



A355 Eastern Relief Road, Beaconsfield, Buckinghamshire

Written Scheme of Investigation for Archaeological Excavation

April 2018

Client: Balfour Beatty

Issue No: 3

OA Reference No:

NGR: 495100 190750

oxfordarchaeology



southsouthsouth

Client Name: Balfour Beatty Construction Ltd
Museum Accession Number: AYBCM:2017.35
Document Title: A355 Beaconsfield Eastern Relief Road, Buckinghamshire
Document Type: Written Scheme of Investigation
Report No.: 1
Grid Reference: 495100 190750
Planning Reference:
Site Code: BERREX 17
Invoice Code: BERREX
HER No.:

OA Document File Location: Projects:b/Beaconsfield_A355 Eastern Relief Road/WSI/EXC
OA Graphics File Location: Servergo:invoice codes a thru h/B_invoice codes/BERREX/WSI

Issue No: 3
Date: 6th April 2018
Prepared by: Tim Allen
Checked by: Tim Allen (Senior Project Manager)
Edited by: Tim Allen (Senior Project Manager)
Approved for Issue by: David Score (Head of Fieldwork, OA South)
Signature:

..... 

Disclaimer:

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Oxford Archaeology being obtained. Oxford Archaeology accepts no responsibility or liability for the consequences of this document being used for a purpose other than the purposes for which it was commissioned. Any person/party using or relying on the document for such other purposes agrees and will by such use or reliance be taken to confirm their agreement to indemnify Oxford Archaeology for all loss or damage resulting therefrom. Oxford Archaeology accepts no responsibility or liability for this document to any party other than the person/party by whom it was commissioned.

OA South

Janus House
Osney Mead
Oxford
OX2 0ES

t. +44 (0)1865 263 800

OA East

15 Trafalgar Way
Bar Hill
Cambridge
CB23 8SG

t. +44 (0)1223 850 500

OA North

Mill 3
Moor Lane Mills
Moor Lane
Lancaster
LA1 1QD

t. +44 (0)1524 880 250

e. info@oxfordarch.co.uk
w. oxfordarchaeology.com

Oxford Archaeology is a registered Charity: No. 285627



A355 Beaconsfield Eastern Relief Road, Buckinghamshire

Written Scheme of Investigation for an Excavation

Centered on NGR 495100, 190750

Contents

| | |
|--|-----------|
| List of Figures | v |
| 1 INTRODUCTION..... | 1 |
| 1.1 Project details | 1 |
| 1.2 Location, topography and geology | 2 |
| 2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND AND POTENTIAL..... | 3 |
| 2.1 Archaeological and historical background | 3 |
| 2.2 Potential | 4 |
| 3 PROJECT AIMS..... | 5 |
| 3.1 General | 5 |
| 3.2 Specific aims and objectives..... | 5 |
| 4 PROJECT SPECIFIC EXCAVATION AND RECORDING METHODOLOGY..... | 6 |
| 4.1 Scope of works..... | 6 |
| 4.2 Programme | 7 |
| 4.3 Site specific methodology | 7 |
| 5 PROJECT SPECIFIC REPORTING AND ARCHIVE METHODOLOGY..... | 12 |
| 5.1 Programme | 12 |
| 5.2 Content..... | 12 |
| 5.3 Specialist input..... | 12 |
| 5.4 Archive..... | 12 |
| 6 HEALTH AND SAFETY..... | 13 |
| 6.1 Roles and responsibilities | 13 |
| 6.2 Method statement and risk assessment..... | 13 |
| 6.3 Monitoring of works..... | 13 |
| 7 BIBLIOGRAPHY | 14 |
| OA STANDARD FIELDWORK METHODOLOGY APPENDICES..... | 15 |
| APPENDIX A GENERAL EXCAVATION AND RECORDING METHODOLOGY | 15 |
| A.1 Standard methodology – summary | 15 |
| A.2 Relevant industry standards and guidelines | 16 |
| A.3 Relevant OA manual and other supporting documentation..... | 16 |

| | | |
|-------------------|--|-----------|
| APPENDIX B | GEOMATICS AND SURVEY | 17 |
| B.1 | Standard methodology - summary | 17 |
| B.2 | Relevant industry standards and guidelines | 19 |
| B.3 | Relevant OA manual and other supporting documentation..... | 19 |
| APPENDIX C | ENVIRONMENTAL EVIDENCE | 20 |
| C.1 | Standard methodology – summary | 20 |
| C.2 | Relevant industry standards and guidelines | 20 |
| C.3 | Relevant OA manual and other supporting documentation..... | 21 |
| APPENDIX D | ARTEFACTUAL EVIDENCE | 22 |
| D.1 | Standard methodology - summary | 22 |
| D.2 | Relevant industry standards and guidelines..... | 23 |
| D.3 | Relevant OA manual and other supporting documentation..... | 23 |
| APPENDIX E | HUMAN REMAINS | 24 |
| E.1 | Standard methodology - summary | 24 |
| E.2 | Relevant industry standards and guidelines | 26 |
| E.3 | Relevant OA manual and other supporting documentation..... | 26 |
| APPENDIX F | REPORTING | 27 |
| F.1 | Standard methodology - summary | 27 |
| F.2 | Relevant industry standards and guidelines | 28 |
| APPENDIX G | LIST OF SPECIALISTS REGULARLY USED BY OA | 30 |
| APPENDIX H | DOCUMENTARY ARCHIVING | 32 |
| H.1 | Standard methodology – summary..... | 32 |
| H.2 | Relevant industry standards and guidelines..... | 33 |
| H.3 | Relevant OA manual and other supporting documentation..... | 33 |
| APPENDIX I | HEALTH AND SAFETY | 34 |
| I.1 | Standard Methodology - summary..... | 34 |
| I.2 | Relevant industry standards and guidelines | 34 |

List of Figures

- Fig.1 Site location map
- Fig.2 Geophysical Survey (Greyscale) after Headland Archaeology
- Fig.3 NW trenches with archaeological features overlain on geophysical survey plot
- Fig. 4 SE trenches with archaeological features overlain on geophysical survey plot
- Fig. 5 Construction limits showing low impact areas and areas for Strip Map and Sample excavation
- Fig. 6 Area a – Subsoil depths and areas for topsoil and subsoil strip

1 INTRODUCTION

1.1 Project details

1.1.1 Following a geophysical survey and an archaeological evaluation, Oxford Archaeology (OA) has been commissioned by Balfour Beatty on behalf of Buckinghamshire County Council (BCC) to prepare a Written Scheme of Investigation for further archaeological mitigation by Strip Map and Sample excavation of three areas along the line of the route of the A355 Improvement Scheme, a proposed relief road east of Beaconsfield in Buckinghamshire, prior to construction (Fig. 1).

1.1.2 The results of the geophysical survey (Fig. 2) suggested that features of archaeological origin might lie within the area of the proposed scheme, and the evaluation (OA 2017) established the presence of heritage assets of historical and archaeological interest (Figs 3 and 4). Paragraph 141 of the National Planning Policy Framework (DCMS 2015) states that

Local Planning Authorities require developers to record and advance understanding of the significance of any historic assets to be lost (wholly or in part) in a manner appropriate to their importance and the impact, and to make this evidence (any archive generated) publicly accessible.

1.1.3 In accordance with this requirement, the BCC Senior Archaeological Officer Philip Markham has advised that further archaeological mitigation will be required to mitigate the impact of the scheme upon the known heritage assets, and to clarify the extent and character of any further assets of historical and archaeological interest that will suffer impact from the scheme.

1.1.4 Consultation with the BCC Senior Archaeological Officer and Balfour Beatty has established the areas of the scheme likely to suffer impact from construction, and thus requiring further archaeological mitigation. These areas, which constitute the scope of work necessary to meet the Local Authority's requirements, are shown on Fig. 5.

1.1.5 Further consultation has established the general requirements in terms of excavation sample and methodologies required for mitigation, although the detail of what will need to be excavated in each area cannot be fully defined until the areas have been stripped and mapped. Further detail will therefore be appended at a later stage following consultation with the BCC Senior Archaeological Officer Philip Markham. This WSI outlines how OA will conduct the Strip, Map and Sample excavations to match those requirements.

1.1.6 All work will be undertaken in accordance with the National Planning Policy Framework (DCMS 2015), with the Management of Research Projects in the Historic Environment (MoRPHE) Project Manager's guide (Historic England 2015), and in accordance with the Code of Conduct of the Chartered Institute for Archaeologists, of which OA is a Registered Organisation. The archaeological works will be carried out in accordance with the Standards and guidance for archaeological excavation and archiving (CifA 2014a; CifA 2014b).

1.2 Location, topography and geology

1.2.1 The site lies on the eastern periphery of Beaconsfield in Buckinghamshire, and is bounded by the A355 Amersham Road on the west, by Minerva Way on the south and by the railway on the north. On the east side there are open fields.

1.2.2 The corridor of the proposed relief road crosses three agricultural fields between the A355 at the north-west end (NGR 494790 191028) and Minerva Way at the south-east end (NGR 495380 190453). The area of proposed development extends over a length of 900m, and the area subject to further archaeological mitigation comprises three areas totaling 3.72 hectares (Fig. 5).

1.2.3 The site is located within an undulating landscape between 96m and 110m above Ordnance Datum (aOD). The three fields are all under grass; there is a copse to the west of the proposed route, and several ponds within the fields both to the west and east.

1.2.4 The drift geology of the area is mapped as Beaconsfield Gravel, formed of sand and gravel. The southern part of the proposed route is underlain by the Lambeth Group Formation, comprising variable sequences of silty and sandy clays, with some sands and gravels, minor limestone and lignite and occasional sandstone and conglomerate. The northern part of the route is underlain by the Seaford Chalk Formation and the Newhaven Chalk Formation, consisting of chalk and marls (Geology of Britain Viewer, 2016).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND AND POTENTIAL

2.1 Archaeological and historical background

2.1.1 The archaeological and historical background to the scheme was described by Jacobs as part of the Environmental Impact Assessment (EIA) for the Environmental Statement for the scheme (Jacobs 2016), and only the relevant parts be summarized here.

2.1.2 No previous fieldwalking has taken place within the site, but a geophysical gradiometer (magnetometer) survey was carried out by Headland Archaeology in 2016 (Jacobs 2016, Appendix 6B; Fig. 2). This was followed by an evaluation by Oxford Archaeology in March 2017 (OA 2017).

2.1.3 The geophysical survey revealed a possible ring ditch 11m in diameter towards the north-west end of the scheme corridor, with a possible central pit and several others outside the ditch. Evaluation has however subsequently established that this ring ditch is in fact a very large post-medieval pit with redeposited gravel in the centre (Fig. 3; see 2.1.12 below).

2.1.4 A potential Bronze Age Bowl Barrow known as 'The Mount' lies c 700m north-east of the line of the scheme within Beaconsfield golf course (Buckinghamshire Historic Environment Record MBC533, Scheduled Monument 27128). This may, however, also be of later date, associated with the 18th century Wilton Park Mansion.

2.1.5 The evaluation identified a small scatter of struck flint tools and flakes of late Neolithic or early Bronze Age date across the central part of the line of the scheme (Figs 3 & 4), and two of the features containing such flints had no later finds, and may thus be of the same date. A struck flint was also recovered from a feature at the very north end of the scheme (Fig. 3).

2.1.6 Several prehistoric struck flints have been recovered from within 1km of the scheme: a fragment of Neolithic polished axe (MBC4725), a Neolithic flake (MBC1154) and two Neolithic or Bronze Age scrapers (MBC7021).

2.1.7 No Iron Age remains were found by the evaluation, nor are any are known within the vicinity of the site.

2.1.8 Two potentially Roman roads, one known as Viatores Route 163, are believed to cross south of Beaconsfield. These routes are not however confirmed. A Roman coin was found somewhere in the vicinity of the site (MBC26598).

2.1.9 Early Roman ditches, some probably representing enclosures, and pits were found by the evaluation in the central and southern parts of the site, and extending over a length of some 800m (Figs 3 & 4). The number of features was relatively sparse, suggesting scattered rather than concentrated activity. A number of undated features found in the evaluation may also be related.

2.1.10 An early medieval settlement area has been identified south-west of the scheme, between Beaconsfield Old Town and Milton Park Mansion, just east of the A355 and north of Minerva Way (Buckinghamshire County Council 2008, figs 27 and 28). This is around 500m south-west of the scheme. Evidence for this is however limited, and no early medieval activity was found by the evaluation along the line of the scheme.

2.1.11 A manor is recorded at Beaconsfield in Domesday Book, and the town was focused on the cross-roads of the London to Oxford road and the route from Windsor to Aylesbury. No

features of medieval date were however found in the evaluation, and no finds of medieval date have been recovered from the vicinity of the site.

2.1.12 An unusual large circular feature with redeposited natural filling the upper central part was found in the north-west part of the scheme (Fig. 3). The finds suggest that this is of 18th or 19th century date, and as it is not shown on historic maps, probably went out of use prior to the mid-19th century. It appears to be too regular to represent an infilled gravel quarry, and its function is currently unclear. A small pit of similar date was found in an adjacent trench, and may have been related.

2.1.13 Other than a clearly modern pit, the only other post-medieval features were field boundaries, which also appear on the historic OS map series.

2.2 Potential

2.2.1 The potential for early prehistoric activity is moderate. Two features of potentially early prehistoric date and a light scatter of residual struck flints have been found by the evaluation, and there is a probable barrow within 700m to the north-east, as well as Neolithic and Bronze Age lithic finds in the wider area.

2.2.2 The potential for Iron Age activity is low, as no finds have been recovered either from the site or from the vicinity.

2.2.3 The potential for Roman activity is high, as a number of features of this period have been identified by the evaluation. The revealed Roman activity however appears to be scattered, rather than indicating a dense focus of occupation. A single coin has been found in the vicinity of the site.

2.2.4 The potential for early Medieval activity is believed to be low, as no activity of this period was found in the evaluation, and the reported settlement is 500m from the line of the scheme. No later Medieval remains were found by evaluation within the site, so the potential for later Medieval activity is also low.

2.2.5 In the post-medieval period the site was part of Milton Manor, and maps suggest that the site has remained agricultural land. The potential for post-medieval activity, other than the enigmatic large circular feature found in the north-west part of the scheme, remains low.

3 PROJECT AIMS

3.1 General

3.1.1 To confirm the extent and character of any surviving remains within the further mitigation areas of the proposed development.

3.1.2 To determine the date range of any surviving remains using artefactual or other remains.

3.1.3 to clarify and enhance the results of the evaluation

3.1.4 to provide a clearer understanding of the level of activity within the proposed development area and surrounding landscape;

3.1.5 to disseminate the results in media appropriate to the level of significance of the discovered remains, in consultation with the client and the archaeological curator

3.1.6 To recover palaeoenvironmental evidence where possible to inform understanding of the environmental and use of the site in the past.

3.1.7 To determine the implications of any remains with reference to economy, status, utility and social activity.

3.1.8 To clarify the range, quality and quantity of the artefactual evidence of each period that may be present.

3.2 Specific aims and objectives

3.2.1 The specific aims and objectives of the evaluation are:

- i. To clarify the extent, density and character of late Neolithic/early Bronze Age activity within the area of the scheme, and as far as is practicable, establish the activities that were carried out there;
- ii. To establish whether the activity of this period was all likely to be contemporary, or represented a number of visits over an extended period of time, and if the latter, whether there was a change of site function over time;
- iii. To clarify the extent, character and duration of the Roman occupation within the area of the scheme, and if practicable to establish its overall trajectory of development;
- iv. To establish whether there were enclosures, structures or other foci of activity within the area containing Roman features, and if so, to investigate their functions and relationships to one another;
- v. To clarify the function and refine the date of the large post-medieval pit in the north-west part of the scheme, to establish whether there were associated features around it, and if so, to understand the interrelationship between these features.

4 PROJECT SPECIFIC EXCAVATION AND RECORDING METHODOLOGY

4.1 Scope of works

4.1.1 Archaeological remains were mainly concentrated in the central part of the scheme, with additional features in the north-west and north-east corners. The north-east area is however no longer part of the areas likely to suffer below-ground impact. An examination of the contours of the ground and the final road profile has established that some areas will only be stripped of topsoil before being made up, and so (provided an appropriate method statement for stripping is agreed with the BCC Senior Archaeological Officer), should not involve impacts to buried archaeological remains. These areas are indicated in yellow on Figure 5.

4.1.2 In part of the north-west end of the scheme, where topsoil stripping only is proposed, the evaluation has suggested that the depth of underlying subsoil may not be sufficient to protect any underlying archaeology from possible impact during stripping. In the areas with less than 0.25m of subsoil, therefore, topsoil strip will be monitored in case archaeological features are exposed immediately after topsoil stripping.

4.1.3 Taking these factors into account, three areas totaling 2.03 (2.46) ha, comprising Area A measuring 4745 (9038) sq. m, Area B measuring 4465 sq. m and Area C measuring 11062 sq. m, will be subject to Strip Map and Sample excavation (Fig. 5). The stripping of topsoil from an area of 9038 sq. m will be monitored in Area A, in case subsoil is so thin that archaeological features appear immediately below the topsoil and so require mitigation, but only 4745 sq. m will be deliberately stripped of subsoil for SMS excavation (Fig. 6).

4.1.4 Should significant archaeological features continue beyond the limits of any of these SMS areas, excavation areas may be extended (within the limits of the scheme) to establish their full extent.

4.1.5 The areas will be stripped of topsoil and subsoil one after another, starting with Area A at the north-west, and each area will be mapped and an indicative sampling plan produced for approval by the BCC Senior Archaeological Officer before excavation begins. Excavation will only commence in any area once the sampling plan has been agreed, and an Instruction to Proceed issued by the Principal Contractor.

4.1.6 Excavation will then proceed by hand following the sampling levels set out in this WSI, and using Oxford Archaeology's standard methodology for archaeological excavation (see Appendices), unless otherwise specified in section 4.3 of this WSI.

4.1.7 Finds and environmental samples from the excavated deposits will be processed as work proceeds, in order to provide additional information about the date and character of investigated features. This will also enable an iterative approach to be taken to sampling, allowing modification of the generic sampling levels as necessary should research questions have been answered, or should new research questions require it. Any such variations to the sampling strategy will need to be agreed in advance between the BCC Senior Archaeological Officer, the Principal Contractor's representative and OA's Senior Project Manager.

4.1.8 Should area stripping reveal archaeological deposits or features of unexpected significance, then a site meeting will be convened with the Principal Contractor's

representative and the BCC Senior Archaeological Officer to discuss the appropriate strategy for dealing with these.

4.1.9 Should archaeological investigation of these significant discoveries prove necessary, then upon instruction from the Principal Contractor, OA will prepare an additional methodology specific to these significant features for approval by the BCC Senior Archeological Officer, and once agreed, will then carry out the agreed additional work.

4.1.10 At the conclusion of fieldwork in each area, OA will provide a numbered plan of all of the revealed archaeological features and interventions, together with a summary of the archaeological discoveries and a table of archaeological deposits and the finds and environmental samples pertaining to them.

4.2 Programme

4.2.1 It is anticipated that stripping will begin during late spring or summer 2018, and that the stripping of the 3 areas will take 8-10 weeks to complete by the Principal Contractor's plant company working under an OA team consisting of one or more Machine Supervisors assisted as required by up to 2 Project Archaeologists, and with a Surveyor visiting periodically to record the exposed remains, under the management of Tim Allen, Senior Project Manager.

4.2.2 All fieldwork undertaken by Oxford Archaeology (South) is overseen by the Head of Fieldwork, David Score MCIfA.

4.3 Site specific methodology

4.3.1 A summary of OA's general approach to excavation and recording can be found in Appendix A. Standard methodologies for Geomatics and Survey, Environmental evidence, Artefactual evidence and Burials can also be found below (Appendices B, C, D and E respectively).

4.3.2 Prior to any machining general photographs of the site areas will be taken.

4.3.3 The areas will be set out using a GPS, and will be tied in to the Ordnance Survey National Grid.

4.3.4 Topsoil and overburden will be excavated carefully in level spits using a 360 tracked excavator fitted with a toothless bucket under close archaeological supervision. Wheeled or tracked dumpers (depending upon weather conditions) will be used to remove the spoil to designated spoilheap locations. Should the topsoil or other overburden be more than 200mm deep, this will be removed in spits no deeper than 200mm.

4.3.5 Dumpers will not track on the stripped surfaces, always operating on the topsoil behind the tracked excavator. In Area A, where parts of the area will be subject to topsoil strip only, a layer of terram will be laid on the exposed surface of the subsoil, and this will then be covered by imported Type 1 material to make up the compound surface. Delivery lorries will not drive onto the stripped area, but will back to the edge and dump their load, which will then be spread by a machine sitting on the dumped material. This method will be repeated until the required area has been covered.

4.3.6 Where topsoil and subsoil are to be stripped, once the first band of topsoil has been removed, subsoil stripping will commence, so that the plant does not track upon the exposed subsoil at any time. In periods of prolonged dry weather, and if it is clear that dumpers are

not creating ruts along the haul route, it may be possible to modify this to strip larger areas of topsoil in advance, but this will only be undertaken with the agreement of the BCC Senior Archaeological Officer, and will be closely monitored by the OA machine supervisor.

4.3.7 Spoil will be monitored for finds both visually and using a metal detector. Because of the potential for scatters of worked flint in the topsoil/ploughsoil, machine stripping will be supervised by archaeologists with experience of identifying lithic artefacts.

4.3.8 Should concentrations of lithic artefacts (more than 3 objects per m² over several metres) be observed during removal of topsoil or subsoil, machining will cease at that location, and an area with a radius of 15m will be fenced off with Netlon until the BCC Senior Archaeological Officer and the Principal Contractor's representative have been informed. Machine excavation will continue beyond the fenced area. If a continuation of the dense scatter of struck flint is noted when stripping recommences, then the area surrounded by Netlon will be expanded, until the limits of the scatter are reached.

4.3.9 Within the fenced area, a modified form of excavation allowing the recovery and recording of lithic material in a controlled manner will be agreed and implemented following discussion and agreement with the BCC Senior Archaeological Officer and the Principal Contractor's representative.

4.3.10 Mechanical excavation will otherwise continue either to the top of archaeological deposits or natural undisturbed ground, whichever is reached first. All excavation by machine and hand will be undertaken with a view to avoid damage to any archaeological deposits or features that might appear worthy of preservation *in situ*.

4.3.11 Where features are exposed immediately below topsoil outside areas designated for SMS excavation, their limits (if discrete features) will be established and they will be photographed, plotted by GPS and any surface finds retrieved, but no hand-excavation will take place, unless they are burials or other significant or fragile remains that may require lifting to prevent further damage. Linear features will not be traced beyond the exposed limits, but will be similarly recorded.

4.3.12 Should significant structures, features or finds be found that may appear to merit preservation *in situ*, they will be adequately protected from deterioration until a meeting has been convened with the BCC Senior Archaeological Officer and the client's representative to discuss and agree how they will be dealt with.

4.3.13 Careful stripping by machine under archaeological supervision should leave a surface that can be planned and photographed without the need for further hand-cleaning. Hand-cleaning will be undertaken in any areas where the soil distinctions are unclear, each area will then be photographed, using a polecam or drone if appropriate, and the revealed archaeological features and deposits will be planned by GPS at an appropriate scale.

4.3.14 A 'feature' in this context may be a ditch or gully, a pit, or a posthole. Structural features include walls, paths, groups of postholes defining buildings or fences, slots that formerly held timbers. Deposits are more extensive spreads of soil, stones etc., which may mask features, be bounded by them, or may be cut by features.

4.3.15 Following completion of the plan of each stripped area, a further drawing will be prepared showing the proposed sample of interventions for hand-excavation. Interventions

will be chosen to investigate intersections between significant features, and the level of sampling will follow that outlined in section 4.3.19 below.

4.3.16 An intervention normally comprises one half of a pit, a 1m length of a ditch, or half-sections of up to 4 postholes, depending upon complexity.

4.3.17 Large pits, especially those with complex deposit sequences, quarries, extensive deposits containing artefacts or very large ditches, and structures containing more than 4 simple postholes, would be considered to require more than one intervention. Burials are also complex features, and will be treated accordingly.

4.3.18 Copies of both drawings will be sent to the BCC Senior Archaeological Officer and to the Principal Contractor's representative for comment and approval before hand-excavation begins, unless preliminary hand-investigation is required immediately to verify or clarify what appear to be archaeological features or deposits of unexpected high significance.

4.3.19 Once the intervention plan has been approved, the agreed sample of the archaeological deposits will be excavated by hand to establish the stratigraphic and chronological sequence, to clarify, excavate and understand structural evidence and to recover artefactual and environmental evidence.

4.3.20 Minimum sampling levels will generally be 20% of linear features and 50% of discrete features, unless otherwise agreed with the BCC Senior Archaeological Officer during the course of the excavations on the basis of information already obtained. These general levels will be refined as follows:

- Postholes, unless belonging to clear structures, and pits (unless complex) will be half-excavated.
- Posthole structures and pits with complex stratigraphy and significant artefactual/ecofactual assemblages, will be 100% excavated, as will human burials (once a Ministry of Justice licence has been obtained).
- Ditched enclosures will have all terminals excavated, and not less than 25% of the remaining ditch or ditches will be excavated by hand.
- Other types of significant archaeology, such as occupation spreads, areas of industrial activity, lithic clusters/scatters, will be dealt with on a case by case basis following agreement at a site meeting and submission of a further specific WSI (see below).

4.3.21 Large features or extensive deposits without obvious archaeological potential may, by agreement with the BCC Senior Archaeological Officer, be tested by machine excavation under close archaeological supervision to clarify their depth and complexity. Should clearly archaeological deposits be exposed during this process, machine excavation would cease and excavation would continue by hand.

4.3.22 In features or deposits containing significant numbers of struck flints, bulk soil samples will be taken for microdebitage.

4.3.23 Should complex or vertical stratigraphy be encountered, the Principal Contractor's representative and the BCC Senior Archaeological Officer will be contacted and further

excavation of this will be halted until a site meeting has taken place to discuss and agree an appropriate strategy for further investigation.

4.3.24 Should human bones be found, the Ministry of Justice (MoJ), the Principal Contractor's representative and the BCC Senior Archaeological Officer will be informed, and a Ministry of Justice licence obtained. No further excavation will be carried out until the appropriate strategy for preservation *in situ* or removal has been agreed. As a minimum OA will follow the guidance set out by English Heritage (ANNEXE 3 SE Minimum standards for archaeological excavation), and will follow the procedures in Appendix E below.

4.3.25 In the event that unforeseen archaeological discoveries are made during the project, specific methodologies for their archaeological mitigation will be agreed after consultation with the BCC Senior Archaeological Officer and the Principal Contractor's representative, and will be appended to the WSI prior to the excavation of such features.

Recording

4.3.26 All deposits will be recorded using unique numbers on pro forma OA recording forms.

4.3.27 Measured drawings of all archaeological features will be prepared at a scale of 1:20 and tied into an overall site plan. All plans will be tied into the Ordnance Survey National Grid. Relative spot heights will be taken as appropriate.

4.3.28 Sections of any excavated archaeological features will be drawn at an appropriate scale (normally 1:10 or 1:20). All sections will be levelled and tied to the Ordnance Survey Datum, or a permanent fixed benchmark.

4.3.29 Digital photographs will be taken of all excavated features and deposits in colour, and black-and-white.

Finds and environmental remains

4.3.30 Any finds or environmental remains will be recovered, processed and assessed according to OA's standard procedures, UKIC and English Heritage guidelines.

4.3.31 Bulk finds will be bagged by context. Small finds (special finds), including in situ flint-working deposits, will be 3-dimensionally recorded on site and will be bagged and registered individually.

4.3.32 During the excavation, finds collected during the week will be taken back to Oxford for processing as work proceeds, and spot-dating will be carried out at weekly intervals.

4.3.33 Should there be particular concerns about any find that cannot be readily identified on site, photographs of this will be taken and sent back to the OA project manager at Oxford to allow a specialist to advise.

4.3.34 Should finds of particular sensitivity or value be located, a conservator will be called to site to advise or supervise recovery from the ground. The BCC Senior Archaeological Officer and the Principal Contractor's representative will be informed immediately and a site meeting convened.

4.3.35 Appropriate security arrangements for protection of any such remains while still subject to recording in the ground will be made with the Principal Contractor.

4.3.36 Environmental samples will be returned to Oxford for processing at the end of each working week. Bulk samples will be taken from deposits of high environmental potential. All bulk environmental samples will be 40L, unless the deposit is less than 40L, in which case all of the deposit will be sampled.

4.3.37 Particular attention will be paid to the potential for buried palaeosoils and waterlogged deposits, which will be sampled as appropriate (see Appendix C) following consultation with OA's environmental team.

4.3.38 Should environmental deposits of particular or unusual significance be found, the Historic England Regional Scientific Officer will be informed, and their advice on appropriate sampling sought. Following consultation with the BCC Senior Archaeological Officer, further environmental sampling may then be carried out.

4.3.39 Samples for scientific dating (radiocarbon dating, dendrochronology or Archaeomagnetic dating) will also be taken if appropriate following consultation with the BCC Senior Archaeological Officer.

4.3.40 Column and incremental samples will be taken if appropriate following on-site consultation with OA's Environmental Manager and/or Geo-Archaeological Manager.

4.3.41 None of the areas will be considered to have been fully mitigated, or released for construction, until the agreement of the BCC Senior Archaeological Officer has been obtained in writing.

4.3.42 Areas will be left open for construction, and will not be backfilled.

5 PROJECT SPECIFIC REPORTING AND ARCHIVE METHODOLOGY

5.1 Programme

5.1.1 Following the completion of fieldwork and processing of finds and environmental materials, a summary of the archaeological discoveries illustrated by plans and photographs will be prepared including a list of the finds recovered and of the environmental samples containing remains. This will be circulated to the BCC Senior Archaeological Officer and the Client's representative with a recommendation as to the appropriate form that post-excavation reporting should take.

5.1.2 Should very few archaeological features, finds and environmental remains have been recovered, and the information potential is considered to be very low, no further assessment of the material will be carried out, and a grey literature report describing the remains will be prepared.

5.1.3 If archaeological features or evidence of activity of significance have been discovered, then a post-excavation assessment (PXA) of the recovered materials and data will be carried out in line with the principles set out in Section 4 of MoRPHE2 PPN3 (English Heritage 2008), and will identify where the results provide information or potential to address topics raised in the Solent Thames Research Framework for the Historic Environment (Hey and Hind 2014). The PXA will be accompanied by an Updated Project Design (UPD) setting out those aspects of the findings that merit further archaeological analysis, and will include a timetable for completion of analysis and publication together with the proposed vehicle for publication eg. County Journal, national or specialist journal, monograph.

5.1.4 The content of this report will be as defined in Appendix F.

5.1.5 The PXA report will be completed within 6 months of the completion of the fieldwork, unless otherwise agreed with the BCC Senior Archaeological Officer.

5.1.6 A copy of the report will be provided to the BCC Senior Archaeological Officer for checking and approval. Once approved, two bound copies of the completed report will be provided to the BCC HER Officer. A copy of the report in Adobe Acrobat (.pdf) format will also be provided.

5.2 Content

5.3 Specialist input

5.3.1 OA has a large pool of internal specialists, as well as a network of external specialists with whom OA have well-established working relationships. A general list of these specialists is presented in Appendix G; in the event that additional input should be required, an updated list of specialists can be supplied.

5.4 Archive

5.4.1 The site archive will be deposited with Buckinghamshire County Museum following completion of the project, under accession number: AYBCM 2017.35.

5.4.2 A summary of OA's general approach to documentary archiving can be found in Appendix H.

6 HEALTH AND SAFETY

6.1 Roles and responsibilities

6.1.1 The Senior Project Manager, Tim Allen, has responsibility for ensuring that safe systems of work are adhered to on site. He/she delegates elements of this responsibility to the Fieldwork Supervisor, who implements these on a day to day basis.

6.1.2 The Director with responsibility for Health and Safety at OA is Dan Poore Tech IOSH (Chief Business Officer).

6.2 Method statement and risk assessment

6.2.1 A summary of OA's general approach to health and safety can be found in Appendix I. A risk assessment has also been undertaken and approved and will be kept on site, along with OA's standard Health and Safety file, which will contain all relevant health and safety documentation.

6.2.2 The Health and Safety file will be available to view at any time.

6.3 Monitoring of works

6.3.1 At least one week's notice of the commencement of the stripping of each area will be given to Philip Markham, Senior Archaeological Officer for Buckinghamshire County Council.

6.3.2 Philip Markham will have free access to the site (subject to Health and Safety considerations) and all records to ensure the works are being carried out in accordance with this WSI and all other relevant standards.

7 BIBLIOGRAPHY

Buckinghamshire County Council, 2008 *Historic Towns Assessment Report*

Chartered Institute for Archaeologists, 2014a Standard and guidance for archaeological excavation, Reading, <http://www.archaeologists.net/sites/default/files/node-files/IfASG-Excavation.pdf>

Chartered Institute for Archaeologists, 2014b, Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives, Chartered Institute for Archaeologists

DCMS, 2015 National Policy Planning Framework, Department of Culture Media and Sport, London

Geology of Britain Viewer, 2015

Hey, G, and Hind, J (eds), 2014 *Solent Thames Research Framework for the Historic Environment: Resource Assessments and Research Agendas*, OxfordWessex Monograph 6

Historic England, 2015 Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide, Swindon, Centre for Archaeology Guidelines

Jacobs, 2016 A355 Eastern Relief Road Environmental Statement (draft), prepared on behalf of Buckinghamshire County Council

Oxford Archaeology, 2017 A355 Eastern Relief Road: Archaeological Evaluation report, unpublished report prepared for Buckinghamshire County Council on behalf of Balfour Beatty

OA STANDARD FIELDWORK METHODOLOGY APPENDICES

The following methods and terms will apply, where appropriate, to all OA fieldwork unless varied by the accompanying detailed Written Scheme of Investigation.

Copies of all OA internal standards and guidelines referred to below are available on request.

APPENDIX A GENERAL EXCAVATION AND RECORDING METHODOLOGY

A.1 Standard methodology – summary

Mechanical excavation

- A.1.1 An appropriate mechanical excavator will be used for machine excavation. This will normally be a JCB or 360° tracked excavator with a 1.5 m to 2 m wide toothless ditching bucket. For work with restricted access or working room a mini excavator will be used.
- A.1.2 All mechanical excavation will be undertaken under direct archaeological supervision.
- A.1.3 All undifferentiated topsoil or overburden of recent origin will be removed down to the first significant archaeological horizon, in successive, level spits.
- A.1.4 Following mechanical excavation, all areas that require examination or recording will be cleaned using appropriate hand tools.
- A.1.5 Spoil heaps will be monitored in order to recover artefacts to assist in the analysis of the spatial distribution of artefacts. Modern artefacts will be noted but not retained.
- A.1.6 After recording, evaluation trenches and test pits will usually be backfilled with excavated material in reverse order of excavation, and compacted as far as is practicable with the mechanical excavator. Area excavations will not normally be backfilled.

Hand excavation

- A.1.7 All investigation of archaeological levels will usually be by hand, with cleaning, examination and recording both in plan and section.
- A.1.8 Within significant archaeological levels the minimum number and proportion of features required to meet the aims of the excavation will be hand excavated. Pits and postholes will usually be subject to a 50% sample by volume. Linear features will be sectioned as appropriate. More complex features such as those associated with funerary activity will usually be subject to 100% hand excavation.
- A.1.9 In the case of evaluations, it is not necessarily the intention that all trial trenches will be fully excavated to natural stratigraphy, but the depth of archaeological deposits across the site will be assessed. The stratigraphy of a representative sample of the evaluation trenches will be recorded even where no archaeological deposits have been identified. Any excavation, both by machine and by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits, which appear to be worthy of preservation *in situ*.

Recording

- A.1.10 Written descriptions will be recorded on proforma sheets comprising factual data and interpretative elements.
- A.1.11 Where stratified deposits are encountered a Harris matrix will be compiled during the course of the excavation.
- A.1.12 Plans will normally be drawn at 1:100, but on urban or deeply stratified sites a scale of 1:50 or 1:20 will be used. Detailed plans will be at an appropriate scale. Burials will be drawn at scale 1:10 or recorded using geo-referenced digital photography.
- A.1.13 The site grid will be accurately tied into the National Grid and located on the 1:2500 or 1:1250 map of the area.
- A.1.14 A register of plans will be kept.
- A.1.15 Long sections of showing layers will be drawn at 1:50. Sections of features or short lengths of trenches will be drawn at 1:20.
- A.1.16 A register of sections will be kept.
- A.1.17 Generally, all sections will be tied in to Ordnance Datum.
- A.1.18 A full photographic record, illustrating in both detail and general context the principal features and finds discovered will be maintained. The photographic record will also include working shots to illustrate more generally the nature of the archaeological work.
- A.1.19 Photographs will be recorded on OA Photographic Record Sheets.

A.2 Relevant industry standards and guidelines

- A.2.1 The Institute for Archaeologists' Standard and Guidance notes relevant to fieldwork are:
- Standard and Guidance for Field Evaluation
 - Standard and Guidance for Excavation
 - Standard and Guidance for an Archaeological Watching Brief.
- A.2.2 These will be adhered to at all times.

A.3 Relevant OA manual and other supporting documentation

- A.3.1 All fieldwork will be undertaken in accordance with the requirements of the OA Field Manual (ed. D Wilkinson 1992), and the revised OA fieldwork manual (publication forthcoming).
- A.3.2 Further guidance is provided to all excavators in the form of the OA 'Fieldwork Crib Sheets - a companion guide to the Fieldwork Manual'. These have been issued ahead of formal publication of the revised Fieldwork Manual.

APPENDIX B GEOMATICS AND SURVEY

B.1 Standard methodology - summary

- B.1.1** The aim of OA methodology is to provide comprehensive survey cover of all investigation areas. Additionally, it is designed to provide coverage for any areas, beyond the original scope of the project, which arise as a result of further work. It provides digital plans of all required elements of the project and locates them within an overall grid.
- B.1.2** It also maintains all necessary survey data and ensures that the relevant information is copied into the primary record, in order to ensure the integrity of the project archive. Furthermore, it ensures that all core data is securely stored and backed up. It establishes accurate project reference systems utilising a series of control stations and permanent base lines.
- B.1.3** The survey will be conducted using a combination of Total Station Theodolite (TST) survey utilising Reflectorless Electronic Distance Measurement (REDM) where appropriate, hand-measured elements and GPS (Global Positioning System).
- B.1.4** Before the main work commences, a network of control stations will be laid out encompassing the area. Control stations will be tied in to known points or existing features using rigorous metric observation. The control network will be set in using a TST to complete a traverse or using techniques as appropriate to ensure sufficient accuracy. A GPS, or other appropriate method, will be used to orientate the control network to National Grid or other recognised coordinate system.
- B.1.5** All control stations will be checked by closed traverse and/or GPS, as appropriate. The accuracy of these control stations will be accessed on a regular basis and re-established accordingly. All stations will be recorded on Survey Control Station sheets.
- B.1.6** Each control station will be marked with a PGM (Permanent Ground Marker). Witness diagrams will include the full 3-D co-ordinates generated, a sketch diagram and measurements to at least three fixed details, written description of the mark and a photograph of the control point in its environs.
- B.1.7** Prior to entry into the field all equipment will be checked, and all pre-survey information will be logged onto the field computer and uploaded onto survey equipment as appropriate. The software in the field computer will be verified and all cabling between the GPS and/or TST and computer will be checked. Prior to conducting the survey, the site will be reconnoitred for locations for a viable control network and check the line of sight and any possible hindrance to survey. Daily record sheets will be kept to record daily tasks and conditions.
- B.1.8** All spatial data will be periodically downloaded onto a field computer, and backed up onto CD, or DVD. It will be cleaned, validated and inspected.
- B.1.9** All survey data will be documented on daily survey record sheets. Information entered on these sheets includes key set up information (Instrument height etc.) as well as daily variables and errors/comments. All survey data will be digitally recorded in a raw format and translated during the download process this shall allow for any errors to be cross referenced with the daily survey record and corrected accordingly.

- B.1.10** A weekly summary of survey work will be produced to access development and highlight problems. This information also will be recorded on the weekly survey journal. Technical support for the survey equipment and download software shall be available at all times. In those instances, where sites are remotely operated, all digital data will be backed up regularly and a copy returned to Oxford on a weekly basis.
- B.1.11** A site plan will initially be created by a rapid survey of relevant archaeological features by mapping their extent using a combination of TST and GPS. This will form the basis for deciding excavation strategy and will be updated as the excavation clarifies the extent of, and relationships between, archaeological features.
- B.1.12** Excavated archaeological interventions and areas of complex stratigraphy will be hand drawn. At least two Drawing Points (DPs) will be set in as a baseline and measurements taken off this by tape and offset. The hand drawn plans will be referenced to the digitally captured pre-site plan by measuring in the DPs with a TST or GPS. These hand drawn elements will then be scanned in, geo-referenced using the DPs as reference points and digitised following OA's digitising protocols. For further details on hand planning procedure please refer to the fieldwork guidelines.
- B.1.13** Where appropriate rectified photography may be used to record standing structures or burials. This will be carried out in line with Standard OA procedures for rectified photography.
- B.1.14** Survey data recorded in the field will be downloaded using appropriate downloading software, and saved as an AutoCAD Map DWG file, or an ESRI Shapefile. These files will be regularly updated and backed up with originals being stored on an OA server in Oxford.
- B.1.15** All drawings will be composed of closed polygons, polylines or points in accordance with the requirements of GIS construction and OA Geomatics protocols. Once created, additional GIS/CAD work will normally be carried out at the local OA central office or at on-site remote locations when appropriate. Support for all GIS/CAD work will be available from OA's Oxford Office during normal office hours. The aim of the GIS/CAD work is to produce workable draft plans, which can be produced as stand-alone products, or can be readily converted to GIS format. Any hand-drawn plans will be scanned and digitised on site in the first instance. Subsequent plans will be added to the main drawing as it develops.
- B.1.16** All plan scans will be numbered according to their plan site number. Digital plans will be given a standard new plan number taken out from the site plan index.
- B.1.17** All digital data will be backed up incrementally on CD or DVD. On each Friday the entire data directory will be backed up and returned to Oxford where it will be copied onto the OA projects server. Each CAD drawing will contain an information layout which will include all the relevant details appertaining to that drawing. Information (metadata) on all other digital files will be created and stored as appropriate. At the end of the survey all raw measurements will be made available as hard copy for archiving purposes.

B.2 Relevant industry standards and guidelines

- B.2.1 English Heritage (2009), Metric Survey Specifications for Cultural Heritage
- B.2.2 English Heritage (2006), Understanding Historic Buildings A Guide to Good Practise
- B.2.3 English Heritage, (2007) Understanding the Archaeology of Landscapes A Guide to Good Recording practise

B.3 Relevant OA manual and other supporting documentation

- B.3.1 OA South Metric Survey, Data Capture and Download Procedures
- B.3.2 OA South Digitising Protocols
- B.3.3 OA South GIS Protocols
- B.3.4 These will be superseded by the OA South Geomatics Manual (in progress).

APPENDIX C ENVIRONMENTAL EVIDENCE

C.1 Standard methodology – summary

- C.1.1 Different environmental and geoarchaeological sampling strategies may be employed according to established research targets and the perceived importance of the strata under investigation. Where possible an environmental specialist(s) will visit the site to advise on sampling strategies. Sampling methods will follow guidelines produced by English Heritage and Oxford Archaeology. A register of samples will be kept. Specialists will be consulted where non-standard sampling is required (e.g. TL, OSL or archaeomagnetic dating) and if appropriate will be invited to visit the site and take the samples.
- C.1.2 Geoarchaeological sampling methods are site specific, and methodologies will be designed in consultation with the geoarchaeological manager on a site by site basis.
- C.1.3 Bulk soil samples, where possible of 40 litres or 100% of a deposit if less is available, will be taken from potentially datable features and layers for flotation for charred plant remains and for the recovery of small bones and artefacts. Larger soil samples (up to 100L) may be taken for the complete recovery of animal bones, marine shell and small artefacts from appropriate contexts. Smaller bulk samples (general biological samples) of 10-20 litres will be taken from any waterlogged deposits present for the recovery of macroscopic plant remains and insects. Series of incremental 2L samples may be taken through buried soils and deep feature fills for the recovery of snails and/or waterlogged plant remains, depending on the nature of the stratigraphy and of the soils and sediments. Columns will be taken from buried soils, peats and waterlogged feature fills for pollen and/or phytoliths, diatoms, ostracods and foraminifera if appropriate. Soil samples will be taken for soil investigations (particle size, organic matter, bulk chemistry, soil micromorphology etc.) and possibly for metallurgical analysis in consultation with the appropriate specialists.
- C.1.4 Bulk samples from dry deposits will be processed by standard water flotation using a modified Siraf-style machine and meshes of 0.25mm (flot) and 0.5 or 1mm depending (residue). Heavy residues will be wet sieved, air dried and sorted. Samples taken exclusively for the recovery of bones, marine shell or artefacts will be wet sieved to 2mm. Waterlogged samples (1L sub-sample) and snail samples (2L) will be processed by hand flotation with flots and residues collected to 0.25mm (waterlogged plants) and 0.5mm (snails) respectively; these flots and residues will be sorted by the specialist. Samples specifically taken for insects, pollen, other microflora and microfauna, metallurgy and soil analysis will be submitted as whole earth to the appropriate specialists or processed following their instructions.

C.2 Relevant industry standards and guidelines

- C.2.1 English Heritage 2010. Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood.
- C.2.2 English Heritage 2001. Archaeometallurgy. Centre for Archaeology Guidelines 2001.01.

- C.2.3 English Heritage 2011. Environmental Archaeology. A guide to the theory and practice of methods, from sampling and recovery to post excavation, (2nd ed)
 - C.2.4 English Heritage 2004. Dendrochronology: Guidelines on Producing and Interpreting Dendrochronological Dates.
 - C.2.5 English Heritage 2006. Archaeomagnetic Dating. Guidelines for Producing and Interpreting Archaeomagnetic Dates.
 - C.2.6 Historic England 2015. Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record.
 - C.2.7 English Heritage 2008. Luminescence Dating. Guidelines on Using Luminescence Dating in Archaeology.
 - C.2.8 English Heritage 2008. Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains.
 - C.2.9 English Heritage 2014. Animal Bones and Archaeology. Guidelines for Best Practice.
- C.3 Relevant OA manual and other supporting documentation**
- C.3.1 Oxford Archaeology 2005. Environmental Sampling Guidelines, 2nd ed.

APPENDIX D ARTEFACTUAL EVIDENCE

D.1 Standard methodology - summary

- D.1.1 Before a site begins arrangements concerning the finds will be discussed with the Head of Finds. Information will be provided by the project manager about the nature of the site, the expected size and make-up of the finds assemblage and any site specific finds retrieval strategies. On-site requirements will be discussed and a conservator appointed who can be called on to make site visits if required. Special requirements regarding particular categories of material will be raised at this early stage for instance the likelihood of recovering assemblages of waterlogged material, large timbers, quantities of structural stone or ceramic building material. Specialists may be required to visit sites to discuss retrieval strategies.
- D.1.2 The project manager will supply the Head of Finds with contact details of the landowner of the site so that consent to deposit any finds resulting from the investigation can be sought.
- D.1.3 The on-site retrieval, lifting and short term packaging of bulk and small finds will follow the detailed guidelines set out in the OA Finds Manual (sections 2 and 3), First Aid for Finds and the UKIC conservation guidelines No.2.
- D.1.4 All finds recovered from site will be transported to an OA regional office for processing; local sites will return finds at the end of each day, away based sites at the end of each week. Special arrangements can be discussed for certain sites with the department manager before the start of a project. Larger long running sites may in some instances set up on-site processing units to deal with the material from a particular site.
- D.1.5 All finds qualifying as Treasure will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act (1996), and the Treasure (Designation) Order 2002. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.
- D.1.6 Each box of finds will be accompanied by a finds context checklist itemising the finds within each box. The number of bags of finds from each context and individual small find from each context will be recorded. A member of the processing team will check the list when it arrives in the department. There are separate forms for finds recovered from fieldwalking.
- D.1.7 The processing programme is reviewed on a weekly basis and priorities are worked out after discussions with the Head of Fieldwork and the Head of Post-excavation. Project managers will keep the Head of Finds informed of any pressing deadlines that they are aware of. All finds from evaluations are dealt with as a matter of priority.
- D.1.8 All bulk finds are washed (where appropriate), marked, bagged and boxed by the processing team according to the guidelines set out in section 4 and 5 of the OA Finds Manual, First-aid for finds and the UKIC guidelines No.2. They must also take into account the requirements of the receiving museum. Primary data recording count and weight of fragments by material from each context is recorded on the site database.

- D.1.9 Unstable and sensitive objects are recorded onto the database and then packaged and stored in controlled environments according to their individual requirements. The advice of a conservator will be sought for sensitive objects in need of urgent conservation. All metalwork will be x-rayed prior to assessment (and to meet the requirements of most receiving museums).
- D.1.10 Finds recovered from the environmental sample processing will be incorporated into the main assemblage and added to the database.
- D.1.11 On completion of the processing and data entry a finds file for each archaeological investigation will be produced, a summary of which is available for the project manager. The assemblage is allocated an OA number for storage purposes. Bulk finds are stored on a roller racking system, metals in a secure controlled storage and organic finds are refrigerated where possible.
- D.1.12 The movement of finds in and out of the department storage areas is strictly monitored and recorded. Carbon copy transit forms exist to record this information. Finds will not be removed from storage without the prior knowledge of the Head of Finds.
- D.1.13 Finds information summarised in the finds compendium is used to assess the finds requirements for the post excavation stages of the project. The Finds department holds a list of all specialists used by OA (see below) both internal and external.
- D.1.14 On completion of the post excavation stage of the project the department prepares the finds assemblage for deposition with the receiving museum. Discussions will be held with the museum, the excavator and the head of finds to finalise any selection, retention or discard policy. Most museums issue strict guidelines for the preparation of archives for deposition with their individual labelling, packaging and recording requirements.

D.2 Relevant industry standards and guidelines

- D.2.1 UKIC, 1983, Packaging and Storage of Freshly-Excavated Artefacts from Archaeological Sites. Conservation Guidelines No.2. Archaeology Section, United Kingdom Institute for Conservation.
- D.2.2 UKIC, 1988, Excavated Artefacts and Conservation: UK sites Revised Edition. Conservation Guidelines No.1. Archaeology Section, United Kingdom Institute for Conservation.
- D.2.3 Society of Museum Archaeologists, 1993, Selection, retention and dispersal of Archaeological Collections. Download available via <http://www.socmusarch.org.uk/publica.htm>
- D.2.4 Watkinson, D E & Neal, V, 1998, First Aid for Finds (3rd edition). RESCUE & UKIC

D.3 Relevant OA manual and other supporting documentation

- D.3.1 Allen, L, and Cropper, C (internal publication only) Oxford Archaeology Finds Manual.

APPENDIX E HUMAN REMAINS

E.1 Standard methodology - summary

- E.1.1 Human remains will not be excavated without a relevant licence/faculty and, where applicable (for example, a post medieval cemetery), a risk assessment from the local environmental officer.
- E.1.2 All human remains will be treated with due care and regard to the sensitivities involved, and will be screened from the public throughout the course of the works.
- E.1.3 Excavation will be undertaken in accordance with ClfA (Roberts and McKinley 1993) and English Heritage and The Church of England guidelines (Mays 2005). For crypts and post-medieval burials, the recommendations set out by the ClfA (Cox 2001) and by the Association of Diocesan and Cathedral Archaeologists and APABE (2010) are also relevant.
- E.1.4 In accordance with recommendations set out in the English Heritage and Church of England (2005) document Guidance for best practice for treatment of human remains excavated from Christian burial grounds in England, skeletons will not be excavated beyond the limits of the trench, unless they are deemed osteologically or archaeologically important.
- E.1.5 Where any soft tissue survives and/or materials (for example, inner coffins, mattresses and other paddings) soaked in body liquor, no excavation or handling of the remains will take place until an appropriate risk assessment has been undertaken. Relevant protocols (i.e. Cox 2001) for their excavation, recording and removal will be adhered to.
- E.1.6 OA does not excavate or remove modern burials (post-1907) and does not remove or open sealed lead coffins. Appropriate PPE (e.g. chemical suit, latex gloves) will be worn by all staff when working with lead coffins.
- E.1.7 Graves and their contents will be hand excavated in plan. Each component (for example, skeleton, grave cut, coffin (or remains of), grave fill) will be assigned a unique context number from a running sequence. A group number will also be assigned to all of these, and small finds numbers to features such as coffin nails, hobnails and other grave goods (as appropriate).
- E.1.8 Soil samples will be taken during the excavation of inhumations, usually from the region of the skull, chest, right hand, left hand, abdomen and pelvis, right foot and left foot. Infants (circa. less than 5 years) will normally be recovered as bulk samples. Soil samples will also be taken from graves that appear to contain no human bone.
- E.1.9 Burials (including the skeleton, cremation, coffin fittings, coffin, urn, grave goods / other) will be recorded by photographic and written record using specialised pro forma context sheets, although these records may only include schematic representations of the location and position of the skeletons, depending on the nature and circumstances of the burial.

- E.1.10 Where necessary, hand drawn plans (usually at 1:10, sometimes 1:5) will be made, especially of contexts where required details cannot be adequately seen using digital rectified photography (for example, urned cremations; undisturbed hob nails).
- E.1.11 Levels will be taken. For inhumations this will be on the skull, pelvis and feet as a minimum.
- E.1.12 Human remains that are exhumed will be bagged and labelled according to skeletal region and carefully packed into suitable containers (for example, acid free cardboard boxes) and transported to a suitable storage location. Any associated coffins and coffin fittings will be contained with the human remains wherever possible.
- E.1.13 Urned cremations will not usually be half sectioned, but excavated in spits or recovered as a bulk sample.
- E.1.14 Wherever possible, urned cremations will be carefully bandaged, recovered whole and will be excavated in spits in the laboratory, as per the recommendations of McKinley (2004).
- E.1.15 Unless deemed osteologically or archaeologically important disarticulated bone / chanel will be collected and reserved for re-burial if immediate re-internment as close to its original position is not practicable. In some instances, a rapid scan of this material may be undertaken by a qualified osteologist, if deemed relevant.
- E.1.16 If undisturbed, pyre sites will normally be excavated in quadrants, at the very least in 0.5 m blocks of 0.5 m spits.
- E.1.17 Pyre debris dumps will be half sectioned or quadrant and will be subject to 100% sampling.
- E.1.18 Wooden and lead coffins and any associated fittings, including fixing nails will be recorded on a pro forma coffin recording sheet. All surviving coffin fittings will be recorded by reference to Reeve and Adams (1993) and the unpublished master catalogue that is being compiled by OA. Where individual types cannot be paralleled, they will be drawn and/ or photographed and assigned a style number. Biographical details obtained from legible departum plate inscriptions will be recorded and further documentary research will be made.
- E.1.19 Funerary structures, such as brick shaft graves and/or vaults will be hand-drawn at a scale of 1:10 or 1:20, as appropriate. Location, dimensions and method of construction will be noted, and the structure added to the overall trench plan.
- E.1.20 Memorials, including headstones, revealed within the areas of development will be recorded irrespective of whether they are believed to be in situ.
- E.1.21 Where required, memorials will be accorded an individual context number and will also be included as part of the grave group, if the association with a burial is clear.
- E.1.22 Memorials will be recorded on pro-forma context sheets, based on and following the guidelines set out by Mytum (2002), and will include details of:
- Shape
 - Dimensions

- Type of stone used
- Iconography (an illustration may best describe these features)
- Inscription (verbatim record of inscription; font of the lettering)
- Stylistic type

E.2 Relevant industry standards and guidelines

- E.2.1 Advisory Panel on the Archaeology of Burials in England, 2015 Large Burial Grounds. Guidance on sampling in archaeological fieldwork projects
- E.2.2 Association of Diocesan and Cathedral Archaeologists and APABE. 2010 Archaeology and Burial Vaults. A guidance note for churches. Guidance Note 2
- E.2.3 British Association of Biological Anthropology and Osteoarchaeology. 2011 Code of Practice.
- E.2.4 British Association of Biological Anthropology and Osteoarchaeology. 2011 Code of Ethics.
- E.2.5 Cox, M, 2001 Crypt archaeology. An approach. ClfA Paper No. 3
- E.2.6 Mays, S, 2005 Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England. Church of England and English Heritage.
- E.2.7 McKinley, J, and Roberts, C, 1993 Excavation and post-excavation treatment of cremated and inhumed human remains, ClfA Technical Paper No. 13
- E.2.8 McKinley, J, 2004 Compiling a skeletal inventory: cremated human bone. In Brickley, M, and McKinley, J (eds) Guidelines to the Standards for Recording Human Remains, ClfA Technical Paper No. 7. 9-13.
- E.2.9 Mytum, H, 2000 Recording and Analysing Graveyards. CBA Handbook No. 15.
- E.2.10 Reeve, J, and Adams, M, 1993 The Spitalfields Project. Volume I – The Archaeology Across the Styx. CBA Research Report No. 85
- E.2.11 The Human Tissue Act 2004

E.3 Relevant OA manual and other supporting documentation

- E.3.1 Loe, L, 2008 The Treatment of Human Remains in the Care of Oxford Archaeology. Oxford Archaeology internal policy document.
- E.3.2 Excavating and recording human remains. Oxford Archaeology internal guidelines document.

APPENDIX F REPORTING

F.1 Standard methodology - summary

F.1.1 For Watching Briefs and Evaluations, the style and format of the report will be determined by OA, but will include as a minimum the following:

- A location plan of trenches and/or other fieldwork in relation to the proposed development.
- Plans and sections of features located at an appropriate scale.
- A section drawing showing depth of deposits including present ground level with Ordnance Datum, vertical and horizontal scale.
- A summary statement of the results.
- A table summarising the features, classes and numbers of artefacts contained within, spot dating of significant finds and an interpretation.
- A reconsideration of the methodology used, and a confidence rating for the results.
- An interpretation of the archaeological findings both within the site and within their wider landscape/townscape setting.

F.1.2 For Excavations, a Post-Excavation Assessment and Project Design will generally be prepared, as prescribed by English Heritage Management of Research Projects in the Historic Environment (MoRPHE) 2006, Section 2.3. This will include a Project Description containing:

- A summary description and background of the project.
- A summary of the quantities and assessment of potential for analysis of the information recovered for each category of site, finds, dating and environmental data. Detailed assessment reports will be contained within appendices.
- An explicit statement of the scope of the project design and how the project relates to any other projects or work preceding, concurrent with or following on from it.
- A statement of the research aims of the fieldwork and an illustrated summary of results to date indicating to what extent the aims were fulfilled.
- A list of the project aims as revised in the light of the results of fieldwork and the current post-excavation assessment process.

F.1.3 A section on Resources and Programming will also be produced, containing:

- A list of the personnel involved indicating their qualifications for the tasks undertaken, along with an explanation of how the project team will communicate, both internally and externally.
- A list of the methods which will be used to achieve the revised research aims.

- A list of all the tasks involved in using the stated methods to achieve the aims and produce a report and research archive in the stated format, indicating the personnel and time in days involved in each task. Allowance should be made for general project-related tasks such as monitoring, management and project meetings, editorial and revision time.
- A cascade or Gantt chart indicating tasks in the sequence and relationships required to complete the project. Due allowance will be made for leave and public holidays. Time will also be allowed for the report to be read by a named academic referee as agreed with the County Archaeological Officer, and by the County Archaeological Officer.
- A report synopsis indicating publisher and report format, broken down into chapters, section headings and subheadings, with approximate word lengths and numbers and titles of illustrations per chapter. The structure of the report synopsis should explicitly reflect the research aims of the project.

F.1.4 The Project Design will be submitted to the County Archaeological Officer or equivalent for agreement.

F.1.5 Under certain circumstances (e.g. with very small mitigations), and as agreed with the County Archaeological Officer or equivalent, a formal Assessment and Project Design may not be required and either the project will continue straight to full analysis, or a simple Project Proposal (MoRPHE 2006 Section 2.1) will be produced prior to full analysis. This proposal may include:

- A summary of the background to the project
- Research aims and objectives
- Methods statement outlining how the aims and objectives will be achieved
- An outline of the stages, products and tasks
- Proposed project team
- Estimated overall timetable and budget if appropriate.

F.1.6 Once the post-excavation Project Design or Project Proposal has been accepted, the County Archaeological Officer or his appointed deputy will monitor the progress of the post-excavation project at agreed points. Any significant variation in the project design will be agreed with the County Archaeological Officer.

F.1.7 The results of the project will be published in an appropriate archaeological journal or monograph. The appropriate level of publication will be dependent on the significance of the fieldwork results and will be agreed with the County Archaeological Officer. An OASIS (Online Access to the Index of Archaeological Investigations) form will be completed for each project as per English Heritage guidelines.

F.2 Relevant industry standards and guidelines

F.2.1 Oxford Archaeology (OA) adheres to the national standards in post-excavation procedure as outlined in English Heritage's Management of Research Projects in the Historic Environment (MoRPHE; EH 2006). Furthermore, all post-excavation projects

take into account the appropriate regional research frameworks as well as national research agendas such as the Framework for Historic Environment Activities & Programmes in English Heritage (SHAPE; EH 2008).

APPENDIX G LIST OF SPECIALISTS REGULARLY USED BY OA

G.1.1 Below are two tables, one containing 'in-house' OA specialists, and the other containing a list of external specialists who are regularly used by OA.

Internal archaeological specialists used by OA

| Specialist | Specialism | Qualifications |
|----------------------|---|--|
| Lisa Brown | Early Prehistoric pottery | BA, PGDip, MLitt, MCIfA |
| Paul Booth | Iron Age and Roman pottery | BA, FSA, MCIfA |
| John Cotter | Medieval and Post Medieval pottery, Clay Pipe and CBM | BA (Hons), MCIfA |
| Cynthia Poole | CBM and Fired Clay | BA (Hons), MSc |
| Edward Biddulph | Roman Pottery | BA (Hons), MA, MCIfA |
| Ian Scott | Metalwork and Glass | BA (Hons) |
| Leigh Allen | Metalwork and worked bone | BA (Hons), PGDip |
| Dr Ruth Shaffrey | Worked stone artefacts | BA, PhD, MCIfA |
| Julian Munby | Architectural Stone | BA, FSA |
| Dr Rebecca Nicholson | Fish and Bird Bone | BA (Hons), MA, D.Phil, MCIfA, FSA Scot |
| Mairead Rutherford | Pollen | BSc, MSc |
| Lee Broderick | Animal bone | BA (hons), MA, MSc, FZG, SAC Dip (ecology) |
| Sheila Boardman | Charred plant remains and charcoal | BA (Hons) |
| Julia Meen | Charred and waterlogged plant remains and charcoal | BSc (Hons), MA |
| Dr Denise Druce | Charred plant remains, charcoal and pollen | BA (Hons), PhD, MCIfA |
| Elizabeth Stafford | Geoarchaeology and land snails | BA (Hons), MSc |
| Carl Champness | Geoarchaeology | BA (Hons), MSc, ACIfA |
| Dr Ian Smith | Animal Bone | BSc, PhD |
| Nicola Scott | Archaeological archive deposition | BA |
| Mike Donnelly | Flint | BSc, MCIfA |
| Dr Louise Loe | Human Bone | D.Phil, BA, MCIfA |
| Helen Webb | Human Bone | MSc, BSc |
| Mark Gibson | Human Bone | MSc, BA |
| Dr Lauren McIntyre | Human Bone | D.Phil, MSc, BSc |

External archaeological specialists regularly used by OA

| Specialist | Specialism | Qualifications |
|------------|------------|----------------|
| Lynne Keys | Slag | BA (Hons) |

| Specialist | Specialism | Qualifications |
|--|---|---------------------------|
| Quita Mould | Leather | BA, MA |
| Penelope Walton Rogers, The Anglo Saxon Laboratory | Identification of Medieval Textiles | FSA, Dip.Acc |
| Dana Goodburn-Brown | Conservation | BSc (Hons), BA, MSc |
| Steve Allen, York Archaeological Trust | Conservation | BA, MA, MAAIS |
| Dr Richard Macphail | Soils, especially Micromorphology | BA (Hons), MSc, PhD |
| Dana Challinor | Charcoal | MA, MSc |
| Dr Nigel Cameron | Diatoms | BSc, MSc, PhD |
| Dr David Smith | Insects | BA (Hons), MA, PhD |
| Professor Adrian Parker | Phytoliths and pollen | BSc (Hons), D.Phil |
| Dr David Starley | Metalworking Slag | BSc (Hons), PhD |
| Wendy Carruthers | Charred and waterlogged plant remains | BA (Hons) |
| Dr Sylvia Peglar | Pollen | PhD |
| Dr John Whittaker | Ostracods and Foraminifera | BA (Hons), PhD |
| Dr John Crowther | Soil Chemistry | MA, PhD |
| Dr Martin Bates | Geoarchaeology | BSc, PhD |
| Dr Dan Miles | Dendrochronology | D.Phil, FSA |
| Dr Jean-Luc Schwenninger | Optically Stimulated Luminescence Dating | PhD |
| Dr David Higgins | Clay Pipe | BA, PhD, MCifA |
| Dr Hugo Anderson- Wymark | Flint | BSc, PhD, FSA Scot, MCifA |
| Dr Damian Goodburn- Brown | Ancient Woodwork | BA, PhD |

APPENDIX H DOCUMENTARY ARCHIVING

H.1 Standard methodology – summary

- H.1.1 The documentary archive constitutes all the written, drawn, photographic and digital records relating to the set up, fieldwork and post-excavation phases of the project. This documentary archive, together with the artefactual and environmental ecofact archive collectively forms the record of the site. The report is part of the documentary archive, and the archive must provide the evidence that supports the conclusions of the report, but the archive may also include data which exceeds the limitations of research parameters set down for the report and which could be of significant value to future researchers.
- H.1.2 At the outset of the project OA Archive department will contact the relevant local receiving museum or archive repository to notify them of the imminent start of a new fieldwork project in their collecting area. Relevant local archiving guidelines will be observed and site codes, which integrate with the receiving repository, will be agreed for labelling of archives and finds.
- H.1.3 During the course of the project the Archive department will assist the Project Manager in the management of the archive including the cataloguing and development technique suitable for photographic archive requirements.
- H.1.4 The site archive will be security copied either by microfilming and the master sent to English Heritage as part of the National Archaeological Record or it will be digitally scanned and stored in a dedicated archive section of the OA computer network. A copy of the work as microfiche diazo or .pdf/a on disk will be sent to the receiving museums with the hard copy. This will act as a safeguard against the accidental loss and the long-term degeneration of paper records and photographs.
- H.1.5 Born digital data where suitable will be printed to hard copy for the receiving museum but if the format is such that it needs maintaining in digital form a copy will be sent to the receiving museum by CD. Back-up copies will be stored on the OA digital network and or posted to the ADS in accordance with AAF & ADS guidelines. In most cases a digital copy of the report will be included in the OASIS project library hosted by ADS.
- H.1.6 Prior to deposition the Archive department will contact the museum regarding the size and content of the archive and discuss any retention and dispersal policies which may be applicable in line with local and SMA Guidelines ' Selection, Retention & Dispersal of Archaeological Collections' 1993
- H.1.7 The site archive will then be deposited with the relevant receiving museum or repository at the earliest opportunity unless further archaeological work on the site is expected. The documentary archive will include correspondence detailing landowner consent to deposit the artefacts and any copyright licences in accordance with the receiving museum guidelines.
- H.1.8 Oxford Archaeology will retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide a licence to the client in all

matters directly relating to the project as described in the Written Scheme of Investigation.

H.1.9 OA will advise the client of any such materials supplied in the course of projects which are not OA's copyright.

H.1.10 OA undertakes to respect all requirements for confidentiality about the client's proposals provided that these are clearly stated. It is expected that such conditions shall not unreasonably impede the satisfactory performance of the services required. OA further undertake to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that clients respect OA's general ethical obligations not to suppress significant archaeological data for an unreasonable period.

H.2 Relevant industry standards and guidelines

H.2.1 At the end of the project the site archive will be ordered, catalogued, labelled and conserved and stored according to the following national guidelines:

H.2.2 The 2007 AAF guide Archaeological Archives A Guide to best practice in creation, compilation, transfer and curation. Brown D.

H.2.3 The ClfA Standard & Guidance for the creation, compilation, transfer and deposition of archaeological archives

H.2.4 The UKIC's Guidelines for the preparation of excavation archives for long-term storage

H.2.5 The MGC's Standards in the museum care of archaeological collections

H.2.6 Local museum guidelines such as Museum of London Guidelines: (<http://www.museumoflondonarchaeology.org.uk/English/ArchiveResearch/DeposRe> source) will be adopted where appropriate to the archive collecting area.

H.2.7 The site archive will be prepared to at least the minimum acceptable standard defined in Management of Archaeological Projects 2, English Heritage 1991.

H.3 Relevant OA manual and other supporting documentation

H.3.1 The OA Archives Policy.

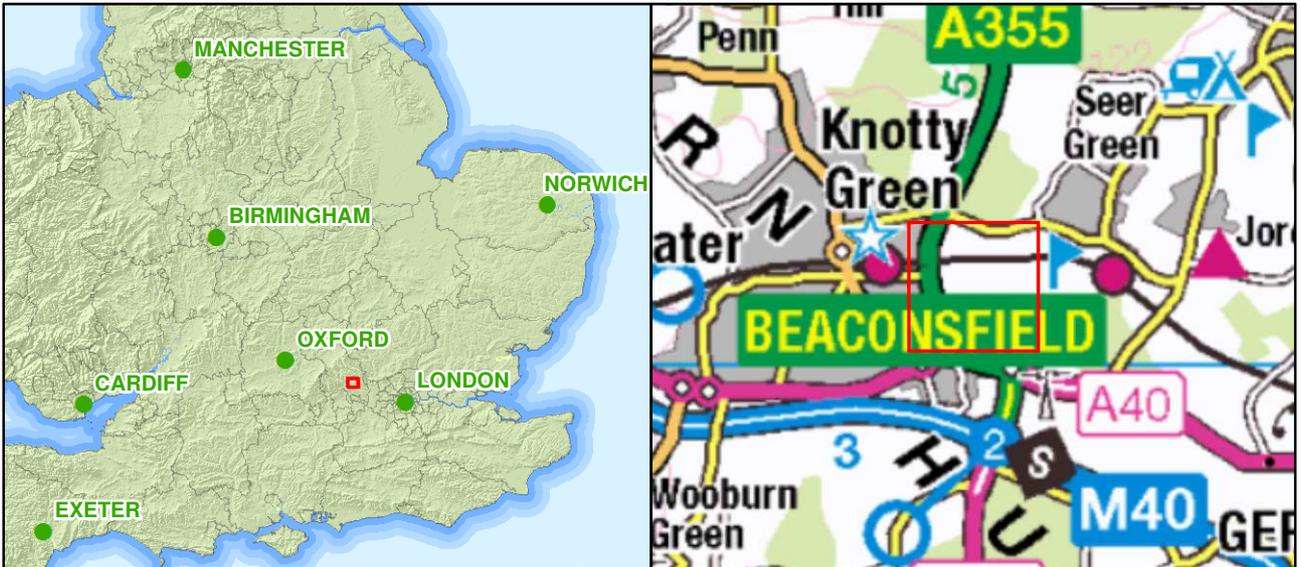
APPENDIX I HEALTH AND SAFETY

I.1 Standard Methodology - summary

- I.1.1 All work will be undertaken in accordance with the OA Health and Safety Policy (Revision 19, July 2016), the OA Site Safety Procedures Manual, a site-specific Risk Assessment and, if required, Safety Plan or Method Statement. Copies of the site-specific documents will be submitted to the client or their representative for approvals prior to mobilisation, and all relevant H and S documentation will be available on site at all times. The Health and Safety documentation will be read in conjunction with the project WSI.
- I.1.2 Where a project falls under the Construction (Design and Management) Regulations (2015), all work will be carried out in accordance with the Principal Contractor's Construction Phase Plan (CPP).

I.2 Relevant industry standards and guidelines

- I.2.1 All work will be carried out according to the requirements of all relevant legislation and guidance, including, but not exclusively:
 - I.2.2 The Health and Safety at Work Act (1974).
 - I.2.3 Management of Health and Safety at Work Regulations (1999).
 - I.2.4 Manual Handling Operations Regulations 1992 (as amended).
 - I.2.5 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (2013).
 - I.2.6 The Construction (Design and Management) Regulations (2015).
 - I.2.7 Relevant OA manual and other supporting documentation
 - I.2.8 The OA Health and Safety Policy.
 - I.2.9 The OA Site Safety Procedures Manual.
 - I.2.10 The OA Risk Assessment templates.
 - I.2.11 The OA Method Statement template.
 - I.2.12 The OA Construction Phase Plan template.



X:\a\A355 Beaconsfield\10Geomatics\03 GIS Projects\BERREY_Figure1.mxd*anne.kilgour*23/02/2017

Contains OS data © Crown Copyright and database right 2017
 Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

Figure 1: Site location

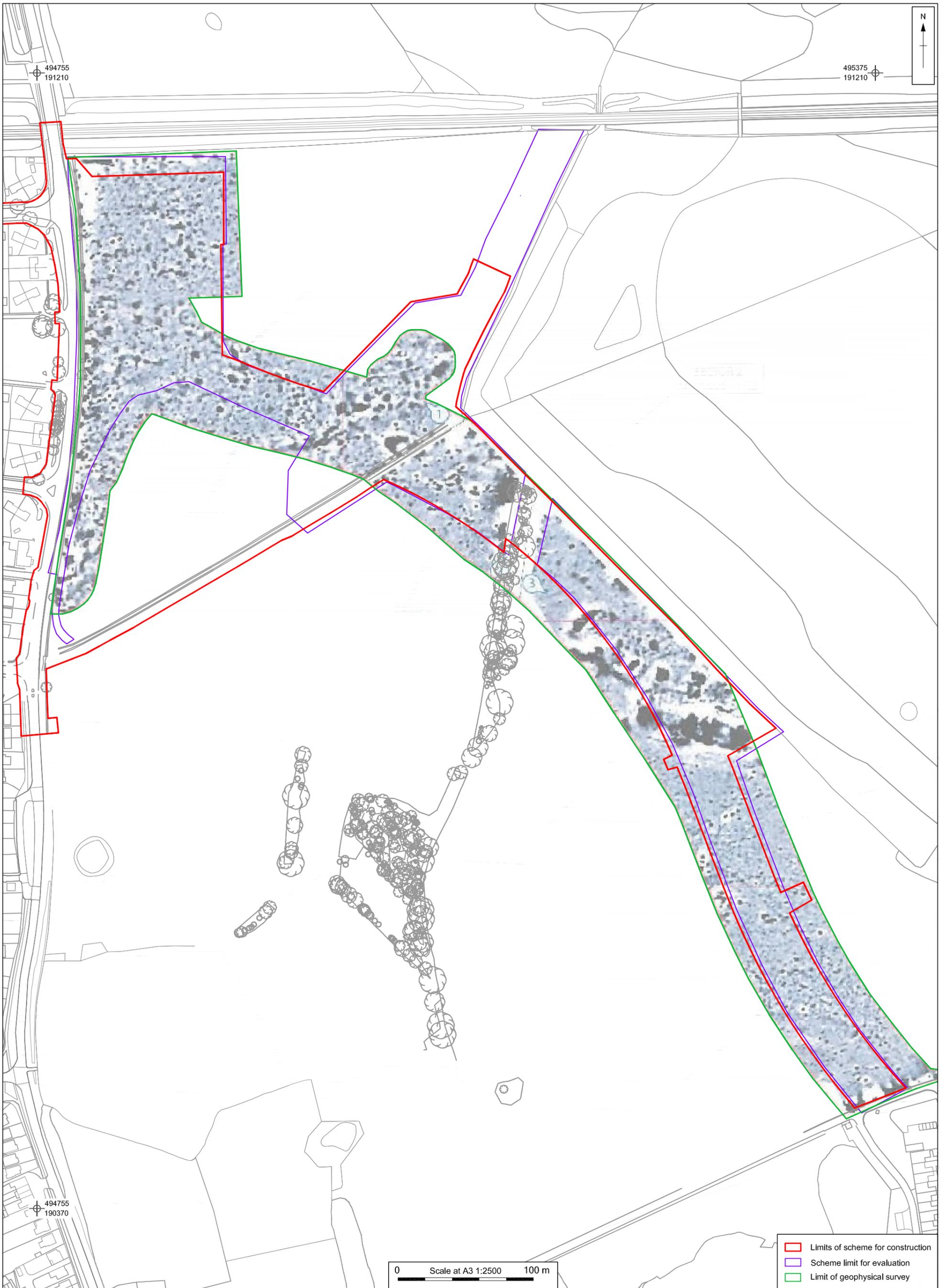


Figure 2 - Geophysical survey (Greyscale) after Headland Archaeology

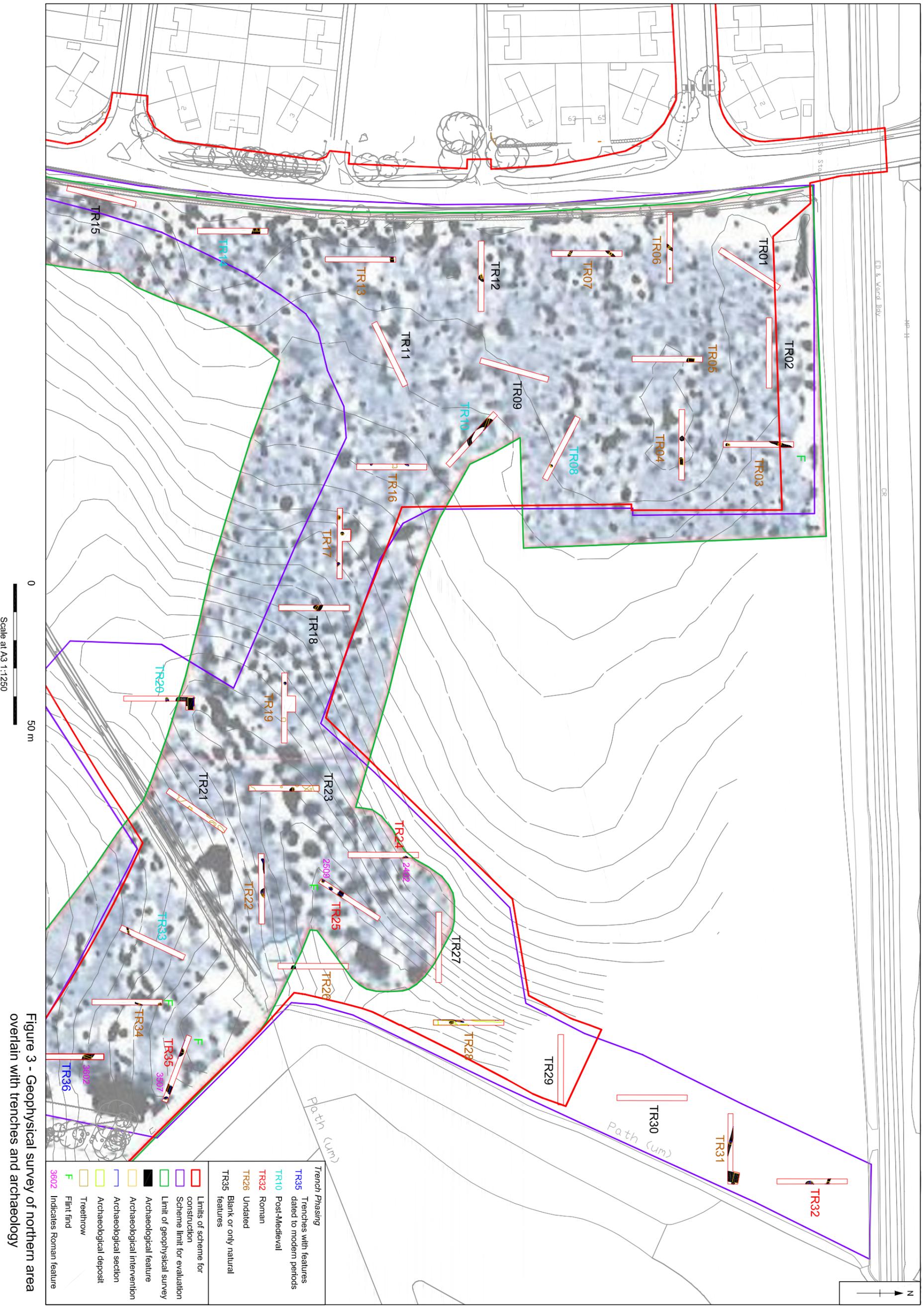
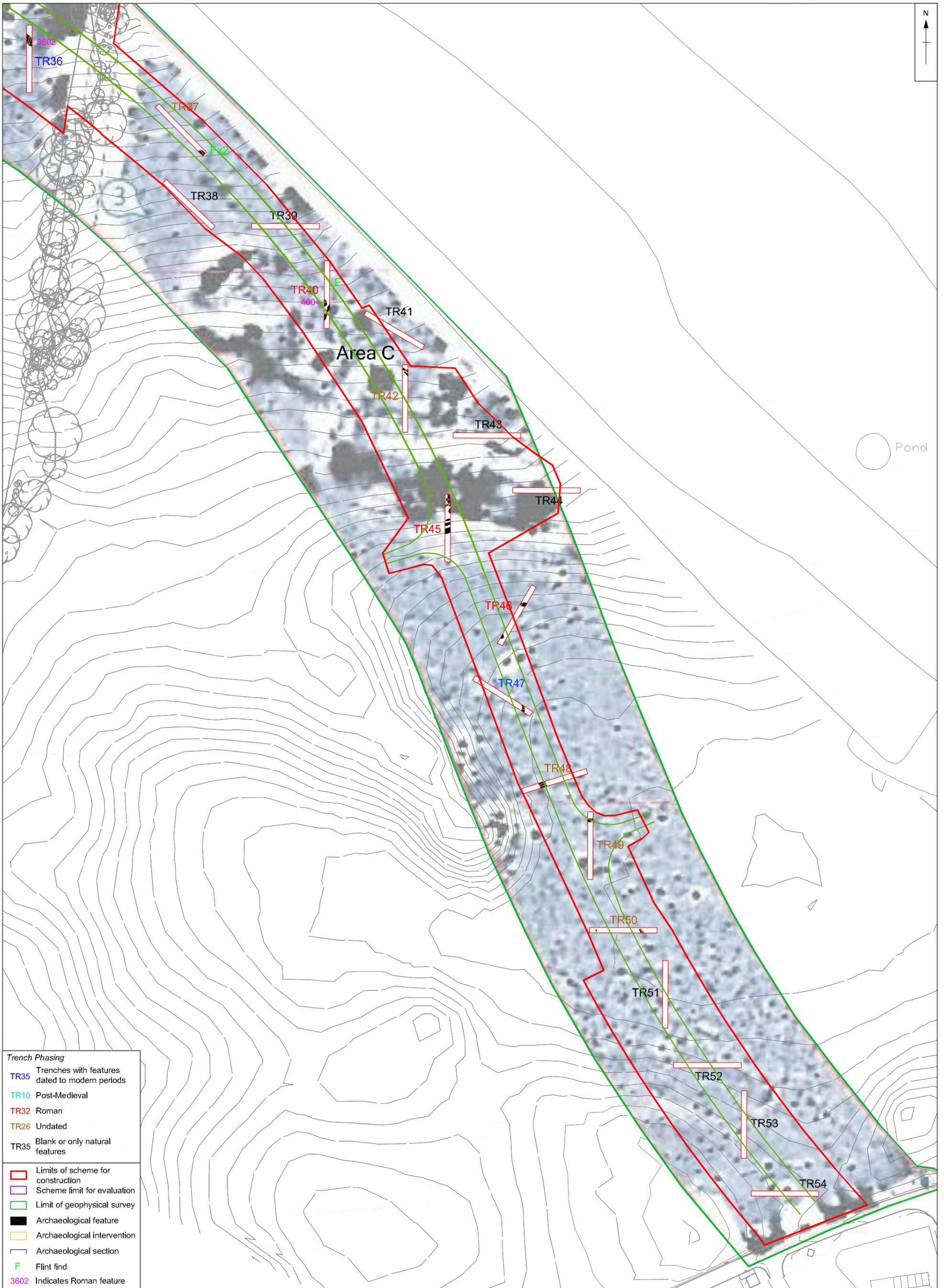


Figure 3 - Geophysical survey of northern area overlain with trenches and archaeology



0 50 m
Scale at A3 1:1250

Figure 4 - Geophysical survey of southern area overlain with trenches and archaeology

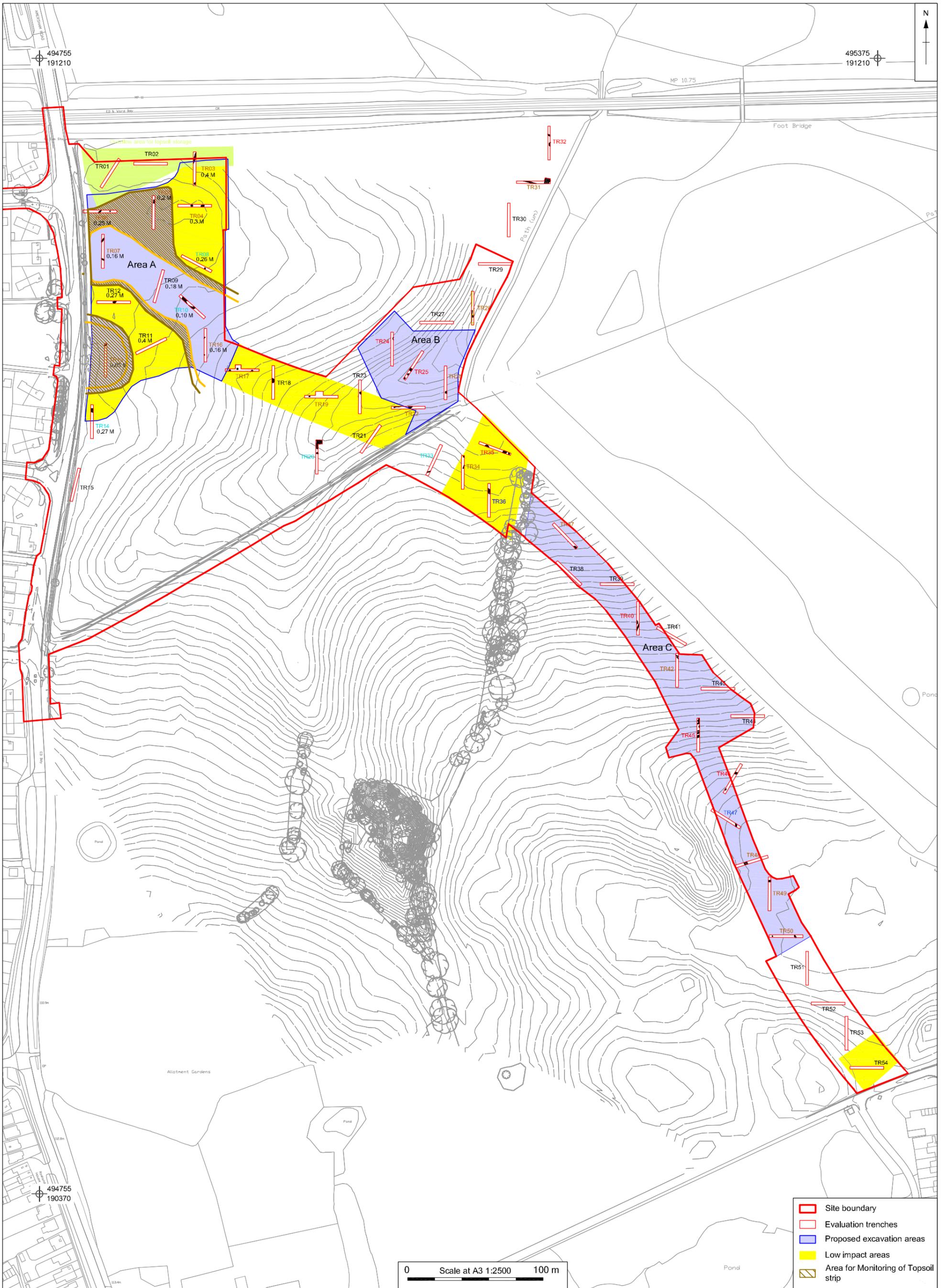


Figure 5 - Construction limits showing low impact areas and areas for SMS excavation

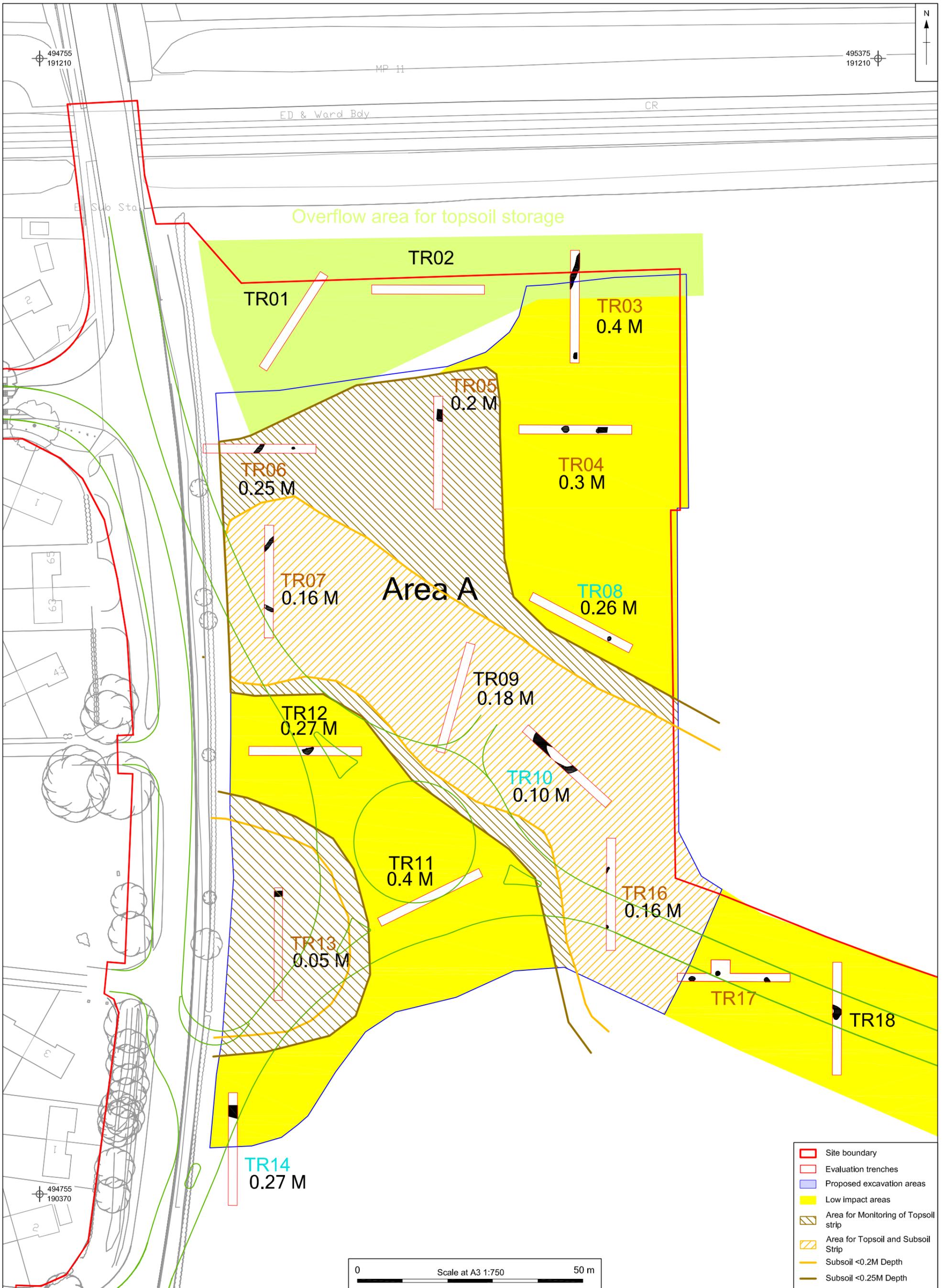


Figure 6: Area A - Subsoil depths and areas for topsoil and subsoil strip



**Head Office/Registered Office/
OA South**

Janus House
Osney Mead
Oxford OX2 0ES

t: +44 (0) 1865 263 800
f: +44 (0) 1865 793 496
e: info@oxfordarchaeology.com
w: <http://oxfordarchaeology.com>

OA North

Mill 3
Moor Lane
Lancaster LA1 1QD

t: +44 (0) 1524 541 000
f: +44 (0) 1524 848 606
e: [oanorth@oxfordarchaeology.com](mailto: oanorth@oxfordarchaeology.com)
w: <http://oxfordarchaeology.com>

OA East

15 Trafalgar Way
Bar Hill
Cambridgeshire
CB23 8SQ

t: +44 (0) 1223 850500
e: [oaeast@oxfordarchaeology.com](mailto: oaeast@oxfordarchaeology.com)
w: <http://oxfordarchaeology.com>



Director: Gill Hey, BA PhD FSA MCifA
*Oxford Archaeology Ltd is a
Private Limited Company, N^o: 1618597
and a Registered Charity, N^o: 285627*