



## **A41 – Pioneer Roundabout, Graven Hill, Bicester**

Written Scheme of Investigation for an archaeological evaluation

On behalf of



May 2021

**Waterman Infrastructure & Environment Limited**

Merchants House, Wapping Road, Bristol, BS1 4RW  
[www.watermangroup.com](http://www.watermangroup.com)






**Client Name:** Graven Hill Village Development Company  
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### Quality Assurance – Approval Status

This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

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Issue	Date	Prepared by	Checked by	Approved by
First	May 2021	Sarah Generalski-Sparling Senior Heritage Consultant	Sally Hales Technical Director	Nick Jones-Hill Technical Director / Project
				
Final	May 2021	Sarah Generalski-Sparling Senior Heritage Consultant	Sally Hales Technical Director	Nick Jones-Hill Technical Director / Project
				

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## Disclaimer

This report has been prepared by Waterman Infrastructure & Environment Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

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## 1. Introduction

Waterman Infrastructure & Environment Ltd ('Waterman') has been commissioned by Graven Hill Village Development Company ('the Client') to produce a Written Scheme of Investigation (WSI) for an archaeological trial trench evaluation in relation to the construction of the A41 Pioneer Roundabout ('the Development') at land located at the junction between Pioneer Road and the A41 ('the Site') at the eastern extent of Graven Hill Garden Village ('the wider Graven Hill Site').

This WSI follows on from the agreed *Overarching Archaeological Written Scheme of Investigation for Land Transfer Area 2 (OAWSI)* produced by Waterman in February 2019<sup>1</sup> and from *the Archaeological Mitigation Strategy* for the Site produced by Waterman in June 2020<sup>2</sup>.

The location of the Site is presented on **Figure 1** below and a detailed location plan is attached in **Appendix A**.



Figure 1: Site Location Plan

Source: OS Data © Crown Copyright and Database Right 2021 [Accessed via ArcGIS Online 14th May 2021]<sup>3</sup>)

An archaeological mitigation strategy for the A41 was produced in June 2020 which identified the key mitigation strategy outlining the archaeological programme. This is included as **Appendix B**

<sup>1</sup> Waterman, 2019. *Overarching Archaeological Written Scheme of Investigation for Land Transfer Area 2*

<sup>2</sup> Waterman, 2020. *A41 Pioneer Roundabout, Graven Hill, Bicester, Archaeological Mitigation Strategy*

<sup>3</sup> ArcGIS Online, accessed on 25<sup>th</sup> June 2020 via <https://www.arcgis.com/index.html>

## 1.1 Project Background

The Client has obtained outline planning permission for the wider Graven Hill Site under reference 11/01494/OUT, however, the application for the A41, which forms part of the wider Graven Hill site, was submitted separately (reference 20/01830/F).

The following pre-commencement conditions were issued in response to the A41 application:

### Condition 10

*“Prior to any demolition and the commencement of the development a professional archaeological organisation acceptable to the Local Planning Authority shall prepare an Archaeological Written Scheme of Investigation, relating to the application site area, which shall be submitted to and approved in writing by the Local Planning Authority.”*

### Condition 11

*“Following the approval of the Written Scheme of Investigation referred to in condition 10, and prior to any demolition on the site and the commencement of the development (other than in accordance with the agreed Written Scheme of Investigation), a staged programme of archaeological evaluation and mitigation shall be carried out by the commissioned archaeological organisation in accordance with the approved Written Scheme of Investigation. The programme of work shall include all processing, research and analysis necessary to produce an accessible and useable archive and a full report for publication which shall be submitted to the Local Planning Authority within two years of the completion of the archaeological fieldwork.”*

## 1.2 The Site

The Site comprises approximately 0.7 hectares (ha) centred on Ordnance Survey Grid Reference SP 59672 20740 and forms part of the eastern extent of the wider Graven Hill Site.

The Site is of an irregular shape, broadly encompassing parts of the A41 including a small section of grassed area to the north of it, and a small previously wooded area with Pioneer Road to the south of the A41. The majority of the Site therefore consists of a mixture of hardstanding (e.g. Pioneer Road and the A41), a small grassed area and a recently cleared woodland area to either side of Pioneer Road.

A description of the wider Graven Hill Site originally set out in the ES authored by Amec and submitted with the planning application is presented below for further context. The wider Graven Hill Site is located 1.5 km to the south of the centre of Bicester with its northern site boundary formed by the A41 and the boundary to the west being the main (Oxford to Bicester) railway line.

Land around Graven Hill has been in use as a military depot since 1941-2 and so the Site is occupied by a number of large storage buildings arranged around the base of the hill, some of which are located to the south and west of the Site. These are served by a local network of road and rail lines which surround Graven Hill Wood. The sloping ground which rises toward the wooded hilltop consists mainly of agricultural land (currently used for cattle pasture).

### 1.2.1 Geology and Topography

The landform of the surrounding study area is predominantly flat, and generally at elevations of approximately 60m to 65m Above Ordnance Datum (AOD), rising gently to the north of Bicester. This flat landform is associated with the River Ray floodplain and small tributary streams which dominate the southern half of the study area. The Graven Hill landform at the centre of the Site rises to 115m AOD, and is one of a series of isolated hills (Poundon Hill, Arncott Hill and Muswell Hill) which rise above the



surrounding landscape. The majority of the developed part of the wider Graven Hill Site lies below 75m AOD, closer to levels within the immediate surroundings.

The superficial (drift) geology was generally absent from the results of a Site Investigation carried out prior to submission of the planning application, however, deposits of alluvium (clay, silt and gravel), made ground and topsoil were all encountered. These deposits were underlain by clay layers with firm orange-brown mottled and brown-grey mottled, clay layers with occasional sand and gravel bands of fine gypsum crystals encountered at shallow depth. These layers were themselves underlain by a firm, brown, laminated, clay layer typically with highly weathered yellow chalk veins and fine gypsum crystals.

The bedrock (solid) geology comprised stiff grey laminated clay with shell fragments and occasional gypsum crystals and was believed to be part of the Peterborough Member (mudstone) of the Oxford Clay Formation. Beneath the Oxford Clay Formation, the Kellaways Sand and Kellaways Clay members of the Kellaways Formation with the Cornbrash Formation (predominantly calcareous shelly mudstones and fossiliferous limestones) located beneath the Kellaways Formation.

### 1.3 Scope of Document

This WSI is for a programme of archaeological trial trenching which has been prepared in response to Conditions 10 and 11.

This WSI has been prepared in accordance with the following guidance by the Chartered Institute for Archaeologists (CIfA):

- Standard and guidance for an archaeological field evaluation<sup>4</sup>

This document presents an outline methodology for the required work and is subject to approval by Oxfordshire County Council's Archaeological Services (OCCAS) in accordance with their archaeological requirements. This WSI will form the basis for a subsequent detailed method statement(s) completed by fieldwork contractors, for each phase and/or sub-phase (if required) of the archaeological works, as appropriate. Sub-contractor method statements are also subject to approval by OCCAS.

Details on the proposed scope of works is discussed in **Section 3**.

The results of any intrusive investigation will need to be subject to suitable post-excavation assessment. The reports resulting from the fieldwork will present a digest of information on the character and significance of any archaeological assets identified.

Should additional work be required that is in addition to the scope outlined in this document, this would be subject to further consultations with OCCAS and may also be subject to a subsequent brief.

<sup>4</sup> CIfA, 2014 (rev 2020). *Standard and guidance for an archaeological field evaluation*

## 2. Archaeological and Historic Background

The wider Graven Hill Site history presented below summarises that set out in the ES authored by Amec<sup>5</sup> and submitted with the wider outline planning application.

### 2.1 Prehistory

There are no recorded assets dating to this period within the Site, however evidence from the surrounding area shows that it was occupied during this period.

There has been some suggestion in the past that the top of Graven Hill was the Site of an Iron Age hill fort and that a linear earthwork, which is still visible within the Graven Hill Wood, formed part of the ramparts. However, these earthworks were investigated by the archaeological excavation of a number of trial trenches in 1999<sup>6</sup>, with no clear evidence of Iron Age activity being recovered. There is no other known evidence for Iron Age activity within Graven Hill Wood and an alternative interpretation of the earthworks representing the remains of Post Medieval lynchets of agricultural origin appears to be more likely.

Evidence of Prehistoric settlement and activity within the 1 km study area used for the baseline presented in the ES<sup>7</sup> comes from a variety of sources, including those which have been recorded by excavation, sites identified as cropmarks on aerial photographs, and as artefact finds.

Iron Age settlement sites have been identified at Chesterton Lane and Bicester Fields Farm. The Chesterton Lane site was investigated in advance of construction for dualling of the A41<sup>8</sup> and identified the presence of middle Iron Age gullies, postholes and sub-rectangular enclosures, all being indicative of settlement. An isolated Bronze Age burial was also identified. The Bicester Fields Farm site<sup>9</sup> is north of Graven Hill and excavation identified an Iron Age enclosure of two phases, and surrounded by other domestic features: pits, boundary ditches and both human and animal burials. A late Iron Age date was identified on the basis of the pottery assemblage, and other finds suggested an economy of pastoralism, with unusually large cattle and ironworking, indicating that the farmstead may have been of relatively high status. Evidence for earlier prehistoric (Mesolithic) activity was also identified<sup>10</sup>.

Cropmark evidence from aerial photography<sup>11</sup>, includes two possible round barrows of probable Bronze Age date to the north-west of the Site which are visible as ring ditches. In addition, a banjo-type enclosure, three hut circles and a number of sinuous ditches have been identified on aerial photographs to the immediate south-west of the Alchester Roman town (Oxfordshire HER ref. 13904)<sup>12</sup>. These have been interpreted as possible evidence for pre-Roman settlement within this area. Further evidence recorded in the Oxfordshire HER has been found in the form of artefacts, including a Bronze Age palstave (Oxfordshire HER ref. 16086) found in the vicinity of Alchester Roman Town and Bronze Age spearhead (Oxfordshire HER ref. 13922) from south of Graven Hill. There are also a number of finds of late Iron Age pottery recorded in the HER.

<sup>5</sup> Amec, 2011. *Future Defence Storage and Redistribution Programme – Redevelopment of MOD Bicester – Environmental Statement*

<sup>6</sup> Oxford University Archaeological Society and School of archaeological studies, University of Leicester, 2000. *Ambrosden, The entrenchments on Graven Hill* (SP 591 204) by Eberhard Sauer in *South Midlands Archaeology*, vol. 30

<sup>7</sup> Amec, 2011. *Future Defence Storage and Redistribution Programme – Redevelopment of MOD Bicester – Environmental Statement*

<sup>8</sup> P M Booth, J Evans and J Hiller, 1991. *Excavations in the Extramural Settlement of Roman Alchester, Oxfordshire*, in *Oxford Archaeology Monograph*, 1

<sup>9</sup> Oxford Archaeological Unit, 1998. *Bicester Fields Farm, Bicester, Oxfordshire – Archaeological Evaluation Report*

<sup>10</sup> "The excavation of a Late Iron Age enclosed settlement at Bicester Fields Farm, Bicester, Oxon." in *Oxoniensia* Issue : 64 (2000), Pages: 153 - 233

<sup>11</sup> Air Photo Services Ltd, 2005. *Land southwest of Bicester, Oxfordshire: Interpretation of Aerial Photographs for Archaeology*. Project No. 0418

<sup>12</sup> [http://www.heritagegateway.org.uk/Gateway/Results\\_Single.aspx?uid=MOX5141&resourceID=1033](http://www.heritagegateway.org.uk/Gateway/Results_Single.aspx?uid=MOX5141&resourceID=1033) [Accessed: 30 January 2015]

## 2.2 Romano-British

The principal settlement site of Roman date within the area is the town of Alchester, a Scheduled Monument. Together with the associated Roman roads, one of which crosses the Site, Alchester defines the Roman settlement pattern in the immediate surrounds of the Site.

Other areas of Roman settlement were also present, including a site which has been excavated at London Road in Bicester (Oxfordshire HER ref. 26005). This was within an area of raised ground between two paleo-channels, and comprised a large number of ditches, pits and postholes. The excavation presented a picture of settlement within an area which was generally wet and marshy.

Another Roman period settlement site has been excavated to the north of Graven Hill at Oxford Road<sup>13</sup>. Evaluation revealed extensive survival of late Iron Age and Romano-British settlement within the floodplain of Langford Brook. All identified features were preserved under post-Roman alluvium, and appeared to represent two phases of occupation. The first of these phases was dated to the 1st century AD, and the second to the 2nd century AD. It was interpreted as a low status rural site typical of Upper Thames region for the period, at a time when increasing agricultural intensification required use of previously marginal land.

A feature of interest in the early Ordnance Survey (OS) editions is the course of Langford Lane which ran within the Graven Hill Site boundary. From its current location at Alchester, the lane continued toward Merton, remaining outside of the wider Graven Hill Site boundary. The other branch continued to the east, following a line on the north side of Graven Hill, within the wider Graven Hill Site boundary, joining the line of Akeman Street at Wretchwick Farm. Given its location, it is possible that this may be a survival of the original Roman Road which led east from Alchester to link with Akeman Street. This route appears to have survived the initial construction of the Graven Hill ordnance depot as it can be seen on aerial photographs of 1945 as a double line of trees.

There is also a significant body of evidence of Roman occupation documented in the Oxfordshire HER in the form of numerous artefact finds, many of which have been from within and around the Alchester site or along the known routes of Roman roads.

## 2.3 Medieval

There is relatively little known of the early medieval settlement within the area, though the Roman town at Alchester was abandoned, perhaps from around the 5th century AD. Bicester appears to have been established as a Saxon settlement in the 6th century and was named as Burencestre in the Domesday Book. The name has been described as either meaning 'fort of Bern' with 'Bern' being derived from the personal name for Beorna<sup>14</sup>, or alternatively being derived from two separate elements – 'byrgen' meaning burial mound, and 'ceaster' meaning Roman fort<sup>15</sup>. The earliest excavated evidence for settlement within the town is from a site to the rear of the King's Arms<sup>16</sup>, which lies to the north of Graven Hill. Excavated remains included pits, gullies and evidence for a number of sunken-feature buildings, which may represent former houses.

<sup>13</sup> Bevan, L and Leach, P, 1993. *An Archaeological Evaluation at Oxford Road, Bicester, Oxfordshire* (BUFAU Report 277) and Mould, C., 1996. *An Archaeological Excavation at Oxford Road, Bicester, Oxfordshire* in *Oxoniensia*, vol. 61

<sup>14</sup> 'The market town of Bicester', in *A History of the County of Oxford: Volume 6*, ed. Mary D Lobel (London, 1959), pp. 14-56 <http://www.british-history.ac.uk/vch/oxon/vol6/pp14-56> [accessed 30 January 2015].

<sup>15</sup> Ekwall, E., 1960. *The Concise English Dictionary of English Place-names*

<sup>16</sup> Harding, P & Roberts, M, 2000. *King's Arms, Bicester, Oxfordshire. Assessment Report on the Results of the Archaeological Excavation Including Proposals for Post-Excavation Analysis and Publication* (Wessex Archaeology)

The first edition OS map of 1885 includes the note site of battle between the Danes and Saxons in 871 AD within Graven Hill Wood. However, there is no other known reference to an early medieval battle at this location and it is not clear on what this is based. Without further evidence, this record should be treated with caution.

The first edition OS also indicates the boundary between the parishes of Ambrosden and Merton cutting across Graven Hill Wood. The division into two halves may be significant since they are divided by a dry ditch starting at the northern 300' contour and rising with the landscape to possibly 370' and down again to the southern 300' contour. The two halves of woodland are approximately 53.333 acres each. It may be that the woodland was equally divided between the parishes of Ambrosden and Merton (Oxfordshire HER ref. 13593).

Ambrosden formed the principal medieval settlement within its parish, though other settlements are also known, such as the one at Arncott. During the medieval period, much of the land around Graven Hill appears to have been in arable use, and the Victoria County History<sup>17</sup> records that the agricultural land of Ambrosden village was organised around three main fields known by the seventeenth century as East, South and West Fields. The extent of arable cultivation is indicated on aerial photographs of the 1940s which show ridge and furrow earthworks (derived from medieval and post-medieval ploughing) on much of the land surrounding the hill, including some of the lower slopes.

In addition to the surviving settlements of medieval origin, there was also a medieval settlement at Wretchwick, to the north of Graven Hill, and possibly extending into its lower slopes. Wretchwick, now a Scheduled Monument, was in the possession of Bicester Priory, before being depopulated by the priory to make way for sheep grazing.

## 2.4 Post Medieval

The wider Graven Hill Site is shown in detail on a series of OS Maps dating from 1880 onwards. In 1880, the wider Graven Hill Site is shown comprising a series of enclosed fields arranged around Graven Hill Wood. A single farmstead was present within the wider Graven Hill Site boundary in 1880, located on the southern edge of Graven Hill Wood, and known as Mount Pleasant. A building is shown on this location on the aerial photographs of 1944-45 and it is possible that Mount Pleasant remained until the development of St David's Barracks in the 1950s.

## 2.5 Twentieth Century

The major development of the 20th century, which has shaped the current form of the wider Graven Hill Site, was the establishment of the Central Ordnance Depot I 1941 during World War Two (WWII). The Bicester site was chosen as being suitable as it was located within southern England, with good road and rail links, and with sufficient space for the creation of a dispersed complex required for protection against air attack. It was also felt that the presence of Graven Hill will provide some additional protection in this regard. The depot was to spread over a wide area, occupying a number of sites from Graven Hill in the north to Arncott and Piddington in the south, collectively known as MOD Bicester.

The selection of MOD Bicester was approved in May 1941 and construction began soon after. Initial construction involved the laying of a 42 mile military rail network within and linking the various sites, followed by construction of the warehouse buildings. Graven Hill comprised D Site (armaments stores) to the south and E Site (small arms) to the north. Stores began to be issued from the MOD Bicester depot in August 1942, and it remained a key supply point for the army for the remainder of the war.

The entry of the United States into the war led to the arrival of large numbers of American troops into Britain, and it was necessary to provide depot facilities for their equipment. This operation was codenamed Bolero

<sup>17</sup> 'Parishes: Merton', in A History of the County of Oxford: Volume 5, Bullingdon Hundred, ed. Mary D Lobel (London, 1957), pp. 221-234 <http://www.british-history.ac.uk/vch/oxon/vol5/pp221-234> [accessed 25 January 2015].

and at Bicester it involved the construction of temporary warehouse in the form of groups of Romney huts served by rail spurs and roads. The completed depot at MOD Bicester served as a key facility in supplying equipment for the Normandy landings in June 1944 and subsequent European campaign. It was also necessary to provide accommodation within the depot for a workforce which during construction reached 24,000, and this was provided by Nissen huts organised into nine self-contained camps. Three of these, Camp nos. 5, 6 and 7 were located on the slopes around Graven Hill Wood. This is depicted in the earliest aerial photography available for the wider Graven Hill Site. In 1944 much of the agricultural land surrounding the depot was occupied by ridge and furrow and areas of ridge and furrow also survived within the depot. Changes visible on aerial photographs within the wider Graven Hill Site are:

- Construction of St David's Barracks by 1954;
- Hutted accommodation north of Graven Hill Wood had been removed by 1959;
- More of the hutted accommodation had been removed by 1966 and trees within the Graven Hill Wood had been felled;
- Only a small number of accommodation huts were still present by 1975. Graven Hill Wood had been replanted and no ridge and furrow earthworks are shown to survive within the Site; and
- All accommodation huts had been removed by 1989.

In addition, the sequence of aerial photographs show the gradual removal by ploughing of ridge and furrow from the surrounding agricultural land, and this was largely absent by 1975.

MOD Bicester continued to operate as a Central Ordnance Depot in the post-war period, though the military workforce was gradually replaced by an increasing number of civilian workers. This meant the need for civilian workers to move into the area and some new housing to be built in Bicester to accommodate them. The temporary hutted accommodation camps were gradually removed and in 1956 new barracks had been completed to the west of Graven Hill Wood on the current St David's Barracks site. Other changes include the removal of the Bolero warehouses in the period after WWII.

In 2006, two trial trenches were excavated within a former tennis court at St David's Barracks in advance of the construction of an accommodation block, though no archaeological features were identified<sup>18</sup>.

## **2.6 Archaeological Discoveries Within the Site**

The Site has not previously been subject to archaeological fieldwork, mainly because of the previous woodland cover and due to the original construction works of the A41 not being archaeologically monitored.

As part of a site wide geophysical survey undertaken by Magnitude Surveys in June 2020 on behalf of the Client, an area immediately adjacent to the northern parcel of former woodland (known as Area 5) was undertaken.

While services were identified, the entire area was characterised as 'magnetic disturbance'<sup>19</sup>. Such areas were described as obscuring the response of weaker features that might lie underneath, as such, the potential for archaeology in this area (which could provide an indication of archaeology that might extend into the northern parcel) is currently unknown.

<sup>18</sup> Granville Laws, 2007. *Bicester, St David's Barracks* (SP 5833 2052) in *South Midlands Archaeology*, vol. 37

<sup>19</sup> Magnitude Surveys, 2020. *Geophysical Survey Report of Land Transfer Area 2, Graven Hill, Bicester* (Report ref: MSSP708), p. 15

## 3. Research Aims and Methodology

### 3.1 Aims of the Evaluation

The objective of the evaluation will be to inform the need for any subsequent mitigation fieldwork within the Site through archaeological investigation – in this case by trial trenching. The scope for any mitigation fieldwork would depend on the archaeology encountered and on further consultations with OCCAS.

The trench plan has been included as **Figure 2** in **Appendix C**.

A contingency of 1% should be provided and used where required.

The aims of the evaluation will be to:

- determine the presence or absence of any buried archaeological remains within the Site that may be affected by the Development and where remains are present, to make an appropriate record to ClfA standards<sup>20</sup>;
- determine the approximate extent, condition, state of preservation and depth of any surviving remains;
- confirm the approximate date or range of dates of the remains;
- sample deposits to assess potential paleoenvironmental evidence;
- produce a report on the results of the archaeological evaluation;
- consult with OCCAS on the need for archaeological mitigation; and
- ensure adequate provision for archival deposition of the archaeological record.

### 3.2 Methodology

#### 3.2.1 Evaluation

The archaeological evaluation will be undertaken by an appropriately experienced ClfA registered archaeologist(s) to monitor archaeological features within the proposed 30m x 2m trench locations as seen in **Figure 2** below. These trench dimensions have been considered most suitable based on the limited amount of space within the evaluation area and to ensure sufficient movement (e.g., for plant) across the Site.

A total of c. 4-5 trenches is currently proposed based on a 4% sample of the available evaluation area. The trench number is based on an available evaluation area of c. 0.5ha. While the Site measures c. 0.7ha, existing constraints, such as those areas which fall within existing roads which will need to remain operational (e.g., the A41 or the access road to the Site) lead to a reduction of c. 0.2ha.

The location and/or orientation of the trenches may be subject to change depending on on-site constraints. Other changes, such as a reduction in the number of trenches or major changes to their location would, however, be subject to approval by OCCAS.

At present, protective fencing for ecological purposes has been erected within the Site, therefore, at present it will need to be determined whether the evaluation will proceed while the fencing is still active, or as soon as possible after its removal. Should there be a possibility to commence with the evaluation while the fencing is still on Site, the following mitigation measures in regard to ecology may be required:

- Finger tip search for Newts to be undertaken by an appropriately qualified ecologist prior to trench excavation;

<sup>20</sup> ClfA, 2014 (rev 2020), *Standard and guidance for archaeological field evaluation*



Figure 2: Trench Location Plan

- Covering of trenches at the end of each day to ensure that no Newts could fall into the trenches.

Work will be carried out according to ClfA's *Standard and guidance archaeological field evaluation*<sup>21</sup>, in line with the requirements of OCCAS.

The final locations, number and sizes of the trenches are subject to change dependent on the health and safety requirements, obstructions identified on Site, the locations of any ground contamination and below ground servicing locations.

If complex archaeological features or deposits are encountered, Waterman will be informed in the first instance, who will then liaise with OCCAS. Excavation will include sampling of features or deposits to recover artefacts, ecofacts and dating evidence in accordance with the methodology for recording as described below.

Should extensive or well-preserved remains be found which require a change to the evaluation methodology, Waterman will agree any additional work with OCCAS prior to commencement.

Infilling of opened archaeological features and reinstatement of the trenches may be required by the archaeological contractor and will be confirmed at their appointment. No trenches will be backfilled until sign off has been obtained by OCCAS.

A summary of the results and a plan of the findings with a completed spot-dating report of all finds will be

<sup>21</sup> Ibid

made available following completion of the evaluation.

### 3.2.2 General

Mechanical excavation will be undertaken using a toothless ditching bucket under constant supervision by an appropriately trained and experienced archaeologist.

Any mechanical excavations will proceed to construction formation levels, safe working depth (up to c.1.2m) or until the top of archaeological deposits and features are reached, whichever is encountered first.

Spoil will be visually scanned, monitored and metal-detected by trained archaeological personnel for the purposes of finds retrieval (where appropriate) and to allow analysis of the spatial distribution of artefacts. Metal detectors may also be used as appropriate to scan archaeological features prior to and during excavation.

Spoil will be situated at a safe distance from the trench edges, with modern overburden/ hardstanding deposits separated from any surviving subsequent layers where practical (i.e. given space restrictions).

All archaeological features and lying deposits within trenches will be cleaned by hand and planned, prior to any hand-excavation. A representative section, not less than 1m in length, of deposits in each trench (from ground surface to the top of the natural geology) will be recorded. Sufficient of the archaeological features and deposits identified must be excavated by hand through a specified or agreed sampling procedure to enable their date, nature, extent and condition to be described.

The depth of archaeological deposits across the whole site must be assessed. The stratigraphy of all trial trenches should be recorded even where no archaeological deposits have been identified.

No archaeological deposits should be entirely removed unless this is unavoidable.

Further sections across trenches may be required where significant stratigraphic variance occurs. All archaeological features and deposits will be sample excavated by hand.

OCCAS will be consulted in terms of the suggested levels of investigation for any archaeological assets identified with the objective of additional excavation, up to complete removal (if required). This may be required of any feature should the excavated samples fail to provide the necessary information as to enable their purpose or date to be ascertained.

The recording system will be compatible with Historic England and ClfA standards and guidance.

The sampling and recording of archaeological deposits and features by the archaeological contractor will be commensurate with the scale of work and using their own *pro-forma* paperwork system. Where practical and appropriate to the aims of the WSI, hand-excavation will include sampling of features and deposits to recover artefacts, ecofacts, dating evidence, and stratigraphic relationships. Recording will include written, drawn, and photographic forms of evidence.

All drawn records of excavated archaeological features and deposits will be compiled, including sections and plans, drawn to 1:10 scale for sections and 1:20 for plans. These will include OS National Grid References (NGR) and heights above Ordnance Datum (aOD). The plan outlines of the excavated areas should be plotted on to a copy of an Ordnance Survey base map of not smaller than 1:2500 scale.

The completed trenches, archaeological features and deposits will be surveyed using appropriate Total Station/GPS survey equipment and related to Ordnance Survey to a 3D accuracy limit of 50mm.

A full digital photographic record will be made during the fieldwork, embedded with appropriate metadata within the image and also ensure long term accessibility of the image set.



## 4. Recording Systems

The recording system shall be compatible with Historic England's and ClfA's standards and guidance. The recording system will also be compliant with other systems used in the region. The recording system will be based on single context planning, such as informed by the Museum of London 'red book'. Pro-forma context sheets shall include all relevant stratigraphic relationships and for complex stratigraphy a separate matrix diagram shall be employed. The following plans and sections are required:

- an overall site plan shall be prepared detailing archaeological deposits as well as the extent of the area relative to the National Grid on a 1:2,500 plan;
- a detailed site plan may be required at 1:100 scale, depending on the findings;
- sections containing significant deposits, including half sections, shall be drawn as appropriate. Section drawings should include heights Ordnance Datum (OD);
- all archaeological plans and sections shall be on drawing film and at a scale of 1:10 or 1:20 and shall include context numbers and OD spot heights for all principal strata and features; and
- an adequate photographic record of any significant archaeological remains shall be made, in both plan and section.

### 4.1 Finds and Samples

Finds will be treated in accordance with the relevant guidance given in the ClfA Standard and Guidance, the UK Institute of Conservators Guidelines *Conservation Guideline No 2* and the Museums and Galleries Commissions *Standards in the Museum Care of Archaeological Collections*<sup>22</sup>.

All artefacts from excavated contexts will be retained to clarify the date and/or function of the feature or deposit. No finds will be discarded without prior approval from OCCAS and the designated museum.

Consideration will also be given to the recovery of specialist samples for scientific analysis, particularly samples for absolute dating, structural materials and cultural / environmental evidence. Environmental samples will be taken from suitable deposits and examined for carbonised remains, macroscopic plant remains, pollen, seeds, insect, molluscs, etc.

All finds and samples will be treated in a proper manner to prevent deterioration and according to guidance given in ClfA's *Standard and guidance archaeological excavation*. This will involve cleaning and conservation where necessary and labelling, cataloguing and secure storage in appropriate containers.

The Archaeological Contractor will need to demonstrate that arrangements are in hand to cover all necessary processing, conservation and specialist analysis of finds and samples, including if necessary, the conservation of organic and composite materials and dendro-chronological and environmental analysis of samples.

Every effort shall be made to ensure that finds analysis is consistent with existing local systems.

### 4.2 Human Remains

In the event of human remains being discovered on Site they will be left in situ, covered and protected. The Archaeological Contractor will inform Waterman and the Coroner. Waterman will in turn inform the Client and OCCAS.

No excavation of burials and removal of skeletons shall be undertaken during the excavation without obtaining a Ministry of Justice licence to remove buried human remains (including cremated remains). A GPS location of any suspect or confirmed burials shall be taken.

<sup>22</sup> Museums and Galleries Commission, 1992, *Standards in the Museum Care of Archaeological Collections*

### **4.3 Treasure**

In the event of any treasure being encountered on Site that falls under the Treasure Act (1996), such artefacts will be excavated and removed appropriately following notification of Waterman who will in turn inform OCCAS and the Client.

### **4.4 Monitoring and Access**

OCCAS and Waterman shall be allowed access to inspect the archaeological works to ensure that they are being conducted to the proper professional standards and in accordance with the agreed method statement.

To facilitate this, a projected timetable for Site work shall be agreed between Waterman, OCCAS, the Archaeological Contractor, the Client, and the contracting archaeological organisation.

Safe access to the Site shall be granted to Waterman, the archaeological contractor, and OCCAS.

Where any member of the monitoring cohort is unable to attend the Site (for example, due to Covid-19 guidance), access to the works shall be facilitated by one or more of the following measures:

- Provision of digital photography of areas/assets of interest;
- Video broadcast (by pre-agreed means) of areas/assets of interest;
- Regular written updates on the progress of work (irrespective of whether areas/assets of interest have been identified);
- Telephone conference to discuss areas/assets of interests with the benefit of the above.

The Client shall notify OCCAS two weeks prior to the start of the works to enable OCCAS to arrange site visits to monitor the Site.

## 5. Health and Safety

The Archaeological Contractor shall comply with the requirements of the Health & Safety at Work Act. The Archaeological Contractor shall prepare a Risk Assessment for the Site in accordance with the organisation's health and safety policy. Health and safety shall take priority over archaeological matters.

The Archaeological Contractor will supply a copy of their Health and Safety Policy and a Dynamic Risk Assessment to Waterman and the Archaeological Contractor before the commencement of any fieldwork. This must consider hazards posed by the activities of the archaeological contractor on Site, where those hazards might pose a risk to employees and sub-contractors to the archaeological contractor. This must have been read, understood and signed by all staff attending Site.

All archaeologists undertaking fieldwork shall comply with all relevant Health and Safety legislation. Machinery shall be kept away from unsupported trench / excavation edges and public access should be restricted. Barriers, hoardings and warning notices shall be installed as appropriate. Safety helmets and other applicable Personal Protective Equipment (PPE) shall be used by all personnel as necessary.

Available reports and drawings pertaining to ground conditions and services shall be provided to the Archaeological Contractor, however, any further information deemed necessary shall be obtained by the Archaeological Contractor prior to intrusive works commencing. In addition to written records, excavation areas shall be checked and cleared for services using a CAT scanner. The Archaeological Contractor shall be responsible for any damage and repairs to site services and any associated business interruption.

Spoil shall be kept at a safe distance from any excavation edges. The location of the spoil heap/s may be within the Site or spoil may be removed off-site immediately.

No existing rights of way or accesses shall be blocked during the course of Site work. Adjacent public roads shall be kept free of mud and spoil.

There is a potential for intrusive works to expose unforeseen contamination at the Site, such as asbestos containing materials (ACMs). The Archaeological Contractor shall detail adequate control measures within their method statements should unforeseen contamination be encountered.

The Archaeological Contractor shall control all aspects of the Safe System of Work. A Risk Assessment, which covers all risks associated with the archaeological contractor's activities on site, shall be provided by the appointed archaeological contractor for this phase of work. The archaeological contractor's Risk Assessment shall also consider hazards posed by the activities of other contractors on site, where those hazards might pose a risk to employees of the archaeological contractor.

The Client and Archaeological Contractor will be responsible for supplying any assessments on the potential risks of Unexploded Ordnance for the Site to Waterman and the archaeological contractor prior to the start of the evaluation.

All work shall be carried out in compliance with the Health and Safety requirements of the Archaeological Contractor (where required).

Health and Safety considerations and safe working practices will override archaeological considerations in all instances.

## 6. Reporting

### 6.1.1 Evaluation Report

The draft evaluation brief will be submitted by the Archaeological Contractor to Waterman within six weeks of completion of the archaeological works for review. Following that, the draft report (either in pdf or .doc format) and any digital data generated as part of the work (such as GIS or CAD files) shall be supplied to OCCAS for approval prior to finalising the report or submitting it for planning purposes.

The completion time of the report(s) is subject to change dependent on the requirements of the report(s). Variations in report completion time could be caused by, but are not exclusive to, report elements such as the specialist analysis of artefacts or environmental sample analysis.

The report(s) should include the following content, as appropriate and should be cross referenced to ClfA's *Standard and guidance for archaeological evaluation*:

- A non-technical summary;
- An introduction;
- A review of the aims and objectives;
- Methodology;
- A summary of results including a description of the nature, extent, date, condition and significance of any archaeological and environmental materials uncovered with specialist opinions and parallels from other sites in the area;
- A discussion on the potential of the data;
- A table of all artefacts recovered from the archaeological works;
- An interpretation of the results should be produced, and attention should be given to the significance of the remains in local, regional and national terms and how these may answer regional research framework questions;
- Conclusions (to exclude any mitigation recommendations);
- Illustrations including plans and section drawings at suitable scales, trench context tables, plus general and detailed photographs where appropriate;
- References; *and*
- Historic Environment Record summary form.

Once a report is finalised, a hard copy of the Final Report(s) will be submitted by the Archaeological Contractor to a suitable archive. An e-copy, in pdf format alongside the digital data, will be submitted to the Historic Environment Records (HER) at [archaeology@oxfordshire.gov.uk](mailto:archaeology@oxfordshire.gov.uk) on the understanding that it will become a public document after an appropriate period of time (generally not exceeding six months). GIS (shape) files of the final phased excavated site plan should be provided to OCCAS and the HER. In addition, the photographic record of the works will be made available to the National Monuments Record (NMR) prior to archiving to enable selection of suitable materials for copying for inclusion into the HER. Once submitted, the Final Report(s) will become a public document.

The Archaeological Contractor will also input details of the project to the online database maintained by the Online Access to the Index of Archaeological Investigations (OASIS) Project at the following internet site: <http://www.ads.ahds.ac.uk/project/oasis>.

The reports will be the property of the Client and will represent a confidential document. Waterman will be responsible for submitting the draft report(s) to OCCAS for comment prior to final approval.

### 6.1.2 Publication and Dissemination

During the archaeological works, Waterman will liaise with OCCAS with respect to the most effective method of publicising the results in accordance with the *CIfA Standards and guidance for archaeological field evaluation*.

Methods of the dissemination of results may include a maximum of 2 no. information boards attached to site hoarding (in a location appropriate to facilitate undisturbed construction) and website posting, the content of which will be subject to consultation with Waterman, OCCAS and the Client prior to issue.

Furthermore, community engagement should also be considered. This could take the form of, for example, talks and opportunities for site visits, however, COVID-19 guidance relevant at the time would need to be taken into consideration, as, where possible, these may need to be presented in a digital format.

Provision should be made for an appropriate level of publication of the results of the evaluation. Summary reports shall be prepared by the Archaeological Contractor and submitted for publication in the relevant local journal in the event of significant remains being found.

Additional publication requirements shall be agreed with OCCAS in the first instance.

It must be noted that the site will need to be published even if the results of the evaluation are negative. Negative results may be published in a local journal, but more substantial results may require higher level of publication. This will need to be formally agreed with OCCAS.

### 6.1.3 Copyright and Confidentiality

Waterman and the Archaeological Contractor 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 an exclusive licence to the Client in all matters directly relating to the project as described in this WSI.

Waterman and the Archaeological Contractor will assign copyright to the Client upon written request but retain the right to be identified as an author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV. S.79).

Waterman will advise the Client of any such materials supplied in the course of projects that are not Waterman's or the Archaeological Contractor's copyright.

Waterman 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. Waterman further undertakes to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that clients respect Waterman's general ethical obligations not to suppress significant archaeological data for an unreasonable period.

## 7. Archiving

The Site archive, which comprises records of the evaluated areas and any materials recovered, including written elements, plans and drawings, photographic prints and transparencies (where appropriate) and other primary data recovered, will be quantified, ordered, indexed and made internally consistent. It will also contain, as a minimum requirement, a Site matrix, Site summary (a short report giving a preliminary account of the discoveries) and brief written observations on the artefactual and environmental data.

The Site archive will also include a summary of all archaeological investigations and mitigation for the Site, incorporating the results of all final assessment and analysis reports, and thereby providing an integrated record.

Work on the Site archive will be completed by the Archaeological Contractor within twelve calendar months of completion of the archaeological investigation. The archive will be deposited with the County's Museum Resource Centre located at Standlake by the Archaeological Contractor. The archive deposition guidance by the Museum Resource Centre for Oxfordshire County Council<sup>23</sup> will need to be adhered to during this process. The requirements note that the organisation responsible for deposition of material informs the museum within a month after the start of the project by completing a Notification Form and emailing it to the Curatorial Assistants. The form can be found in Appendix 3 of the requirements document<sup>24</sup>.

All artefacts (e.g. pottery, metalwork, objects in worked flint and stone, wood, bone, horn and leather, slag) and ecofacts (organic finds such as bones, preserved ancient plant remains, seeds, pollen and charcoal, soil samples) recovered during the archaeological investigation will be made available to the archaeological contractor pending completion of the report, to be stored during the course of the archaeological investigation at the archaeological contractor's secure offices or usual place of secure storage of archaeological finds until the archive can be deposited within an the appropriate museum by the Archaeological Contractor.

All artefacts recovered during the excavations will be suitably washed (where the condition of the artefacts allows) and marked by the Archaeological Contractor and all artefacts and ecofacts bagged and boxed by the Archaeological Contractor, in accordance with current United Kingdom Institute for Conservation (UKIC) / RESCUE publication *First Aid for Finds* (1998)<sup>25</sup>. All 'small finds' will be boxed together, separate from bulk finds.

Subject to the legislation of the Treasure Act 1996, all artefacts and ecofacts unearthed from the evaluation and all other elements of the Site archive (as defined in *Management of Research Projects in the Historic Environment*<sup>26</sup>) should be deposited by the Archaeological Contractor in an appropriate public museum registered or provisionally registered by the Museums and Galleries Commission and acceptable to OCCAS. No artefacts or ecofacts from the Site will be deposited in the relevant depository without the prior written consent of the land owner. Should the land owner be unwilling to deposit the archive with the chosen archive, a full photographic and drawn survey will be made of all artefacts and elements being withheld.

In the absence of an appropriate archive, provision should be made by the Archaeological Contractor for retaining the project archive, until a suitable depository is available and arrangements have been made for the transfer of the archive.

The Archaeological Contractor will ensure that the Collections Manager is notified and liaised with at an

<sup>23</sup> Oxfordshire County Council, 2020. *Oxfordshire Museum Service Requirements for Transferring Archaeological Services 2020-2021*

<sup>24</sup> Ibid

<sup>25</sup> United Kingdom Institute for Conservation of Historic & Artistic Works, 1998. *First Aid for Finds: Practical Guide for Archaeologists*

<sup>26</sup> Historic England, 2015. *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide*

early stage. It is the responsibility of the Archaeological Contractor to meet the local museum's reasonable requirements with regard to the preparation of archives for deposition.

Provision will be made for the payment of a 'deposit grant' at the time of archive transfer towards the costs of archive curation in perpetuity. The rates and requirements currently employed by archive stores elsewhere in the country and by the chosen museum for its archive store shall be used for guidance.

Prior to the deposition of finds in the recipient museum, the Archaeological Contractor will agree with that museum the sample or quantity of bulk finds (pottery, animal and human bone, other ecofactual material, building material, burnt flint, worked flint and stone) to be deposited.

All excavated artefacts and ecofacts and all other elements of the Site archive should be delivered by the Archaeological Contractor to the recipient museum as one deposit. Where this arrangement is not practicable, lists will be submitted by the Archaeological Contractor to the recipient museum of objects not deposited, together with information as to the quantity involved and their current location, reasons why items have not been deposited and a timetable for their ultimate deposition.

Subject to the resources available and to discussion with the recipient museum, all articles needing conservation will be properly stabilised by the Archaeological Contractor prior to their deposition at the recipient museum and records of their treatment lodged with the museum. Those items for which available resources do not permit stabilisation will be separately packed and listed by the Archaeological Contractor.

Prior to commencement of the archaeological investigation the Archaeological Contractor will obtain from the recipient museum an accession number(s) for excavated artefacts and ecofacts from the project and any guidelines regarding deposition of such artefacts and ecofacts specific to the recipient museum.

All finds, save those specifically excluded by the recipient museum or excluded on grounds of size/material, will be marked by the Archaeological Contractor with the recipient museum's accession number.

Artefacts and ecofacts deposited by the Archaeological Contractor in the recipient museum will be accompanied by the remainder of the original Site archive or by a complete duplicate record thereof. A microfiched security copy of the Site archive should also be supplied by the Archaeological Contractor to the recipient museum.

Subject to the agreement of the landowner, all artefacts and ecofacts recovered from the archaeological watching brief and excavation will be deposited by the Archaeological Contractor within the recipient museum within five years from the date of completion of the investigation.

Copyright of the written, drawn and photographic elements of the Site archive will be vested jointly with the archaeological contractor and the recipient museum.

The following documents should be adhered to:

- *Standards in the Museum Care of Archaeological Collections*<sup>27</sup>;
  - *Management of Research Projects in the Historic Environment*<sup>28</sup>; and
- MoRPHE (applicable Technical Guides and Project Planning Notes)*<sup>29</sup>.

<sup>27</sup> Museum and Galleries Commission, 1992. *Standards in the Museum Care of Archaeological Collections*

<sup>28</sup> Historic England, April 2015. *Management of Research Projects in the Historic Environment - The MoRPHE Project Managers' Guide*

<sup>29</sup> MoRPHE Technical Guides and Project Planning Notes, accessible from <https://www.historicengland.org.uk/images-books/publications/morphe-project-managers-guide/>

## 8. Archaeological Contractor – Specific Requirements

### 8.1 General

The appointed Archaeological Contractor will provide Waterman with a detailed method statement for undertaking the archaeological investigations, which shall require approval from OCCAS. This shall include all fieldwork and post-excavation work including archiving.

The Archaeological Contractor shall provide a brief career profile of the site supervisor which demonstrates their suitability for undertaking the work. Additionally, a full cost estimate for the fieldwork, post-excavation and archiving shall be provided to Waterman.

The requirements of this WSI shall be met in full where reasonably practicable and any variations to this WSI shall be agreed with OCCAS in advance.

The scope of work detailed in the main part of the specification is aimed at meeting the aims of the project in a cost-effective manner. Waterman attempts to foresee possible site-specific problems and resource these. However, there may be unusual circumstances which have not been included in the costing and programme, such as:

- unavoidable delays due to extreme bad weather;
- vandalism; and
- complex structures or objects, including those in waterlogged conditions, requiring specialist removal.

### 8.2 Insurance

The Archaeological Contractor will hold Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance. Details will be supplied on request.

Waterman and the Archaeological Contractor will not be liable to indemnify the Client against any compensation or damages for or with respect to:

- the use or occupation of land (which has been provided by the Client) by the Project or for the purposes of completing the Project. Interference whether temporary or permanent with any right of way, light, air or water or other easement or quasi easement which are unavoidable result of the Project in accordance with the Agreement;
- any other damage which is the unavoidable result of the Project in accordance with the Agreement; and
- injuries or damage to persons or property resulting from any act or neglect or breach of statutory duty done or committed by the Client or his agents, servants or their contractors (not being employed by Waterman) or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof or in relation thereto.

### 8.3 Standards and Procedures

Waterman and the Archaeological Contractor shall conform to the standards of professional conduct outlined in the ClfA *Code of Conduct*, the ClfA *Regulations for professional conduct*, the ClfA *Standards and guidance for an archaeological field evaluation* and the British Archaeologists and Developers Liaison Group *Code of Practice*.



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## **APPENDICES**

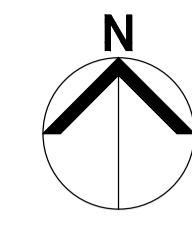
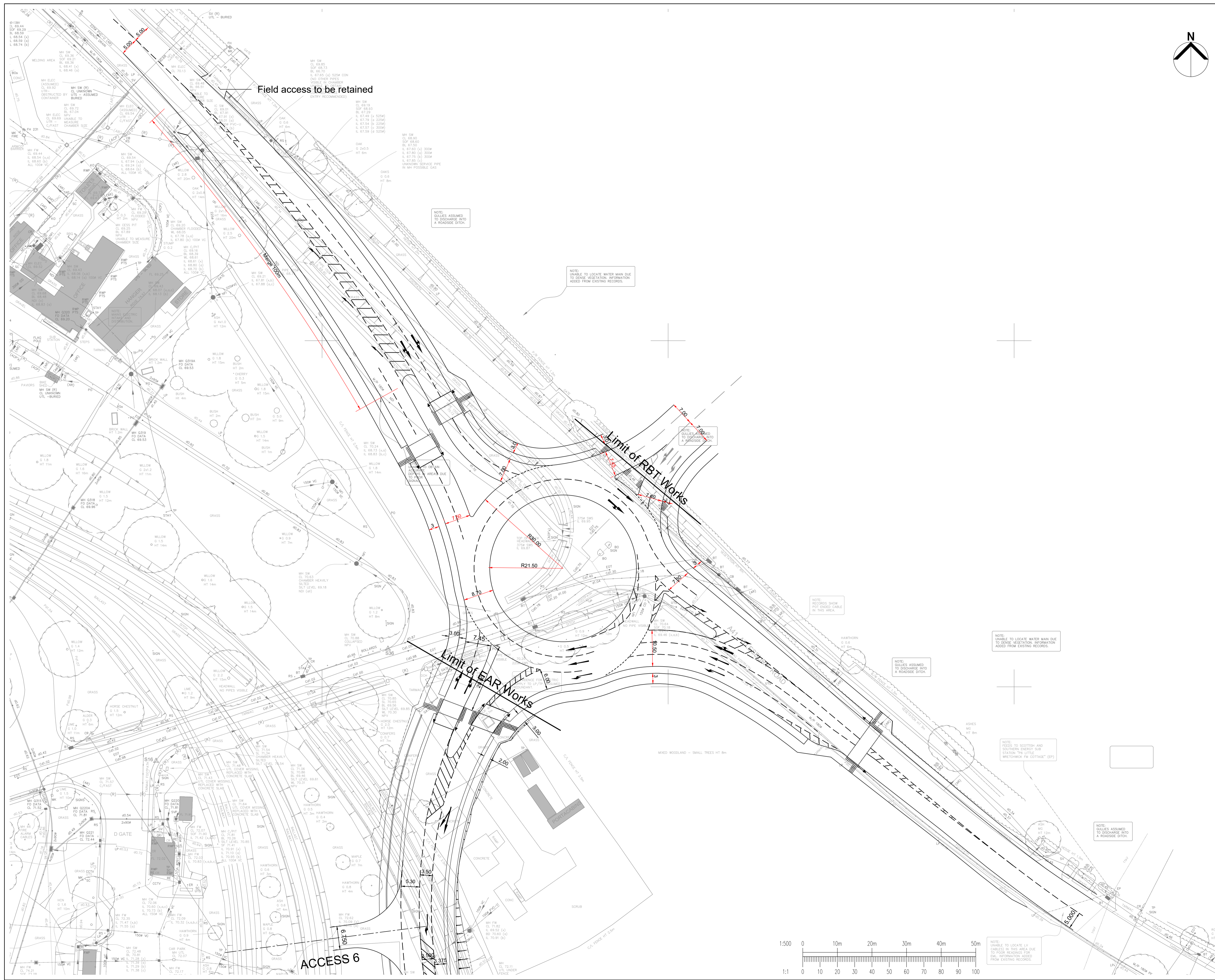
### **A. Site Plans**

#### **Appendices**

A41 – Pioneer Roundabout, Graven Hill, Bicester

WIE11386-145

WIE11386-145-R-19-2-1-A41 WSI



This drawing should not be scaled. Dimensions to be verified on site. Any discrepancies should be referred to the Engineer prior to work being put in hand.

This drawing is the property of Waterman Infrastructure & Environment Limited, and the drawing is issued on the condition that it is not copied, reproduced, related or disclosed to any unauthorised person, either wholly or in part without the consent in writing of Waterman Infrastructure & Environment Limited. Pickfords Wharf, Clerk Street, London SE1 9DG. 1 020 7928 7888 1 020 7902 0992

**GENERAL NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
3. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
4. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

**FOR INFORMATION**

Rev	Date	Description	By
A01	15.06.20	ISSUED	AN

Amendments

**GRAVEN HILL**

**A41 PIONEER ROAD ROUNDABOUT GENERAL ARRANGEMENT**

Client



Graven Hill Village Development Company Limited



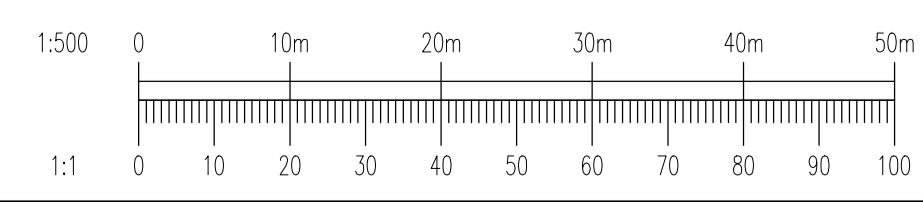
5th Floor One Cornwall Street Birmingham B3 2DX  
10121 212 7700  
mail@watermangroup.com www.watermangroup.com

Drawing Status: **PRELIMINARY**

Designed by	AN	Checked by	DP	Project No	11386
Drawn by	AN	Date	JUNE 2020	Computer File No	

Scales @ A1: work to figured dimensions only 1:500 WIE11386-145-01-A41 Pioneer Rd General Arrangement.dwg

Publisher	Zone	Category	Number	Revision
WIE	A41	03	001	A01



# UK and Ireland Office Locations

