associated with ring-ditch features, they are most likely the former location of the cattle feeders. The weak negative response being caused by the trampling down the earth surrounding the feeder.

4.3.35 There are two large dipolar responses recorded at **12041** and **12042**. These are associated with the location of overhead cable uprights, which traverse the northern part of the area on an east-west alignment.

4.3.36 Three modern services traverse NW8. These are all characterised by strong dipolar magnetic responses. Two extend from the south-east corner of Cherry Lodge (NW8c) with **12043** heading towards a south-westerly trajectory and **12044** to the south-east. Traversing the central field (NW8d) on a northwest to south-east is also **12045**. This is a particularly strong response associated with a service, such as a pipe or cable.

4.4 NW9 (Parsonage Down south)

Site location, topography, and geology

4.4.1 NW9 is the largest area surveyed in Phase 4, covering a total of 70.8 ha across three areas (NW9a – NW9c). It is located 450 m west of the village of Winterbourne Stoke, 1.8 km south of Shrewton (**Figure 1**).

4.4.2 The largest of these areas (NW9a) is an irregularly shaped field directly north of Scotland Lodge Farm to the south of NW8. It is bounded to the east by the route of the B3083 and to the west by a field boundary leading onto open agricultural land on Parsonage down. In the north-west there is a short trackway and field boundary leading onto NW8. In the south, there are two small areas of woodland and field boundaries separating the area from NW9b to the south-west and NW9c to the south-east.

4.4.3 NW9b covers an irregularly shaped parcel of land to the west of Scotland Lodge Farm. It is bounded to the north and east by field boundaries, a layby on the northern side of the A303 to the south, and open agricultural land to the west.

4.4.4 The smallest field (NW9c) is a square shaped area comprising three horse paddocks surrounded by metal fences and wooded boundaries. It is located to the east of Scotland Lodge Farm, to the south-east of NW9a and north-west of NW4 [3].

4.4.5 The topography of NW9a is relatively complex, being located at the junction of three valleys. The most prominent of these traverses the area on a sinuous north-west to south-east alignment. A second, enters the area from the south-west corner, and heads towards the centre of the field, at around 80 m aOD. The highest point is in the centre of the western part of the site, where there is a slight promontory at approximately 106 m aOD. There is also a rise from the centre of the area (80 m aOD) to the north-eastern part of the field (102 m aOD), with the lowest point lying in the south-east corner of the site (78 m aOD). In addition, there is a gradual slope from the eastern boundary (107 m aOD) to the north-eastern corner at 96 m aOD.

4.4.6 NW9b is situated on a promontory overlooking a shallow valley to the south. The highest point is in the centre of the southern boundary of the area at 118 m aOD. There is a gradual decline from this point to the north (101 m aOD) and to the south-east (108 m aOD). Within NW9c, there is also a gradual decline from the north-west (97 m aOD) to the south-east (78 m aOD).

4.4.7 The solid geology comprises Jurassic chalk of the Seaford Formation. Superficial deposits of head clay, silt, sand, and gravel, are recorded which relates closely to the topography in NW9a [24]. Two bands of this enter the area from the north-east and south-east, converging in the centre of the field and then continuing westwards towards the south-east corner.

4.4.8 The soils underlying the NW9a are likely to consist of brown rendzinas of the 343h (Andover 1) association across the north, with grey rendzinas of the 342a (Upton 1) association in the north, and humic rendzinas of the 341 (Icknield) association in the south-west. NW9b and NW9c are mostly covered by grey rendzinas of the 342a (Upton 1) association, with an area of brown rendzinas of the 343h (Andover 1) association in the west of NW9b [25]. Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Archaeological background

4.4.9 This area is located 2.7 km outside of the western perimeter of the WHS and does not contain any scheduled monuments. However, there is a pair of closely spaced ring ditches identified from aerial photographs and interpreted as probable round barrows within NW9a. The southern one of these is noted as being incomplete. A further ring ditch has also been identified from aerial photographs and interpreted, 185 m to the north-east of this.

4.4.10 Within NW9b, the cropmark remains of two further probable Bronze Age round barrows have been identified. The northern example has a diameter of 30 m and its location has been confirmed by geophysical survey [29], whilst the smaller is partially obscured by the present field boundary.

4.4.11 There is a potential Romano-British settlement and traces of an Iron Age oval enclosure, 30 m south-east of NW9b. This has been identified from cropmarks and comprises numerous rectilinear and sub-rectangular ditch defined enclosures. A concentration of Late Romano-British pottery and burnt flint was recovered during fieldwalking in this area [30]. The results of a geophysical survey in 2001 [10] identified oval ditch contains dense concentrations of pits and that further enclosures extend eastwards and westwards. The results suggest that the extent

of the main settlement has been defined, though further settlement could be present to the north. Limited evaluation has confirmed occupation on this site from the Early Iron Age through to the Romano-British period [31] [32].

4.4.12 Numerous cropmarks associated with a field system have been previously recorded across NW9 from aerial photographs. These are predominantly orientated on a north-south/east-west rectilinear system and are possibly associated with an extensive area of co-axial field systems and lynchets. These are likely to date from the Later Prehistoric and Roman period and may be associated with activity at the oval enclosure. This field system was re-used in the Medieval/Post Medieval period with traces of ridge and furrow being visible as cropmarks within some of the embanked field units.

4.4.13 In the north-eastern part of NW9a, an oval enclosure and numerous pits of an unknown date have also been identified by geophysical survey [10].

4.4.14 Trial trenching in 2003 recorded Holocene colluvial deposits in-filling a dry valley running along part of the length of 'Area J'/ 'Area 4' [11]. The sedimentary sequence included moderately deep deposits of largely homogeneous unbanded, silty colluvium including buried soils, argillic brown earths and periglacial calcareous coombe deposits. The colluvial sequence appears to have accumulated over an extended period from the end of the last glacial or postglacial period, through to the medieval period and, therefore, has the potential to provide a detailed local landscape history.

Gradiometer survey results and interpretation

4.4.15 In the north-eastern part of NW9a, an oval enclosure and numerous pits of an unknown date have also been identified by geophysical survey [10].The gradiometer survey was undertaken by Wessex Archaeology's in-house geophysics team between the 6th of April and 5th of May 2018. Field conditions at the time of survey were generally good, being covered with a short wheat and oat crop (NW9a; NW9b) or a short grass (NW9c). Obstructions in NW9a include a short hedgerow, protruding from the south-east, and a stockpile of hay and farm equipment, close to the northern boundary with NW8. In the south-west of NW9b there was a large agricultural building, but the field was otherwise free of obstructions. Within NW9c, there were horses and a series of electric fences, which were moved prior to the survey.

NW9a

4.4.16 In the western part of NW9a (**Figure 28**), there are two clear circular anomalies which are associated with archaeological remains. These are in very close proximity to each other, being separated by 10 m. The most northerly of these (**13000**) is formed of a ring-shaped positive anomaly which is associated with a ditch-feature. This well-defined anomaly is 2.5 m in width and has an internal dimeter of 25 m. On both the inside and outside edge of the ditch there is a negative response, which could be associated with bank material. This feature has been previously mapped from aerial photographs and is thought to be associated with a barrow of probable Bronze Age origin.

4.4.17 To the south of **13000**, is a penannular ditch feature which is characterised by a similar positive anomaly (**13001**). This is 2.5 m wide with a slightly larger 27 m internal diameter, and a 17 m break on the south-western side. The terminal ends

of the ditch are notably wider (approximately 3.2 m), with a slightly bulbous appearance, suggesting they represent an entrance. There is a corresponding negative response on the inside and outside that could be associated with the presence of a bank. This has also previously been identified from cropmarks visible on aerial photographs of the area and has been interpreted as a probable Bronze Age barrow. However, given the clear entrance on the south-eastern side, it is possible that this anomaly could be associated with a hengiform monument and could be earlier in origin.

4.4.18 Within both **13000** and **13001** there are a small number of circular positive anomalies. These are between 1 m and 2.5 m in diameter and are most likely associated with pit-like anomalies. There are also several similar anomalies in the area surrounding these two features, which are likely associated with archaeological activity. Such monuments often provide a focal point for contemporary and subsequent funerary activity, suggesting some potential for these anomalies to be associated with grave-features. However, it is not possible to confirm this based on the results of this geophysical survey alone.

4.4.19 Approximately 180 m to the north-east of **13000** is another ring-ditch feature (**13002**). This has an internal diameter of 17 m and is formed of a weakly positive, 1.5 m wide circular feature. This corresponds with a probable Bronze Age barrow that has been previously recorded from aerial photographs. There is a pit-like feature within the centre of the feature, as well as a further example 2.5 m to the south. These are both represented by weakly positive, 1.6 m diameter circular anomalies.

4.4.20 Close to the south-east corner of NW9a (**Figure 31**), there is a further probable barrow, albeit of a very different character to those at **13000** – **13002**. It is visible as a poorly defined negative response which is circular in form. It is 20 m in diameter with a 14 m diameter area of weakly positive magnetic response in the centre. The southern part of this is visible as a slightly stronger positive response. This is suggestive of a circular bank-like feature with a large depression or pit in the centre. The variation in the southern part is likely associated with differing deposits within the centre. The circular form of this response suggests that it may be associated with a Bronze Age pond barrow. This has not been previously identified within the WSHER and is also located in an area of complex geology. As such, it is possible that this represents a geological solution hollow.

4.4.21 At **13004** (**Figure 29**) there is an irregular sub-circular feature which is approximately 27 m x 21 m. This comprises a 1.2 m wide weakly positive curvi-linear anomaly that is more recti-linear in the south-east corner. To the north of this is a faint linear trend which may represent a northerly extension of the same feature, but this is much more poorly defined. This arrangement is associated with a probable oval enclosure which has been previously identified from aerial photographs of the area. It is possible that this enclosure predates, and is possibly truncated by, the field system recorded to the north (**13011**).

4.4.22 Surrounding **13004** are numerous circular and sub-circular pit-like features. These are predominantly located to the north-east at **13005** and are visible as a concentration of positive anomalies. They are 1 m – 3 m in diameter, although there are several notably larger and more regular examples at **13006** and **13007**. Several of these roughly correspond with features identified as cropmarks on

aerial photographs and are therefore likely to be associated with a concentration of undated pit features.

4.4.23 Across the north-eastern part of NW9a (**Figure 29**) are six parallel east-west aligned linear anomalies (**13008** – **13013**). These vary in length, with the longest located at the centre extending for 300 m (**13011**) and the shortest in the south for only 40 m (**13013**). They are also relatively regularly spaced between 50 m – 70 m apart and are characterised by weakly positive responses, with a weakly negative response located on the northern edge. It is likely that the positive response is associated with a ditch-like element to the feature, with the negative values being attributable to a probable bank. The positive (ditch) elements of these features are between 3 m and 8 m wide, whilst the negative (bank) part is more consistently around 2.5 m wide. Although the interface between the two responses is clear, the outer edges of the feature are more poorly defined, suggesting that they are more diffuse. This type of response is indicative of a series of lynchet features, where there is a very gradual break of slope on the outer edge of the feature and a more pronounced 'terrace' at the centre.

4.4.24 The three northernmost examples (**13008** – **13010**) are intersected in the east and centre by two north-south aligned linear anomalies (**13014**; **13015**). These extend for 180 m to 190 m in length and are 2 to 5 m wide. They are both characterised by a slightly intermittent and weak positive magnetic response. However, it is probable these are associated with a continuation of features identified to the north of this area in NW8.

4.4.25 To the west of **13014**, three further north-south aligned linear anomalies, spaced approximately 50 m apart have also been identified (**13016** – **13018**). These are characterised by broad (4 to 6 m wide) weakly positive responses, with a corresponding negative response along the eastern edge. The western most of these (**13018**) extends for 200 m, and the shortest (**13016**) for 65 m, though it is the presence of a modern service (**13064**) has hindered the detection of the entirety of these features. 160 m south of this are two further north-south aligned linear anomalies (**13019** and **13020**; **Figure 31**). These are similar in character to **13016** – **13018**, being weakly positive, but with the negative response on the western edge. They are also 4 - 6 m wide and extend for 280 m. It is likely that these features are associated with ditch/bank-like features such as lynchets, with the bank (negative) part of the feature being located on the upslope edge.

4.4.26 These orthogonally aligned ditch and lynchet features identified in the north-east corner of NW9 (**13008** – **13020**) are most likely associated with the remains of a field system. Based on similar features that have been recorded across Salisbury Plain via geophysical survey and assessments of aerial photographs, and occasionally dated through excavation, this is likely to represent large scale land division spanning the Mid-Late Bronze Age through to the Romano-British period.

4.4.27 Positioned perpendicular to **13016** – **13020**, are a series of weakly positive and negative linear trends. This is reasonably well-defined to a 450 m x 110 m rectangular area in the centre of the site, where the topography of the valley is at its steepest. As they are also regularly spaced (6 – 8 m apart), it is thought that these are associated with ridge and furrow ploughing. As such, it is likely that this represents a possible medieval/post-medieval ridge and furrow field system.

4.4.28 In the southern-central portion of NW9a (**Figures 28** – **31**) there are numerous other weakly positive and negative linear anomalies that conform to a north-south/east-west alignment (**13021** – **13027**). These are associated with ditch-like features, but vary in size and scale, measuring between 2 m and 6 m wide. They likely relate to further elements of the Late Prehistoric – Romano-British field system and have also been identified by cropmarks visible on aerial photographs.

4.4.29 Within this area there are two slightly stronger positive linear anomalies which do not adhere to the overall orthogonal pattern identified at **13021** – **13027**. The northern most example of these is a positive curvi-linear anomaly which measures 1.5 m wide (**13028**) (**Figure 31**). It extends on an east-west alignment for 35 m before curving towards a more southerly trajectory for a further 45 m. To the south of this, a similar 1.5 m wide, 35 m long positive anomaly is situated on an east-west alignment (**13029**). At both the eastern and western end, it turns approximately ninety degrees towards the north for 9 m and 17 m respectively. It is possible that both these features are connected, but this cannot be confirmed by the data due to the presence of lynchet features within the same area (**13019**; **13023**; **13024**). As neither of these anomalies relate to the features previously identified from aerial photographs, it is possible that they are associated with a small enclosure which may predate the field system.

4.4.30 Within the vicinity of **13028** and **13029**, there are several small circular and sub-circular positive anomalies. These are between 1 m and 3 m in diameter and are likely to be pit-like features that may be associated with this small enclosure. In addition, there is a penannular anomaly located roughly in the centre of this (**13030**). This has an internal diameter of 10 m and is characterised by a weak negative response that likely represents a 1 m wide bank-like feature. It is possible that this is a small pond barrow, but the weak, poorly defined nature of the response makes this difficult to confirm.

4.4.31 In the southern-most point of NW9a (**Figure 31**), there are two weakly positive linear anomalies (**13031**). The first of these extends east from the western boundary of the area for 45 m. The second is located 8 m to the south and measures 50 m from east to west before turning ninety degrees towards the south for a further 35 m. These are both 3 m – 5 m wide and are indicative of ditch features. It is likely that they are associated with similar features identified to the west in NW9b (**13076**) and may form a small enclosure of uncertain date.

4.4.32 In the south-west corner of the site (**Figure 28** and **30**) there is further evidence for an extensive undated field system. There are three north-north-west to south-south-east aligned linear anomalies (**13032** – **13034**). These are characterised by a weakly positive magnetic response and are associated with 2 to 3 m wide ditch-like features. The most easterly of these (**13034**) also has a weak negative response on the western edge that may be evidence of bank material. This anomaly is 140 m long and turns ninety degrees in the northern extent heading towards the north-east for 45 m. The more westerly examples (**13032**; **13033**) are approximately 120 m long.

4.4.33 Extending east-north-east from the western perimeter of the site are four further linear anomalies (**13035** – **13038**). These are visible as positive magnetic responses, and the largest of these also have a corresponding negative response on the northern edge (**13035**; **13038**). It is likely that these are associated with a

ditch/bank feature. The two central examples (**13036**; **13037**) are relatively short, extending 30 to 35 m. The southernmost example closely follows a break of slope and extends for 105 m. The northern example (**13035**) is slightly stronger than the others, is much better-defined and measures 135 m in length.

4.4.34 There is a notably denser concentration of 1 to 3 m diameter sub-circular anomalies on the northern side of **13035** that are likely associated with pit-like features. **13035** also appears to form a boundary to these linear anomalies on an alignment which is askew to the predominant north-south/east-west arrangement across the remainder of NW9a. It is likely that this is still associated with a field system of probable later prehistoric to Romano-British date but may relate to a different phase. However, it is also possible that it is positioned to respect the predominant topographic gradient in the area.

4.4.35 To the north, and overlapping part of **13032** – **13038**, are five further, roughly north-south aligned ditch/bank like features (**13039** – **13044**) (**Figure 28**). These are represented by weakly positive linear anomalies, which have a negative response consistently located on the western edge. The three central linear anomalies are equally spaced 115 m apart (**13040** – **13043**), with a shorter spacing separating **13040** and **13044**. These are 3 m wide but vary in length from 75 m to 240 m. It is probable that **13040** and **13041** form part of the same feature, possibly being bisected by **13035**, but it is not possible to establish the exact relationship of these two features.

4.4.36 Intersecting **13042** – **13044**, are two east-west aligned linear ditch/bank-like features (**13045**; **13046**). These are also identifiable as positive linear anomalies with the parallel negative response located directly to the north. They are also relatively wide, measuring up to 6 m in width. At the western end of this, there is a complex arrangement of three 'L-shaped' weakly positive/negative linear responses at **13047** – **13049**. The slightly askew north-south/east-west alignment of these features appear to broadly correspond with both the arrangements identified at **13033** – **13038** and **13039** – **13046**. This may suggest that there is a degree of contemporaneity between the two orientations, or at least that they may have been positioned to respect each other. However, the image presented here is a palimpsest and it is not possible to encapsulate the full chronology of these features based on these geophysical survey results alone. It is likely that there have been numerous phases and alterations to this field system over an extensive period.

4.4.37 In the north-west corner of NW9a are three east-west aligned linear anomalies (**13050** – **13052**) (**Figure 28**). These are characterised by both weakly positive and negative magnetic responses and are likely to be associated with lynchet, or ditch/bank-like features. They are relatively broad, measuring 4 m – 6 m wide and are very similar in character to a series of anomalies identified to the north in NW8 (**12006** – **12022**). The longest of these extends for 180 m (**13051**), whilst the examples located to the north and south of this (**13050**; **13052**) extend for 120 m. They are likely associated with a southerly extension of the field system identified in NW8, and the staggered positioning is suggestive of a 'brickwork' layout. Such an arrangement is often associated with a field system of a Late Iron Age – Romano-British date.

4.4.38 To the north of (**13050** – **13052**), running parallel with the existing field boundary which divides NW8 and NW9, is an intermittent linear anomaly (**13053**). It is characterised by a weakly positive, 3 m wide response. This extends for 550 m on an east-west orientation, although there are several breaks and deviations during this. Most notably, there is a significant step towards the eastern extent of the feature at **13054**. It is likely that this is a ditch-like feature. The sinuous course of which being attributable to the topography of the area, following a significant break of slope.

4.4.39 There is a notable paucity of linear anomalies between **13050** – **13054** and those in the south-west corner of NW9a at **13032** – **13049**. This corresponds with a slight plateau in the topography of the field which may have negated the use of lynchets or similar features associated with these field systems. However, as a more extensive array of linear features has been mapped from aerial photographs in this area, it is equally possible that they are heavily ploughed down, and therefore undetected by this gradiometer survey.

4.4.40 Projecting south-east from the northern limit of NW9a is a broad amorphous band of weakly positive and negative magnetic response (**13055**; **Figure 28**). This is orientated on a meandering north-west to south-east alignment, which turns towards a more easterly direction in the south-east (**13056**; **Figure 31**). This is 780 m in length and varies between 110 m and 80 m wide, though it is very poorly defined in places. Extending from the centre of this is an extension which is situated on a curving south-westerly orientation (**13057**; **Figure 28**). This is 475 m in length and between 50 m and 70 m wide. It also closely follows the variation in topography of the area, as well as mapped deposits of Head – clay, sand, silt, and gravel (BGS 2018). They are therefore interpreted as superficial geology and it is likely that the numerous variations in the magnetic response across this are associated with differing dry river valley (coombe) deposits.

4.4.41 Across much of NW9a are numerous weakly positive curvi-linear trends. These are indistinct, low amplitude anomalies that have potential to be associated with archaeological remains. They vary in size from 8 m to 18 m in diameter and may represent heavily ploughed down remains of Bronze Age barrow features. Perhaps the most convincing of these anomalies are located at **13058** in the east (**Figure 29**) and **13059** in the south-west (**Figure 30**). However, the extremely weak and fragmentary nature of these responses makes this very difficult to interpret with any degree of confidence.

4.4.42 Near, and within, part of the area mapped as superficial geological deposits (**13055** – **13057**), there are a small number of negative circular trends. These are considered too poorly defined and weak to be interpreted as being of archaeological origin, however there is a possibility that they could be associated with pond barrows due to their circular form. Those at **13060** (**Figure 31**), 24 m south-east of **13003**, and **13061** are the perhaps most clearly identifiable examples of this, but these are considered most likely to be natural in origin.

4.4.43 Extending from the southern boundary of the site is a broad area of strong dipolar magnetic responses (**13062**; **Figures 29** and **30**). This is characterised by small positive and negative anomalies and is linear in form, measuring 430 m long and 20 m wide. This is most likely associated with disturbed ground and/or a concentration of ferrous objects. Within the centre of this there is a discernible

weakly positive linear anomaly, which is associated with a former field boundary and track identifiable on historic OS mapping dating to 1888. This is only visible in the southern part of the feature, but it is likely that the increased magnetic response is also associated with a continuation of this former field boundary.

4.4.44 To the east of this, there is a further area of increased magnetic response (**13063**; **Figure 29**). This measures 225 m x 15 m and extends on a north-westerly trajectory from the existing field boundary located in the south-east of the area. It is also characterised by a series of indistinct dipolar anomalies and has a weakly positive linear anomaly located at the southern extent, which is 125 m long and 2 m wide. This is likely associated with a former field boundary or track and is also identifiable on historic OS mapping dating to 1888.

4.4.45 There are numerous linear trends identified across the site. Many of these conform to the complex arrangement of the aforementioned field systems but are too weak to be attributed to archaeological remains. It is possible that these were originally more comprehensive but have been heavily ploughed down by modern agricultural practice. There are a significant number of closely spaced, weakly positive and negative linear trends that are associated with this, which are indicative of modern ploughing. These follow the alignment of the existing field boundaries and cover the entirety of the site.

4.4.46 A magnetically strong dipolar response can be identified traversing the site on a north-west to south-east alignment (**13064**; **Figures 29** and **31**). This extends for 700 m and is characteristic of a modern service. It also follows the known route of a gas main and continues into NW8 to the north.

NW9b

4.4.47 Immediately west of the eastern field boundary, two weakly positive curvi-linear anomalies have been identified (**13065**; **13066**; **Figure 32**). These are most likely associated with round barrows of probable Bronze Age date and have both been previously recorded by aerial photographs of the area. The most northerly of these (**13065**) forms a complete circular feature, with an internal diameter measuring 28 m. The positive (ditch) element of the feature measures 3 to 4 m wide, and there is a weakly negative response on the inner edge of this which may be associated with remnant bank material. 5 m to the south-east of this is the second curvi-linear feature (**13066**), although it is partially obscured by the modern field boundary at the eastern edge of the area. However, it is probable that this formed a complete circle, approximately 16 m in diameter, with a 2 m wide ditch.

4.4.48 Within, and immediately surrounding these two probable round barrows, are numerous irregularly shaped weakly positive anomalies. These are interpreted as possible archaeology and are most likely associated with small pit-like features. Given that Bronze Age barrows frequently provide a focal point for later funerary activity in the Stonehenge WHS, it is possible they may represent satellite burials.

4.4.49 Intersecting the north-western part of **13065**, is a sinuous weakly positive anomaly (**13067**). This extends for 90 m and is situated on a roughly north-south alignment. It measures 2 m wide and is associated with ditch-like feature. It is unclear how this relates to **13065**, but the slightly curving nature of the feature corresponds with the form of the barrow, and it may therefore be positioned to respect this.

4.4.50 To the north of **13067** are further weakly positive linear anomalies that also broadly respect the arrangement of the possible Bronze Age barrows. **13068**, extends north from the north-western part of **13065** for 110 m. At the centre of this there is a slight protrusion on the eastern side, and a further east-west aligned linear anomaly (**13069**) which extends for 24 m. At a 45-degree angle to this, a 17 m long linear anomaly (**13070**) also extends from **13067** towards **13065** on a south-eastern trajectory. The close proximity of these features to **13065** and **13066**, may suggest that these probable ditch-like features are also positioned in a manner that respects the round barrows position. However, it is not possible to confirm whether this activity is contemporary with these features on the basis of these geophysical survey results alone.

4.4.51 To the north-east of **13069** there is a weakly positive linear anomaly which extends to the south-west from the eastern boundary of the field (**13071**). This is 25 m in length, 2 m wide, and is most likely associated with a ditch-like feature. The alignment of this feature roughly corresponds with the northern part of **13067**.

4.4.52 Surrounding these ditch-like features are numerous probable pit-like anomalies. These are characterised by a weakly positive magnetic response and are 1 – 3 m in diameter. They are circular or sub-circular in plan and predominantly distributed around the eastern part of NW9b. This concentration may suggest that **13068** – **13071** relate to an enclosure and that these pit features are associated settlement activity. **13068** is recorded in the WSHER as being part of the enclosed settlement south of Parsonage down, which is directly south-east of the survey area. It is possible that **13069** - **13071** also relate to this settlement.

4.4.53 38 m south-west of **13065** is a small circular feature (**13072**). This is characterised by very weakly positive magnetic values and is poorly defined. It forms a penannular shape and is broken in the south-eastern part. It has an internal diameter of 3 m and is most likely representative of a ditch feature measuring 2 m wide. It is possible that this represents a very small barrow or ring-ditch; however, the weak nature of the response makes this difficult to confirm with any degree of certainty.

4.4.54 Directly south of **13066**, is a weakly positive linear anomaly which is arranged in a sub-rounded rectangular shape (**13073**). This measures 10 x 6 m and is very poorly defined on the western corner. It is situated on an approximate north-west to south-east orientation and is likely associated with a < 1 m wide ditch-like feature.

4.4.55 Further to the north, at **13074**, there are two parallel linear anomalies which both measure 11 x 1.5 m. These are aligned north-east to south-west with a 5 m diameter semi-circular anomaly at the north-eastern end. These are all represented by weakly positive magnetic values and are also quite poorly defined.

4.4.56 It is not clear what **13073** and **13074** relate to in archaeological terms, and the weak nature prevents a confident interpretation. However, their sub-rectangular layout, and proximity to other features (**13065** – **13071**) is suggestive of possible archaeological remains.

4.4.57 In the north of NW9b (**Figure 30**), there are several meandering linear anomalies which traverse the area on an east-west alignment (**13075**). These are all

characterised by a weakly positive magnetic response and are most likely associated with 2 m wide ditch-like features. In the eastern extent, two parallel linear features extend for 125 m and are separated by a 5 – 8 m gap. In the centre there is a 32 x 4 m area of positive response which is more poorly defined. After a 20 m break the anomaly bifurcates, heading on more north/south-western trajectories. The northern ditch continues for a further 60 m, and the southern for 110 m. These features have been recorded in the WSHER as belonging to a ridge and furrow field system. It is likely that these ditches are associated with a boundary of a field system, but as there is limited evidence for any ridge and furrow ploughing across the area, it is probable that they may have earlier origins. The sinuous nature of the feature corresponds to that of the topography of the area, where the edge of a slight ridge is present.

4.4.58 At the easternmost end of this, close to the existing boundary of the area, there is a short, slightly broader linear anomaly (**13076**). This is aligned on an east – west orientation but turns towards the south (and **13068**) at the western end. As a result, it is probable that it forms a northern limit of the enclosure surrounding the barrows to the south, as opposed to a continuation of **13075**. Although it does not visibly connect with **13068**, it is most likely that this is due to the previous location of a trench in this location, which identified an undated linear feature [11] (Tr 50).

4.4.59 Approximately 50 m north of **13075**, there is a further east-west aligned linear anomaly (**13077**). This is also likely to be associated with a ditch like feature extending for 96 m with a width of 2.5 m. Aerial photographs of the area suggest this is most likely associated with the features recorded to the south at **13075**. 8 m to the south of this is a very weakly positive linear anomaly on the same alignment, which probably relates to a former field boundary recorded on the 1840 tithe map of Winterbourne Stoke (**13078**). However, it is also possible that this feature is associated with a ploughing furrow at the edge of the field and that the boundary is located at **13077**.

4.4.60 Across the central area of NW9b (**Figure 30**) is an orthogonal north – south/east – west arrangement of weak, intermittent positive linear anomalies (**13079**). These are generally very poorly defined but could be associated with the heavily ploughed down boundaries of a field system. East – west aligned cropmarks identified on aerial photographs have suggested that the late prehistoric and Romano-British field system at Parsonage down may have extended this far east. However, given that these were not identified in previous evaluation trenching it is likely that they are heavily ploughed down, or may simply be associated with agricultural activity. Despite this, it is not possible to rule out an archaeological interpretation for these features.

4.4.61 In the west, there is a very fragmentary and weak positive curvi-linear anomaly at **13080**. This measures 22 m in diameter and is a maximum of 2.5 m wide. The roughly circular form of this may suggest that it is associated with a further ring-ditch. However, given the very weak nature of the response it is equally plausible that this relates to natural variation in the geology or soils.

4.4.62 Extending northward from the southern tip of the area is a further linear anomaly (**13081**) (**Figure 32**). This extends for 135 m and terminates 40 m south of **13067**. It is represented by weakly positive magnetic values, although there is a corresponding negative response on the western edge of this. It measures 2.5 m

wide and is characteristic of a ditch-like feature. This is not recorded within the WSHER, but it is situated on a similar alignment to other features identified in this geophysical survey (**13067**; **13068**), as well as from aerial photographs of the area. Consequently, it is likely to be associated with a field system adjacent to the enclosed settlement, south of Parsonage down.

4.4.63 In the southern part of the survey area is a complex area of linear anomalies which are associated with ditch and bank-like features. This comprises three parallel positive linear anomalies spaced 15 m apart on an east – west alignment (**13082**). These extend for 95 m and are bounded in the east by a negative linear anomaly running north-north-west to south-south-east for 115 m (**13083**). This, and the northern two positive anomalies at **13082** can be attributed to former field boundaries visible on the 1840 Winterbourne Stoke tithe map, but the southern example is not recorded. However, given the similarity in response and equal separation, it is likely to be associated with a further field division in this area.

4.4.64 In the western part of the northern most field boundary at **13082** a further linear anomaly is identifiable (**13084**). This is slightly askew to the east – west alignment of the former field boundaries, but the relationship between these two features is not clear from these geophysical survey results. However, it is probable that this represents a further ditch-like feature which may predate the former field boundaries. This also corresponds with a cropmark recorded from aerial photographs of the area that has been interpreted as part of a late prehistoric and Romano-British field system.

4.4.65 Approximately 20 m north of **13084**, there is an area of increased magnetic response, which traverses the area on a north-east to south-west orientation. This is characterised by numerous indistinct ferrous anomalies, as well as weakly positive and negative responses. This type of response may be associated with a spread of dumped material, likely laid down to form a temporary trackway or to consolidate a route across the field. Although this is not recorded on historic OS mapping or aerial photographs, it does lead from the layby to the north of the A303 to an entrance into the paddocks directly east of NW9b.

4.4.66 In the south there is a large area of strongly magnetic response which is representative of ferrous material (**13086**). This is associated with a barn building constructed in corrugated sheets of iron.

4.4.67 Traversing the north of the area (**Figure 30**) is a faint, weakly negative linear anomaly (**13087**). This does not relate to any features visible on historic mapping or aerial photographs and does not correlate with the alignment of any other features recorded by the geophysical survey. As it is very straight and appears to connect a series of ferrous anomalies, it is considered most likely that this is associated with a modern plastic pipe.

NW9c

4.4.68 Within NW9c (**Figure 31**), there are a small number of linear anomalies which might relate to part of the wider field system identified to the north in NW9a and to the west in NW9b. The first of these is located at **13088**, where a weakly positive response can be identified on an east-west alignment. This measures 81 m in length, is 1 m wide, and is located directly north of the line of trees which divides

the fields in this area. It is most likely that this is associated with a ditch like feature and it may represent a continuation of the anomaly identified at **13021** to the west.

4.4.69 Approximately 25 m to the south of **13088**, there is further weakly positive linear anomaly that is also on an east – west orientation (**13089**). On the southern edge of this there is a weakly negative response. This is associated with a ditch and bank-like feature. However, it does not correspond with any features previously identified from aerial photographs of the area. This measures 5 m in width and is 55 m long.

4.4.70 At **13090** there are two poorly defined, weakly positive linear anomalies. These are both positioned on an east – west alignment and may be associated with further ditch-like features. The most northerly of these measures 35 m in length and is 1 m wide. The southern example is broader, measuring 4 m in width and 58 m in length. These are most likely associated with further ditch-like features, although it is equally possible that they may be associated with evidence for historic cultivation such as ridge and furrow ploughing. The northern of the two anomalies is similar in character to that of **13088**, whereas the broader southern example is closer to **13089**. As such it is possible that these features are associated, but it is not clear form these survey results alone.

4.4.71 In the eastern part of NW9c there are numerous amorphous areas of weakly positive and negative response (**13091**). The lack of shape or pattern to these anomalies is indicative of geological variation. Whilst none are recorded [24], it is likely that there may be superficial deposits covering this area. Furthermore, to the south-west of this, similar anomalies were identified in Phase 1 [3] (NW4; **4102**).

4.4.72 Across the entirety of NW9, there are numerous linear trends on a north – south alignment. These are evenly spaced between 10 and 25 m apart and are most likely associated with ridge and furrow ploughing.

4.4.73 In the north of the area there is a weakly negative linear anomaly which extends for 81 m in length and is 1.2 m wide (**13092**). This heads towards a north-easterly trajectory from the southern boundary of the field and corresponds with a trackway or field boundary visible on the ground surface and on contemporary OS mapping of the area and is also visible on the surface.

4.4.74 In the south-western corner of the field is a circular arrangement of dipolar anomalies (**13093**). These correspond to an area of electric fencing that was arranged for temporarily enclosing horses.

4.4.75 Traversing the area on a north-west to south-east alignment is a strong dipolar anomaly (**13094**). This is associated with a modern service and is a continuation of the anomaly at **13064**.

GPR survey results and interpretation

GPR Area 21

4.4.76 A GPR survey was undertaken across a 1.1 ha area of NW9b (**Figure 45**; **48**). This was selected as the gradiometer survey for the area contained several complex archaeological features centred on two ring ditches (**13065**; **13066**) and an enclosure ditch (**13068**). The GPR survey was also successful in identifying

these anomalies but has provided additional details regarding their nature and extent. A total depth of 2.46 m was achieved and there were no obstacles preventing the collection of the survey data.

4.4.77 Within the upper timeslices there are numerous, closely spaced, parallel linear trends that are most likely associated with modern ploughing furrows. On the same alignment are several stronger high amplitude responses, which are situated in pairs, and separated by 1.8 m. These are associated with tractor wheel ruts. In the north these are orientated north – south and in the west, they are orientated west-south-west to east-north-east. For the most part these are no longer visible following Timeslice 5 (0.5 m – 0.66), although there are a few deeper examples in places.

4.4.78 The strongest response within the upper timeslices is in the centre of the area at **13100**. Here a north-east to south-west aligned linear anomaly can be seen to extend for 57 m. At the south-western end of this the anomaly turns slightly and heads towards a more southerly direction. It also tapers slightly in the north-eastern extent and appears to be formed of numerous closely spaced linear responses. It is visible from Timeslice 4 (0.37 – 0.53 m) to Timeslice 7 (0.74 – 0.9 m), and is relatively consistent throughout, although it becomes increasingly weak as it descends. This corresponds with a sinuous anomaly in the gradiometer survey (**13068**), which was interpreted as a ditch-like feature that may relate to the barrow identified in this location (**13065; 13104**). However, the shallow nature and composition of this within the GPR survey suggests that is more likely of modern origin. The closely space linear trends that can be distinguished are suggestive of further tractor wheel ruts. The odd alignment of this may suggest that a vehicle may have got stuck in wet conditions and created deep wheel ruts across this area. However, this is merely speculation.

4.4.79 Traversing the entirety of GPR Area 21, is a sinuous linear anomaly (**13101**) which has previously been identified by the gradiometer survey of the area (**13066**; **13067**) and aerial photographs. This first becomes visible within Timeslice 3 (0.23 – 0.41 m). From this point until Timeslice 6 (0.99 – 1.15 m) it is characterised by a high amplitude response, which measures 1.5 m in width and 140 m in length, although there is a short break in the vicinity of the probable barrow feature. From Timeslice 7 (0.74 – 0.9 m), it continues as a low amplitude response throughout the remainder of the dataset until Timeslice 20 (2.34 – 2.46 m). It is possible that this is caused by a variation in the composition of the fill, at varying depths. However, it is also possible that this may be caused by a ‘ringing’ of the GPR pulse created by the strength of the initial response of the anomaly and may therefore not be a true representation of the depth of the feature. Nonetheless, it is likely that this is associated with a ditch-like feature which corresponds well with the results of the gradiometer survey.

4.4.80 In the south-west corner of the area, there is a further high amplitude response that is linear in form. This is also slightly sinuous in nature, but it is positioned on a broadly east-north-east to west-south-west alignment (**13102**). This was identified as a weak linear trend within the gradiometer survey but is more prominent within the GPR survey results. It is visible from Timeslice 4 (0.37 – 0.53 m) to Timeslice 6 (0.62 – 0.78 m) and measures 1 m wide by 39 m long. It is probable that this is associated with a shallow ditch-like feature, and may be associated with the anomaly at **13101**, although there is no clear physical relationship.

4.4.81 The first of the two barrows to be identified in the GPR survey is the smaller of the two (**13066**). This is located in the south-eastern corner of the Area 21 and is formed of an incomplete circular anomaly (**13103**) being truncated in the west by the existing field boundary. It is apparent from Timeslice 5 (0.5 – 0.66 m) to Timeslice 8 (0.87 – 1.02 m) as a high amplitude response. From this point it is faintly visible as a low amplitude response throughout the remainder of the dataset, though this is most likely caused by 'ringing' of the GPR signal. The response is associated with the remains of the ring-ditch and measures 15 m in diameter and is 2 m wide. There is no evidence for any internal features within **13103**, although there it is possible that small and discrete features (such as graves) may not have been detected by the GPR.

4.4.82 The second, and larger ring ditch feature (**13065**) is very clear within the results of the GPR survey, despite perhaps being disturbed by possible tractor ruts (**13101**). This is visible from Timeslice 6 (0.62 – 0.78 m) as a weak high amplitude response (**13104**). From this point the high amplitude element of the anomaly is confined to the centre and is surrounded by two wider areas of low amplitude. This is consistent until Timeslice 14 (1.6 – 1.76 m), where the anomaly continues as a weak low amplitude response until the final timeslice (20; 2.34 – 2.46 m). This is suggestive of a substantial ditch-like feature, which is 3 – 4 m wide and has an internal diameter of 29 m. It is likely, in this case, that the low and high amplitude variations detected within the feature are associated with differences in the composition of the fill of the feature. Although it is not possible to comment on the precise nature of this, it is probable that the ditch may extend to a significant depth.

4.4.83 Within **13104**, there is no clear evidence for internal features. Although there are some very weak low amplitude responses that are circular in form, they are not consistently present within more than a single timeslice. If they were indeed archaeological features, it is more likely that they would persist in the same location. There is, however, a notable high amplitude area located within the centre of the ring-ditch at **13105**. This is located at a significant depth and is visible from Timeslice 14 (1.6 – 1.76 m) to Timeslice 17 (1.97 – 2.13 m). This is irregularly shaped but measures a maximum of 8 m in diameter. It is possible that this is associated with a central pit feature. However, the depth and amorphous nature of the anomaly make this difficult to confirm and it is equally possible that it is natural in origin.

4.4.84 Between Timeslice 5 (0.5 m – 0.66 m) and the final timeslice (20; 2.34 – 2.46 m) there are a series of broad curvi-linear high amplitude anomalies (**13106**). These are predominantly formed of three amorphous bands which traverse the area from the west, and curve towards the south. Their position shifts laterally as the timeslices descend, gradually moving from the north to the south-west. This also corresponds with strong dipping planar responses in the radargrams of the area. It is most likely that they are associated with local geomorphology, where dipping bands of weathering, marl, or flint bedding are present within the chalk.

4.4.85 Within the same area as **13106**, there is a rectangular anomaly that that is not paralleled in the gradiometer survey (**13107**). This is located 16 m north-west of **13104** and is characterised by an area of strong high amplitude response. It is visible within the data between Timeslice 7 (0.74 – 0.9 m) and Timeslice 11 (1.23 – 1.39 m) but is clearest within Timeslice 9 (0.99 – 1.15 m), where a 13 x 10 m

area can be identified. It is relatively consistent in form throughout these timeslices and may represent an area of disturbed ground. This size and form of the anomaly is suggestive of a previous archaeological investigation, however there are no recorded evaluation trenches or test-pits in this precise location. As such it may relate to a possible archaeological feature, although as it is contained within an area of complex geological responses, suggesting it may be natural in origin.

4.4.86 Within the gradiometer survey of the area, there are numerous pit-like anomalies recorded to the north of the two barrows (13065; 13066). These are not clearly identifiable within the GPR survey results of the area, and it is possible that they may instead relate to natural undulations in the chalk bedrock. However, it is also possible that these features may be limited in scale or composed of a material that is indistinct from the background geological material, and therefore has not been detected with this particular survey technique. The potential for small, shallow, or discrete features (such as graves) to be situated in close proximity to monuments such as this cannot be ruled out.

4.5 NW10 (Winterbourne Stoke Bypass east)

Site location, topography, and geology

4.5.1 NW10 is composed of eight irregularly shaped fields (NW10a – NW10h) directly north-east and west of Manor Farm in Winterbourne Stoke. It refers to a 1.4 km wide area covering a total of 50.2 ha, directly north of the village of Winterbourne Stoke, to the east of NW9. It is 1.3 km south-east of Shrewton and approximately 6.5 km west of Amesbury (**Figure 1**).

4.5.2 The River Till meanders through the centre of the area (NW10d) on an approximate north – south orientation. The site is bounded by the route of the B3083 to the west and the existing route of the A303 in the south-east. To the north the area is bound by open agricultural land, with the western boundary of the site lead onto an area previously surveyed by Wessex Archaeology [5] (NW6) to the east. Internally it is divided by numerous field boundaries and trackways.

4.5.3 The topography of the area is variable, but generally focused on the River Till running through the centre. The highest point is at 105 m aOD in the north-west corner (NW10a). The western fields generally decline from this point to the River Till in the centre of the area at around 70 m aOD. In the east, the highest point is at the south-eastern point of the large central field on Winterbourne Stoke Hill (NW10e; 103 m aOD), and there is a slope from this point towards the River Till. In the easternmost fields (NW10f; NW10g), there is a decline into the centre of the area from the north-east and south-west, which corresponds to a dry river valley traversing the area.

4.5.4 The solid geology is comprised of Jurassic Chalk of the Seaford Formation. A band of head deposits of clay, silt, sand, and gravel enters the area from the south-east corner of NW9a, traversing the south of NW10a, and parts of NW10b and NW10h. This extends towards the River Till to the west, where further head deposits of gravel are recorded [24]. Directly to the north of NW10e an area of alluvium, comprising clay, sand, and gravel has also been recorded. Augur surveys and test-pitting along the valley of the River Till have also established that the presence of the alluvium is variable and discontinuous across the valley bottom [32]. It is possible therefore that these deposits may be located elsewhere

within NW10 and, although the sequences are shallow (generally less than 1 m), they have the potential to bury and seal archaeological horizons, thus preventing their successful detection through gradiometer survey.

4.5.5 The soils underlying most of the site are likely to consist of brown rendzinas of the 343h (Andover 1) association. In the centre of the area, close to the River Till, they are typical brown calcareous earths of the 511f (Coombe 1) association [25]. Soils derived from such geological parent materials have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey, although, as discussed, deposits associated with the River Till have the potential to mask archaeological remains.

Archaeological background

4.5.6 This area contains no scheduled monuments and is located 1.3 km outside of the WHS. However, a linear ditch or boundary of possible Bronze Age date is visible as a cropmark traversing NW10f and NW10g on aerial photographs. This linear ditch is aligned north-west – south-east and can be traced for 2.2 km. It is one of a number of extensive prehistoric ditches which divide areas of Salisbury Plain. The feature was investigated within two trial trenches during an evaluation in 2003 and struck flint was recovered from the lower fill of the ditch in one of the trenches [11]. The ditch has also been identified by recent geophysical surveys [3] [5] and trial trenching.

4.5.7 In the south-eastern corner of NW10e, a group of three probable ring ditches/ barrows has been identified from aerial photographs, close to the existing route of the A303. This is surrounded by a possible incomplete/conjoined rectilinear enclosure and a number of other ditches mapped from aerial photographs as part of English Heritage's Stonehenge World Heritage Site NMP. It is suggested that these enclosures may represent part of a later prehistoric settlement.

4.5.8 An extensive complex of linear features identified from aerial photographs have been mapped across much of the eastern part of NW11. This complex largely consists of parallel linear features, orientated north-east – south-west. The form of these features suggests that they are predominantly of late prehistoric to Romano-British date, although some elements could relate to post-medieval or medieval land divisions, lynchets, or strip fields (e.g. traces of ridge and furrow). Recent geophysical survey [5] (NW6) has detected traces of medieval to post-medieval ridge and furrow cultivation within the eastern part of NW6. This coincides with/follows the same alignment as several of the features identified from aerial photographs.

4.5.9 Further linear features have also been recorded in the north-western part of NW10, and more extensively to the north of this area. This is thought to be associated with the probable late prehistoric and/or Romano-British settlement site located to the north-west of the Coniger Enclosure. The site is largely known from aerial photographs, which reveal the presence of a D-shaped enclosure, fragmented ditches and banks within and extending to the south-east of the enclosure, two adjacent rectilinear enclosures, and an incomplete curvilinear enclosure.

4.5.10 In the western part of NW10a, numerous pits of an unknown date have also been identified by previous geophysical survey [10]. This corresponds with those located further to the west in NW9a.

4.5.11 Post-medieval water meadows alongside the River Till are visible as earthworks on aerial photographs in the area directly north of the central part of NW10.

Gradiometer survey results and interpretation

4.5.12 The gradiometer survey was undertaken by Wessex Archaeology's in-house geophysics team between the 8th of January and 28th of February 2018. Field conditions at the time of survey were generally good, although there were periods of very wet weather and snow. The western and central fields (NW10a; NW10b; NW10d; NW10h) were grassland and open pasture. The eastern and northern fields were covered with a short wheat crop or stubble (NW10c; NW10e – NW10g). The only obstacles were a series of agricultural stock piles between NW10c and NW10h, and spoil heaps to the north of NW10e.

4.5.13 Directly north of the existing route of the A303, in the south-eastern tip of NW10e (**Figure 35**), are three circular (**14000** – **14002**), and two semi-circular anomalies (**14003**; **14004**). These are associated with the remains of five probable Bronze Age round barrows located in a tightly packed cluster. They are characterised by weakly positive magnetic values that are associated with the ring-ditch element of the features. Each ditch is of a similar size, measuring between 2-3 m in width. The smallest internal diameter is **14001**, at 17.5 m. This is followed by **14000** at 19 m, and **14002** at 23 m. The two southerly examples are severely truncated by the route of the A303. Despite this, the anomalies suggest that the internal diameter of **14003** would likely have been approximately 22 m with **14004** closer to 24 m. There is limited evidence for any remnant bank material within these features, suggesting that they are heavily ploughed down. However, on the southern inside edge of the **14002**, there is a weakly negative magnetic response, which may suggest the presence of a bank.

4.5.14 Within some of the ring-ditches, there is a small number of 1 to 2 m circular positive anomalies. It is possible that these could be associated with internal pit-like features. However, these are very weak, and may relate to natural undulations in the chalk bedrock.

4.5.15 The three complete ring-ditches (**14000** – **14002**) are recorded in the WSHER from aerial photographs as Bronze Age round barrows. The addition of the two further barrows, suggests that there is a significant group of these monuments in this area. As there are numerous barrow groups like this recorded within Stonehenge WHS and the adjacent area, such an interpretation is not unfounded. Furthermore, this is located on top of a promontory on Winterbourne Stoke Hill, overlooking the valley of the River Till. Such prominent locations often form a focal point for subsequent funerary activity, and it is therefore possible that there are further discrete features within this area than has been detected by the gradiometer survey.

4.5.16 125 m north-west of **14000** – **14004**, is a circular anomaly (**14005**). This is represented by a very weakly positive response that is most-likely associated with a further ring-ditch. This has an internal diameter of 7.5 m, with the ditch being <1 m wide. Within the centre there is a weakly positive circular anomaly that is 2 m in

diameter. This is most likely associated with a more isolated Bronze Age barrow, potentially containing a central pit. It has not been previously identified from aerial photographs and is not recorded within the WSHER. The weak nature of the magnetic response suggests that this feature may be heavily ploughed down, therefore avoiding prior identification.

4.5.17 Between the group of five probable round barrows (**14000** – **14004**) and the smaller, more isolated example (**14005**), there is a weakly positive linear anomaly that intersects the area (**14006**). This is predominantly situated on a north-east to south-west orientation but turns towards a south-easterly trajectory at the southern extent. It covers a total distance of 245 m and is between 1.5 and 2 m wide. This is representative of a ditch-like feature and is most likely associated with an undated enclosure on the top of Winterbourne Stoke Hill that has previously been recorded from aerial photographs. There is a 4 m gap in the ditch, to the north of the change in direction. It is probable that this is an entrance to the enclosure.

4.5.18 9 m south of **14006** is a cluster of weakly positive anomalies arranged in a circular fashion (**14007**). These vary in size and shape, from 1.5 m diameter pit-like features, to elongated curvi-linear features measuring up to 6 x 1 m. This is interpreted as possible archaeology and may represent a further ring-ditch with an internal diameter of 8 m. The size is very similar to that of **14005**, but the weak and fragmentary nature of the anomaly makes it difficult to provide a definitive interpretation. Given the propensity of similar features in the immediate vicinity, it is likely that it is associated with a probable Bronze Age round barrow, albeit heavily ploughed down.

4.5.19 To the south-east of the group of five Bronze Age round barrows (**14000** – **14004**), there is a very weak curvi-linear trend (**14008**). This is 16 m in diameter, but it is very faint and partially obscured by magnetic interference caused by the A303 to the south. It is possible that this is associated with an additional ring-ditch feature, but this cannot be asserted with any degree of confidence.

4.5.20 In the north-eastern field (NW10g) (**Figure 37**) there is another cluster of weakly positive anomalies that could be associated with a possible ring-ditch feature (**14009**). This is 9 m in diameter and is formed of 6 x 1 m curvi-linear anomalies. 35 m to the west of this, there is a weak circular linear trend (**14010**). This is 10 m in diameter and could also be associated with a ring-ditch. Both are very poorly defined and may simply be associated with natural variations in the underlying chalk bedrock. However, it is not possible to rule out an archaeological origin for these features.

4.5.21 In the north-easternmost part of NW10g, there is a weakly positive north – south aligned linear anomaly (**14011**). This is likely associated with a ditch-like feature and is 2.5 m wide. It extends for 15 m before turning ninety degrees and continuing for 30 m to the east. As this is on a different alignment to numerous other linear features in the immediate vicinity it is possible that this represents a separate phase of activity. It likely extends beyond the survey extents to the north and east, making it difficult to provide a more detailed interpretation of this feature. This is particularly difficult as it does not correlate with other features recorded from aerial photographs.

4.5.22 Traversing the northern part of the two easternmost fields (NW10f; NW10g) (**Figure 37**) is a moderately strong positive linear anomaly (**14012**). This is 2 m wide, runs for a total distance of 420 m, and is orientated on a curving north-west to south-east alignment. It visibly continues further to the east into two previously surveyed areas (NW5; **8200** and NW6; **8116**) and may also continue further to the west beyond the survey extent. This is indicative of a ditch feature and relates to a possible Bronze Age boundary ditch recorded on aerial photographs of the area and within the WSHER.

4.5.23 Projecting north, north-east, and south-west from **14012** are a series of linear anomalies (**14013** – **14016**). These are associated with an array of ditch-like features and are characterised by a weakly positive magnetic response. They measure between 2 and 2.5 m wide and are broadly parallel with each other. However, they are not separated by a constant distance. For example, at **14013** and **14015** the linear anomalies are 15 m apart, while at **14016** they are spaced by 30 m. At **14014**, there are three anomalies which are irregularly spaced 5 and 12 m apart. The slight difference in the alignment of the features is most likely in respect to the topography of the area, with the alignment being perpendicular to the direction of the slope. As such, it is possible that these features acted as a series of terraces, enhancing the agricultural capability of the area. These have previously been mapped from aerial photographs as part of a ridge and furrow field system and have also been identified in a previous geophysical survey to the east (NW6; **8204**).

4.5.24 In the south-western part of NW10f (**Figure 36**), there are a series of linear anomalies (**4017** – **4018**) which broadly correspond to the alignment of features identified at **14013** – **14016**. These are characterised by a slightly weaker magnetic response, but they are also thought to be associated with ditch-like features attributable to the ridge and furrow field system in this area. **14017** closely follows the arrangement of **14015**, but there is a slight variation at **14018**, where the features are more closely spaced than **14016**. At the southern edge of the field, close to the A303, there are two parallel linear anomalies that are situated on an east – west alignment (**14019**). These are all likely to form part of the same field system and have also been traced further east in previous geophysical survey areas (NW6; **8205**).

4.5.25 A 30 to 50 m wide band of slightly increased positive/negative magnetic response traverses the centre of NW10f and NW10g (**14020**). This is orientated on a winding, north-west to south-east alignment and divides the northern (**14013** – **14016**) and southern (**14017** and **14018**) ridge and furrow field system. It is related to a recorded band of clay, silt, sand, and gravel Head deposits (BGS 2018). There are several variations within this that could be associated with archaeological remains; however, as the topography is also very steep here it is probable that these relate to varying deposits of this material.

4.5.26 In the eastern part of the large central field (NW10e) (**Figure 35**), there are twelve parallel linear anomalies that are situated on an approximate north-east to south-west orientation (**14021**). These are characterised by weakly positive magnetic responses and have an equal spacing of 12 – 15 m. They are 2 m wide, but are increasingly weak towards the north, only being represented by faint linear trends at **14022**. The alignment of these is slightly askew to that of **14007**, but is perpendicular to the topography of the area, which slopes gradually from the

south-east to north-west. This arrangement covers a roughly rectangular 175 m x 300 m area. It is likely that this forms a ridge and furrow field system, similar to that identified at **14012** – **14019**. Furthermore, many of these linear anomalies have been previously identified as such from aerial photographs of the area.

4.5.27 At the centre of **14021**, there is a slightly longer ditch-like feature at **14023**. This is on the same alignment and extends for 220 m before turning towards a north-westerly trajectory for a further 55 m. This likely forms part of the same field system but may be associated with an internal division or boundary to this.

4.5.28 An interesting aspect of the southern part of **14021**, is that the arrangement of the linear anomalies appears to respect the position of the round barrows at **14000** – **14004**. The spacing is much wider at 25 m and it is unlikely that this is coincidental. As such, it is likely that the barrows were visible or extant when the field system was originally laid out.

4.5.29 A positive linear anomaly (**14024**) traverses the middle of the large central field (NW10e) (**Figure 35**). This is predominantly aligned on a north-north-west to south-south-east orientation, although it turns slightly towards the south-east in the southern extent, and towards the north-west in the north. It extends for a total distance of 340 m and is 1.5 m to 2 m wide. This is associated with a ditch-like feature and has been previously identified on aerial photographs of the area. It is recorded as a linear earthwork dating to the later prehistoric period in the WSHER and likely continues beyond the A303 to the south, towards Hill Farm, 475 m to the south-east.

4.5.30 **14024** does not visibly continue to the north-west into NW10d, although a faint linear trend on the same alignment may be associated. It is possible that the ditch terminates at the northern field boundary, between NW10e and NW10d, however it is also possible that recorded deposits of alluvium in this area [24], may be overlying the feature. Alternatively, the presence of a post-medieval water meadow system (**14030** – **14032**) in NW10d, may have heavily truncated **14024**.

4.5.31 Adjacent to **14024**, there are numerous weakly parallel positive linear anomalies covering an irregularly shaped 135 m x 130 m area (**14025**). They are closely spaced, between 5 m and 7 m apart, and measure 3 m wide. This type of response is most likely associated with a series of possible ditch like-features. In between these is a weakly negative response that could be associated with intervening bank-like features. This is described in the WSHER as ridge and furrow of a post-medieval date and is therefore interpreted as such.

4.5.32 Extending west from **14025** are three, slightly sinuous weakly positive anomalies (**14026**). These are 3 m wide and are also situated on a similar east-north-east to west-south-west alignment, covering a 60 m x 60 m area. They are interpreted as possible archaeology and, as they define the western edge of the ridge and furrow, may be associated with a boundary ditch. However, they are in an area where irregular superficial geological deposits have been identified. It is not clear therefore, whether these are archaeological or natural in origin.

4.5.33 In the north-western corner of NW10e (**Figure 35**), there is a series of amorphous areas of increased magnetic response. These are characterised by weakly positive/negative magnetic values and are very irregular in plan. However, some of

these areas are more circular (**14027**) or linear (**14028**). It is considered most likely that these relate to superficial geological deposits, probably associated with alluvial material, which has been recorded to the north and west adjacent to the River Till [24]. .

4.5.34 At **14029**, there are three weakly positive linear anomalies situated on an east-north-east to west-south-west alignment. These are between 70 m and 90 m in length and 3 m wide. They are interpreted as possible ditch-like features and are associated with a ridge and furrow field system, which has been recorded previously from aerial photographs.

4.5.35 Within the northern part of NW10d (**Figures 34** – **35**), there are a series of weakly positive linear anomalies on an approximate east-north-east to west-south-west orientation (**14030**). In the south of this field, there are also two roughly north – south aligned examples (**14031**). Surrounding these are several weak linear trends that respect this layout and are adjacent to the River Till. These are associated with part of a post-medieval water meadow system, which is recorded more extensively to the north-east from aerial photographs.

4.5.36 At **14032**, there is an irregular linear area of increased magnetic response, protruding from the western edge of the field towards the River Till. It is characterised by a strong dipolar response and is also associated with the remains of the water meadow system. The layout of the anomaly closely corresponds with that which is recorded on historic OS mapping dating to 1844. This shows that the river is redirected to the north-east. The strength of the magnetic response suggests that the edge or structure of this feature may have been constructed of brick, concrete, or metal, which is common for features of this type. As this feature is no longer present on the ground surface it is also likely that the channel has been backfilled with such material following its disuse.

4.5.37 It is notable that there is generally a reduced background magnetic response across NW10d. A possible explanation for this is that the area has been covered with an alluvial silt as result of the presence of the water meadow system and its subsequent abandonment. If this is the case, it is possible that such material may be overlying further archaeological remains which have, therefore, not been detected in this geophysical survey.

4.5.38 Extending south from the existing field boundary which divides NW10c and NW10h (**Figure 34**), is a broad positive linear anomaly (**14033**). This is thought to be associated with an undated ditch-like feature. The anomaly is 85 m in length and 3.5 m wide. On the eastern edge there is a corresponding weakly negative response, which may be associated with some remnant bank material. This is not recorded within the WSHER and is also not visible on any historic mapping of the area. However, given the amount of recorded linear features that are positioned on a similar alignment within the surrounding area, it is likely that this forms part of a wider field system surrounding Winterbourne Stoke.

4.5.39 Directly south-west of **14033**, numerous positive anomalies have been identified that are situated on the same north – south/east – west orientation (**14034**). These are much weaker and thinner than **14033** and are more closely spaced, between 8 – 12 m apart. It is possible that these relate to further possible ditch-like features, perhaps associated with smaller internal field divisions. However, it is also

plausible that they may simply be associated with historic cultivation in the form of ridge and furrow ploughing.

4.5.40 Similar weakly positive and negative responses have also been recorded on a co-axial alignment in the south-west field of NW10 (NW10b) (**Figure 34**). At **14035** a 2.5 m wide positive anomaly extends 46 m on a predominately south-south-east to north-north-west alignment before turning ninety degrees to the north-east for a further 16 m. At **14036**, a 4 m wide negative linear response has been identified. This extends for 47 m from the west-south-west to the east-north-east. Directly to the west of this, there is a further 635 m long, weakly positive linear anomaly (**14037**). This is 2 – 3 m wide and traverses the length of both western fields (NW10a and NW10b) (**Figures 33** – **34**) on a south-south-east to north-north-west orientation. At the northern extent of this there is a further weakly positive anomaly which extends east from **14037** for 60 m (**14038**). This is 4 m wide and there is also a weakly negative response on the northern edge of this. These anomalies are most likely ditch or bank-like features associated with former field boundaries of an uncertain date. None of these can be attributed to any features recorded on historic mapping of the area or within the WSHER. As a field system is recorded on a very similar alignment to the west and north-east of NW10, it is probable that these features are associated.

4.5.41 In addition to the anomalies identified at **14033** – **14038**, there are numerous faint positive and negative linear trends following the same co-axial layout. These are most likely associated with further field divisions and evidence of historic cultivation across the area. However, the weak nature of the responses prevents any confident interpretation.

4.5.42 At **14039** (**Figure 34**), there are two positive anomalies that do not correspond to the alignment of the field system. These are very weak and are aligned east-north-east to west-south-west. They are separated by 10 m and are 2 m wide. The northern example is 18 m long, and the southern anomaly is 26 m long. These are most likely associated with ditch-like features of an uncertain date and function.

4.5.43 To the north of **14039**, and directly south of the field boundary which divides NW10c and NW10h, the location of a Bronze Age Barrow has been recorded from aerial photographs. However, there is no corresponding geophysical anomaly which can be attributed to this. It is possible that the feature has been ploughed down to the extent where it is no longer detectable by geophysical survey, but it may also be that the cropmarks are not attributable to such a feature.

4.5.44 Across the south-eastern part of NW10, there are a series of irregular and amorphous positive anomalies. These are randomly distributed and are very poorly defined. They are perhaps most clearly visible at **14040** and **14041**, as well as at **14042** in NW10c (**Figure 34**). The widespread nature, lack of discernible pattern, and relatively weak nature suggests that these are most likely associated with periglacial weathering of the chalk bedrock. These anomalies also contribute to a slightly enhanced background response within the gradiometer results across the western part of NW10. The complex and variable nature of this may prevent the successful detection of more discrete features within this area.

4.5.45 Close to the western edge of NW10a (**Figure 33**), there are two weakly positive recti-linear anomalies (**14043**; **14044**). The most northerly of these (**14043**)

measures 18 m x 9 m and is slightly curved in the southern extent. **14044** measures a maximum of 24 m x 12 m but is not visible on the south-eastern side. The positive nature of these responses is suggestive of ditch-like features. However, there is a generally increased magnetic response, which is particularly prominent to the west of **14044** that is harder to define. As a result, it is not clear what these features are associated with, although the recti-linear arrangement is suggestive of a possible archaeological origin. Neither feature corresponds with anything recorded on historic mapping of the area, but **14043** is recorded within the WSHER as a pit-like feature. However, the geophysical survey results indicate it is more likely to be a ditch feature than a pit.

4.5.46 Surrounding **14045** are numerous circular and sub-circular anomalies. These are characterised by a positive magnetic response and are between 1.5 and 3 m in diameter. These are most likely associated with pit-like features of an uncertain date and correlate with a series of such features identified from aerial photographs of the area, albeit in a slightly more northerly position.

4.5.47 There are a variety of similar, more isolated pit-like anomalies across NW10 which have also been interpreted as possible archaeology. However, as they are not disturbed in any clear fashion it is not possible to provide more specific interpretations. Furthermore, it is equally possible that they are associated with natural undulations in the chalk bedrock.

4.5.48 There are three areas where linear anomalies have been identified which can be attributed to former field boundaries. In the west, there is very weak negative linear anomaly which traverses NW10a on an east – west alignment (**14045**) (**Figure 33**). This extends for 160 m and is 2 m wide. It is not visible on any historic mapping of the area but is on the same orientation as the boundary dividing NW10c and NW10h.

4.5.49 Traversing the area on an approximate east-west alignment is a weakly positive linear anomaly (**14046**) (**Figure 33**). This is 160 m long, 2 m wide, and appears to continue from the current field boundary which divides NW10c and NW10h. Although this cannot be attributed to a feature visible on any of the available historic maps of the area, it is probable that this is associated with a former field boundary.

4.5.50 Within NW10d (**Figure 34**), there is a weakly positive anomaly surrounded by several ferrous anomalies that is also associated with a former field boundary (**14047**). This is orientated on a north-east to south-west alignment and appears to cross the route of the River Till. It is 100 m in length by 2 m wide, with a 16 m gap to the south-east of the centre. This corresponds with a field boundary visible on the Winterbourne Stoke Tithe map of 1840, although it is also possible that it may be associated with a drain related to the water meadow system in this area.

4.5.51 In the north-east of NW10e (**Figure 35**), there are two parallel positive linear anomalies which are separated by 16 m (**14048**). The longest, and more southerly of these is 260 m long. The more northerly example is 120 m long. They are both 2 to 3 m wide and are associated with probable ditch-like features. These do not relate to any features visible on any available historic mapping. However, they can be seen on aerial photographs of the area dating to 2002, where the triangular area in the north-east has been used as an area of set aside.

4.5.52 Four modern services have been identified in the west of NW10 (**Figures 33** – **34**). These are characterised by strong dipolar magnetic responses. **14048** closely follows the alignment of the B3085, which defines the western perimeter of the area. In the northern part of this, the anomaly bifurcates and follows an additional, curved trajectory towards the north-east (**14049**). Two further modern services have been identified on an approximate north-north-east to south-south-west alignment at **14050** and **14051**. These cover the entire length of the western part of NW10 for 675 m.

Earth resistance survey results and interpretation

4.5.53 The earth resistance survey was located over the south-eastern corner of NW10e, where the remains of five probable Bronze Age round barrows were identified in the gradiometer survey (**14000** – **14004**). These anomalies are very clear within the gradiometer survey results, but the earth resistance survey was deployed in this area to provide further detail regarding the nature of these remains. It was also undertaken to establish the presence of any additional features that might not have been identified by the gradiometer survey.

4.5.54 A total area of 1.1 ha was covered, and a number of high and low resistance anomalies have been identified, some of which are associated with the five aforementioned monuments.

4.5.55 The clearest response which is associated with a probable round barrow is a low resistance circular anomaly (**14100**) that corresponds with the easternmost example at **14002**. The ring ditch is 2 – 4 .5 m wide and has and internal diameter of 24 m. The area that this encloses is characterised by a higher resistance response which may be associated with remnant bank material. At the centre of the ring ditch, a 6.5 m diameter low resistance circular anomaly has also been identified. It is likely this is evidence of a pit feature, and its central position suggests that it associated with the barrow. This corresponds with a very weak positive response in the gradiometer data, but it is more clearly represented within the earth resistance data.

4.5.56 Elsewhere within the ring ditch at **14100**, there are three 1 – 2 m diameter high resistance discrete anomalies. It is possible that these relate to small pit features or other disturbance associated with the former barrow mound. However, these are very weak, and are also not duplicated in the gradiometer survey.

4.5.57 Along the southern boundary of the area, directly north of the route of the A303, two semi-circular high resistance anomalies have been identified (**14101**; **140102**). These relate to the two previously unidentified Bronze Age round barrows that were revealed in the gradiometer survey of the area (**14003** and **14004**). Both high resistance anomalies relate to the former mound material, with the corresponding ring ditch being very poorly represented on the northern side. The ring-ditch of the eastern example is very faintly replicated as a semi-circular low resistance anomaly with an internal diameter of 24.5 m (**14101**). To the west of this, at **14102**, there is no clear anomaly formed by the surrounding ring ditch, although a faint curvi-linear trend has been identified, that suggests an approximate diameter of 22 m. The successful detection of these ring ditches has likely been inhibited by significant plough damage. This is particularly apparent along the northern part of anomaly at **14102**, where a plough line can be seen extending through the mound anomaly.

4.5.58 The remaining two ring ditches that were identified in the gradiometer survey (**14000** and **14001**) are not clearly reciprocated in the earth resistance data. Although very faint curvi-linear trends are in the general vicinity of these features, they are too weak to be clearly identified as being associated with ring-ditch features. In addition, there are also no corresponding high resistance anomalies that might be associated with bank or mound material.

4.5.59 Two parallel low resistance linear anomalies traverse the area on a north-east to south-west orientation at **14103**. The anomalies extend 110 m and 63 m respectively and are 2.5 m – 4.5 m in width. These are indicative of ditch features, relating to a wider series of features identified by the gradiometer survey (**14023**). The ditches identified in the earth resistance data have a separation of 27 m and appear to respect the position of the Bronze Age barrows. It is thought that these form part of a ridge and furrow field system. The positioning of the features suggests that the barrow mounds were extant when the field system was constructed.

4.5.60 Similar anomalies are seen on a north-west to south-east orientation at **14104**. These have a spacing of 20 m and vary in length from 57 m to 95 m (although they likely extend beyond the survey area). These correlate with the orientation of the existing field boundaries, and the predominate orientation of tractor wheel ruts and ploughing furrows visible on the ground surface at the time of the survey.

4.5.61 An area of high resistance anomalies has been identified at the western extent of the survey area (**14015**). This comprises 2 m – 5 m diameter discrete anomalies and a larger amorphous anomaly. These relate to areas of drier ground and may indicate archaeological activity. However, the irregular form suggests that they more likely relate to natural undulations in the chalk bedrock. Similar high resistance anomalies are seen across the area and are attributed the same interpretation.

4.5.62 In the south-eastern corner of the survey, two low resistance anomalies have been identified (**14106**). The western of the two is 6.5 m in diameter, while the eastern is a more elongated, measuring 6 m by 17 m. The low resistance response is indicative of an area of increased moisture, usually associated with cut features. It is possible these relate to large archaeological pits or the remains of ditches. However, they are more likely caused by modern agricultural activity in the area.

4.5.63 In the north of the area a high resistance trend appears to form a 35 m by 40 m rectilinear shape (**14107**). It is possible that this forms an enclosure, not identified within the gradiometer survey data. However, the shared alignment with various phases/orientations of ploughing and other agricultural activity seen across the area, implies that this more likely modern in origin.

GPR survey results and interpretation

GPR Area 22

4.5.64 A GPR survey was also undertaken in the south-east corner of NW10e, directly north of the current route of the A303 (**Figure 46**; **49**). This covered 1.1 ha and was targeted on a dense concentration of anomalies that are considered to be of archaeological origin. This includes the five Bronze Age round barrows that were identified in the gradiometer (**14000** – **14004**) and earth resistance surveys (**14100**

– **14103**). The GPR survey was successful in identifying responses associated with each of the five barrows and has provided additional details regarding their nature and extent. A total depth of 2.51 m was achieved and there were no obstacles preventing the collection of the survey data.

4.5.65 A series of closely spaced, parallel linear trends have been identified in the uppermost Timeslices. These are orientated on the same alignment as the southern and north-eastern field boundaries at the edge of the survey area, and on a north-west to south-east alignment in the centre of the area. These are present from the first timeslice until Timeslice 6 (0.63 – 0.78 m), where they are only very faintly visible. They correspond with ploughing activity visible on the ground surface of the area and are therefore considered to be modern in origin.

4.5.66 Orientated on a north-east to south-west alignment are several more broadly spaced linear anomalies (**14200** – **14202**). From Timeslice 3 (0.25 – 0.4 m) to Timeslice 7 (0.75 – 0.91 m), these are characterised by high amplitude responses. From Timeslice 8 (0.88 – 1.03 m) onwards they are visible as a low amplitude response, although it is probable that this effect may have been caused by a 'ringing' of the GPR pulse. This corresponds with a series of linear anomalies in the gradiometer and resistance survey (**14021**; **14103**) and is thought to pertain to part of a ridge and furrow field system that has been previously noted in the area from aerial photographs. The shallow depth range that is suggested by this GPR dataset is consistent with such an interpretation.

4.5.67 The first timeslice that reveals responses associated with the remains of the Bronze Age round barrows is Timeslice 5 (0.5 – 0.66 m). However, only the three most northerly examples can be identified at this depth (**14203** – **14205**). These can be most clearly identified within Timeslice 6 (0.63 – 0.78 m), where three complete circular features can be visualised as high amplitude responses. The two north-westerly examples (**14203**; **14204**) are very similar in size and form, measuring 19 m and 20 m in diameter respectively. These correspond with similar anomalies in the gradiometer (**14000**; **14001**) but are not paralleled in the resistance data for the area. The ditch element of this is approximately 1 m wide and is consistently visible until Timeslice 11 (1.26 – 1.41 m). From this point the anomaly at **14204** continues as a slightly more diffuse low amplitude response until Timeslice 14 (1.63 – 1.79 m). It is possible that this variation in response is caused by changes in the composition of the fill of the feature.

4.5.68 The anomaly at **14205** is broader than those identified at **14203** and **14204**. This corresponds with the clear response identified in the gradiometer (**14002**) and earth resistance survey (**14100**). It measures 3.5 m in width and has an internal diameter of 22.5 m. It is characterised by a high amplitude response, but is more diffuse, perhaps suggesting that it is comprised of a variable material. It is visible as a high amplitude response until Timeslice 9 (1 – 1.16 m), after which a low amplitude response is detected until Timeslice 15 (1.76 – 1.91 m). At the centre of the low amplitude response, a high amplitude response can be identified. This is clearest within Timeslice 10 (1.13 – 1.28 m) and likely relates to the variable composition of the ditch fill. This also suggests that the ring ditch is reasonably well preserved and may extend to a significant depth.

4.5.69 Two semi-circular responses have also been located along the southern edge of the area (**14206**; **14207**). These relate to similar anomalies in the gradiometer data

(**14003**; **14004**) and areas of high resistance in the earth resistance data (**14101**; **14102**). They are visible from Timeslice 7 (0.75 – 0.91 m) and are present as a faint, 1 m wide high amplitude response. These are surrounded by a low amplitude response in the lower timeslices, such as that shown in Timeslice 12 (1.38 – 1.53 m). Neither anomaly is visible beyond Timeslice 14 (1.63 m – 1.79 m), but they are both consistent in shape, with an internal diameter of approximately 20 – 22 m. It is possible that they are located deeper in the dataset due to an increased level of overburden in this area, due to its location close the northern field edge. However, for the same reason, it is also likely that these features may have been significantly ploughed down. This is supported by the numerous linear trends associated with this in each of the geophysical survey datasets.

4.5.70 From Timeslice 12 (1.38 m – 1.53 m), and throughout the remainder of the timeslices, there are pairs of regularly spaced high amplitude linear trends. These are orientated on a north-west to south-east (**14208**) and east to west (**14209**) alignment. They correlate with anomalies identified in the resistance survey (**14104**) of a similar nature and are associated with tractor wheel ruts present on the ground surface at the time of the survey. Their detection in the deeper timeslices is most likely caused by 'ringing' of the GPR as the signal returns to the receiver, as opposed to a genuine representation of the depth of these features.

4.5.71 At **14210**, a curvi-linear high amplitude response has been identified, 16 m to the north-west of **14204**. This can be seen from Timeslice 8 (0.88 – 1.03 m) to Timeslice 11 (1.26 – 1.41 m). It measures a maximum of 18 m in length and is approximately 1 m wide. The roughly semi-circular form, may suggest that this is part of an additional ring-ditch feature which has not been detected in the gradiometer or resistance survey of the area. The close proximity to a series of such features adds credence to such an interpretation, but if this is the case it is likely that it is fragmentary and heavily ploughed down. However, it is located within an area of other high amplitude anomalies that are thought to be associated with natural geological material. As such, it is not possible to confidently suggest that this represents a further round barrow in this area.

4.5.72 Within Timeslice 5 (0.5 – 0.66 m) and throughout the remainder of the dataset, until Timeslice 20 (2.39 -2.51 m), there are a numerous, amorphous high amplitude responses. These are generally linear in form and conform to a north-east to south-west orientation. They are between 2 m and 5 m wide and vary in length significantly. They also shift laterally as they descend, moving from a north-westerly to a south-easterly position and can be seen as strong dipping, planar responses in the associated radargrams. These are thought to be associated with bands of flint or marl within the chalk bedrock and are not considered to be archaeological in origin. The strength and density of these anomalies has made the definition of some of the archaeological features difficult. As such it is has not been possible to identify any discrete features within any of the five barrows, although some ephemeral high amplitude responses are visible within **14206**.

4.5.73 In the south-east corner of the area, there are a small number of high amplitude anomalies that are circular or sub-circular in form (**14211**). These measure between 1 m and 2 m in diameter and are most clearly visible between Timeslice 10 (1.13 -1.28 m) and Timeslice 12 (1.38 m – 1.53 m). It is possible that these relate to pit-like features, and there are a small number of similar possible features identified within the gradiometer survey of this area. However, given the lack of

coherent arrangement to these anomalies it is not possible to provide a more specific interpretation.

4.6 NW11 (Berwick Down west)

Site location, topography, and geology

4.6.1 NW11 is the westernmost of the Phase 4 survey areas, located 380 m east of Yarnbury Camp. It covers 11.2 ha and comprises a 60 m wide linear parcel of land directly north of the route of the A303. It extends for a total of 1.8 km and traverses the southern portion of two large fields. It is located 3.5 km north-west of Deptford and 1.2 km west of Winterbourne Stoke (**Figure 1**).

4.6.2 The area is situated on a slight promontory, looking north over the western part of Parsonage down. The highest point is in the east (157 m aOD) and there is a slight decline towards the centre of the area (136 m aOD). This then plateaus slightly with a very gradual decline to the west (128 m aOD).

4.6.3 The solid geology comprises Jurassic Chalk of the Seaford Formation. However, there are recorded Head deposits of clay, silt, sand, and gravel, which extend towards the north-east from the southern boundary of NW11a [24].

4.6.4 The soils underlying most of the site are likely to consist of humic rendzinas of the 341 (Icknield) association. However, in the eastern and westernmost part they are likely brown rendzinas of the 343h (Andover 1) association [25]. Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Archaeological background

4.6.5 This area is located 4 km to the west of the WHS and is 380 m east of the scheduled monument at Yarnbury Camp (NHLE no. 1005689). This is a large multi-vallate hillfort with outworks and an annexe on the western edge thought to be a Roman stock enclosure. There is evidence for internal occupation and activity from the Early Iron Age to the Romano-British period and burials of this period were reportedly found in 1800 and 1932. The monument is also the location of the 19th century biannual sheep fair, as well as the parish boundary between Steeple Langford and Berwick St James (marked by boundary stones).

4.6.6 Extensive series of ‘Celtic field systems’ to the east of Yarnbury Camp are known largely from aerial photographs. This incorporates co-axial field systems, where there is a series of regular fields on a common axis and some areas of more irregular, possible later aggregate field systems. These are likely to date from the later prehistoric and Roman period, possibly associated with activity at the hillfort. A particularly well-preserved part of the field system to the north-east of Yarnbury Camp, and 500 m north of NW11a, is scheduled, along with an oval enclosure (NHLE no. 1009646)

4.6.7 Approximately 60 m to the south of the western part of NW11a, an undated, but possibly later prehistoric oval enclosure has been identified from aerial photographs. The northern end of the enclosure appears to have been destroyed during widening of the A303 and a 'V-shaped' ditch was observed during the

works, which may have been related to the enclosure. Finds recovered during the investigation included human bone, pottery, and an iron arrowhead.

4.6.8 In the western part of the area (NW11b), a series of possible pits and some possible linear features have been identified by a previous geophysical survey [9]. Later evaluation suggests many of these anomalies are not anthropogenic in nature although at least three were confirmed as archaeological features; one of which contained Early Bronze Age pottery and another Late Bronze Age pottery [10].

4.6.9 WSHER records a possible round barrow (MWI74873) as a crop mark in NW11: this was not confirmed by the surveys (below: 4.6.17).

Gradiometer survey results and interpretation

4.6.10 The gradiometer survey was undertaken in two phases to allow for variable site conditions within the area. The first stage took place between the 25th and 26th of January 2018, with the westernmost part being revisited on the 25th of April. Field conditions were generally good, being covered with a short stubble or having been recently ploughed and seeded. Obstructions include a large stockpile of manure, a water-tank, and surrounding wooded area to the east of the centre of the larger field (NW11a). There was also a small area of fencing along the southern edge of the site, which covers a larger area at the gated entrance into NW11a. The area is bounded by field boundaries to the east and west, the A303 to the south, and open agricultural land to the north.

4.6.11 Within the south-western corner of NW11a (**Figure 38**) there are two weakly negative linear anomalies (**15000** and **15001**). These are situated on a north-west to south-east orientation and traverse the width of the survey area. **15000** is 43 m long, 4.5 m wide and has a corresponding positive response on the northern and southern edge. Extending from the southern edge is a south-westerly projection, which heads towards the south-western corner of the area for a further 7.5 m. 67 m to the north-east, **15001** can also be seen to traverse the area on a parallel alignment to **15000**. This is 76 m long and 5 m wide. There is also a weakly positive response on the southern edge which is very poorly defined. These anomalies are associated with lynchet features and it is likely that the negative response is associated with a bank. The positive response on the edge of this is most likely related to a broad ditch, although their weak nature suggests that they may be limited in depth.

4.6.12 To the east of these anomalies, several similar responses have been identified. These are generally weaker than those at **15000** and **15001**, but they are situated on the same north-west to south-east orientation. For example, 15002 is located 108 m north-east of **15001** and is characterised by a weakly negative response. It is 32 m long, with a 10 m southerly projection close to the eastern end. It is approximately 4 – 5 m wide and there is a positive response on the southern edge. 92 m to the north-east of this there is a further positive anomaly at **15003**. This is 5.5 m wide and 45 m long, although it likely extends north beyond the survey extent. 55 m to the east of this a further positive linear anomaly has been identified (**15004**). This may represent a continuation of **15003**, although there is no connection between them. **15004** is 62 m long and 4 m wide, with no discernible negative response on either side of the anomaly. Extending for 41 m from the

northern edge of this are two 2 m wide parallel positive anomalies (**15005**). On the western side of these is a very faint negative response, but this is poorly defined.

4.6.13 The anomalies at **15000** to **15005** correspond to the remains of an extensive later prehistoric – Romano-British field system which has previously been recorded from aerial photographs of the area. The positive elements are most likely associated with ditch-like features, with the negative response being attributable to banks. There is a slight discrepancy between the position of the cropmarks and that of the anomalies identified by this survey. The anomalies are also less extensive than has been indicated by the cropmarks, possibly suggesting that these features are not quite as widespread or that they have been heavily ploughed down.

4.6.14 Extending north-east from the eastern end of **15004** there is a positive linear anomaly that follows the orientation of the southern field boundary (**Figure 39**). This is 112 m in length and 1 – 1.5 m wide. It may represent an extension of **15004**, but the shared alignment with the southern field boundary suggests that it is likely of more recent origin.

4.6.15 Approximately 22 m north of **15006** is a recti-linear arrangement of weakly positive linear anomalies (**15007**). This is aligned on a north – south orientation and covers a 23 x 27 m area. It is composed of two, 1 m wide parallel linear anomalies on the northern and eastern side. It is notably weaker towards the west and south where only a single linear anomaly is recorded. Within the centre of these is a concentration of strong dipolar anomalies. This arrangement corresponds with a probable post-medieval pond visible on historic OS mapping dating to 1877. It is likely that the positive linear anomalies represent a small double-ditched enclosure, with the central, ferrous response representing the infilling of the pond following its abandonment.

4.6.16 To the west of **15002**, there is a weakly positive linear anomaly which traverses the area on a north-north-west to south-south-east alignment (**15008**) (**Figure 38**). This measures 55 m x 1.3 m and is likely associated with a ditch-like feature. It does not correspond with any cropmarks but is perpendicular to the existing boundary to the south. It is probable, therefore, that it is associated with a former field boundary not visible on the available historic mapping of the area. However, as the trajectory of this anomaly heads towards an oval enclosure on the southern side of the A303, it is not possible to rule out an archaeological interpretation.

4.6.17 There is a very weak penannular anomaly, approximately 5 m north-east of **15002**. This is characterised by a weakly positive magnetic response with an internal dimeter of 3 m and a width of 1 m (**15009**). There is a break in the anomaly on the western edge. It is possible that this may represent the ring-ditch feature recorded in the WSHER as a possible round barrow (MWI74873), although it is significantly smaller than many of the recorded examples in the surrounding landscape. Nonetheless, it is possible that this represent a possible Bronze Age round barrow, although the weak nature of the response suggests that this may have been heavily ploughed down.

4.6.18 Within the centre of the area (**Figure 39**) there is a positive linear anomaly at **15010**, which likely relates to a ditch-like feature. This is on an approximately north – south alignment and measures 45 m in length, although it is broken in the centre

by the presence of modern services (**15018**). This broadly corresponds with the orientation of the field system that has been recorded in the area, and as such is likely related to a field boundary.

4.6.19 At **15011**, 160 m to the east of **15010**, there is a broad linear anomaly on an approximate west-north-west to east-south-east alignment. This is visible as a 3 m wide weakly positive response with a slight negative response on the northern edge. This measures 110 m in length and is most likely associated with a ditch and bank-like feature. As this also corresponds with the alignment of the cropmarks that have been identified in aerial photographs of the area, it is likely associated with the remains of a lynchet forming part of a wider field system on Parsonage Down.

4.6.20 In the eastern-most part of NW11 (**Figure 40**), there is a further example of a probable lynchet (**15012**). This is very poorly defined but is visible as a broad 7 m wide positive anomaly on the same west-north-west to east-south-east alignment. This also corresponds with the alignment of the field system which has been identified from cropmarks across Parsonage Down.

4.6.21 At **15013** there is a weakly positive linear anomaly on a north-north-east to south-south-west orientation. This is 1 m wide and 50 m in length. It corresponds with a former field boundary recorded on the 1843 Tithe map for Berwick St James. Several other boundaries are visible on this map, but these are not replicated as geophysical anomalies. This suggests that they have most likely been removed by modern agricultural activity, such as ploughing.

4.6.22 Across the eastern part of the site there are many circular and -sub-circular positive anomalies (**Figures 39 – 40**). These are limited in scale, measuring between 1 m and 3 m in diameter, but are particularly prevalent at **15014** and **15015**. These could be associated with a dense concentration of pit-like features. However, given the lack of coherent arrangement and slightly irregular form of these anomalies, it is equally possible that they are natural in origin. Areas of woodland indicated on historic OS mapping dating to 1877 suggest that these anomalies are associated with numerous tree throws/boles.

4.6.23 An area of increased magnetic response (**15016**) has been identified to the west of the wooded area containing a water tank (**Figure 39**), which could not be surveyed. It is probable that this is associated with ferrous material or made ground and is likely of modern origin.

4.6.24 The central part of NW11 is dominated by a series of strong dipolar linear anomalies (**Figures 39 – 40**). The longest of these traverses the area on an approximate north-west to south-east alignment (**15017**), and there are several off-shoots from this (**15017 – 15021**). These are attributable to a series of modern services such as pipes or cables.

4.7 Rollestone Corner

Site location, topography, and geology

4.7.1 The most northerly area of Phase 4 is directly south of Rollestone Camp, 1.8 km east of the village of Shrewton, and 2.5 km west of Larkhill (Figure 1). The survey comprises an irregularly shaped area and a triangular area, divided centrally by

the route of the B3086. It comprises three parcels of land, occupying part of three fields (RC01 – RC03) either site of the existing route of the B3086. The eastern field (RC02) is located in the north-western corner of the boundary of the Stonehenge WHS. The site is bounded to the north by the road known as the Packway and by open agricultural land to the south-east and south-west.

4.7.2 The area is relatively flat, with the highest point located in the north-east corner of the western field at 115 m aOD. There is a slight decline from this point to the south, but this is very gradual (111 m aOD).

4.7.3 The solid geology comprises Jurassic Chalk of the Seaford Formation, with no superficial deposits recorded [24].

4.7.4 The soils underlying most of the site are likely to consist of brown rendzinas of the 343h (Andover 1) association [25]. Soils derived from such geological parent material have been shown to produce magnetic contrasts acceptable for the detection of archaeological remains through magnetometer survey.

Archaeological background

4.7.5 The eastern field at Rollestone corner (RC02) occupies the north-western corner of the WHS. The area does not contain any scheduled monuments but is situated amidst a dense concentration of scheduled and non-designated round barrows (NHLE no. NHLE 1009124; 1009129; 1010886; 1010887; 1010888; 1010889; 1010890; 1010891; 1010892; 1010904; 1010905; 1012166; 1012168; 1012169; 1012170; 1013758). This includes several examples of the rarer pond, saucer, disc, and bell types. The barrows are predominantly located along a ridge coinciding approximately with the line of the Packway and are clustered together to form distinct groups, the largest of which are known as the Rollestone Field and Net Down linear cemeteries. Numerous other possible or probable barrows have also been identified. These are dispersed from the main groups, including two possible examples identified from cropmarks to the north-west of Rollestone Camp.

4.7.6 In the western part of RC01, there is a possible barrow which has been recorded from aerial photographs but has not been subject to any detailed archaeological investigation. To the south of this, an east – west aligned linear feature is also identified from aerial photographs. This possibly forms part of a later prehistoric - Roman field system, which extends further north towards Rollestone Clump. However, an evaluation carried out across part of the area, in association with a proposed extension to the Rollestone grain store in 1996, failed to find any traces of this. It was therefore concluded that the cropmarks were ephemeral and confined to the depth of the topsoil only.

4.7.7 During the same evaluation of the Rollestone grain store site, a small square enclosure was identified and may have been associated with occupation. This was initially recorded from cropmarks.

4.7.8 To the south-west of RC01, is the site of a landing ground associated with a World War I balloon training school and subsequent RAF Anti-Gas School established during World War II at Rollestone Camp. The Rollestone Landing Ground was requisitioned in September 1939 and had a north-east – south-west orientated

grass strip. It was closed in July 1946, and the land subsequently returned to agricultural use [28].

Gradiometer survey results and interpretation

4.7.9 The gradiometer survey was undertaken between the 6th and the 25th of April 2018. Field conditions at the time of survey were generally good, being recently ploughed or harrowed. During periods of wet weather, it was not possible to complete the survey, which led to an hiatus between the survey of the western (RC01) and western (RC02) fields. A third field to the south has yet to be surveyed but comprises a 0.8 ha area.

RC01

4.7.10 In the westernmost part of the site (**Figure 41**), there is a large area of strong dipolar magnetic response. This covers a 20 x 30 m area and is most likely associated with a large amount of ferrous material. Within the centre of this, a 13 m diameter circular form is visible, although this is very poorly defined (**16000**). This may be associated with a possible barrow that has been previously identified from a cropmark on aerial photographs, however the location of this is slightly to the north-west of the cropmark. As such, it is not clear whether this is associated with a possible barrow, which may have been backfilled or covered with ferrous material or is a more modern feature.

4.7.11 In the centre of the large western field (RC01), there is a strong positive anomaly at **16001**. The south-eastern part of this is formed of a 9 m x 7 m amorphous area, and there is an 8 m long north-westerly projection extending from this which is 4 m wide. The strength and nature of this response is suggestive of a large cut-feature and the surrounding weakly negative magnetic response may suggest the presence of bank on the outer edges. This is interpreted as possible archaeology and is considered most likely to be associated with a chalk extraction pit of medieval or post-medieval origin. To the south-east of the site numerous ‘Old Chalk Pits’ are recorded on 1887 OS mapping, which are similar in scale and form.

4.7.12 Across the entirety of RC01 there are numerous small circular and sub-circular positive anomalies. These are between 1 m – 3 m in diameter and are most-likely associated with pit-like features of uncertain origin. These are randomly distributed across most of the site, but a concentration can be seen at **16002**, surrounded by a weakly positive curvilinear trend. This arrangement may suggest an archaeological origin for these features. However, it is equally possible that they represent natural undulations in the underlying chalk bedrock.

4.7.13 There is a short weakly positive linear anomaly at **16003** which measures 18 m in length and 3 m wide. This is orientated north – south and may be associated with a short ditch-like feature. Similarly, there are two short east – west aligned linear anomalies at **16004**, which are also characterised by a weakly positive magnetic response. These are both 9 m in length and 1.5 m wide. It is possible that these features are associated with the heavily ploughed down remains of a ditched field system, however the poorly defined nature of both anomalies makes this interpretation tentative.

4.7.14 At **16005** there is an extensive array of weakly positive and negative linear trends visible across the site on a number of alignments. These are predominantly situated on an east – west orientation and are associated with modern ploughing

furrows. In addition, there are three sets of parallel linear trends spaced 1.8 m apart, which are most likely associated with vehicle wheel ruts running across site on an east-south-east to west-north-west alignment.

4.7.15 Traversing the site on a north-east to south-west alignment is a strong dipolar linear anomaly (**16006**). In the north-eastern extent this appears to split into two, heading towards the Packway on a northerly trajectory and Rollestone camp. Although there are two 10 m gaps in the anomaly, it extends for 200 m in length and is characteristic of a modern service.

4.7.16 In the north-western corner of RC01, there is a linear area of increased magnetic response situated on a north-north-west to south-south-east alignment (**16007**). The 40 m by 12 m area is characterised by a series of indistinct positive and negative anomalies. This type of response is often indicative of a former field boundary, but in this case, it does not correlate with any such features on historic mapping. However, it is probable that it is associated with a field boundary or trackway of relatively recent date.

RC02

4.7.17 In the field on the eastern side of the B3086 (RC02) (**Figure 40**), there is a north – south aligned weakly positive linear anomaly (**16008**). This is located 40 m east of the road, is 55 m in length, and 2.5 m wide. This is most likely associated with a ditch-like feature of uncertain origin. It is similar in alignment to **16003** and could therefore be associated.

4.7.18 Across much of RC02 there are numerous small circular pit-like anomalies. These are less than 3 m in diameter and are characterised by weakly positive magnetic values. In the south of the area, at **16009**, there is a short linear arrangement of such features which may be associated with a pit-alignment. These are interpreted as possible archaeology, but it is probable that many of these anomalies are associated with natural undulations in the underlying chalk bedrock.

4.7.19 Numerous weakly positive and negative linear trends are visible across the area. These are largely associated with modern ploughing activity. There are also two parallel positive anomalies which are most likely associated with a vehicle track at **16010**.

5 Discussion

5.1 Gradiometer survey

5.1.1 The detailed gradiometer survey has been successful in detecting a diverse range and high density of anomalies of archaeological origin across the Scheme. The anomalies are primarily ditch and pit-like features, which take several forms and date to a variety of periods. Many of these correspond with known archaeological remains that have been previously identified from aerial sources and previous investigations. These represent complexes of prehistoric monuments, settlement activity, and field systems. In addition, several previously unrecorded archaeological features have been identified, as well as evidence for historic land management.

5.1.2 Aside from archaeological features, numerous former field boundaries have been identified that correlate with OS mapping and aerial photography for the Scheme. Areas of increased magnetic response, superficial geological deposits, agricultural ploughing trends, and numerous modern services have also been located.

5.1.3 The most easterly of the survey areas covered during this fourth phase of the Scheme is located immediately west of the WHS boundary (NW7). It comprises four small areas surrounding a previously surveyed area (NW5) and has revealed part of a scheduled sub-rectangular enclosure and round barrow (NHLE 1011048; **11016**; **11017**). These are visible on aerial photographs and were also identified by a previous geophysical survey [8] [3] continuing to the south of the area (SW3; 4200).

5.1.4 Part of an undated boundary ditch has been located in two of these areas (NW7a; **11001**, NW7c; **11019**). This corresponds with features previously recorded in 2017 [5] (NW5; **8104**), as well as a scheduled continuation of this feature to the south-west of Longbarrow roundabout (NHLE no. 1010837). Excavation of a section of the feature in the early 2000s [26], and later in 2013 [27] revealed the remains of an extensive ditch. The strength and size of the anomaly suggests that this feature continues for a significant distance.

5.1.5 A large number of linear anomalies in the north of NW7 correspond with cropmarks on aerial photographs. It is likely that these form part of an extensive field system set out perpendicular to, and therefore presumably contemporary with, the Romano-British settlement on Winterbourne Stoke Down (NHLE no. 1015222).

5.1.6 NW8 is located 2.7 km outside of the western perimeter of the WHS. In the north-east corner of NW8e is an arching curvi-linear anomaly, which corresponds with a cropmark recorded in the WSHER (**12000**). It is probable that this is associated with the probable later prehistoric and/or Romano-British settlement on High Down, recorded to the north-east of the area.

5.1.7 Numerous other linear anomalies have been identified on a co-axial (north-south/east-west) alignment. These are associated with extensive field systems and lynchets of varying form. These boundaries may have been established during multiple phases of activity and subject to episodic alteration and reorganisation. However, the field systems and lynchets are likely to date broadly to the later prehistoric to Roman period, following a pattern observed across large swathes of Salisbury Plain. They may also incorporate some elements derived from considerably later episodes of land division, including medieval lynchets and strip fields. Evidence for ridge and furrow ploughing has also been identified across the area.

5.1.8 The biggest area surveyed within this phase of the Scheme is NW9. Within the largest field of this (NW9a) a circular (**13000**) and penannular (**13001**) feature have been identified. These relate to a pair of closely spaced ring ditches identified from aerial photographs. They are thought to be associated with round barrows of probable Bronze Age origin, although it is speculated that the penannular anomaly to the south may relate to a hengiform monument and could perhaps be earlier in origin. Within both of these several internal features have also been identified and it is possible that these may contain significant archaeological remains.

5.1.9 A further, ring-ditch feature has been identified in the centre of NW9a (**13002**) and a previously unidentified pond barrow (**13003**) has been hypothesised in the south-west of the area. However, this is located in an area of complex superficial geological deposits and may be associated with a solution hollow.

5.1.10 As was the case within the area directly to the north (NW8), numerous linear anomalies associated with lynchet features and a co-axial field system have been identified. These have been previously recorded on aerial photographs of the area. In the west of NW9a, a small ovoid enclosure (13004) and numerous pit-like anomalies have also been identified that were recorded in previous geophysical surveys [10].

5.1.11 A broad and amorphous anomaly traverses the centre of the area (**13055**). This relates to a dry-river valley which has subsequently been targeted by an electrical resistance tomography (ERT) survey [33].

5.1.12 Within NW9b, the remains of a large probable round barrow, and part of a second have been identified (**13065**; **13066**). These were both revealed in a previous geophysical survey [29], and are surrounded by a recti-linear enclosure (**13068**) with numerous pit-like features recorded to the north. Across the remainder of the area, part of a field system, which was recorded in a previous phase of archaeological investigation (Wessex Archaeology 2003), has been located in the east of the survey area. This is associated with the nearby Iron Age and Romano-British settlement located 30 m south-east of the area [30] [31] [32].

5.1.13 NW10 is located to the north of Winterbourne Stoke. In the south-eastern corner of NW10e, a group of five probable ring ditches/barrows have been identified. Three of these were previously identified from aerial photographs (**14000** – **14002**). The southern examples are incomplete and are intersected by the existing route of the A303 (**14003**; **14004**). This is surrounded by a complex array of linear anomalies that are also mapped from aerial photographs. This is evidence for a probable enclosure, wider field system, and ridge and furrow ploughing. The form and arrangement of this closely corresponds to that of the local topography and recorded superficial geological deposits. In addition, numerous pit and ditch-like features were identified across the area, as well as part of a post -medieval water meadow system alongside the River Till.

5.1.14 The remains of a Bronze Age barrow that were previously indicated from cropmarks in part of the area were not corroborated by the geophysical survey (to the west of the River Till - in NW10h). It is likely that this feature has been removed by subsequent agricultural activity, or that is formed of a material that is not magnetically enhanced enough to be detected by this geophysical survey.

5.1.15 At the western end of the Scheme, near Yarnbury Camp (NHLE no. 1005689), the remains of part of an extensive later prehistoric – Romano-British field system were located within NW11. This had been previously recorded from aerial photographs. In the eastern-most part of the area a dense concentration of circular and sub-circular positive anomalies has been located. These are limited in scale and could be associated with a dense concentration of pit-like features. However, given the lack of coherent arrangement and slightly irregular form of these anomalies, it is suggested that they may be natural in origin. Some of these were identified by a previous geophysical survey [9] and later evaluation suggests many

of these anomalies are not anthropogenic in nature. However, at least three were confirmed as archaeological features [10]. An anomaly corresponding with the location of the possible barrow recorded in the WSHER (MWI74873) was identified, although the weak nature of the response and its significantly smaller size suggest that it is either not a barrow or a heavily ploughed down example.

5.1.16 In the centre of NW11, a recti-linear arrangement of anomalies corresponds to a post-medieval pond visible on historic mapping of the area (**15007**).

5.1.17 Despite being partly located within the boundary of the Stonehenge WHS, and in close proximity to a dense concentration of scheduled and non-designated round barrows, the most northerly survey area also contains the fewest probable archaeological features. However, in the westernmost part of RC01 there is a large area of strong dipolar magnetic responses (**16001**). This has been tenuously associated with a possible barrow that may have been backfilled or covered with ferrous material. This has been previously identified from a cropmark on aerial photographs, although the position of the anomaly is slightly to the north-west of this.

5.1.18 In the centre of RC01 a possible chalk extraction pit of medieval or post-medieval origin has been hypothesised (**16001**). As several similarly shaped features are labelled as 'Old Chalk Pits' on 1887 OS mapping, it is probable that this represents further such activity.

5.2 Earth Resistance survey

5.2.1 Two areas of the scheme were selected for targeted earth resistance survey. The first of these was situated in NW7c, covering an undated boundary ditch and a scheduled enclosure and barrow that was identified in the gradiometer survey (NHLE no. 1010837). Whilst the largest and clearest of the anticipated features were identified (**11100**; **11101**), the more subtle, and likely less extensive, features were not. For example, the barrow that was anticipated in this area was not visible within the results of this survey.

5.2.2 The second area covered by earth resistance survey was located in the south-eastern corner of NW10e. Within this area the remains of five probable Bronze Age round barrows were identified (**14100** – **14102**) in the gradiometer survey, as well as part of a ditched enclosure and field system. The majority of these were duplicated in the earth resistance survey, but there were also significant omissions. Most notably two ring-ditches were not clearly represented within the dataset. Furthermore, within this area, results of the survey were dominated by an increased number of anomalies associated with agricultural activity. This may suggest that there is a significant overburden across this part of the site and that the archaeological features are located below the maximum range of the resistance survey (below 1m). However, it may also be that they are comprised of a material which has little or no contrast to the natural background material and has therefore not been detected by this technique.

5.2.3 Neither of the two earth resistance survey areas added any significant further information to that provided by the gradiometer survey. However, the results have largely supported the initial interpretation and provided some detail regarding the features probable nature and extent.

5.3 GPR survey

5.3.1 A GPR survey was carried out in the same location as the two earth resistance areas, as well as a further location in NW9b (GPR Areas 20 – 22). The survey in each area was successful in identifying all the anticipated features that were identified in the gradiometer survey. The increased spatial resolution, as well as the ability to provide depth information, has helped add detail by better determining the dimensions and composition of these features.

5.3.2 GPR Area 20 is located in NW7c (Resistance Area 1). This covered an undated boundary ditch as well as a scheduled enclosure and barrow (NHLE no. 1010837). The large irregularly shaped enclosure ditch was found to extend to a significant depth (**11206**), as was the undated boundary ditch to the north of this (**11208**). In both cases the response of the GPR varied between high and low amplitude and it is possible that this may be associated with a variation in the composition of the feature. In addition, evidence for the probable barrow was detected (**11207**), although the weak nature and limited range of the response suggests that is likely to have been heavily ploughed down.

5.3.3 The GPR survey of Area 21 (in NW9b) was positioned over an area where two probable round barrows and an enclosure have been identified in the gradiometer survey. Both barrows were clearly identified within the GPR survey, and the results also suggested that the smaller (**13103**), incomplete example is likely to be relatively limited in depth. However, the larger example to the north is more likely to comprise a substantial ditch **13104**). No internal features were recorded within either barrow, although the larger example has been partially truncated by subsequent activity that might be associated with tractor movement across the feature. The enclosure ditch was also located (**13101**), but many of the pit-like anomalies identified in the gradiometer survey were not clearly visible in the results of the GPR. It is possible that the magnetic anomalies may simply relate to natural undulations in the chalk bedrock. However, it is also possible that these features may be limited in scale or composed of a material that is indistinct from the background geological material, and therefore has not been detected by the GPR survey. ~~cannot be ruled out~~.

5.3.4 The GPR survey of Area 22 contains a dense concentration of responses that are associated with archaeological remains. It is located in the south-eastern part of NW10e (Resistance Area 2) and contains five probable Bronze Age round barrows. The GPR survey has located each of these features (**14203** – **14207**), albeit within slightly different depth ranges. For example, the GPR survey has suggest that the two southerly examples (**14206**; **14207**), which are intersected by the current route of the A303, are probably covered by an increased overburden or may be more heavily truncated by subsequent ploughing of the area.

5.3.5 Several linear anomalies that were identified in the gradiometer and earth resistance survey were also located by the GPR. These are predominantly located within the upper timeslices and are therefore considered likely to be associated with agricultural activity, most likely of a medieval or post-medieval date. In addition, a small number of isolated high amplitude responses were identified in the south-eastern corner of the area that might be associated with discrete pit-like features of an unknown date.

5.3.6 In all the GPR survey areas responses associated with the local geomorphology were identified. These are visible as dipping bands of high amplitude that shift laterally within the timeslices. They are associated with bands of weathering marl, or flint bedding within the chalk bedrock and considered to be natural in origin. However, the strength of these responses may have hindered the detection of very discrete features.

6 Conclusions

6.1 Summary

6.1.1 In conclusion, the geophysical survey was successful in fulfilling the overarching aims for the evaluation programme. It helped to define the extent and character of archaeological features within each fieldwork site and therefore the archaeological mitigation strategy for the Scheme, both as reported in the ES. The large-scale coverage of the detailed gradiometer survey highlighted a diverse range of archaeological features. This added to our knowledge of the development of the prehistoric and historic landscapes surrounding the Stonehenge WHS.

6.1.2 The targeted resistance and GPR surveys provided a better definition of the extent and character of certain features. It is not possible to comment precisely on phasing and dating, but the GPR survey enabled an increased confidence in the archaeological interpretation.

6.1.3 Comparisons with previous phases of survey demonstrated that the Phase 4 work provide clearer and more accurately located archaeological information and the capability to detect small and weakly magnetised features with greater confidence.

6.1.4 Overall, the survey was particularly successful at identifying funerary monuments and field systems of probable prehistoric origin. In addition, it showed that a high density of archaeological features, potentially of national and international significance, are located immediately outside of the Stonehenge WHS.

7 Figures

Figure 1 Site location and detailed survey extent

Figure 2 Gradiometer survey results: Greyscale plot (NW7a; NW7b)

Figure 3 Gradiometer survey results: Greyscale plot (NW7c)

Figure 4 Gradiometer survey results: Greyscale plot (NW7d)

Figure 5 Gradiometer survey results: Greyscale plot (NW8a-c)

Figure 6 Gradiometer survey results: Greyscale plot (NW8d)

Figure 7 Gradiometer survey results: Greyscale plot (NW8e)

Figure 8 Gradiometer survey results: Greyscale plot (NW9a – northwest)

Figure 9 Gradiometer survey results: Greyscale plot (NW9a – northeast)

Figure 10 Gradiometer survey results: Greyscale plot (NW9b – north; NW9a – southwest)

Figure 11 Gradiometer survey results: Greyscale plot (NW9c; NW9a – southeast)

Figure 12 Gradiometer survey results: Greyscale plot (NW9b– south)

Figure 13 Gradiometer survey results: Greyscale plot (NW10a; NW10c)

Figure 14 Gradiometer survey results: Greyscale plot (NW10a; NW10b; NW10c; Nw10d; NW10h)

Figure 15 Gradiometer survey results: Greyscale plot (NW10e)

Figure 16 Gradiometer survey results: Greyscale plot (NW10e; NW10f; NW10g - south)

Figure 17 Gradiometer survey results: Greyscale plot (NW10e; NW10f; NW10g - north)

Figure 18 Gradiometer survey results: Greyscale plot (NW11 – west)

Figure 19 Gradiometer survey results: Greyscale plot (NW11 – centre)

Figure 20 Gradiometer survey results: Greyscale plot (NW11 – east)

Figure 21 Gradiometer survey results: Greyscale plot (RC01; RC02)

Figure 22 Gradiometer survey results: Interpretation (NW7a; NW7b)

Figure 23 Gradiometer survey results: Interpretation (NW7c)

Figure 24 Gradiometer survey results: Interpretation (NW7d)

Figure 25 Gradiometer survey results: Interpretation (NW8a-c)

Figure 26 Gradiometer survey results: Interpretation (NW8d)

Figure 27 Gradiometer survey results: Interpretation (NW8e)

Figure 28 Gradiometer survey results: Interpretation (NW9a – northwest)

Figure 29 Gradiometer survey results: Interpretation (NW9a – northeast)

Figure 30 Gradiometer survey results: Interpretation (NW9b – north; NW9a – southwest)

Figure 31 Gradiometer survey results: Interpretation (NW9c; NW9a – southeast)

Figure 32 Gradiometer survey results: Interpretation (NW9b– south)

Figure 33 Gradiometer survey results: Interpretation (NW10a; NW10c)

Figure 34 Gradiometer survey results: Interpretation (NW10a; NW10b; NW10c; Nw10d; NW10h)

Figure 35 Gradiometer survey results: Interpretation (NW10e)

Figure 36 Gradiometer survey results: Interpretation (NW10e; NW10f; NW10g - south)

Figure 37 Gradiometer survey results: Interpretation (NW10e; NW10f; NW10g - north)

Figure 38 Gradiometer survey results: Interpretation (NW11 – west)

Figure 39 Gradiometer survey results: Interpretation (NW11 – centre)

Figure 40 Gradiometer survey results: Interpretation (NW11 – east)

Figure 41 Gradiometer survey results: Interpretation (RC01; RC02)

Figure 42 Earth Resistance survey results: Greyscale plot and Interpretation (Resistance Area 1 – NW7c)

Figure 43 Earth Resistance survey results: Greyscale plot and Interpretation (Resistance Area 2 – NW10e)

Figure 44 GPR survey results: Greyscale plot (GPR Area 20 – NW7c)

Figure 45 GPR survey results: Interpretation (GPR Area 20 – NW7c)

Figure 46 GPR survey results: Greyscale plot (GPR Area 21 – NW9b)

Figure 47 GPR survey results: Interpretation (GPR Area 21 – NW9b)

Figure 48 GPR survey results: Greyscale plot (GPR Area 22 – NW10e)

Figure 49 GPR survey results: Interpretation (GPR Area 22 – NW10e)

Figure 50 Location of Previous Geophysical Survey Investigations

Figure 51 Comparison of Geophysical survey interpretation: Areas west of Longbarrow roundabout

404000 406000 408000 410000

144000 142000 140000

N

Rollestone Mobile Home Park
Nelridge Farm
Elston Hill Farm
Shrewton Farm Cottages
Shrewton Farm
Orcheston
Elston Lane
Elston
Shrewton Lodge
The Packway
London Road
Highwood House
Maddington
B3086
Middle Farm
Rollestone Corner
Maddington Farm
Woodway Cottage
Chitterne Road
B390
Middle Croft Farm
Tanners Lane
High Street
Shrewton
Greenland Farm or Greenlands Bungalow
B3086
A360
The Common
Amesbury Road
Rollestone
Maddington Down
Homanton
River Till
Helsome's Field Barn
Berry Lodge
B3086
High Down
Foredown Barn
NW8
NW7
NW9
NW5
NW10
NW6
SW9
SW1
A303
Parsonage Down
Scotland Lodge Farm
NW4
Winterbourne Stoke
SW3
Hill Farm
Winterbourne Stoke Hill
NW11
SW4
SW2
Berwick Road
summerfield House
SW5
SW8
Oatlands Bungalows
Oatlands Dairy Unit
SW6
The Park
SW7
Whitehill
Berwick St James
Berwick Down
Steeple Langford
Cow Down

0.5 0 0.5 1 1.5 2 2.5 km

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Salisbury Plain
Amesbury

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- GPR Survey Area
- Previous Survey Area
- Scheduled Monument
- World Heritage Site
- Non-designated assets

Revision Details	By	Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 1

SITE LOCATION AND DETAILED SURVEY EXTENTS

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No. 201734

Scale @ A3: 1:25,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
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AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Rev
| 1
Location | Type | Role | Number

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NW7b

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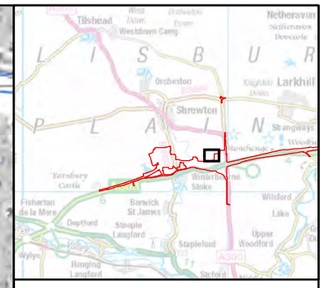

NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 2

GREYSCALE (NW7)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

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Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 2 | Number

Rev

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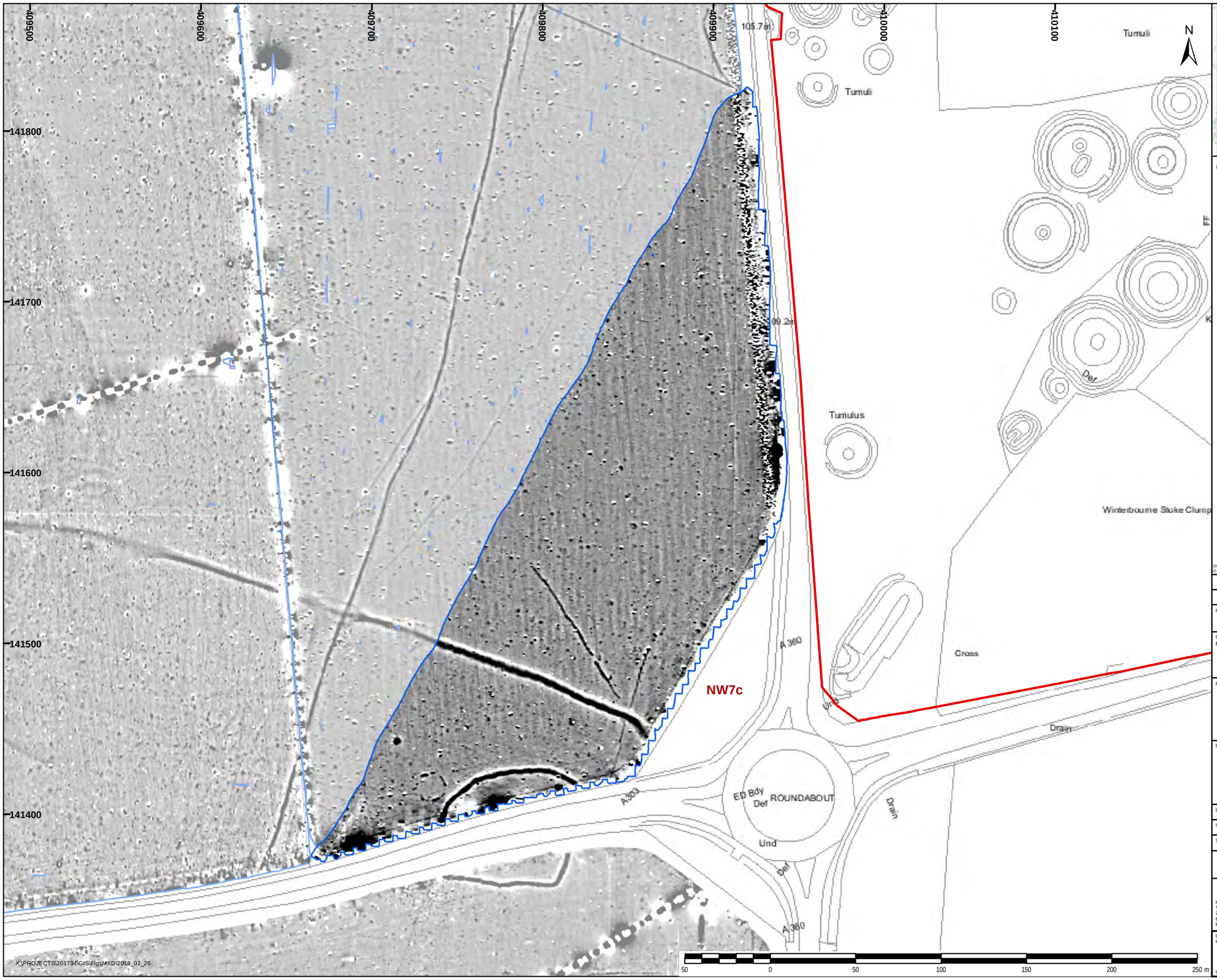

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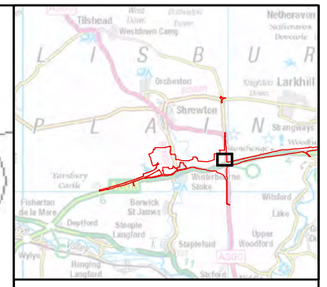

NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
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Project Title

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GEOPHYSICAL SURVEY PHASE 4

FIGURE 3

GREYSCALE (NW7)

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Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 3 | Number

Rev

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410000
410100

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142400

CORNER
A303
98.0m
Stonehenge Visitor Cent
5m
S
NW7d
Winterbourne Stoke Down
Tumulus
Tumulus

N

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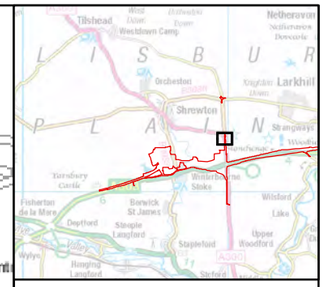

NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

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Project Title

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Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 4

GREYSCALE (NW7)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

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Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 4 | Number | Rev

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NW8a

NW8b

NW8c

NW8d

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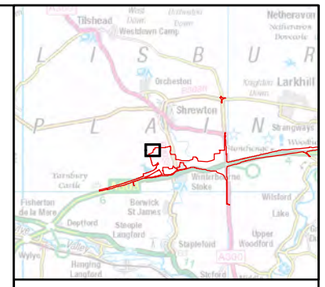

NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

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Project Title

A303 AMESBURY TO BERWICK DOWN

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GEOPHYSICAL SURVEY PHASE 4

FIGURE 5

GREYSCALE (NW8)

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Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 5 | Number

Rev

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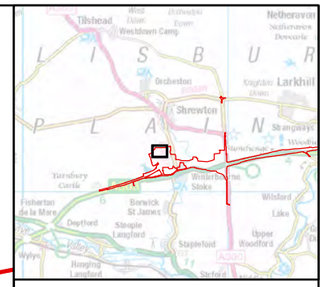
NW8d

NW8c

NW8b



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 6

GREYSCALE (NW8)

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RM	RM			18/03/2019

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Rev

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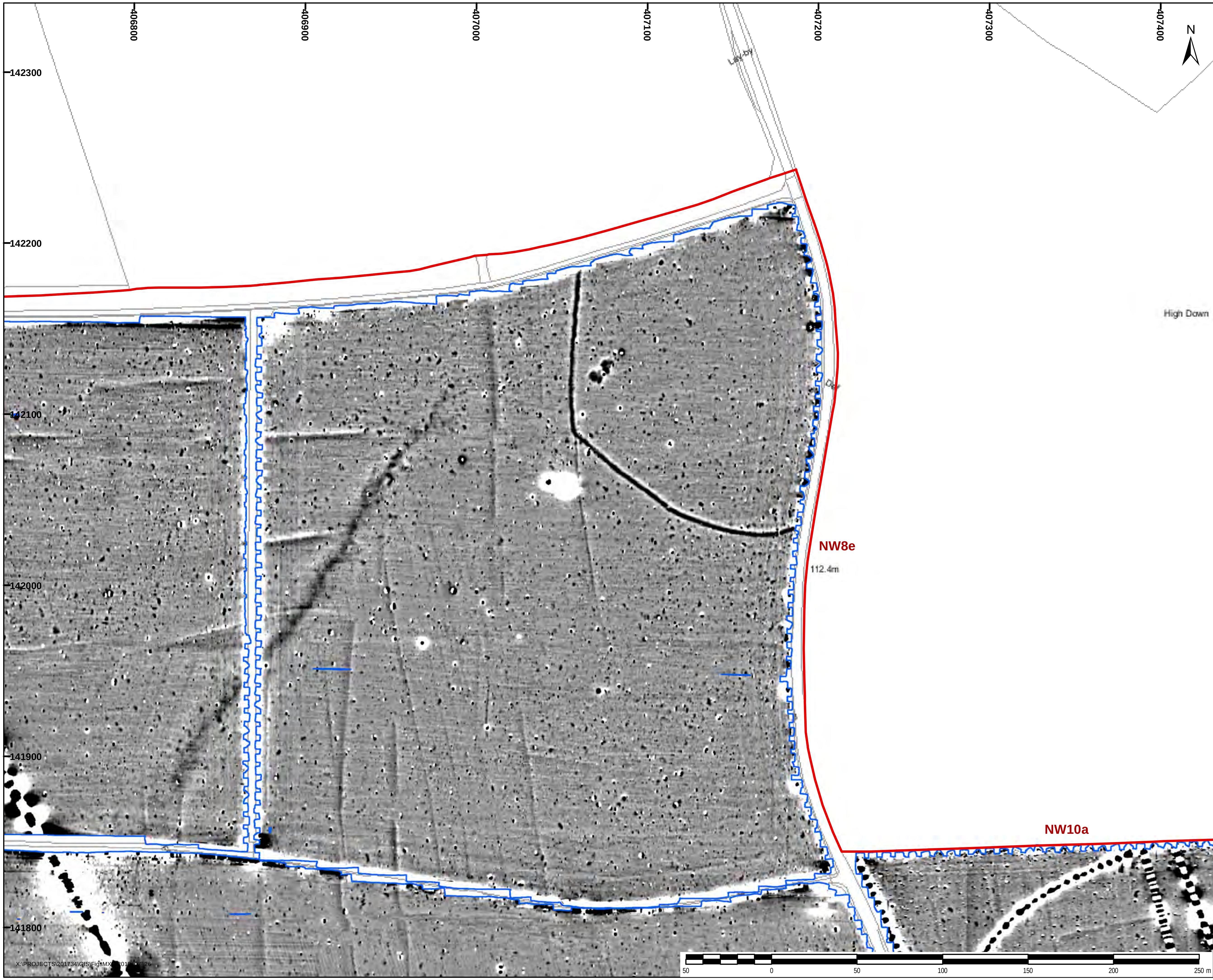

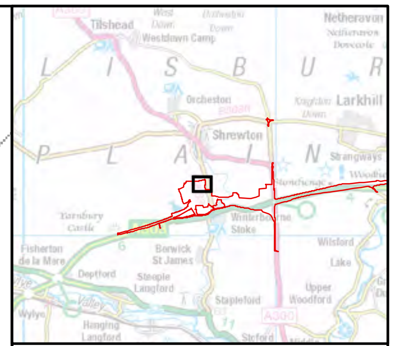

NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 7

GREYSCALE (NW8)

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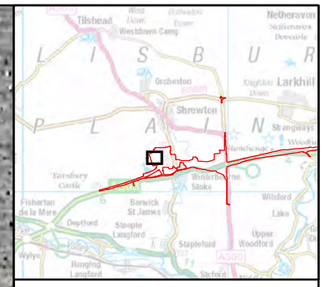
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
Location | Type | Role | 7 | Number

Rev



NOTES / LEGEND

🟥 DCO boundary

🟦 Detailed Survey Extents

+3nT

-2nT

OS Basemapping:

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 8

GREYSCALE (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

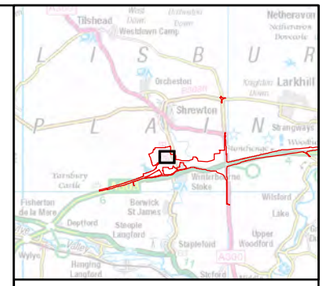
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
| 8
Location | Type | Role | Number

Rev

406700
406800
406900
407000
407100
407200
407300
N
141900
141800
141700
141600
141500
NW10a
2.0m
X:\PROJECTS\201734\GIS\FigsMXD\2018-07_26
50 0 50 100 150 200 250 m



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 9

GREYSCALE (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | 9

Rev

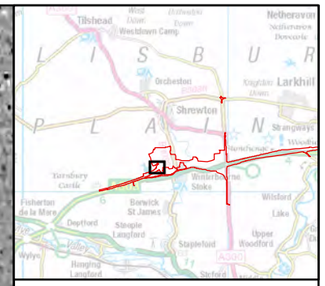
406300
406400
406500
406600
406700
406800
406900

141400
141300
141200
141100
141000

NW9a
NW9b

Parsonage
Down

N



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 10

GREYSCALE (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | 10 | Rev

50 0 50 100 150 200 250 m

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

406800
406900
407000
407100
407200
407300
407400

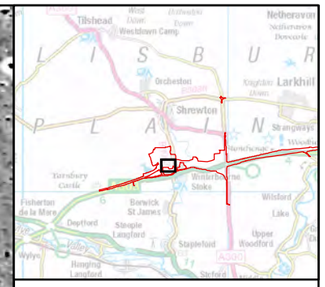
141500
141400
141300
141200
141100

N

NW9a
NW9b
NW9c

50 0 50 100 150 200 250 m

X:\PROJECTS\2017\4\GIS\FigsMXD\2018_07_26



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 11

GREYSCALE (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3	Zone
1:2,000	

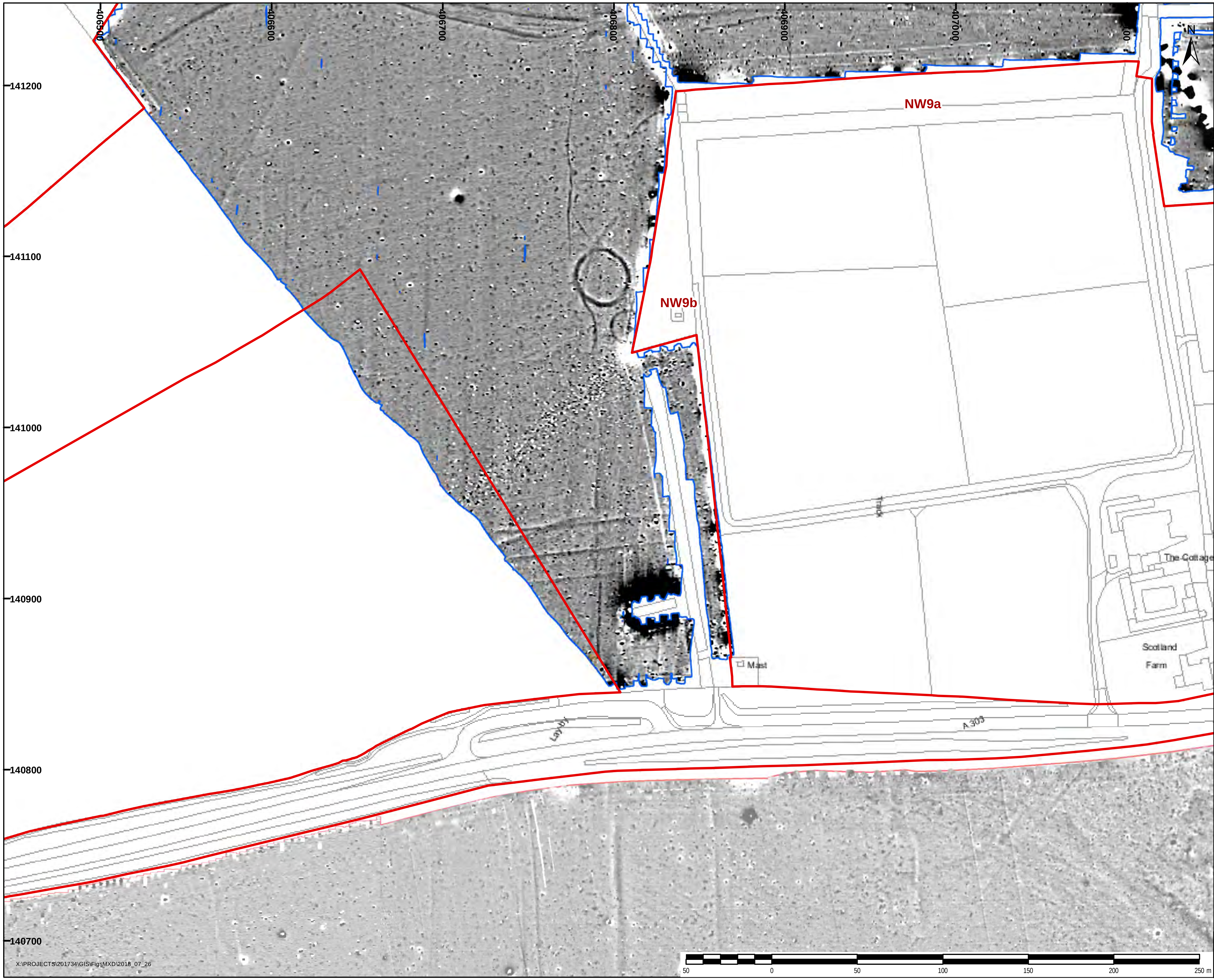
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

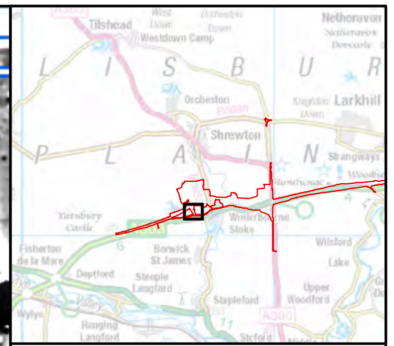
AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Type | Role | 11 | Number

Location

Rev





NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 12

GREYSCALE (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
Location | Type | Role | 12 Number

Rev

407200 407300 407400 407500 407600 407700 407800

141900 141800 141700 141600 141500 141400

Tumuli

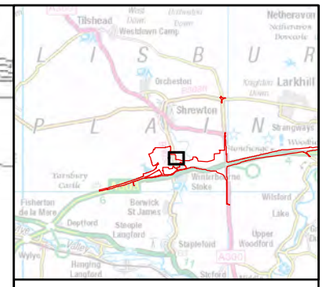
N

NW10a

NW10c

NW10d

2.0m



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 13

GREYSCALE (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 13 | Rev
Location | Type | Role | Number

50 0 50 100 150 200 250 m

X:\PROJECTS\207784\GIS\FigsMXD\2018_07_26

NOTES / LEGEND

DCO boundary

Detailed Survey Extents

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 14

GREYSCALE (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 14 | Rev
Location | Type | Role | Number

407800
407900
408000
408100
408200
408300
408400

141600
141500
141400
141300
141200
141100

FB

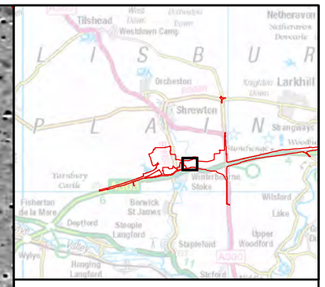
A303

NW10e

Winterbourne Stoke Hill

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

N



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

50 0 50 100 150 200 250 m

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 15

GREYSCALE (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 15 | Number

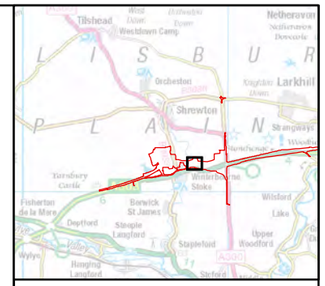
Rev

408100
408200
408300
408400
408500
408600
408700

141600
141500
141400
141300
141200

NW10g
NW10e
NW10f

N



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 16

GREYSCALE (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 16 | Number

Rev

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

Winterbourne Stoke Hill

50 0 50 100 150 200 250 m

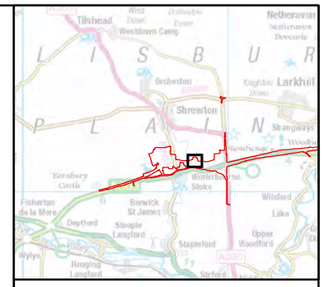
141800
141700
141600
141500
141400
141300

408100
408200
408300
408400
408500
408600
408700

Drain
Track

N

NW10g



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 17

GREYSCALE (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 17 | Rev

Location | Type | Role | Number

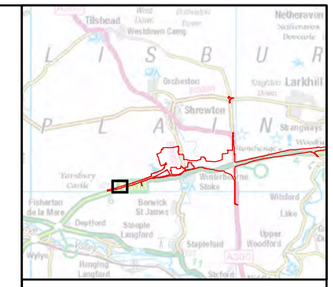
50 0 50 100 150 200 250 m

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

404000
404100
404200
404300
404400
404500
404600

140500
140400
140300
140200
140100
140000

N



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 18

GREYSCALE (NW11)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | | 18 | Rev
Location | Type | Role | Number

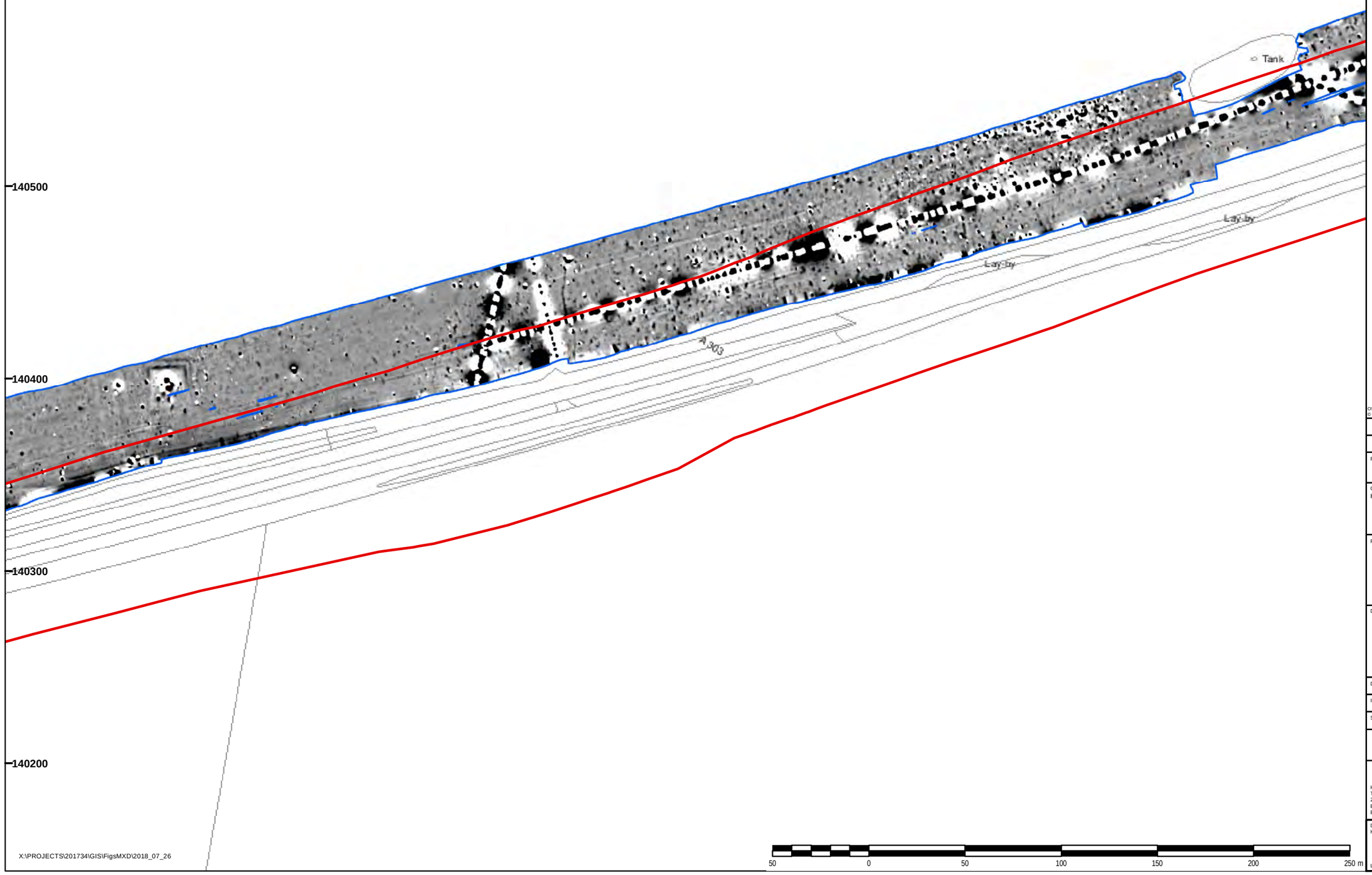
50 0 50 100 150 200 250 m

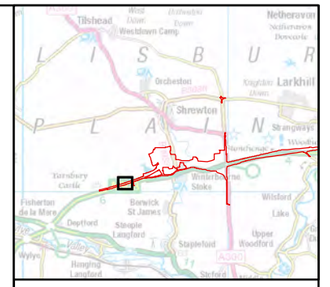
X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

404700
404800
404900
405000
405100
405200
405300

140700
140600
140500
140400
140300
140200

N





NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

50 0 50 100 150 200 250 m

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 19

GREYSCALE (NW11)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

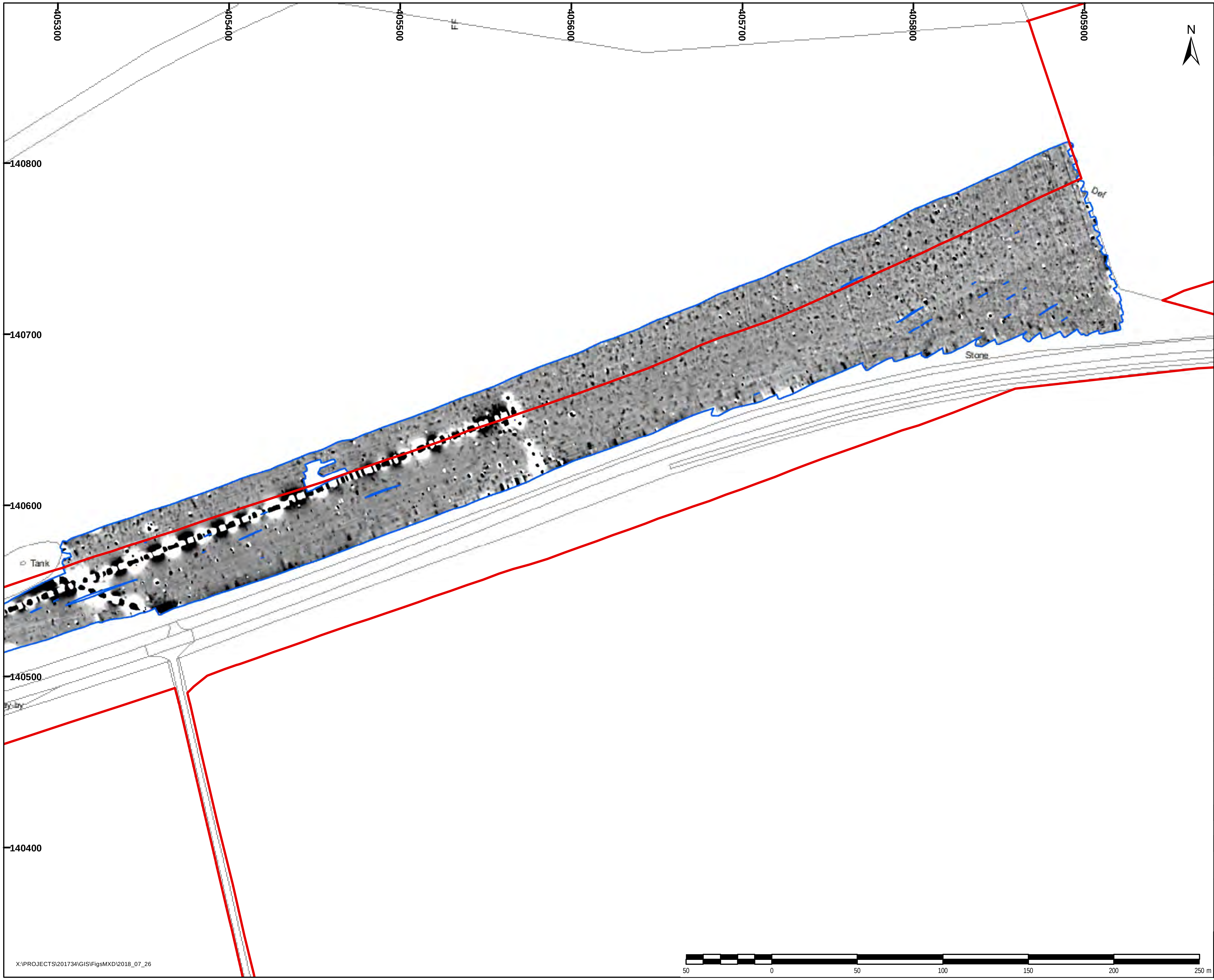
Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 19 | Number

Rev



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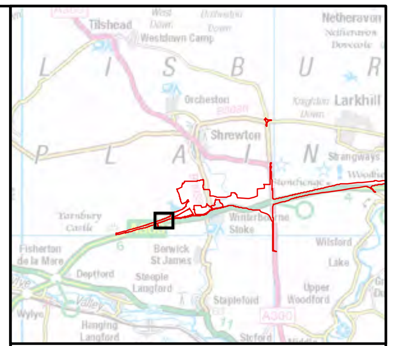
N



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 20

GREYSCALE (NW11)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

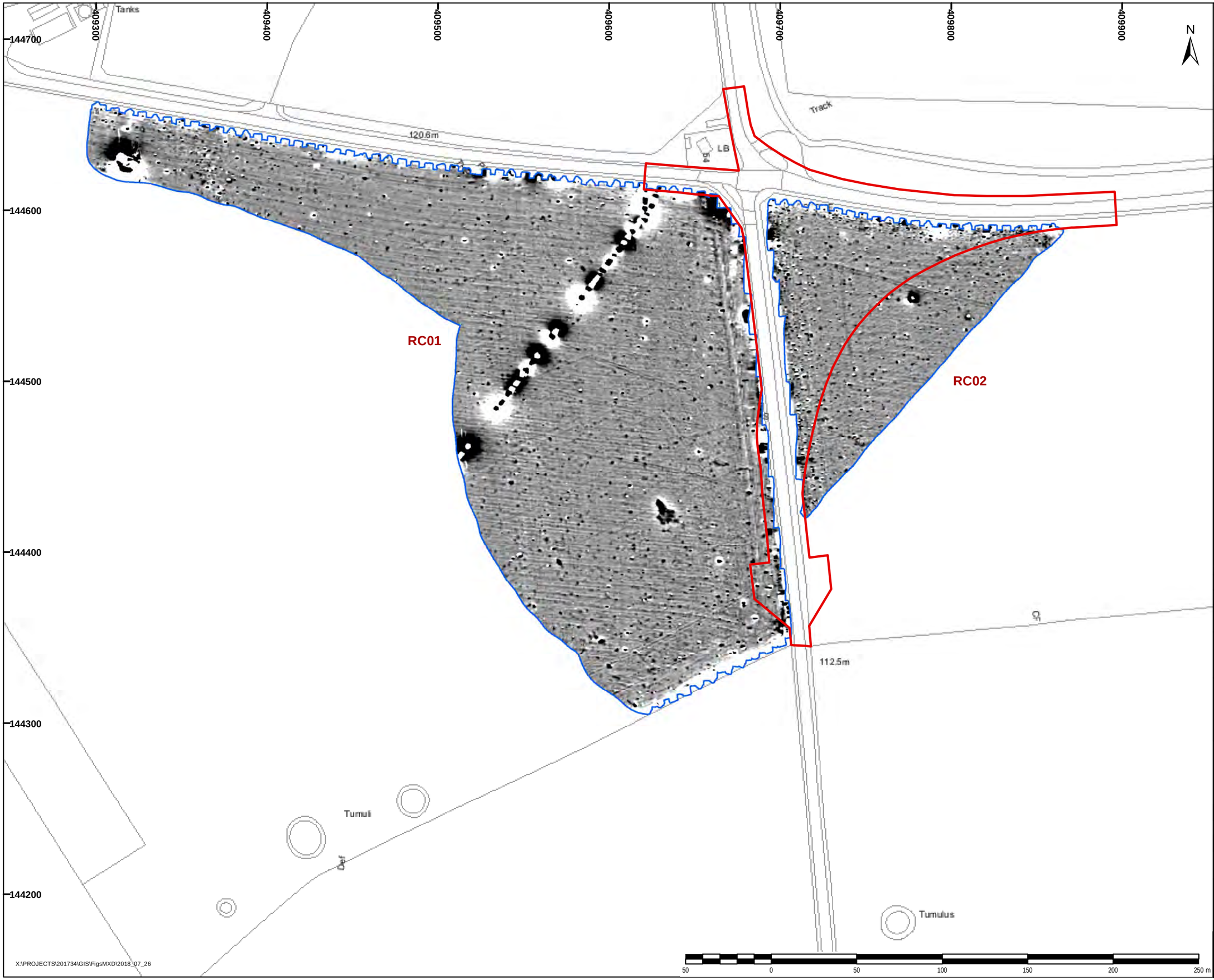
Internal Project No.

Scale @ A3 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Rev
Location | Type | Role | 20 | Number



NOTES / LEGEND

DCO boundary

Detailed Survey Extents

+3nT

-2nT

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 21

GREYSCALE (Rollestone Corner)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 21 | Type | Role | Number

Location

Rev

408800
409000
409100
409200
409300
409400
409500
142000
141900
141800
141700
141600
NW7a
NW7b
11000
11001
11002
11003
11004
11005
11006
11007
11008
11009
11010
11012
11013
11014
11015
Pump House
(covered)
N
50 0 50 100 150 200 250 m
X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 22

INTERPRETATION (NW7)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

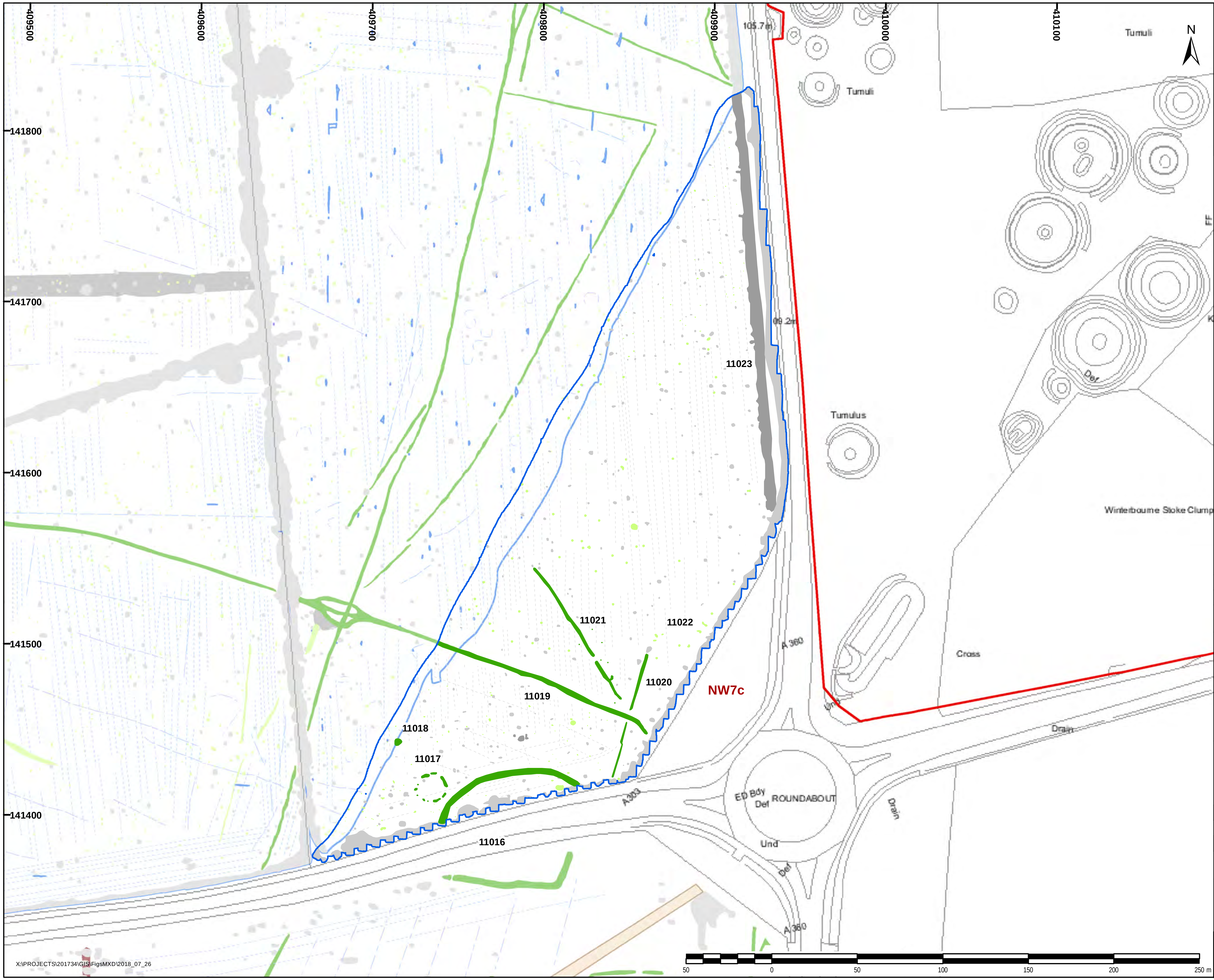
Zone

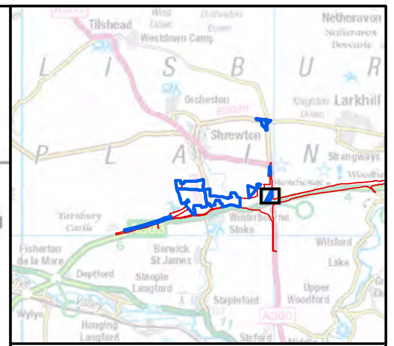
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 22 | Location | Type | Role | Number

Rev





NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 23

INTERPRETATION (NW7)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 23 Number

Rev

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 24

INTERPRETATION (NW7)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number: | 24

Rev

406900 406100 406200 406300 406400 406500 406600

142200 142100 142000 141900 141800

N

NW8a NW8b NW8c NW8d

12006 12028 12040 12008 12037 12039 12031 12011 12043 12033 12038 12029 12027 12036 12034 12041 12007 12044 12009 12010 12045 12012 12030 12015 13053 13054

Lodge

Def

F1

0 50 100 150 200 250 m

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 25

INTERPRETATION (NW8)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

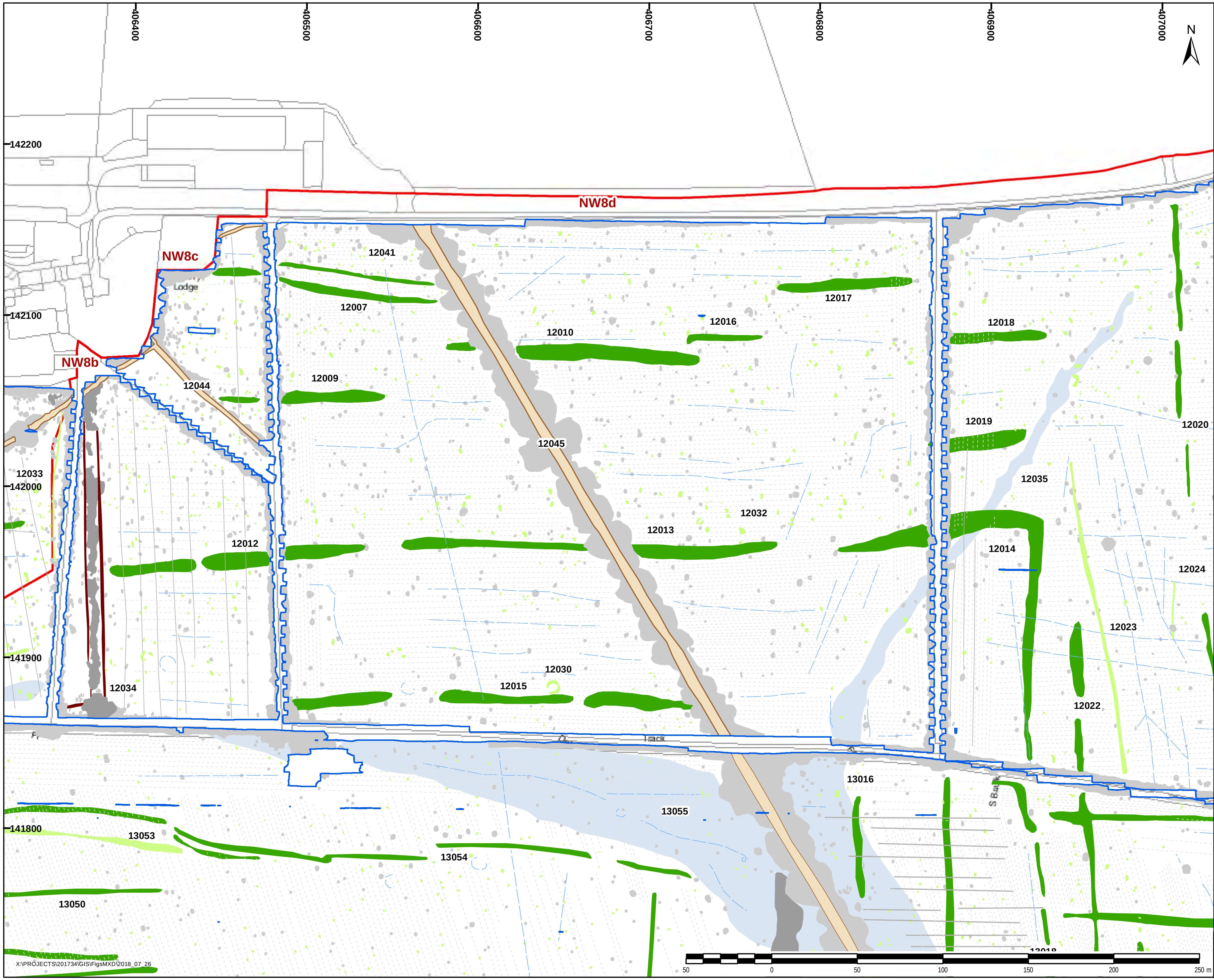
Scale @ A3: 1:2,000 | Zone

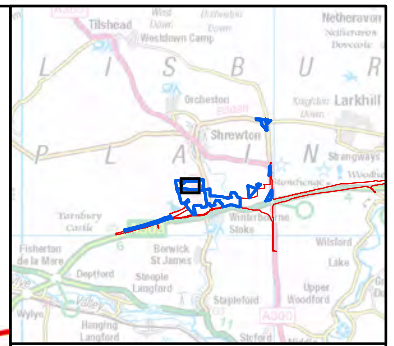
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 25
Location | Type | Role | Number

Rev





NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 26

INTERPRETATION (NW8)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

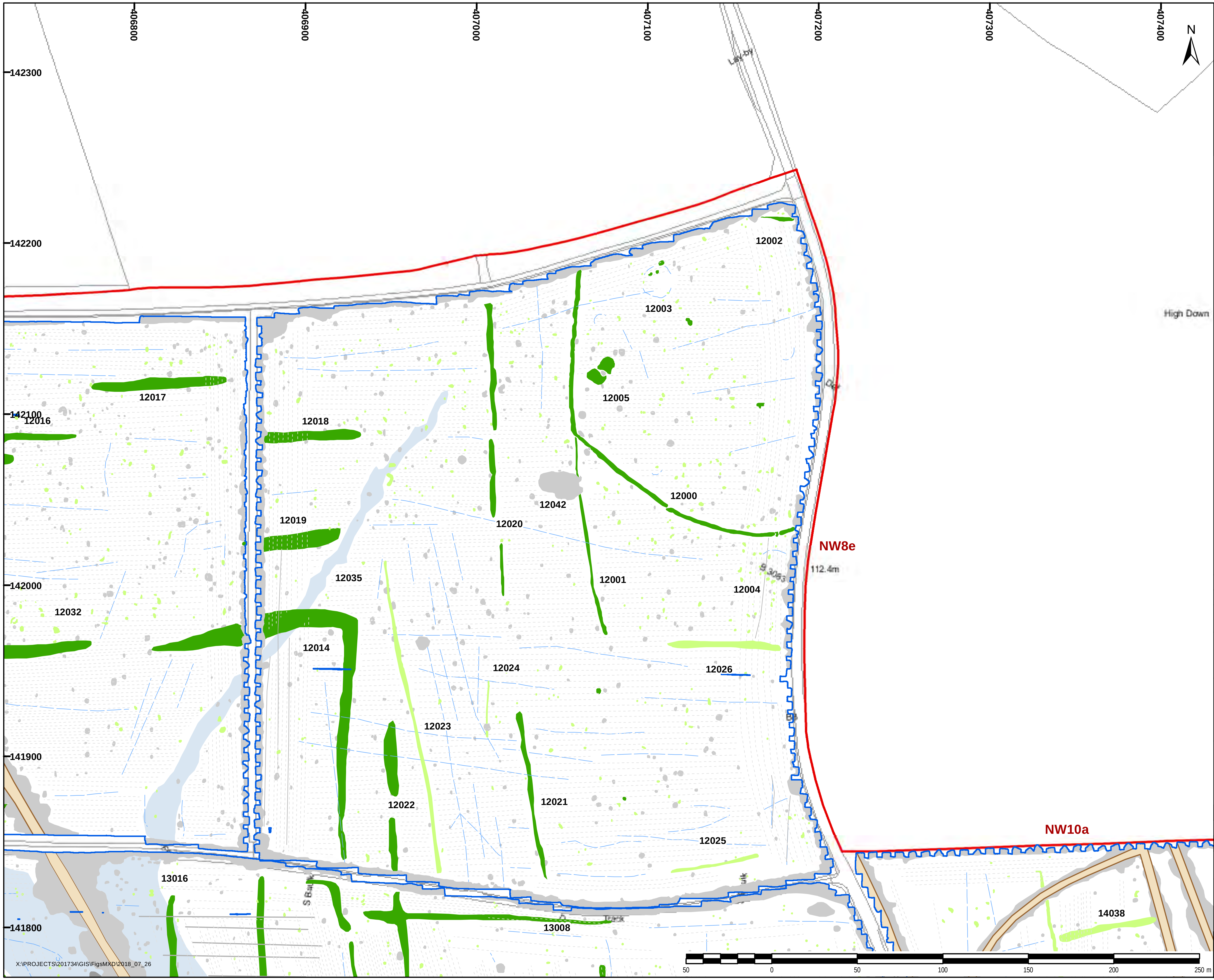
Scale @ A3 1:2,000 | Zone

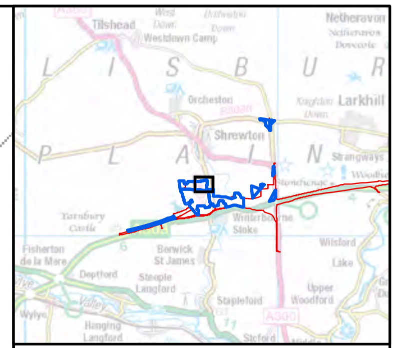
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
Location | Type | Role | 26 Number

Rev





NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 27

INTERPRETATION (NW8)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

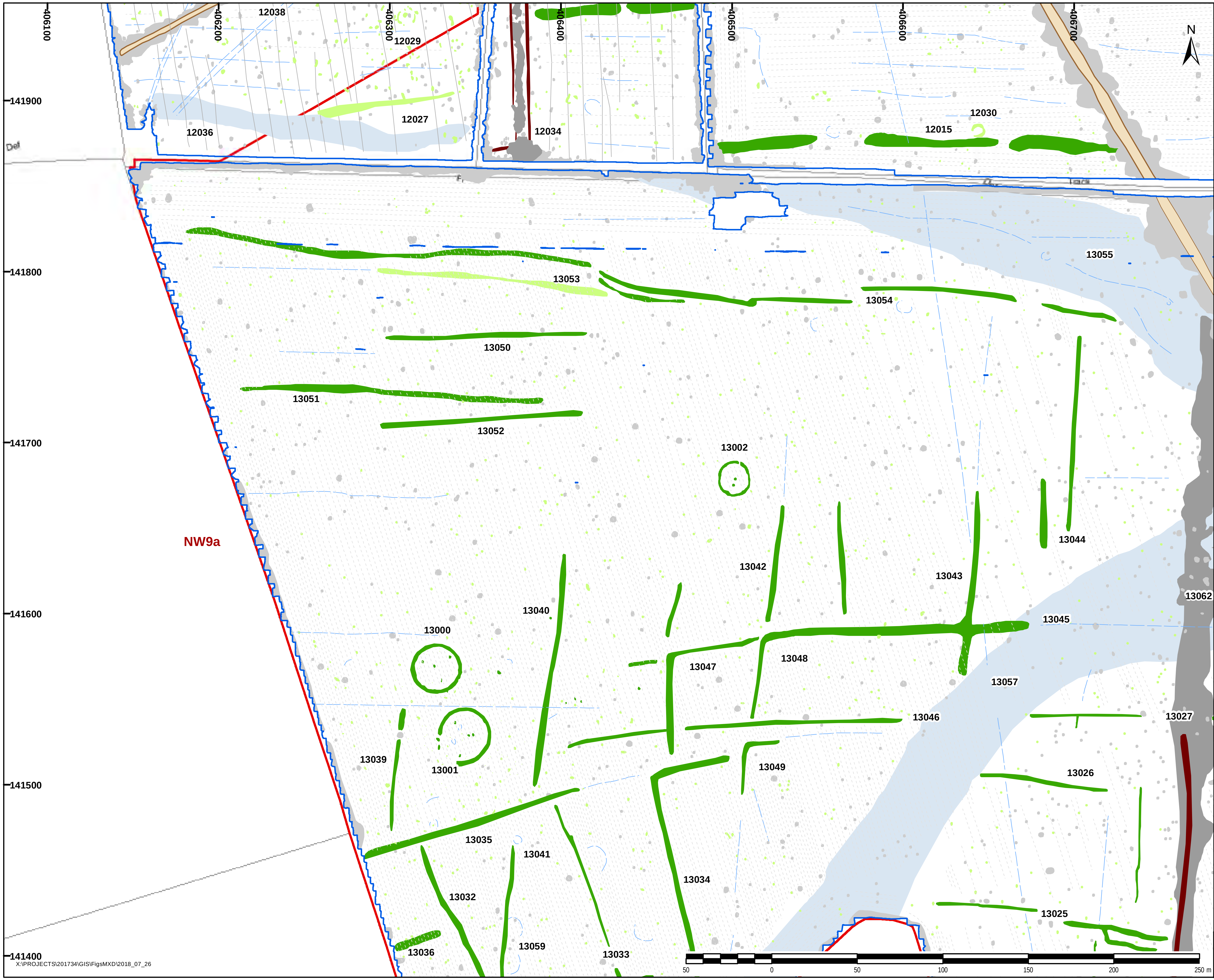
Internal Project No.

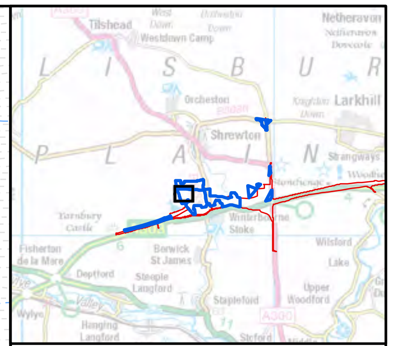
Scale @ A3 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
Location | Type | Role | Number 27
Rev





NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title
A303 AMESBURY TO BERWICK DOWN

Drawing Title
GEOPHYSICAL SURVEY PHASE 4
FIGURE 28
INTERPRETATION (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

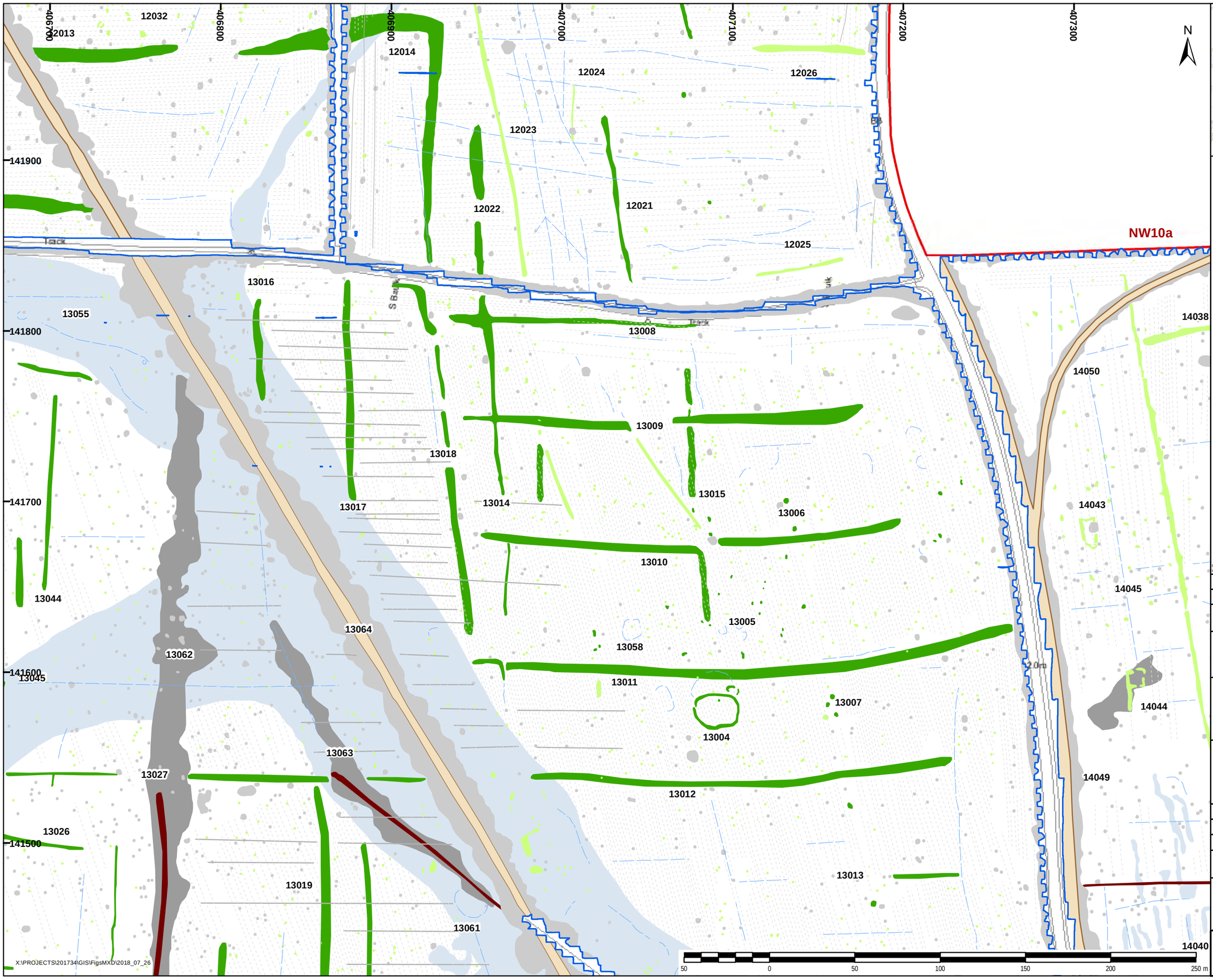
Internal Project No.

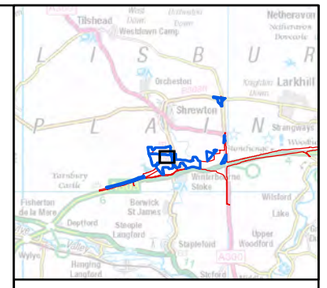
Scale @ A3 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
Location | Type | Role | 28 Number
Rev





NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 29

INTERPRETATION (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 29 | Number | Rev

406300
406400
406500
406600
406700
406800
406900
141400
141300
141200
141100
141000
13035
13041
13034
13032
13059
13033
13036
13037
13038
NW9a
13025
13019
13020
13028
13030
13024
13023
13029
13077
13022
13078
13075
13087
13076
13031
13074
13068
13071
13069
13079
13080
13070
13065
NW9b
13067
13066
13072
13073
13085
13083
13081
13084
Parsonage Down
N
50 0 50 100 150 200 250 m
X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 30

INTERPRETATION (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 30 | Rev
Location | Type | Role | Number

406800 406900 407000 407100 407200 407300 407400

13004 13063 13027 13012 14049 14037 14046 14040

141500 13019 13061 13013 13003 13020 141400 13028 13030 13056 13060 13024 13023 13029

141300 13022 13021 13092 Field System 13088 13091 13089 13090 13094 13093

13076 13031 141200 13074 13068 13071 13069 13070 141100 13065 13067 13066 13073

NW9a NW9b NW9c

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

50 0 50 100 150 200 250 m

N

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 31

INTERPRETATION (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000 | Zone

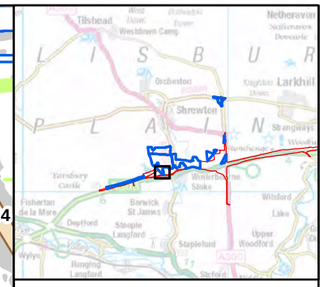
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 31 | Number

Rev

406900
406600
406700
406800
406900
407000
407100
141200
141100
141000
140900
140800
140700
13087
13076
13031
13074
13068
13071
13069
13079
13080
13070
13065
13067
13066
13072
13073
13085
13083
13081
13084
13082
13086
NW9a
NW9b
13094
Track
The Cottage
Scotland Farm
Mast
Layby
A303
X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26
50 0 50 100 150 200 250 m
N



NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 32

INTERPRETATION (NW9)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number: | 32

Rev

407200 407300 407400 407500 407600 407700 407800

141900 141800 141700 141600 141500 141400

NW10a NW10c NW10d

14038 14050 14043 14045 14044 14049 14037 14046 14040 14036 14039 14051 14052 14042 14032 14047 14033 14031

13007 13013 13003

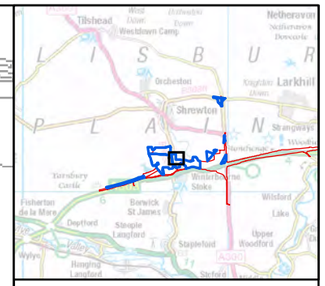
2.0m

Tumuli

N

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

50 0 50 100 150 200 250 m



NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 33

INTERPRETATION (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000

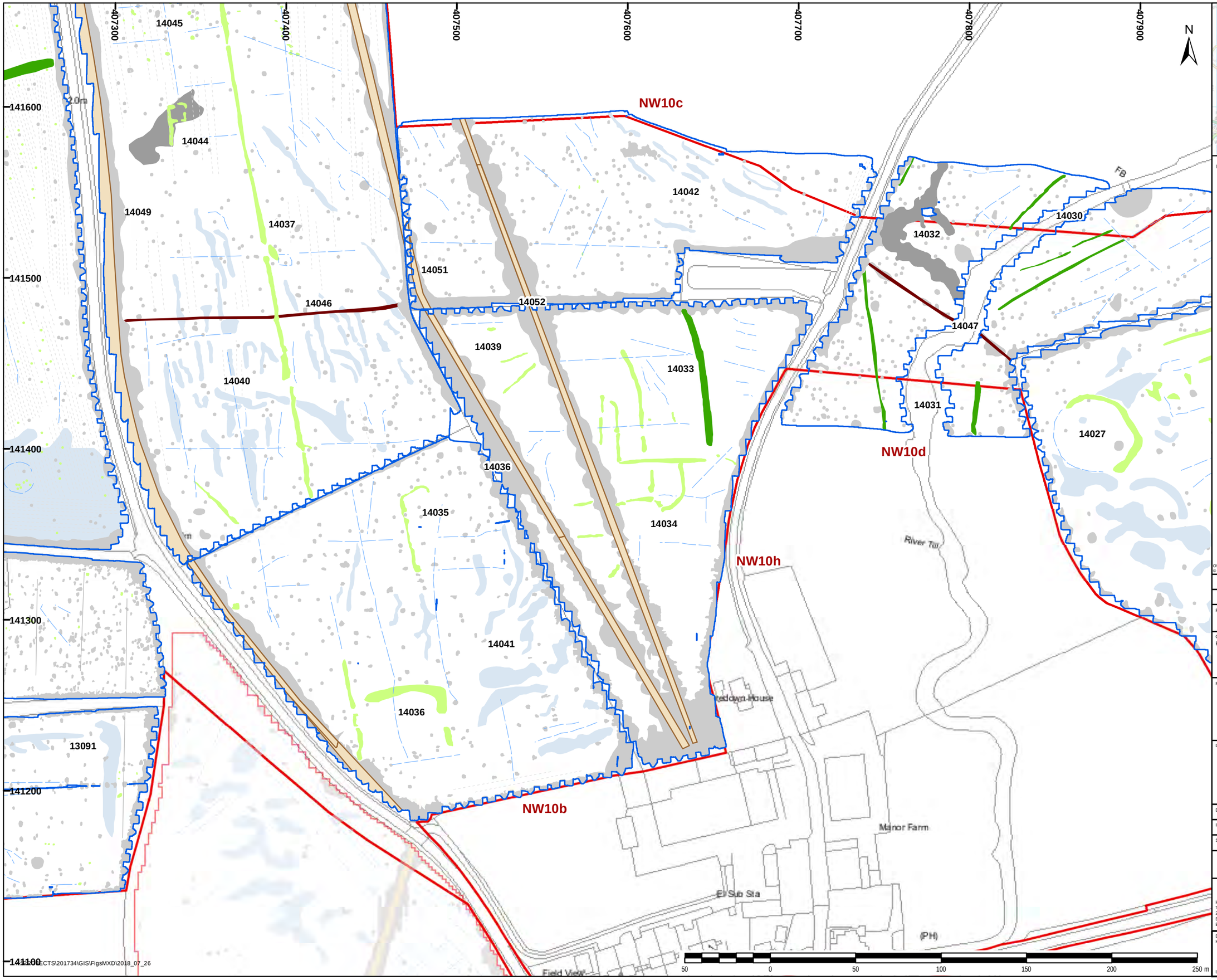
Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 33
Location | Type | Role | Number

Rev



NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title:
GEOPHYSICAL SURVEY PHASE 4
FIGURE 34
INTERPRETATION (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 34 | Number

Rev

407800
407900
408000
408100
408200
408300
408400
141600
141500
141400
141300
141200
141100
14010
14009
14014
14012
14030
14029
14024
14027
14028
14025
14048
14022
14021
14005
14017
14023
14006
14007
14000
14001
14002
14003
14004
14008
14026
NW10e
F8
Track
A 303
Winterbourne Stoke Hill
N
50 0 50 100 150 200 250 m
X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 35

INTERPRETATION (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

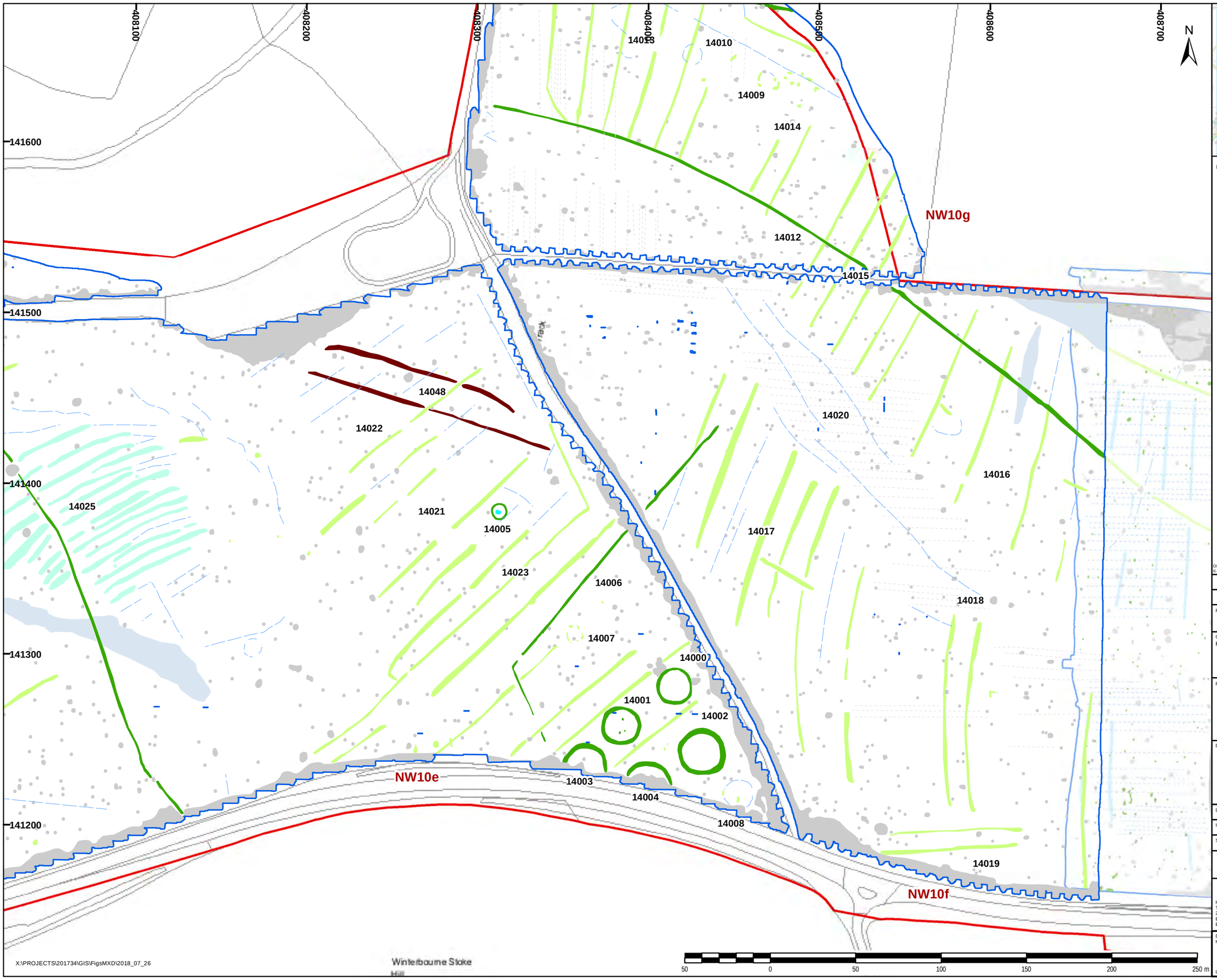
Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 35
Location | Type | Role | Number

Rev



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NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 36

INTERPRETATION (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 36 | Location | Type | Role | Number

Rev

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 37

INTERPRETATION (NW10)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3: 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 37 | Location | Type | Role | Number

Rev

404000
404100
404200
404300
404400
404500
404600

140500
140400
140300
140200
140100
140000

N

15000
15001
15002
15003
15004
15005
15008
15009

Track
Und
A303
MS
Track
Der

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

50 0 50 100 150 200 250 m

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 38

INTERPRETATION (NW11)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

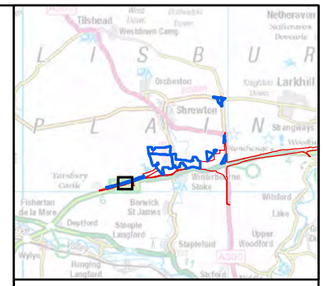
Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | 38 | Number

Rev

404700
404800
404900
405000
405100
405200
405300

140700
140600
140500
140400
140300
140200

N



15015
15017
15011
15014
15019
15010
15018
15007
15006

Tank
Layby
Layby
A303

NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 39

INTERPRETATION (NW11)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 39 | Location | Type | Role | Number

Rev

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

50 0 50 100 150 200 250 m

405300
405400
405500
405600
405700
405800
405900

140800
140700
140600
140500
140400

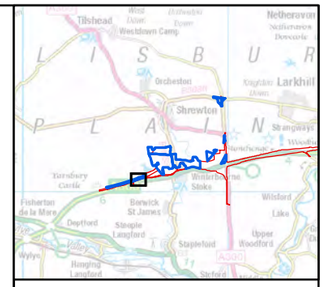
N

15014
15012
15013
15021
15020

Tank

X:\PROJECTS\201734\GIS\FigsMXD\2018_07_26

50 0 50 100 150 200 250 m



NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 40

INTERPRETATION (NW11)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

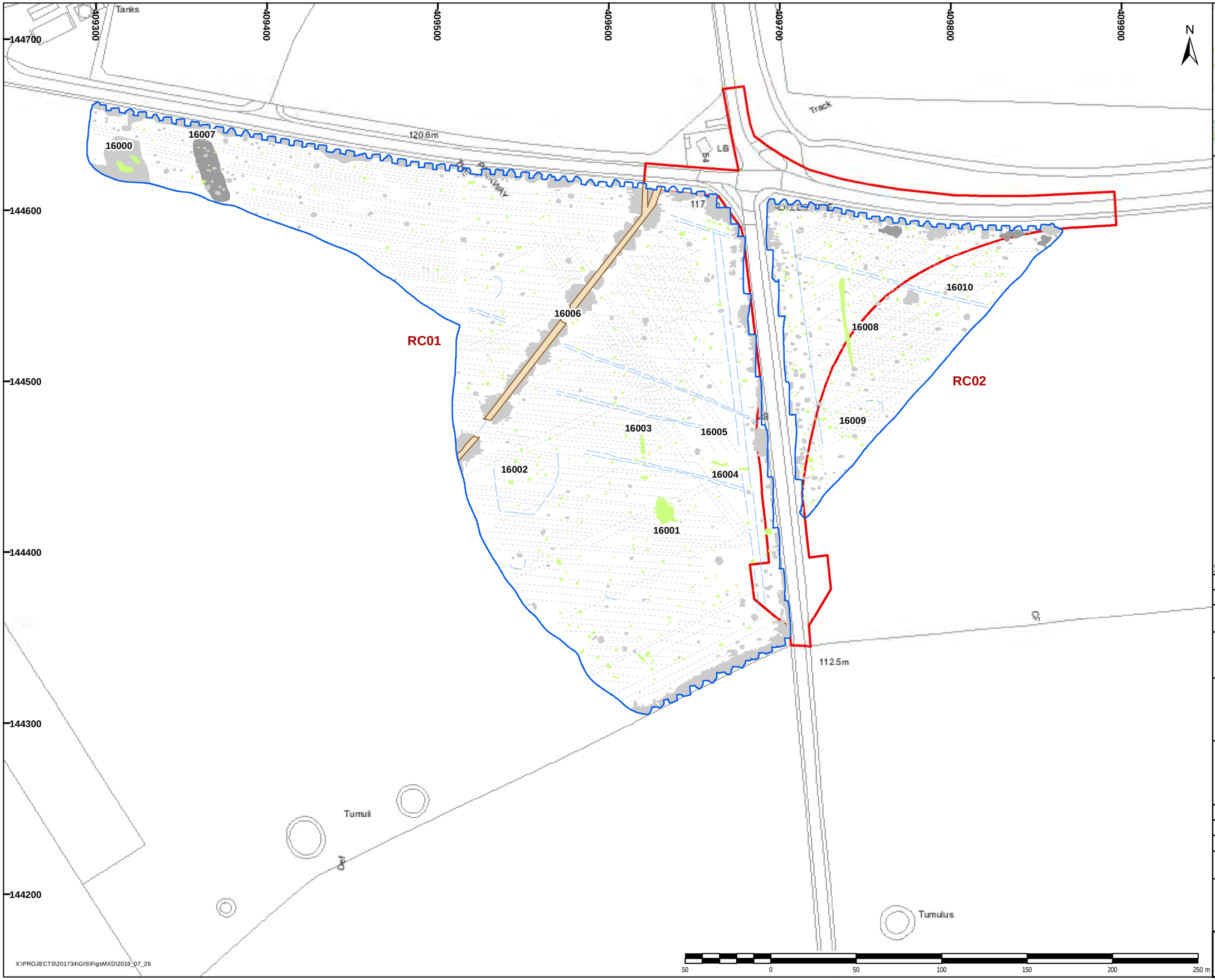
Scale @ A3 1:2,000

Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 40 | Rev
Location | Type | Role | Number



NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- Archaeology
- Possible archaeology
- Former field boundary
- Ridge and furrow
- Ridge and furrow
- Ploughing
- Trend
- Ferrous
- Increased magnetic response
- Modern service
- Superficial geology

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 AMESBURY TO BERWICK DOWN

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 41

INTERPRETATION (Rollestone Corner)

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No.

Scale @ A3 1:2,000

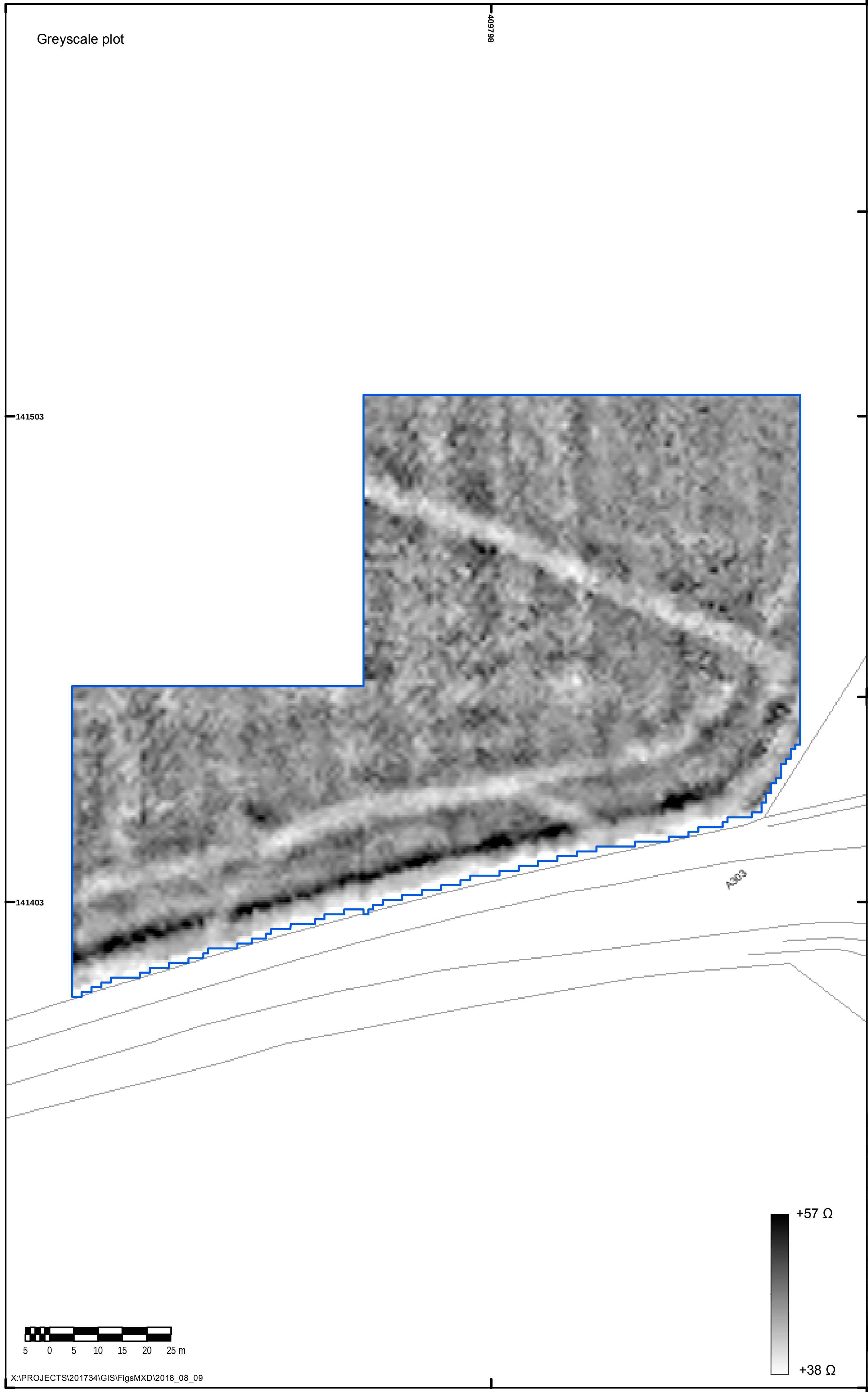
Zone

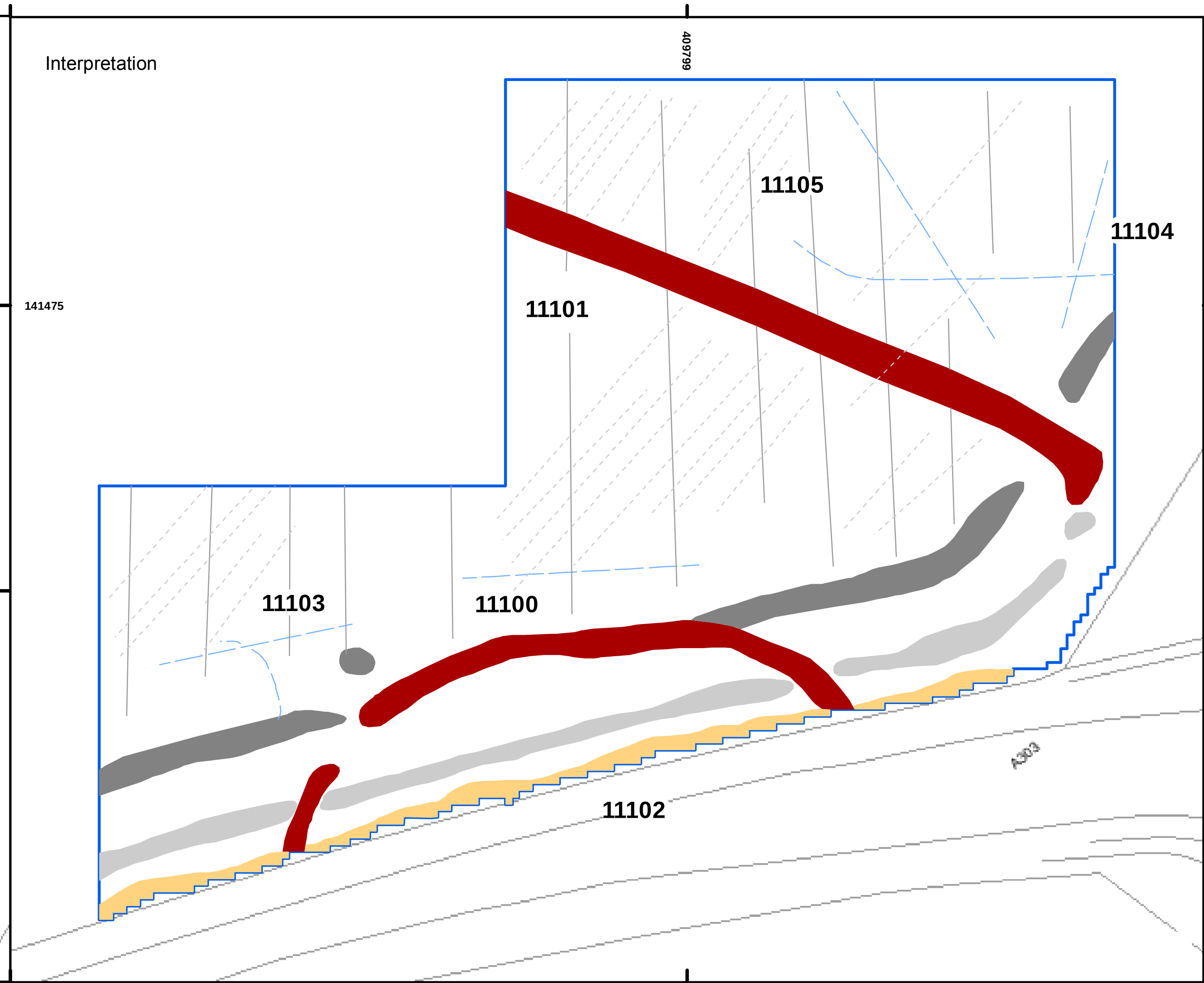
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

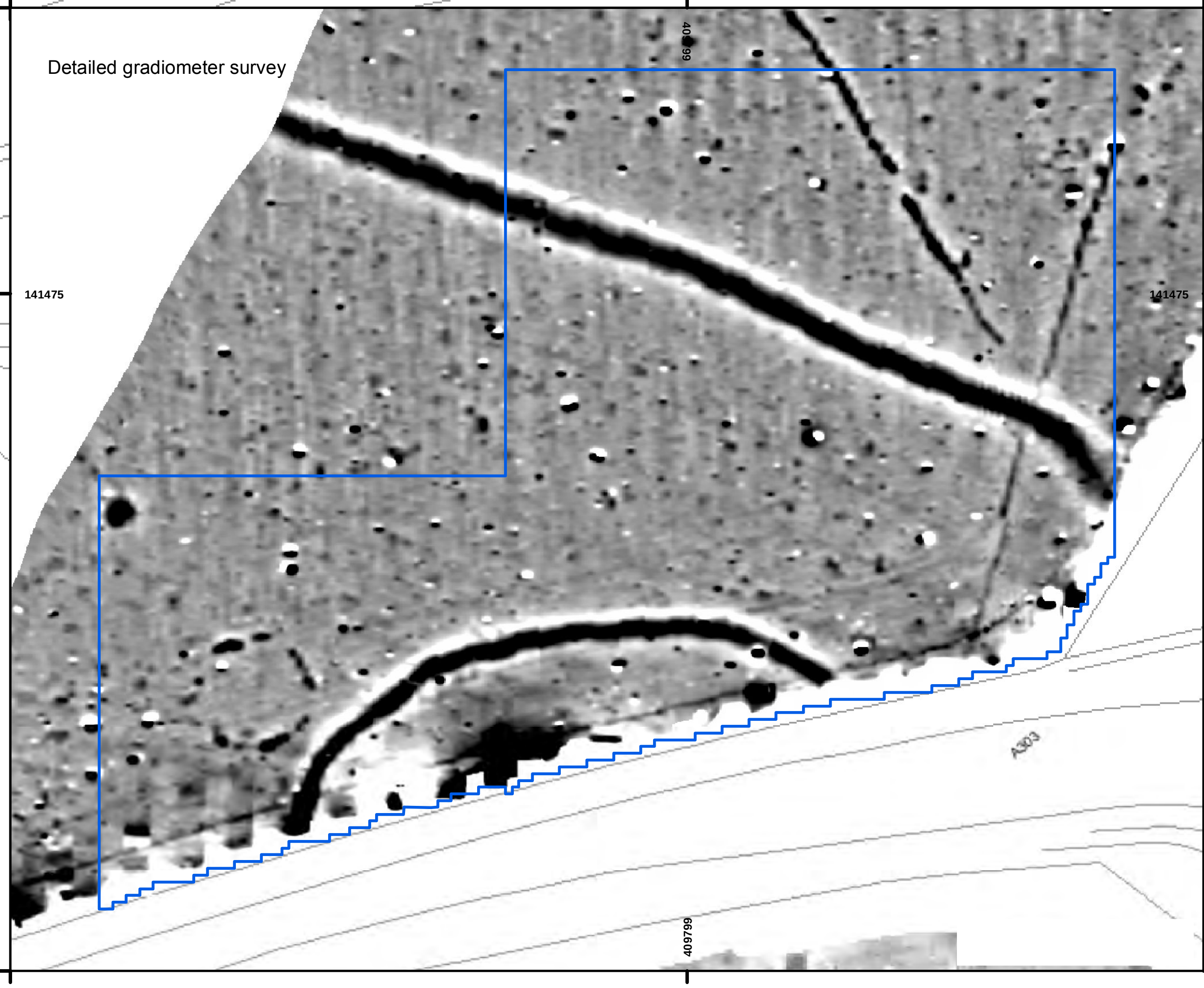
AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | 41 | Location | Type | Role | Number

Rev







Detailed survey extent
Archaeology
Possible archaeology
High resistance
Low resistance
Increased resitivity
Ridge and furrow
Trend
Ploughing

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title
A303 Amesbury to Berwick Down

Drawing Title
GEOPHYSICAL SURVEY PHASE 4

FIGURE 42

EARTH RESISTANCE SURVEY RESULTS
Resistance Area 1

Designed	Drawn	Checked	Approved	Date
NLC	NLC			18/03/2019

Internal Project No. 201745

Scale @ A3 1:1,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume
Location | Type | Role | Number
Rev

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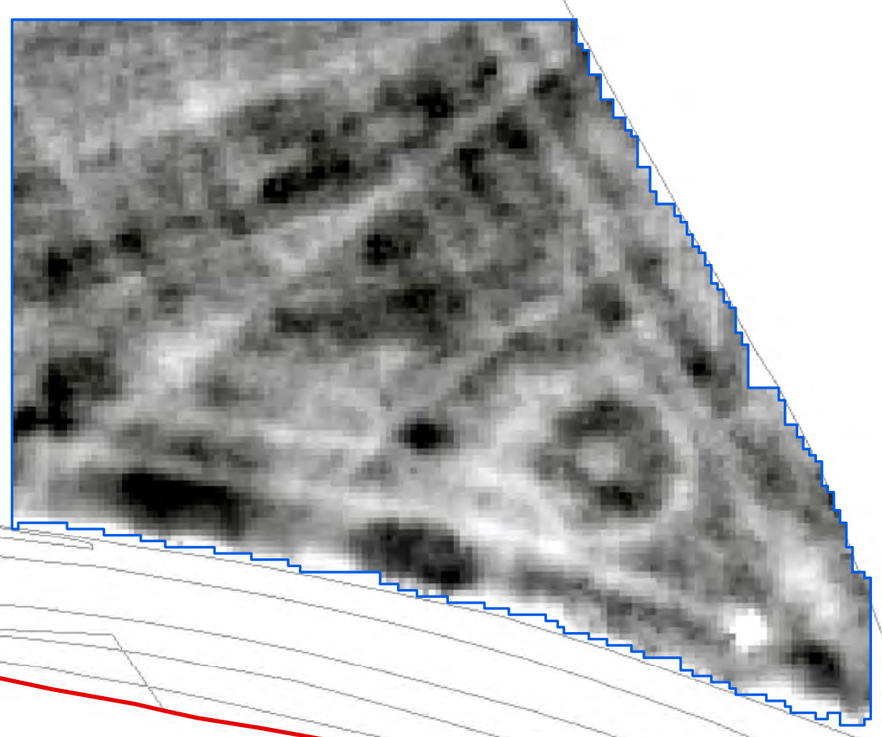
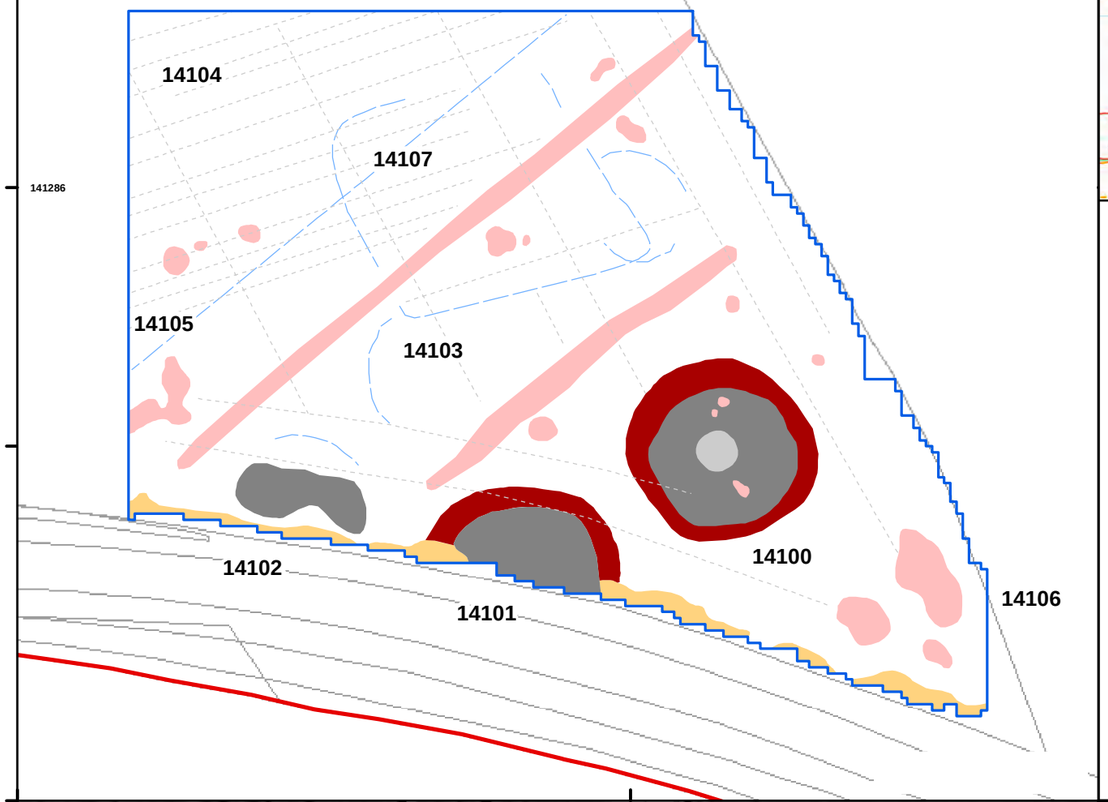
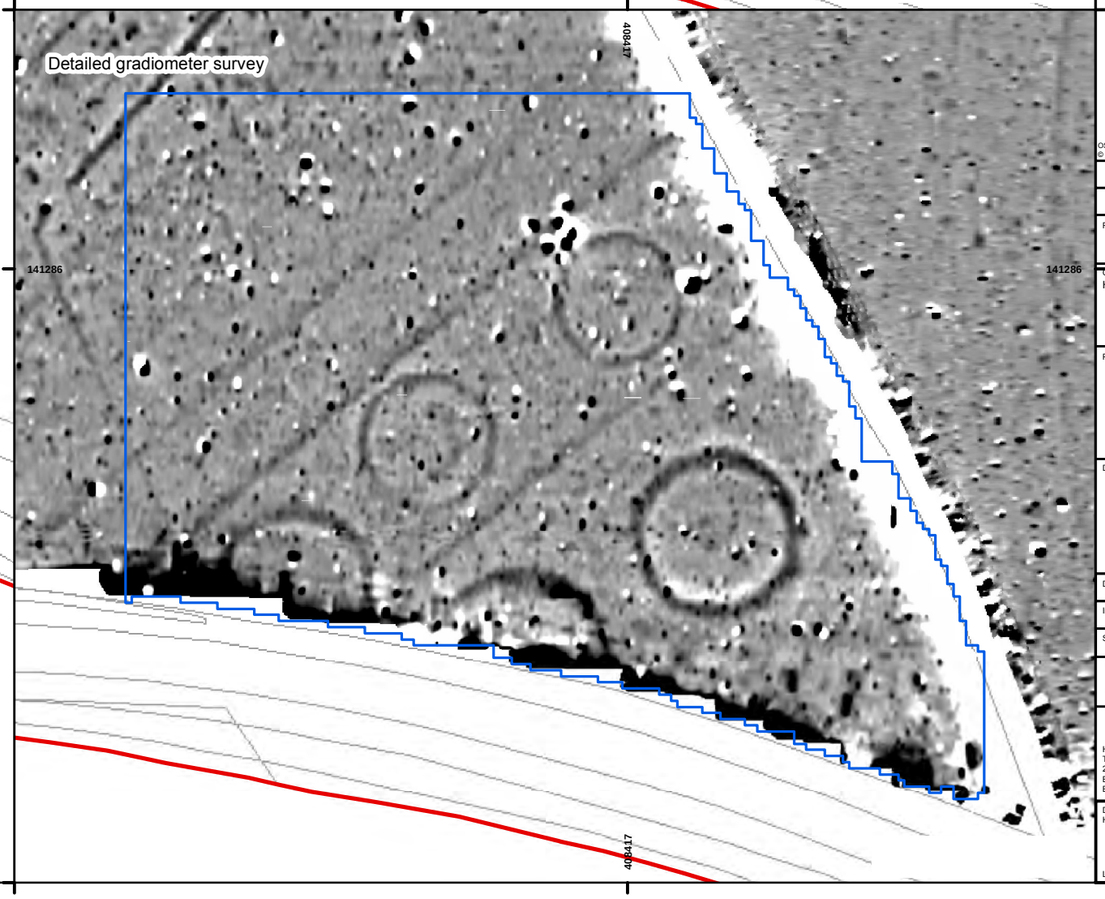
Greyscale plot



Interpretation



Detailed gradiometer survey



+51 Ω

+37 Ω

5 0 5 10 15 20 25 m

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DCO boundary
Detailed survey extent
Archaeology
Possible archaeology
High resistance
Low resistance
Increased resitivity
Trend
Ploughing

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 43

EARTH RESISTANCE SURVEY RESULTS
Resistance Area 2

Designed	Drawn	Checked	Approved	Date
NLC	NLC			18/03/2019

Internal Project No. 201735

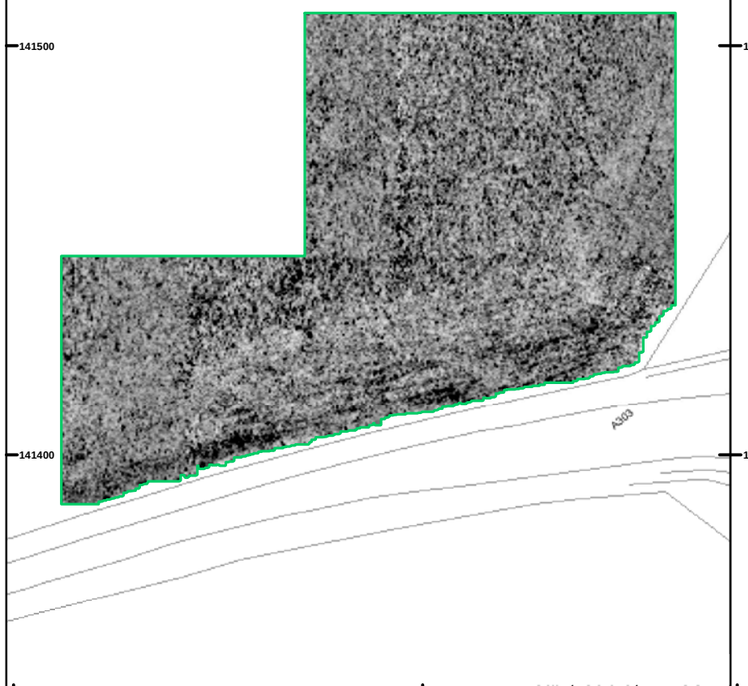
Scale @ A3 1:1,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

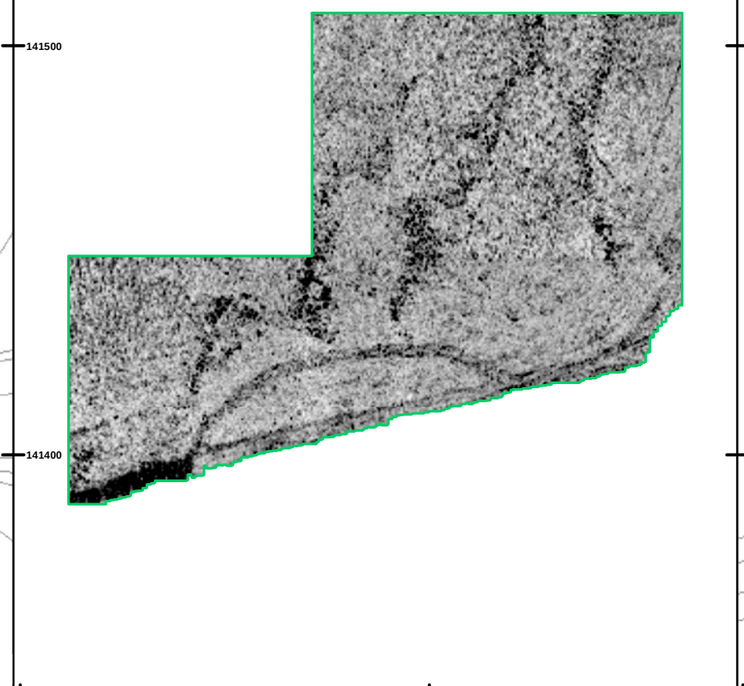
AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | Rev

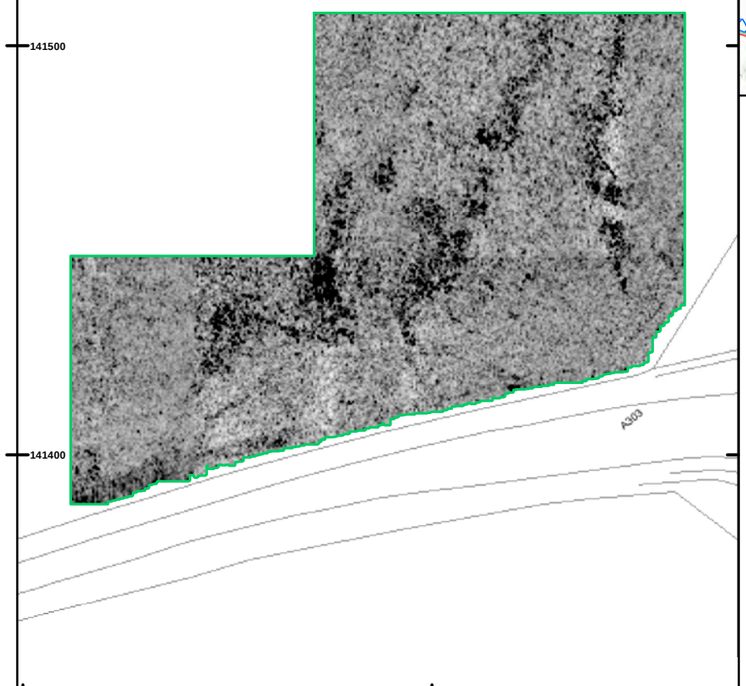
Timeslice 6: 10.19 - 12.68 ns (0.59 - 0.74 m)



Timeslice 8: 14.26 - 16.76 ns (0.83 - 0.97 m)



Timeslice 10: 16.3 - 18.79 ns (0.95 - 1.09 m)



N

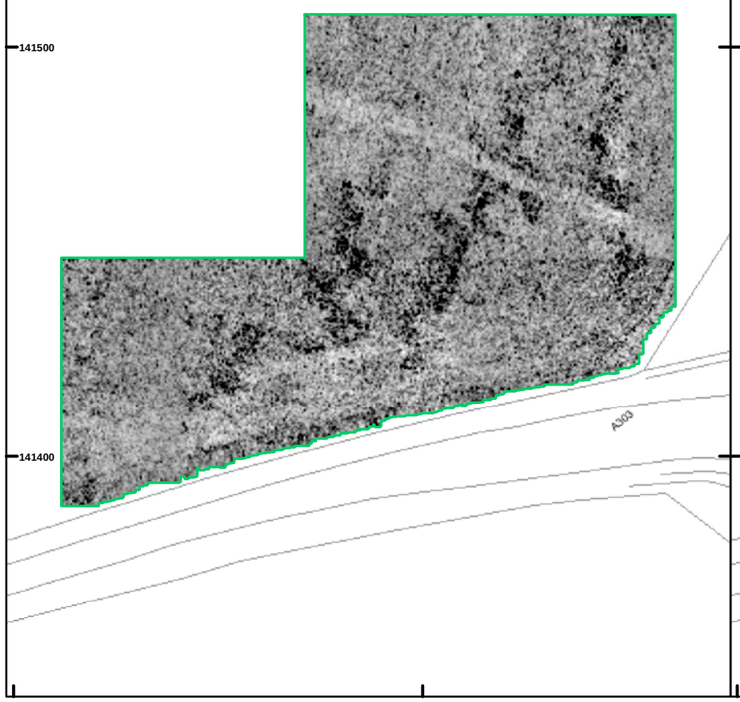
GPR Survey Extent

DCO boundary

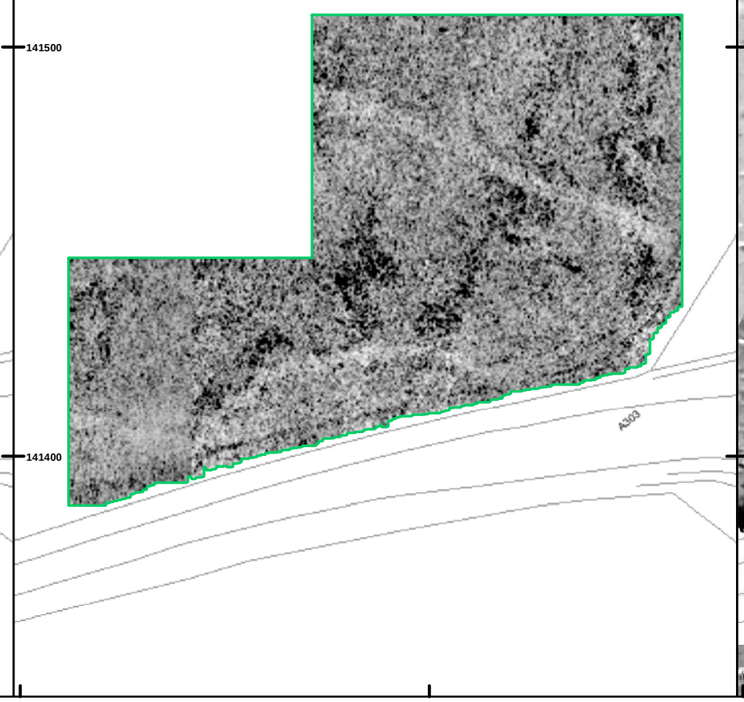
High Amplitude

Low Amplitude

Timeslice 13: 24.44 - 26.94 ns (1.42 - 1.56 m)



Timeslice 15: 28.52 - 31.01 ns (1.65 - 1.8 m)



Detailed Gradiometer Survey: Greyscale plot

Revision Details	NLC Check	31/07/18	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 Stonehenge: Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 44

GPR SURVEY RESULTS
GPR Area 20

Designed	Drawn	Checked	Approved	Date
NLC	NLC			18/03/2019

Internal Project No. WA Reference: 201734

Scale @ A3 1:1,500 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Rev

Location | Type | Role | Number

X:\PROJECTS\201734\GIS\FigsMXD\2018_08_09

Timeslice 5: 10.69 - 14.09 ns (0.5 - 0.66 m)

Timeslice 7: 15.98 - 19.38 ns (0.74 - 0.9 m)

Timeslice 9: 21.27 - 24.67 ns (0.99 - 1.15 m)

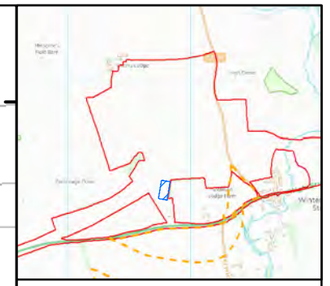
Timeslice 11: 26.55 - 29.96 ns (1.23 - 1.39 m)

Timeslice 14: 34.48 - 37.89 ns (1.6 - 1.76 m)

Detailed Gradiometer Survey: Greyscale plot

406700
406800
141200
141100
Mast (Telec

N



GPR Survey Extent

High Amplitude

Low Amplitude

Revision Details	NLC / Check	31/07/18	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 Stonehenge: Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 45

GPR SURVEY RESULTS
GPR Area 21

Designed	Drawn	Checked	Approved	Date
NLC	NLC	??	??	18/03/2019

Internal Project No. WA Reference: 201734

Scale @ A3 1:1,500 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Rev

Location | Type | Role | Number

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Timeslice 6: 13.5 - 16.79 ns (0.63 - 0.78 m)

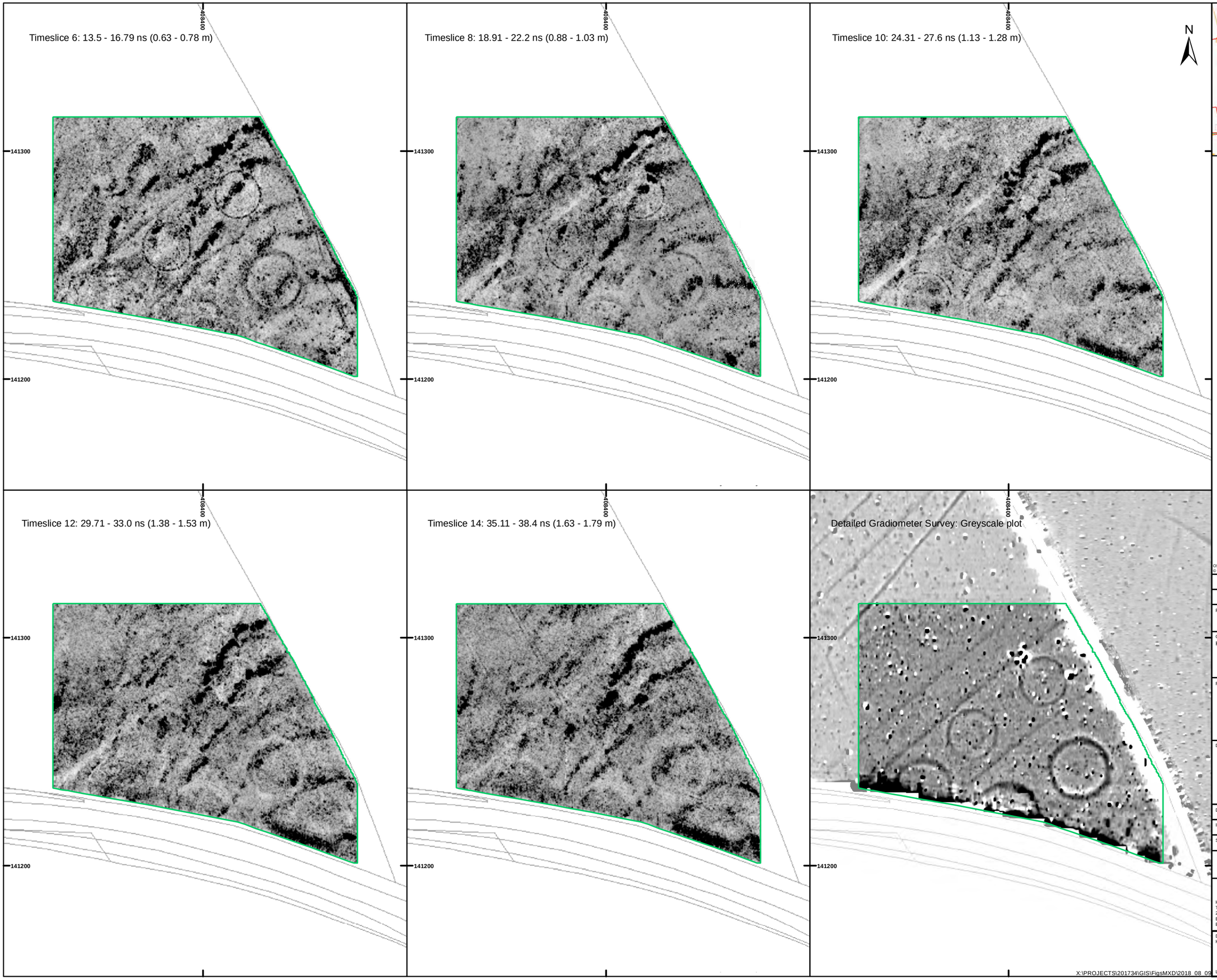
Timeslice 8: 18.91 - 22.2 ns (0.88 - 1.03 m)

Timeslice 10: 24.31 - 27.6 ns (1.13 - 1.28 m)

Timeslice 12: 29.71 - 33.0 ns (1.38 - 1.53 m)

Timeslice 14: 35.11 - 38.4 ns (1.63 - 1.79 m)

Detailed Gradiometer Survey: Greyscale plot



GPR Survey Extent

High Amplitude

Low Amplitude

Revision Details	NLC / Check	31/07/18	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 Stonehenge: Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 46

GPR SURVEY RESULTS
GPR Area 22

Designed	Drawn	Checked	Approved	Date
NLC	NLC	??	??	18/03/2019

Internal Project No. WA Reference: 201734

Scale @ A3 1:1,500 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Rev

Location | Type | Role | Number

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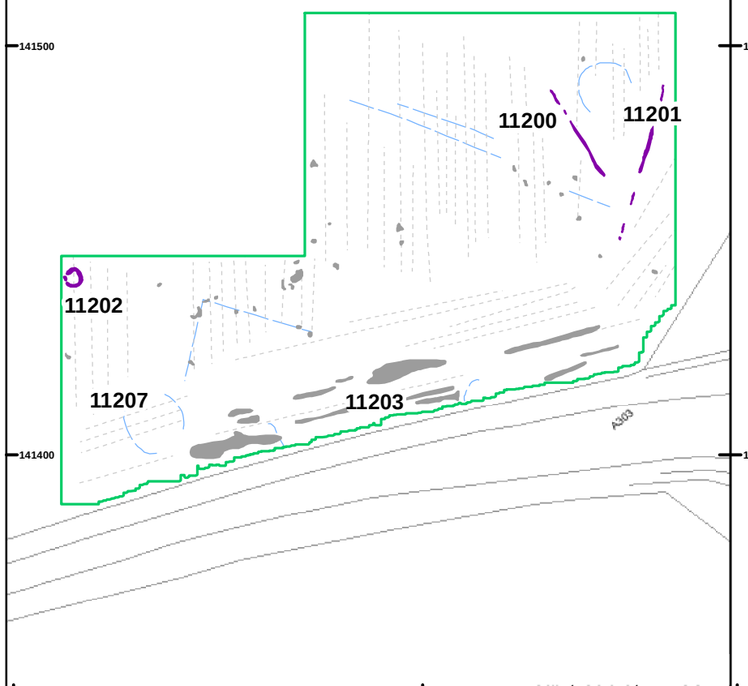
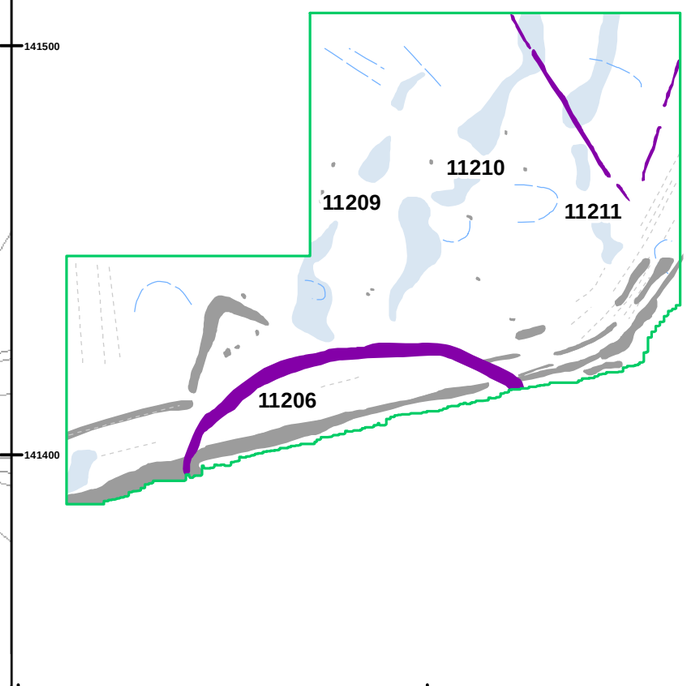
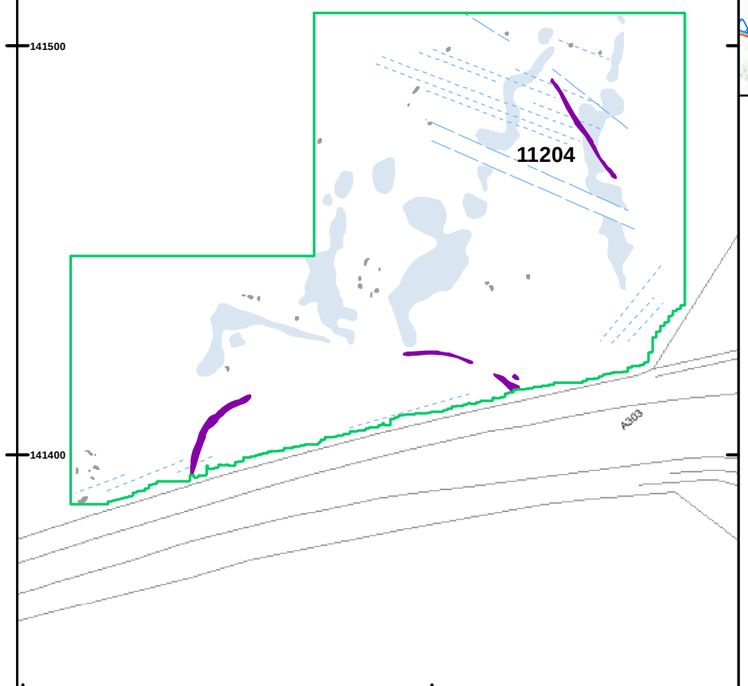
Timeslice 6: 10.19 - 12.68 ns (0.59 - 0.74 m)



Timeslice 8: 14.26 - 16.76 ns (0.83 - 0.97 m)

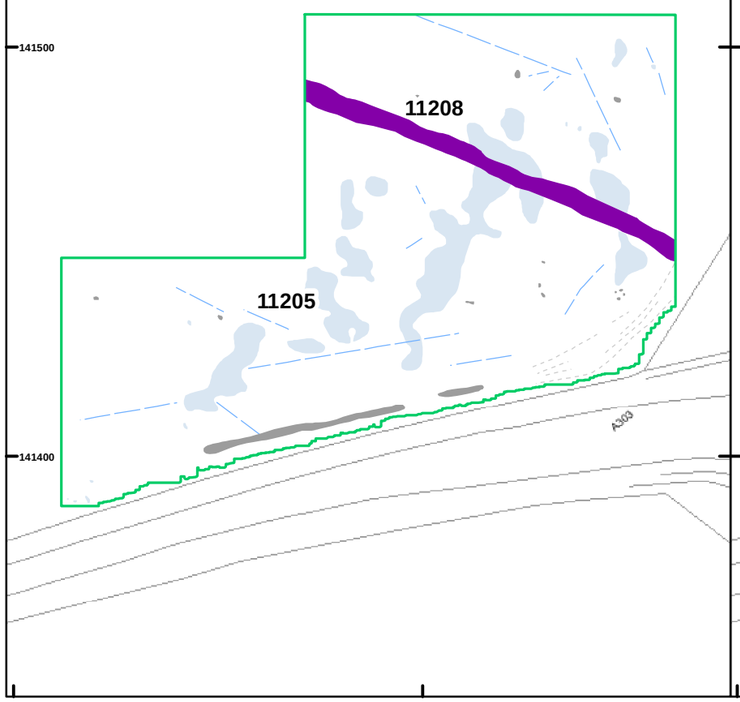


Timeslice 10: 16.3 - 18.79 ns (0.95 - 1.09 m)

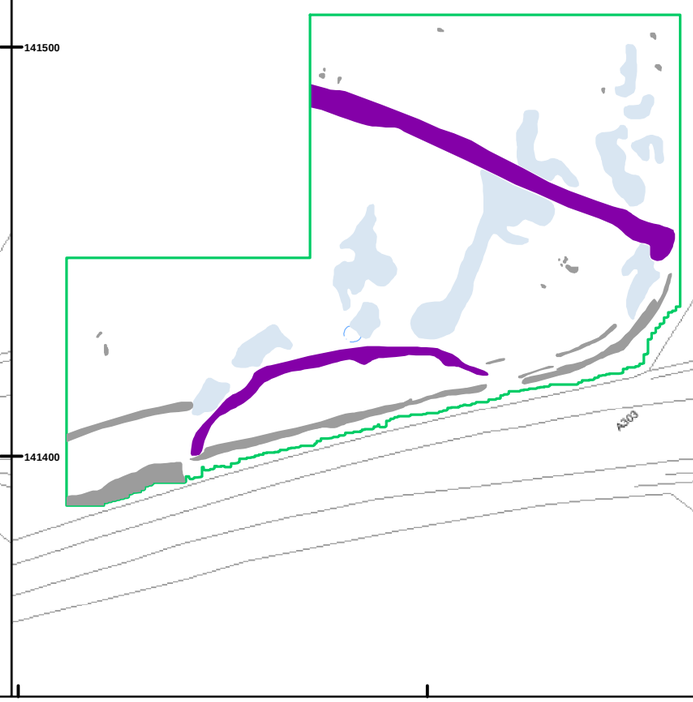


GPR Survey Extent
Archaeology
High amplitude
Superficial geology
Ploughing
Trend

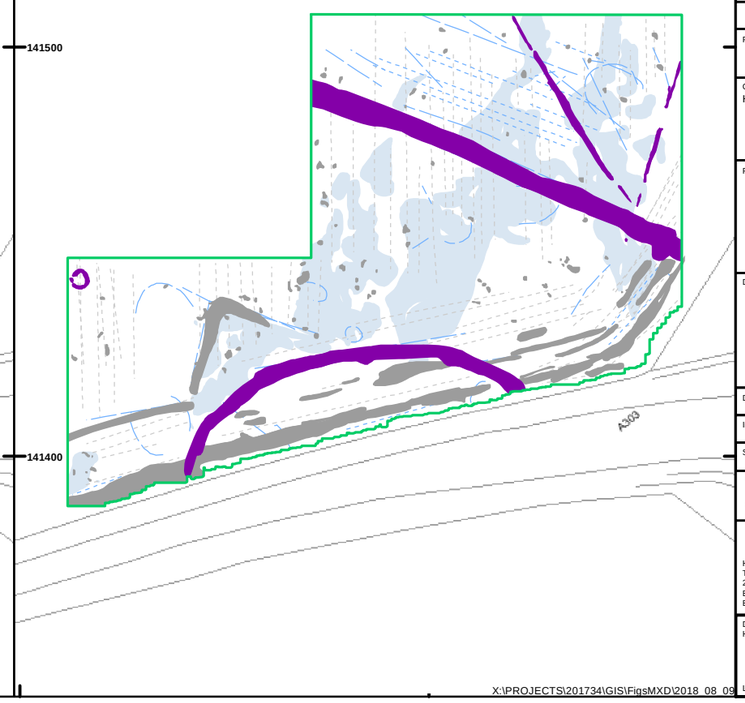
Timeslice 13: 24.44 - 26.94 ns (1.42 - 1.56 m)



Timeslice 15: 28.52 - 31.01 ns (1.65 - 1.8 m)



Graphical summary of GPR survey results



Revision Details	NLC / Check	31/07/18	Suffix

Purpose of issue

Client
Highways England

Working on behalf of
highways england

Project Title

A303 Stonehenge: Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 47

GPR SURVEY RESULTS
Interpretations: GPR Area 20

Designed	Drawn	Checked	Approved	Date
NLC	NLC	??	??	18/03/2019

Internal Project No. WA Reference: 201734

Scale @ A3 1:1,500 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | Rev

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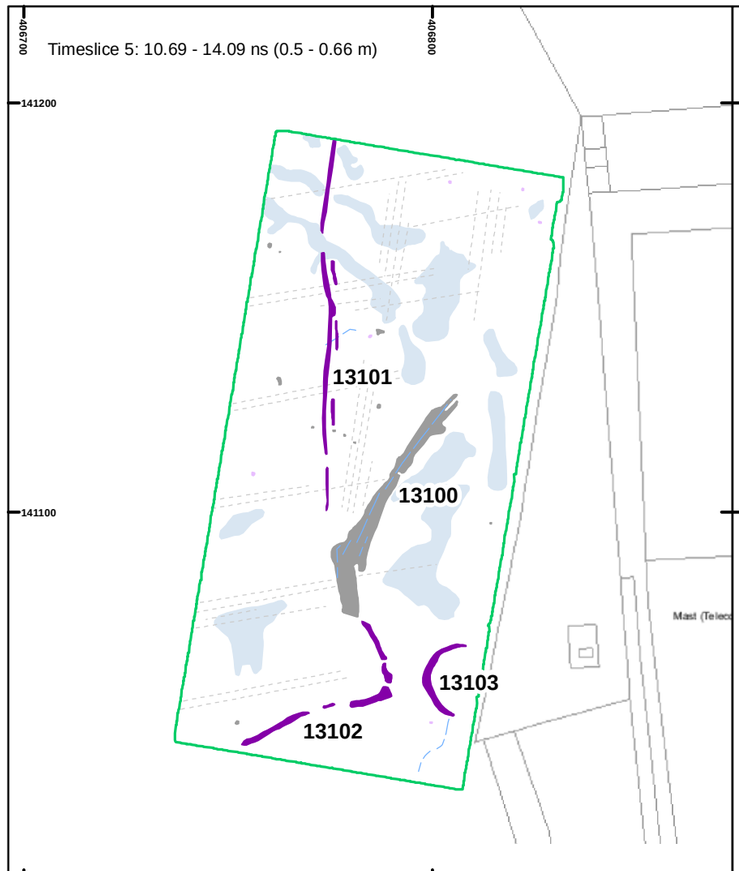
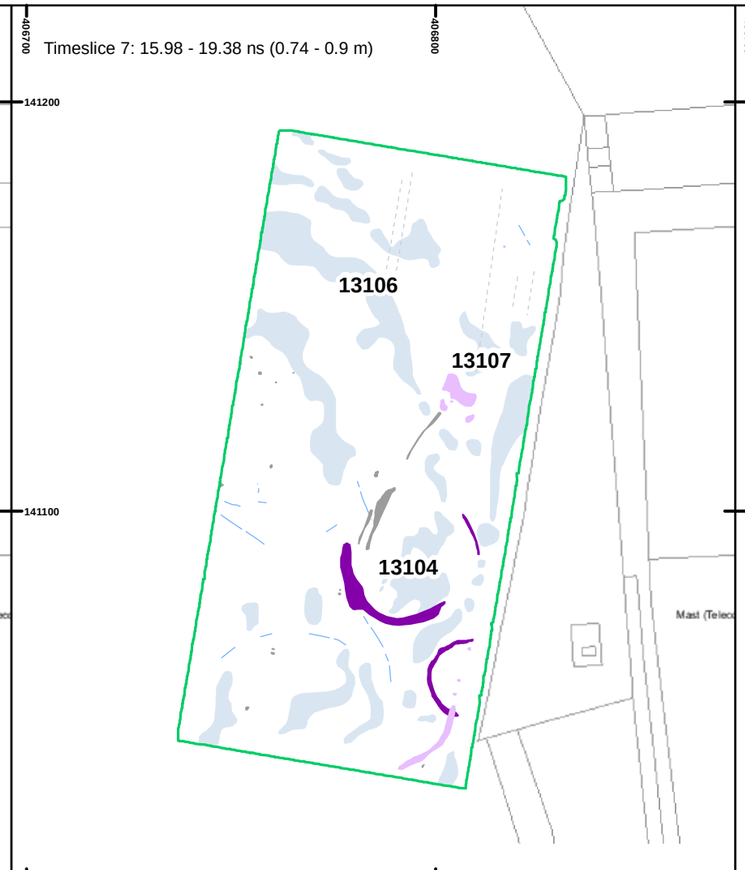
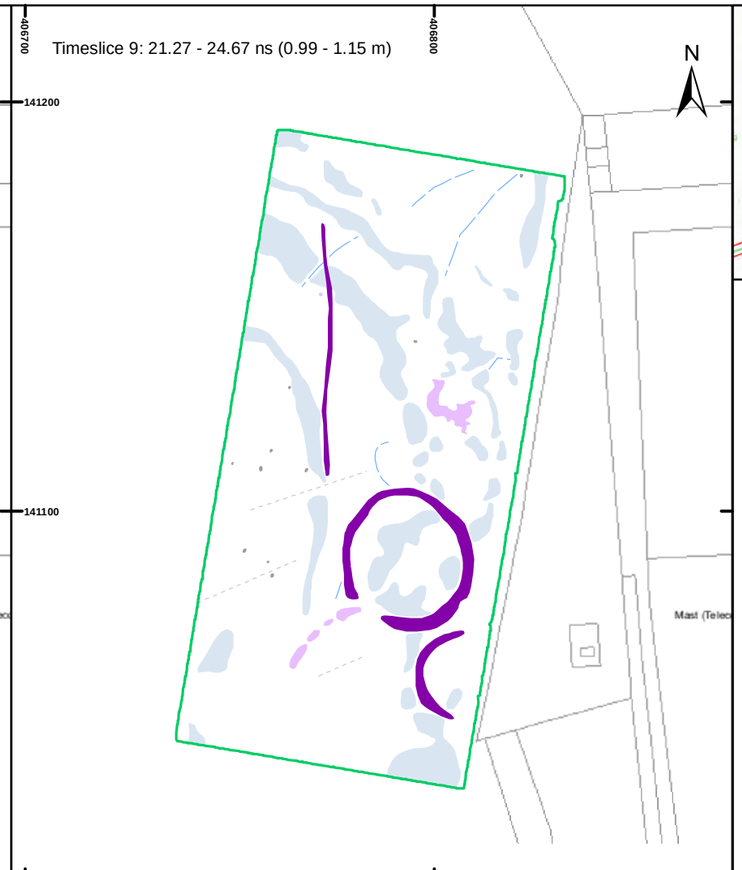
Timeslice 5: 10.69 - 14.09 ns (0.5 - 0.66 m)



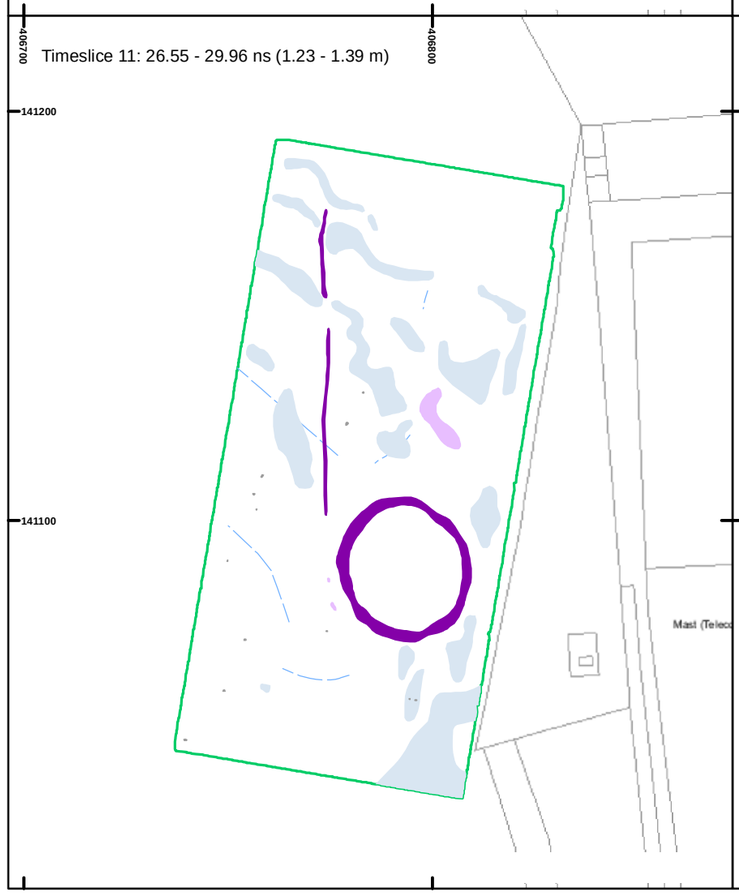
Timeslice 7: 15.98 - 19.38 ns (0.74 - 0.9 m)



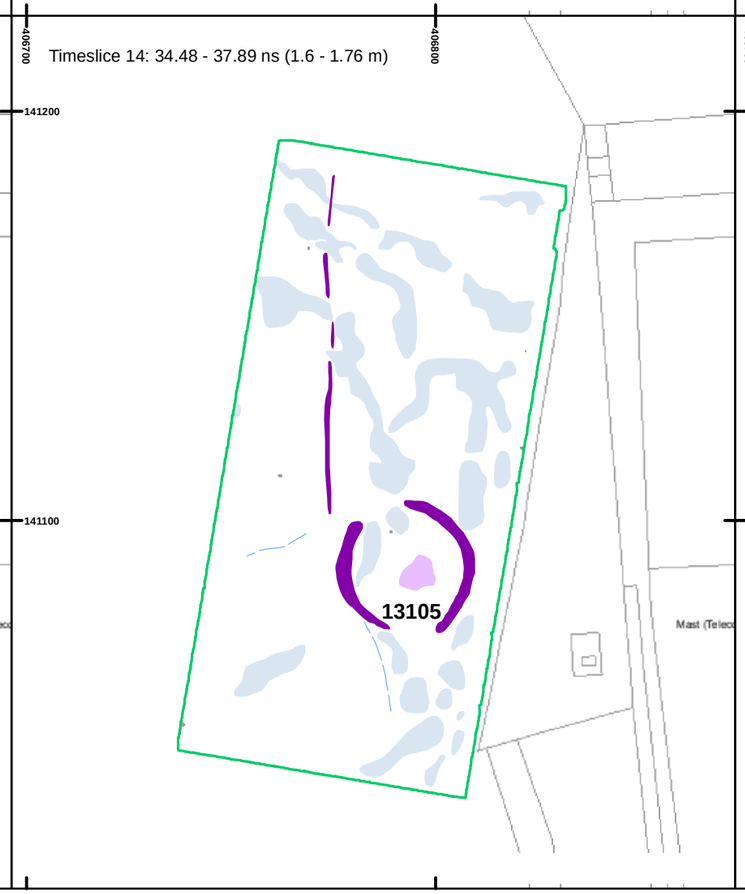
Timeslice 9: 21.27 - 24.67 ns (0.99 - 1.15 m)



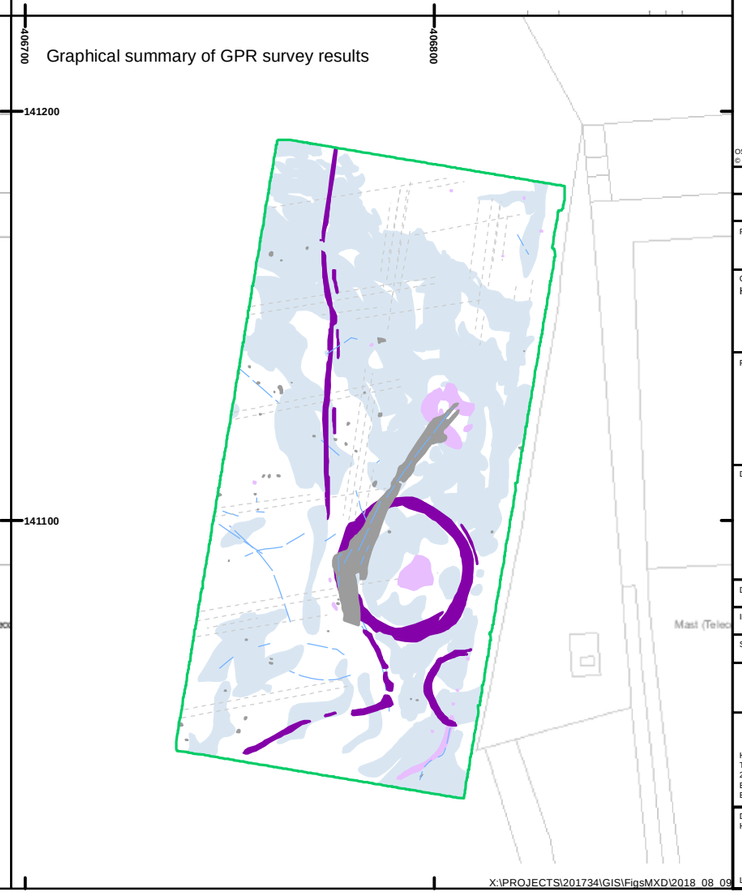
Timeslice 11: 26.55 - 29.96 ns (1.23 - 1.39 m)



Timeslice 14: 34.48 - 37.89 ns (1.6 - 1.76 m)



Graphical summary of GPR survey results



GPR Survey Extent
Archaeology
Possible archaeology
High amplitude
Superficial geology
Ploughing
Trend

Revision Details	NLC / Check	31/07/18	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 Stonehenge: Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 48

GPR SURVEY RESULTS
Interpretation: GPR Area 21

Designed	Drawn	Checked	Approved	Date
NLC	NLC	??	??	18/03/2019

Internal Project No. WA Reference: 201734

Scale @ A3 1:1,500 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | Rev

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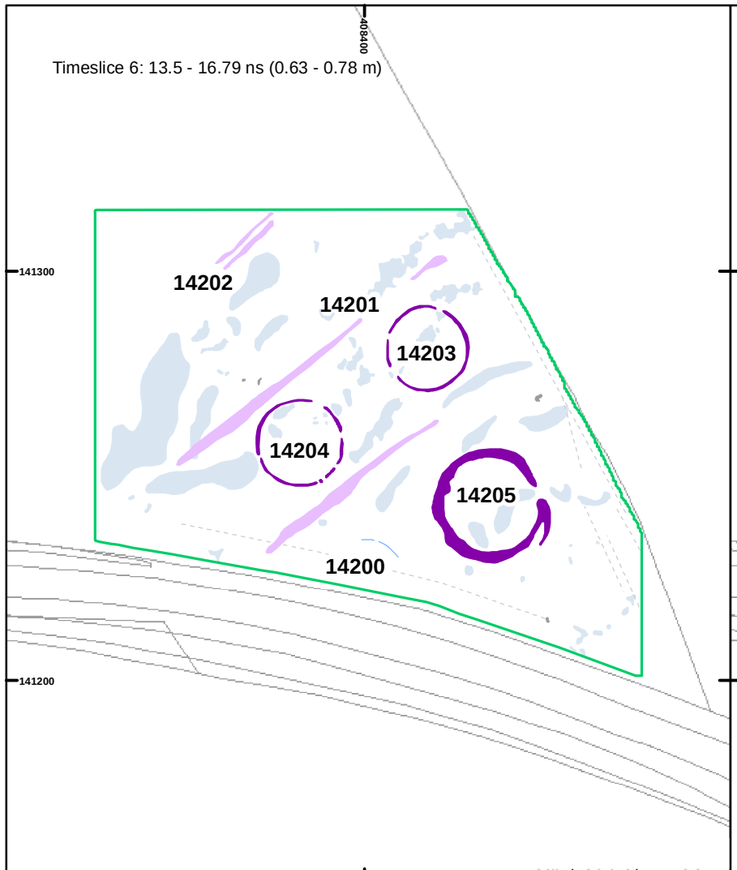
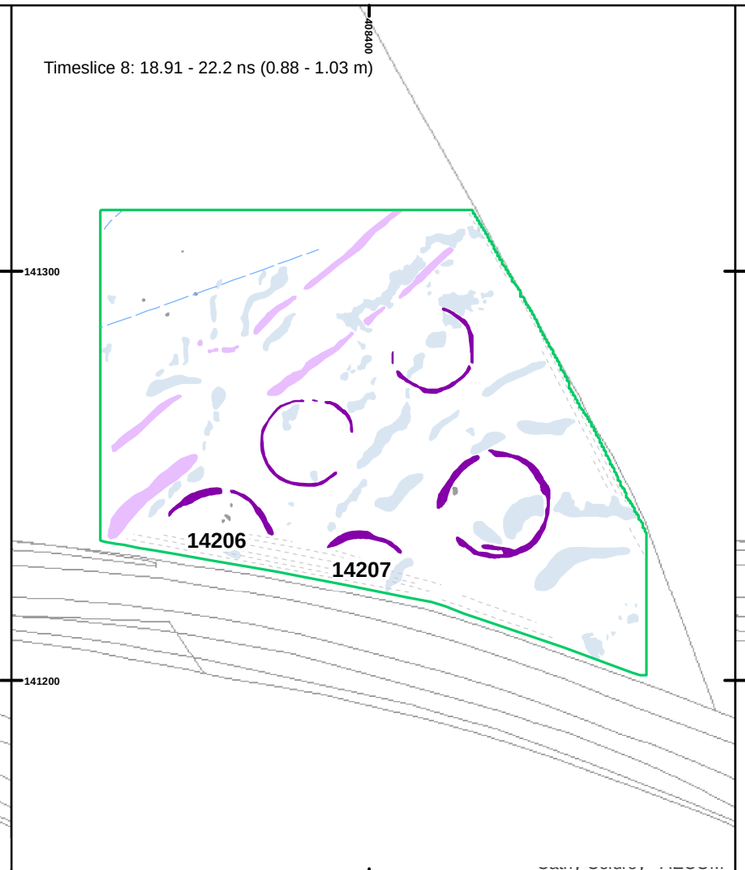
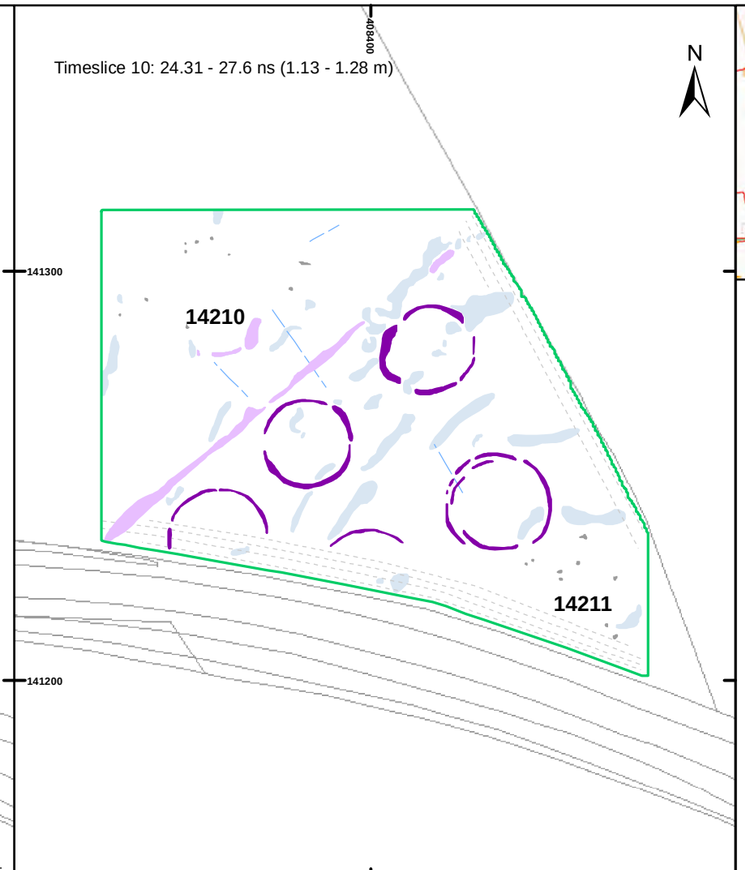
Timeslice 6: 13.5 - 16.79 ns (0.63 - 0.78 m)



Timeslice 8: 18.91 - 22.2 ns (0.88 - 1.03 m)



Timeslice 10: 24.31 - 27.6 ns (1.13 - 1.28 m)



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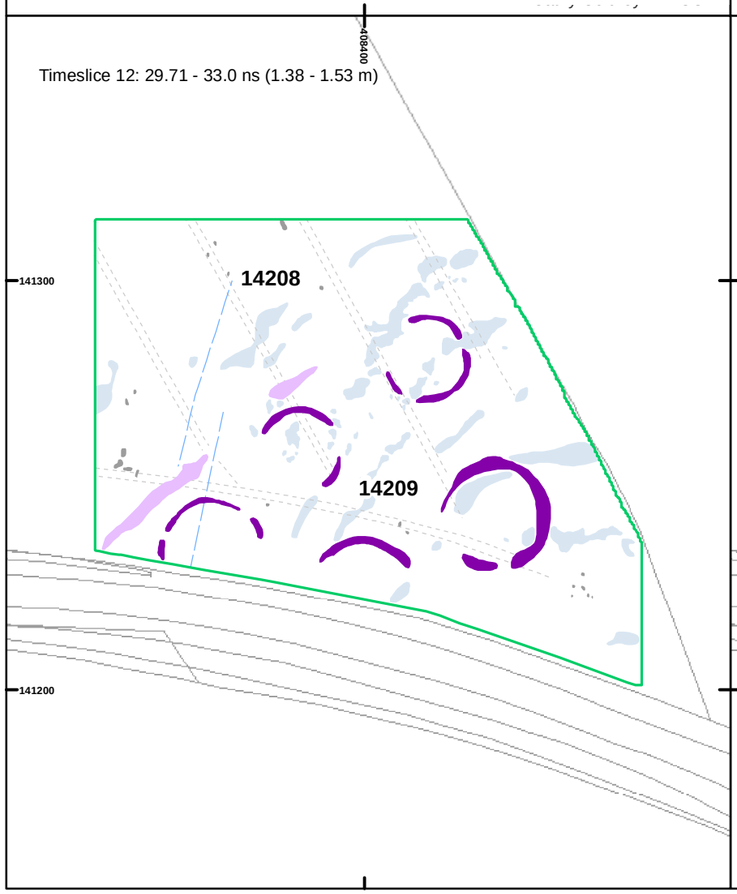
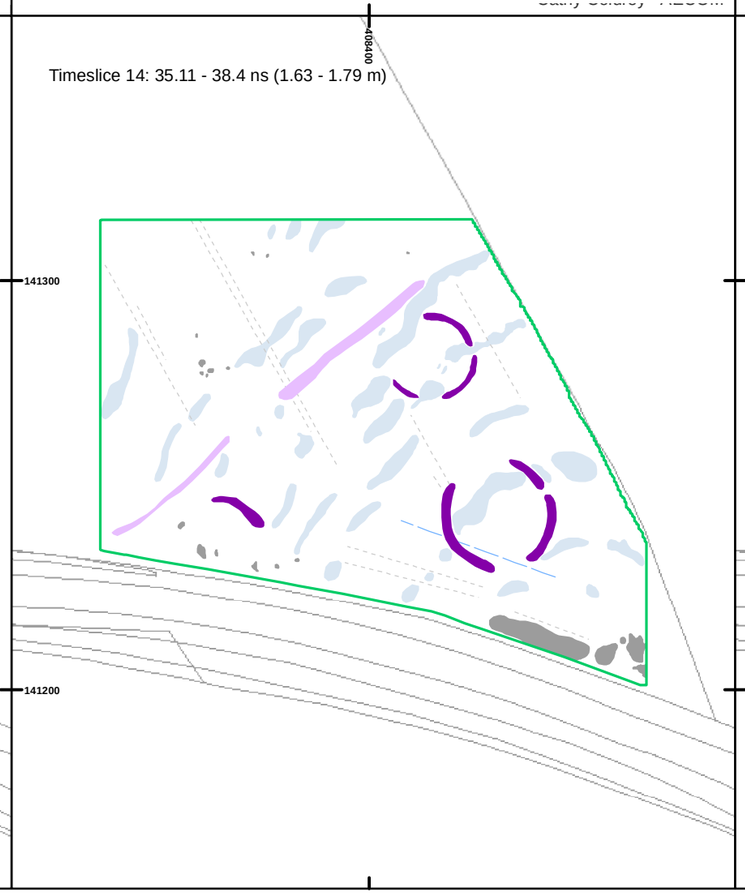
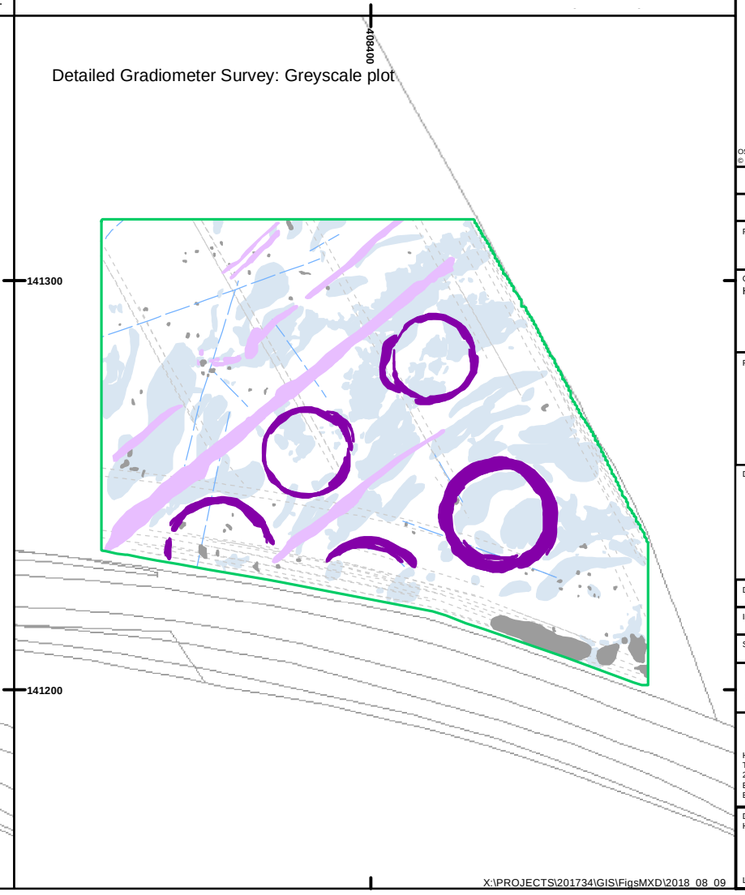
Timeslice 12: 29.71 - 33.0 ns (1.38 - 1.53 m)



Timeslice 14: 35.11 - 38.4 ns (1.63 - 1.79 m)



Detailed Gradiometer Survey: Greyscale plot



- GPR Survey Extent
- Possible archaeology
- Archaeology
- High amplitude
- Ploughing
- Trend
- Superficial geology

Revision Details	NLC / Check	31/07/18	Suffix

Purpose of issue

Client: Highways England

Working on behalf of highways england

Project Title: A303 Stonehenge: Amesbury to Berwick Down

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 49

GPR SURVEY RESULTS
Interpretation: GPR Area 22

Designed	Drawn	Checked	Approved	Date
NLC	NLC	??	??	18/03/2019

Internal Project No. WA Reference: 201734

Scale @ A3: 1:1,500 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | Rev

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404000 406000 408000 410000

144000 142000 140000

N

NW7 NW8 NW9 NW10 NW11

Shrewton Rollestone Homanton Greenland Farm or Greenlands Bungalow Croft Farm Tanners Lane The Common Amesbury Road A360 B3086 B3083 River Till Melsome's Field Barn Cherry Lodge High Down Foredown Barn Parsonage Down Scotland Lodge Farm Winterbourne Stoke Hill Farm Winterbourne Stoke Hill 119 Oatlands Hill 128 Summerfield House Berwick Road Oatlands Bungalows Oatlands Dairy Unit The Park Yarnbury Castle A303 Berwick Down Berwick St James High Street Whitehill Uppington Lane Uppington House Druid's Lodge York House Steeple Langford Cow Down

0.5 0 0.5 1 1.5 2.5 km

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NOTES / LEGEND

- DCO boundary
- Detailed Survey Extents
- GPR Survey Area
- Previous Survey Area
- Previous geophysical surveys
- Scheduled Monument
- World Heritage Site

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: GEOPHYSICAL SURVEY PHASE 4

FIGURE 1

SITE LOCATION AND DETAILED SURVEY EXTENTS

Designed	Drawn	Checked	Approved	Date
RM	RM			18/03/2019

Internal Project No. 201734

Scale @ A3: 1:20,000 Zone

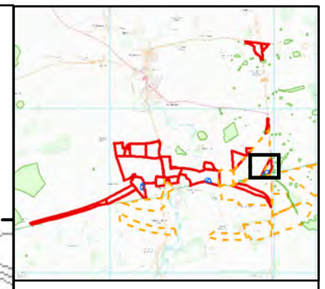
Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AmW
AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Location | Type | Role | Number | 1

Rev

Greyscale plot



GSB Probable archaeology

GSB Possible archaeology

WA Archaeology

WA Possible archaeology

GSB survey extents

Revision Details	By / Check	Date	Suffix

Purpose of issue

Client
Highways England

Working on behalf of highways england

Project Title

A303 Amesbury to Berwick Down

Drawing Title

GEOPHYSICAL SURVEY PHASE 4

FIGURE 51

COMPARISON OF GEOPHYSICAL SURVEY INTERPRETATION
Areas west of Longbarrow roundabout

Designed	Drawn	Checked	Approved	Date
NLC	NLC			15/11/2018

Internal Project No. 201745

Scale @ A3 1:2,000 | Zone

Highways England
Temple Quay House
2 Temple Quay
Bristol
BS1 6PN

AECOM + mace + WSP

Drawing Number
Highways England PIN | Originator | Volume | Rev

Location | Type | Role | Number

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Abbreviations List

AESR	Archaeological Evaluation Strategy Report
AmW	AECOM, Mace, WSP Joint Venture
CIfA	Chartered Institute for Archaeologists
DCO	Development Consent Order
EIA	Environmental Impact Assessment
GNSS	Global Navigation Satellite System
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HIA	Historic Impact Assessment
HMAG	Heritage Monitoring and Advisory Group
ISAP	International Society for Archaeological Prospection
NGR	National Grid Reference
NHLE	National Heritage List for England
NMP	National Mapping Programme
nT	Nanotesla
OS	Ordnance Survey
OUV	Outstanding Universal Value
OWSI	Overarching Written Scheme of Investigation
RCHME	Royal Commission on Historical Monuments (England)
RTK	Real-Time Kinematic
WA	Wessex Archaeology
WCAS	Wiltshire County Archaeology Service
WHS	World Heritage Site
WSHER	Wiltshire and Swindon Historic Environment Record

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Appendices

Appendix A Consideration of Previous Geophysical Surveys

A.1 Introduction

A.1.1.1 An extensive geophysical survey as part of the A303 Amesbury to Berwick Down road improvement scheme has covered a total of just under 600 ha, undertaken over four phases between 2016 and 2018. Several of these areas have been partly surveyed by GSB Prospection Ltd (now a part of Sumo Services) between 1992 and 2004 (NW7c, NW8, NW9; NW10; NW11 – **Figure 50**). This Appendix reanalyses some of these datasets to assess the integrity of the interpretations [34] [35].

A.2 Scope of review

A.2.1.1 This section of the document considers all the available geophysical survey data collected west of Longbarrow roundabout by Wessex Archaeology and GSB Prospection Ltd since the early 1990s. It also presents a brief description of the methodology used for both survey programmes and summarises the main discrepancies between them.

A.2.1.2 The aim of this brief review is to determine whether there is any significant difference between the geophysical survey data collected in 2016-2018 and that collected between 1992 and 2004. It also aims to comment any observed difference within the interpretation of these datasets.

A.3 Survey specification comparison

A.3.1.1 Since the early 1990s, geophysical survey instruments have evolved substantially. Survey methods have also advanced and the standard resolution of gradiometer data has increased. The following table summarises the main differences between the survey specification used by GSB Prospection Ltd in the early 1990s and 2000s, and the current methodology employed by Wessex Archaeology.

Table 1 Summary of survey specifications

	1992-2004	2016-2018
Survey Method	Fluxgate gradiometer	Fluxgate gradiometer
Instrumentation	Geoscan FM36 and FM256	Bartington Grad-01-1000L
Survey location	Survey grids set out using a combination of tapes, EDMs and theodolite	Survey grid nodes established using a Leica Viva RTK GNSS instrument, precise to 0.02 m.
Sample interval	1 m x 0.5 m	1 m x 0.25 m (or better with cart system)
Data Processing	Destripe, Destagger, and interpolation	Destripe, Destagger (not required for cart-based system), and interpolation

A.4 Summary of the significant differences

A.4.1.1 The 2016-2018 surveys were undertaken according to (or exceeding) Historic England [21] and European Archaeological Council [22] guidelines. Whilst there were no over-arching standards at the time of the 1992-2004 surveys, the surveys were undertaken to an accepted industry standard.

A.4.1.2 The main difference between the geophysical survey datasets from 1992-2004 and 2016-2018 is the variation between the sampling interval and survey location methods used. The main implications of this can be clearly shown in a comparison between the interpretation in the field directly north-west of Long barrow roundabout (**Figure 51**).

A.4.1.3 With regard to the sampling interval, the higher resolution of the 2016-2018 data has resulted the improved detection of smaller and more subtle features. For example, at **11017**, a circular arrangement of anomalies has been identified in both datasets. However, within the 2018 dataset this is more segmented, suggesting that it may be formed of a series of post-holes or pits. Although it is not clear if this has been caused by a subsequent plough damage, the increased sample density does enable the ability to resolve smaller archaeological features more clearly. In addition, it has also provided an increased clarity and confidence in the archaeological interpretation, and features associated with agricultural activity and superficial geological deposits are also identified with greater assurance.

A.4.1.4 Despite this limitation, all the 'major' archaeological features (barrows, ditches, large pits, etc.) were successfully identified in the 1992-2004 datasets. It could be argued, therefore, that the more recently acquired dataset has not resulted in a significantly enhanced interpretation beyond that previously achieved.

A.4.1.5 The use of modern survey-grade GPS systems during the 2016-2018 fieldwork has undoubtedly provided georeferencing information to a much higher accuracy than was achievable during earlier campaigns. In most cases, the locations of major archaeological features are only marginally different. However, this difference can be quite marked, as can be exemplified by the linear anomalies identified at **11019** and **11021**, where there is a discrepancy of up to 5 m. These shortcomings have been highlighted previously [34] and are characteristic of the standard methodologies used during the 1990s and early 2000s.

A.5 Conclusions

A.5.1.1 The survey data collected in 2016 and 2018 provides clearer and more accurately located archaeological information. The improvements in instrumentation and methodology, largely afforded by technological advances, have resulted in the capability to detect small and weakly magnetised features with greater confidence. Despite this, where the 1992 and 2004 surveys were undertaken, the 'major' archaeological features have been identified. It is unlikely, therefore, that additional 'major' archaeological features (such as barrows, ditches, large pits, etc.) would be identified by resurveying the further previously covered areas with more modern equipment and survey methodologies. However, the increased accuracy and characterisation of features may be pertinent in subsequent archaeological mitigation strategies.

Appendix B Gradiometer Survey: Equipment and Data Processing

B.1 Survey methods and equipment

B.1.1.1 The magnetic data for this project was largely acquired using a non-magnetic cart fitted with 4x Bartington Grad-01-1000L magnetic gradiometers. The instrument has four sensor assemblies fixed horizontally 1 m apart allowing four traverses to be recorded simultaneously. Each sensor contains two fluxgate magnetometers arranged vertically with a 1m separation and measures the difference between the vertical components of the total magnetic field within each sensor array. This arrangement of magnetometers suppresses any diurnal or low frequency effects.

B.1.1.2 The gradiometers have an effective resolution of 0.03 nT over a ±100 nT range, and measurements from each sensor are logged at a rate of 8 Hz (intervals of c. 0.13 m). All the data are stored on a Leica Viva CS35 tablet controller using the data acquisition program MLGrad 601. This also collects readings streamed by a Leica GS14 GNSS receiver, which is fixed to the cart at a measured distance from the sensors.

B.1.1.3 The use of the non-magnetic cart has several advantages over the use of the Bartington Grad 601-2 fluxgate gradiometer instrument. Perhaps chief amongst these is that it has a higher sample rate resulting in higher resolution dataset. The addition of the GPS receiver also negates the need to establish a survey grid prior to the survey and therefore increases efficiency. Mounting the instrument on the cart also reduces the occurrence of operator error caused by inconsistent walking speeds and variation in traverse position due to varying ground cover and topography.

B.1.1.4 Wessex Archaeology undertakes two types of magnetic surveys: scanning and detail. When not using the handheld Bartington 601-2 dual magnetic gradiometer, both types depend upon the establishment of an accurate 20 m or 30 m site grid, which is achieved using a Leica Viva RTK GNSS instrument and then extended using tapes. The Leica Viva system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02 m in real-time and therefore exceed the level of accuracy recommended by Historic England [21] for geophysical surveys.

B.1.1.5 Scanning surveys consist of recording data at 0.25 m intervals along transects spaced 10m apart, acquiring a minimum of 80 data points per transect. Due to the relatively coarse transect interval, scanning surveys should only be expected to detect extended regions of archaeological anomalies, when there is a greater likelihood of distinguishing such responses from the background magnetic field.

B.1.1.6 The detailed surveys consist of 20 m x 20 m or 30 m x 30 m grids, and data are collected at 0.25 m intervals along traverses spaced 1m apart. These strategies give 1600 or 3600 measurements per 20 m or 30 m grid respectively and are the recommended methodologies for archaeological surveys of this type [21].

B.1.1.7 Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and

characterisation of small and ephemeral features. Data may be collected at up to 0.125 m intervals along traverses spaced up to 0.25 m apart, resulting in a maximum of 28800 readings per 30 m grid, exceeding that recommended by Historic England [21] for characterisation surveys.

B.2 Post-Processing

B.2.1.1 The magnetic data collected during the detail survey are downloaded from the Bartington system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

B.2.1.2 As the scanning data are not as closely distributed as with detailed survey, they are georeferenced using the GPS information and interpolated to highlight similar anomalies in adjacent transects. Directional trends may be removed before interpolation to produce more easily understood images.

B.2.1.3 Typical data and image processing steps for the non-magnetic cart fitted system may include:

- Destripe – Removes striping effects caused by directional variation, drift, and operational habits. This is achieved by determining the median of each transect and subtracting that value from each data point.
- Discard Overlap – Eliminates portions of the tracks that have been collected too close one another. Without this, the results of the interpolation process can be distorted as very close points with potentially differing values.
- Interpolation – Sets the X and Y interval of the data and the track radius around each data point that is included in the interpolated result.

B.2.1.4 Typical displays of the data used during processing and analysis:

- Greyscale – Presents the data in plan using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.
- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This type of image is useful as it shows the full range of individual anomalies and can be provided upon request.

Appendix C Earth Resistance Survey: Equipment and Data Processing

C.1 Survey Methods and Equipment

C.1.1.1 The data for this project was acquired using a Geoscan Research RM15-D with a twin-probe array system. The instrument has two electrodes spaced 0.5 m apart fixed horizontally to the portable frame and two electrodes anchored 15-50 m away. The probes work in pairs (one mobile, one anchored) to measure the current and potential resistivity. This arrangement of electrodes suppresses any double peaking effects.

C.1.1.2 The resistivity metres have a range of 20470 ohms to 0.0005 ohms and an effective depth of 0.5 m - 0.75 m. All of the data are stored on an integrated data logger for subsequent post-processing and analysis.

C.1.1.3 Resistivity surveys undertaken by Wessex Archaeology depend upon the establishment of an accurate 30 m site grid, which is achieved using a Leica Viva RTK GNSS instrument. The Leica Viva system receives corrections from a network of reference stations operated by the Ordnance Survey and Leica Geosystems, allowing positions to be determined with a precision of 0.02 m in real-time and therefore exceed the level of accuracy recommended by Historic England for geophysical surveys [21].

C.1.1.4 Resistivity survey data were collected in 30 m x 30 m grid at 1 m intervals along traverses spaced 1 m, giving a reading interval of 1m x 1 m. This strategy adheres to the recommended methodologies for archaeological surveys of this type [21].

C.1.1.5 Data may be collected with a higher sample density where complex archaeological anomalies are encountered, to aid the detection and characterisation of small and ephemeral features. Data may be collected at up to 16 readings per metre, exceeding that recommended by Historic England for characterisation surveys [21].

C.2 Post-processing

C.2.1.1 The data collected during the detailed resistivity survey are downloaded from the Geoscan Research system for processing and analysis using both commercial and in-house software. This software allows for both the data and the images to be processed in order to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

C.2.1.2 Typical data and image processing steps may include:

- Despike – Filtering isolated data points that exceed the mean by a specified amount to reduce the appearance of dominant anomalous readings.
- Edge Match – Each time the remote probes are moved, e.g. between grids or on different days, systematic offsets will be introduced through the change in resistance at the new location. Whilst efforts are made to minimise this in the

field, small mismatches can be corrected by setting the statistical mean of any given grid to that of one of its neighbours

C.2.1.3 Typical displays of the data used during processing and analysis:

- Greyscale – Presents the data in plan view using a greyscale to indicate the relative strength of the signal at each measurement point. These plots can be produced in colour to highlight certain features but generally greyscale plots are used during analysis of the data.
- XY Plot – Presents the data as a trace or graph line for each traverse. Each traverse is displaced down the image to produce a stacked profile effect. This type of image is useful as it shows the full range of individual anomalies and can be provided upon request.

Appendix D GPR Survey: Equipment and Data Processing

D.1 Survey Methods and Equipment

D.1.1.1 The ground penetrating radar (GPR) data were collected using a cart-based shielded antenna with central frequencies suitable for the types of target being investigated. Lower frequency antennae can acquire data from deeper below the surface, whereas higher frequencies allow high resolution imaging of near-surface targets at the expense of deep penetration. The exact make and model of equipment varies.

D.1.1.2 The depth of penetration of GPR systems is determined by the central frequency of the antenna and the relative dielectric permittivity (RDP) of the material through which the GPR signal passes. In general, soils in floodplain settings may have a wide range of RDPs, although around 8 may be considered average, resulting in a maximum depth of penetration *c.* 2.5m with the GPR signal having a velocity of approximately 0.1m/ns.

D.1.1.3 The GPR beam is conical in shape, however, and whilst most of the energy is concentrated in the centre of the cone, the GPR signal illuminates a horizontal footprint which becomes wider with increasing depth. At the maximum depth of the antenna, it becomes impossible to resolve any feature smaller than the horizontal footprint for the corresponding depth. The size of the footprint is dependent upon central frequency, and its size increases as the central frequency decreases.

D.1.1.4 The vertical resolution is similarly dependent upon the central frequency; for the 500MHz antenna, features of the order of 0.05m may be resolved vertically. Antennae with lower frequencies can therefore penetrate more deeply but are less resolute in both horizontal and vertical directions. Choice of antenna frequency is guided largely by the anticipated depth to the target and the required resolution.

D.1.1.5 GPR data for detailed surveys are collected along traverses of varying length separated by 0.5m with cross lines collected running perpendicular to these traverses at wider separations. The data sampling resolution is governed by the data logger and a minimum separation of 0.05m between traces is collected for all surveys.

D.2 Post-Processing

D.2.1.1 The radar data collected during the detail survey are downloaded from the GPR system for processing and analysis using commercial software (GPR Slice). This software allows for both the data and the images to be processed to enhance the results for analysis; however, it should be noted that minimal data processing is conducted so as not to distort the anomalies.

D.2.1.2 Typical data and image processing steps may include:

- Gain – Amplifies GPR data based upon its position in the profile, which boosts the contrast between anomalies and background. A wobble correction is also applied during this step;
- Background Filter - is used to remove banding noises that are seen across the radargrams
- Bandpass – Removes GPR data lying outside a specified range, which removes high- and low-frequency noise.

D.2.1.3 Typical displays of the data used during processing and analysis:

- Timeslice – Presents the data as a series of successive plan views of the variation of reflector energy from the surface to the deepest recorded response. The variation in amplitude is represented using a grey scale with black indicating high amplitude and white indicating low amplitude responses.
- Radargram – Presents each radar profile in a vertical view with distance along the profile expressed along the x axis and depth along the y axis. The amplitude variation is expressed using a greyscale.

Appendix E Relative Velocity to depth conversion for GPR Areas

Table 2 Velocity values for all GPR Areas

Area	Velocity m/ns
NW7c – GPR Area 20	0.116
NW9b - GPR Area 21	0.093
NW10e – GPR Area 22	0.093

Table 3 Relative velocity to depth conversion based on a dielectric constant of 6.69 for the 500 MHz antenna at NW7c – GPR Area 20

Time Slice	Time (ns)	Depth (m)
1	0.0 – 2.5	0 – 0.14
2	2.04 – 4.53	0.12 – 0.26
3	4.07 – 6.57	0.24 – 0.38
4	6.11 – 8.61	0.35 – 0.5
5	8.15 – 10.64	0.47 – 0.62
6	10.19 – 12.68	0.59 – 0.74
7	14.26 – 16.76	0.71 – 0.85
8	16.2 – 18.79	0.83 – 0.97
9	18.33 – 20.83	0.95 – 1.09
10	20.37 – 22.87	1.06 – 1.21
11	22.41 – 24.9	1.18 – 1.33
12	24.44 – 26.94	1.3 – 1.44
13	26.48 – 28.98	1.42 – 1.56
14	28.52 – 31.01	1.54 – 1.68
15	30.56 – 33.05	1.65 – 1.8
16	32.59 – 35.09	1.77 – 1.92
17	34.63 – 37.13	1.89 – 2.04
18	36.67 – 39.16	2.01 – 2.15
19	26.67 – 39.16	2.13 – 2.27
20	28.7 – 41.2	2.24 – 2.39

Table 4 Relative velocity to depth conversion based on a dielectric constant of 10.41 for the 500 MHz antenna at NW9b – GPR Area 21

Time Slice	Time (ns)	Depth (m)
1	0.11 – 3.52	0 – 0.16
2	2.76 – 6.16	0.13 – 0.29
3	5.4 – 8.81	0.25 – 0.41

4	8.05 – 11.45	0.37 – 0.53
5	10.69 – 14.09	0.5 – 0.66
6	13.33 – 16.74	0.62 – 0.78
7	15.98 – 19.38	0.74 – 0.9
8	18.62 – 22.03	0.87 – 1.02
9	21.27 – 24.67	0.99 – 1.15
10	23.91 – 27.31	1.11 – 1.27
11	26.55 – 29.96	1.23 – 1.39
12	29.2 – 32.6	1.36 – 1.52
13	31.84 – 35.25	1.48 – 1.64
14	34.38 – 37.89	1.6 – 1.76
15	37.13 – 40.53	1.73 – 1.88
16	39.77 – 43.18	1.85 – 2.01
17	42.42 – 45.82	1.97 – 2.13
18	45.06 – 48.46	2.1 -2.25
19	47.7 – 51.11	2.22 – 2.38
20	50.35 – 52.99	2.34 – 2.46

Table 5 Relative velocity to depth conversion based on a dielectric constant of 10.41 for the 500 MHz antenna at NW10e – GPR Area 22

Time Slice	Time (ns)	Depth (m)
1	0.11 – 3.29	0.0 – 0.15
2	2.7 – 5.99	0.13 – 0.28
3	5.4 – 8.69	0.25 – 0.4
4	8.1 – 11.39	0.38 – 0.53
5	10.8 – 14.09	0.5 – 0.66
6	13.5 – 16.79	0.63 – 0.78
7	16.2 – 19.5	0.75 – 0.91
8	18.91 – 22.2	0.88 – 1.03
9	21.61 – 24.9	1.0 – 1.16
10	24.21 – 27.6	1.13 – 1.28
11	27.01 – 30.3	1.26 – 1.41
12	29.71 – 33.0	1.38 – 1.53
13	32.41 – 35.7	1.51 – 1.66
14	35.11 – 38.4	1.63 – 1.79
15	37.81 – 41.1	1.76 – 1.91
16	40.51 – 43.8	1.88 – 2.04
17	43.21 – 46.5	2.01 – 2.16
18	45.91 – 49.2	2.13 – 2.29
19	48.61 – 51.9	2.26 – 2.41
20	51.31 – 54.01	2.39 – 2.51

Appendix F Geophysical interpretation

F.1.1.1 The interpretation methodology used by Wessex Archaeology separates the anomalies into four main categories: archaeological, modern, agricultural, and uncertain origin/geological.

F.1.1.2 The archaeological category is used for features when the form, nature and pattern of the anomaly are indicative of archaeological material. Further sources of information such as aerial photographs may also have been incorporated in providing the final interpretation. This category is further sub-divided into three groups, implying a decreasing level of confidence:

- Archaeology – used when there is a clear geophysical response and anthropogenic pattern.
- Possible archaeology – used for features which give a response but which form no discernible pattern or trend.

F.1.1.3 The modern category is used for anomalies that are presumed to be relatively modern in date:

- Ferrous – used for responses caused by ferrous material. These anomalies are likely to be of modern origin.
- Coherent ferrous – used for anomalies caused by ferrous material that can be directly linked to a specific or known modern origin.
- Modern service – used for responses considered relating to cables and pipes; most are composed of ferrous/ceramic material although services made from non-magnetic material can sometimes be observed.

F.1.1.4 The agricultural category is used for the following:

- Former field boundaries – used for ditch sections that correspond to the position of boundaries marked on earlier mapping.
- Ridge and furrow – used for broad and diffuse linear anomalies that are considered to indicate areas of former ridge and furrow.
- Ploughing – used for well-defined narrow linear responses, usually aligned parallel to existing field boundaries.
- Drainage – used to define the course of ceramic field drains that are visible in the data as a series of repeating bipolar (black and white) responses.

F.1.1.5 The uncertain origin/geological category is used for features when the form, nature and pattern of the anomaly are not sufficient to warrant a classification as an archaeological feature. This category is further sub-divided into:

- Increased magnetic response – used for areas dominated by indistinct anomalies which may have some archaeological potential.
- Trend – used for low amplitude or indistinct linear anomalies.
- Superficial geology – used for diffuse edged spreads considered to relate to shallow geological deposits. They can be distinguished as areas of positive, negative, or broad bipolar (positive and negative) anomalies.

F.1.1.6 For the interpretation of Earth Resistance datasets two additional categories are employed:

- High Resistance – used for anomalies that are characterised by values of high resistivity but display no discernible patterns.
- Low Resistance – used for features that are represented by low resistivity values and display no discernible patterns.

F.1.1.7 For the interpretation of GPR datasets the following categories are also employed:

- High Amplitude – used for responses which give a strong high amplitude response but display no discernible patterns.
- Low Amplitude – used for responses that give a notably low amplitude response but display no discernible patterns.

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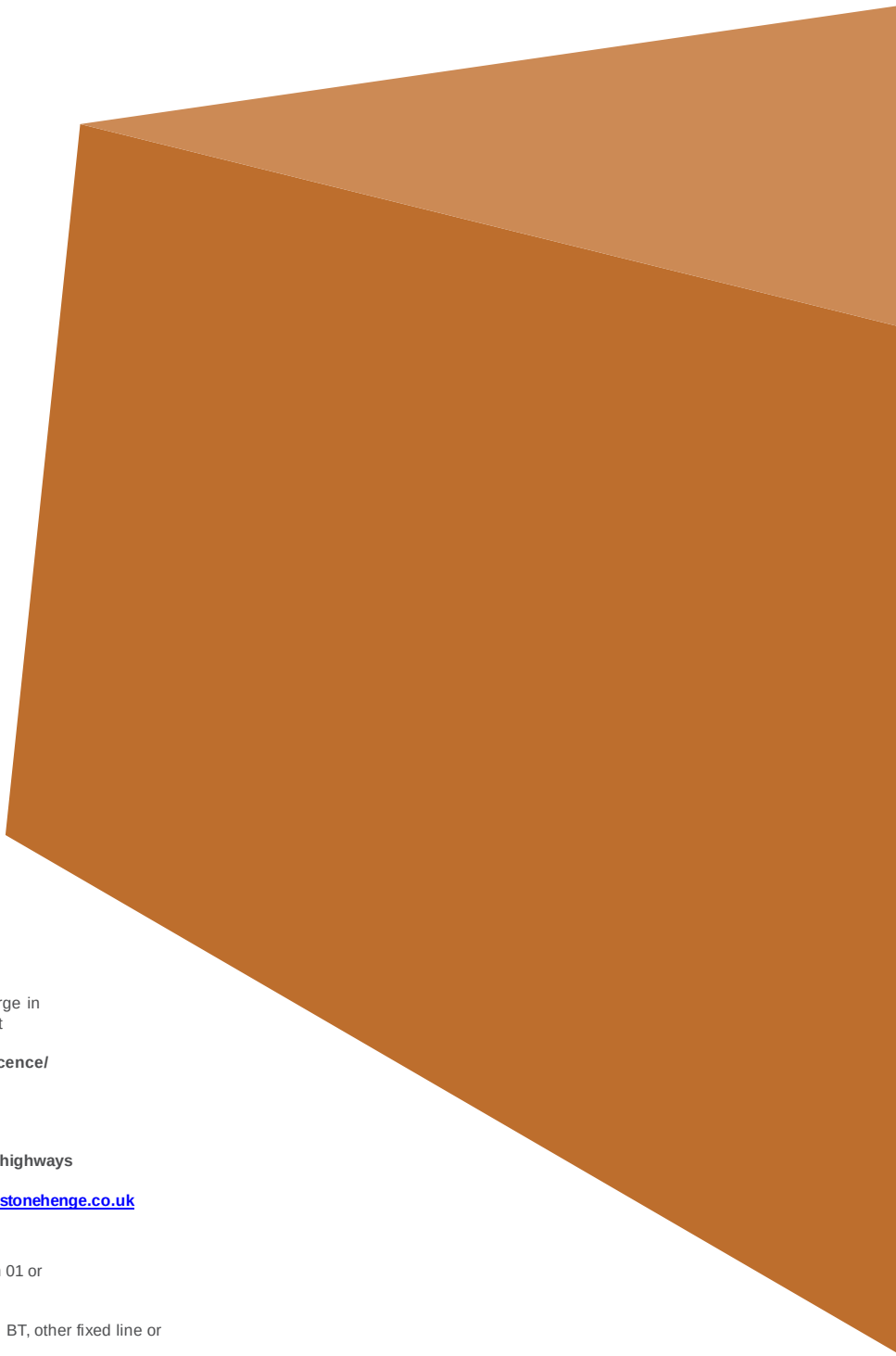

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