NSG European Technical Centre, Lathom, West Lancashire

Archaeological Watching Brief Report

June 2019

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NSG European Technical Centre, Lathom, West Lancashire

Archaeological Watching Brief Report

Written by Paul Simkins

With illustrations by Mark Tidmarsh

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Summary

Oxford Archaeology (OA) North were commissioned by Orion Heritage (the client) to undertake a watching brief during the construction of a solar farm on land at, and to the south of, the NSG European Technical Centre, Lathom, West Lancashire (NGR. SD 45918 08539).

The work was undertaken as a condition of Planning Permission (planning ref. 2018/0409/FUL). The client was commissioned by Lightsource Renewable Holdings Ltd to produce a desk-based assessment (DBA; Orion Heritage 2018), and a geophysical survey was also undertaken by Magnitude (2018). These investigations revealed preserved earthworks likely relating to part of a World War 1 Remount Station. Following the production of the DBA and completion of the geophysical survey, the client liaised with the Lancashire Archaeological Advisory Service (LAAS) to determine the best manner in which to implement the development proposals. A range of special measures and mitigation were suggested, including the use of cable trays throughout the southern field other than around the outside of it, re-routing of the access road along the western boundary, structures placed outside the area of significant earthworks in the southern field, swales placed around the perimeter of the site and the High Voltage (HV) Cable placed along the northern edge of the southern field. There was also a requirement to use low impact machinery on the site, which resulted in very minimal impact to the earthwork remains of the remount station. These mitigation measures are detailed in Written Schemes of Investigation produced by Orion Heritage and OA North.

The fieldwork initially involved the monitoring of five geotechnical test pits, undertaken in November 2018, with the monitoring of cable trenches, an access road, transformer bases and swales, being undertaken during construction of the solar farm in March, April and May 2019.

Little of archaeological interest was identified during the watching brief, a levelling layer of compact sand and clinker or ash was encountered in several sections of the Earth Cable trench, which likely related to a levelling layer for the remount station. A small assemblage of glass and ceramic finds was recovered from the topsoil with the southern field, all being dated to the nineteenth and twentieth centuries.

Acknowledgements

OA North would like to thank Will Bedford of Orion Heritage for commissioning this project. Thanks is also extended to the archaeological advisors to the local planning authority who monitored the work on behalf of Lancashire County Council for their advice and guidance.

The project was managed for OA North by Paul Dunn. The fieldwork was undertaken by Paul Dunn, James Hodgson and Paul Simkins. Illustrations were produced by Mark Tidmarsh.

1 INTRODUCTION

1.1 Scope of work

1.1.1 OA North were commissioned by Orion Heritage (the client) to undertake a watching brief during the construction of a solar farm on land at, and to the south of, the NSG European Technical Centre, Lathom, West Lancashire (NGR. SD 45918 08539).

1.1.2 The work was undertaken as a condition of Planning Permission (planning ref. 2018/0409/FUL). The client was commissioned by Lightsource Renewable Holdings Ltd to produce a desk-based assessment (DBA) (Orion Heritage 2018), and a geophysical survey was also undertaken by Magnitude (2018). These investigations revealed preserved earthworks likely relating to part of a World War 1 Remount Station. Following the production of the DBA and completion of the geophysical survey, the client liaised with the Lancashire Archaeological Advisory Service (LAAS) to determine the best manner in which to implement the development proposals. A range of special measures and mitigation were suggested, which were detailed in a Written Scheme of Investigation (WSI; *Appendix D*) produced by the client. One of the mitigation measures was to provide an archaeological watching brief during any below ground works required as part of the development. The client commissioned OA North to undertake the watching brief and requested OA North produce a WSI (*Appendix E*) detailing the methodology of the watching brief (*Appendix E*).

1.1.3 The fieldwork initially involved the monitoring of five geotechnical test pits, undertaken in November 2018, with the monitoring of all cable trenches, an access road, transformer bases and swales, being undertaken in March, April and May 2019. This document outlines how OA North implemented those requirements.

1.2 Location, topography and geology

1.2.1 The site lies to the west of Skelmersdale and comprises two sites; one smaller site within the NSG European Technical Centre measuring approximately 0.95ha, and a larger site approximately 350m to the south at Lord's Cottage Farm, which measures approximately 4.9ha (Fig. 1 NGR SD 45918 08539). The topography of the site is relatively level, at a height above ordnance datum (aOD) of approximately 55m.

1.2.2 The solid bedrock geology of the site is mapped as bands of Sandstone of the Old Lawrence Rock formation, formed in the Carboniferous Period and Mudstone, Siltstone and Sandstone of the Pennine Lower Coal Measures formation, formed in the Carboniferous Period (BGS 2019). The superficial deposits of the site are mapped as Shirdley Hill Sand Formation with a band of Devensian Till along the western edge of site, both formed in the Quaternary Period (*ibid*). The soils of the area are identified as slightly acid loamy and clayey soils with impeded drainage (Cranfield 2019).

1.3 Archaeological and historical background

1.3.1 The archaeological and historical background of the site has been described in detail in a desk-based assessment produced by Orion Heritage (2018) and will not be reproduced here.

2 WATCHING BRIEF AIMS AND METHODOLOGY

2.1 Aims

2.1.1 The project aims and objectives were as follows:

i. to adhere to and fulfil the agreed programme of works associated with the archaeological potential of the site;
ii. to determine or confirm the general nature of any remains present;
iii. to determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence;
iv. to determine if buried remains associated with the WW1 remount station survive within the southern field of the site (Fig 2);
v. to provide an understanding of the nature of those remains;
vi. to show how they relate to the known historical records;
vii. to mitigate the limited loss of the remains in the localised areas of impact;
viii. to provide an enhanced understanding of the buried remains, and of the Lathom remount station;
ix. to compile a professional archival record of any archaeological remains within the site.

2.2 Methodology

2.2.1 The full methodology is outlined in the Written Scheme of Investigation (*Appendix E*) and was adhered to in full and was fully compliant with prevailing guidelines and established industry best practice (CIfA 2014a: 2014b: 2014c: Historic England 2015). A programme of field observation accurately recorded the character of deposits within the excavations.

2.2.2 The topsoil and overburden were removed using an 13-ton, 360°, tracked excavator (fitted with a toothless ditching bucket) to the surface of the first significant archaeological deposit, under direct archaeological supervision at all times. Subsequent cleaning and investigation of all archaeological deposits were undertaken manually, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions. All features of archaeological interest were investigated and recorded.

2.2.3 All information identified during the site works was recorded stratigraphically, using a system adapted from that used by the former Centre of Archaeology of English Heritage, with an accompanying pictorial record (plans, sections, and digital photographs). Primary records were available for inspection at all times.

2.2.4 Results of all field investigations were recorded on *pro forma* context sheets. The site archive includes a photographic record and accurate large-scale plans and sections at appropriate scales (1:50, 1:20 1:10).

2.2.5 A full professional archive has been compiled in accordance with the Written Scheme of Investigation (*Appendices D* and *E*), and in accordance with current CIfA (2014c) and Historic England guidelines (Historic England 2015). The archive will be deposited with Lancashire Historic Environment Record.

3 RESULTS

3.1 Introduction and presentation of results

3.1.1 The results of the watching brief are presented below and include a stratigraphic description of the trenches that contained archaeological remains. The full details of all trenches with dimensions and depths of all deposits can be found in *Appendix A*. The results of the geotechnical test pits will be discussed first followed by the results of the monitoring during construction of the solar farm.

3.2 Watching Brief Results

3.2.1 ***Geotechnical Test Pits***: five geotechnical test pits were excavated across the site, two in the northern field (within the factory site) and three in the southern field (Fig 2). All but one of the test pits measured 2.2m long by 0.7m wide and 2.8m deep, Test Pit 3 was 2.9m long by 0.7m wide and 2.8m deep. The test pits were monitored on 14th November 2018.

3.2.2 The test pits in the northern field (Test Pits 1 and 2) displayed similar deposits, although there was slight variation in the natural deposits identified. The test pits contained a substantial thickness of made ground containing brick and building rubble, clearly a levelling deposit prior to the construction of the NSG factory. The made ground was overlain by a consistent layer of topsoil.

Plate 1: Test Pit 1 looking north-east, scale 1m

3.2.3 The test pits in the southern field (Test Pits 3, 4 and 5) were again fairly consistent, there was slight variation in the natural deposits identified, these being a mixture of sand and clay. The natural geology was overlain by a consistent thickness of subsoil, 0.35m, which was, in turn, overlain by topsoil, 0.15m thick. There were no finds recovered from any of the test pits.

Plate 2: Test Pit 5 looking north-east, scale 1m

3.2.4 ***Cable Trenches in the Southern Field***: the cable trenches for earth, CCTV and HV cable, within the southern field were monitored periodically from March to April. These trenches were approximately 0.7m wide and up to 1m bgl, depending on ground stability, the only exception being a section of the HV cable trench which crossed the gas main running through the area, the trench here was excavated to a width of 1m and a depth of 1.5m bgl. The cable trenches in the southern field were monitored between 4th March and 2nd April 2019.

Plate 3: Cable trench looking west in the north-west corner of the southern field

3.2.5 The deposits identified throughout the cable trenches were broadly similar to those within Test Pits 3, 4 and 5. The natural geology, ***1004***, varied slightly across the area, primarily being a loose yellow sand, overlain by subsoil, ***1003***, 0.35m thick, which was, in turn, overlain by topsoil, ***1001***, 0.15m thick. Throughout several sections of the cable trenches, there was evidence for a thin layer of made ground or hard standing, ***1002***, which was identified as grey compact sand and clinker or ash. This deposit is likely related to levelling of the field for the remount station. There was also evidence of concrete within the topsoil, which may also have related to the remount station.

Plate 4: Levelling deposit ***1002*** within cable trench

3.2.6 ***Transformer Bases in the Southern Field***: three transformer bases were excavated at the end of the access track, in the north-western part of the southern field (Fig 3). These bases were all excavated on the 13th March 2019 and varied in size, the northernmost one measured 2m long by 1m wide, the middle and southernmost ones measured 3m long by 2m wide, and the bases were all excavated to a maximum depth of 0.5m bgl. Natural geology was not encountered in these bases due to the excavated depth; subsoil ***1003***, was the earliest deposit identified, overlain by topsoil ***1001***. There were no archaeological features, although the bases of two glass bottles were recovered from topsoil ***1001***.

Plate 5: Transformer bases looking north

3.2.7 ***HV Cable Trench in the Northern Field***: a section of HV cable trenching was monitored in the northern field (Fig 5), measuring approximately 700m long by 0.7m wide and up to 1.5m deep. The deposits identified during the monitoring were consistent with those identified within Test Pits 1 and 2, natural geology, ***1007***, was overlain by made ground, ***1006***, of variable thickness, which was, in turn, overlain by a consistent layer of topsoil, ***1005***, 0.2m thick. There were no archaeological features or finds encountered.

3.2.8 ***Access Road in the Southern Field***: an access road extending northwards from the south-west corner and up the western edge of the southern field, turning 90° east prior to reaching the north-west corner of the field, then extending up to the transformer bases (Fig 3), was monitored on 15th and 17th April 2019. The access track was approximately 3m wide and excavated to a depth of 0.2m bgl. Due to this depth of excavation, only topsoil ***1001*** was encountered. No archaeological features were identified, however, two glass bottles were recovered from topsoil ***1001***, at the southern end of the access track.

Plate 6: Access Track looking south, scale 1m

3.2.9 ***Swales in the Southern Field***: fifteen swales were excavated throughout the southern field (Fig 3), which were monitored on the 7th May 2019. These all varied in length and alignment but were all excavated to a maximum depth of 0.2m bgl. As with the access track, due to this depth of excavation, only topsoil ***1001*** was encountered. No archaeological features were encountered, however, a small assemblage of glass and ceramics was recovered.

3.3 Finds summary

3.3.1 A small assemblage of glass bottles and ceramics was recovered from topsoil ***1001*** within the southern field. These all date likely date to the nineteenth and twentieth centuries. One of the bottles, with Ormskirk printed on the front and 'C.S & Co Ltd' printed on the base, also has a date stamp of 1828 on the base.

Plate 7: Ceramic finds, scale 0.05m

Plate 8: Glass finds, scale 0.05m

4 DISCUSSION

4.1 Results and Interpretation

4.1.1 Little archaeology was identified throughout the monitoring works and only a small assemblage of nineteenth and twentieth century glass bottles and ceramics was recovered. The only potential archaeological deposit relates to made ground ***1002***, which was identified in the cable trenches, likely a levelling deposit relating to the remount station. The lack of archaeological features is likely testament to the mitigation strategy, the impact on the potential archaeological remains being reduced to narrow trenches around the outside of the remount station, the shallow nature of excavations and also utilising small diameter piles to support the solar arrays.

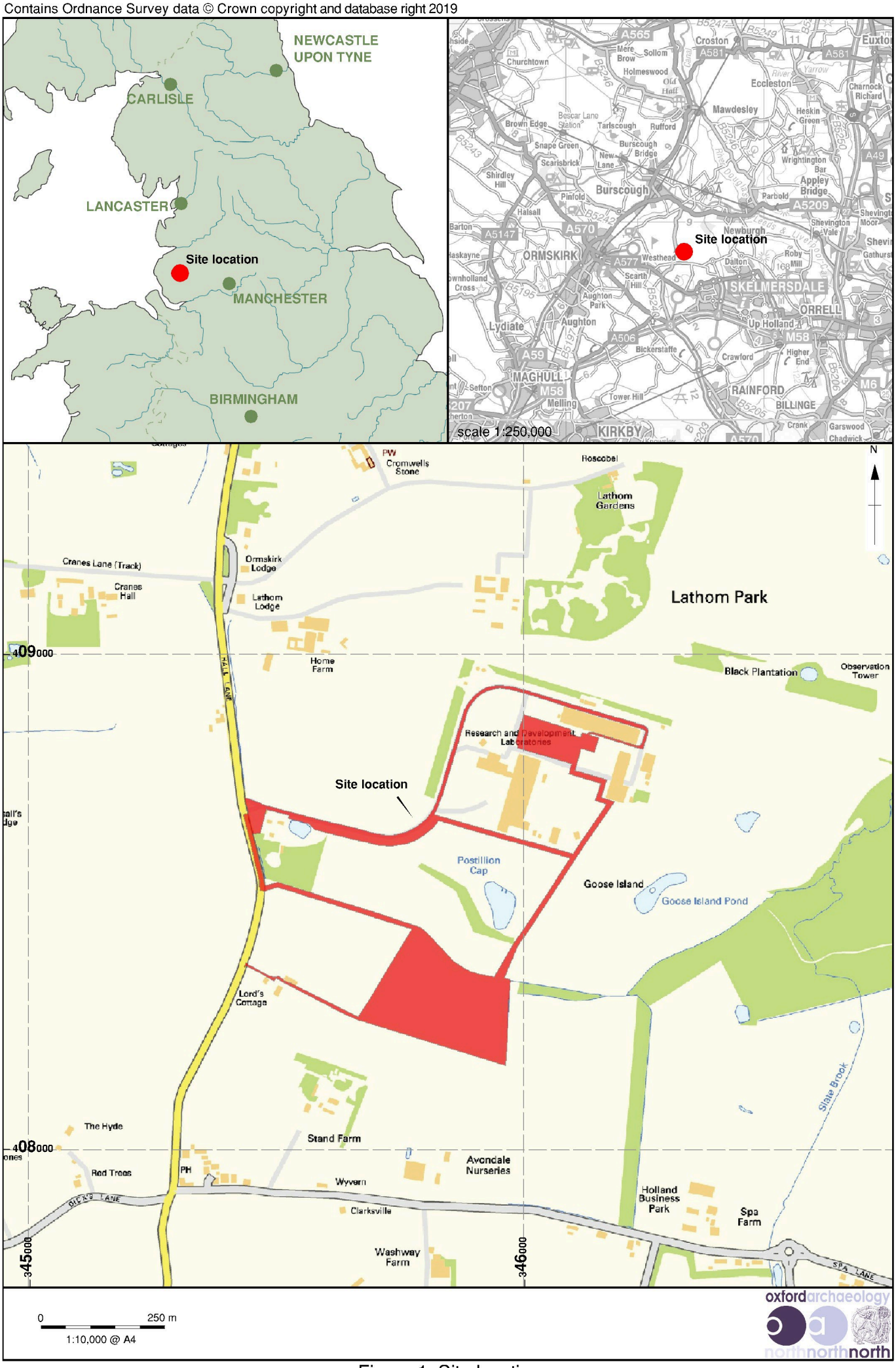

Figure 1: Site location

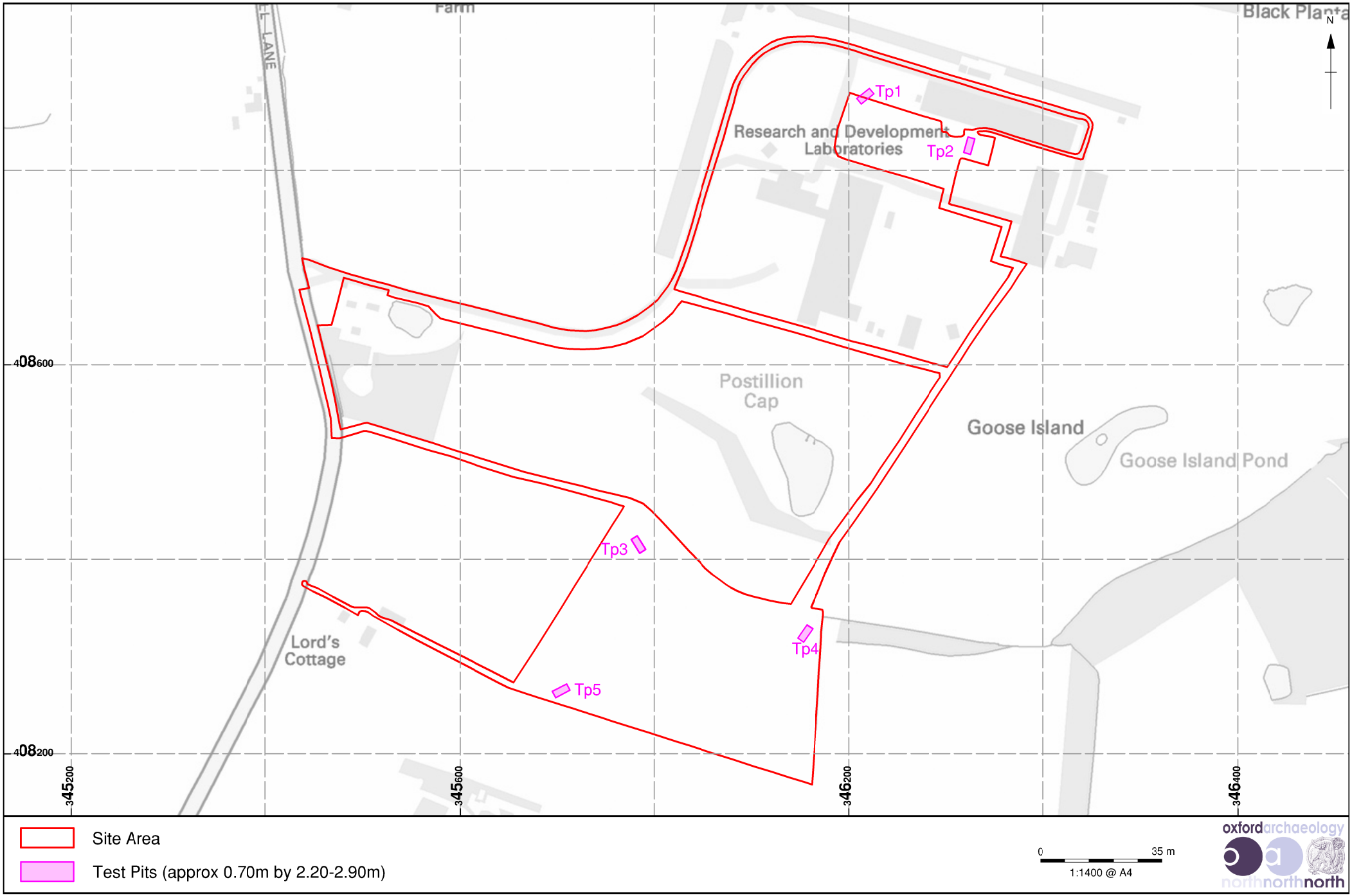

Figure 2: Test Pits Monitored

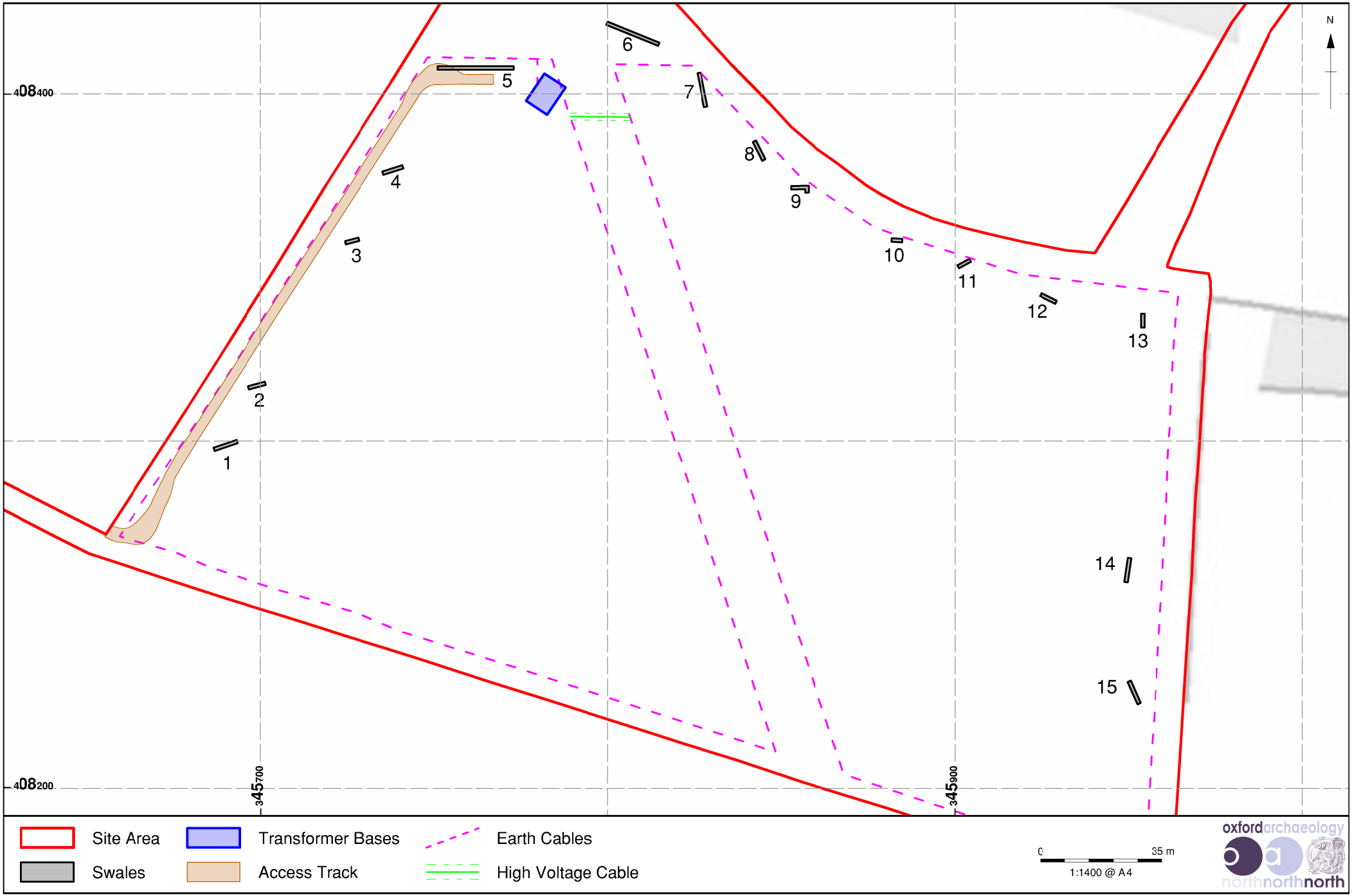

Figure 3: Watching brief undertaken in the southern field

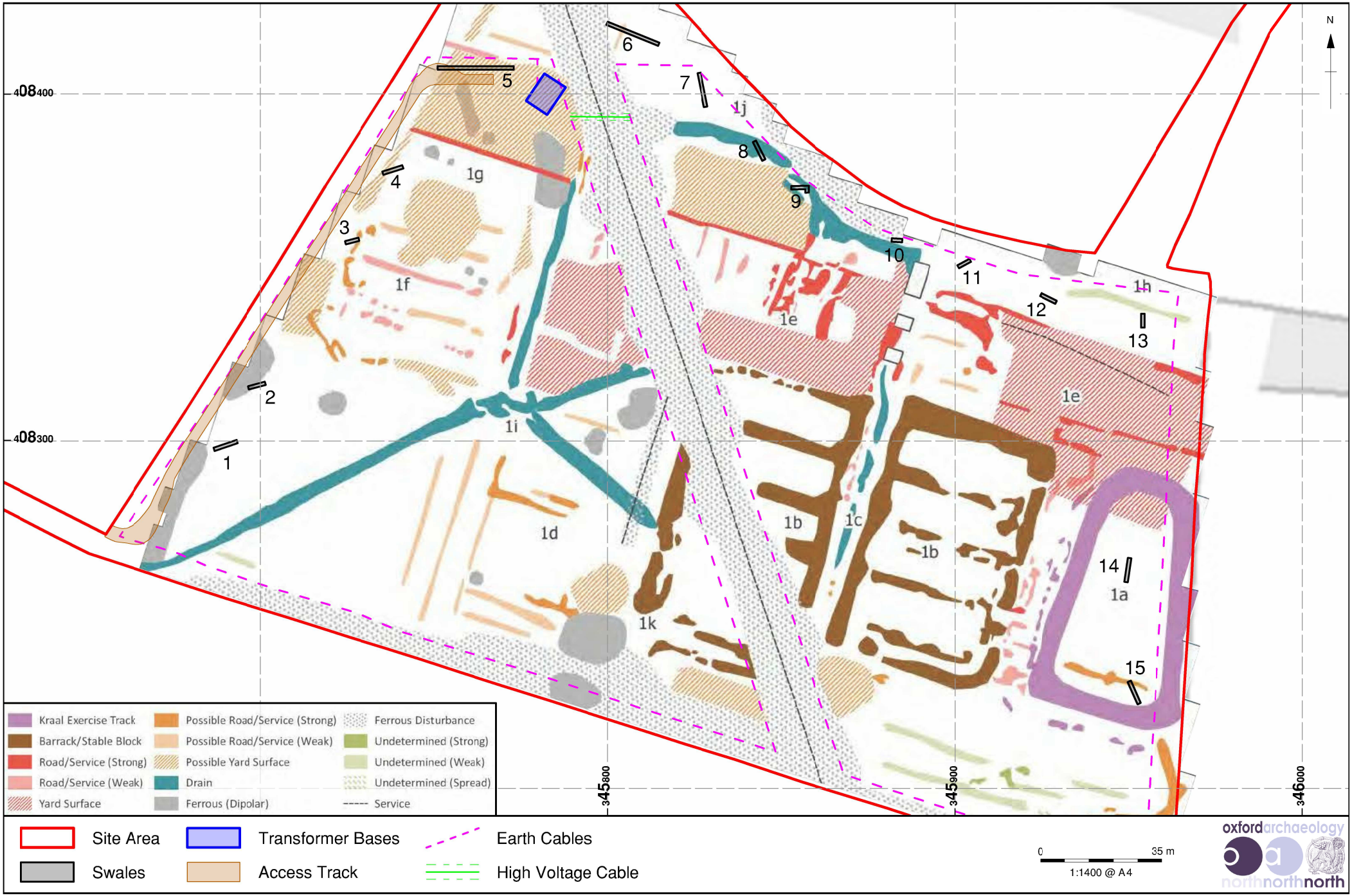

Figure 4: Watching brief undertaken in the southern field, superimposed on the interpretation of the geophysical survey

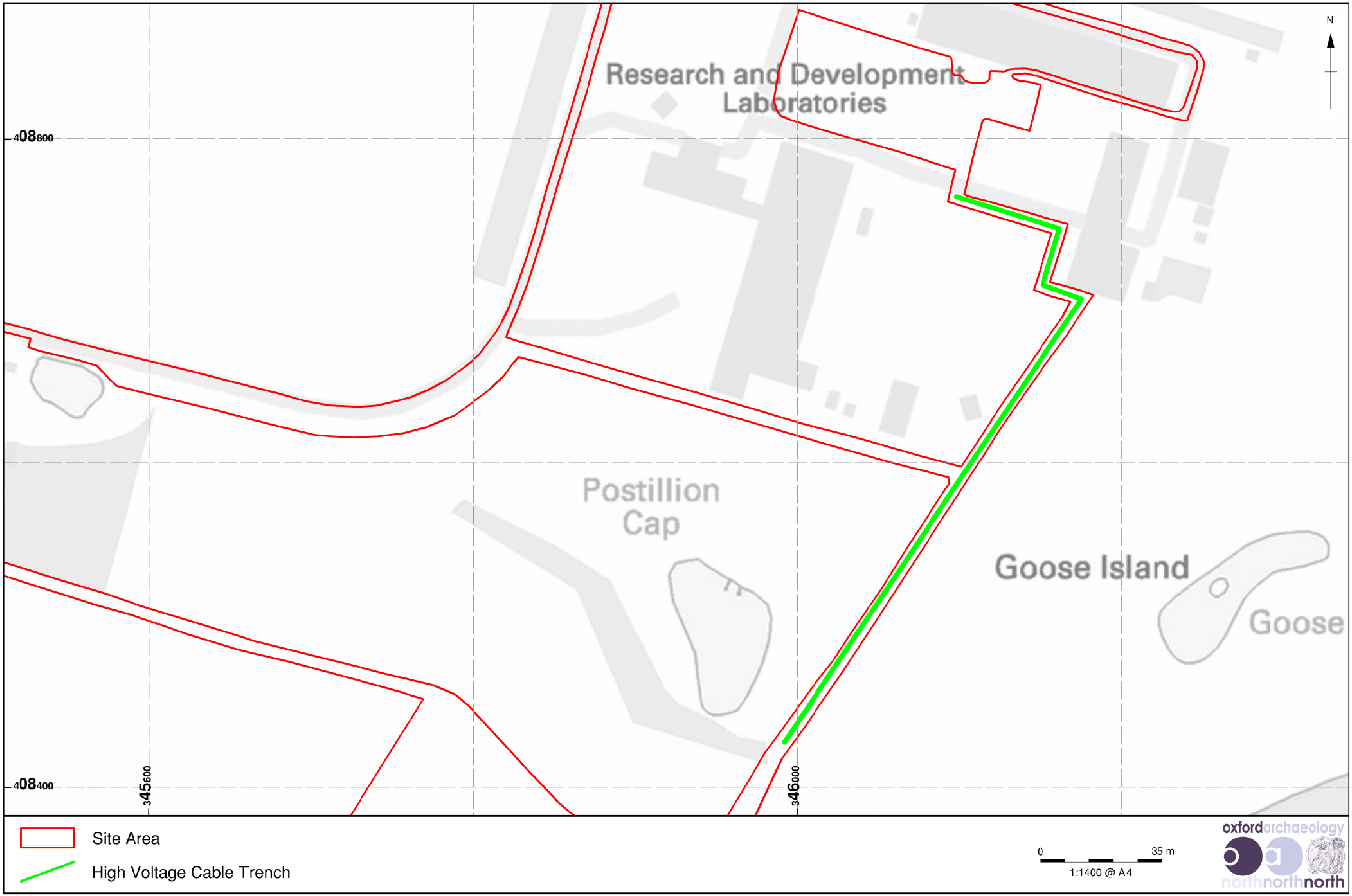

Figure 5: High voltage cable trench monitored in the northern field

APPENDIX A DESCRIPTIONS AND CONTEXT INVENTORY

Test Pit 1						
General description					**Orientation**	NE-SW
Test pit located in the northern field and devoid of archaeology. Consists of topsoil and made ground overlying natural geology of silty clay and silty sand.					**Length (m)**	2.2
					Width (m)	0.7
					Avg. depth (m)	2.8
Context No.	**Type**	**Width (m)**	**Depth (m)**	**Description**	**Finds**	**Date**
101	Layer	-	0.2	Topsoil	-	-
102	Layer	-	0.8	Subsoil	-	-
103	Layer	-	1.4	Natural Geology of dark brown silty clay	-	-
104	Layer	-	0.4	Natural Geology of mottled brown silty sand	-	-

Test Pit 2						
General description					**Orientation**	N-S
Test pit located in the northern field and devoid of archaeology. Consists of topsoil and subsoil overlying natural geology of sandy gravel.					**Length (m)**	2.2
					Width (m)	0.7
					Avg. depth (m)	2.8
Context No.	**Type**	**Width (m)**	**Depth (m)**	**Description**	**Finds**	**Date**
201	Layer	-	0.3	Topsoil	-	-
202	Layer	-	1.1	Subsoil	-	-
203	Layer	-	1.4	Natural of reddish orange sandy gravel	-	-

Test Pit 3						
General description					**Orientation**	SE-NW
Test pit located in the southern field and devoid of archaeology. Consists of topsoil and subsoil overlying natural geology of silty clay and silty sand.					**Length (m)**	2.9
					Width (m)	0.7
					Avg. depth (m)	2.8
Context No.	**Type**	**Width (m)**	**Depth (m)**	**Description**	**Finds**	**Date**
301	Layer	-	0.15	Topsoil	-	-
302	Layer	-	0.5	Subsoil	-	-
303	Layer	-	1.5	Natural Geology of mottled brown silt clay	-	-
304	Layer	-	0.65	Natural Geology of mid white grey silt sand	-	-

Test Pit 4		
General description	**Orientation**	NE-SW
Test pit located in the southern field and devoid of archaeology. Consists of topsoil and subsoil overlying natural geology of silty sand and silty clay.	**Length (m)**	2.2
	Width (m)	0.7
	Avg. depth (m)	2.8

Context No.	Type	Width (m)	Depth (m)	Description	Finds	Date
401	Layer	-	0.1	Topsoil	-	-
402	Layer	-	0.5	Subsoil	-	-
403	Layer	-	0.7	Natural geology of light yellow grey silty sand	-	-
404	Layer	-	1.2	Natural geology of dark brown silty clay	-	-
405	Layer	-	0.3	Natural geology of mid brown grey silty clay	-	-

Test Pit 5						
General description					**Orientation**	E-W
Test pit located in the southern field and devoid of archaeology. Consists of topsoil and subsoil overlying natural geology of silty clay.					**Length (m)**	30
					Width (m)	2
					Avg. depth (m)	0.30
Context No.	**Type**	**Width (m)**	**Depth (m)**	**Description**	**Finds**	**Date**
501	Layer	-	0.1	Topsoil	-	-
502	Layer	-	0.4	Subsoil	-	-
503	Layer	-	1	Natural Geology of mid yellow brown silty clay	-	-
504	Layer	-	1	Natural Geology of dark black grey silty clay	-	-
505	Layer	-	0.3	Natural Geology of light brown silty clay		

Watching Brief during Construction Works						
General description					**Orientation**	
Deposits identified during the construction of the solar farm Consists of topsoil and subsoil overlying natural geology of silty sand.					**Length (m)**	
					Width (m)	
					Avg. depth (m)	
Context No.	**Type**	**Width (m)**	**Depth (m)**	**Description**	**Finds**	**Date**
1001	Layer	-	0.25	Topsoil in southern field	Nineteenth and twentieth century glass and ceramics	-
1002	Layer	-	0.3	Made Ground in southern field, grey compact sand and clinker or ash	-	-
1003	Layer	-	0.25	Subsoil in southern field	-	-
1004	Layer	-	-	Natural Geology in southern field, of loose yellow silty sand	-	-
1005	Layer	-	0.2	Topsoil within northern field	-	-

1006	Layer	-	1	Made Ground within northern field, brick and concrete	-	-
1007	Layer	-	-	Natural Geology within northern field, of orange sandy gravels to brown clay	-	-

APPENDIX B BIBLIOGRAPHY

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APPENDIX C SITE SUMMARY DETAILS

Site name:	NSG European Technical Centre, Lathom, West Lancashire
Site code:	LSF18
Grid Reference	SD 45918 08539
Type:	Watching Brief
Date and duration:	November 2018 and March to May 2019, 15 days
Location of archive:	The archive is currently held at OA North, Mill 3, Moor Lane, Lancaster, LA1 1QD, and will be deposited with Lancashire Historic Environment Record in due course.
Summary of Results:	OA North were commissioned to undertake an archaeological watching brief at the NSG European Technical Centre, Lathom, West Lancashire (NGR: SD 45918 08539), initially during ground investigation works and then during the construction of the the solar farm. Five test pits were excavated around the factory and within the southern field, the location of a World War 1 remount station. The watching brief during the construction phase of works monitored the cables trenches, transformer bases, access track, and swales. Little archaeology was identified during the watching brief, the only deposit identified as being archaeological was a levelling deposit, which may relate to the remount station. These results do suggest that the mitigation strategy was successful, with minimal impact to the archaeological resource.

APPENDIX D ORION HERITAGE WRITTEN SCHEME OF INVESTIGATION

Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire
Archaeological Written Scheme of investigation
April 2018

Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire
Archaeological Written Scheme of investigation
April 2018

Report

Archaeological Written Scheme of Investigation

Site

Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

Date

April 2018

Planning Authority

West Lancashire Borough Council

Site Centred At

SD 45918 08539

Prepared and Approved By

William Bedford (BA MCIfA)

Report Status

Final

Orion Ref

PN1536

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Appendices

Figures

1.0 Introduction

Project background and purpose of document

Introduction

1.1 This Written Scheme of Investigation (WSI) has been prepared by William Bedford of Orion Heritage, in relation to land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire, which is hereafter referred to as the study site. It is proposed to install a solar installation within the study site, which would generate energy for the technical centre to the north.

Previous work

1.2 The study site has been subject to a desk-based assessment (Orion Heritage 2018), as well as a geophysical survey (SUMO 2018). These investigations, together with a walkover of the study site undertaken on the 6th of February 2018, revealed that the eastern half of the southern field of the study site (see Fig. 1) contained archaeological earthworks. The earthworks are likely to be remnants of part of a WWI Remount Station which was located at Lathom House and the surrounding grounds during the First World War. The overall remount station occupied a wide area to the north of the study site. However, at present little systematic study of the available evidence has been completed and many details about the remount station are not understood (Orion Heritage 2018). In particular the location of buildings and how the overall station was organised are still not known in any detail.

1.3 The remains within the study site comprise a small but well-preserved part of the overall remount station. At present these remains are under pasture, and cows and bulls occupy the field for much of the year. The site is also poorly drained. These factors have been accepted as being detrimental to the integrity of the remains, especially if the activity continues over a prolonged period of time.

Consultation

1.4 Following the completion of the desk-based assessment and geophysical survey, a meeting was held at the study site with the Lancashire Archaeological Advisory Service (LAAS). At this meeting the results of the previous work were reviewed, and the best manner in which to implement the development proposals was considered. It was agreed that the installation of a solar farm within the study site would be acceptable in principle, provided special measures were taken in the design and construction of the solar installation to avoid unacceptable impacts to the buried remains, and if mitigation measures were implemented to better understand the buried remains and thereby also increase understanding of the history and heritage of Lathom Park.

1.5 The special measures and mitigation that will be required have been discussed and agreed with LAAS. This WSI will formally set out those agreed measures as follows:

- The special measures that will be required from the design of the development.
- The special measures that will be required during the construction of the development.
- The scope and type of mitigation measures that will be required.

1.6 Special measures that should be taken in the design and implementation of the development are set out in Section 2, below. Mitigation measures required are set out in Section 3. With the measures set out in place the proposed development would avoid unacceptable harm to the buried remains, remove the earthworks from the risk of trample by cattle and would enhance their understanding.

2.0 Special measures and restrictions for the development

Design restrictions

2.1 The impact of the proposed development on the study site is limited, comprising a total below ground impact of less than 1% of the study site area. The "H"-piles used results in localised impacts, no large-scale ground reduction or landscaping is planned. There are a number of areas which contain concrete structures and where these are in the way of a pile first attempts will be made to relocate the pile. However, if not possible, a drill bit will be used to pre-drill the hole prior to the insertion of the pile. The position of any concrete that needs this treatment will be recorded and added to the archaeological record of the study site.

2.2 While the development proposals have the potential to impact on any sub-surface remains which may survive within the study site, the impact from the piles would be minimal. In addition to the piles, the development involves installation of 1 transformer, 1 switchgear unit and an AC box located within the study site. Service trenches would typically link the nearest end of each row of panels to the transformer. There will also be a High Voltage (HV) Cable which connects to the technical centre to the north.

2.3 The earthwork remains present in the southern field of study site are of considerable interest, comprising remnants of the WWI remount station which occupied Lathom House in the early 20th century. They are also sensitive to localised impacts such as that which would result from a cable trench. Therefore, it has been agreed that a number of alterations to the design of the development are needed to make the physical impacts acceptable. These are:

1. **The use of cable trays** – No cable trenches will be dug within the southern field of the study site, for the low voltage cables within the southern field, except for one small trench to cross beneath the existing gas main. The cables will be installed using a cable tray system, so that the only below ground impact would be the piles used to support the panels, which comprise a minimal impact.
2. **Re-routing of access road** – The access road to the solar farm and the attendant drainage will be aligned along the western boundary of the study site, within an area that has already suffered from surface impacts in the past.
3. **Placement of structures** – Any structures within the solar installation must be placed outside of the area of significant earthworks, close to the western boundary of the study site, as shown in Figure 3.
4. **Placement of swales** – Some swales are planned along the perimeter of the study site, to improve drainage. These will be positioned to avoid surface impacts to the earthworks, and their position is shown in figure 3.
5. **Placement of HV Cable** – There will be one HV cable to link the solar installation in the study site with the technical centre. This will be placed along the northern boundary of the study site, and will avoid all extant earthworks.

2.4 The development must incorporate the above measures to ensure that the impacts on buried remains are acceptable.

Implementation and construction restrictions

2.5 In addition to designed impacts of the development, the buried remains are also at risk from potential impacts during the construction phase of the development. The construction can involve activities, such as installation of a compound and vehicular movement that, if not carefully managed, can result in rutting or other impacts which could damage the earthworks and buried remains.

2.6 Therefore, in addition to the low impact of the proposed development once operational, additional measures would also be taken during construction, to ensure the risk of construction phase impacts is avoided. These measures are:

1. **Use of small machinery** – Only small rigs would be used to install the panels. These would be light enough to avoid rutting of the ground.
2. **Plant and vehicle movements** – Plant and vehicle movements across the field will be managed to avoid crossing the earthwork area unless strictly necessary to install the panel arrays and frames. This includes plant and vehicles using the outer perimeter to access areas of the site rather than tracking across the centre of the earthwork area. The plant being used would comprise a small tracked bobcat to carry equipment around (4 tonnes) and a tracked piling machine (8 tonnes). A 360 excavator will also be used for some limited excavation tasks, such as the swales, access track construction and excavation of the High Voltage Cable, however a

smaller machine can be specified for this work. These machines have a similar weight to agricultural tractors, but as they are tracked, would have a lessor impact on the surface. Non-tracked machines will only access the compound off site and will drive only on the road surface. The works will also, where possible, be scheduled during drier periods and the use of metal trackways or other means to protect the remains will be considered if conditions are wet and disturbance unavoidable.

3. **Compound area** – The construction compound will be situated outside of the study site, to ensure that its installation does not affect buried remains.

4. **Archaeological monitoring** – The construction works would be intermittently monitored by an archaeologist to ensure compliance with the measures set out above, and that inadvertent impacts do not arise (see paragraph 3.2 below).

2.7 With the above measures in place, the physical impacts of the proposed developments would be minimal.

3.0 Scope of mitigation works and methodology

3.1 In addition to the measures set out above to minimise any physical impacts, additional measures can be taken to mitigate the small effects which would result from the proposed development, and to provide an enhancement to the significance of any buried remains.

3.2 It is recommended that a programme of archaeological works is implemented, comprising:

- Aerial photographic analysis.
- Archaeological recording action of the access road, the high voltage trench, swales and small transformer stations, to mitigate any loss in these small areas.
- Additional historical research and production of a report summarising the results of the archaeological investigations and photographic analysis to provide enhanced public knowledge of the buried remains.

3.3 This programme of archaeological works would serve to:

- Determine if buried remains associated with the WWI remount station survive within the southern field of the study site.
- Provide an understanding of the nature of those remains.
- Show how they relate to the known historical records we possess.
- Mitigate the limited loss of remains in the localised areas of impact.
- Provide an enhanced understanding of the buried remains, and of the Lathom remount station, which can be disseminated to the wider public and via suitable publication.

3.4 This programme of works would also serve to mitigate the limited effects the proposed development would have on any other remains of interest which may be present within the study site.

3.5 Separate written schemes of investigation will be prepared by the appointed archaeology contractor and aerial photographic analysis contractor setting out the scope of their activities and their detailed methodologies. These WSIs must be agreed with LAAS and appended at the back of this WSI before they are implemented.

4.0 Research Framework

Aims of the Project

4.1 The specific aims of this project are, where possible:

- To conserve the buried remains within the southern field of the study site, ensuring that unacceptable development impacts are avoided.
- To enhance understanding of the buried remains within the southern field of the study site.
- To collate known information about the remount station in light of what is discovered by the archaeological investigations associated with the development and provide an enhanced understanding of its significance.
- To generate an archive which will allow future research of the evidence to be undertaken if appropriate.
- To disseminate the results of the work in a format and manner proportionate to the significance of the findings.

4.2 In addition, as the project progresses, more detailed research aims will be generated; where this is the case these will be formally agreed and added as a supplement to this WSI.

5.0 Other matters

Contractor

5.1 The appointed archaeology contractors will be Registered Organisations with the Chartered Institute for Archaeologists and have appropriate experience of working on similar sites in Lancashire.

5.2 The field team deployed by the contractor will include only full time professional archaeological staff. All staff in supervisory positions should be members of the CIfA at the appropriate level.

5.3 The composition of the project team must be detailed and agreed in advance with Orion Heritage (this is to include any subcontractors).

Communication

5.4 All queries and communications are to be directed through Orion Heritage. No comment is to be made about this Specification or project to the media or other parties.

Copyright

5.5 It is recognised that the copyright of written, graphic and photographic records and the report rests with the originating body. However, Orion Heritage and their client require an agreement to facilitate the copying and use of any or all materials resulting from this project.

Codes of Practice

5.6 The following statutory provisions and codes of practice are to be adhered to where relevant:

- All statutory provisions and by-laws relating to the work in question, especially the Health and Safety at Work Act 1974;
- The Chartered Institute for Archaeologists Code of Conduct;
- The Chartered Institute for Archaeologists Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology.

5.7 Should the archaeological contractor recover or encounter any finds believed to fall within the statutory definition of Treasure as defined by the Treasure Act, they will immediately advise Orion Heritage and notify to the relevant Coroner's Office.

Variations

5.8 Variations to the Specification or Project Design that the contractor may wish to make must be approved, in advance, by Orion Heritage and the LPA Archaeological Advisor.

6.0 Sources

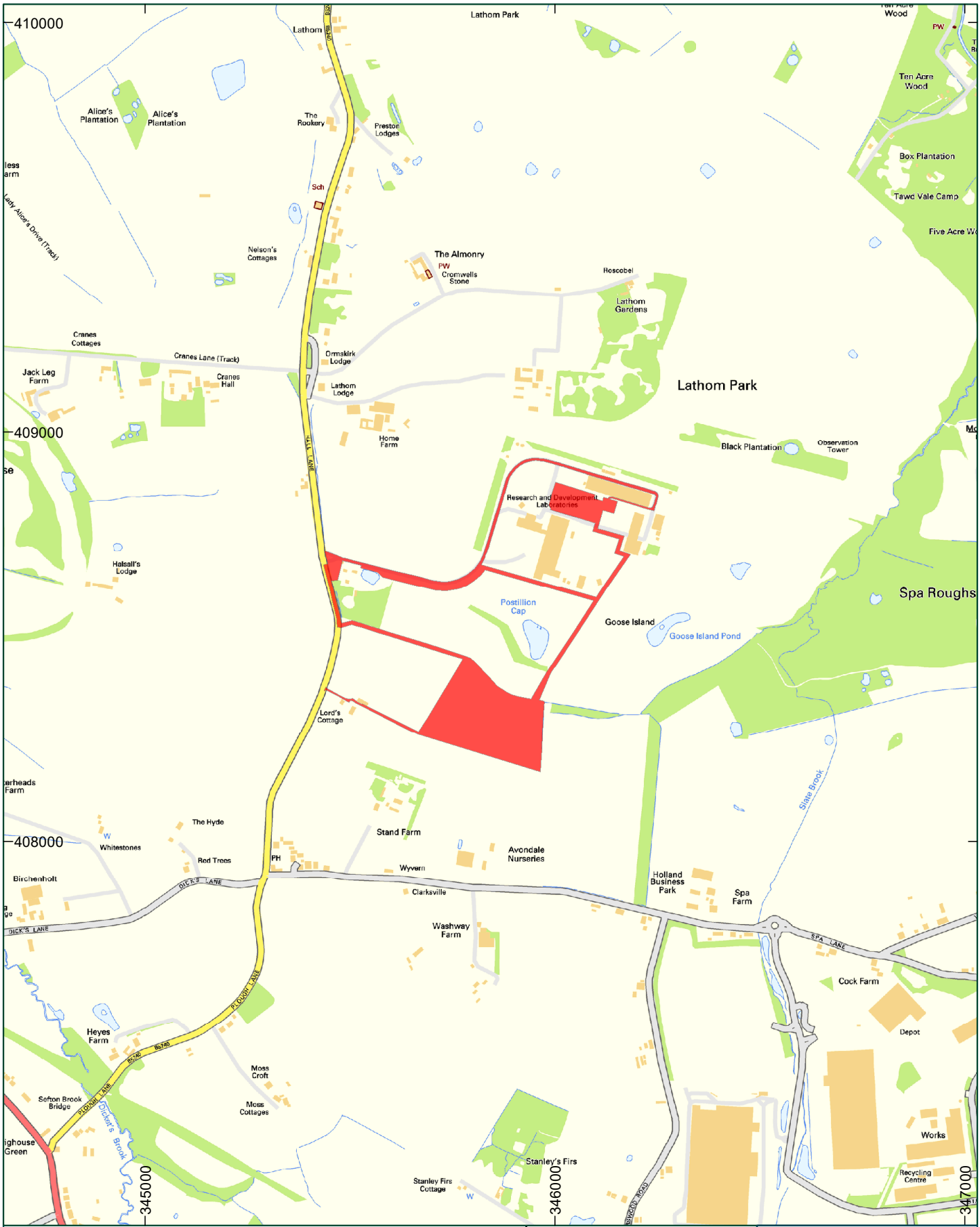
CIfA	2014	Standard and guidance for an archaeological watching brief
English Heritage	1991	The Management of Archaeological Projects (2nd ed.)
English Heritage	2006	The Management of Projects in the Historic Environment
English Heritage	2011	Environmental Archaeology – A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition)
Magnitude Surveys	2018	Land to the south of the NSG European Technical Centre, Lathom, West Lancashire – Geophysical Survey Report
Orion Heritage	2018	Land at the NSG European Technical Centre, Lathom, West Lancashire – Archaeological Desk-Based Assessment
SUMO Services Ltd	2018	Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire – Geophysical Survey Report

Appendix 1 – Archaeology contractor's WSI

Inserted overleaf [forthcoming]

Appendix 1 – Aerial photographic analysis contractor's WSI

Inserted overleaf [forthcoming]



Legend

Site

1:12,500 at A4

0 400m

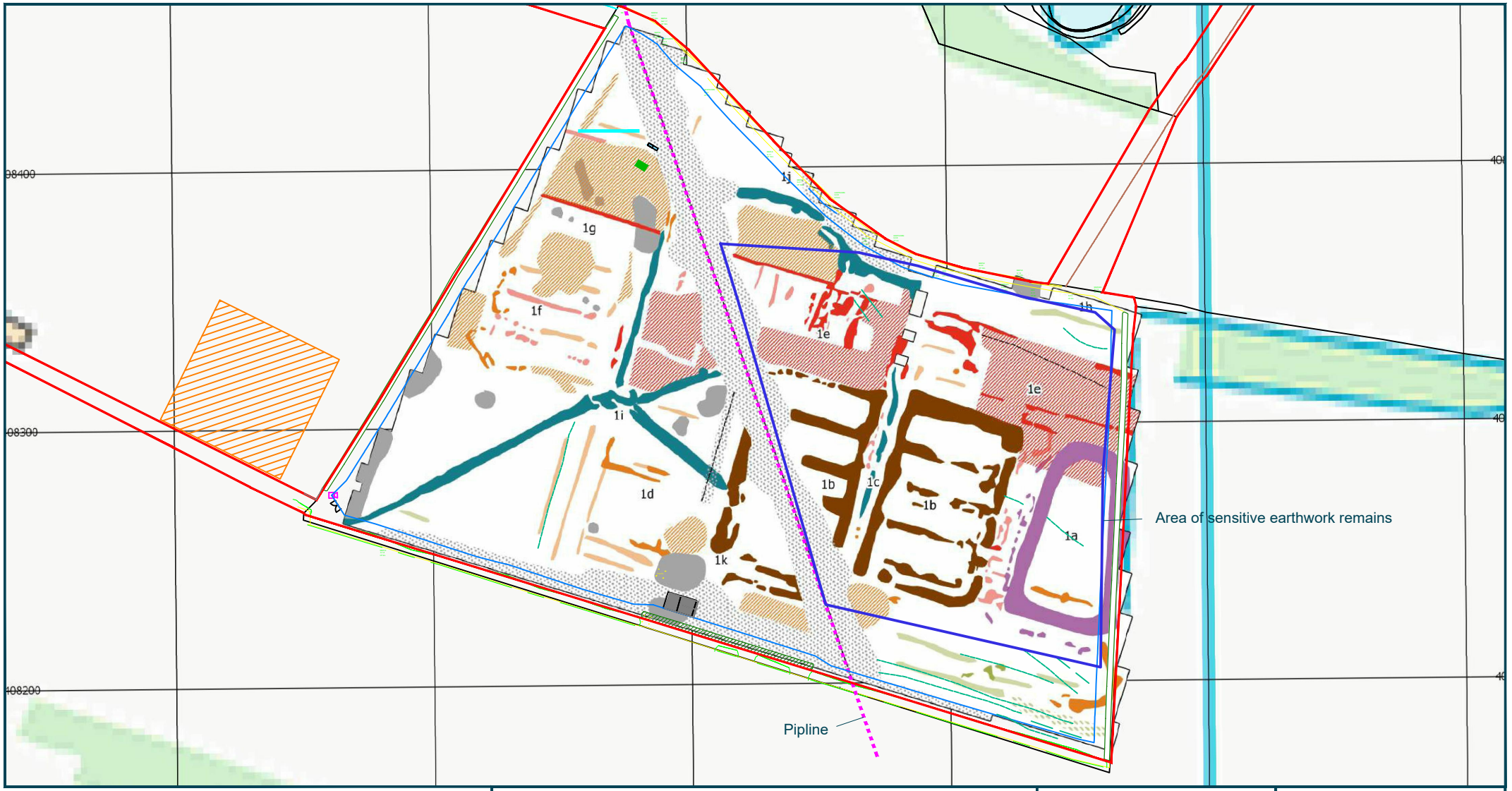
N

Title:

Fig. 1: Site Location

Address:

Land at and south of the NSG European Technical Centre, Lathom, West Lancashire



Legend:

1:2,000 at A4:

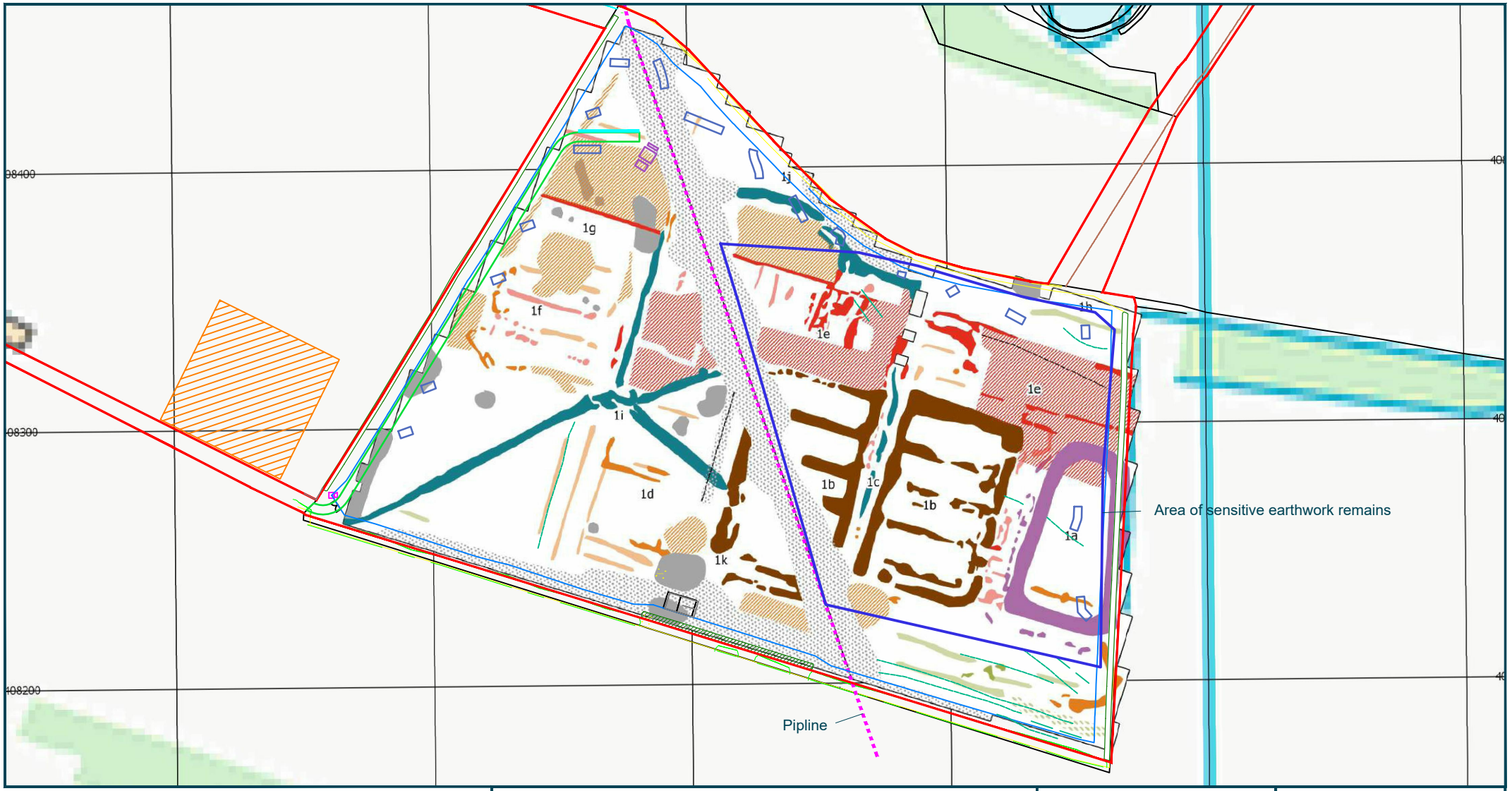
0 50m

Title:
Fig. 2: Area of sensitive earthwork remains

Address:
Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

N

orion.



Legend:

- Proposed swale
- Proposed access road
- Proposed cabin

1:2,000 at A4:

0 50m

N

Title:

Fig. 3: Development impacts in relation to archaeological remains

Address:

Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

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APPENDIX E OA NORTH WRITTEN SCHEME OF INVESTIGATION

Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

Written Scheme of Investigation
Archaeological Watching Brief

February 2019

Client: Orion Heritage

Issue No: V1
OA Reference No: L11203
NGR: SD 45918 08539

oxfordarchaeology

Client Name:	Orion Heritage
Client Ref No:.	
Document Title:	Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire
Document Type:	Written Scheme of Investigation
Grid Reference:	SD 45918 08539
Planning Reference:	2018/0409/FUL
Site Code:	LSF18
Invoice Code:	L11203
OA Document File Location:	X:\Paul\Projects\L11203_Lathom_Solar_Farm\Background
OA Graphics File Location:	X:\Paul\Projects\L11203_Lathom_Solar_Farm\OAN_CAD
Issue No:	V.1
Date:	28/02/19
Prepared by:	Paul Dunn (Project Manager)
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Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

Written Scheme of Investigation for an Archaeological Watching Brief

Centred on NGR SD 45918 08539

Contents

List of Figures

1 INTRODUCTION

1.1 Project details

1.1.1 Oxford Archaeology (OA) North has been commissioned by Orion Heritage (the client) to undertake an archaeological watching brief of the site of a proposed Solar Farm on Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire (NGR: SD 45918 08539) (Fig. 1).

1.1.2 The work is being undertaken as a condition of Planning Permission (planning ref: 2018/0409/FUL). The client was commissioned by Lightsource Renewable Holdings Ltd to produce a desk-based assessment (DBA) (Orion Heritage 2018a), a geophysical survey was also undertaken by SUMO (2018). These investigations revealed preserved earthworks likely relating to part of a World War 1 Remount Station. Following the production of the DBA and completion of the geophysical survey, the client liaised with the Lancashire Archaeological Advisory Service (LAAS) to determine the best manner in which to implement the development proposals. As such, a range of special measures and mitigation were suggested, which are detailed in a Written Scheme of Investigation (WSI) produced by the client (Orion Heritage 2018b). One of the mitigation measures is to provide an archaeological watching brief during any below ground works required as part of the development. The client subsequently commissioned OA North to undertake the watching brief. This document outlines how OA will implement those requirements.

1.1.3 All work will be undertaken in accordance with local and national planning policies referenced within this document.

1.2 Location, topography and geology

1.2.1 The site lies to the west of Skelmersdale and comprises two sites; one smaller site within the NSG European Technical Centre measuring approximately 0.95ha, and a larger site approximately 350m to the south at Lord's Cottage Farm, which measures approximately 4.9ha (Fig. 1 NGR SD 45918 08539). The topography of the site is relatively level, at a height above ordnance datum (aOD) of approximately 55m.

1.2.2 The solid bedrock geology of the site is mapped as bands of Sandstone of the Old Lawrence Rock formation, formed in the Carboniferous Period and Mudstone, Siltstone and Sandstone of the Pennine Lower Coal Measures formation, formed in the Carboniferous Period (BGS 2019). The superficial deposits of the site are mapped as Shirdley Hill Sand Formation with a band of Devensian Till along the western edge of site, both formed in the Quaternary Period (*ibid*). The soils of the area are identified as slightly acid loamy and clayey soils with impeded drainage (Cranfield 2019).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND AND POTENTIAL

2.1 Archaeological and historical background

2.1.1 The archaeological and historical background of the site has been described in detail in a desk-based assessment produced by Orion Heritage (2018a), and will not be reproduced here.

2.2 Potential

2.2.1 The DBA (*ibid*) highlighted that there was clear potential within the southern field of the site to contain buried remains associated with the use of Lathom Park as a remount station in WW1. If present they would be Regional interest, due to their historic interest (*ibid*). Roman and Prehistoric remains cannot be discounted for the southern field which would be local interest (*ibid*).

2.2.2 The northern field is likely to have been heavily truncated during the construction of the NSG European Technical Centre, however, fragmentary remains relating to the sieges of Lathom Park during the civil war may survive, which if they do would be of local interest (*ibid*).

3 PROJECT AIMS

3.1 General

3.1.1 The general aims of the project can be summarised as follows;

- to adhere to and fulfil the agreed programme of works associated with the archaeological potential of the site;
- to determine or confirm the general nature of any remains present;
- to determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence;
- to compile a professional archival record of any archaeological remains within the site.

3.2 Specific aims and objectives

3.2.1 The specific aims and objectives of the archaeological watching brief are:

- to determine if buried remains associated with the WW1 remount station survive within the southern field of the study site (Fig. 2);
- to provide an understanding of the nature of those remains;
- to show how they relate to the known historical records;
- to mitigate the limited loss of the remains in the localised areas of impact;
- to provide an enhanced understanding of the buried remains, and of the Lathom remount station, which can be disseminated to the wider public and via a suitable publication.

4 PROJECT SPECIFIC EXCAVATION AND RECORDING METHODOLOGY

4.1 Scope of works

4.1.1 The works will involve the monitoring and recording of any below ground required by the development (Fig. 3), all to be excavated with a mechanical excavator fitted with a toothless ditching bucket. The spoil will be check for finds and if significant material is detected this will be retained. Once the areas where below ground excavations are required, excavated to the developer's formation level, they will be manually cleaned and recorded. Where archaeological features are present, the archaeologist will be afforded the opportunity to clean, investigate and record them; environmental samples will be taken and finds recovered. If potentially significant archaeological remains are identified, the archaeologist will inform the client, who will consult with LAAS.

4.2 Programme

4.2.1 OA North will commence the watching brief on Monday 4th March 2019. The duration of the archaeological presence if currently unknown.

4.2.2 The project will be under the direct management of Paul Dunn (OA North Project Manager) to whom all correspondence should be addressed. The watching brief will be supervised in the field by a Project Archaeologist. Depending on OA North's timetabling of works and weather this may be subject to change through the duration of the archaeological works. All OA North Project Officers, Supervisors and Project Archaeologists are experience field archaeologists capable of carrying out projects of all sizes.

4.2.3 All fieldwork undertaken by OA North is overseen by the Operations Manager, Alan Lupton 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 Site specific methodologies will be as follows:

i. The project archaeologist will maintain a watching brief during all below ground excavations required for the development;
ii. The Project Archaeologist will be afforded the opportunity to clean, investigate, record and sample all archaeological remains to an appropriate degree. The hand excavation and recording methodology which will be implemented can be found in Appendix A;
iii. If potentially significant remains are identified, the Project Archaeologist will stop excavation works. They will inform Orion Heritage, who will consult with LAAS, work will only continue with their approval;

iv. A photographic and textual record will be made of the stratigraphy and archaeological features encountered;

v. Spoil arising from the excavations will be scanned for finds and palaeoenvironmental evidence, which will be collected if deemed significant;

vi. At all times, the archaeologist will work under the Health and Safety directions of the site contractor.

5 PROJECT SPECIFIC REPORTING AND ARCHIVE METHODOLOGY

5.1 Programme

5.1.1 The final report will be completed within 4 to 6 weeks of the completion of the fieldwork.

5.1.2 A copy of the report in Adobe Acrobat (.pdf) format will be provided to Orion Heritage. Once approved a copy will be provided by Orion Heritage to LAAS for comment prior to final issue. Paper copies can also be provided on request.

5.2 Content

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

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 an appropriate record office following completion of the project. An OASIS summary will be produced once the archive is ready for deposition, with a digital copy of the final report being uploaded. A digital copy of the final report will be sent to LAAS for inclusion in the Lancashire Historic Environment Record.

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 Project Manager, Paul Dunn, has responsibility for ensuring that safe systems of work are adhered to on site. Elements of this responsibility will be delegated to the Project Archaeologist, who implements these on a day to day basis. Paul Dunn and the Project Archaeologist are supported by OA North's Health and Safety Advisor, Fraser Brown.

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 Archaeological investigations will be monitored where appropriate by Orion Heritage and LAAS. All such site visits will be carried out under the auspices of the Main Contractors Health and Safety Plan and visitors will wear appropriate PPE and be accompanied at all times.

7 BIBLIOGRAPHY

British Geological Survey (BGS), 2019 Geology of Britain Viewer [Online], available at http://mapapps.bgs.ac.uk/geologyofbritain/home.html (accessed February 2019)

Cranfield Soil and Agrifood Institute, 2019, National Soil Resources Institute's Soilscapes of Britain Map, [Online], available at: http://www.landis.org.uk/soilscapes/ , Cranfield University (accessed February 2018)

Orion Heritage, 2018a, *Land at the NSG European Technical Centre and at Lord's Cottage Farm, Lathom, West Lancashire: Archaeological Desk Based Assessment*, unpubl rep

Orion Heritage, 2018b, *Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire: Archaeological Written Scheme of Investigation*, unpubl rep

SUMO Services Ltd, 2018, *Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire: Geophysical Survey Report*, unpubl rep

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 may 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 Chartered Institute for Archaeologists Standard and Guidance notes relevant to fieldwork are:

- Standard and Guidance for Archaeological Field Evaluation
- Standard and Guidance for Archaeological 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), or photogrammetry.

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 photogrammetry or rectified photography may be used to record standing structures or burials. This will be carried out in line with Standard OA procedures for photogrammetry or 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 Historic England (2007) Understanding the Archaeology of Landscapes A Guide to Good Recording Practice.

B.2.2 Historic England (2015), Metric Survey Specifications for Cultural Heritage.

B.2.3 Historic England (2016), Understanding Historic Buildings A Guide to Good Recording Practice.

B.2.4 Historic England (2017), Photogrammetric Applications for Cultural Heritage. Guidance for Good Practice.

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 Historic England 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 on sediment type and like modes of preservation (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 Historic England 2010. Waterlogged Wood: Guidelines on the recording, sampling, conservation and curation of waterlogged wood.

C.2.2 Historic England 2011. Environmental Archaeology. A guide to the theory and practice of methods, from sampling and recovery to post excavation, (2nd ed)

C.2.3 Historic England 2004. Dendrochronology: Guidelines on Producing and Interpreting Dendrochronological Dates.

C.2.4 Historic England 2006. Archaeomagnetic Dating. Guidelines for Producing and Interpreting Archaeomagnetic Dates.

C.2.5 Historic England 2008. Luminescence Dating. Guidelines on Using Luminescence Dating in Archaeology.

C.2.6 Historic England 2008. Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains.

C.2.7 Historic England 2014. Animal Bones and Archaeology. Guidelines for Best Practice.

C.2.8 Historic England, 2015. Archaeometallurgy. Guidelines for Best Practice.

C.2.9 Historic England 2015 Geoarchaeology. Using Earth Sciences to Understand the Archaeological Record.

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 CIfA (Roberts and McKinley 1993) and the Advisory Panel on the Archaeology of Burials in England (APABE, 2015, 2017). For crypts and post-medieval burials, the recommendations set out by the CIfA (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 Historic England and Church of England (2005) and updated by the Advisory Panel on the Archaeology of Burials in England (2017), 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 (those less than 100 years old) 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 normally 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 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 Unurned cremations will not usually be half sectioned, but excavated in spits and/or quadrants (i.e. large deposits or spreads), 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, 2017).

E.1.15 Unless deemed osteologically or archaeologically important disarticuled bone / charnel 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 quadranted 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 recorded by photogrammetry or 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
- Condition, completeness and fragmentation of stones, no longer in original positions
- Iconography (an illustration may best describe these features)
- Inscription (verbatum 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, 2017 Guidance for Best Practice for the Treatment of Human Remains Excavated from Christian Burial Grounds in England.

E.2.2 Advisory Panel on the Archaeology of Burials in England, 2015 Large Burial Grounds. Guidance on sampling in archaeological fieldwork projects.

E.2.3 Association of Diocesan and Cathedral Archaeologists and APABE. 2010 Archaeology and Burial Vaults. A guidance note for churches. Guidance Note 2.

E.2.4 British Association of Biological Anthropology and Osteoarchaeology. 2011 Code of Practice.

E.2.5 British Association of Biological Anthropology and Osteoarchaeology. 2011 Code of Ethics.

E.2.6 Cox, M, 2001 Crypt archaeology. An approach. CIfA Paper No. 3

E.2.7 McKinley, J, and Roberts, C, 1993 Excavation and post-excavation treatment of cremated and inhumed human remains, CIfA 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, CIfA Technical Paper No. 7. 9-13.

E.2.9 McKinley, J, 2017 Compiling a skeletal inventory: cremated human bone. In Mitchell P, and Brickley, M (eds) Updated Guidelines to the Standards for Recording Human Remains, CIfA 14-19

E.2.10 Mitchell P, and Brickley, M (eds) Updated Guidelines to the Standards for Recording Human Remains, CIFA 2017

E.2.11 Mytum, H, 2000 Recording and Analysing Graveyards. CBA Handbook No. 15.

E.2.12 Reeve, J, and Adams, M, 1993 The Spitalfields Project. Volume I – The Archaeology Across the Styx. CBA Research Report No. 85

E.2.13 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 of buried 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 Historic England 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 Historic England 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 Historic England'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 Historic England (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
Dr Mairead Rutherford	Pollen	BSc, MSc
Lee Broderick	Animal bone	BA (hons), MA, MSc, FZG, SAC Dip (ecology)
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 (Hons Dunelm)
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)
Quita Mould	Leather	BA, MA

Specialist	Specialism	Qualifications
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 Where there is currently no receiving museum for the project archive, although responsibility for the archive ultimately lies with the client, OA will hold the archive on their behalf for a period of up to 3 years after completion of the report, after which time (in the event that a suitable depository has not been secured) provision for further storage of the archive will be made in agreement with Oxford Archaeology, the client and the relevant planning archaeologist.

H.1.4 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.1.5 Born digital data will only be printed to hard copy for the receiving museum where practical. Archive elements that need maintaining in digital form will be sent to ADS in accordance with Arches Standard and ADS guidelines. A copy will be sent to the receiving museum by CD and back-up copies will be stored on the OA digital network. 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. Deposition charges will be required from the client as part of the project costs but the level of the fee is set by the receiving body, and may be subject to change during the lifespan of the project. Changes to archiving charges beyond OA's control will be passed across to the client.

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 the receiving repository or museum for the archive with a full licence for use to the client in all matters directly relating to the project as described in the Written Scheme of Investigation, and in line with the relevant receiving body guidelines.

H.1.9 OA will advise the receiving repository or museum for the archive of 3rd party 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. Archaeological findings and conclusions can be kept confidential for a limited period but will be made publicly available in line with the above procedure either after a specified time period agreed with the client at the outset of the project, or where no such period is agreed, after a reasonable period of time. 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 2014 EAC Guidelines A Standard and Guide to the Best Practice for Archaeological Archiving in Europe (GB) Perrin K, Brown E et al.

H.2.3 The 2014 CIFA Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives.

H.2.4 The 2011 AAF guide Archaeological Archives A Guide to Best Practice in Creation, Compilation, Transfer and Curation. Brown D.

H.2.5 The UKIC's Guidelines for the preparation of excavation archives for long-term storage.

H.2.6 The MGC's Standards in the museum care of archaeological collections.

H.2.7 Local museum guidelines such as Museum of London Guidelines: (http://www.museumoflondonarchaeology.org.uk/English/ArchiveResearch/DeposResource) will be adopted where appropriate to the archive collecting area.

H.2.8 The site archive will be prepared to at least the minimum acceptable standard defined in Management of Archaeological Projects 2, Historic England 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 current OA Health and Safety Policy, 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.

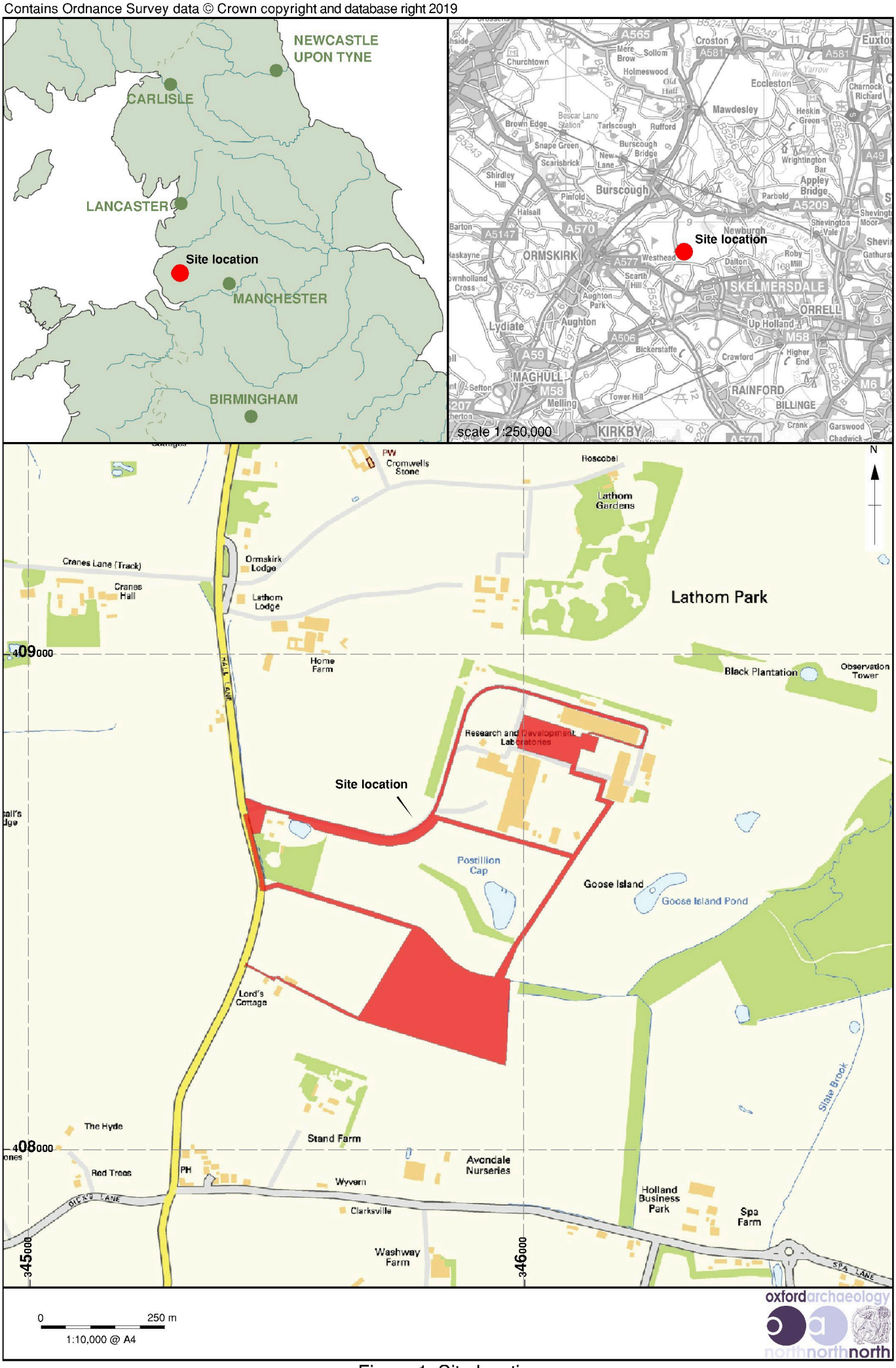
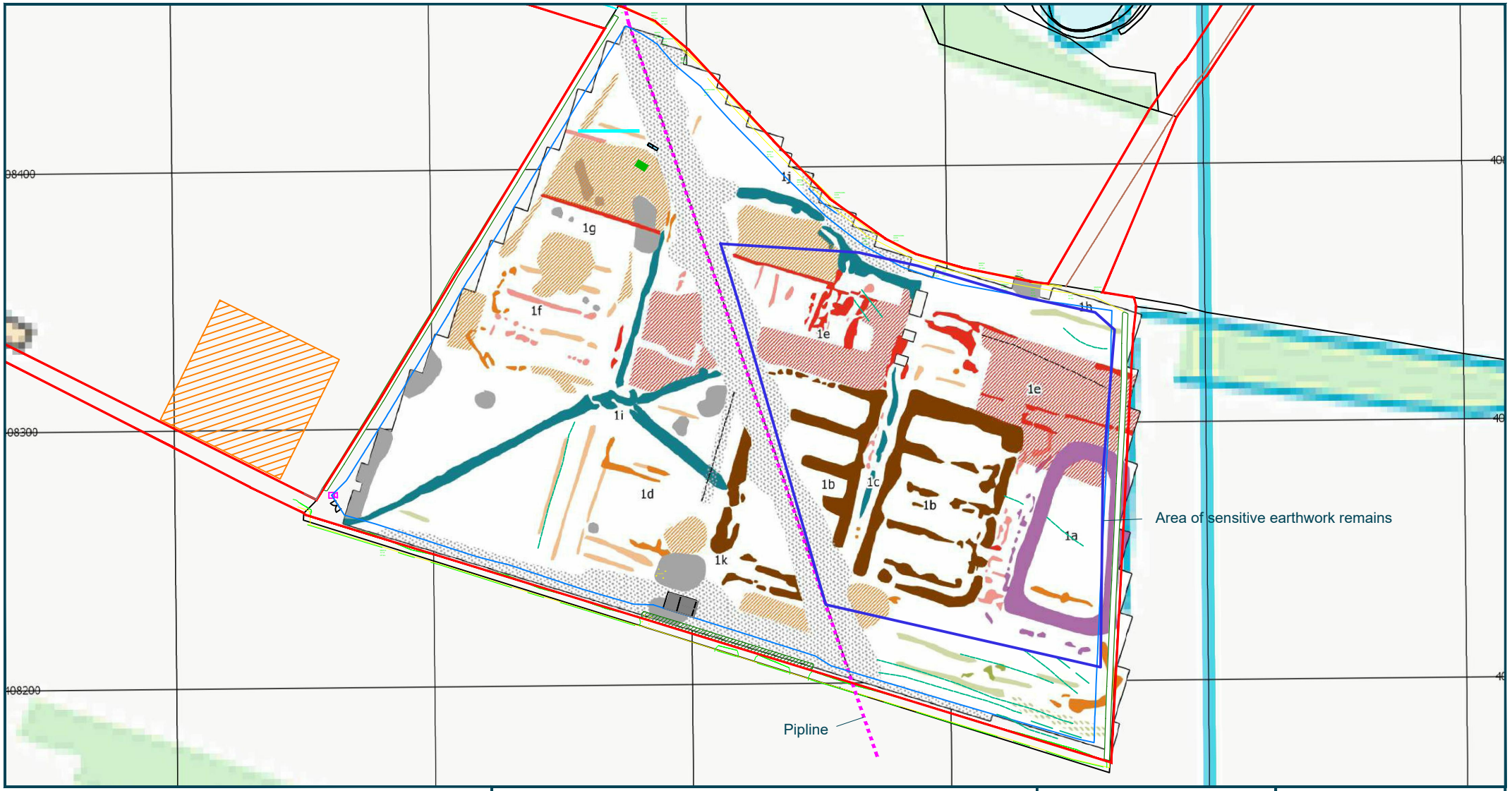


Figure 1: Site location



Legend:

1:2,000 at A4:

0 50m

Title:
Fig. 2: Area of sensitive earthwork remains

Address:
Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

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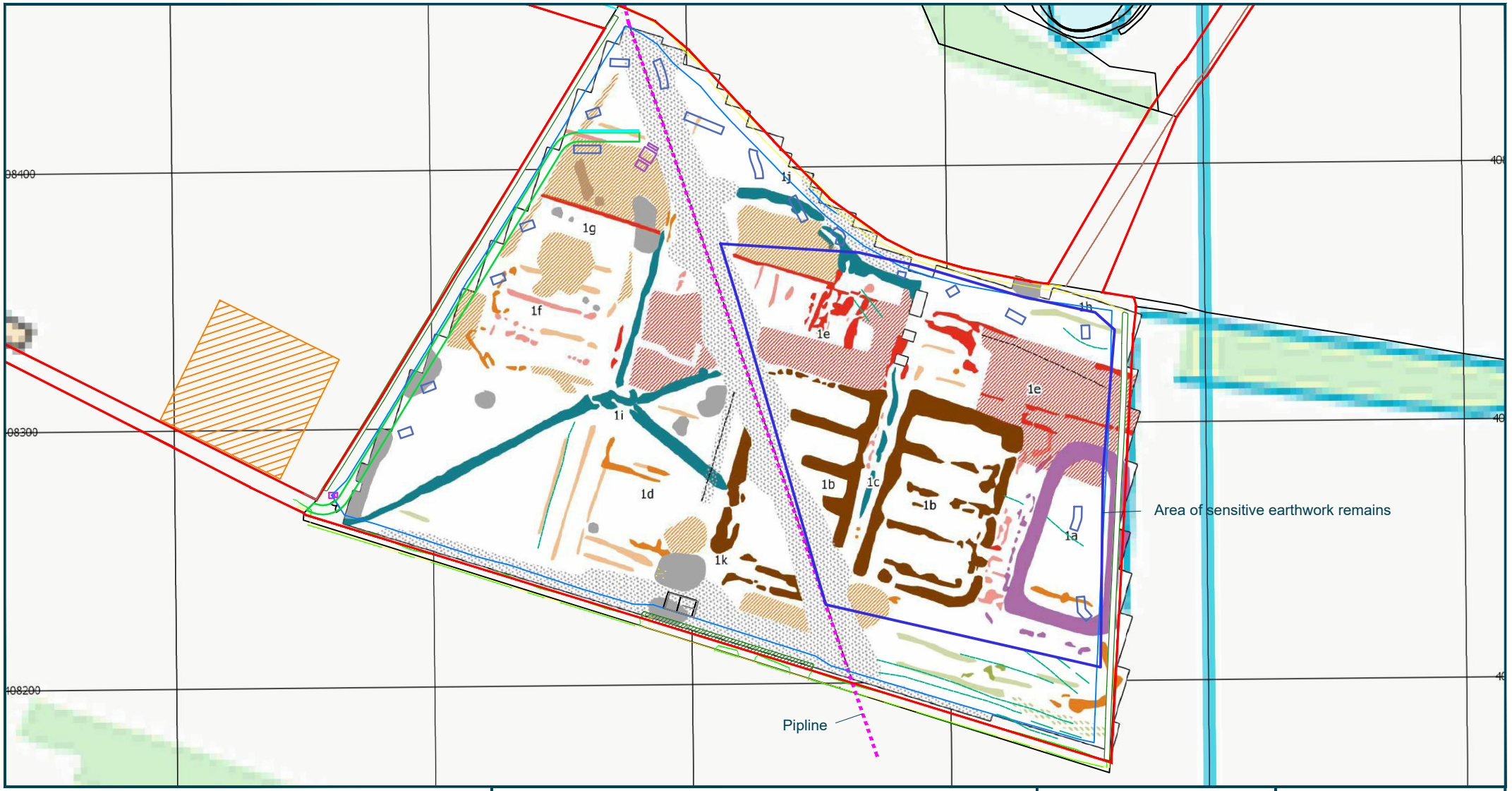

Legend:

- Proposed swale
- Proposed access road
- Proposed cabin

1:2,000 at A4:

0 50m

N

Title:

Fig. 3: Development impacts in relation to archaeological remains

Address:

Land at and to the south of the NSG European Technical Centre, Lathom, West Lancashire

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