ARCHAEOLOGICAL DESK-BASED ASSESSMENT

Manor Farm, Poyle Road, Slough, Berks

Project Code: 794-PLN-HER-00628
Manor Farm, Poyle Road, Slough
Final
12 December 2024
NGR: TQ 02943 76060
Local Planning Authority:
Slough Borough Council

rpsgroup.com

Quality Management

Version	Status	Authored by	Reviewed by	Approved by	Date
#1	Draft	Robert Masefield	Simon Blatherwick	Robert Masefield	21 May 2024
#2	Final	Robert Masefield	Simon Blatherwick	Robert Masefield	02 August 2024
#3	Revised Final	Robert Masefield	Simon Blatherwick	Robert Masefield	6 November 2024
#4	Revised Final	Robert Masefield	Simon Blatherwick	Robert Masefield	13 November 2024
#5	Revised Final	Robert Masefield	Simon Blatherwick	Robert Masefield	13 November 2024
#6	Revised Final	Robert Masefield	Simon Blatherwick	Robert Masefield	12 December 2024

Approval for issue

Robert Masefield	12 December 2024

File/Model Location

Document location:	RPS/794-PLN-HER-00628
Model / Appendices location:	RPS/794-PLN-HER-00628

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EXECUTIVE SUMMARY

Land at Manor Farm, Poyle, Slough in Berkshire has been reviewed for its below ground archaeological potential.

Manor Farm Propco Limited are seeking to develop the c.20 acres site in west London as a data centre campus. The development will comprise one data centre building, a utility substation, a guard house, and any other ancillary structures required for the successful operation of the data centre on circa 13 acres. The development will also include a battery energy storage system (BESS) deployment on the southeastern edge of the site, occupying approximately 6 acres of the site. The Battery Storage site comprises grass fields and the Data Centre site is currently occupied by light industrial units, hardstanding of vehicle storage areas, a grassed area to the north-east. Manor Farm itself originated in the 20th century and two of its buildings, a residence and barn/unit, remain at the south-east corner of this site.

In terms of relevant, nationally significant designated heritage assets, no World Heritage Sites, Historic Wrecks or Historic Battlefields lie within the study site or its immediate vicinity.

Historic landfill mapping in combination with past Site Investigation boreholes have shown that the entire area of the Battery Storage site, and the landscape to the immediate west of the site, was subject to landfill (following quarrying). The landfill of quarrying at 'Poyle Manor South' was by Drinkwater and Murray Limited from between 1948 and 1983 (with a licence issued in 1974). The borehole data show consistent 4m to 5m depths of Made Ground across the Battery Storage site and therefore no Holocene period archaeology will have survived there. Consequently, there is no archaeological potential here. In addition, landfill is also shown within the western area of the Data Centre site, as inferred by BGS and Environment Agency Mapping and existing Site Investigation boreholes for that site similarly show widespread made ground to several metres deep. However, from the available data it is not known whether the associated quarrying extended to the north/north-east areas or to the eastern extent of the site, close to Poyle Road.

As such it is concluded that it is possible that the archaeology may survive in the northern and eastern zones of the Data Centre. There is no potential where quarrying has removed the former ground surfaces to depth, but elsewhere a low potential for Palaeolithic and Mesolithic archaeology is suggested, with a low to moderate potential for remains of late Bronze Age/early Iron Age, Roman or Medieval date within the site generally. The 'The Rural Settlement of Roman Britain' (Allen et al, 2018) online publication shows a postulated Roman road line originating at the Roman settlement of Staines and heading north-west to potentially cross the western area of the Data Centre site from south-east to north-west. However, this line, which would have been removed by the aforementioned quarrying, is nevertheless conjectural and is not on the Berkshire HER data provided for the study area. The location of Medieval Poyle Manor, just to the north of the site, is of particular interest. However, there is currently no reason to suppose that its manorial, buildings, known from archaeological work to have been located north of the Poyle Channel (at the same location as the former Post Medieval complex), extended south of the channel into the site. Archaeological remains potentially within the confined areas of survival within the Data Centre site, are most likely to be low/local significance.

At this stage, prior to further Site Investigation, there is geo-archaeological potential within the eastern area of the Data Centre site due to the presence of Alluvium capping the terrace gravel and London Clay as mapped by the British Geological Survey. However, much of the alluvium within the site may also have been removed prior to gravel extraction beneath it. Such deposits, where surviving, are likely to be of low (Local) importance subject to date and presence/absence of organic deposits such as peat.

Archaeological survival at the site is likely to be fragmentary and will necessarily depend upon the impact of past post-depositional impacts as a result of quarrying. The proposed development *may* impact buried remains via its groundworks, foundations, services, attenuation and roads.

Due to the potential for the northern and eastern zones of the Data Centre site to contain archaeological remains, it is considered that archaeological evaluation of the northern and eastern zones of the Data Centre site is likely to be required. Discussions with the relevant Archaeological Officer at Berkshire Archaeology on behalf of the LPA of 16/09/24 have established that archaeological mitigation, including evaluation trenching and geo-archaeological assessment as a first stage, could be secured via a planning condition applied to the consent. It is recommended that such post determination archaeological evaluation is confined to the areas north and east of the mapped Made Ground within the Data Centre site only. Such evaluation will fix the extent of the modern quarrying and define the presence/absence, significance of below ground archaeology that may be impacted. This may lead to further measures to mitigate or offset effects to associated heritage significance. The above requirement may be modified in the event that project Ground Investigation is able to demonstrate that the northern and eastern areas of the site have also been quarried in the 20th century.

Contents

Appendices

Figures

Plates

1 INTRODUCTION AND SCOPE OF STUDY

1.1 The subject of this assessment comprises the site, also referred to as the study site, for land at Manor Farm, Poyle, Slough comprising a BESS (here referred to as 'Battery Storage site') on the southern part of the site and a data centre with substation on the northern part of the site (here collectively referred to as the 'Data Centre site' for ease of reference). The study area to encompass the two sites is centred at NGR TQ 02943 76060 within administrative area of Slough Borough Council (see Figures 1-2). The Data Centre site is centred on TQ 02944 76241, and the Battery Storage site at TQ 02903 75850.

1.2 The site is located within Poyle to the east side of Poyle Road. The Poyle Channel and the Heathrow Hilton Hotel are located to the north of the Data Centre site and the Wraysbury Reservoir is located to the south of the Battery Storage site. Colnbrook is located to the north-west and the M25 further to the east.

1.3 Figure 2a spatially summarises relevant cultural heritage designations and archaeological findspot references in relation to the study site, primarily using data provided by the Hertfordshire Historic Environment Record (HER).

1.4 In terms of relevant nationally significant designated heritage assets, the study site does not lie within the vicinity of a World Heritage Site, Historic Battlefield or Historic Wreck.

1.5 In accordance with relevant policy and guidance on archaeology and planning, including 'Standard and Guidance for Historic Environment Desk-Based Assessments' (Chartered Institute for Archaeologists, 2020), the assessment draws together the available archaeological, topographic, historical, cartographic and land-use information in order to clarify the likely archaeological potential and significance of the study site. The assessment includes an examination of evidence on the Berkshire Historic Environment Record (BHER), the Surrey Historic Environment Record (SHER), and other sources, and includes a map regression exercise.

1.6 The assessment thus enables relevant parties to assess the archaeological potential of the study site (as far as can be determined prior to fieldwork evaluation surveys), together with the likely significance of that potential, and to consider the need for design, civil engineering, and archaeological solutions to the archaeological potential and significance identified.

2 PLANNING BACKGROUND AND DEVELOPMENT PLAN FRAMEWORK

2.1 National legislation regarding archaeology, including scheduled monuments, is contained in the Ancient Monuments and Archaeological Areas Act 1979, amended by the National Heritage Act 1983 and 2002, updated April 2014.

2.2 The Levelling Up and Regeneration Bill gained Royal Assent on 26th October 2023 to become the Levelling Up and Regeneration Act 2023. Clause 92 of the LUR Act 2023 establishes that the settings of certain type of designated heritage assets now have the equivalent statutory protection as the setting of a listed building - i.e. in planning decision-making 'special regard' should be given to the desirability of preserving or enhancing the asset and its setting. This applies to World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens and Protected Wrecks, but not Conservation Areas.

2.3 In March 2012, the government published the National Planning Policy Framework (NPPF), and it was last updated in September 2023. The NPPF is supported by the National Planning Practice Guidance (NPPG), which was published online 6th March 2014 and is periodically updated (https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment).

2.4 The NPPF and NPPG are additionally supported by three Good Practice Advice (GPA) documents published by Historic England: GPA 1: The Historic Environment in Local Plans; GPA 2: Managing Significance in Decision-Taking in the Historic Environment (both published March 2015). The second edition of GPA3: The Setting of Heritage Assets was published in December 2017.

National Planning Policy

2.5 Section 16 of the NPPF, entitled Conserving and enhancing the historic environment provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Section 16 of the NPPF can be summarised as seeking the:

- Delivery of sustainable development;
- Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment;
- Conservation of England's heritage assets in a manner appropriate to their significance; and
- Recognition that heritage makes to our knowledge and understanding of the past.

2.6 Section 16 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. Paragraph 194 states that planning decisions should be based on the significance of the heritage asset and that level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset.

2.7 *Heritage Assets* are defined in Annex 2 of the NPPF as: a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning

decisions. They include designated heritage assets (as defined in the NPPF) and assets identified by the local planning authority during the process of decision-making or through the plan-making process.

2.8 Annex 2 also defines *Archaeological Interest* as a heritage asset which holds or potentially could hold evidence of past human activity worthy of expert investigation at some point.

2.9 A *Designated Heritage Asset* comprises a: World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.

2.10 *Significance* (for heritage policy) is defined as: The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.

2.11 *Setting* is defined as: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

2.12 In short, government policy provides a framework which:

- Protects nationally important designated Heritage Assets;
- Protects the settings of such designations;
- In appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions;
- Provides for the excavation and investigation of sites not significant enough to merit *in-situ* preservation.

2.13 The NPPG reiterates that the conservation of heritage assets in a manner appropriate to their significance is a core planning principle, requiring a flexible and thoughtful approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation. Importantly, the guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset's significance and make the interpretation publicly available. Key elements of the guidance relate to assessing harm. An important consideration should be whether the proposed works adversely affect a key element of the heritage asset's special architectural or historic interest. Additionally, it is the degree of harm, rather than the scale of development, that is to be assessed. The level of 'substantial harm' is considered to be a high bar that may not arise in many cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the NPPF. Importantly, harm may arise from works to the asset or from development within its setting. Setting is defined as the surroundings in which an asset is experienced and may be more extensive than the curtilage. A thorough assessment of the impact of proposals upon setting needs to take into account, and be proportionate to, the significance of the heritage asset and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

2.14 In considering any planning application for development, the planning authority will be mindful of the framework set by government policy, in this instance the NPPF, by current Development Plan Policy and by other material considerations.

Local Planning Policy

Slough Borough Council Local Development Plan

2.15 The Local Development Plan for Slough sets out the long term overall vision for how the area should develop, and a strategy for how this should take place.

2.16 This policy sets the framework for making decisions on individual planning applications. The Local Development Plan for Slough is comprised of:

- The Core Strategy Development Plan Document
- Site Allocations Development Plan Document
- Local Plan Saved Policies
- The Minerals and Waste Local Plan Policies
- Proposals Map
- Supplementary residential extension guidelines (RESPD) which provide information on what kinds of residential extensions are considered acceptable in Slough.

2.17 Slough Local Plan (adopted March 2004) Saved Policies and Policies still in use December 2010 included:

"Policy EN17 (Locally Listed Buildings)."

2.18 The other Historic Environment Policies; Policy EN18 (Historic Parks and Gardens); Policy EN19 (Protection of Archaeological Sites) and Policy EN20 (Archaeological Remains) were not saved.

Policy EN19 (Protection of Archaeological Sites) had read:

"There is a presumption in favour of the preservation of the integrity of all scheduled ancient monuments and other archaeological remains of importance and their setting. Development will not be permitted if it fails to preserve the archaeological value and interest of the archaeological remains or their setting."

Policy EN20 (Archaeological Remains) had read:

"In areas with archaeological potential, a prospective developer will be required to carry out an archaeological field evaluation before any decision is taken on a planning application.

Where archaeological remains will be affected by a development, conditions will be imposed to preserve the remains in situ. Where preservation is not required, appropriate arrangements will be required by condition for the excavation and recording of archaeological sites prior to the commencement of"

2.19 The conservation of the historical environment is addressed in the National Planning Policy Framework, as well as Slough's Local Development Plan and Developer's Guide. The relevant section of the Local Development Plan and Developer's Guide (Slough Local Development Framework Core Strategy 2006 - 2026 (adopted December 2008)) includes Core Policy 9:

"CORE POLICY 9 (NATURAL AND BUILT ENVIRONMENT)

Development will not be permitted unless it:

- Enhances and protects the historic environment;
- Respects the character and distinctiveness of existing buildings, townscapes and landscapes and their local designations;
- Protects and enhances the water environment and its margins;
- Enhances and preserves natural habitats and the biodiversity of the Borough, including corridors between biodiversity rich features."

2.20 The Site Allocations Development Plan Document (Slough Local Development Framework Site Allocations Development Plan Document Adopted November 2010) does not include specific archaeology information.

2.21 The LDP includes that "Slough Borough Council is responsible for all planning matters relating to minerals and waste. This includes policies surrounding minerals and waste, planning applications relating to minerals and waste, and enforcement of these applications. This work was previously done by the Joint Strategic Planning Unit for Berkshire. This unit has now ceased to exist, but several of the key documents relating to minerals and waste were created under this name."

2.22 The Slough Local Development Framework Proposals Map November 2010 includes the site within Map 6 ('Colebrook & Poyle'). Ancient Monuments CP9; Historic Parks and Gardens CP9 and Conservation Areas CP9. The map does not show any of these at the site or adjacent to it.

2.23 The council is currently working on a new Local Plan.

2.24 The emerging Local Plan for Slough will set out how to guide development in Slough through to 2036 and will update the existing Core Strategy, Site Allocations, and Local Plan Saved Policies.

Relevant Designations

2.25 In terms of relevant nationally significant designated heritage assets, the study site does not lie within the vicinity of a Scheduled Monument, World Heritage Site, Historic Battlefield or Historic Wreck.

2.26 In terms of designated archaeological heritage assets, no World Heritage Sites, Scheduled Monuments, Historic Battlefield or Historic Wreck sites are located within the Site or in its close proximity (the 1km 'study area' based on centre point between the Battery Storage and Data Centre site area).

2.27 There would be no direct impacts to designated archaeological heritage assets.

2.28 The closest Scheduled Monument is 'Schoolhouse (Lord Knyvett's)' (National List 1005920) located c.3 km to the south-east. An example of a well-preserved Roman settlement site 'Romano-British site 1000yds (910m) W of East Bedfont parish church' (SM 1002042) is a Scheduled Monument located c.4.5km to the south-east at West Bedfont and an important Neolithic Causewayed enclosure Scheduled Monument 'Part of a causewayed enclosure, 632m north-east of Mayfield Farm' (SM 1002043) is located at East Bedfont some 5km to the south-east of the site.

2.29 The closest Scheduled Monument to the north is 'Two concentric ditches showing as crop marks at Thorney' (National List 1006944) is located c. 3.5km to the north. The scheduled monument known as

"Early medieval and medieval palace and associated monuments, Kingsbury" (National List 1006995) is located c.3.8km to the south-west.

2.30 The study site is separated and screened from these designated archaeological assets by modern development which has removed the study site from the wider landscape setting of the monuments. As such, there would be no effect to the significance of the Scheduled Monuments from the proposed development.

2.31 The Hillingdon Proposals Map indicates that the Heathrow Archaeological Priority Zone (APZ; DLO36182) includes much of the airport to the east of the M25 and is locally designated due to potential to contain prehistoric and later archaeology associated with the terrace gravel zone.

2.32 In line with relevant planning policy and guidance, this desk-based assessment seeks to clarify the study site's archaeological potential, together with the likely significance of that potential, and the need or otherwise for additional mitigation measures.

3 GEOLOGY AND TOPOGRAPHY

Geology

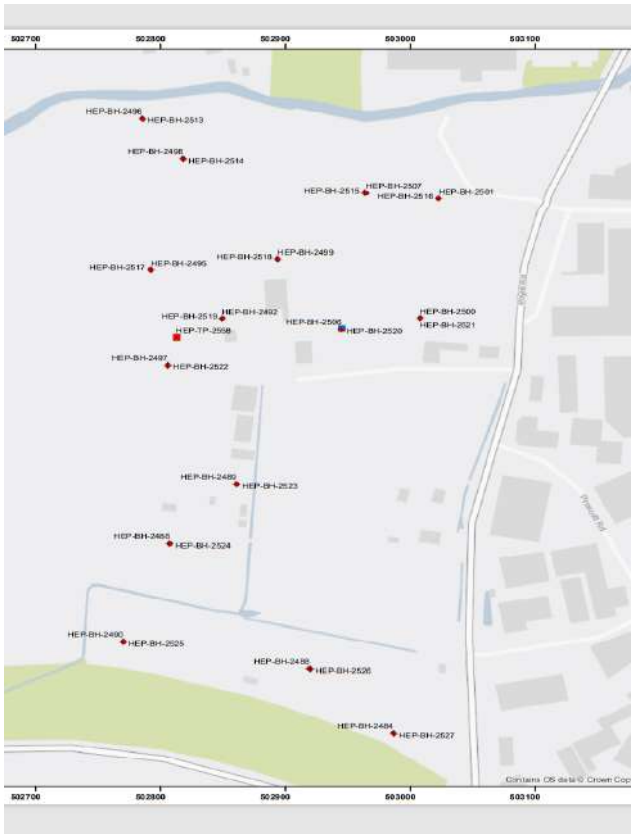
3.1 According to the BGS Online the solid geology of the study site is mapped as London Clay Formation - Clay, silt and sand. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period (https://geologyviewer.bgs.ac.uk/?_ga=2.51942633.1995974743.1714045626-1995733632.1714045626).

3.2 The drift geology of the eastern half of the Data Centre sub site comprises Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period. The alluvium is associated with the Poyle Channel just to the north of the site.

3.3 The drift geology of the western area of the Data Centre and the area of the Battery Storage is recorded as Shepperton Gravel Member - Sand and gravel. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

3.4 The entire area of the Battery Storage site and at least the western part of the Data Centre site, in addition to landscape to the immediate west of both sites, was subject to landfill (following quarrying). The landfill of quarrying was by Drinkwater and Murray Limited from between 1948 and 1983 (with a licence issued in 1974) (Extent provided at Appendix C).

3.5 An extract of a Heathrow Airport expansion related Ground Investigation report by Fugro (2019), below, provides a location plan of Ground Investigation boreholes that took place within and west of the sites;



3.6 The associated borehole logs (see Appendix D) illustrate the depth of made ground at the Battery Storage site as follows:

- HEP-BH-2525 (western extent of Battery Storage proposal site) – 0.3m topsoil above 4.7m of Made Ground;
- HEP-BH-2526 (central area of Battery Storage proposal site) – 0.1m topsoil over 4.1m of Made Ground; and
- HEP-BH-2527 (south-eastern extent of Battery Storage proposal site) - 0.2m topsoil over 4.0m of Made Ground.

3.7 Remnant Terrace Gravel deposits were encountered below, in turn above the London Clay. Therefore, no archaeology will survive at the Battery Storage site.

3.8 For the Data Centre site the following boreholes are relevant:

- HEP-BH-2492/2519 (south-western area of the Data Centre site) – 3m of Made Ground plus including fragments of concrete and clinker to 1.6m depth (from a ground level 20.75mOD) whilst adjacent BH-2519 indicates a full depth of 5.1m of Made Ground over a remnant of Terrace Gravel and the London Clay;
- HEP-BH-2506/2520 (central southern area of the Data Centre site) – BH-2506 shows 1.2m plus of Made Ground including concrete, brick and slate (from a ground level of 20.43m OD) whilst adjacent BH-2520 indicates a full depth of 6.2m of Made Ground over London Clay;
- HEP-BH 2500/2521 (in the south-eastern area of the of the Data Centre site) – BH-2500 shows 2.10m plus of Made Ground including fragments of glass and metal pipe (from a ground level of 20.58m OD) whilst adjacent BH-2521 indicates less disturbance with a complete depth of 1.5m of Made Ground over Terrace Gravel and London Clay:
- HEP-BH-2515/2507 (in the central northern area of the of the Data Centre site) – BH-2515 shows 5.5m of Made Ground including plastic, metal, wood and glass to a full depth of 5.5m (from a ground level of 20.73m OD) whilst adjacent BH-2507 shows 2.10m plus of Made Ground; and
- HEP-BH-2501/2516 (in the central north-east of the of the Data Centre site) – BH2501 shows 2.10m plus of Made Ground including concrete, glass and brick (from a ground level of 20.58m OD) whilst adjacent BH-2516 shows 4.10m plus of Made Ground over River Gravel and London Clay.

3.9 It therefore appears most of the Data Centre site has been subject to quarrying ahead of landfill. The possible exception is the north-east grassed zone where there are no boreholes to corroborate and areas close to existing Manor Farm buildings at the south-east extent of the site whose presence means landfill did not extend that far east.

3.10 Landfill within the western area of the Data Centre site at least is also inferred by BGS and Environment Agency Mapping (see Appendix C). The straight sided north/south divide between Alluvium and Gravel on the BGS within the Data Centre site also alludes to the removal of Alluvium by quarrying in the

western area of the site such that the uppermost geology is now Gravel. The only historic BGS borehole within this part of the site (TQ07NW740) does not provide any associated data.

Topography

3.11 The existing ground level of both of the site areas is relatively flat, at around 20m AOD within the Battery Storage site fields and at c.20-21m AOD within the Data Centre site.

3.12 The nearest major watercourse is the Poyle Channel immediately to the north of the Data Centre site which connects the north-south aligned Colne Brook to the west and the Wraysbury River east of the M25, to the north-east.

3.13 Before the Ordnance survey map of 2019 a drain is shown on maps running north-west/south-east through the Data Centre site (Manor Farm) to connect the Poyle Channel.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND WITH ASSESSMENT OF SIGNIFICANCE

Timescales used in this report

Prehistoric

Palaeolithic	900,000	-	12,000 BC
Mesolithic	12,000	-	4,000 BC
Neolithic	4,000	-	1,800 BC
Bronze Age	1,800	-	600 BC
Iron Age	600	-	AD 43

Historic

Roman	AD 43	-	410
Saxon/Early Medieval	AD 410	-	1066
Medieval	AD 1066	-	1485
Post Medieval	AD 1486	-	1799
Modern	AD 1800	-	Present

Introduction

4.1 This chapter reviews the available archaeological evidence for the study site and the archaeological/historical background of the general area, and, in accordance with NPPF, considers the potential for any as yet to be discovered archaeological evidence on the study site.

4.2 What follows comprises a review of known archaeological assets within a one kilometre radius of a central point (TQ 02943 76060) between the Battery Storage site and Data Centre site of the study site, also referred to as the study area. The information is based on Historic Environment Record (HER) data held on the Berkshire and the Surrey HER's (the Berks and Surrey records cited below are prefixed with BHER and SHER accordingly) together with a historic map regression exercise charting the development of the study area from the eighteenth century onwards until the present day.

4.3 Figure 2a spatially summarises relevant cultural heritage designations and archaeological findspot references in relation to the study site, primarily using data provided by the Berkshire HER and the Surrey HER, and the Historic England website. Appendix A provides a summary of the HER.

4.4 In terms of relevant designated heritage assets, the study site does not lie within the vicinity of a World Heritage Site, Historic Battlefield or Historic Wreck.

4.5 There would be no direct impacts to designated archaeological heritage assets.

4.6 The closest Scheduled Monument is 'Schoolhouse (Lord Knyvett's)' (National List 1005920) located c.3 km to the south-east. An example of a well-preserved Roman settlement site 'Romano-British site 1000yds (910m) W of East Bedfont parish church' (SM 1002042) is a Scheduled Monument located c.4.5km to the south-east at West Bedfont and an important Neolithic Causewayed enclosure Scheduled Monument 'Part of a causewayed enclosure, 632m north-east of Mayfield Farm' (SM 1002043) is located at East Bedfont some 5km to the south-east of the site.

4.7 The closest Scheduled Monument to the north is 'Two concentric ditches showing as crop marks at Thorney' (National List 1006944) is located c. 3.5km to the north. The scheduled monument known as “Early medieval and medieval palace and associated monuments, Kingsbury” (National List 1006995) is located c.3.8km to the south-west.

Previous Archaeological Work

4.8 The Berkshire HER records indicates that no known archaeological fieldwork has been undertaken within the study site. The Surrey HER records Manor Farm, whose modern buildings remain within the south-eastern corner of the Data Centre site, as the location of a historic farmstead (SHER 21877).

4.9 1999 archaeological excavations at the site of the derelict Georgian Poyle House Slough, Berkshire (BHER ESL10) were conducted from c.80m to the north of the Data Centre site. The investigations identified some evidence of earlier beamslots from a farm-related range along with foundations of buildings almost certainly from the Medieval precursor to Poyle Manor, with occupation commencing in the late 11th or 12th centuries. Residual Mesolithic and late Neolithic/early Bronze Age flintwork was also found. 2009 to 2011 investigations for a new hotel for Poyle House (BHER ERM1337), located c.100m to the north of the north-eastern extent of the Data Centre site (BHER ERM1337) followed the 1999 excavation that had recorded Medieval structural remains.

4.10 The Berks HER records that Poyle, on the Colne Brook floodplain (5km north its confluence with the Thames) comprises alluvial silty clay, overlying floodplain gravel geology and had been occupied by Poyle House and its associated buildings since the Medieval period. A number of investigations within disturbed deposits or shallow excavations were undertaken which consequently did not identify archaeology. Geo-archaeological test pits also found no evidence for Pleistocene or Holocene prehistoric activity. A building previously identified in 1999 was further characterised and along with associated ditches probably indicates a farmstead ‘(potentially associated with the manor at Stanwell)’. In situ alluvium was located north of the Poyle Channel and later structures of a boat house, brick wells, drains of likely 18th century phases of the house were recorded during the watching brief.

4.11 At a point after the late 17th century Poyle Park Manor (located 330m to the north-east of the Data Centre site), lost its manorial status and is referred to simply as Poyle House or Poyle Farm (BHER ERM1756). The BHER notes that ‘*archaeological work at the site of the Hilton Hotel concluded that the Poyle Park Manor Estate…appeared to be a thriving and developing farm with extensive arable and pastural interests*.’ It is possible that the site was utilised as part of the estate farmland (which was located beneath the Hilton Hotel).

4.12 In 2012 investigation at Poyle Place, Horton Road, Colnbrook (BHER ERM1483) c.340m to the south-east of the Battery Storage site comprised eight test pits, followed by a watching brief during the formation of a new access road. These exercises were sterile with modern made ground directly over the geology.

4.13 In 2000 a 3-trench evaluation of 'Land to rear of Aberdeen House, Bridge Street, Colnbrook' (BHER ESL9) c.780m to the north of the Data Centre site identified undated alluvial deposits in 'Trench 2' associated with the Colne Brook. The ground levels had been raised in the Victorian period with rubbish deposits to counter flooding.

4.14 A geophysical survey was conducted in Albany Park c.700m to the north of the Data Centre site (BHER ESL33). Four 30m by 30m grids were surveyed using a Geoscan FM36 magnetometer. No archaeological features were identified.

4.15 An evaluation in 2015 for 'Poyle Site 14' c.330m to the east of the Battery Storage site (BHER ERM1662) did not identify any Prehistoric or Medieval activity. A palaeochannel was detected sealed by alluvium. A late post-medieval ditch was also found.

4.16 A 1990 12-trench evaluation at Berkyn Manor Farm, Horton, Berkshire, c.650m to the west of the sites (BHER ERW162 (SL15463) located a Late Iron Age/Early Roman settlement on a gravel ridge adjacent and parallel to Colnbrook. Seven trenches found only undated isolated ditches with the numerous dateable occupation pits an ditches plus a cobbled surface on gravel ridges or 'islands' in Trenches A, B and E. A subsequent exaction in 1995 at Berkyn Manor Farm, Horton, c.550m to the west of the Data Centre site (ERW108 & ERW109). was 80m by 60m in extent (Area A) and investigated the associated small Romano-British rural settlement. Five more areas (ERW109) targeted an isolated ditch-like and pit-like features found by the evaluation (i.e. by Event ERW162). A ditch in Trench B4 produced Middle to Late Bronze Age pottery but the other features remained undated. In 2003 a further 2.16 hectare excavation was undertaken for the 'Poyle Southern Extension' at Berkyn Manor Farm, c.580m to the west of Battery Storage site (BHER ERM433). Numerous archaeological features were concentrated in the western zone and where dated were of the Middle Bronze Age, including enclosure/field system ditches and a water-hole.

4.17 The 'Lower Colne Brook Regrading Scheme, Horton Mill to Poyle Bridge' (BHER ERM415) included a 1991 watching brief from c.100m (and further westwards) from the north-west extent of the Data Centre site. An easement was stripped and systematically examined for archaeological deposits. An area on the south side of Poyle Channel, adjacent to Poyle Bridge, exposed silty-clay alluvium but no archaeological features or artefacts were noted here or in the other areas of stripping.

4.18 A 1997 archaeological watching brief Pippin's School, Colnbrook, Berkshire (BHER ERM416), c.750m to the north-east of the Data Centre site, was negative.

4.19 A 2004 desk based assessment for the extension to Poyle Sand and Gravel Pit (BHER ERM431), c.780m to the west of the Data Centre site, identified that the area had suffered much archaeological loss via the surrounding major reservoirs and previous extraction works. There followed a 2004 evaluation of thirty-five 50m-length trenches in advance of the new quarry extension (ERM432) that identified predominantly later Prehistoric (Bronze Age and Iron Age) along with Romano-British features

over the site, including a number of concentrations. The evidence represents a managed and enclosed landscape of later prehistoric date, potentially associated with funerary and/or ritual monuments (a single ritual monument was suggested by aerial photography in the northeastern sector of the site). 155 features were recorded in total.

4.20 A 2006 evaluation in the grounds of the Fulcrum Building at Horton Road, Poyle (BHER ERM599), c.550m to the south-east of the Battery storage site, consisted of two trenches. One found a 1.7m wide probable shallow channel whilst the other trench was blank other than overlaying modern deposits.

4.21 A 2006 watching brief at Cottesbrook House, Bath Road, Colnbrook (BHER ERM596), c.580m to the north of the Data Centre site, ahead of a new block of apartments proved negative, as was another 2006 watching brief at 35 Coppermill Road, Wraysbury, c.650m to the south-west of the Battery storage site (BHER ERM658).

4.22 A 2007 watching brief at White Hart House, Park Street, Colnbrook, Berkshire (BHER ERM719), c.600m to the north of the Data Centre site, located spreads of Victorian/Modern material possibly over alluvium.

4.23 A 2007 work at Englefield and Averley, Bath Road, Poyle (BHER ERM1712), c.500m to the north-east of the Data Centre site, included a single 10m by 2m trench and two smaller trenches. Brickearth was recorded capping the gravels but no archaeology was found.

4.24 A 2015 evaluation comprising two trenches at Old Bath Road, Colnbrook (BHER ERM1830), c.600m to the north-east of the Data Centre site, confirmed an absence of archaeological remains and that significant truncation that had taken place.

4.25 Desk-based work includes a environmental assessment report for the Colnbrook Flood Alleviation Scheme (ERM372) at the northern edge of the study area, which identified Colnbrook's strong cultural heritage 'dating back to its relationship with the coaching trade during the eighteenth century, due to its location on the London to Windsor route'.

4.26 A 2015 archaeological desk-based assessment (DBA) for a solar farm proposal was undertaken for a site at Poyle Park Manor, c.320m to the north of the Data Centre site (BHER ERM1756). This identified that the entire site was quarried in the 1980's (photographs from 1985 show that site subject to quarrying) then backfilled including as shown by 1990's aerial photographs. As such the site contained a 'low potential' for in-situ archaeological remains to be survive.

4.27 A 2015 DBA for Freestone Yard, Colnbrook at the northern edge of the study area identified low archaeological potential (BHER ERM1808).

4.28 A 2017 DBA for 'Land at Mathisen Way, Poyle' (BHER ERM2125), c.400m east of the Data Centre site, identified archaeological potential for that site citing Terminal 5 and Kingsmead Quarry, Horton as indicating the wider potential of the fertile gravel valley. However, the subsequent 5-trench evaluation in 2018 (BHER ERM2126) did not reveal any features of significance in this instance.

4.29 A 2019 DBA for Unit 3 Blackthorne Road Slough (BHER ERM2331), c.400m to the east of the sites, identified low potential due to modern truncation, as informed by geotechnical Ground Investigation.

4.30 A 2021 DBA for Land at Colndale Road, Poyle, Slough (BHER ERM2620), c.200m east of the Data Centre site, suggested that based on the wealth of known archaeology in the study area, and the potential noted from its general location, that there was a potential for archaeology to survive within the site, with a particular focus on the Prehistoric and Modern periods.

4.31 Land at Horton Road, Poyle (BHER ERM2473), c.200m south-east of the Battery Storage site, was also the subject to a 2020 DBA which identified a low-moderate potential for Late prehistoric archaeology but a low potential for all other periods.

4.32 Land off Bath Road, Poyle, Slough, Berkshire, c.600m east of the Data Centre site, was subject to a DBA in 2022 (BHER ERM2709).

4.33 The Colne Valley Park Historic Landscape Characterisation Project (ERM790), centred c.190m to the north-west of the data Centre site, was carried out by Buckinghamshire County Council and Groundwork Trust. The project covered associated zones of Greater London, the boundaries of Buckinghamshire, Hertfordshire and Surrey and also includes the London Borough of Hillingdon along with Slough, Windsor and Maidenhead in Berkshire. It provided a detailed and cohesive historic landscape characterisation for the Park (ERM790) with 'additional information on historic farmsteads and estates, boundaries, routeways and waterways.' The impact of twentieth century aggregates extraction and settlement expansion within the Colne Valley is identified. Clearly, close proximity to London stimulated modern settlement and aggregate extraction from the Colne Valley gravels (gravel extraction sites now commonly flooded reservoirs) Nevertheless areas of 19th century and earlier field systems along with historic parks and ancient woodland survive.

LiDAR

4.34 Figure 3 reproduces the LiDAR date for the study site, coloured to show interpreted height variations. Sourced from the Environment Agency, the data was captured LiDAR survey (data from Environment Agency) at a 1m resolution, and was processed to generate simple local relief and multidirectional hillshade models.

4.35 There are no obvious archaeological features visible on the LiDAR survey within the Battery Storage site, but the uneven nature of the terrain is shown and correlates with the data sources for quarrying of its entire area (see Section 3).

4.36 The Data Centre site includes various surfaces in the southern and western area and a number of structures close to the southern access. The eastern grassed areas are even suggesting that relatively little disturbance has taken place there.

Earlier Prehistoric (Palaeolithic and Mesolithic)

4.37 The presence of Palaeolithic material can be notoriously difficult to predict and is typically dependent upon the presence of an appropriate underlying geology sequence (such as terrace gravels or brickearth), as well as suitable topography and access to nearby resources and water.

4.38 The wider area of north-west Surrey, East Berkshire and West London includes a large number of Palaeolithic finds, largely documented by Wymer (1999; see also Bridgeland 1996). The older Thames Terraces from which most artefacts are derived tend to have been reworked in later glacial periods.

4.39 Despite the presence of Thames Terrace riverine Taplow Gravels of Pleistocene date underlying the Site, very limited evidence for Palaeolithic artefacts is known from the study area.

4.40 A small assemblage of early Upper Palaeolithic material was recovered from the World Cargo site at Heathrow (CgMs 2014 citing Juby, 2011).

4.41 Beyond the study area evaluations at Home Farm, Harmondsworth in 1988 and 1991, c.3km to the north-east of the study site, recovered two flints of the Levallois Upper Palaeolithic tradition (MLO58506).

4.42 On the basis of the available evidence, including the lack of nearby evidence and a conducive underlying geological sequence, the archaeological potential of the study site for the Palaeolithic period is considered to be relatively low. However, given the geology the presence of artefacts of the period within the underlaying gravels cannot be ruled out.

4.43 The Thames and its tributaries provided fish and fowl resources and were also key routeways through the still largely forested landscape in the Mesolithic period. In this case the closest Thames tributary is the Colne Brook is located to the north of the Data Centre site.

4.44 The archaeological potential of the Brickearth and Taplow Terrace Gravel deposits around West London are well-documented as settled to varying degrees and varying permanence from the Mesolithic period onwards (see Lewis et al 2006; Bird 2006; Lambrick, Robinson & Allen 2009).

4.45 Mesolithic flintwork is scattered across the landscape (often residually within later features) with the presence of occasional pits, for example at the former Perry Oaks Sludge Works, Heathrow excavations, also noted. Beyond the study area 1994 investigations at Northolt Road, Hillingdon at the Staff West Car-Park for Heathrow Airport, from c.200m to the west of the study site, contained later pits along with flintwork of possible Mesolithic date (Greater London HER).

4.46 The only possible Palaeolithic period finds from the study area comprise of three residual pieces of worked flint were recovered from a tree throw investigated as part of the Berkyn Manor Farm (Poyle Southern Extension), Horton excavation (MRM16020; ERM433). These comprised of a flake, blade and core fragments and may be of Upper Palaeolithic (Late Glacial) origin.

4.47 Although few Palaeolithic findspots have been recovered from the study area, or from the locality, Mesolithic postholes have been recorded at Bedfont Court during an evaluation c.1.5km south-east of the study site. Eight stake holes were arranged in lines, one containing remains of a waterlogged stake which was dated to c.6,500BC. The only find from the study area was a flint blade found during the excavation at Poyle Manor/ Poyle House (BHER SL15465), c. 80m to the north of the Data Centre site. No further Mesolithic finds, or features have been recorded in the study area.

4.48 The archaeological potential for the Early Prehistoric period at the Data Centre site is considered to be **low**. The potential of the battery storage site was also low prior to truncation - but here gravel extraction will have removed this potential to depth.

Later Prehistoric (Neolithic, Bronze Age and Iron Age)

4.49 From around 4000 BC the mobile hunter-gathering economy of the Mesolithic gradually gave way to a more settled agriculture-based subsistence. The pace of woodland clearance to create arable and pasture-based agricultural land varied regionally and locally, depending on a wide variety of climatic, topographic, social and other factors. The trend was one of a slow, but gradually increasing pace of forest clearance.

4.50 This was followed by increasing woodland clearance, probably principally for pastoral farming, in the Bronze Age, with an emphasis on the creation of enclosed farmland with individual fields in the Middle to Late Bronze Age, often utilising the river valleys and lighter soils in the first instance (Yates 2007). In this area Bronze Age occupation and farming is evidenced across the Thames Valley.

4.51 The archaeological interest of the wider area is well informed by the extensive investigations at Heathrow Airport, particularly the former Perry Oaks Sludge Works site at Terminal 5 which identified significant archaeological remains of Neolithic, Bronze Age, Iron Age, Roman and later date. Dorney Rowing Lake and Kingsmead Quarry, Horton have also produced significant Mesolithic, Neolithic and later archaeology.

4.52 The Thames and its tributaries were also key routeways through the still largely forested landscape in the Neolithic and later prehistoric periods. For farmers of the later prehistoric periods, the now largely cleared river valleys provided for water and nutrient rich alluvial pastures for livestock. In this case the closest Thames tributary is the Colne Brook which is located to the immediate north of the site.

4.53 The archaeological potential of the Brickearth and Taplow Terrace Gravel deposits around West London are well-documented as settled to varying degrees and varying permanence from the Mesolithic period onwards (see Lewis et al 2006; Bird 2006; Lambrick, Robinson & Allen 2009).

4.54 An important Neolithic Causewayed enclosure is a Scheduled Monument 'Part of a causewayed enclosure, 632m north-east of Mayfield Farm' (SM 1002043) located at East Bedfont some c.4.5km to the south-east of the site. This example includes two circuits of causewayed concentric ditches. The outer ditch encloses an area of c.245m by 220m (about 4 hectares). Causewayed enclosures were important local or regional centres in the early Neolithic (after c.3,600 BC). Their concentric broken (causewayed) ditches were a large undertaking for relatively small groups of early farmers and represent a level of communal work commensurate with use as local ceremonial monuments. However, it is considered that major gatherings of disparate communities took place within the enclosures at certain times of year at which time livestock and other goods were exchanged and feasts as well as marriages and other ceremonies probably took place (e.g. Bird 2006). The location of this causewayed enclosure confirms that the surrounding area was occupied and farmed at this time.

4.55 There are several major Neolithic monuments within the surrounding landscape and a number of smaller later Neolithic monuments and occupation traces such as pits have been identified via large-scale archaeological investigations including at the former Perry Oaks Sewage Works at Heathrow Terminal 5 beyond the study area to the east of the M25 motorway (Lewis *et al* 2006).

4.56 The wider area beyond east of the M25 and study area also includes part of the 3.6km long Stanwell cursus, a linear form of Neolithic monument (e.g. Lewis et al, 2006). The north-northeast by south-southwest aligned monument was identified as a crop mark feature from the air and a stretch of it has been fully excavated at the former Perry Oaks Sewage Works site for Heathrow Terminal 5 (Lewis et al, 2006). As with the entire area of Heathrow Airport it is within the 'Heathrow Area' Archaeological Priority Zone (APZ1). The various Perry Oaks archaeological investigations for Terminal 5 (Western Perimeter Road, Heathrow Airport) identified an important a 'Neolithic monumental landscape' that included the cursus along with a c. 20m diameter horseshoe shaped enclosure (comprised of two segmented ditches forming opposing 'horns' and scatters of Neolithic pits and postholes across the site. The section of cursus investigated was 480m long with its two 1.4m wide and up to c.0.3m deep parallel ditches 80m to 90m apart. There were gaps or causeways within the ditches to allow access. Work between 2002 and 2005 confirmed a period of initial Neolithic activity between 4,100 and 3,650 BC, prior to the later development of the monumental landscape. Further enclosures, including a second horseshoe enclosure, were built in the third millennium BC were found in eastern areas along with a rectangular enclosure to the north. The monuments were resected or incorporated into the later (Bronze Age) landscapes.

4.57 The move towards more permanent Neolithic settlements can also be seen in the important settlement just outside the study area, at the Kingsmead Quarry at Horton to the west – where a causewayed enclosure along with foundations of no less than four rare early Neolithic rectangular timber buildings have been discovered between 2008 and 2012 (two post defined and two beam trench founded; https://archaeology.co.uk/articles/hortons-neolithic-houses.htm). In addition, a Neolithic axe was found at Horton within the study area in 1959, c.600m to the south-west of the Battery Storage site (BHER 00011.00.000; MRW7450) and an end scraper of a similar date was found at Coppermill Road, Horton (BHER 00012.00.000; MRW7451) in the same area.

4.58 Bronze Age features recorded on the GLHER to the east of the study area and the M25 include substantial areas of co-axial field-systems that emerged in the Middle and Late Bronze Age (e.g. Yates 2007). These, including those at Perry Oaks, often referenced earlier features such as pits that may have been marked above ground and the Neolithic and Early Bronze Age monuments.

4.59 The very extensive Perry Oaks Sludge Works excavations east of the M25 identified Bronze Age field system ditches of bi-axial fields and droveways across the entire area (e.g. Lewis et al, 2006). These represent a highly organised and productive landscape that clearly extends on the gravel zone well beyond the excavated areas. Set within the landscape were six possible settlement sites and the associated pits, including 32 waterholes preserving log-ladders, adze handles and a 'beaters', and ditches produced large assemblages of pottery. Earlier excavations targeted on crop marks by Surrey Archaeological Unit identified two post-built roundhouses. For the major investigations (1999 and 2002-5) the landscape enclosure with fields is thought to have begun earlier than had previously been suggested for Southern Britain, at between process 2000BC and 1600BC, with the Neolithic monuments incorporated from inception. The system was only fully developed in the Middle Bronze Age, however. Burials of Bronze Age date included a number of cremations.

4.60 Evaluations at Home Farm, Harmondsworth between 1988 and 1998 also located a late Bronze Age settlement and field system (GLHER).

4.61 Within the study area evaluation in 2005 at Poyle Western Extension, Poyle, Berkshire, c.700m to the west of the Data Centre site, dated three ditches of a possible enclosure (previously identified by aerial photography) to the Middle to Late Bronze Age period (BHER MRW15853; ERM431; ERM432).

4.62 Middle to Late Bronze pottery was also recovered during machine trenching at Berkyn Manor Farm, Horton (BHER 04107.04.200; MRW15579), c.580m to the east of the Data Centre site.

4.63 Iron Age occupation is also widespread regionally, especially on the Thames gravels, with perhaps the most significant local occupation an enclosed settlement known as 'Caesar's Camp', which was excavated by Grimes prior to the construction of the Heathrow airfield in 1944. The camp included a number of roundhouses, a rectilinear building that has been interpreted as a temple. The Harmondsworth APA includes evidence of a late Iron Age to Roman settlement and associated small cemetery.

4.64 A sizeable Iron Age settlement of 18 circular roundhouses were identified, along with 4-poster 'granaries', stock enclosures and a cluster of pits containing a substantial quantity of Middle Iron Age pottery, at Perry Oaks Sludge Works from c.600m to the south-west of the study site (e.g. Lewis et al, 2006). A later farmstead instigated in the Late Iron Age and continuing in use into the Roman period was also excavated in stages between 1969 and 1999 at Perry Oaks Sludge Works. A number of structures originated in the middle Iron Age, whilst others were of Late Iron Age and later date. A typical of 'ladder' of enclosures was also excavated in addition to two drove ways. The 1999 excavation showed that the earlier landscape was completely obliterated and rearranged in the Late Iron Age to early Roman to become a northeast-southwest aligned field system. A number of penannular gullies represent roundhouses, one of which was transitional with the Roman period.

4.65 Since destroyed by quarrying, cropmark features were identified within the study area via historic aerial photographs at Horton, Berkshire (BHER 00026.00.000; MRW33) from c.220m to c.400m to the south-west of the Battery Storage site. In particular this included a probable prehistoric, rectangular enclosure (BHER 00026.01.000; MRW34) c.230m north-east of the Battery Storage site, another enclosure (BHER 00026.02.000; MRW35) c.400m to the east of the Battery Storage site, a ditch (BHER 00026.04.000; MRW37) in the same area, and a probable barrow ring-ditch (BHER 00026.05.000; MRW38) c.220m to the south east of the Battery Storage site.

4.66 The subsequent excavation, at the western edge of the study area, recorded two sections of Middle Bronze Age enclosure/field system ditches and other features (BHER MRM15874). One of these contained significant quantities of pottery along with burnt flint and animal bone and was cut by a was 7.4m by 5.4m oval waterhole.

4.67 A possible ring-ditch was investigated during an archaeological evaluation at Poyle Western Extension, Poyle, c.590m to the north-west of the Data Centre site, and although its form suggested a Bronze Age date, only very fragmentary pottery was recovered as dating (BHER MRM15858). The evaluation also identified a 1.24m x 1.03m oval pit, c.750m to the east, which was 0.36m in depth and contained a sherd of Beaker/Early Bronze Age pottery (BHER MRM15862). The fill also produced charred hulled wheat

grains of probable emmer wheat and a tuber and a stone of sloe. Other findings from the evaluation included a Middle to Late Bronze Age ditch c.680m to the east of the site (BHER MRM15864) and a series of late Bronze Age features including a well, pits, ditches and four undated ditches (possibly of a post monumental landscape field-system) in this prehistoric activity area (BHER MRM15859; MRM15860; MRM15861).

4.68 Another ring ditch measuring c.30-31m in diameter was identified by aerial photographs at Summerleaze Quarry, Horton within the same general zone and is shown as such on Fig. 2a, c.780m to the west of the Data Centre site (BHER MRM18490).

4.69 Overall, the wider gravel terrace of the area there is a general potential for Neolithic and Bronze Age archaeology, particularly for scatters of pits, Bronze Age field-systems, ritual monuments and associated traces of occupation. The eastern zone of the northern Data Centre sub site corresponds with alluvium mapped by the BGS associated with the Colne Brook floodplain. Such alluvium tends to have been deposited during the sea level rises of the Neolithic and Bronze Age periods. As such these locations may preserve Bronze Age and Neolithic remains within and/or below the alluvium and such deposits may extent, albeit in a truncated fashion, to below the brownfield/truncated areas of the site. Overall (prior to truncation) a **moderate** potential for occupation or funerary activity of Neolithic to earlier Bronze Age date is predicted for the Data Centre site, whilst a **moderate** potential can also be identified for the later Bronze Age and Iron Age field-systems and/or occupation. The potential of the Battery Storage site was also moderate prior to truncation but here gravel extraction will probably have removed this potential (see below).

Late Iron Age and Roman

4.70 In the wider area a well-preserved example of a Roman settlement from the wider area is represented by a Scheduled Monument (SM 1002042) known as 'Romano-British site 1000yds (910m) W of East Bedfont parish church' and is located c.4km to the south-east of the study site.

4.71 Otherwise, indications of Roman settlement beyond the 1km study area include continuations of late Iron Age sites at several sites within the Heathrow APZ at Perry Oaks, as investigated by successive excavations from 1969 to 1999. A total of five Roman buildings defined by gullies were identified. Ladder form enclosures appear to be of late Roman date (or last used then). The settlement also contained waterholes and wells, some with intact wooden boxed revetments. One waterhole fill produced very late evidence of site use into the 4th to 5th century AD in the form of deposition of a lead tank.

4.72 As noted in the Events summary above evidence for Late Iron Age or Roman occupation in the study area is recorded for Berkyn Manor Farm (North), Horton to the north-west of the study area, where a number of late Iron Age to Roman features probably relate to a Roman farmstead. In 1990 two phases of evaluation found gullies, ditches, pits, a hollow and a possible cobbled track or yard surface (BHER MRW5471 to MRW5479; MSL15463, ERW162).

4.73 Within the 1km study area a Late Iron Age ditch and three parallel undated but probably contemporary ditches were also recorded during the evaluation at Poyle Western Extension, Poyle, c.800m to the west of the proposal sites (BHER MRM15863; ERM432). Two sherds of Roman pottery were recovered

during the Berkyn Manor Farm (Poyle Southern Extension), Horton excavation – also c.800m to the west of the sites (BHER MRM16019; ERM433).

4.74 Roman farmsteads are often found to be spaced at around 0.5km to 1km intervals in well drained land in southern England and in light of above negative results of the trenching at the study site for the Roman period, it may have been located within and area of Roman landscape rather than at a settlement focus. A generally low-moderate potential for the presence of Roman period landscape and a low potential for settlement is predicted (for non-truncated areas).

4.75 Although not on the HER a section of the online 'The Roman Rural Settlement map' (The Rural Settlement of Roman Britain: Martyn Allen, Nathan Blick, Tom Brindle, Tim Evans, Michael Fulford, Neil Holbrook, Lisa Lodwick, Julian D Richards, Alex Smith: an online resource (2018) - Map Viewer (archaeologydataservice.ac.uk), provided as Appendix E, shows a possible Roman Road route has been projected to run across the site. The alignment is postulated to run from the Roman town at Staines (to the south-east) north-westwards, through or near the site area, *en route* to the Iver Heath area, prior to kinking further north-west towards High Wycombe. This line, based on the work of Margary, is not confirmed and is treated with caution.

4.76 A **low to moderate** archaeological potential can be identified for the Roman period landscape and possibly occupation evidence within the study site.

Anglo-Saxon/Early Medieval/Medieval

4.77 For the wider area beyond the 1km study area, investigations at Prospect Park, Harmondsworth have included the important remains of early Saxon settlement comprising two possible post-hole defined halls in addition to eleven typical sunken feature buildings (SFB's). Another SFB was excavated at Holloway Lane. It is suggested that these represent evidence for shifting foci of occupation. The Harmondsworth APA text states that 'this is the only early Saxon settlement to have been investigated on any scale in London.' A settlement at Harmondsworth is recorded by the 1086 Domesday survey when the land was owned by a Benedictine Abbey. The Priory cell was west of the church and the tithe barn. The Grade II* St Mary's Church includes fabric of late 12th century date. The important medieval Tithe Barn to the west of the church is Grade I listed. Historical records indicate that the settlement comprised 48 houses by 1337.

4.78 The Berkshire HER (for ERM2473) includes that in the wider area the Colne Valley has been documented as a major political division since historic records began in England and until recently marked the western edge of Middlesex. On this basis it has been suggested that it probably formed a western boundary for the territory of the Middle Saxons in the early Saxon period (5th-6th centuries). There are records of a Saxon estate at Harmondsworth to the northeast and emergent villages by the time of the Norman Conquest at Stanwell, Harlington, Cranford and Bedfont. However, Poyle itself as a settlement was not mentioned in the 1086 Domesday Book bit was included as 'one of two subsidiary estates held by knights from Stanwell Manor'. The late 11th-century settlement at Stanwell was relatively wealthy with the manor including over 40 households with four mills and three weirs and provided over 1,400 eels per annum.

4.79 The earliest mention of 'Colebroc' (Colnbrook to the north-west of the site) occurs in 1106 but that reference appears to refer to an inn on the London Road (possibly the Ostrich Inn), that with its associated land was then given in alms to Abingdon Abbey; however, the settlement of Colnbrook itself dates much later, to the late 18th century (BHER MRM16374 at the north-west extent of the study area).

4.80 Poyle Manor was founded in the late 12th or early 13th century, was located from only c.80m to the north of the Data Centre site and the Poyle Channel (BHER 06036.00.000; MSL7247). Documentary evidence indicates that the manor comprised a house and a mill and 122 acres of land in the 13th century and that by the 15th century the mill had ceased to be used, although the associated estate had increased to 240 acres. Excavation were undertaken in 1999 (Foreman, Hardy & Mays, A. 2016). The remains of a partial moat are thought to have been late Post Medieval additions, and there is no evidence of the moat extending around the house on the northern and eastern sides. The aforementioned 1999 excavations recorded traces of the medieval buildings (BHER SL15465; MSL15465). These included beamslots of a possible outbuildings and structural remains of the north wall of the medieval house itself. Occupation as early as the late 11th or 12th century was also suggested by the artefacts. The Medieval house was later replaced and the last known iteration of the house was built on the site c.1700. Wooden artefacts from waterlogged deposits included a barrel lid or base, the base of a post, whilst an oak felloe, forming part of a wheel was found beneath a 13th century ditch fill. In addition, 130 bones from cattle, sheep, domestic fowl, cat and the right radius and ulna of horse were recovered, with 12th-13th century cattle dominating the assemblage. The 2009-2011 excavations added further building evidence in the form of eight postholes associated with an 11th-13th century building (6m east-west and 9m north-south). The sub-divided building extended to the south and is thought to represent a simple rectangular hall within a larger complex. Only three sherds of medieval pottery were recovered during those excavations. The Surrey HER also includes equivalent references to the post-conquest homestead moat at Polye Manor (SHER 644 - MSE644; ESE4454; ESE4455 & ESE3149).

4.81 In view of the available information, a **low** archaeological potential can be identified for the Anglo-Saxon period within the sites. During the Medieval period, the Data Centre site area was located to the south of the Poyle Manor and the river that bordered its southern side, however, the proximity of the manorial complex suggests a **moderate** potential for Medieval activity, most plausibly within the northern areas of the site closer to the river and the manor. Once again there is negligible potential for archaeological survival, due to gravel extraction, within the southern Battery Storage site.

Post Medieval & Modern (including map regression exercise)

4.82 Colnbrook, to the north-west of Poyle, was granted a charter raising its status to a borough by 1544 (ERM2709). This was largely due to increases in traffic from London using the Bath Road (which was turnpiked in 1727) and its location and numerous inns was associated with movement and billeting of troops which continued until the Great Western Railway bypassed the area (ibid after Hunter 2003). As a result of a loss of traffic by 1872 the turnpike trust was decommissioned. The later 19th and earlier 20th centuries briefly increased traffic use but local trades continued to be lost due to the local section of the London-Bath route being bypassed via construction of the A4 Colnbrook Bypass in 1929. the village and it was a typical commuter village by the later 20th century.

4.83 'Poyle', at a location c.200m to the east of the Date Centre site, was separated from its previous attachment to the manor of Stanwell in the 17th century and its former manorial status was lost (BHER ERM2620). It was subsequently referred to as Poyle Farm in the 18th century.

4.84 Industry at Poyle included leather mills in the 17th and 18th centuries but Poyle Mill subsequently (from the late 19th century) manufactured asbestos, fibre, artificial manure and bricks.

4.85 There are a number of listed buildings of Post Medieval date which are assessed and located and by a separate RPS Built Heritage report, which are also listed on the HER (Appendix A). These include the late 16th century and 17th century 'Hollies' at Poyle Road, Stanwell to the immediate south-east of the Data Centre site (Grade II Listed Building 1187063); and the late 17th / early 18th century Poyle Farmhouse situated between the proposal sites (Grade II Listed Building 1298905).

4.86 Colnbrook Bridge and Boundary Marker at Park Street, c.650m to the north of the Data Centre site, dates to 1777 (BHER MRM16537) whilst a former late 18th century building was located at Windsor House, Poyle Road, Colnbrook, c.280m to the north-east of the site (BHER MRM18538). It had been embedded later within an industrial complex but following its Grade II listing in 1982 was demolished in the 1980's and so was delisted.

4.87 A pair of later Post Medieval ditches were also excavated at Poyle Site 14, Industrial Estate, Slough, c.350m south-east of the Battery Storage site (BHER MRM17583). Three more Post Medieval ditches were investigated during evaluation at Mathisen Way, c.330m to the east of the Data Centre site (BHER MRM18296).

4.88 In the early 19th century, the London to Bath Road was an important route for the busy stagecoach trade, passing to the north of the site, with several public houses and inns along its route in the area. Tax posts marking the location of each route into London, at which point duty became payable on coal and wine, are also recorded at various points. 19th century listed buildings include 'City Post' c.300m to the north-west of the Data Centre site (Grade II Listed Building 1280897; BHER 06035.01.000 - MSL7241). Other 19th century 'Corporation of London Tax Posts' for the collection of duty are located at Slough further to the north-west of the Data Centre (MSL7235; List Entry 1280897), in the north parapet of Colnbrook Bridge (BHER MSL7245) and on the south side of Horton Road (BHER MSL7246; ERM2126). The Surrey HER duplicates the Corporation of London Tax Post references (SHER 3860 - MSE3860; ESE9267) (SHER 3872 - MSE3872; ESE9279) (SHER 3890 - MSE3890; ESE9297).

4.89 A 19th century Congregational Chapel was formerly located at Poyle, c.380m to the north-east of the Data Centre site (BHER MRM17645) but was demolished in 2000.

4.90 According to the Surrey HER (for sites now in Berks) the Staines to West Drayton Railway line from West Staines to West Drayton via Yeoveney was built in 1885 but was decommissioned in the 1960's (SHER 15385 - MSE15385 – not illustrated on Fig. 2a). Colnbrook Railway station opened in 1884. The 1888 Colnbrook Railway Station and Goods Yard, Colnbrook is also recorded by the Surrey HER and has been partially demolished (SHER 19786 - MSE19786). The former Poyle Halt, near Lintell's Bridge, Slough (a railway building used to serve the Explosives Works and Stanwell Moor village) (SHER MSE23251) was opened in 1927 as 'Stanwell Moor & Poyle Halt'. It comprised a single wooden shelter and was closed in 1965. The Former Poyle Estate Halt, Slough (SHER MSE23252) was a similar railway

facility that was opened in 1954 as Poyle Halt and had been constructed to serve a new factory and warehouse development. It was also closed in 1965.

4.91 According to the Surrey HER Manor Farm itself at Poyle Road, Poyle (Stanwell Parish) was a historic farmstead (SHER 21877 - MSE21877). The location of the farm is shown within the south-eastern extent of the 'Data Centre' northern site. Although classified as such its date is shown as unknown on the list. It is included as part of a project researching important historic farmsteads and associated buildings within the current administrative county of Surrey. Plates 11 and 12 show the current 20th century residential and barn buildings at this location. Historic mapping show this farm was not present until 1923 (see map regression below).

4.92 Other 'historic farmsteads' within the study area as recorded by the SHER include 'Poyle Place', Horton Road, Poyle, c.480m to the south-east of the Battery Storage site, is a farm of 20th century date (SHER 21875 - MSE21875 – not illustrated on Fig. 2a) and first appears on the Ordnance Survey 1926. Another historic farmstead was located c.700m to the east of the Data Centre site, at Rosary Farm, Bath Road, Poyle (SHER 21876 - MSE21876 – not illustrated on Fig. 2a).

4.93 The Berks HER MRM18273, c.200m south-east of the Data Centre site, relates to the post-modernist McKay Trading Estate (Grade II Listed Building 1451400). The estate was designed in the mid 1970's by John Outram Associates. Outram's warehouses at Poyle were so successful that McKay commissioned further buildings in Kensington. The Berks HER records that "*Outram was a notable figure in Post-Modernism, a movement and style prevalent in architecture between about 1975 and 1990. Outram's warehouses at Poyle remain in use today. The office interiors, including the main entrance hall of the first unit, have largely been refitted and there has been some replacement of window and door units. Warehouses and offices designed in 1974-1974 by John Outram Associates, assistant architect Tony McIntyre and architectural assistant Ernest Nagy*."

4.94 In general terms Poyle became increasingly industrialised from the early 20th century onwards following the stimulus of Colnbrook Railway station's opening in 1884, followed in 1927 by a station at Poyle Halt and late the station at Poyle Industrial Estate Halt in 1953. The first factory appeared in 1914 but by the 1950's between 70 and 80 more had been constructed. The 20th century industrialisation of Poyle continued, despite losing the railway line in the 1960's. Despite this setback extensive gravel extraction works at Poyle s created a new stimulus and included the creation of several reservoirs and pools, whilst Heathrow Airport (on the site of a 1930s aerodrome (HAL)) was opened to the east of Poyle in 1946. More stimulus followed the creation of the M25 Orbital Motorway in 1986 and the adjacent Junction 14.

4.95 The vast extent of quarry and subsequent landfill at what is referred to as 'Poyle Manor South' is shown by Groundsure 'historic landfill mapping' (see Appendix C). This which shows that the entire area of the Battery Storage site and the landscape to the immediate west of the site was subject to landfill (following quarrying). The landfill of quarrying was by Drinkwater and Murray Limited from between 1948 and 1983 (with a licence issued in 1974).

Map Regression

4.96 Rocque's map of Middlesex from 1754 (Fig. 4) shows the Colne Brook, Wraysbury River and the Colne, with the Poyle Channel to the immediate north of the site and Ooyle Road to the east. The map also indicates a cluster of buildings at 'Poyle Mill' (located where the current Poyle Road crosses the Channel). 'Colnbrook' is shown running along the Bath Road, but the study site appears as undeveloped land in agricultural use; the Battery Storage site over parts of three fields and the Data Centre site over parts of two, with its southern boundary aligned on an east-west boundary, as it is today. In the wider area Heath Row Field is shown to the east and Stanwell Field to the south-east.

4.97 Though inaccurate the 1768 Jefferys Map (Fig. 5) labels a series of buildings as 'Poyle' to the south and north of the unlabelled Poyle Channel. There are buildings illustrated on both sides of the north-south road (presumably Poyle Road) with those on the west side therefore potentially associated with the roadside eastern area of Data Centre site. As maps of this date are often indicative and were not accurately surveyed it is unclear whether the buildings were then present at the site, but subsequent mapping does not indicate their presence.

4.98 The 1811 Ordnance Survey Drawing (Fig. 6) shows the north-south alignment of Poyle Road with 'Poyle' labelled to its east side and the complex of Poyle Farm shown between the two proposal sites. Poyle Paper Mills are shown to the north on the watercourse. There is no evidence for the existence of Manor Farm at this stage and both sites are within fields. The north-east area of the Data Centre site is occupied by a triangular land parcel which may be defined on its west side by a small former steam. The remainder of the proposal site is one large rectangular field. There are no buildings present. The Battery Storage site is within a separate field to the south of Poyle Farm.

4.99 The 1841 Stanwell Parish Tithe Map (Fig. 7) details the layout of Poyle Farm between the sites and Poyle Paper Mills to the north. The map shows the small settlement of Poyle in more detail, with several properties along Poyle Road along with Poyle Mill buildings along the Poyle Channel and Poyle Road.

1841-3 Tithe Apportionments, Stanwell - Middlesex

Land Parcel	Landowner	Occupant	Description	Land Use/Cultivation
115	George Patterson	George Patterson	Allotment Poyle Green	Meadow
116	George Patterson	George Patterson	Water	-
117	George Patterson	Joseph Saunders	Hay Field	Arable
118	George Patterson	Joseph Saunders	Five Acres	Meadow
121	Edward Abbey	John Cane	Gravelly Close	Arable
122	Edward Abbey	John Cane	Five Acres	Meadow
128	George Stone	John Cane	Farmyard Rickyard etc.	-
129	George Stone	John Cane	Granary Meadow	Meadow
130	Edward Abbey	John Cane	Farm Buildings etc.	-
131	Edward Abbey	John Cane	Rickyard	Garden
132	William Passingham	William Passingham	Three Cottages and Gardens	-

133	Edward Abbey	John Cane	Flower Garden	Arable
134	Edward Abbey	John Cane	Water	-
135	Edward Abbey	John Cane	Flower Garden	Meadow
136	Edward Abbey	John Cane	Ten Acres	Meadow

4.100 The field immediately east of the north-western area of the Data Centre site is a triangular plot 115 within known as 'Allotment Poyle Green' and was meadow owned and occupied by George Patterson. There is a stream along its western edge referred to as 116 as 'water'. The land within the Data Centre site itself comprises mainly of a large field 'Hay Field'. The eastern edge of a field to its west side (number illegible) is also within the site boundary, as is the southern edge of a narrow plot 114 known as 'Two Acres' in the northern area, abutting Poyle Channel. A track is shown along the southern edge of the larger field (in the same location as the access road today). These were under the same owner and occupier associated with Poyle House depicted to the north of the Poyle Channel. The Battery Storage site is largely within a large arable field known as 'Flower Garden' owned by Edward Abbey and occupied by John Cane. The proposal site also clips the edges of three other former fields. In addition a ditch or small stream ran through its northern edge. These plots were part of Poyle Farm.

4.101 An 1869 map of Polye Park Estate (Fig. 8) shows detail of the open areas of the sites and the Poyle House layout to the north. Poyle Farm was, for some reason, not depicted then on the west side of the road, although A 'Farm House' and outbuildings were shown to the east side of Poyle Road. A building called 'Golden Cross' was located to the south-east of the Battery Storage site. The former field arrangements for the sites are unchanged.

4.102 The 1865 1:10,560 scale Ordnance Survey Map (Fig. 9) and 1866 1:2500 scale Ordnance Survey map shows Poyle House to the north of the Data Centre site, the Paper Mill to the north-east, with Poyle Cottage to the east and Poyle Fam to the south. The site is mainly one field. There are no changes at the Battery Storage site.

4.103 The 1894-1897 1:10,560 scale Ordnance Survey Map (Fig. 10) and 1899 1:2500 scale Ordnance Survey Map show no changes within the sites. The Manor House lodge is labelled to the north of the river and now labels the paper mills as 'Poyle Mills (Asbestos)'. The 1900 OS (not illustrated) shows some limited residential development around Poyle Cottage on the east side of Poyle Road and boat house at Poyle Manor House on the north side of the Poyle Channel. The railway to the east is the main addition by the time of the 1899 OS.

4.104 The 1910 to 1913 1:10,560 scale Ordnance Survey Map (Fig. 11) and 1914 1:2500 scale Ordnance Survey Map now show no changes at the sites. The Poyle Road area was still only subject to ribbon development and the areas to its east and west remaining open farmland. The Paper Mill to the north-east suffixed with 'Flock' on the 1:2500 scale map.

4.105 By the 1923 1:10,560 scale Ordnance Survey Map (Fig. 12) is the first to show 'Manor Farm' as three buildings on the north side of the east-west access road. two of these remain (see Plates 11 and 12). A small orchard is shown to the north side of these buildings but the site is otherwise open. There are no

changes at the Battery Storage site although to the east of Poyle Road several buildings are labelled as 'Explosive Works'.

4.106 The 1932-1934 and 1938 1:10,560 scale Ordnance Survey Maps (not illustrated) shows no relevant changes.

4.107 By the 1960 1:10,560 scale Ordnance Survey Map (Fig. 13) the area east of Poyle Road has illustrates the development of industry along with a 'Trading Estate'. The Hollies listed building to the south-east of the Data Centre site is labelled a such (although present earlier). Most significantly a large area of quarrying is depicted to the west side of the site. The extent of open quarrying has morphed in extent by the 1960-65 1:10,560 scale Ordnance Survey Map (Fig. 14) to extend further south-east and already covers much of the Battery Storage site.

4.108 The 1973 to 1974 1:10,000 scale Ordnance Survey Map (Fig. 15) shows the complete infill of the land east of Poyle Road with the Trading Estate and further development of the gravel quarrying to the west of the sites. Wraysbury Reservoir has now been constructed to the south. Subdivisions are shown with the Data Centre site land at Manor Farm.

4.109 The historic landfill mapping (see Appendix C) shows the entire area of the Battery Storage site and the landscape to the immediate west of the site was subject to landfill (following quarrying). The landfill of quarrying at 'Poyle Manor South' was by Dirnkwater and Murray Limited from between 1948 and 1983 (with a licence issued in 1974).

4.110 There are no major changes to the sites 1984 to 1987 on the 1:10,000 scale Ordnance Survey Map (Fig. 16) but the M25 had by now been constructed to the east. The 1980's map does not show quarrying or landfill.

4.111 The 2001 1:10,000 scale Ordnance Survey Map (Fig. 16) simply labels 'Gravel Pit' to the west side of the Data Centre site.

4.112 The 2017 Google Earth aerial image (Fig. 17) shows the central southern area of the Data Centre site now surfaced for car parking. Large stockpiles and haul routes for gravel storage are visible within the north-west and parts of the south-east area of the Data Centre site, as well as mounds of gravel to the immediate west. It is not clear whether the material was stored over exiting hardstandings or on soft ground. If the latter these zones may have suffered truncation form rutting (whether extraction had first occurred within this area is not clear). The grassed area in the north-east zone of the Data Centre site is intact.

4.113 That the areas were soft landscape appears to be confirmed by the 2019 Google Earth aerial image (Fig. 18) which shows that most of the bunds and been removed exposing bare earth ground. The south-eastern area of 2017 disturbance is now shown as car park. The light industrial buildings on the site are also shown.

Historic Landscape Characterisation (HLC)

4.114 The Historic Landscape Characterisation held by the Berks Historic Environment Record (Fig. 2b) refers to both sites as 'Waste Disposal Site' (HRM586). The record provides that the area relates to 'the

Wiggins Recycling Centre, Colnbrook, Slough' and was used as a modern waste disposal site after 1960. The precise level of disturbance within the Data Centre site itself cannot be established by this source.

4.115 The Hilton Hotel zone is shown to the north and is shown partly overlaps the northern edge of the Data Centre site red line (HRM585) - so is not accurate in that respect. However, the HLC zone not only reflects the modern hotel but also the former grounds of the former Manor of Poyle (Poyle House).

4.116 The archaeological potential of the study site for the Post Medieval and Modern periods can be identified as generally low with the exception of the likely presence of landfill in the Battery Storage Site and possible landscape feature associated with Poyle Manor and then the buildings of the 20th century Manor Farm.

Undated

4.117 In addition to the probably Prehistoric cropmarks noted above a number of former cropmark ditches and enclosures at Poyle, Slough (Berks HER) have been destroyed by housing MSL7248, MSL7249).

4.118 A number of undated features including an inhumation burial and a small tile-built structure were revealed during excavation were noted near previous Iron Age and Romano British discoveries at Berkyn Manor Farm, Horton (MRW15574; MRW15575; MRW15576; MRW15577; MRW15578; MRW15580).

4.119 Undated ditches, a pit and post-holes were also revealed during an archaeological evaluation at Poyle Western Extension, Poyle, Berkshire (MRM15865; MRM15866; MRM15867; MRM15868; MRM15869; MRM15870; MRM15871; MRM15872 and MRM15873).

4.120 An undated palaeochannel at Poyle Site 14, Slough was revealed cutting the natural gravel (MRW17582).

4.121 The Surrey HER includes further undated cropmarks including a double ditched enclosure (SHER 634 - MSE634; ESE4433; ESE4434); a Sub-rectangular enclosure or ring ditch (SHER 635 - MSE635; ESE4435; ESE4436); rectangular enclosure and ditch cropmarks at Stanwell (SHER 636 - MSE636; ESE4437; ESE4438); a boundary ditch and bank (SHER 637 - MSE637; ESE4439; ESE4440); linear ditches at Stanwell (SHER 638 - MSE638; ESE4441; ESE4442); linear ditch and ring ditch cropmarks, Stanwell (SHER 639 - MSE639); a large sub-rectangular enclosure appears to be cut by smaller rectangular enclosure(s) (SHER 640 - MSE640; ESE4445; ESE4446; ESE4447); and intersecting linear ditch cropmarks, Stanwell (SHER 641 - MSE641; ESE4448; ESE4449).

Assessment of Significance (Designated Assets)

4.122 Existing national policy guidance for archaeology (the NPPF as referenced in section 2) enshrines the concept of the 'significance' of heritage assets. Significance as defined in the NPPF centres on the value of an archaeological or historic asset for its 'heritage interest' to this or future generations.

4.123 In terms of relevant designated heritage assets, the sites do not lie within the vicinity of, or within a Scheduled Monument, World Heritage Site, Historic Battlefield or Historic Wreck. There are no such nationally important archaeological assets within the 1km study area.

4.124 Much further afield, 'Schoolhouse (Lord Knyvett's)' (National List 1005920) located c.3 km to the south-east, 'Romano-British site 1000yds (910m) W of East Bedfont parish church' (SM 1002042) c.4.5km to the south-east at West Bedfont, and 'Part of a causewayed enclosure, 632m north-east of Mayfield Farm' (SM 1002043) located at East Bedfont some 5km to the south-east of the site, are of national Importance.

Assessment of Significance (Non-Designated Assets)

4.125 In terms of relevant local designations, the study site does not lie within the Archaeological Priority Area, as defined by the LPA.

4.126 As there is no potential remaining significance at the Battery Storage site (BESS) or within western, central and southern areas of the Data Centre (see Section 3 & Appendices 3 and 4). This section relates only to relatively restricted areas including a strip along the northern edge, the grass area in the north-eastern area and perhaps the eastern zone of the Data Centre site, beyond the Ground Investigation boreholes which all demonstrated deep Made Ground.

4.127 Although it is possible that Palaeolithic or Mesolithic could be present within the least disturbed areas such as the north-east grassed area of the Data Centre site, near Poyle Channel, such remains are most likely to be residual and of low significance. However, the presence of more significant remains within the north-east grassed area cannot be ruled out.

4.128 Although based on the 1km study area there is no substantial reason to suppose the presence of significant Neolithic remains at the sites, especially in the areas of high modern disturbance (which may include the whole of the Battery storage site). However, the nationally important Horton sites show that more substantial remains can survive locally, and therefore the presence of features or monuments of higher than local importance, in less disturbed areas, cannot be ruled out at this stage.

4.129 Bronze Age, Iron Age and Roman archaeology has been found over wide areas where intensive survey has taken place within the study area and beyond. Any remains within the study sites are, however, likely to be heavily disturbed, again with the possible exception of the north-east and eastern areas of the Date Centre, and a low (local) or possibly medium (regional) significance for remains is predicted if present, the variation depending on whether the archaeology represents evidence for farming landscape / poorly preserved occupation, industry or ritual or more legible remains of occupation, industry or ritual/mortuary activity.

4.130 There is a low potential for Anglo-Saxon remains and any remains are most likely to represent landscape of low (local) significance. The Data Centre site is however, located to the immediate south of the Medieval Poyle Manor and the Poyle Channel which bordered its south side, whilst Poyle Road is likely to date from the Medieval period at least. Should features associated with the manor be present these are most likely to be of low (local) or possibly medium (reginal) significance, depending on form, function, preservation and date.

4.131 The modern buildings of Manor Farm and associated features are of negligible archaeological significance and 20th century landfill is of no archaeological interest.

4.132 There is also a geo-archaeological potential within the north-eastern and eastern area of the Data Centre site due to the presence of Alluvium capping the terrace gravel and London Clay. Such deposits are likely to be of low (Local) importance subject to date and presence/absence of organic deposits such as peat.

(https://geologyviewer.bgs.ac.uk/?_ga=2.23532218.1038282008.1715957713-240252094.1715957712)

4.133 As identified by desk based work, archaeological potential by period and the likely significance of any archaeological remains which may be present within the site is summarised in table form below:

Period:	Identified Archaeological Potential (prior to truncation)	likely Archaeological Significance (if present at Data Centre site)
Palaeolithic	Low	Low (Local)
Mesolithic	Battery Storage site – Nil (quarrying impact over entire area) Data Centre site - Low	Low (Local)
Neolithic	Battery Storage site - Nil (quarrying impact over entire area) Data Centre site - Low - Moderate	Low (Local) (or possibly Moderate (Regional))
Bronze Age	Battery Storage site - Nil (quarrying impact over entire area) Data Centre site - Low - Moderate	Low (Local) (or possibly Moderate (Regional))
Iron Age	Battery Storage site - Nil (quarrying impact over entire area) Data Centre site - Low - Moderate	Low (local) (or possibly Moderate (Regional))
Roman	Battery Storage site - Nil (quarrying impact over entire area) Data Centre site - Low - Moderate	Low (local) (or possibly Moderate (Regional))
Anglo-Saxon	Battery Storage site – Nil (quarrying impact over entire area) Data Centre site - Low	Low (local)
Medieval	Battery Storage site - Nil (quarrying impact over entire area) Data Centre site - Low	Low (local) (or possibly Moderate (Regional) if associated with Poyle Manor)
Post Medieval	Battery Storage site - Nil (quarrying impact over entire area) Data Centre site - Low	Low (local)
Modern	Battery Storage site – High (landfill)	Negligible (Manor Farm buildings and associated features) Landfill

	Data Centre site – High (Manor Farm buildings and associated features)	
Geo-archaeology	Battery Storage site – Nil (quarrying impact over entire Data Centre site – High for Alluvium	Likely to be low (Local) subject to date and presence/absence of organic deposits

4.134 Any archaeological remains, should they occur at the study site, would in the context of the Secretary of State's non-statutory criteria for Scheduled Monuments (DCMS 2013) most likely be of local significance, although the potential for Moderate/Regional importance archaeology cannot be discounted at this stage.

4.135 As with all sites yet to be archaeologically evaluated by surveys, the above 'identified' potential and significance categories are subject to reassessment when development impact zone specific data from such fieldwork surveys is available, along with a truncation assessment.

5 SITE CONDITIONS, THE PROPOSED DEVELOPMENT AND REVIEW OF POTENTIAL DEVELOPMENT IMPACTS ON ARCHAEOLOGICAL ASSETS

Site Conditions

5.1 A site visit was conducted on 9th May 2024 (Plates 1-12). The conditions were bright and dry. The southern Battery Storge (BESS) site currently comprises pastureland within two fields south of Poyle Farm. The ground is uneven perhaps reflecting the Made Ground deposition. There is a mature hedge with trees forming the northern boundary (see Plates 1 and 2).

5.2 The Data Centre site comprises an access road along its south edge with various light industrial use buildings fronting it (along with the 20th century Manor Farm buildings at the connection with Poyle Road) (see Plates 3, 4, 11 and 12). There are a series of surfaced compounds within the interior that include zones used for vehicle storage buildings (Plates 7 to 9).

5.3 The north-eastern grassed area (a former green on the historic mapping) is shown as grassed on Plate 10.

5.4 Poyle Farm is located between the split sites and is currently well screened from the proposed development areas to the north and south by trees and vegetation.

5.5 Agricultural/horticultural use of the study site prior to development of hardstandings across most of the site and the foundations of buildings and can be considered likely to have had a moderate, widespread negative archaeological impact. The north-eastern area *may* be relatively undisturbed by modern instructions (subject to future Ground Investigation).

Proposed Development

5.6 Manor Farm Propco Limited are seeking to develop the c.20 acres of the site in west London as a data centre campus. The Proposed Development is shown at Appendix B and comprises a southern BESS development and a northern Data Centre with substation and associated hardstanding and landscaping.

5.7 The northern Data Centre site will comprise one data centre building, a utility substation, a guard house, and any other ancillary structures required for the successful operation of the data centre on circa 13 acres. The southern BESS site will include a battery energy storage system (BESS) occupying approximately 6 acres of the site.

5.8 The Data Centre building has a maximum proposed height of 30m for the central Chiller Platform and 21.5m in height for the plant gantry. The battery units will be lower than 5m in height. The development description is as follows:

"Demolition of existing buildings and the redevelopment to comprise a Data Centre (Use Class B8) with ancillary sub station and Battery Energy Storage System (BESS) with ancillary offices, associated plant, emergency backup generators and associated fuel storage, landscaping, sustainable drainage systems, car and cycle parking, and new and amended vehicular and emergency access from Poyle Road."

Review of Potential Development Impacts on Designated Archaeological Assets

5.9 In terms of relevant designated archaeological heritage assets, as defined above and as shown on Figure 2a, no nationally designated World Heritage Sites, Historic Battlefield or Historic Wreck sites lie within the vicinity of the study site and despite a building height of up to 21m at the Data Centre, due to the screening effect of the intensive intermediate modern built development, there would no negative visual effects on the distant Scheduled Monuments beyond the 1km study area, as cited above.

5.10 Built Heritage is assessed in a separate RPS report.

Review of Potential Development Impacts on Non-Designated Assets

5.11 The historic landfill mapping in combination with Ground Investigation boreholes reported on by Fugro in 2019 (see Appendices C and D) show that the entire area of the Battery Storage site, and the landscape to the immediate west of the site, was subject to landfill (following quarrying). The landfill of quarrying at 'Poyle Manor South' was by Drinkwater and Murray Limited from between 1948 and 1983 (with a licence issued in 1974). The borehole data show consistent 4m to 5m depths of Made Ground across the Battery Storage site and therefore no Holocene period archaeology will have survived there. Consequently, there is no archaeological potential here.

5.12 In addition, landfill is also shown within the western area of the Data Centre site, as inferred by BGS and Environment Agency Mapping (see Appendix C). However, a wider area of landfill across the Data Centre site is indicated by the borehole data set out in Section 3 and Appendix D (after Fugro 2019) which show this site must also have been subject to quarrying to several metres' depth and subsequent landfill. It is theoretically possible that the grassed area in the north-east of the site, where no boreholes were placed, was not quarried and retains archaeological potential. This would need to be demonstrated by additional Ground Investigation or archaeological trenching. In addition, the survival of buildings associated with the 20th century Manor Farm, at the extreme south-eastern extent of the site, indicate that the quarrying was not undertaken as far east as Poyle Road. Some archaeological survival is also possible in eastern areas of the site, beyond the borehole locations.

5.13 Therefore, based on present data it is possible that the archaeology may survive in the northern Data Centre site. If so a low potential for Palaeolithic and Mesolithic remains is suggested, and a low to moderate potential of other remains of late Bronze Age/early Iron Age, Roman or Medieval date within the site generally. The 'The Rural Settlement of Roman Britain: an online resource: Map Viewer (archaeologydataservice.ac.uk)' extract, provided as Appendix E, shows a postulated Roman road line originating at the Roman settlement of Staines and heading north-west to potentially cross the western area site from south-east to north-west. However, this line is conjectural and is not on the Berkshire HER data provided for the study area. The line would in any case have been removed by quarrying based on the Fugro 2019 GI report.

5.14 The location of Medieval Poyle Manor, just to the north of the site, is of particular interest. However, there is currently no reason to suppose that its manorial, buildings, known from archaeological work to have been located north of the Poyle Channel (at the same location as the former Post Medieval

complex), extended to the site, south of the channel. Archaeological remains over this site are most likely to be low/local significance should any have survived truncation (e.g. in the northern / eastern area).

5.15 There is a theoretical geo-archaeological potential within the eastern/north-eastern area of the Data Centre site, due to the mapped presence of Alluvium capping the terrace gravel and London Clay shown on the BGS. Such deposits where present, are likely to be of low (local) importance subject to date and presence/absence of organic deposits such as peat. However, the historic borehole logs for the site (Appendix D) indicate that such Holocene floodplain deposits may have been largely removed by modern extraction.

5.16 The nature of archaeological survival will necessarily depend upon the impact of past post-depositional impacts as a result of development since deposition.

5.17 The proposed development may impact buried remains via its groundworks, foundations, services, attenuation and roads in areas that are not truncated by quarrying.

5.18 Due to the potential for the northern and eastern zones Data Centre site to contain archaeological remains it is considered that archaeological evaluation of the site is likely to be required. Discussions will be required with the Archaeological Officer at Berkshire Archaeology on behalf of the LPA would determine the precise requirements and timing of any archaeological evaluation and geo-archaeological assessment. It is recommended that such archaeological evaluation is confined to the areas north and east of the mapped Made Ground within the Data Centre site only and is undertaken as a condition of planning permission. Such evaluation will fix the extent of the modern quarrying and define the presence/absence, significance of below ground archaeology that may be impacted. This may lead to further measures to mitigate or offset effects to associated heritage significance. The above likely requirement may be modified in the event that project Ground Investigation is able to demonstrate that the northern and eastern areas of the site have also been quarried in the 20th century.

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6 SUMMARY AND CONCLUSIONS

6.1 Land at Manor Farm, Poyle, Slough in Berkshire has been reviewed for its below ground archaeological potential.

6.2 Manor Farm Propco Limited' are seeking to develop the c.20 acres site in west London as a data centre campus. The development will comprise one data centre building, a utility substation, a guard house, and any other ancillary structures required for the successful operation of the data centre on circa 13 acres. The development will also include a battery energy storage system (BESS) deployment on the southeastern edge of the site, occupying approximately 6 acres of the site. The Battery Storage site comprises grass fields and the Data Centre site is currently occupied by light industrial units, hardstanding of vehicle storage areas, a grassed area to the north-east. Manor Farm itself originated in the 20th century and two of its buildings, a residence and barn/unit, remain at the south-east corner of this site.

6.3 In terms of relevant, nationally significant designated heritage assets, no World Heritage Sites, Historic Wrecks or Historic Battlefields lie within the study site or its immediate vicinity.

6.4 Historic landfill mapping in combination with past Site Investigation boreholes have shown that the entire area of the Battery Storage site, and the landscape to the immediate west of the site, was subject to landfill (following quarrying). The landfill of quarrying at 'Poyle Manor South' was by Drinkwater and Murray Limited from between 1948 and 1983 (with a licence issued in 1974). The borehole data show consistent 4m to 5m depths of Made Ground across the Battery Storage site and therefore no Holocene period archaeology will have survived there. Consequently, there is no archaeological potential here. In addition, landfill is also shown within the western area of the Data Centre site, as inferred by BGS and Environment Agency Mapping and existing Site Investigation boreholes for that site similarly show widespread made ground to several metres deep. However, from the available data it is not known whether the associated quarrying extended to the north/north-east areas or to the eastern extent of the site, close to Poyle Road.

6.5 As such it is currently concluded that it is possible that the archaeology may survive in the northern and eastern zones of the Data Centre. There is no potential where quarrying has removed the former ground surfaces to depth, but elsewhere a low potential for Palaeolithic and Mesolithic archaeology is suggested, with a low to moderate potential for remains of late Bronze Age/early Iron Age, Roman or Medieval date within the site generally. The 'The Rural Settlement of Roman Britain' (Allen et al, 2018) online publication shows a postulated Roman road line originating at the Roman settlement of Staines and heading north-west to potentially cross the western area of the Data Centre site from south-east to north-west. However, this line, which would have been removed by the aforementioned quarrying, is nevertheless conjectural and is not on the Berkshire HER data provided for the study area. The location of Medieval Poyle Manor, just to the north of the site, is of particular interest. However, there is currently no reason to suppose that its manorial, buildings, known from archaeological work to have been located north of the Poyle Channel (at the same location as the former Post Medieval complex), extended south of the channel into the site. Archaeological remains potentially within the confined areas of survival within the Data Centre site, are most likely to be low/local significance.

6.6 At this stage, prior to further Site Investigation, there is geo-archaeological potential within the eastern area of the Data Centre due to the presence of Alluvium capping the terrace gravel and London Clay as mapped by the British Geological Survey. However, much of the alluvium within the site may also have been removed prior to gravel extraction beneath it. Such deposits, where surviving, are likely to be of low (Local) importance subject to date and presence/absence of organic deposits such as peat.

6.7 Archaeological survival at the site is likely to be fragmentary and will necessarily depend upon the impact of past post-depositional impacts as a result of quarrying. The proposed development may impact buried remains via its groundworks, foundations, services, attenuation and roads.

6.8 Due to the potential for the northern and eastern zones of the Data Centre site to contain archaeological remains, it is considered that archaeological evaluation of the northern and eastern zones of the Data Centre site is likely to be required. Discussions with the relevant Archaeological Officer at Berkshire Archaeology on behalf of the LPA of 16/09/24 have established that archaeological mitigation, including evaluation trenching and geo-archaeological assessment as a first stage, could be secured via a planning condition applied to the consent. It is recommended that such post determination archaeological evaluation is confined to the areas north and east of the mapped Made Ground within the Data Centre site only. Such evaluation will fix the extent of the modern quarrying and define the presence/absence, significance of below ground archaeology that may be impacted. This may lead to further measures to mitigate or offset effects to associated heritage significance. The above requirement may be modified in the event that project Ground Investigation is able to demonstrate that the northern and eastern areas of the site have also been quarried in the 20th century.

SOURCES CONSULTED

General

Berkshire Historic Environment Record

Surrey Historic Environment Record

Internet

Archaeological Data Service: http://archaeologydataservice.ac.uk

Aerial photography: http://www.britainfromabove.org.uk/

British Geological Survey: http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html

British History: http://www.british-history.ac.uk/

Domesday Book: https://opendomesday.org.uk

The Rural Settlement of Roman Britain: an online resource: Map Viewer (archaeologydataservice.ac.uk)

Historic England (National Heritage List): https://www.historicengland.org.uk/listing/the-list

Maidenhead Waterways: http://www.maidenheadwaterways.org/default.html

Past Scape: http://www.pastscape.org.uk

Portable Antiquities Database: https://finds.org.uk/database/

NPPG: http://planningguidance.planningportal.gov.uk

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Longley, D, 1976, '*The archaeological implications of gravel extraction in north-west Surrey'*, Res Vol Surrey Archaeol Soc 3.

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Wymer *The Lower Palaeolithic Occupation of Britain 2 volumes* 1999

Fugro 2019. HEATHROW EXPANSION PROJECT - STAGE 1 GROUND INVESTIGATION PACKAGE 15A

Cartographic

1754 Rocque Map of Middlesex

1768 Jefferys Map

1811 Ordnance Survey Drawing

1841 Stanwell Parish Tithe Map

1869 Map of Poyle Park Estate

1869 1:10,560 scale Ordnance Survey Map

1894-1897 1:10,560 scale Ordnance Survey Map

1910 to 1913 1:10,560 scale Ordnance Survey Map

1923 1:10,560 scale Ordnance Survey Map

1960 1:10,560 scale Ordnance Survey Map

1960-65 1:10,560 scale Ordnance Survey Map

1973 to 1974 1:10,000 scale Ordnance Survey Map

1984 to 1987 1:10,000 scale Ordnance Survey Map

2017 Google Earth aerial image

2019 Google Earth aerial image

2023 Google Earth aerial image

APPENDICES

Appendix A

HER Gazetteer

HER Gazetteer

Berkshire HER

HER Data

PrefRef	Name	MonType	Period
00011.00.000	Neolithic axe - near Horton, Berkshire	FINDSPOT	Neolithic
00012.00.000	Findspot in Coppermill Road, Horton, Berkshire	FINDSPOT	Early Neolithic to Late Neolithic
00026.00.000	Cropmark features at Horton, Berkshire	SITE	Prehistoric
00026.01.000	Cropmark enclosure at Horton, Berkshire	ENCLOSURE	Prehistoric
00026.02.000	Cropmark enclosure at Horton, Berkshire	ENCLOSURE	Prehistoric
00026.04.000	A cropmark ditch at Horton, Berkshire	DITCH	Prehistoric
00026.05.000	Cropmark ring ditch at Horton, Berkshire	RING DITCH	Early Bronze Age
04107.01.000	Late Iron Age-Roman features at Berkyn Manor Farm (North), Horton, Berkshire	YARD; DITCH; HOLLOW; GULLY; PIT	Late Iron Age to Roman
04107.01.100	Late Iron Age/Roman features at Berkyn Manor Farm (North), Horton, Berkshire	PIT; POST HOLE; GULLY	Late Iron Age to Roman
04107.01.200	Late Iron Age/Roman features at Berkyn Manor Farm (North), Horton, Berkshire	POST HOLE	Late Iron Age to Roman
04107.01.300	Late Iron Age/Roman gullies at Berkyn Manor Farm (North), Horton, Berkshire	GULLY	Late Iron Age to Roman
04107.01.400	Late Iron Age/ Roman ditches at Berkyn Manor Farm (North), Horton, Berkshire	DITCH	Late Iron Age to Roman
04107.01.401	Late Iron Age/Roman wooden stakes at Berkyn Manor Farm (North), Horton, Berkshire	STAKE HOLE	Late Iron Age to Roman
04107.02.000	Late Iron Age - Roman ditches at Berkyn Manor Farm (South), Horton, Berkshire	DITCH	Late Iron Age to Roman
04107.02.100	Late Iron Age to Roman gullies at Berkyn Manor (South), Horton, Berkshire	GULLY	Late Iron Age to Roman
04107.02.200	Late Iron Age/ Roman posthole at Berkyn Manor Farm (South), Horton, Berkshire	POST HOLE	Late Iron Age to Roman
04107.03.000	Undated features at Berkyn Manor Farm, Horton, Berkshire	DITCH; GULLY; PIT; POST HOLE	Unknown
04107.03.100	Undated inhumation at Berkyn Manor Farm, Horton, Berkshire	INHUMATION	Unknown
04107.03.200	Tile-built structure - Berkyn Manor Farm, Horton, Berkshire	STRUCTURE	Unknown
04107.04.000	Ditch at Berkyn Manor Farm, Horton, Berkshire	DITCH	Unknown
04107.04.100	Ditch at Berkyn Manor, Horton, Berkshire	DITCH	Unknown
04107.04.200	Ditch and Bronze Age pottery at Berkyn Manor Farm, Horton, Berkshire	DITCH; FINDSPOT	Middle Bronze Age to Late Bronze Age
04107.04.300	Ditches at Berkyn Manor Farm, Horton, Berkshire	DITCH	Unknown
06035.00.000	Corporation of London Tax Posts, Slough, Berkshire	DUTY POST	Post Medieval
06035.01.000	Corporation of London Tax Post - Poyle Manor, Slough, Berkshire	DUTY POST	Post Medieval
06035.05.000	Corporation of London Tax Post at Colnbrook Bridge, Slough, Berkshire	DUTY POST	Post Medieval
06035.06.000	A Corporation of London Tax Post - Horton Road, Slough, Berkshire	DUTY POST	Post Medieval
06036.00.000	Poyle Manor, Poyle, Slough, Berkshire	MOAT?; MANOR HOUSE; GARDEN FEATURE?	Medieval to Post Medieval
06037.00.000	Cropmark ditches at Poyle, Slough, Berkshire	LINEAR FEATURE	Unknown
06038.00.000	Cropmark enclosure - Poyle, Slough, Berkshire	ENCLOSURE	Unknown
MRM15853	Possible Bronze Age enclosure at Poyle Western Extension, Poyle, Berkshire	ENCLOSURE?; DITCH	Middle Bronze Age to Late Bronze Age
MRM15854	Cropmark of possible ring ditch and central feature at Poyle Western Extension, Poyle, Berkshire	RING DITCH; DITCH; PIT	Unknown
MRM15858	A possible ring ditch and other features at Poyle Western Extension, Poyle, Berkshire	RING DITCH; DITCH	Bronze Age

MRM15859	A well and ditches at Poyle Western Extension, Poyle, Berkshire	WELL; DITCH	Late Bronze Age to Early Iron Age
MRM15860	A Bronze Age ditch and pit at Poyle Western Extension, Poyle, Berkshire	DITCH; PIT	Middle Bronze Age to Late Bronze Age
MRM15861	Three ditches and a Bronze Age pit at Poyle Western Extension, Poyle, Berkshire	PIT	Middle Bronze Age to Late Bronze Age
MRM15862	Early Bronze Age pit at Poyle Western Extension, Poyle, Berkshire	PIT	Early Bronze Age
MRM15863	Late Iron Age ditch at Poyle Western Extension, Poyle, Berkshire	DITCH	Late Iron Age
MRM15864	Ditches at Poyle Western Extension, Poyle, Berkshire	DITCH; DITCH	Middle Bronze Age to Late Bronze Age
MRM15865	A ditch and a pit at Poyle Western Extension, Poyle, Berkshire	BOUNDARY DITCH; PIT	Unknown
MRM15866	Two undated postholes at Poyle Western Extension, Poyle, Berkshire	POST HOLE	Unknown
MRM15867	Two shallow ditches and pit at Poyle Western Extension, Poyle, Berkshire	DITCH; PIT	Unknown
MRM15868	Updated features at Poyle Western Extension, Poyle, Berkshire	BEAM SLOT; DITCH; POST HOLE	Unknown
MRM15869	Field system or field boundaries at Poyle Western Extension, Poyle, Berkshire	FIELD SYSTEM	Unknown
MRM15870	A ditch and a post hole at Poyle Western Extension, Poyle, Berkshire	DITCH; POST HOLE	Unknown
MRM15871	A post hole at Poyle Western Extension, Poyle, Berkshire	POST HOLE	Unknown
MRM15872	A post hole at Poyle Western Extension, Poyle, Berkshire	POST HOLE	Unknown
MRM15873	Three ditches at Poyle Western Extension, Poyle, Berkshire	DITCH	Unknown
MRM15874	Middle Bronze Age features at Berkyn Manor Farm (Poyle Southern Extension), Berkshire	FIELD SYSTEM; DITCH; PIT	Middle Bronze Age
MRM16019	Roman findspot - Berkyn Manor Farm (Poyle Southern Extension), Horton, Berkshire	FINDSPOT	Roman
MRM16020	Possible Palaeolithic finds-Berkyn Manor Farm (Poyle Southern Extension), Horton, Berkshire	FINDSPOT	Upper Palaeolithic
MRM16374	Colnbrook/Colnbrook with Poyle, Slough, Berkshire	INN; SETTLEMENT	Medieval to 21st Century
MRM16537	Colnbrook Bridge and Boundary Marker, Park Street, Colnbrook, Slough, Berkshire	BRIDGE; BOUNDARY MARKER	Post Medieval
MRM17582	Palaeochannel - Poyle Site 14, Industrial Estate, Slough Berkshire	PALAEOCHANNEL	Unknown
MRM17583	Two later post-medieval ditches - Poyle Site 14, Industrial Estate, Slough Berkshire	BOUNDARY DITCH; DRAINAGE DITCH?	Post Medieval
MRM17645	Site of Congregational chapel at Poyle, Slough, Berkshire	CONGREGATIONAL CHAPEL	Post Medieval
MRM18273	McKay Trading Estate, Blackthorne Road, Poyle, Slough	INDUSTRIAL ESTATE; WAREHOUSE	Late 20th Century
MRM18296	Post-medieval ditches at Mathisen Way, Poyle, Slough	DITCH	Post Medieval
MRM18296	Post-medieval ditches at Mathisen Way, Poyle, Slough	DITCH	Post Medieval
MRM18490	Ring ditch crop mark – site at Summerleaze Quarry, Horton, Berkshire	RING DITCH	Unknown
MRM18538	Site of former late 18th century Windsor House, Poyle Road, Colnbrook, Slough, Berkshire	BUILDING	Post Medieval
SL15463	Late Iron Age-Romano British settlement at Berkyn Manor Farm, Horton, Berkshire	PIT; POST HOLE; SETTLEMENT; DITCH	Late Iron Age to Roman
SL15465	Poyle Manor/ Poyle House, Poyle, Slough, Berkshire	BUILDING; DITCH	Medieval to Post Medieval

HER Events

EvUID	Name	RecordType	DispDate
ERM1337	Poyle House, Slough, Berkshire	EVT	2009-2011

ERM1483	Poyle Place, Horton Road, Colnbrook, Berkshire	NVP	2012
ERM1662	Poyle Site 14, Slough, Berkshire	EVT	2015
ERM1712	Englefield and Averley, Bath Road, Poyle, Berkshire	NVP	2007
ERM1756	Poyle Park Manor, Colnbrook, Berkshire	EVP	2015
ERM1808	Freestone Yard, Colnbrook, Slough	EVP	2015
ERM1830	Old Bath Road, Colnbrook, Berkshire	NVP	2015
ERM2125	Land at Mathisen Way, Poyle, Berkshire. Archaeology Assessment	EVP	2017
ERM2126	Land at Mathisen Way, Poyle, Berkshire	EVT	2018
ERM2331	Unit 3 Blackthorne Road Slough SL3 0DA - Archaeological Desk Based Assessment	EVP	2019
ERM2473	Land at Horton Road, Poyle, Slough, Berkshire	EVP	2020
ERM2620	Land at Colndale Road, Poyle, Slough	EVP	2021
ERM2709	Land off Bath Road, Poyle, Slough, Berkshire - Desk-based Assessment	EVP	2022
ERM372	Colnbrook Flood Alleviation Scheme	EVP	2004
ERM415	Lower Colne Brook Regrading Scheme. Horton Mill to Poyle Bridge	NVP	1991
ERM416	Pippin's School, Colnbrook, Berkshire	NVP	1997
ERM431	Proposed Extension to Poyle Sand and Gravel Pit, Poyle, Berkshire (Poyle Western Extension)	EVP	2003/2004
ERM432	Poyle Sand and Gravel Pit, Poyle, Berkshire	EVT	2004
ERM433	Berkyn Manor Farm (Poyle Southern Extension), Horton, Berkshire	EVT	2003
ERM596	Cottesbrook House, Bath Road, Colnbrook, Berkshire	NVP	2006
ERM599	Horton Road, Poyle, Slough, Berkshire	NVP	2006
ERM658	35 Coppermill Road, Wraysbury, Berkshire	NVP	2006
ERM719	White Hart House, Park Street, Colnbrook, Berkshire	NVP	2007
ERM790	Colne Valley Park Historic Landscape Characterisation Project	EVP	2006-2007
ERW108	Berkyn Manor Farm, Horton, Berkshire	EVT	1985
ERW109	Berkyn Manor Farm, Horton, Berkshire	EVT	1995
ERW162	Berkyn Manor Farm, Horton	EVT	1990
ESL10	Poyle House, Poyle, Slough	EVT	1999
ESL33	Albany Park, Colnbrook, Slough, Berkshire	EVS	2001
ESL9	Land to rear of Aberdeen House, Bridge Street, Colnbrook	NVP	2000

Surrey HER

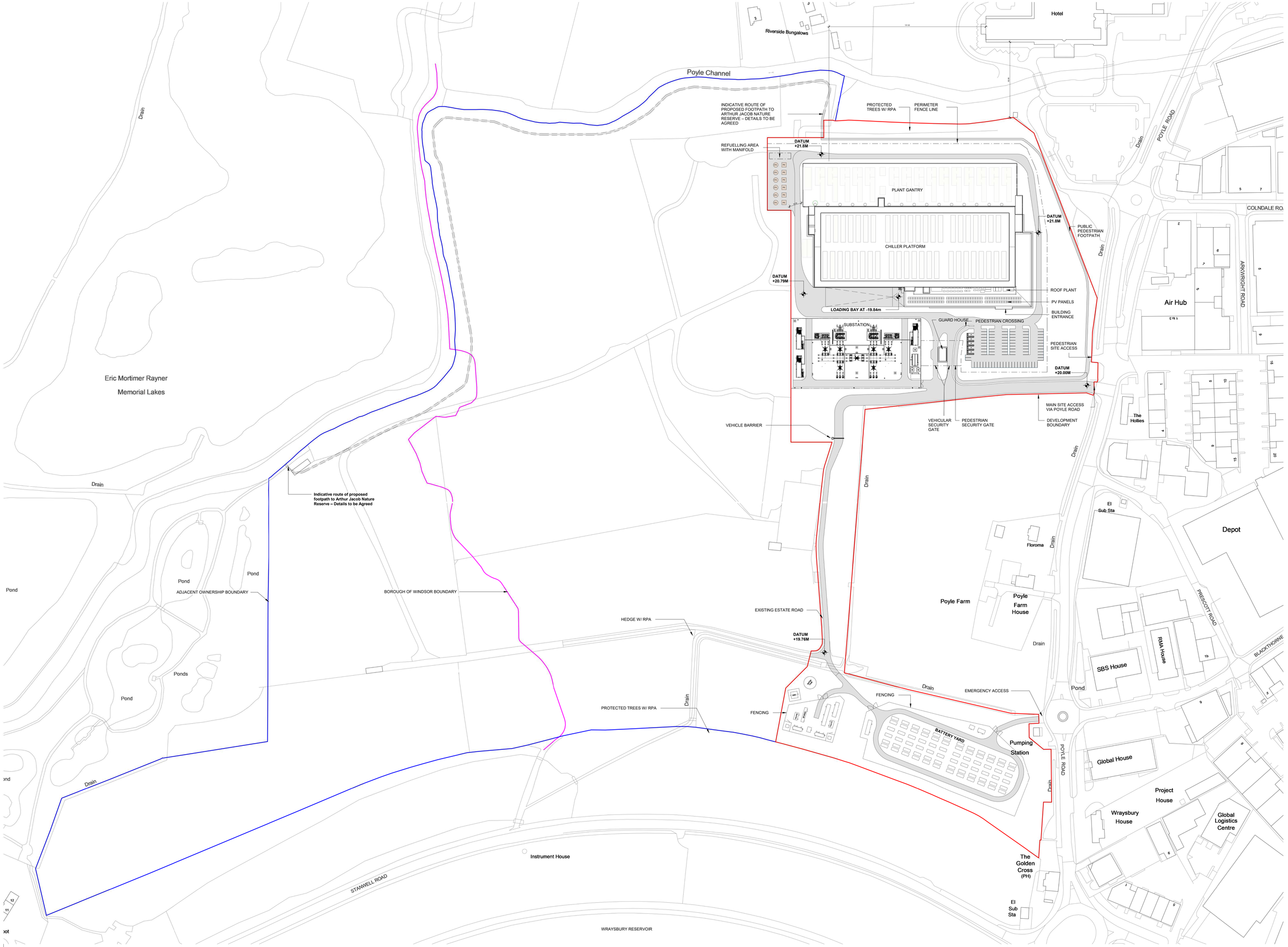
HER Data

PrefRef	Name	MonType
634	Double ditched rectangular enclosure cropmarks, Stanwell	ENCLOSURE; DITCH; RECTANGULAR ENCLOSURE; DOUBLE DITCHED ENCLOSURE
635	Sub-rectangular enclosure and ring ditch cropmarks, Stanwell	RING DITCH; ENCLOSURE; RECTANGULAR ENCLOSURE
636	Rectangular enclosure and ditch cropmarks, Stanwell	ENCLOSURE; DITCH; RECTANGULAR ENCLOSURE
637	Boundary ditch and bank cropmarks, Stanwell	BOUNDARY; BANK (EARTHWORK); BOUNDARY BANK
638	Linear ditch cropmarks, Stanwell	DITCH; LINEAR FEATURE
639	Linear ditch and ring ditch cropmarks, Stanwell	RING DITCH; DITCH; LINEAR FEATURE
640	Sub-rectangular enclosure cropmarks, Stanwell	ENCLOSURE; RECTANGULAR ENCLOSURE
641	Intersecting linear ditch cropmarks, Stanwell	DITCH; LINEAR FEATURE
644	Homestead moat, Poyle Manor	MOAT; MANOR HOUSE; MOAT
3860	Corporation Of London Tax Post, Colne Brook, Poyle	COAL DUTY BOUNDARY MARKER
3872	Corporation of London Tax Post, Bath Road, Colnbrook	COAL DUTY BOUNDARY MARKER

3890	Corporation of London Tax Post, Horton Road, Stanwell	COAL DUTY BOUNDARY MARKER
15385	Staines to West Drayton Railway line (disused)	RAILWAY; RAILWAY EMBANKMENT; GOODS STATION
19786	Colnbrook Railway Station (Demolished) and Goods Yard, Colnbrook	RAILWAY STATION; SIGNAL BOX; STATION MASTERS HOUSE; WAITING ROOM; RAILWAY PLATFORM; LEVEL CROSSING; GOODS YARD; RAILWAY STATION
21875	Poyle Place, Horton Road, Poyle	FARM
21876	Rosary Farm, Bath Road, Poyle	FARM
21877	Manor Farm, Poyle Road, Poyle	FARM
MSE23251	Former Poyle Halt, near Lintell's Bridge, Slough	RAILWAY; RAILWAY STATION
MSE23252	Former Poyle Estate Halt, Slough	RAILWAY STATION; RAILWAY

Appendix B

Site Layout Plan (Development Proposals)



1 PROPOSED SITE PLAN
1 : 1000

CORGAN
185 Park St, Triptych Bankside London, SE1 9SH, United Kingdom
www.corgan.com

N

NOTES:

Do not scale for construction. Figured dimensions only to be taken from this drawing. Check dimensions on site and report discrepencies back to the Architect.
All areas have been measured from current drawings. They may vary because of (e.g) survey, Construction tolerances, Statutory requirements or re-definition of the area to be measured.

This drawing has been prepared in accordance with the scope Corgan's appointment to it's Client and subject to the T&Cs of that appointment. Corgan accepts no responsibility for the use of this document for any other purpose.

This drawing is to be read in conjuction with all relevant drawings and specifictions from other disciplines. Please refer to Civil, Landscape and M&E drawing where referenced.

LEGEND

- DEVELOPMENT BOUNDARY 20.16 Acre
- ADJACENT OWNERSHIP BOUNDARY 54.51 Acre

TOTAL BOUNDARY AREA
74.67 Acre

PARKING SCHEDULE

Comments	COUNT
Standard Bay	81
WCA Bay	5
	86

Rev	Revision Description	Date	Author/ Reviewed
P07	Issue for Planning	24.11.19	YC
P06	ALIMS path updated	24.11.13	YC
P05	Updated path location	24.11.07	YC
P04	38535 boundary updated	24.11.05	YC
P03	Draft Planning Issuance	24.11.04	YC
P02	Updated Areas - issue for Pre-application	24.08.12	YC
P01	Issue for Pre-application	24.08.02	YC

PLANNING

Client: AIPUT c/o Tritax Management LLP

Project: Manor Farm

Address: Poyle Road, Slough, SL3 0BL, England, U.K.

Title:
PROPOSED SITE PLAN

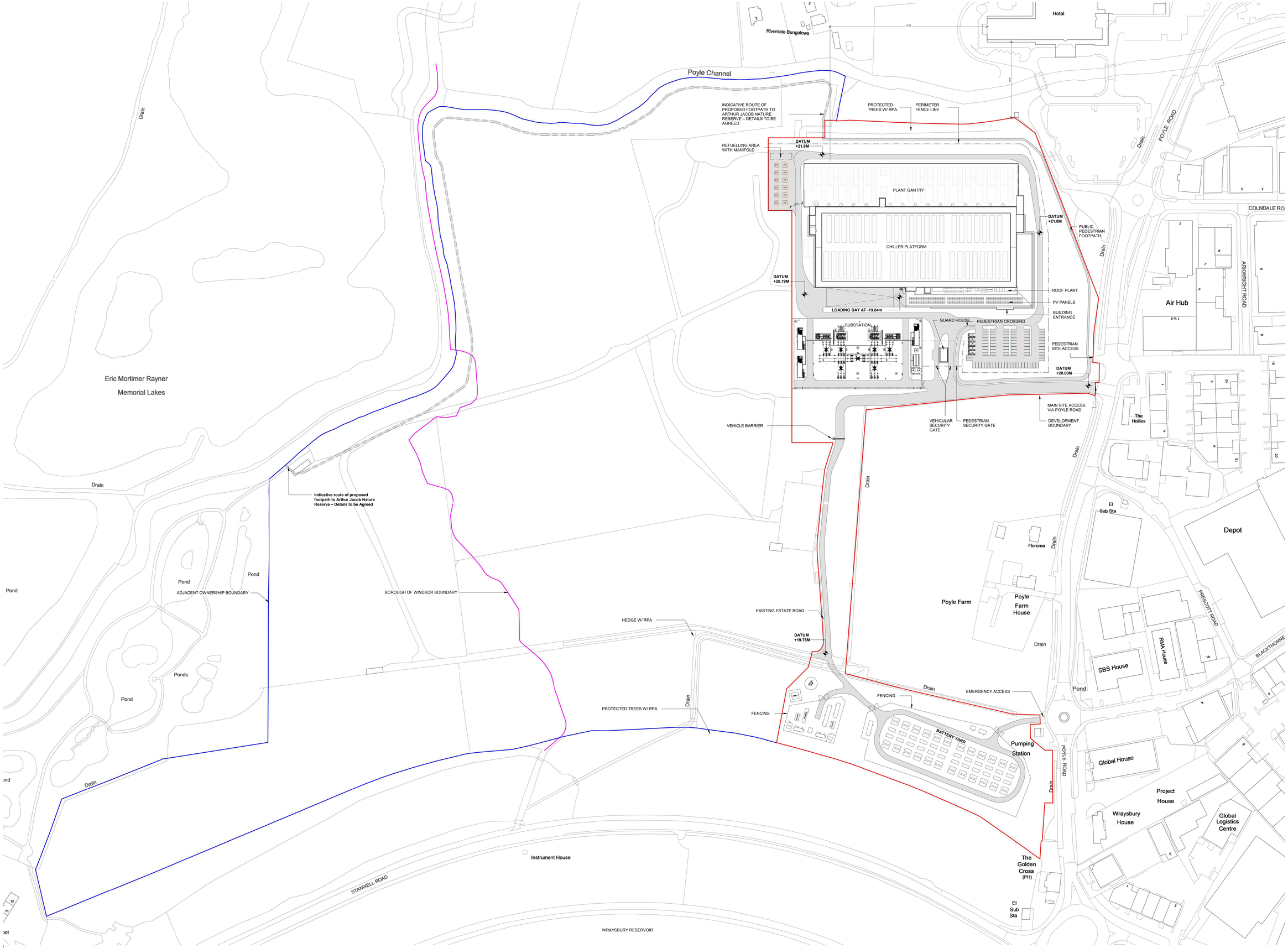
Scale	As indicated	**Size**	A0
Date	02.08.2024	**Drawn**	IB
Job Number	24303.0000	**Checked**	YC

CON - COR - ZZ - ZZ - D - A - 00104

Project	Originator	Functional Breakdown	Spatial Breakdown	Form	Discipline	Number

STATUS S3 **REVISION** P07

19/11/2024 17:07:48



1 PROPOSED SITE PLAN
1 : 1000

1:1000
0 10 50 100

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NOTES:

Do not scale for construction. Figured dimensions only to be taken from this drawing. Check dimensions on site and report discrepencies back to the Architect.
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LEGEND

- DEVELOPMENT BOUNDARY 20.16 Acre
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PARKING SCHEDULE

Comments	COUNT
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	86

Rev	Revision Description	Date	Author/ Reviewed
P07	Issue for Planning	24.11.19	YC
P06	ALIMS path updated	24.11.13	YC
P05	Updated path location	24.11.07	YC
P04	3653S boundary updated	24.11.05	YC
P03	Draft Planning Issuance	24.11.04	YC
P02	Updated Areas - issue for Pre-application	24.08.13	YC
P01	Issue for Pre-application	24.08.02	YC

PLANNING

Client: AIPUT c/o Tritax Management LLP

Project: Manor Farm

Address: Poyle Road, Slough, SL3 0BL, England, U.K.

Title:
PROPOSED SITE PLAN

Scale	As indicated	**Size**	A0
Date	02.08.2024	**Drawn**	IB
Job Number	24303.0000	**Checked**	YC

CON - COR - ZZ - ZZ - D - A - 00104

Project	Originator	Functional Breakdown	Spatial Breakdown	Form	Discipline	Number

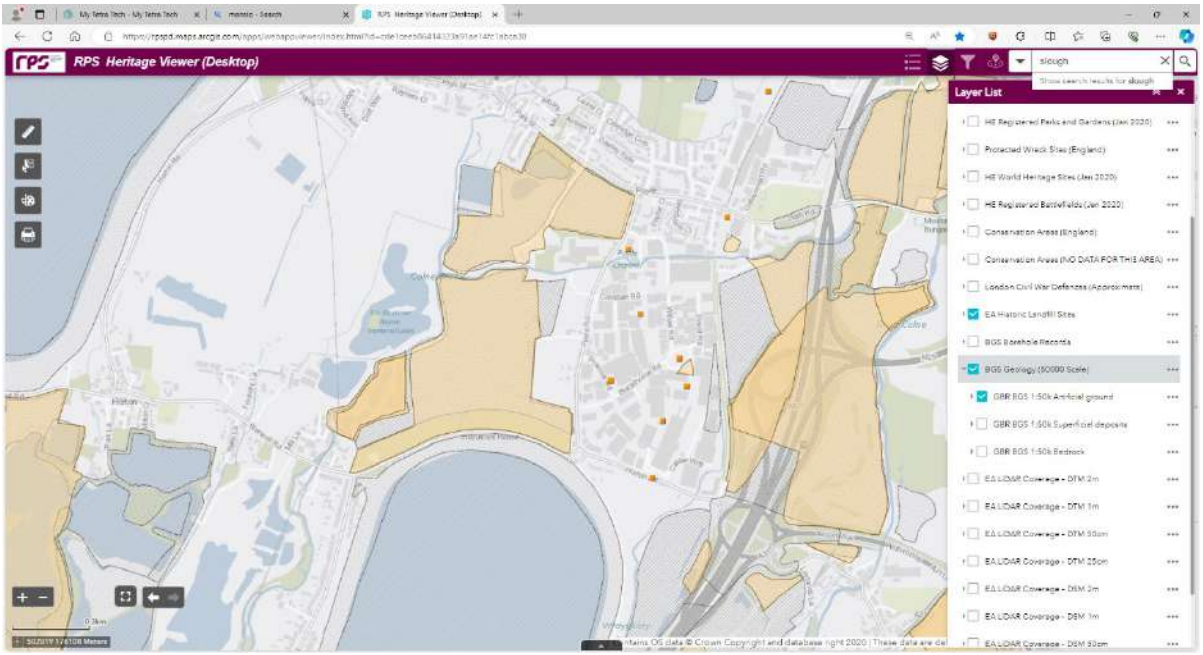
STATUS S3 **REVISION P07**

19/11/2024 17:07:48

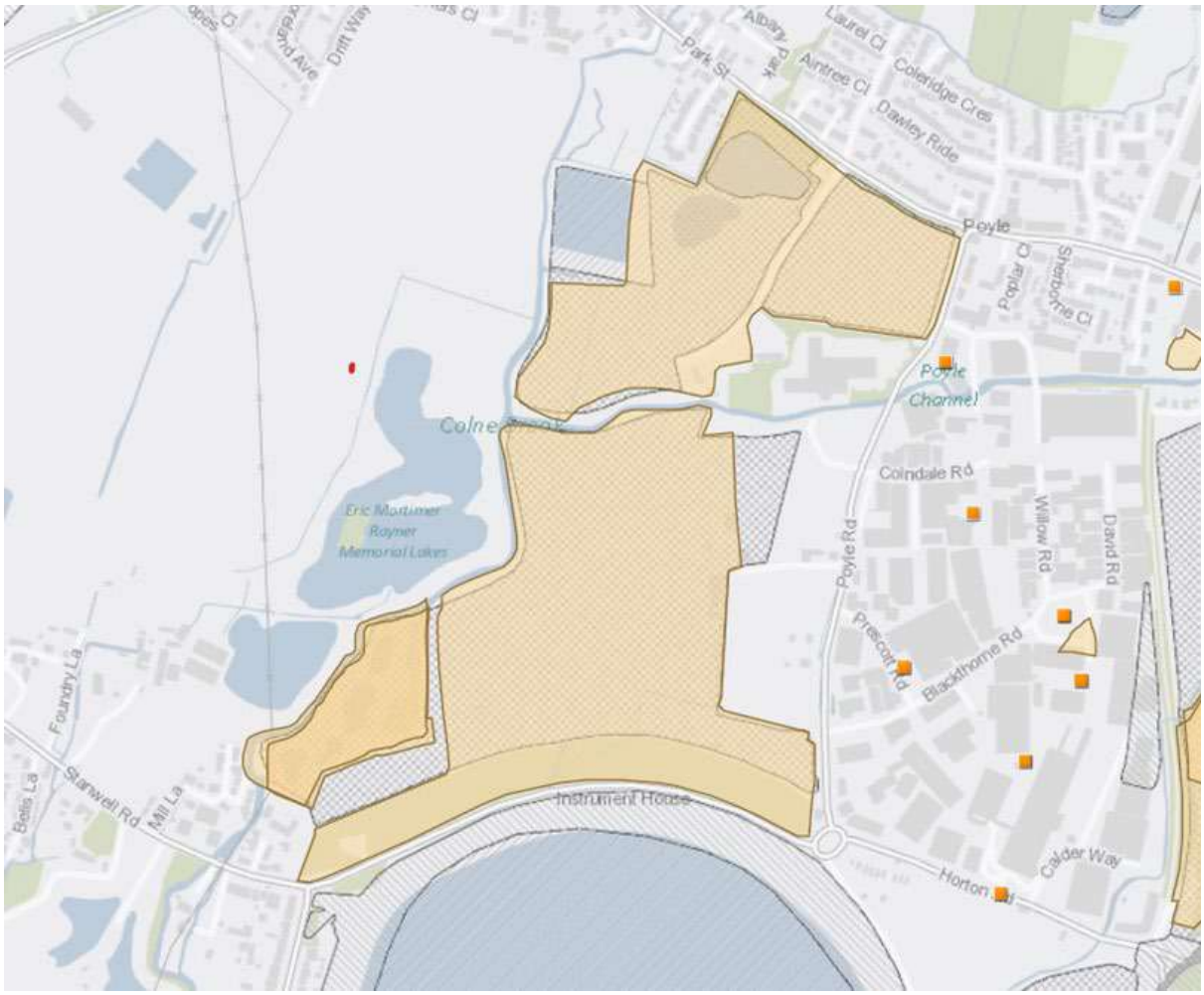
Appendix C

Historic Landfill Mapping and Fugro 2019 Ground Investigation Extract

Extent of Landfill as inferred by BGS and Environment Agency Mapping



Extent of Landfill as inferred by BGS and Environment Agency Mapping



Historic Landfill

groundsure.io

502659, 175966

Historic Landfill Landfill

SITE NAME
Poyle Manor South

SITE ADDRESS
Poyle Road, Poyle, Colnbrook, Slough

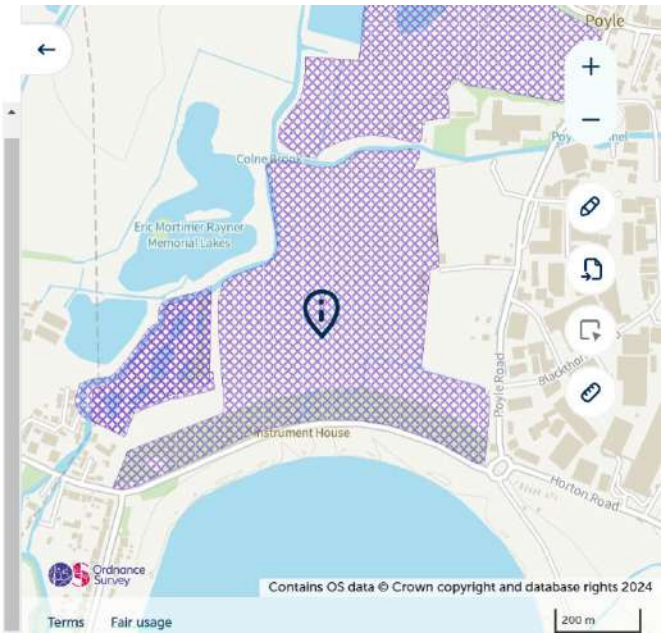
REFERENCE
SP/12, SLO23, 54/12/4/374

OPERATOR
Drinkwater and Murry Limited

LICENCE ISSUED
1974-12-31

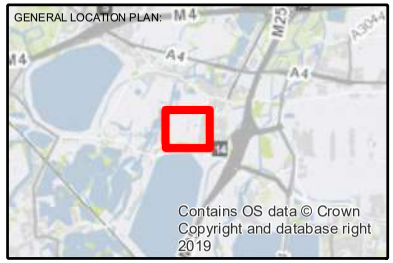
FIRST INPUT
1948-12-31

LAST INPUT
1983-12-31



Appendix D

Ground Investigation Extract (after Fugro 2019)



GENERAL LOCATION PLAN SCALE:

0 0.5 1 2 3 4 Kilometres

PLAN SCALE:

0 0.0125 0.025 0.05 0.075 0.1 Kilometres

Legend

- Cable Percussion Boreholes
- Inspection Pits
- Trial Pits

Notes:
1. Inset map provided by ESRI UK
2. Sheet size: A3
3. Coordinate system: British National Grid

CLIENT: HEATHROW AIRPORT LIMITED

PROJECT: HEATHROW EXPANSION PROJECT - STAGE 1 GROUND INVESTIGATION PACKAGE 15A

TITLE: LOCATION PLAN OF EXPLORATORY POSITIONS

GIS BY: JJL	DATE: 23/07/2019
CHECKED BY: ASC	DATE: 12/11/2019
APPROVED BY: ASC	DATE: 12/11/2019
CONTRACT NO.: G190012U	FIGURE NO.: B.2.1

Fugro GeoServices Ltd
Fugro House, Hithercroft Road, Wallingford, Oxfordshire, OX10 9RB, United Kingdom
Registered in England No. 1284352 | VAT No. GB 133 1704 09
www.fugro.com

C. SCHEDULES

C.1 SCHEDULE OF EXPLORATORY POSITIONS

C.2 SCHEDULE OF VARIATION TO ORIGINAL SCOPE OF WORKS

C.3 SCHEDULE OF STRATA ENCOUNTERED

SCHEDULE OF EXPLORATORY POSITIONS

Position ID	Method of Investigation	National Grid Coordinates (OSGB36)		Ground Elevation	Base Depth	Field/ In Situ Testing					Laboratory Testing		Installation Details/ Backfill	Paired Position ID	Remarks
		Eastings	Northings			Headspace Photo Ionisation Detector Testing	Standard Penetration Testing	Permeability Testing	Hand Penetrometer/ Hand Vane Testing	CPTU Dissipation Testing	Geoenvironmental Testing	Geotechnical Testing			
		(m)	(m)	(m OD)	(m bgl)										
HEP-BH-2484	CP	502986.12	175792.70	19.99	3.70	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 3.70 m [19.99] {19.87}	HEP-BH-2527	
HEP-BH-2486	CP	502807.26	175974.51	20.48	1.80	None	None	None	None	None	None	None	50 mm GMP; 0.50 to 1.80 m [20.48] {20.35}	HEP-BH-2524	
HEP-BH-2488	CP	502919.15	175854.27	20.49	3.00	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 3.00 m [20.49] {20.39}	HEP-BH-2526	
HEP-BH-2489	CP	502860.63	176031.47	20.42	1.90	None	None	None	None	None	None	None	50 mm GMP; 0.50 to 1.70 m [20.42] {20.21}	HEP-BH-2523	
HEP-BH-2490	CP	502769.97	175880.57	19.73	3.00	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 3.00 m [19.73] {19.52}	HEP-BH-2525	
HEP-BH-2492	CP	502849.25	176189.96	20.75	3.00	None	None	None	None	None	None	None	50 mm GMP; 0.80 to 3.00 m [20.75] {20.58}	HEP-BH-2519	
HEP-BH-2495	CP	502792.41	176236.53	22.35	3.00	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 3.00 m [22.35] {22.24}	HEP-BH-2517	
HEP-BH-2496	CP	502785.28	176382.28	21.32	2.50	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 2.50 m [21.56] {21.28}	HEP-BH-2513	
HEP-BH-2497	CP	502805.80	176145.73	21.27	2.00	1	None	None	None	None	Yes	None	50 mm GMP; 0.90 to 2.00 m [21.56] {21.22}	HEP-BH-2522	
HEP-BH-2498	CP	502818.08	176343.89	21.90	2.30	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 2.30 m [21.90] {21.80}	HEP-BH-2514	
HEP-BH-2499	CP	502893.75	176246.97	20.73	1.40	None	None	None	None	None	None	None	50 mm GMP; 0.50 to 1.20 m [21.15] {20.74}	HEP-BH-2518	
HEP-BH-2500	CP	503007.71	176190.23	20.23	1.50	None	None	None	None	None	None	None	50 mm GMP; 1.00 to 1.50 m [20.64] {20.24}	HEP-BH-2521	
HEP-BH-2501	CP	503022.55	176305.13	20.58	2.10	None	None	None	None	None	None	None	50 mm GMP; 0.70 to 1.80 m [20.93] {20.58}	HEP-BH-2516	
HEP-BH-2506	IP	502944.92	176180.46	20.43	1.20	None	None	None	None	None	None	None	50 mm GMP; 0.90 to 1.20 m [20.43] {20.34}	HEP-BH-2520	
HEP-BH-2507	CP	502964.69	176310.72	20.76	2.10	None	None	None	None	None	None	None	50 mm GMP; 0.90 to 2.10 m [20.76] {20.62}	HEP-BH-2515	
HEP-BH-2513	CP	502785.79	176381.34	21.33	8.00	8	1	None	None	None	Yes	Yes	50 mm SP; 1.00 to 4.80 m [21.61] {21.35}	HEP-BH-2496	
HEP-BH-2514	CP	502818.13	176342.85	21.89	17.00	11	3	None	None	None	Yes	Yes	50 mm SP; 1.00 to 4.70 m [21.89] {21.74}	HEP-BH-2498	
HEP-BH-2515	CP	502963.41	176310.96	20.73	26.00	15	7	None	None	None	Yes	Yes	50 mm SP; 1.90 to 4.80 m [20.73] {20.63}	HEP-BH-2507	
HEP-BH-2516	CP	503022.56	176305.81	20.55	16.50	11	4	2	None	None	Yes	Yes	50 mm SP; 4.10 to 6.20 m [20.95] {20.56}	HEP-BH-2501	
HEP-BH-2517	CP	502792.04	176237.67	22.38	9.60	10	1	None	None	None	Yes	Yes	50 mm SP; 1.00 to 6.40 m [22.38] {22.22}	HEP-BH-2495	
HEP-BH-2518	CP	502893.59	176247.83	20.76	15.90	14	7	None	None	None	Yes	Yes	50 mm SP; 0.70 to 3.00 m [21.17] {20.76}	HEP-BH-2499	
HEP-BH-2519	CP	502849.63	176190.51	20.74	8.40	12	4	None	None	None	Yes	Yes	50 mm SP; 3.40 to 4.60 m [20.74] {20.67}	HEP-BH-2492	
HEP-BH-2520	CP	502944.62	176179.51	20.41	16.20	13	7	None	None	None	Yes	Yes	50 mm SP; 1.20 to 5.20 m [20.41] {20.19}	HEP-BH-2506	
HEP-BH-2521	CP	503007.93	176190.97	20.23	8.00	10	4	2	None	None	Yes	Yes	50 mm SP; 1.50 to 5.90 m [20.64] {20.23}	HEP-BH-2500	
HEP-BH-2522	CP	502805.83	176144.67	21.16	16.00	12	6	None	None	None	Yes	Yes	50 mm SP; 1.00 to 4.90 m [21.50] {21.16}	HEP-BH-2497	
HEP-BH-2523	CP	502861.03	176031.03	20.39	16.00	12	7	None	None	None	Yes	Yes	50 mm SP; 2.50 to 5.50 m [20.39] {20.27}	HEP-BH-2489	
HEP-BH-2524	CP	502807.37	175973.95	20.44	8.50	12	3	None	None	None	Yes	Yes	50 mm SP; 1.00 to 6.00 m [20.44] {20.31}	HEP-BH-2486	
HEP-BH-2525	CP	502770.15	175880.00	19.71	16.90	14	6	None	None	None	Yes	Yes	50 mm SP; 1.00 to 4.50 m [19.71] {19.59}	HEP-BH-2490	
HEP-BH-2526	CP	502919.93	175853.84	20.47	7.00	7	1	None	None	None	Yes	Yes	50 mm SP; 1.00 to 3.70 m [20.47] {20.38}	HEP-BH-2488	
HEP-BH-2527	CP	502986.85	175791.86	20.00	15.00	10	3	None	None	None	Yes	Yes	50 mm SP; 1.00 to 3.70 m [20.00] {19.96}	HEP-BH-2484	
HEP-TP-2558	TP	502812.57	176172.06	21.51	3.80	5	None	None	None	None	Yes	Yes	Backfilled with arisings	-	Photographs prepared.

SCHEDULE OF EXPLORATORY POSITIONS

Position ID	Method of Investigation	National Grid Coordinates (OSGB36)		Ground Elevation	Base Depth	Field/ In Situ Testing					Laboratory Testing		Installation Details/ Backfill	Paired Position ID	Remarks
		Eastings	Northings			Headspace Photo Ionisation Detector Testing	Standard Penetration Testing	Permeability Testing	Hand Penetromer/ Hand Vane Testing	CPTU Dissipation Testing	Geoenvironmental Testing	Geotechnical Testing			
		(m)	(m)	(m OD)	(m bgl)										

GENERAL NOTES:

All exploratory positions initiated with a PAS128:2014 compliant survey

METHOD OF INVESTIGATION:

IP	Inspection pitting
CP	Cable percussion boring
TP	Trial pitting/trial trenching

SURVEY DETAILS:

mOD	metres Ordnance Datum (Newlyn)
m bgl	metres below ground level

FIELD/IN SITU TESTING:

CPTU	Cone penetration testing

INSTALLATIONS AND BACKFILL:

GMP	Gas monitoring point
SP	Standpipe
-	Diameter and type of installation; depth of response zone (m bgl) [Elevation at top of installation cover (m OD)] {Elevation at top of installation pipe (m OD)}
Bentonite	Bentonite pellets

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2492**
	Fugro Reference	G190012U			
	Coordinates (m)	E502849.25 N176189.96	Ground Elevation (m Datum)	20.75	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.10	D	1		0	MADE GROUND: greyish brown, sandy gravel with low cobble content. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of brick, clinker, coal and concrete. Cobble (<85x107x110 mm) is subangular of concrete. [MADE GROUND] [GRAVEL]	(0.70)				
0.70 - 0.80	D	2			Between 0.60 m and 0.70 m; slightly clayey.	0.70	20.05			
				1	MADE GROUND: (very soft and soft), dark grey, slightly sandy, gravelly, silty clay with low cobble content. With rare fragments of clinker (<5x15 mm) (<1%), wood debris (<30x52 mm) (<1%) and wire wool (<1x1 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of brick and concrete. Cobble (<85x102x110 mm) is subangular of brick. [MADE GROUND] [CLAY]	(0.90)				
1.60 - 1.70	D	3				1.60	19.15			
				2	MADE GROUND: (soft and firm), dark grey and brown, locally discoloured green, slightly sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is subangular and angular, fine to coarse of flint and brick. [MADE GROUND] [CLAY]	(1.40)				
2.60 - 2.70	D	4								
				3	End of Borehole at 3.00 m	3.00	17.75			G
				4						
				5						
				6						
				7						
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2492**
Fugro Reference	G190012U			
Coordinates (m)	E502849.25 N176189.96	Ground Elevation (m Datum)	20.75	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	12/06/2019	12/06/2019	Hand-dug			CT	OJ	
1.20	3.00	CP	12/06/2019	12/06/2019	Dando 3000			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
12/06/2019	10:00:00	0.00			
12/06/2019	11:00:00	1.20		Dry	
12/06/2019	13:00:00	3.00	3.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
3.00	250	3.00	250

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater was not encountered during excavation or boring.

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
GMP	1	0.80	3.00	12/06/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.17	1.00	50	Plain
Pipe1	1.00	3.00	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	12/06/2019
0.05	0.20	Concrete	12/06/2019
0.20	0.80	Bentonite	12/06/2019
0.80	3.00	Gravel Backfill	12/06/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 26/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2492**
	Fugro Reference	G190012U			
	Coordinates (m)	E502849.25 N176189.96	Ground Elevation (m Datum)	20.75	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2500**
Fugro Reference	G190012U			
Coordinates (m)	E503007.71 N176190.23	Ground Elevation (m Datum)	20.23	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	22/05/2019	22/05/2019	Hand-dug			CT	OJ	
1.20	1.50	CP	22/05/2019	22/05/2019	Dando 3000			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
22/05/2019	08:00:00	0.00			
22/05/2019	09:00:00	1.20		Dry	
22/05/2019	12:00:00	1.50	1.40	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
1.50	200	1.40	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater was not encountered during excavation or boring.

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
GMP	1	1.00	1.50	22/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	-0.01	1.00	50	Plain
Pipe1	1.00	1.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
-0.41	0.00	Upstanding Cover	22/05/2019
0.00	0.20	Concrete	22/05/2019
0.20	1.00	Bentonite	22/05/2019
1.00	1.50	Gravel Backfill	22/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 26/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2500**
	Fugro Reference	G190012U			
	Coordinates (m)	E503007.71 N176190.23	Ground Elevation (m Datum)	20.23	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results				In Situ Hand Penetrometer Results		Volatile Headspace Testing by Photoionisation Detector	
Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)	Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)	Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID	
Client	Heathrow Airport Limited			**HEP-BH-2501**	
Fugro Reference	G190012U				
Coordinates (m)	E503022.55 N176305.13	Ground Elevation (m Datum)	20.58	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.15 - 0.25	D	1		0	MADE GROUND: brown, slightly sandy, slightly gravelly silt. With some roots and rootlets (<1x3 mm). Sand is fine to coarse. Gravel is subangular and subrounded, fine and medium of flint and brick. [MADE GROUND] [SILT]	(0.15) 0.15 (0.35) 0.50	20.43 20.08			
0.50 - 0.60	D	2			MADE GROUND: brown, slightly sandy, slightly gravelly silt. With occasional rootlets (<1x3 mm). With occasional fragments of glass (<1x30x50 mm) (1%). With rare fragments of metal pipe (<18x120 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint and brick. [MADE GROUND] [SILT]	(0.40) 0.90	19.68			
0.90 - 1.00	D	3		1						
1.50 - 1.60	D	4			MADE GROUND: brown, slightly sandy, clayey gravel. With occasional fragments of glass (<2x30x60 mm) (1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. [MADE GROUND] [GRAVEL]	(1.20)				G
				2	MADE GROUND: (soft), brown, black and dark grey, slightly sandy, gravelly clay. With occasional fragments of glass (<2x30x60 mm) (2%). With rare fragments of metal pipe (<10x300 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. Slight organic odour. [MADE GROUND] [CLAY]	2.10	18.48		▼	
				3	End of Borehole at 2.10 m					
				4						
				5						
				6						
				7						
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2501**
Fugro Reference	G190012U			
Coordinates (m)	E503022.55 N176305.13	Ground Elevation (m Datum)	20.58	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	23/05/2019	23/05/2019	Hand-dug			JT	RS	
1.20	2.10	CP	23/05/2019	23/05/2019	Dando 3000			JT	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
23/05/2019	13:30:00	0.00			
23/05/2019	14:30:00	1.20		Dry	
23/05/2019	15:30:00	2.10	2.00		

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
2.10	200	2.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
2.10				

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not monitored.

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located. The borehole was terminated at 2.10 m due to groundwater ingress.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
GMP	1	0.70	1.80	23/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.00	0.80	50	Plain
Pipe1	0.80	1.80	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
-0.35	0.00	Upstanding Cover	23/05/2019
0.00	0.20	Concrete	23/05/2019
0.20	0.70	Bentonite	23/05/2019
0.70	1.80	Gravel Backfill	23/05/2019
1.80	2.10	Bentonite	23/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 26/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2501**
	Fugro Reference	G190012U			
	Coordinates (m)	E503022.55 N176305.13	Ground Elevation (m Datum)	20.58	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion		Location ID
	Client	Heathrow Airport Limited		**HEP-BH-2506**
	Fugro Reference	G190012U		
	Coordinates (m)	E502944.92 N176180.46	Ground Elevation (m Datum) 20.43	Sheet 1 of 1
	Hole Type	Inspection Pit		Status Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.10	D	1			MADE GROUND: dark brown, slightly silty, gravelly sand with low cobble content. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of mudstone, brick, concrete and slate. Cobbles (<80x80x110 mm) are subangular of brick. [MADE GROUND] [SAND] At 0.30 m; with frequent subangular fragments (<5x60 mm) of slag.	(0.55)				
0.55 - 0.65	D	2			MADE GROUND: dark grey, slightly gravelly, sandy, clayey silt. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of brick and concrete. Slight organic odour. [MADE GROUND] [SILT]	0.55	19.88			
1.00 - 1.10	D	3		1		(0.65)				
					End of Inspection Pit at 1.20 m	1.20	19.23			
				2						
				3						
				4						

Notes	Pit Stability	Plan
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'		0.40 m 0.40 m

Template: FGSL/HBSI/FGSL Trial Pit.hbt/Config Fugro Rev5/05/12/2019/TS-AW	Print Date	26/02/2020

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2506**
Fugro Reference	G190012U			
Coordinates (m)	E502944.92 N176180.46	Ground Elevation (m Datum)	20.43	Sheet 1 of 1
Hole Type	Inspection Pit			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	20/05/2019	20/05/2019	Hand-dug			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
20/05/2019	08:00:00	0.00			
20/05/2019	14:00:00	1.20		Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater was not encountered during excavation.

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
GMP	1	0.90	1.20	20/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.09	0.90	50	Plain
Pipe1	0.90	1.20	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	20/05/2019
0.05	0.20	Concrete	20/05/2019
0.20	0.90	Bentonite	20/05/2019
0.90	1.20	Gravel Backfill	20/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 26/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2506**
	Fugro Reference	G190012U			
	Coordinates (m)	E502944.92 N176180.46	Ground Elevation (m Datum)	20.43	Sheet 1 of 1
	Hole Type	Inspection Pit			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2507**
	Fugro Reference	G190012U			
	Coordinates (m)	E502964.69 N176310.72	Ground Elevation (m Datum)	20.76	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.15 - 0.25	D	1			MADE GROUND: brown, slightly silty, sandy gravel with low cobble content. With rare fragments of plastic (<30x40x70 mm) (<1%) and tile (<3x30x50 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. Cobbles (<100x100x120 mm) are subangular of concrete. [MADE GROUND] [GRAVEL]	(1.00)				
0.50 - 0.60	D	2								
0.90 - 1.00	D	3		1	MADE GROUND: dark grey, slightly silty, sandy gravel. With rare fragments of metal wire (<2x250 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. [MADE GROUND] [GRAVEL]	1.00 (0.50) 1.50	19.76 19.26			
1.50 - 1.60	D	4			MADE GROUND: (soft), dark grey, slightly gravelly, sandy clay. With rare fragments of plastic (<40x40x50 mm) (<1%), tile (<3x40x40 mm) (<1%), metal wire (<2x300 mm) (<1%) and wood debris (<10x10x40 mm) (D2) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. [MADE GROUND] [CLAY]	(0.60) 2.10	18.66			
2.00 - 2.10	D	5		2	End of Borehole at 2.10 m					
				3						
				4						
				5						
				6						
				7						
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2507**
Fugro Reference	G190012U			
Coordinates (m)	E502964.69 N176310.72	Ground Elevation (m Datum)	20.76	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	20/05/2019	20/05/2019	Hand-dug			JT	RS	
1.20	2.10	CP	20/05/2019	20/05/2019	Dando 3000			JT	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
20/05/2019	08:00:00	0.00			
20/05/2019	16:00:00	1.20		Dry	
20/05/2019	18:00:00	2.10	2.00	2.10	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
2.10	200	2.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
2.10				

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater strike at 2.10 m (slow seepage) not monitored. Subsequent groundwater level recorded on 15/08/2019 during gas monitoring event was 1.68m.

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located. The borehole was terminated at 2.10 m at the top of the saturation zone.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
GMP	1	0.90	2.10	20/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.14	1.00	50	Plain
Pipe1	1.00	2.10	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	20/05/2019
0.05	0.20	Concrete	20/05/2019
0.20	0.90	Bentonite	20/05/2019
0.90	2.10	Gravel Backfill	20/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 27/02/2020

	Contract Name	HAL Airport Expansion		Location ID
	Client	Heathrow Airport Limited		**HEP-BH-2507**
	Fugro Reference	G190012U		
	Coordinates (m)	E502964.69 N176310.72	Ground Elevation (m Datum) 20.76	Sheet 1 of 1
	Hole Type	Cable Percussion		Status Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2515**
	Fugro Reference	G190012U			
	Coordinates (m)	E502963.41 N176310.96	Ground Elevation (m Datum)	20.73	Sheet 1 of 3
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.15 - 0.25	D	3			MADE GROUND: brown, slightly silty, sandy gravel with low cobble content. With occasional fragments of metal wire (<3x300 mm) (2%). With rare fragments of metal (<1x5x250 mm) (<1%), plastic (<3x150x400 mm) (<1%), wood debris (<10x10x30 mm) (D1) (<1%) and tile (<3x50x70 mm) (<1%). Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of flint, brick and concrete. Cobbles (<100x150x150 mm) are angular and subangular of brick and concrete.					
0.15 - 0.25	ES	2								
0.15 - 0.30	B	1								
0.15	PID		< 0.1 ppm			(0.90)				
0.50 - 0.60	D	6								
0.50 - 0.60	ES	5								
0.50 - 0.70	B	4								
0.50	PID		< 0.1 ppm	1		0.90	19.83			
0.90 - 1.00	D	9			[MADE GROUND] [GRAVEL]	(0.40)				
0.90 - 1.00	ES	8			MADE GROUND: dark brown and dark grey, sandy gravel. With occasional fragments of plastic (<3x30x50 mm) (2%) and tile (<50x70x120 mm) (2%). Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of flint, brick and concrete.	1.30	19.43			
0.90 - 1.20	B	7								
0.90	PID		< 0.1 ppm							
1.30 - 1.40	D	12								
1.30 - 1.40	ES	11								
1.30 - 1.50	B	10			[MADE GROUND] [GRAVEL]	(1.20)				
1.30	PID		< 0.1 ppm	2	MADE GROUND: (soft), dark brown, rarely dark grey, slightly gravelly, sandy clay. With rare fragments of plastic (<20x20x30 mm) (<1%) and tile (<3x50x70 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. Slight organic odour.					
1.50 - 1.95	B	14								
1.50 - 1.95	D	13								
1.50 - 1.95	SPT		N = 14 (C)							
2.00 - 2.10	D	15								
2.00 - 2.10	ES	16								
2.00 - 2.40	B	17			[MADE GROUND] [CLAY]	2.50	18.23			
2.00	PID		< 0.1 ppm		MADE GROUND: (soft), dark grey, slightly gravelly, sandy clay (67%). With some fragments of plastic (<5x70x100 mm) (10%), metal wires and springs (<5x60x80 mm) (5%) and glass (<3x60x60 mm) (5%). With occasional fragments of wood debris (<30x30x50 mm) (D1) (2%). With rare fragments of tile (<3x50x50 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. With a slight organic odour. Slight hydrocarbon sheen on surface of groundwater.					
2.50 - 2.60	ES	20								
2.50 - 2.95	D	18		3		(0.90)				
2.50 - 3.00	B	19								
2.50 - 2.95	SPT		N = 7 (C)							
2.50	PID		< 0.1 ppm			3.40	17.33			
3.50 - 3.60	D	23								
3.50 - 3.60	ES	22								
3.50 - 4.00	B	21								
3.50	PID		< 0.1 ppm							
				4	[MADE GROUND] [WASTE, e.g. LANDFILL]	(1.30)				
					MADE GROUND: black, slightly clayey, sandy gravel (83%). With some fragments of glass (<3x60x60 mm) (10%) and plastic (<3x70x80 mm) (5%). With occasional fragments of metal (<30x30x50 mm) (2%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint and brick. Slight organic odour. Slight hydrocarbon sheen on surface of groundwater.					
4.50 - 4.60	D	26								
4.50 - 4.60	ES	25								
4.50 - 5.00	B	24				4.70	16.03			
4.50	PID		< 0.1 ppm							
				5	[MADE GROUND] [WASTE, e.g. LANDFILL]	(0.60)				
					At 3.80 m; with angular cobble (70x150x200 mm) of brick.	5.30	15.43			
					MADE GROUND: (soft), black and dark grey, slightly sandy, slightly gravelly clay (83%). With frequent fragments of glass (<3x70x100 mm) (15%). With occasional fragments of metal and metal wire (<5x60x80 mm) (2%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. Slight organic odour. Slight hydrocarbon sheen on surface of groundwater.	(0.30)				
5.60 - 5.70	D	29				5.60	15.13			
5.60 - 5.70	ES	28				(0.40)				
5.60 - 6.00	B	27								
5.60	PID		< 0.1 ppm	6		6.00	14.73			
					[MADE GROUND] [WASTE, e.g. LANDFILL]					
6.50 - 6.95	UT	30	50/400 mm		Grey, sandy GRAVEL. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]					
6.95 - 7.00	D	31		7	Firm, brown, mottled orange brown, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular and subrounded, fine and medium of flint. (Gravel possibly brought down during boring from above stratum). [LONDON CLAY FORMATION] [CLAY]					
					Firm, grey CLAY. Locally fissured. With occasional pockets (<20x30 mm) of dark grey and black, fine sand. Fissures are randomly orientated, closely spaced, planar and rough.					
7.90 - 8.00	D	34								
7.90 - 8.00	ES	33		8	[LONDON CLAY FORMATION] [CLAY]	(4.00)				
7.90 - 8.40	B	32			Between 7.90 m and 8.20 m; with subangular fragments (<10x35x40 mm) of grey claystone.					
7.90	PID		< 0.1 ppm							
8.50 - 8.95	B	36								
8.50 - 8.95	D	35								
8.50 - 8.95	SPT		N = 21 (S)							
				9						
10.00 - 10.45	UT	37	55/430 mm			10.00	10.73			

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion		Location ID	
	Client	Heathrow Airport Limited		**HEP-BH-2515**	
	Fugro Reference	G190012U			
	Coordinates (m)	E502963.41 N176310.96	Ground Elevation (m Datum) 20.73	Sheet 2 of 3	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.45 - 10.50	D	38			Stiff, fissured, grey CLAY. With occasional pockets (<20x30 mm) of dark grey and black, fine sand and partings (<1 mm) of light grey silt. Fissures are randomly orientated, very closely and closely spaced, planar, smooth and polished. [LONDON CLAY FORMATION] [CLAY]					
11.00 - 11.10	D	39		11		(2.00)				
12.00 - 12.10	ES	42		12		12.00	8.73			
12.00 - 12.45	B	41			Very stiff, fissured, grey CLAY. With occasional pockets (<30x40 mm) of dark grey and black, fine sand, occasional partings (<1 mm) of light grey silt, bioturbation burrows (<3x20 mm) infilled with grey silt, and pyrite nodules (<40x40 mm). With rare shell fragments (<30x40 mm). Fissures are randomly orientated, very closely and closely spaced, planar, smooth and polished. [LONDON CLAY FORMATION] [CLAY]					
12.00 - 12.45	D	40								
12.00 - 12.45	SPT		N = 26 (S)							
12.00	PID		< 0.1 ppm							
13.00 - 13.10	D	43		13						
14.00 - 14.45	UT	44	75/420 mm	14	Between 14.00 m and 14.45 m; very high strength.					
14.45 - 14.50	D	45								
15.00 - 15.10	ES	46		15		(6.00)				
15.00	PID		< 0.1 ppm							
16.00 - 16.45	D	47		16						
16.00 - 16.45	SPT		N = 35 (S)							
17.00 - 17.10	D	48		17						
18.00 - 18.45	UT	49	80/420 mm	18	Very stiff, fissured, grey, slightly sandy CLAY. With occasional partings (<1 mm) of light grey silt. With occasional shell fragments (<30x40 mm). With rare pockets (<30x70 mm) of dark grey and black, fine sand. With rare bioturbation burrows (<3x20 mm). Sand is mainly fine. Fissures are randomly orientated, very closely and closely spaced, planar, smooth and polished. [LONDON CLAY FORMATION] [CLAY]	18.00	2.73			
18.45 - 18.50	D	50								
18.50 - 18.60	ES	51								
18.50	PID		< 0.1 ppm							
19.00 - 19.10	D	52		19						
20.00 - 20.45	B	54								
20.00 - 20.45	D	53								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2515**
	Fugro Reference	G190012U			
	Coordinates (m)	E502963.41 N176310.96	Ground Elevation (m Datum)	20.73	Sheet 3 of 3
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
20.00 - 20.45	SPT		N = 41 (S)							
21.00 - 21.10	D	55		21						
21.50 - 21.60	ES	56								
21.50	PID		< 0.1 ppm							
22.00 - 22.45	UT	57	100/400 mm	22		(8.00)				
22.45 - 22.50	D	58								
23.00 - 23.10	D	59		23						
24.00 - 24.10	ES	61		24						
24.00 - 24.45	D	60								
24.00 - 24.41	SPT		50/260 mm (S)							
24.00	PID		< 0.1 ppm							
25.00 - 25.10	D	62		25						
25.00 - 25.50	B	63								
				26	End of Borehole at 26.00 m	26.00	-5.27			
				27						
				28						
				29						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2515**
Fugro Reference	G190012U			
Coordinates (m)	E502963.41 N176310.96	Ground Elevation (m Datum)	20.73	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	16/05/2019	16/05/2019	Hand-dug			JT	RS	
1.20	26.00	CP	16/05/2019	20/05/2019	Dando 3000			JT	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
16/05/2019	15:15:00	0.00			
16/05/2019	16:00:00	1.20		Dry	
16/05/2019	16:30:00	1.50	1.50	Dry	
17/05/2019	08:00:00	1.50	1.50	Dry	
17/05/2019	18:00:00	7.50	6.30	Dry	
20/05/2019	08:30:00	7.50	6.30	Dry	
20/05/2019	18:00:00	26.00	8.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
7.50	200	6.30	200
26.00	150	8.00	150

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
2.50	1.90	20	2.50	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	1.90	4.80	20/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.10	2.00	50	Plain
Pipe1	2.00	4.80	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	20/05/2019
0.05	0.20	Concrete	20/05/2019
0.20	1.90	Bentonite	20/05/2019
1.90	4.80	Gravel Backfill	20/05/2019
4.80	26.00	Grout	20/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2515**
	Fugro Reference	G190012U			
	Coordinates (m)	E502963.41 N176310.96	Ground Elevation (m Datum)	20.73	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.50	C	0	N=14 (1,1/3,3,4,4)	450	EQU052	72	1.50	Dry
2.50	C	0	N=7 (1,2/2,2,1,2)	450	EQU052	72	2.50	2.40
8.50	S	0	N=21 (7,4/4,4,6,7)	450	EQU052	72	8.00	Dry
12.00	S	0	N=26 (4,5/6,6,7,7)	450	EQU052	72	8.00	Dry
16.00	S	0	N=35 (6,6/7,8,10,10)	450	EQU052	72	8.00	Dry
20.00	S	0	N=41 (6,8/9,10,11,11)	450	EQU052	72	8.00	Dry
24.00	S	0	N=50 (8,10/50 for 260mm)	410	EQU052	72	8.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.15	< 0.1
0.50	< 0.1
0.90	< 0.1
1.30	< 0.1
2.00	< 0.1
2.50	< 0.1
3.50	< 0.1
4.50	< 0.1
5.60	< 0.1
7.90	< 0.1
12.00	< 0.1
15.00	< 0.1
18.50	< 0.1
21.50	< 0.1
24.00	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2516**
	Fugro Reference	G190012U			
	Coordinates (m)	E503022.56 N176305.81	Ground Elevation (m Datum)	20.55	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.15 - 0.25	D	3			MADE GROUND: brown, slightly sandy, slightly gravelly silt. With some roots and rootlets (<1x10 mm). Sand is fine and medium. Gravel is subangular and subrounded, fine and medium of flint and brick. [MADE GROUND] [SILT]	(0.15) 0.15 (0.30) 0.45	20.40 20.10			
0.15 - 0.25	ES	2								
0.15 - 0.30	B	1								
0.15	PID		< 0.1 ppm							
0.50 - 0.60	D	6								
0.50 - 0.60	ES	5								
0.50 - 0.70	B	4			MADE GROUND: brown, slightly sandy, slightly gravelly silt. With rare roots and rootlets (<1x5 mm). Sand is fine to coarse. Gravel is subangular and subrounded, fine and medium of flint, brick and concrete. [MADE GROUND] [SILT]	(0.45) 0.90	19.65			
0.50	PID		< 0.1 ppm	1						
0.90 - 1.00	D	9								
0.90 - 1.00	ES	8								
0.90 - 1.20	B	7								
0.90	PID		< 0.1 ppm		MADE GROUND: dark brown, slightly sandy, clayey gravel. With rare fragments of metal wire (<3x200 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. Slight organic odour. [MADE GROUND] [GRAVEL]					
1.50 - 1.60	ES	12								
1.50 - 1.95	D	10								
1.50 - 2.00	B	11								
1.50	PID		< 0.1 ppm	2		(2.10)				
					MADE GROUND: (soft), black, brown and grey, slightly sandy, gravelly clay. With occasional fragments of metal (<2x30x60 mm) (2%). With rare fragments of black fabric (<5x50x200 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint, brick and concrete. Slight organic odour. [MADE GROUND] [CLAY]					
2.50 - 2.60	D	15								
2.50 - 2.60	ES	14								
2.50 - 2.80	B	13								
2.50	PID		< 0.1 ppm		At 1.10 m; with rare fragments of black fabric (5x50x200 mm) (<1%).					
				3	Between 2.00 m and 2.20 m; grey and very sandy.	3.00	17.55			
					MADE GROUND: (firm), black, dark and light grey, slightly sandy, slightly gravelly clay. With occasional fragments of glass (<3x60x70 mm) (5%), metal bands and metal wire (<1x200x300 mm) (2%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint and brick. [MADE GROUND] [CLAY]	(1.10)				
3.50 - 3.60	D	18								
3.50 - 3.60	ES	17								
3.50 - 3.80	B	16								
3.50	PID		< 0.1 ppm	4						
4.10 - 4.20	D	21			Grey, sandy GRAVEL. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]	4.10	16.45			
4.10 - 4.20	ES	20								
4.10 - 4.40	B	19								
4.10	PID		< 0.1 ppm							
5.00 - 5.45	D	22		5	Between 5.00 m and 5.45 m; loose.	(2.10)				
5.00 - 5.50	B	23								
5.00 - 5.45	SPT		N = 8 (C)							
				6						
6.20 - 6.30	D	26			Firm and stiff, fissured, grey CLAY. With occasional pockets (<10x10 mm) of orange clay. With rare bioturbation burrows (<1x2 mm) and partings (<1 mm) of light grey silt. Fissures are randomly orientated, very closely and closely spaced, planar, smooth and polished. [LONDON CLAY FORMATION] [CLAY]	6.20	14.35			
6.20 - 6.30	ES	25								
6.20 - 6.50	B	24								
6.20	PID		< 0.1 ppm							
6.50 - 6.95	UT	27	50/375 mm							
6.95 - 7.00	D	28		7	Between 6.20 m and 6.80 m; fissures not discernable.					
7.50 - 7.60	D	29								
8.00 - 8.45	D	30		8						
8.00 - 8.45	SPT		N = 19 (S)							
8.50 - 8.60	ES	31			Between 8.50 m and 11.00 m; stiff.					
8.50	PID		< 0.1 ppm							
9.00 - 9.10	D	32		9	Between 9.00 m and 16.50 m; with occasional selenite crystals (<1 mm).	(5.30)				
9.50 - 9.95	UT	33	60/450 mm		Between 9.50 m and 9.95 m; high strength.					
9.95 - 10.00	D	34								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2516**
Fugro Reference	G190012U			
Coordinates (m)	E503022.56 N176305.81	Ground Elevation (m Datum)	20.55	Sheet 2 of 2
Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details						Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend		Water Strike	Backfill / Installation
11.00 - 11.45 11.00 - 11.45	D SPT	35	N = 29 (S)	11	Between 11.00 m and 11.50 m; possibly very stiff.						
11.50 - 11.60 11.50	ES PID	36	< 0.1 ppm		Very stiff, fissured, grey CLAY. With occasional bioturbation burrows (<2x70 mm) and pockets (<30x50 mm) of black, fine sand. With rare partings (<1 mm) and pockets of light grey silt. Fissures are randomly orientated, very closely and closely spaced, planar, smooth and polished. [LONDON CLAY FORMATION] [CLAY]	11.50	9.05				
12.00 - 12.10	D	37		12							
13.00 - 13.45	UT	38	50/100 mm	13	Between 13.10 m and 13.40 m; with thin laminations (<3 mm) of claystone.						
13.45 - 13.50	D	39									
				14		(5.00)					
14.50 - 14.60 14.50	ES PID	40	< 0.1 ppm								
15.00 - 15.45 15.00 - 15.45	D SPT	41	N = 31 (S)	15							
16.00 - 16.50 16.00 - 16.50	B D	43 42		16	Between 16.00 m and 16.50 m; slightly gravelly. Gravel is fine and medium.						
					End of Borehole at 16.50 m	16.50	4.05				
				17							
				18							
				19							

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2516**
Fugro Reference	G190012U			
Coordinates (m)	E503022.56 N176305.81	Ground Elevation (m Datum)	20.55	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	21/05/2019	21/05/2019	Hand-dug.			JT	RS	
1.20	16.50	CP	21/05/2019	23/05/2019	Dando 3000			JT	RS	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
21/05/2019	08:00:00	0.00			
21/05/2019	09:00:00	1.20		Dry	
21/05/2019	18:00:00	8.00	7.00	Dry	
23/05/2019	08:00:00	8.00	7.00	Dry	
23/05/2019	18:00:00	16.50	9.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
8.00	200	7.00	200
16.50	150	9.00	150

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
3.50	2.95	20		

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located. Bentonite seal placed between 6.20 m and 8.00 m as instructed by IDT.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	4.10	6.20	23/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	-0.01	4.20	50	Plain
Pipe1	4.20	6.20	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
-0.40	0.00	Upstanding Cover	23/05/2019
0.00	0.20	Concrete	23/05/2019
0.20	4.10	Bentonite	23/05/2019
4.10	6.20	Gravel Backfill	23/05/2019
6.20	16.50	Grout	23/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2516**
	Fugro Reference	G190012U			
	Coordinates (m)	E503022.56 N176305.81	Ground Elevation (m Datum)	20.55	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
5.00	C	0	N=8 (5,4/2,2,2,2)	450	EQU052	72	5.00	3.65
8.00	S	0	N=19 (2,4/4,4,5,6)	450	EQU052	72	8.00	Dry
11.00	S	0	N=29 (4,5/6,7,8,8)	450	EQU052	72	9.00	Dry
15.00	S	0	N=31 (4,6/6,8,8,9)	450	EQU052	72	9.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.15	< 0.1
0.50	< 0.1
0.90	< 0.1
1.50	< 0.1
2.50	< 0.1
3.50	< 0.1
4.10	< 0.1
6.20	< 0.1
8.50	< 0.1
11.50	< 0.1
14.50	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID	
Client	Heathrow Airport Limited			**HEP-BH-2519**	
Fugro Reference	G190012U				
Coordinates (m)	E502849.63 N176190.51	Ground Elevation (m Datum)	20.74	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.05	D	1			MADE GROUND: dark brown and grey, slightly silty, gravelly sand with low cobble content. With rare fragments of tile (<3x3 mm) (<1%) and clinker (<60 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick, concrete and coal. Cobbles (<15x70x70 mm) are subangular of concrete. [MADE GROUND] [SAND]	(0.80)				
0.00 - 0.10	ES	2								
0.00 - 0.50	LB	3								
0.00	PID		< 0.1 ppm							
0.50 - 0.55	D	4								
0.80 - 0.85	D	5				0.80	19.94			
0.80 - 0.90	ES	6			MADE GROUND: (soft), brownish grey, locally mottled green and black, slightly sandy, gravelly clay with low cobble content. With rare fragments of plastic (<8x10 mm) (<1%) and clinker (<60 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick, concrete and coal. Cobbles (<70x70x75 mm) are subangular of brick. [MADE GROUND] [CLAY]	(0.20)				
0.80 - 1.00	B	7		1		1.00	19.74			
0.80	PID		0.3 ppm			(0.40)				
1.00 - 1.05	D	8				1.40	19.34			
1.00 - 1.10	ES	9								
1.00 - 1.40	LB	10								
1.00	PID		0.2 ppm							
1.40 - 1.45	D	11								
1.40 - 1.50	ES	12								
1.40 - 1.90	LB	13			MADE GROUND: (soft), dark grey and black, slightly gravelly, very sandy clay. With occasional fragments of mop string (<2x8 mm) (2%) and clinker (<60 mm) (2%). With rare fragments of wood debris (<20x30 mm) (D1) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of brick, clinker and concrete. [MADE GROUND] [CLAY] Between 1.20 m and 1.40 m; (firm).					
1.40	PID		0.2 ppm	2						
1.50 - 1.95	D	14								
1.50 - 1.95	SPT		N = 5 (S)			(2.10)				
2.40 - 2.45	D	15								
2.40 - 2.50	ES	16								
2.40	PID		< 0.1 ppm							
2.50 - 2.95	D	17								
2.50 - 2.95	SPT		N = 8 (S)		MADE GROUND: (soft and firm), greyish brown, mottled orange and brown, slightly sandy, slightly gravelly clay with low cobble content. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of brick and concrete. Cobbles (<85x102x110 mm) are subangular of brick and concrete. [MADE GROUND] [CLAY] Between 3.00 m and 3.20 m; with frequent subangular fragments (<30x40 mm) of coal.					
3.40 - 3.45	D	18		3						
3.40 - 3.50	ES	19				3.50	17.24			
3.40	PID		< 0.1 ppm							
3.50 - 3.55	D	21								
3.50 - 3.60	ES	22								
3.50 - 4.00	LB	20								
3.50 - 3.95	SPT		N = 12 (S)	4	MADE GROUND: (very soft and soft), dark grey and black, locally mottled greyish brown, slightly sandy, very gravelly clay. With occasional fragments of wire wool (<3x3 mm) (2%). With rare fragments of wood debris (<30x40 mm) (D1) (<1%), plastic sheet (<15x40x65 mm) (<1%) and glass (<3x3 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick and concrete. With a slight organic odour. [MADE GROUND] [CLAY]					
3.50	PID		0.6 ppm			(1.60)				
4.50 - 4.55	D	23								
4.50 - 4.60	ES	24								
4.50	PID		0.3 ppm							
5.10 - 5.15	D	25		5		5.10	15.64			
5.10 - 5.20	ES	26			Grey, slightly clayey, very sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint. Cobbles (<65x70x70 mm) are subangular of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]					
5.10 - 5.60	B	27								
5.10	PID		< 0.1 ppm							
						(1.30)				
6.00 - 6.50	B	28		6	Between 6.00 m and 6.45 m; medium dense.					
6.00 - 6.45	SPT		N = 23 (C)							
6.10 - 6.15	D	29								
6.10 - 6.20	ES	30				6.40	14.34			
6.10	PID		< 0.1 ppm		Firm and stiff, greyish brown, slightly sandy CLAY. With occasional shell fragments (<3x5 mm). Sand is fine to coarse. [LONDON CLAY FORMATION] [CLAY] Between 6.40 m and 6.90 m; slightly gravelly. Gravel is fine and medium.					
6.40 - 6.45	D	31								
6.40 - 6.50	ES	32								
6.40 - 6.90	B	33								
6.40	PID		< 0.1 ppm	7						
6.90 - 7.00	ES	34								
6.90	PID		< 0.1 ppm							
						(2.00)				
7.50 - 7.95	UT	35	47/450 mm							
7.95 - 8.00	D	36		8						
8.35 - 8.40	D	37								
					End of Borehole at 8.40 m	8.40	12.34			
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2519**
	Fugro Reference	G190012U			
	Coordinates (m)	E502849.63 N176190.51	Ground Elevation (m Datum)	20.74	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	11/06/2019	11/06/2019	Hand-dug			CT	OJ	
1.20	8.40	CP	11/06/2019	11/06/2019	Dando 3000			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
11/06/2019	11:00:00	0.00			
11/06/2019	12:00:00	1.20		Dry	
11/06/2019	16:30:00	8.40	7.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
8.40	250	7.00	250

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
4.20	2.30	20	4.10	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	3.40	4.60	11/06/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.07	3.60	50	Plain
Pipe1	3.60	4.60	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	11/06/2019
0.05	0.20	Concrete	11/06/2019
0.20	3.40	Bentonite	11/06/2019
3.40	4.60	Gravel Backfill	11/06/2019
4.60	8.40	Bentonite	11/06/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW				Print Date	27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2519**
	Fugro Reference	G190012U			
	Coordinates (m)	E502849.63 N176190.51	Ground Elevation (m Datum)	20.74	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.50	S	0	N=5 (1,0/1,0,1,3)	450	AR2315	50	1.50	Dry
2.50	S	0	N=8 (1,0/1,0,3,4)	450	AR2315	50	2.50	Dry
3.50	S	0	N=12 (1,1/1,2,4,5)	450	AR2315	50	3.50	Dry
6.00	C	0	N=23 (4,4/5,6,6,6)	450	AR2315	50	6.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.00	< 0.1
0.80	0.3
1.00	0.2
1.40	0.2
2.40	< 0.1
3.40	< 0.1
3.50	0.6
4.50	0.3
5.10	< 0.1
6.10	< 0.1
6.40	< 0.1
6.90	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2520**
	Fugro Reference	G190012U			
	Coordinates (m)	E502944.62 N176179.51	Ground Elevation (m Datum)	20.41	Sheet 1 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.05	D	1			MADE GROUND: dark brown, slightly silty, gravelly sand with low cobble content. With rare fragments of clinker (<20x60 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick and concrete. Cobbles (<70x80x85 mm) are subangular of brick.					
0.00 - 0.10	ES	2								
0.00 - 0.50	B	3				(0.60)				
0.00	PID		< 0.1 ppm							
0.60 - 0.65	D	4			[MADE GROUND] [SAND]	0.60	19.81			
0.60 - 0.70	ES	5			MADE GROUND: dark grey, sandy, gravelly silt. With rare fragments of wood debris (<8x10x20 mm) (D1) (<1%), glass (<3x3 mm) (<1%) and clinker (<20x60 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of brick and concrete. With a slight organic odour.					
0.60 - 1.10	B	6				(0.70)				
0.60	PID		0.1 ppm	1						
1.30 - 1.35	D	7			[MADE GROUND] [SILT]	1.30	19.11			
1.30 - 1.40	ES	8								
1.30 - 1.80	B	9				(0.60)				
1.30	PID		< 0.1 ppm							
1.50 - 1.95	SPT		N = 2 (S)		MADE GROUND: (firm and stiff), orangish brown and grey, slightly sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick and concrete. With a slight organic odour.					
1.90 - 1.95	D	10				1.90	18.51			
1.90 - 2.00	ES	11		2						
1.90 - 2.40	B	12								
1.90	PID		0.1 ppm		[MADE GROUND] [CLAY]	(0.80)				
2.50 - 2.95	D	13			MADE GROUND: (very soft), dark grey, sandy, gravelly, silty clay with low cobble content. With rare fragments of organic wood (<15x40x40 mm). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick and concrete. Cobbles (<80x80x85 mm) are subangular of concrete. With a slight hydrocarbon odour.					
2.50 - 2.95	SPT		N = 3 (S)			2.70	17.71			
2.70 - 2.75	D	14								
2.70 - 2.80	ES	15								
2.70 - 3.20	B	16		3						
2.70	PID		1.1 ppm		[MADE GROUND] [CLAY]					
3.50	B	51			MADE GROUND: (very soft and soft), greenish grey and black, slightly gravelly, sandy clay with low cobble content. With occasional fragments of wood debris (<10x50x70 mm) (D2) (2%) and metal (<20x80x100 mm) (2%). With rare fragments of glass (<3x5 mm) (<1%). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of brick, concrete and siliceous material. Cobbles (<20x80x100 mm) are subangular of brick. With a slight organic odour.					
3.50 - 3.95	D	17								
3.50 - 3.95	SPT		N = 9 (S)							
3.70 - 3.80	ES	18								
3.70 - 4.20	B	19		4						
3.70	PID		0.6 ppm							
4.50 - 4.95	D	20			[MADE GROUND] [CLAY]	(3.50)				
4.50 - 4.95	SPT		N = 12 (S)		At 3.50 m; with fragments of possible ACM (<30x50 mm).					
4.70 - 4.80	ES	21								
4.70 - 5.20	B	22			Between 4.70 m and 5.75 m; greyish brown. Gravel is angular and subangular, fine to coarse of flint.					
4.70	PID		0.2 ppm	5						
5.70 - 5.75	D	23								
5.70 - 5.80	ES	24								
5.70	PID		< 0.1 ppm							
6.00 - 6.45	D	25		6						
6.00 - 6.45	SPT		N = 15 (S)			6.20	14.21			
6.20 - 6.25	D	26			Firm and stiff, fissured, brownish grey CLAY. Fissures are randomly orientated, extremely closely spaced, undulating, rough. [LONDON CLAY FORMATION] [CLAY]					
6.20 - 6.30	ES	27								
6.20 - 6.70	B	28								
6.20	PID		< 0.1 ppm							
6.70 - 6.80	ES	29								
6.70	PID		< 0.1 ppm	7						
7.20 - 7.25	D	30								
						(2.30)				
7.50 - 7.95	UT	31	31/450 mm							
7.95 - 8.00	D	32		8						
8.50 - 9.00	B	33				8.50	11.91			
					Stiff becoming very stiff, dark greyish brown, slightly sandy CLAY. With rare bioturbation burrows (<5x8 mm), infilled with grey silt. Sand is fine.					
8.95 - 9.00	D	34								
9.00 - 9.45	D	35		9	[LONDON CLAY FORMATION] [CLAY]					
9.00 - 9.45	SPT		N = 23 (S)							
9.70 - 9.80	ES	36								
9.70	PID		< 0.1 ppm							
9.95 - 10.00	D	37								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2520**
	Fugro Reference	G190012U			
	Coordinates (m)	E502944.62 N176179.51	Ground Elevation (m Datum)	20.41	Sheet 2 of 2
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.95 - 11.00	D	38		11						
11.00 - 11.45	UT	39	55/450 mm							
11.45 - 11.50	D	40			Between 11.45 m and 12.00 m; with frequent bioturbation burrows (<3x3 mm), infilled with grey silt.					
11.95 - 12.00	D	41		12						
						(7.70)				
12.70 - 12.80	ES	42								
12.70	PID		< 0.1 ppm							
12.95 - 13.00	D	43		13						
13.00 - 13.45	D	44								
13.00 - 13.45	SPT		N = 27 (S)							
13.95 - 14.00	D	45		14						
14.95 - 15.00	D	46								
15.00 - 15.45	UT	47	78/450 mm	15						
15.45 - 15.50	D	48								
15.70 - 15.80	ES	49								
15.70	PID		< 0.1 ppm							
15.95 - 16.00	D	50		16						
					End of Borehole at 16.20 m	16.20	4.21			
				17						
				18						
				19						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID	
Client	Heathrow Airport Limited			**HEP-BH-2520**	
Fugro Reference	G190012U				
Coordinates (m)	E502944.62 N176179.51	Ground Elevation (m Datum)	20.41	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	16/05/2019	16/05/2019	Hand-dug			CT	OJ	
1.20	16.20	CP	16/05/2019	20/05/2019	Dando 3000			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
16/05/2019	09:30:00	0.00			
16/05/2019	10:30:00	1.20		Dry	
16/05/2019	18:00:00	8.20	6.30	Dry	
20/05/2019	08:30:00	8.20	6.30	Dry	
20/05/2019	09:00:00	16.20	9.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
8.20	200	6.30	200
16.20	150	9.00	150

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
1.60	0.80	20	1.50	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	1.20	5.20	20/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.22	1.40	50	Plain
Pipe1	1.40	5.20	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	20/05/2019
0.05	0.20	Concrete	20/05/2019
0.20	1.20	Bentonite	20/05/2019
1.20	5.20	Gravel Backfill	20/05/2019
5.20	6.20	Bentonite	20/05/2019
6.20	16.20	Grout	20/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW				Print Date	27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2520**
	Fugro Reference	G190012U			
	Coordinates (m)	E502944.62 N176179.51	Ground Elevation (m Datum)	20.41	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.50	S	0	N=2 (1,0/1,0,0,1)	450	AR2315	50	1.50	Dry
2.50	S	0	N=3 (1,0/1,0,1,1)	450	AR2315	50	2.50	Dry
3.50	S	0	N=9 (2,5/3,2,2,2)	450	AR2315	50	3.50	Dry
4.50	S	0	N=12 (1,2/2,3,3,4)	450	AR2315	50	4.50	Dry
6.00	S	0	N=15 (1,1/3,3,3,6)	450	AR2315	50	6.00	Dry
9.00	S	0	N=23 (3,3/5,6,6,6)	450	AR2315	50	9.00	Dry
13.00	S	0	N=27 (3,4/5,6,7,9)	450	AR2315	50	9.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.00	< 0.1
0.60	0.1
1.30	< 0.1
1.90	0.1
2.70	1.1
3.70	0.6
4.70	0.2
5.70	< 0.1
6.20	< 0.1
6.70	< 0.1
9.70	< 0.1
12.70	< 0.1
15.70	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2521**
	Fugro Reference	G190012U			
	Coordinates (m)	E503007.93 N176190.97	Ground Elevation (m Datum)	20.23	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.05	D	1			MADE GROUND: brown, gravelly sand with low cobble content. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick and concrete. Cobbles (<75x75x80 mm) are subangular of concrete. [MADE GROUND] [SAND]					
0.00 - 0.10	ES	2								
0.00 - 0.50	LB	3								
0.00	PID		< 0.1 ppm			(0.90)				
0.90 - 0.95	D	4				0.90	19.33			
0.90 - 1.00	ES	5		1	MADE GROUND: brown, slightly sandy, gravelly, clayey silt with low cobble content. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint, brick and rare concrete. Cobbles (<80x100x105 mm) are subangular of brick and concrete. [MADE GROUND] [SILT]	(0.40)				
0.90 - 1.20	LB	6				1.30	18.93			
0.90	PID		< 0.1 ppm			(0.20)				
1.30 - 1.35	D	7				1.50	18.73		▼	
1.30 - 1.40	ES	8			MADE GROUND: yellowish brown, silty, gravelly sand. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint. [MADE GROUND] [SAND]					
1.30 - 1.50	B	9		2						
1.30	PID		< 0.1 ppm							
1.50 - 1.55	D	10								
1.50 - 1.60	ES	11								
1.50 - 2.00	B	12			Loose becoming dense, dark grey and brown, sandy GRAVEL. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]					
1.50 - 1.95	SPT		N = 6 (C)							
1.50	PID		< 0.1 ppm							
2.50 - 2.55	D	13								
2.50 - 2.60	ES	14								
2.50 - 3.00	B	15			Between 2.50 m and 2.95 m; medium dense.					
2.50 - 2.95	SPT		N = 16 (C)	3						
2.50	PID		< 0.1 ppm							
3.50 - 3.55	D	16								
3.50 - 3.60	ES	17			Between 3.50 m and 3.95 m; dense.					
3.50 - 4.00	B	18			Between 3.50 m and 4.00 m; with high cobble content. Cobbles (<80x105x110 mm) are subangular of flint.	(4.40)				
3.50 - 3.95	SPT		N = 33 (C)							
3.50	PID		< 0.1 ppm	4						
4.50 - 4.55	D	19								
4.50 - 4.60	ES	20								
4.50 - 5.00	B	21								
4.50	PID		< 0.1 ppm							
5.50 - 5.55	D	22		5						
5.50 - 5.60	ES	23								
5.50 - 5.90	B	24								
5.50	PID		< 0.1 ppm			5.90	14.33			
6.00 - 6.05	D	25		6	Firm and stiff, fissured, brownish grey, slightly sandy CLAY. With rare bioturbation burrows (<3x5 mm), infilled with grey silt. Sand is fine to coarse. Fissures are randomly orientated, extremely closely spaced, undulating, rough. [LONDON CLAY FORMATION] [CLAY]					
6.00 - 6.10	ES	26								
6.00 - 6.45	D	27								
6.00 - 6.50	B	28								
6.00 - 6.45	SPT		N = 16 (S)							
6.00	PID		< 0.1 ppm							
6.50 - 6.60	ES	29			Between 6.00 m and 6.50 m; slightly sandy, slightly gravelly silt. Gravel is fine.					
6.50	PID		< 0.1 ppm							
7.00 - 7.05	D	30		7		(2.10)				
7.50 - 7.95	UT	31	64/450 mm							
7.95 - 8.00	D	32		8						
					End of Borehole at 8.00 m	8.00	12.23			
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2521**
Fugro Reference	G190012U			
Coordinates (m)	E503007.93 N176190.97	Ground Elevation (m Datum)	20.23	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	21/05/2019	21/05/2019	Hand-dug			CT	OJ	
1.20	8.00	CP	21/05/2019	22/05/2019	Dando 3000			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
21/05/2019	08:00:00	0.00			
21/05/2019	11:00:00	1.20		Dry	
21/05/2019	18:00:00	6.00	5.90	Dry	
22/05/2019	09:00:00	6.00	5.90	Dry	
22/05/2019	18:00:00	8.00	6.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
8.00	200	6.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
1.60				

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

Groundwater not monitored.

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	1.50	5.90	22/05/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.00	1.70	50	Plain
Pipe1	1.70	5.90	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
-0.41	0.00	Upstanding Cover	22/05/2019
0.00	0.20	Concrete	22/05/2019
0.20	1.50	Bentonite	22/05/2019
1.50	5.90	Gravel Backfill	22/05/2019
5.90	8.00	Bentonite	22/05/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2521**
	Fugro Reference	G190012U			
	Coordinates (m)	E503007.93 N176190.97	Ground Elevation (m Datum)	20.23	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.50	C	0	N=6 (1,1/1,1,2,2)	450	AR2315	50	1.50	Dry
2.50	C	0	N=16 (1,2/2,3,5,6)	450	AR2315	50	2.50	Dry
3.50	C	0	N=33 (3,6/7,8,9,9)	450	AR2315	50	3.50	Dry
6.00	S	0	N=16 (2,3/4,4,4,4)	450	AR2315	50	6.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.00	< 0.1
0.90	< 0.1
1.30	< 0.1
1.50	< 0.1
2.50	< 0.1
3.50	< 0.1
4.50	< 0.1
5.50	< 0.1
6.00	< 0.1
6.50	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion		Location ID	
	Client	Heathrow Airport Limited		**HEP-BH-2525**	
	Fugro Reference	G190012U			
	Coordinates (m)	E502770.15 N175880.00	Ground Elevation (m Datum) 19.71	Sheet 1 of 2	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.00 - 0.05	D	1			TOPSOIL: dark brown, slightly sandy, slightly gravelly silt. With frequent roots and rootlets (<8x10 mm). Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint. [TOPSOIL] [SILT]	(0.30)				
0.00 - 0.10	ES	2				0.30	19.41			
0.00 - 0.30	LB	3								
0.00	PID		< 0.1 ppm							
0.30 - 0.35	D	4			MADE GROUND: (very soft), greyish brown, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is angular and subangular, fine to coarse of flint. [MADE GROUND] [CLAY]					
0.30 - 0.40	ES	5								
0.30 - 0.80	LB	6								
0.30	PID		< 0.1 ppm	1		(1.20)				
1.30 - 1.35	D	7								
1.30 - 1.40	ES	8								
1.30	PID		< 0.1 ppm			1.50	18.21			
1.50 - 1.55	D	10			MADE GROUND: (soft and firm), dark grey and brown, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. [MADE GROUND] [CLAY]					
1.50 - 1.60	ES	11								
1.50 - 1.95	D	9								
1.50 - 2.00	B	12		2						
1.50 - 1.95	SPT		N = 9 (S)							
1.50	PID		< 0.1 ppm							
2.50 - 2.55	D	14								
2.50 - 2.60	ES	15								
2.50 - 2.95	D	13								
2.50 - 2.95	SPT		N = 11 (S)							
2.50	PID		< 0.1 ppm	3						
3.50 - 3.55	D	17				(3.50)				
3.50 - 3.60	ES	18								
3.50 - 3.95	D	16								
3.50 - 3.95	SPT		N = 4 (S)							
3.50	PID		< 0.1 ppm	4						
4.50 - 4.55	D	19								
4.50 - 4.60	ES	20								
4.50	PID		< 0.1 ppm							
5.00 - 5.05	D	21		5	Dark grey, sandy GRAVEL with low cobble content. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. Cobbles (<105x108x110 mm) are subangular of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]	5.00	14.71			
5.00 - 5.10	ES	22								
5.00 - 5.50	B	23								
5.00	PID		< 0.1 ppm							
6.00 - 6.05	D	25		6	Between 6.00 m and 6.45 m; medium dense.	(1.90)				
6.00 - 6.10	ES	26								
6.00 - 6.50	B	24								
6.00 - 6.45	SPT		N = 28 (C)							
6.00	PID		< 0.1 ppm							
6.90 - 6.95	D	27				6.90	12.81			
6.90 - 7.00	ES	28		7	Firm becoming stiff, brownish grey, slightly sandy CLAY. With rare bioturbation burrows (<3x5 mm), infilled with silt. Sand is fine to coarse. [LONDON CLAY FORMATION] [CLAY]					
6.90 - 7.40	B	29								
6.90	PID		< 0.1 ppm							
7.40 - 7.50	ES	30								
7.40	PID		< 0.1 ppm		Between 6.90 m and 7.40 m; slightly gravelly. Gravel is fine to coarse.					
7.50 - 7.95	UT	31	59/450 mm							
7.95 - 8.00	D	32		8		(2.10)				
8.50 - 8.55	D	33								
9.00 - 9.10	ES	34		9	Very stiff, fissured, grey CLAY. With rare bioturbation burrows (<5x5 mm), infilled with silt. Fissures are randomly orientated, extremely closely spaced, mainly undulating, occasionally planar, rough. [LONDON CLAY FORMATION] [CLAY]	9.00	10.71			
9.00 - 9.45	D	35								
9.00 - 9.45	SPT		N = 21 (S)							
9.00	PID		< 0.1 ppm							
9.50 - 9.55	D	36								

Continued next page

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID	
Client	Heathrow Airport Limited			**HEP-BH-2525**	
Fugro Reference	G190012U				
Coordinates (m)	E502770.15 N175880.00	Ground Elevation (m Datum)	19.71	Sheet 2 of 2	
Hole Type	Cable Percussion			Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
10.50 - 10.55	D	37								
11.00 - 11.45	UT	38	64/450 mm	11						
11.45 - 11.50	D	39			Between 11.45 m and 11.50 m; with rare pockets (<3x5 mm) of shell fragments.					
12.00 - 12.10 12.00	ES PID	40	< 0.1 ppm	12						
12.50 - 12.55	D	41								
13.00 - 13.45 13.00 - 13.45	D SPT	42	N = 29 (S)	13		(7.90)				
13.50 - 13.55	D	43			Between 13.50 m and 14.00 m; with occasional pyrite nodules (<10x15 mm) and pockets (<3x3 mm) of shell fragments.					
				14						
14.50 - 14.55	D	44								
15.00 - 15.10 15.00 - 15.35 15.00 15.35 - 15.40 15.50 - 15.55	ES UT PID D D	45 46 47 48	100/350 mm < 0.1 ppm	15						
				16						
16.50 - 16.55	D	49								
				17	End of Borehole at 16.90 m	16.90	2.81			
				18						
				19						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2525**
Fugro Reference	G190012U			
Coordinates (m)	E502770.15 N175880.00	Ground Elevation (m Datum)	19.71	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	20/06/2019	20/06/2019	Hand-dug			CT	OJ	
1.20	16.90	CP	20/06/2019	25/06/2019	Dando 3000			CT	OJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
20/06/2019	08:00:00	0.00			
20/06/2019	10:00:00	1.20		Dry	
20/06/2019	13:00:00	8.90	7.00	Dry	
25/06/2019	08:00:00	8.90	7.00	Dry	
25/06/2019	18:00:00	16.90	9.00	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
8.90	250	7.00	250
16.90	200	9.00	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
5.00	3.10	20	4.90	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located. Bentonite seal placed between 6.90 m and 8.90 m as instructed by IDT.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	1.00	4.50	25/06/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.12	1.00	50	Plain
Pipe1	1.00	4.50	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	25/06/2019
0.05	0.20	Concrete	25/06/2019
0.20	1.00	Bentonite	25/06/2019
1.00	4.50	Gravel Backfill	25/06/2019
4.50	6.90	Bentonite	25/06/2019
6.90	16.90	Grout	25/06/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2525**
	Fugro Reference	G190012U			
	Coordinates (m)	E502770.15 N175880.00	Ground Elevation (m Datum)	19.71	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
1.50	S	0	N=9 (1,1/2,2,2,3)	450	AR2315	50	1.50	Dry
2.50	S	0	N=11 (1,2/2,3,3,3)	450	AR2315	50	2.50	Dry
3.50	S	0	N=4 (1,0/0,1,1,2)	450	AR2315	50	3.50	Dry
6.00	C	0	N=28 (5,6/5,6,8,9)	450	AR2315	50	6.00	Dry
9.00	S	0	N=21 (2,2/4,5,6,6)	450	AR2315	50	9.00	Dry
13.00	S	0	N=29 (2,3/5,7,8,9)	450	AR2315	50	9.00	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.00	< 0.1
0.30	< 0.1
1.30	< 0.1
1.50	< 0.1
2.50	< 0.1
3.50	< 0.1
4.50	< 0.1
5.00	< 0.1
6.00	< 0.1
6.90	< 0.1
7.40	< 0.1
9.00	< 0.1
12.00	< 0.1
15.00	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2526**
	Fugro Reference	G190012U			
	Coordinates (m)	E502919.93 N175853.84	Ground Elevation (m Datum)	20.47	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
0.10 - 0.15	D	2			TOPSOIL: brown silt. With frequent rootlets (<1x10 mm). [TOPSOIL] [SILT]	(0.10)	20.37			
0.10 - 0.60	B	1				0.10				
0.20 - 0.30	ES	3			MADE GROUND: (soft), brown, slightly sandy, slightly gravelly clay. With rare fragments of plastic (<2x5 mm) (<1%). Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of brick and chalk. [MADE GROUND] [CLAY]					
0.20	PID		< 0.1 ppm							
				1	Between 1.00 m and 1.20 m; gravelly. Gravel is angular to subrounded, fine to coarse of flint.	(1.40)				
1.50 - 1.60	ES	5				1.50	18.97			
1.50 - 2.00	B	4			MADE GROUND: (soft), dark greyish brown, slightly sandy, gravelly clay. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint and brick. [MADE GROUND] [CLAY]					
1.50	PID		< 0.1 ppm							
1.60 - 1.65	D	6								
2.00 - 2.60	B	7		2	Between 2.00 m and 2.60 m; slightly sandy gravelly clay / clayey very sandy gravel.					
					Between 2.50 m and 4.20 m; brick gravel is absent.					
2.60 - 2.70	ES	8								
2.60	PID		< 0.1 ppm							
2.70 - 2.75	D	9				(2.70)				
3.00 - 3.50	B	10		3						
3.50 - 3.60	ES	11								
3.50	PID		< 0.1 ppm							
3.60 - 3.65	D	12								
				4						
4.20 - 4.30	ES	14				4.20	16.27			
4.20	PID		< 0.1 ppm		Medium dense, orange, grey and brown, slightly sandy GRAVEL. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]					
4.30 - 4.35	D	15								
4.50 - 4.95	B	13				(0.80)				
4.50 - 4.95	SPT		N = 26 (C)		Between 4.50 m and 5.00 m; clayey, very sandy gravel.					
5.00 - 5.50	B	16		5		5.00	15.47			
5.50 - 5.60	ES	17			Stiff, fissured, dark grey, slightly sandy CLAY. Sand is fine to coarse. Fissures are randomly orientated, extremely closely spaced, mainly undulating, occasionally planar, rough and smooth. [LONDON CLAY FORMATION] [CLAY]					
5.50	PID		< 0.1 ppm							
5.60 - 5.65	D	18								
6.00 - 6.45	UT	19	60/450 mm	6		(2.00)				
6.45 - 6.50	D	20								
6.90 - 7.00	ES	21								
6.90	PID		< 0.1 ppm	7	End of Borehole at 7.00 m	7.00	13.47			
				8						
				9						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID	
Client	Heathrow Airport Limited			**HEP-BH-2526**	
Fugro Reference	G190012U				
Coordinates (m)	E502919.93 N175853.84	Ground Elevation (m Datum)	20.47	Sheet 1 of 1	
Hole Type	Cable Percussion			Status	Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	26/06/2019	26/06/2019	Hand-dug			SB	JJ	
1.20	7.00	CP	26/06/2019	26/06/2019	Dando 3000			SB	JJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
26/06/2019	09:00:00	0.00			
26/06/2019	10:45:00	1.20		Dry	
26/06/2019	18:00:00	7.00	5.30	7.00	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
7.00	200	5.30	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
4.00	2.83	20	3.60	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	1.00	3.70	26/06/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.09	1.20	50	Plain
Pipe1	1.20	3.70	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	26/06/2019
0.05	0.20	Concrete	26/06/2019
0.20	1.00	Bentonite	26/06/2019
1.00	3.70	Gravel Backfill	26/06/2019
3.70	7.00	Bentonite	26/06/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB
Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW				Print Date	27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2526**
	Fugro Reference	G190012U			
	Coordinates (m)	E502919.93 N175853.84	Ground Elevation (m Datum)	20.47	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
4.50	C	0	N=26 (1,5/7,5,7,7)	450	AR2519	76	4.50	3.50

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1
1.50	< 0.1
2.60	< 0.1
3.50	< 0.1
4.20	< 0.1
5.50	< 0.1
6.90	< 0.1

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

FUGRO	Contract Name	HAL Airport Expansion		Location ID	
	Client	Heathrow Airport Limited		**HEP-BH-2527**	
	Fugro Reference	G190012U			
	Coordinates (m)	E502986.85 N175791.86	Ground Elevation (m Datum) 20.00	Sheet 1 of 2	
	Hole Type	Cable Percussion		Status	Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
					TOPSOIL: brown silt. With frequent rootlets (<1x12 mm). [TOPSOIL] [SILT]	(0.20)				
0.20 - 0.30	ES	2				0.20	19.80			
0.20 - 0.60	B	1			MADE GROUND: (very soft), dark brown, slightly sandy, slightly gravelly clay. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint and brick. [MADE GROUND] [CLAY]					
0.20	PID		< 0.1 ppm							
0.30 - 0.35	D	3				(1.00)				
				1	Between 0.20 m and 1.50 m; IDT engineer noted rare fragments of black plastic (<1%).					
1.20 - 1.30	ES	5				1.20	18.80			
1.20 - 1.70	B	4			MADE GROUND: (firm), black, mottled dark greyish brown, slightly gravelly, sandy clay. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of flint, chalk and brick. [MADE GROUND] [CLAY]					
1.20	PID		< 0.1 ppm							
1.30 - 1.35	D	6			At 1.50 m; IDT engineer noted a fragment of rubber mat (<20x200x200 mm).					
2.00 - 2.10	ES	8		2	Between 1.50 m and 2.00 m; IDT engineer noted rare fragments of black wood debris (D2) (<1%).					
2.00 - 2.50	B	7								
2.00	PID		< 0.1 ppm							
2.10 - 2.15	D	9				(3.00)				
3.00 - 3.10	ES	11		3						
3.00 - 3.50	B	10								
3.00	PID		< 0.1 ppm							
3.10 - 3.15	D	12			Between 3.50 m and 4.20 m; brick gravel is absent.					
				4						
4.20 - 4.30	ES	13			Loose to medium dense, grey, orange and brown, slightly clayey, sandy GRAVEL. Sand is fine to coarse. Gravel is subangular and subrounded, fine to coarse of flint. [RIVER TERRACE DEPOSITS] [GRAVEL]	4.20	15.80			
4.20	PID		< 0.1 ppm							
4.30 - 4.35	D	14								
4.50 - 4.95	B	15				(0.80)				
4.50 - 4.95	SPT		N = 10 (C)							
5.00 - 5.50	B	16		5	Stiff, fissured, dark brownish grey, slightly sandy CLAY. Sand is fine to coarse. Fissures are randomly orientated, extremely closely spaced, mainly undulating, occasionally planar, rough and smooth. [LONDON CLAY FORMATION] [CLAY]	5.00	15.00			
5.50 - 5.60	ES	17			Between 5.00 m and 5.50 m; slightly gravelly. Gravel is mainly fine.					
5.50	PID		< 0.1 ppm							
5.60 - 5.65	D	18								
6.00 - 6.45	UT	19	75/450 mm	6						
6.45 - 6.50	D	20								
6.90 - 7.00	ES	21								
6.90	PID		< 0.1 ppm	7						
7.50 - 7.95	D	22								
7.50 - 7.95	SPT		N = 14 (S)							
				8						
8.25 - 8.30	D	23								
8.60 - 8.70	ES	24								
8.60	PID		< 0.1 ppm							
9.00 - 9.45	UT	25	110/450 mm	9	Between 9.00 m and 13.50 m; micaceous.					
						(8.50)				
9.45 - 9.50	D	26								
					Continued next page					

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2527**
Fugro Reference	G190012U			
Coordinates (m)	E502986.85 N175791.86	Ground Elevation (m Datum)	20.00	Sheet 2 of 2
Hole Type	Cable Percussion			Status: Final

Sampling and In Situ Testing				Strata Details					Groundwater	
Depth (m)	Type	No.	Test Results	Depth (m)	Strata Descriptions	Depth (Thickness) (m)	Level (m Datum)	Legend	Water Strike	Backfill / Installation
11.00 - 11.45	D	27		11						
11.00 - 11.45	SPT		N = 24 (S)							
11.50 - 11.55	D	29								
11.60 - 11.70	ES	28								
11.60	PID		< 0.1 ppm	12						
13.00 - 13.45	UT	30	105/450 mm	13						
13.10 - 13.15	D	32								
13.45 - 13.50	D	31			Very stiff, fissured, dark brownish grey, micaceous CLAY. Fissures are randomly orientated, extremely closely spaced, mainly undulating, occasionally planar, rough and smooth. [LONDON CLAY FORMATION] [CLAY]	13.50	6.50			
14.00 - 14.10	ES	33		14						
14.00	PID		< 0.1 ppm			(1.50)				
				15	End of Borehole at 15.00 m	15.00	5.00			
				16						
				17						
				18						
				19						

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Contract Name	HAL Airport Expansion			Location ID
Client	Heathrow Airport Limited			**HEP-BH-2527**
Fugro Reference	G190012U			
Coordinates (m)	E502986.85 N175791.86	Ground Elevation (m Datum)	20.00	Sheet 1 of 1
Hole Type	Cable Percussion			Status: Final

Equipment

Depth From (m)	Depth To (m)	Hole Type	Date From	Date To	Equipment	Core Barrel	Core Bit	Drilling Crew	Logged By	Remarks
0.00	1.20	IP	19/06/2019	19/06/2019	Hand-dug			SB	JJ	
1.20	15.00	CP	20/06/2019	25/06/2019	Dando 3000			SB	JJ	

Progress

Date (dd/mm/yyyy)	Time (hh:mm:ss)	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Weather
19/06/2019	16:15:00	0.00			
19/06/2019	17:15:00	1.20		Dry	
20/06/2019	08:00:00	1.20		Dry	
20/06/2019	18:00:00	7.00	6.00	7.00	
25/06/2019	12:45:00	7.00	6.00	7.00	
25/06/2019	18:00:00	15.00	7.60	Dry	

Rotary Details

Depth From (m)	Depth To (m)	Flush Type	Flush Return (%)	Flush Colour	Run Time (hh:mm)

Core Details

Depth From (m)	Depth To (m)	Diameter (mm)

Hole and Casing

Depth To (m)	Hole Diameter (mm)	Depth To (m)	Casing Diameter (mm)
7.00	250	6.00	250
15.00	200	7.60	200

Chiselling / Slow Progress

Depth From (m)	Depth To (m)	Duration (hh:mm)	Tool / Remark

Water Strike

Strike At (m)	Rise To (m)	Time Elapsed (mins)	Casing Depth (m)	Depth Sealed (m)
4.20	1.90	20	4.00	

Water Added

Depth From (m)	Depth To (m)

Water Strike Remarks

General Remarks

A PAS128:2014 compliant survey was carried out for underground utility mapping prior to intrusive works and an inspection pit was excavated to 1.20 m. Services were not located. Bentonite seal placed between 5.00 m and 7.00 m as instructed by IDT.

Installation

Type	ID	Response Zone Top (m)	Response Zone Base (m)	Installation Date
SP	1	1.00	3.70	25/06/2019

Pipe

ID	Top Depth (m)	Base Depth (m)	Diameter (mm)	Type
Pipe1	0.04	1.20	50	Plain
Pipe1	1.20	3.70	50	Slotted

Backfill

Depth From (m)	Depth To (m)	Backfill Material	Date
0.00	0.05	Flush Cover	25/06/2019
0.05	0.20	Concrete	25/06/2019
0.20	1.00	Bentonite	25/06/2019
1.00	3.70	Gravel Backfill	25/06/2019
3.70	15.00	Bentonite	25/06/2019

Notes

- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Checked By	ROR	Elevation Datum	Local Datum Not Defined	Grid Coordinate System	OSGB

Template: FGSL/HBSI/FGSL BH Summary.hbt/Config Fugro Rev5/29/11/2019/TS+AW — Print Date: 27/02/2020

	Contract Name	HAL Airport Expansion			Location ID
	Client	Heathrow Airport Limited			**HEP-BH-2527**
	Fugro Reference	G190012U			
	Coordinates (m)	E502986.85 N175791.86	Ground Elevation (m Datum)	20.00	Sheet 1 of 1
	Hole Type	Cable Percussion			Status: Final

Standard Penetration Test Results

Test Depth (m)	Test Type	Self Weight Penetration (mm)	Test Result	Total Penetration (mm)	Hammer Serial Number	Energy Ratio (%)	Casing Depth (m)	Water Depth (m)
4.50	C	0	N=10 (1,3/3,4,2,1)	450	AR2519	76	4.50	1.90
7.50	S	0	N=14 (1,2/2,3,3,6)	450	AR2519	76	7.50	7.50
11.00	S	0	N=24 (1,3/3,4,8,9)	450	AR2519	76	7.60	Dry

In Situ Vane Test Results

Test Depth (m)	Test Type	Undisturbed Undrained Shear Strength (kPa)	Residual Undrained Shear Strength (kPa)

In Situ Hand Penetrometer Results

Test Depth (m)	Undisturbed Undrained Shear Strength (kPa)

Volatile Headspace Testing by Photoionisation Detector

Test Depth (m)	PID Result (ppm)
0.20	< 0.1
1.20	< 0.1
2.00	< 0.1
3.00	< 0.1
4.20	< 0.1
5.50	< 0.1
6.90	< 0.1
8.60	< 0.1
11.60	< 0.1
14.00	< 0.1

Notes

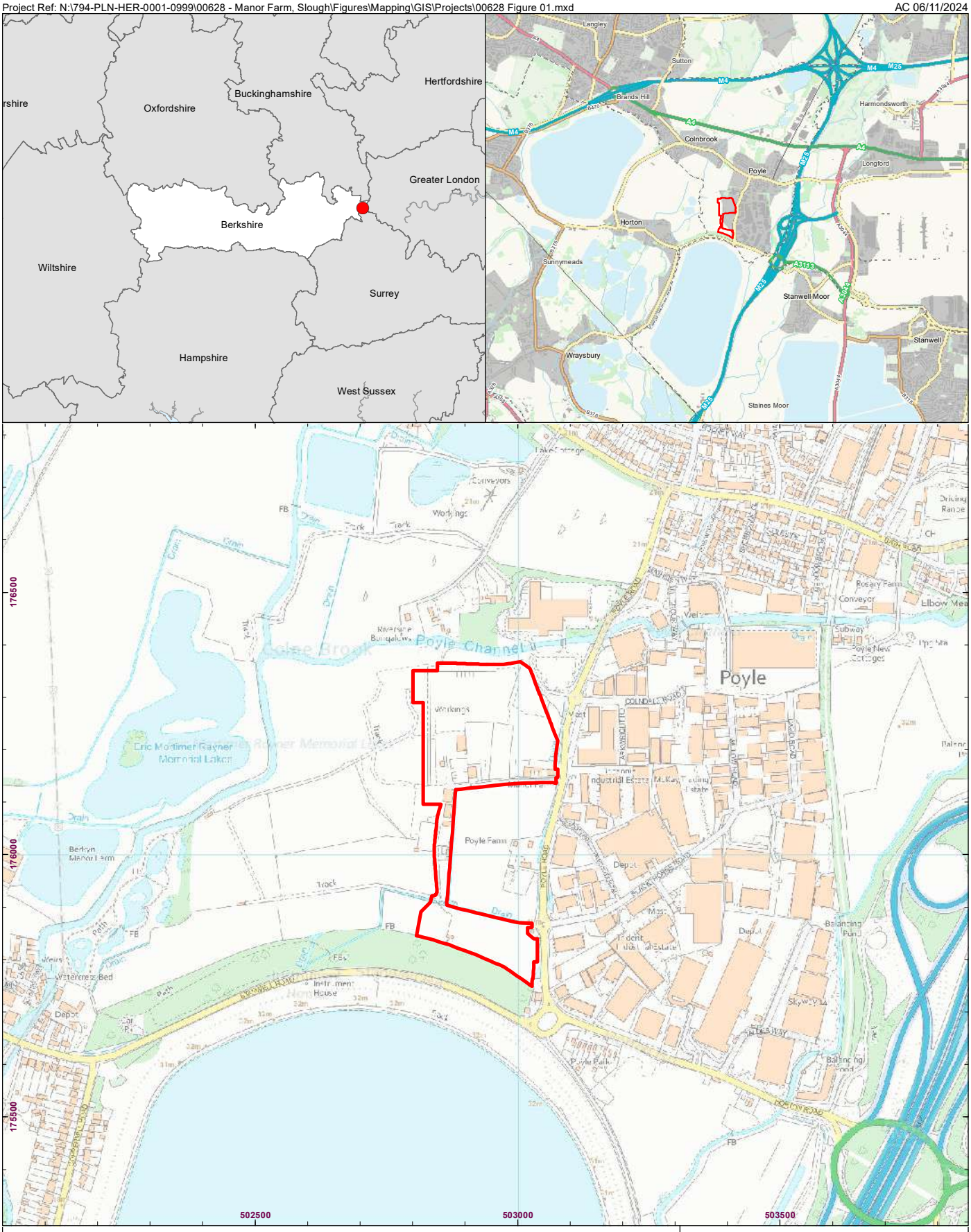
- Abbreviations and results data defined on 'Notes on Exploratory Position Records'

Appendix E

Extract from Roman Settlement of Roman Britain Website

Roman Settlement of Britain Map Extract

FIGURES



Site Boundary

Site Boundary

N

0 100 200m

Scale at A4: 1:10,000

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Figure 1

Site Location

AC 06/11/2024

Legend

Site Boundary

1 km Search Radius

Non-designated Heritage Assets:

HER Data (points)

- Monument
- Find Spot
- Building

HER Data (lines)

- Monument

Previous Archaeological Work:

- HER Events (points)
- HER Events (lines)
- HER Events (polygons)

N

0 100 200m

Scale at A3: 1:8,000

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Figure 2a

HER Records Plot within 1km study area (data from Berkshire and Surrey HERs)

Project Ref: N:\1794-PLN-HER-0001-0999\00628 - Manor Farm, Slough\Figures\Mapping\GIS\Projects\00628 Figure 02a HER.mxd

AC 06/11/2024

HRM575
HRM579
HRM580
HRM581
HRM582
HRM584
HRM578
HRM583
HRM585
HRM1929
HRM601
HRM605
HRM606
HRM607
HRM609
HRM608
HRM610
HRM612
HRM1867
HRM1928
HRM586
HRM1892
HRM1893
HRM1895
HRM587
HRM1894
HRM588
HRM611
HRM1882
12
7

Legend

- Site Boundary
- 1 km Search Radius

Historic Landscape Characterisation:

- Artificial Lake
- Artificial river
- Detached houses
- Education
- Farm or Farmstead
- Golf
- Historic settlement core
- Hotel
- Industrial estate
- Open Green Space
- Parkland
- Pond
- Public Park
- Quarry
- Reorganised field
- River
- Scrubland
- Semi-detached houses
- Slip road
- Waste Disposal Site
- Other Industry
- Valley floor and water management

N

0 100 200m

Scale at A3: 1:8,000

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Figure 2b

Historic Landscape Characterisation data (from Berkshire HER)

Project Ref: N:\794-PLN-HER-0001-0999\00628 - Manor Farm, Slough\Figures\Mapping\GIS\Projects\00628 Figure 02b HLC.mxd

NAME 06/11/2024

Legend

Site Boundary

LiDAR DATA

Source:
Environment Agency

Data Type: DTM

Resolution: 1m

Date Captured:
2022

Processing:
Multi-direction Hillshade overlaid on simple Local Relief Model

N

0 20 40 60 80 100m

Scale at A3: 1:3,000

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Figure 3

LiDAR survey

Project Ref: N:\794-PLN-HER-0001-0999\00628 - Manor Farm, Slough\Figures\Mapping\GIS\Projects\00628 Figure 03 LiDAR.mxd

Site Boundary (approximate location)

N

0 100 200 300 400 500 m

Scale at A4: 1:15,000
(approximately)

rps
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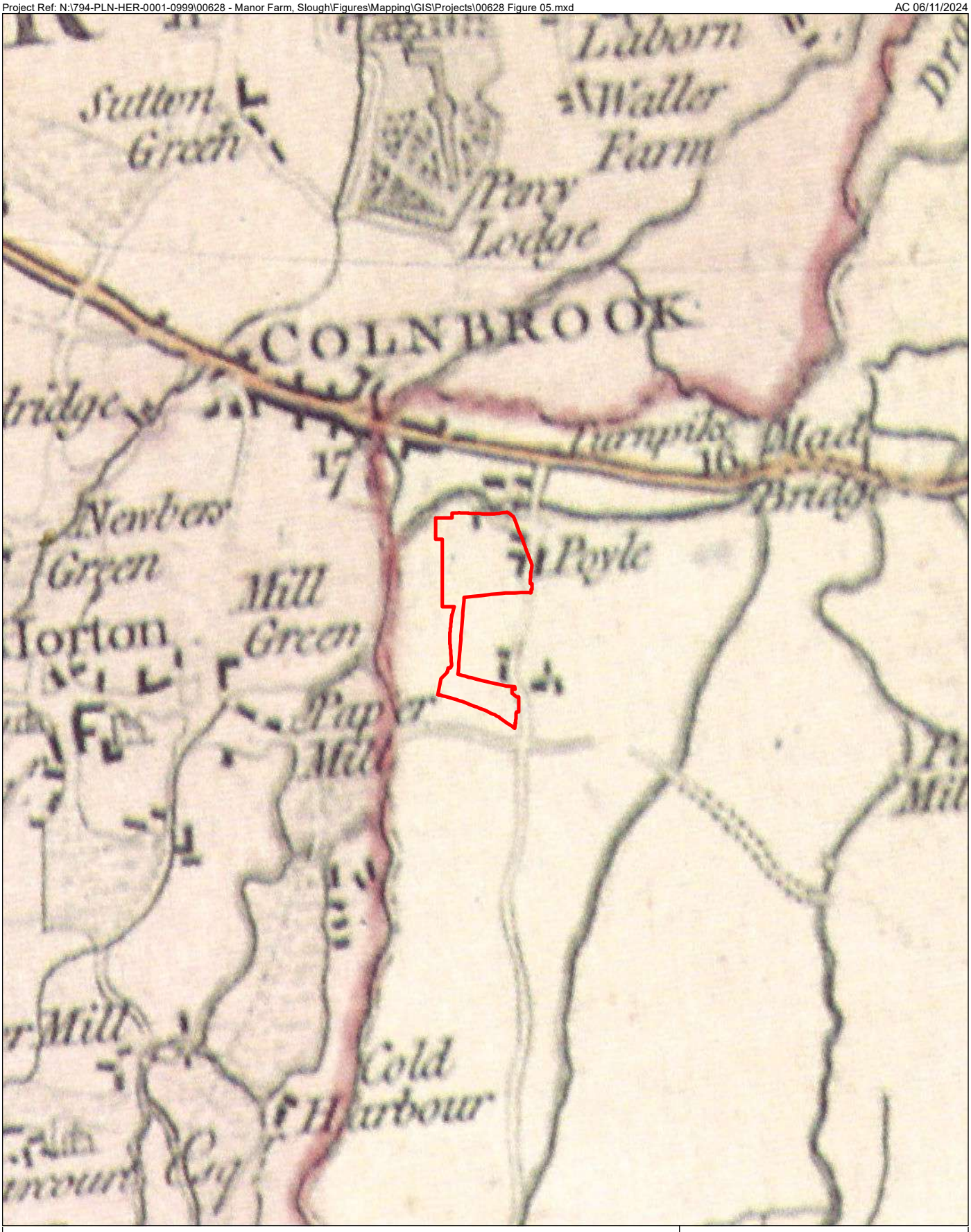
Figure 4

1754 Rocque Map of Middlesex



Site Boundary (approximate location)

N

0 100 200 300 400 500m

Scale at A4: 1:15,000 (approximately)

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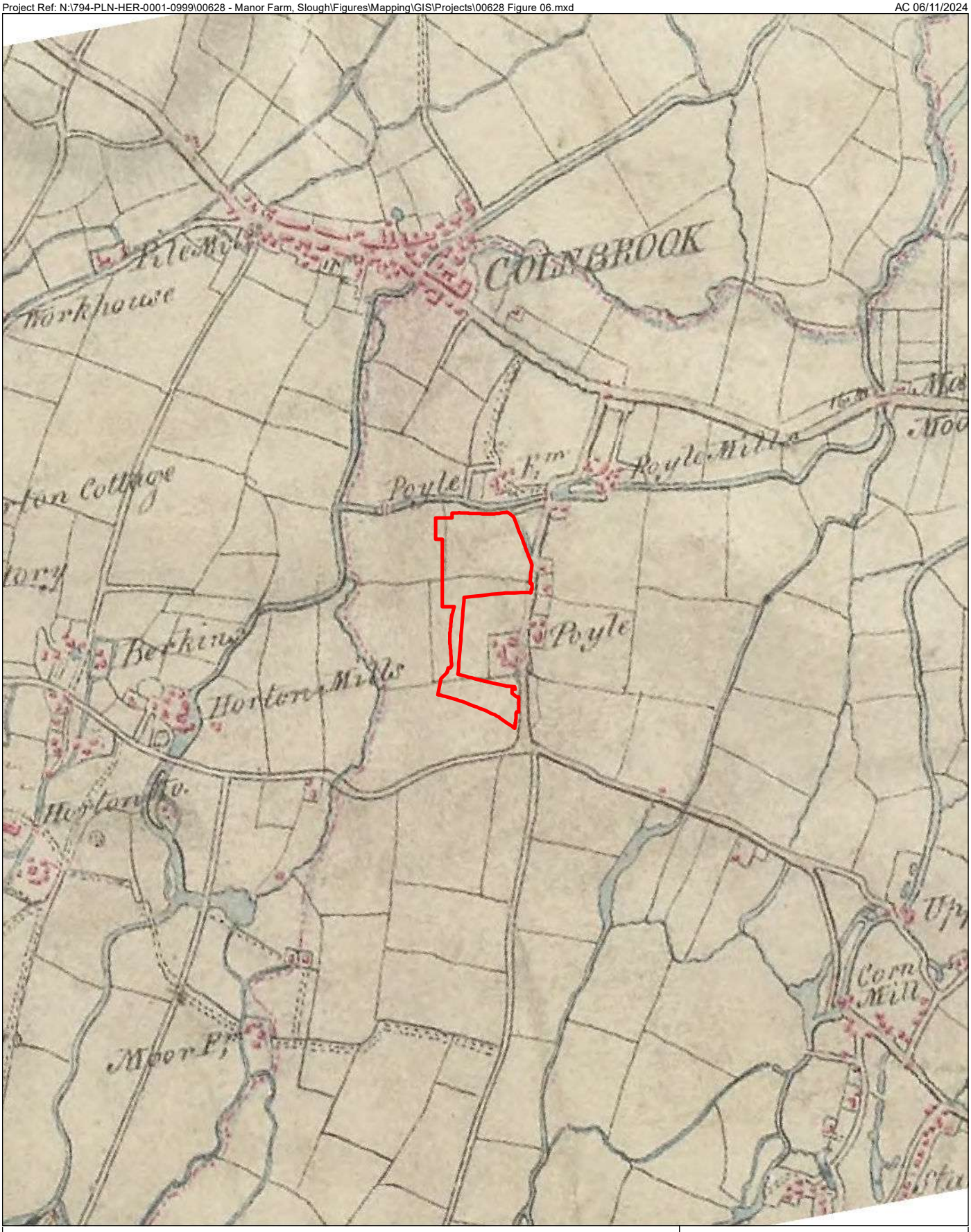
Figure 5

1768 Jefferys Map



Site Boundary (approximate location)

N

0 100 200 300 400 500m

Scale at A4: 1:15,000 (approximately)

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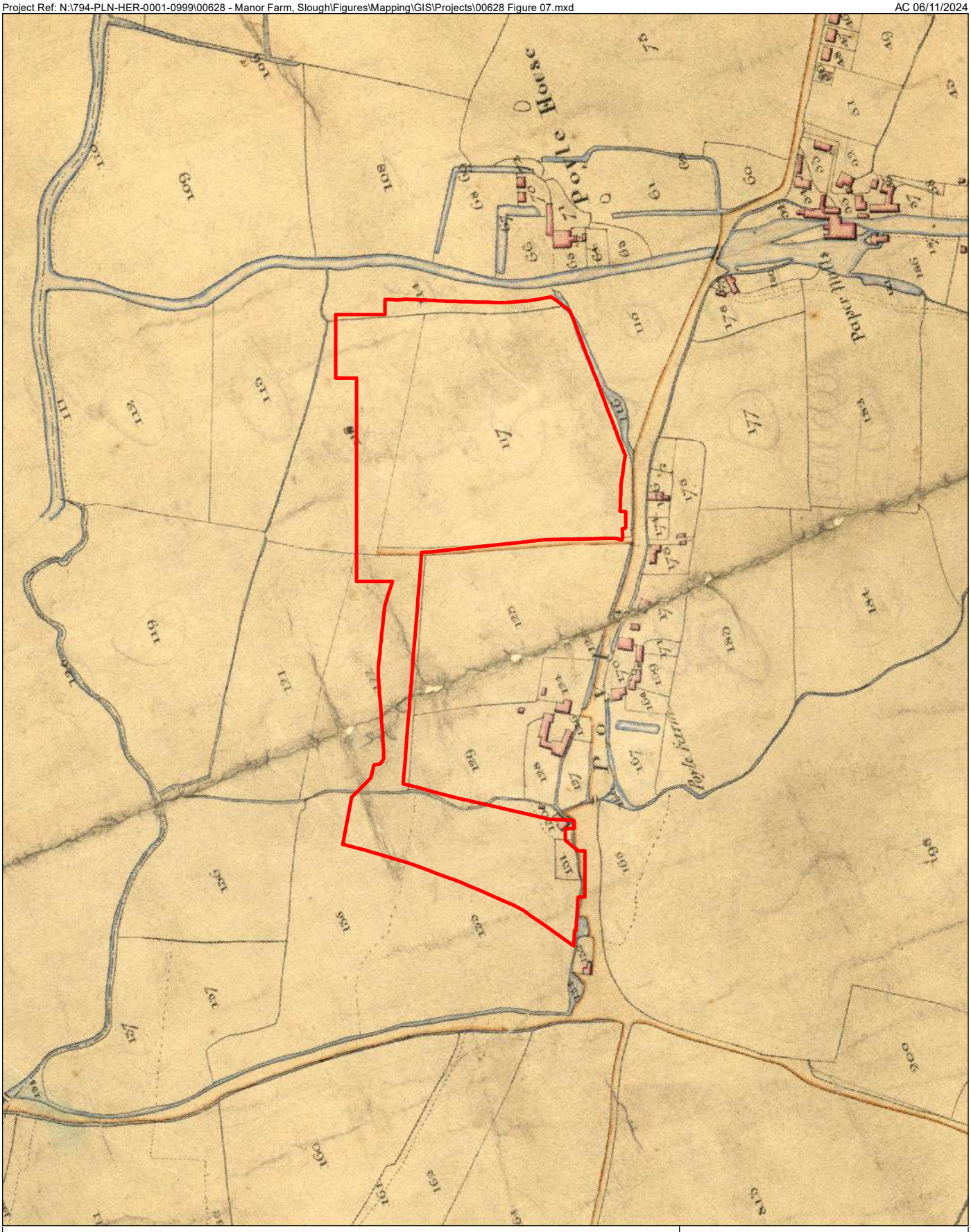
Figure 6

1811 Ordnance Survey Drawing



Site Boundary (approximate location)

N

0 50 100m

Scale at A4: 1:5,000
(approximately)

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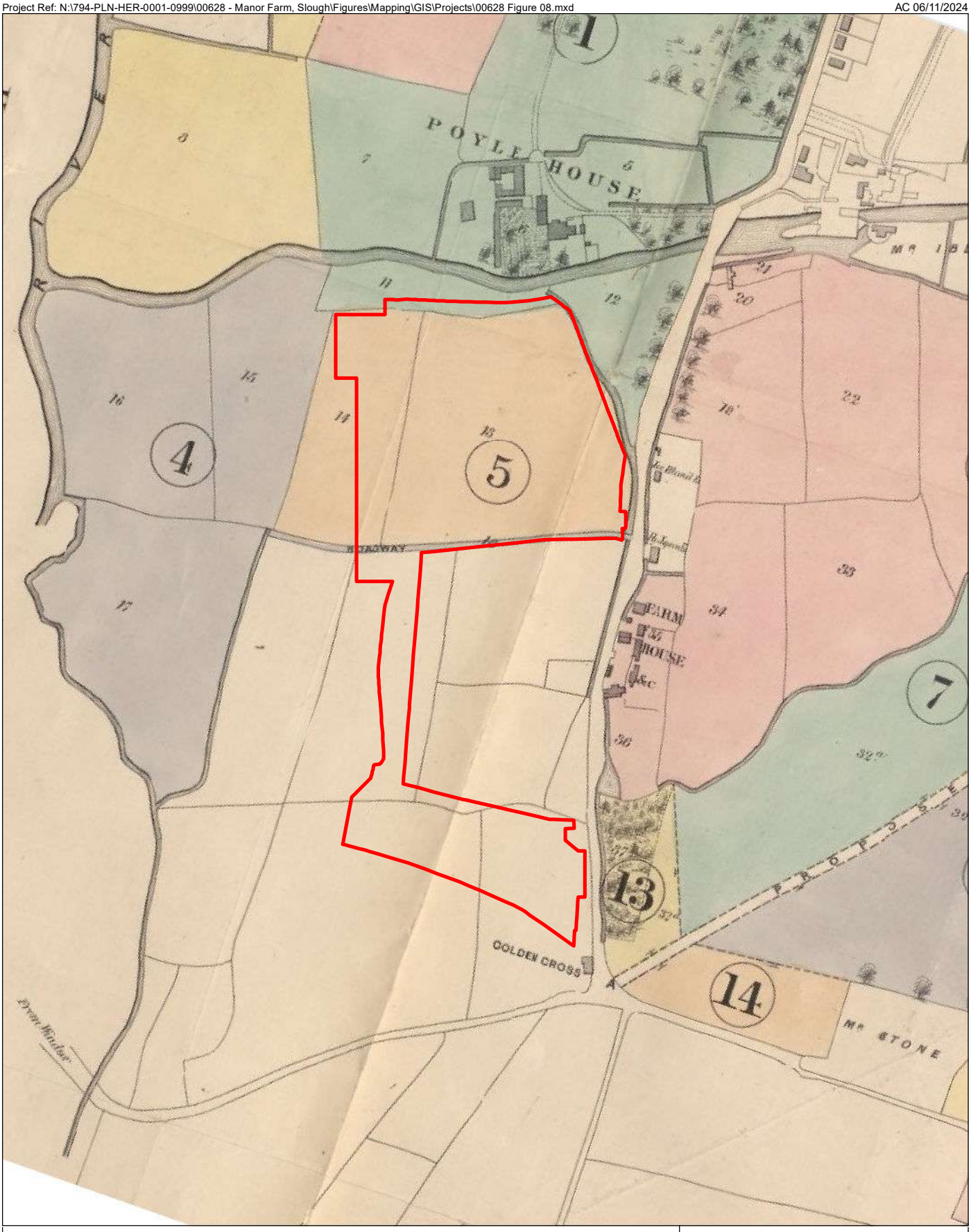
Figure 7

1841 Stanwell Parish Tithe Map



Site Boundary (approximate location)

N

0 50 100m

Scale at A4: 1:5,000 (approximately)

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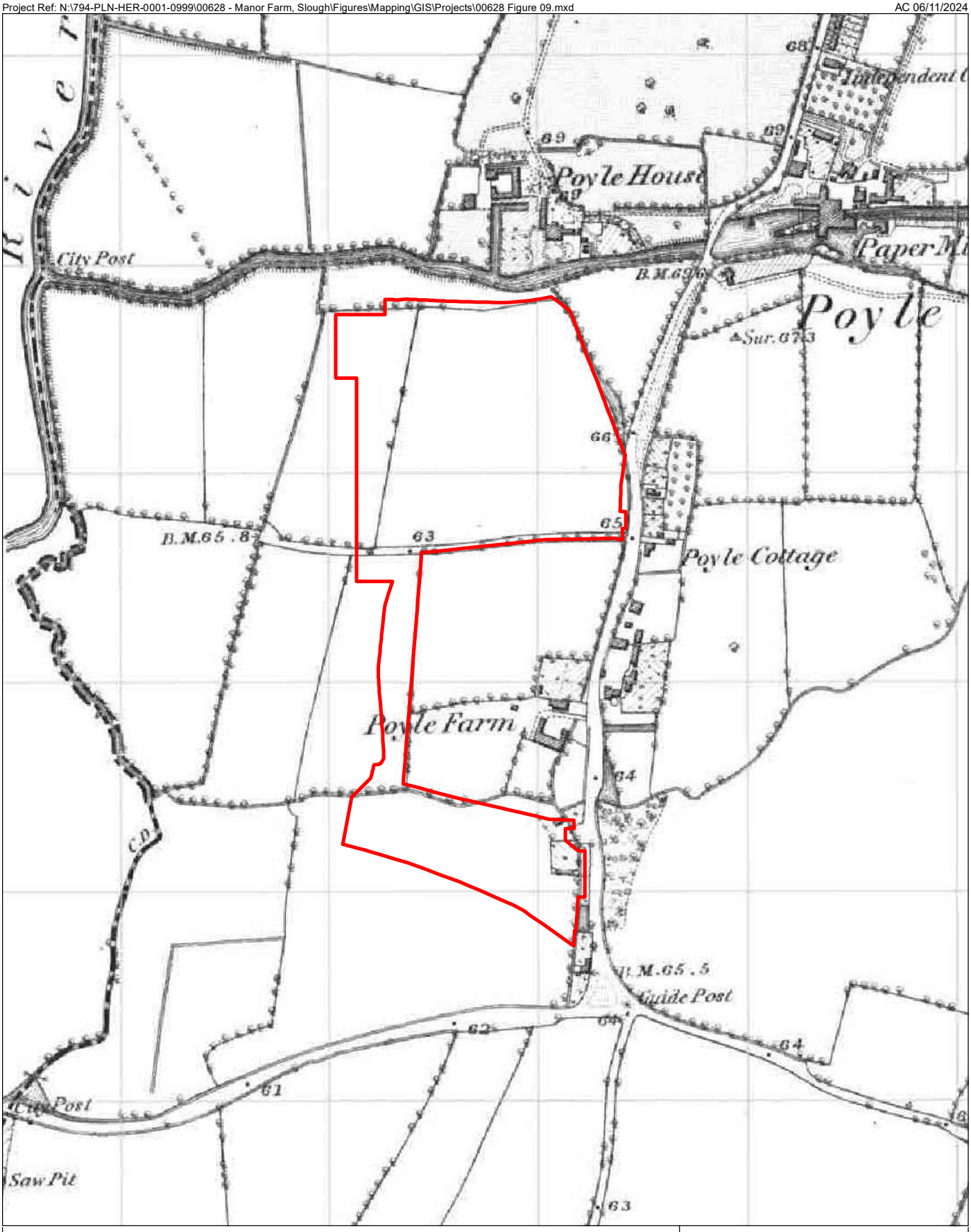
Figure 8

1869 Map of Poyle Park Estate



Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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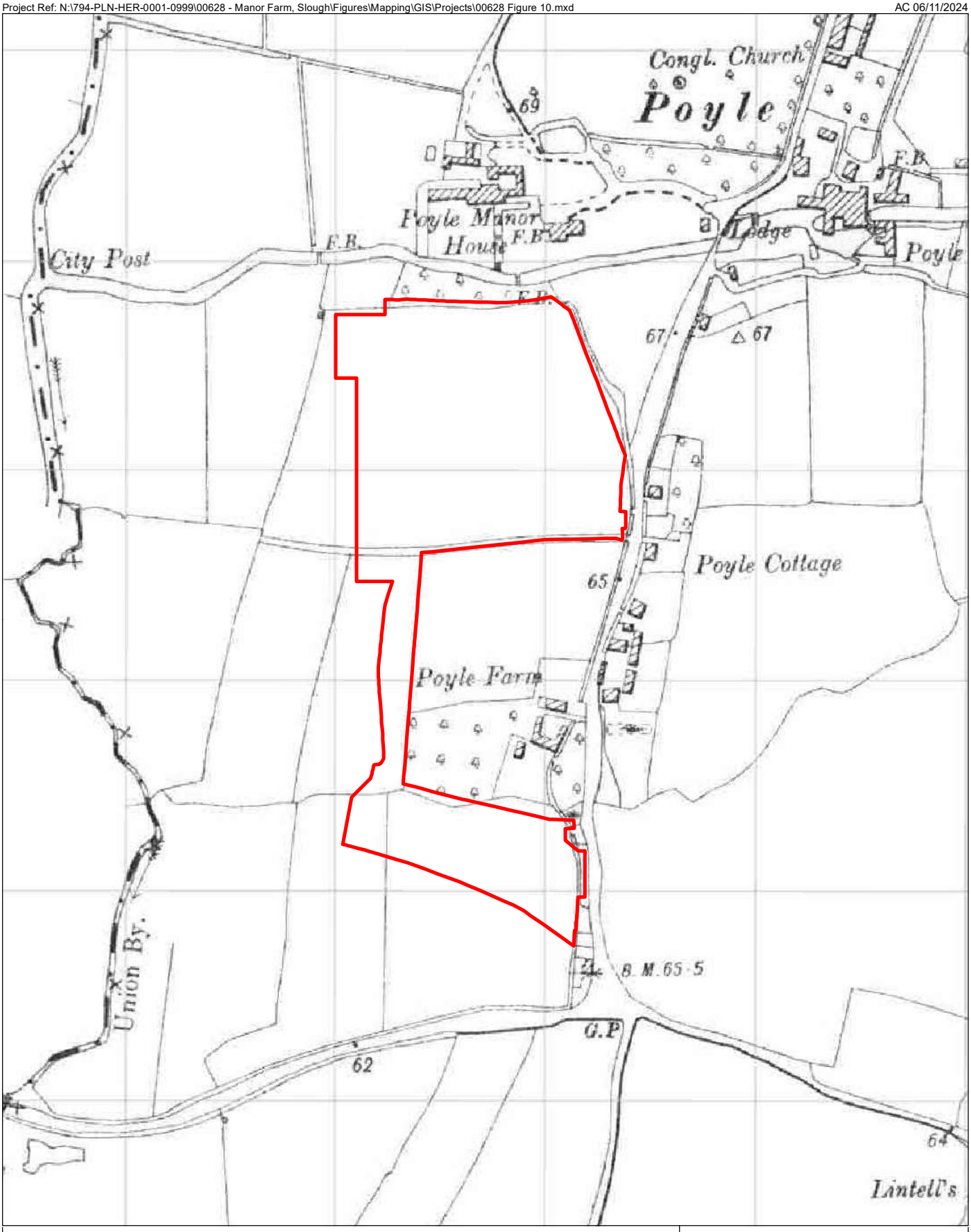
Figure 9

1869 1:10,560 scale Ordnance Survey Map



Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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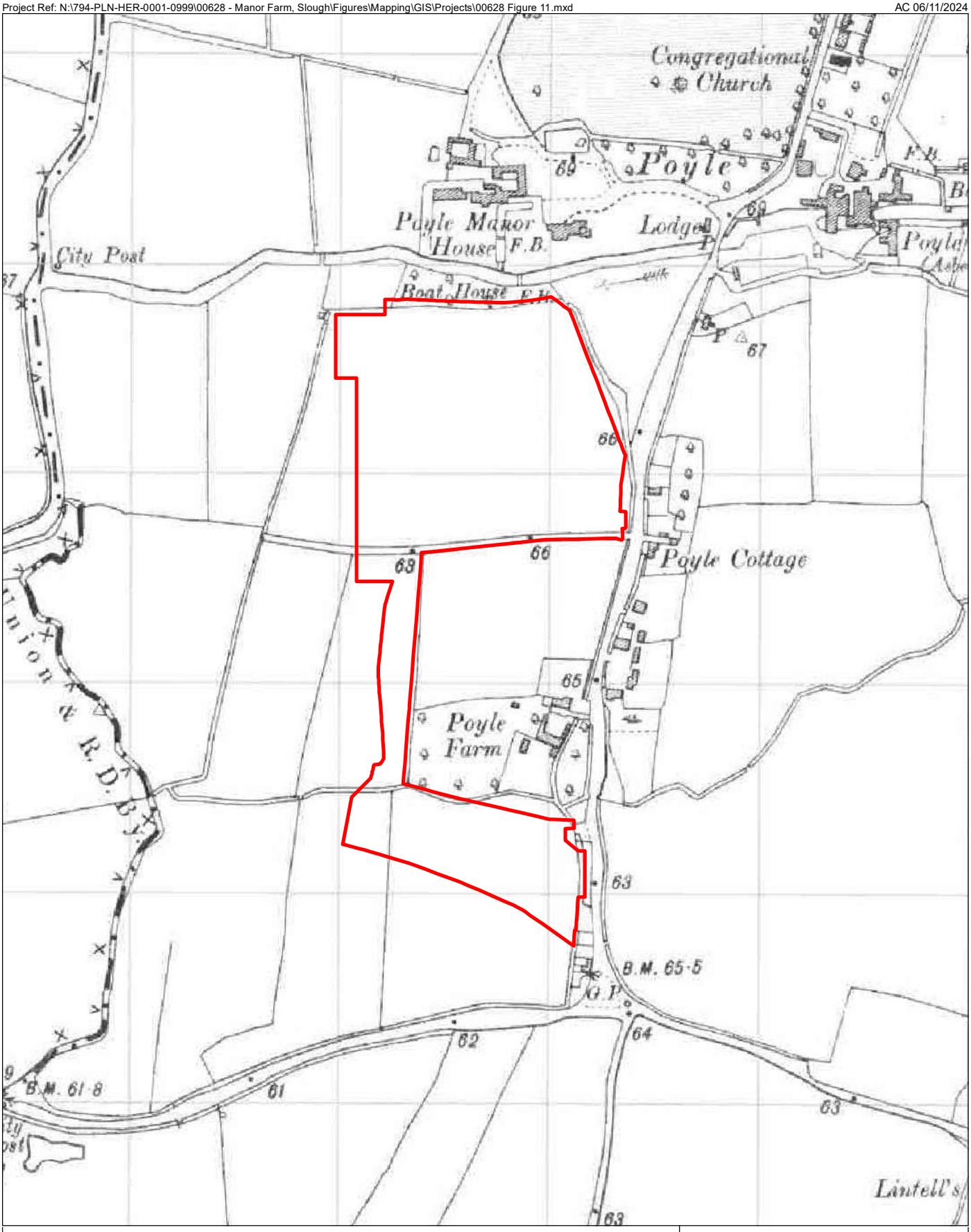
Figure 10

1894-1897 1:10,560 scale Ordnance Survey Map



Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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Figure 11

1910 to 1913 1:10,560 scale Ordnance Survey Map

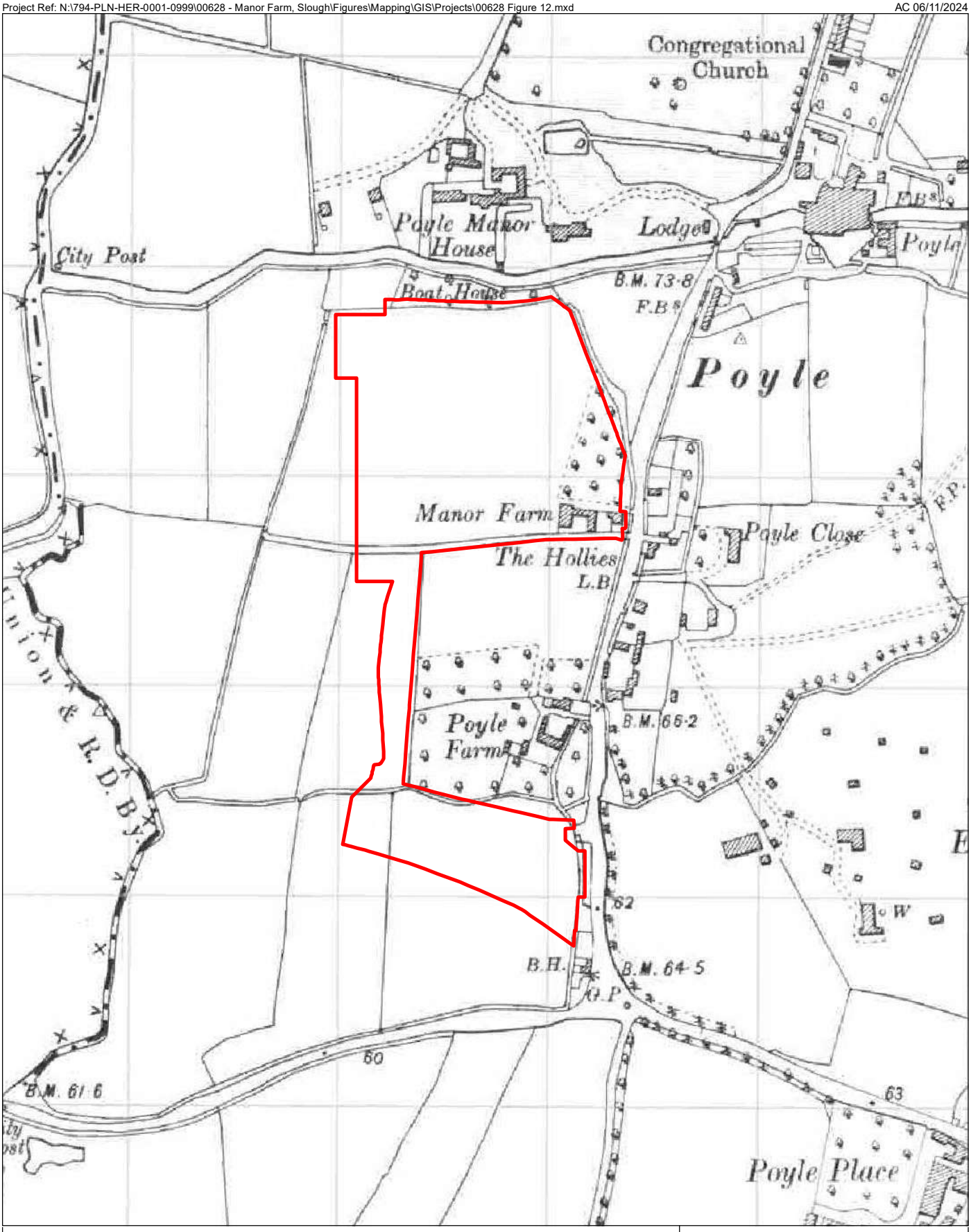

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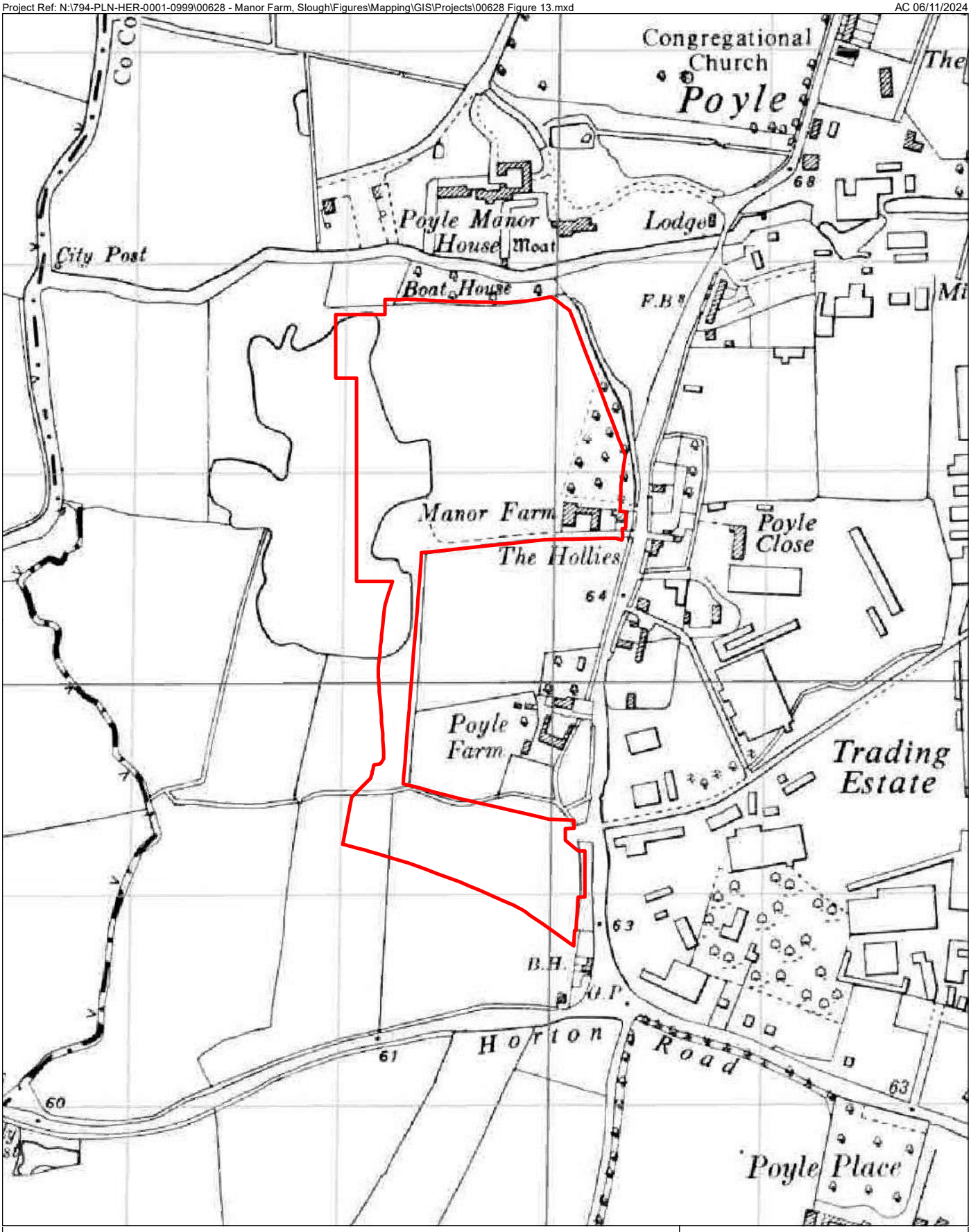
Figure 12

1923 1:10,560 scale Ordnance Survey Map



Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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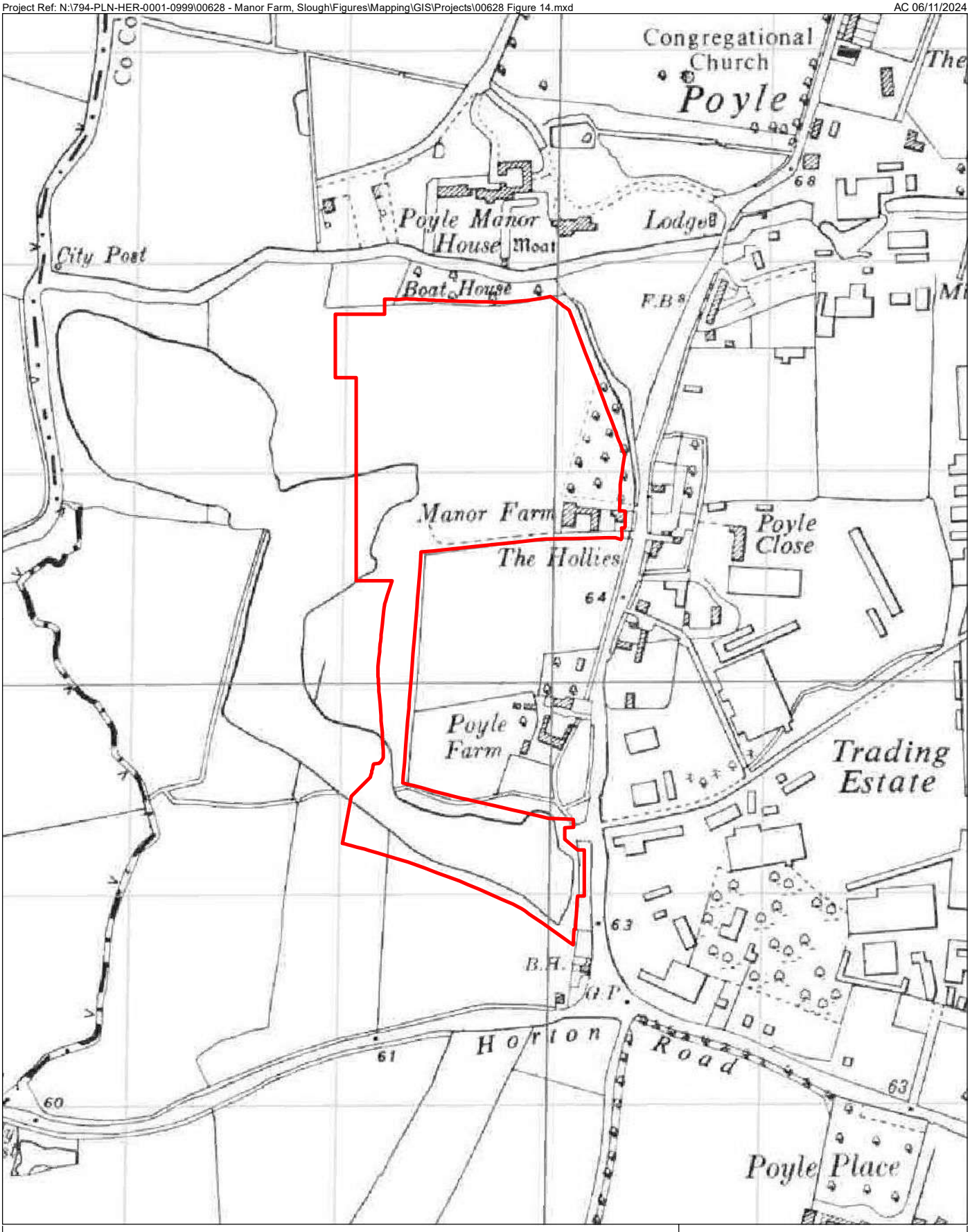
Figure 13

1960 1:10,560 scale Ordnance Survey Map



Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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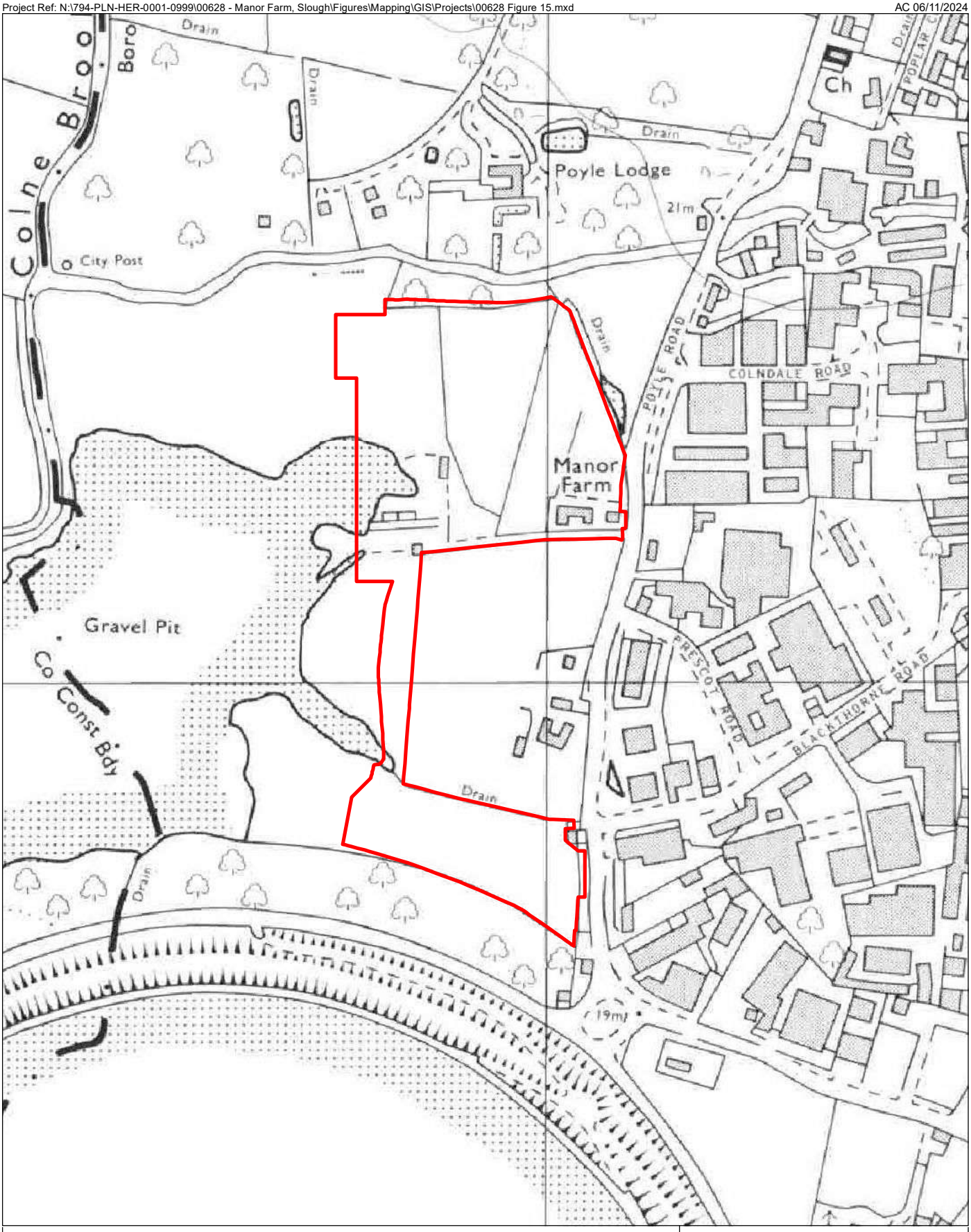
Figure 14

1960-65 1:10,560 scale Ordnance Survey Map



Site Boundary

Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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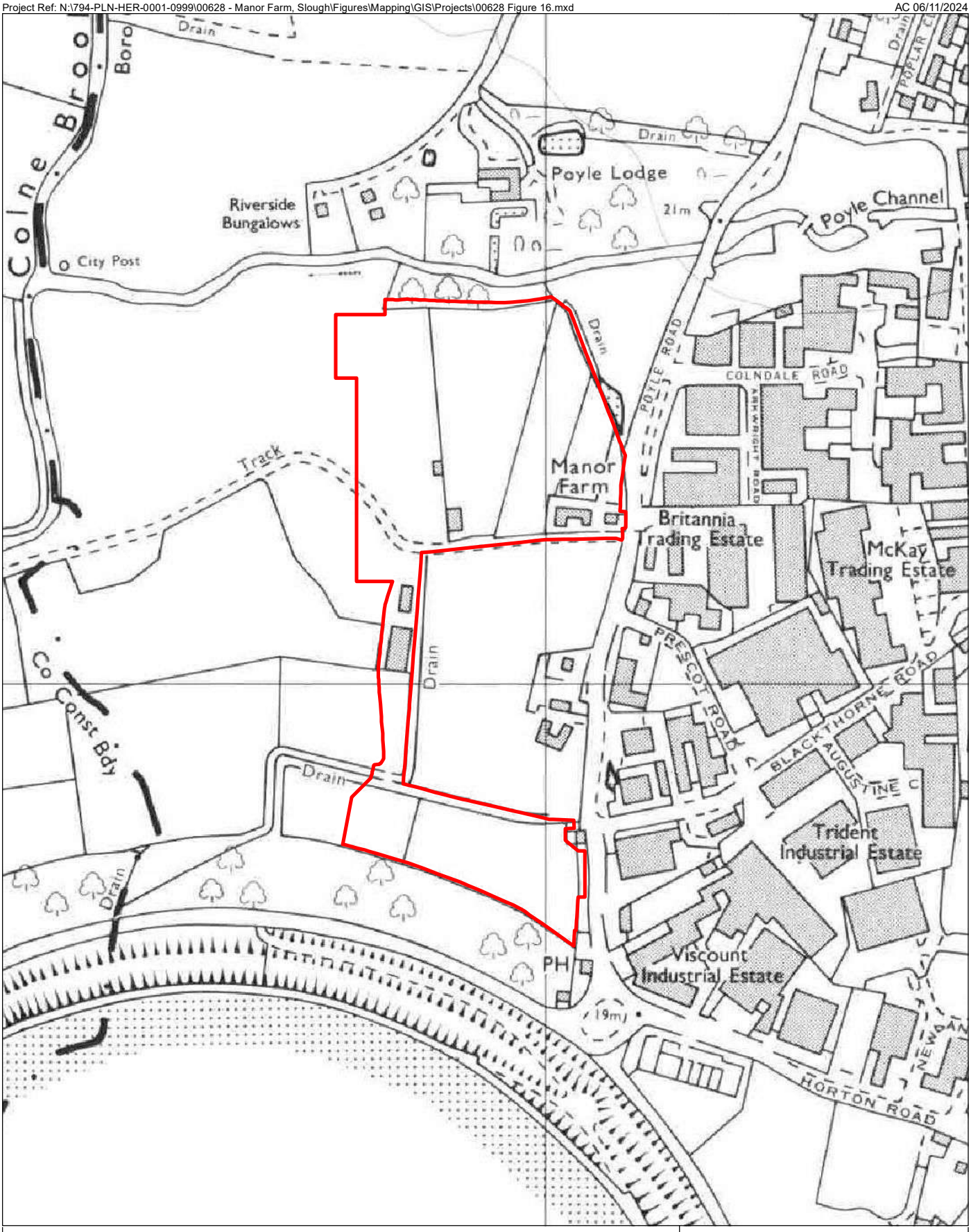
Figure 15

1973 to 1974 1:10,000 scale Ordnance Survey Map



Site Boundary

N

0 50 100m

Scale at A4: 1:5,000

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Figure 16

1984 to 1987 1:10,000 scale Ordnance Survey Map

Site Boundary

N

0 50 100m

Scale at A4: 1:3,000

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Figure 17

2017 Google Earth aerial image

Site Boundary

N

0 50 100m

Scale at A4: 1:3,000

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Figure 18

2019 Google Earth aerial image

Site Boundary

N

0 50 100m

Scale at A4: 1:3,000

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Figure 19

2023 Google Earth aerial image

PLATES

Plates

Plate 1: Battery Storage Site Eastern Field (looking West)

Plate 2: Battery Storage Site Western Field (looking West)

Plate 3: Manor Farm - Data Centre Site (southern extent looking West from south-east corner)

Plate 4: Manor Farm - Data Centre Site (southern extent looking East from south-werst corner)

Plate 5: Manor Farm - Data Centre Site (north-east corner looking south-east)

Plate 6: Colne Brook to North of the Data Centre Site (looking north-east)

Plate 7: Manor Farm – Data Centre Site Interior View (looking north from southern access road)

Plate 8: Manor Farm – Data Centre Site Interior View (looking north from southern access road)

Plate 9: Manor Farm – Data Centre Site Interior View (looking north-west from Southern Access Road)

Plate 10: Manor Farm – Data Centre Site North-East Grassed Area Interior View (looking south from Hilton London Heathrow Airport Hotel Car Park)

Plate 11: Building at Manor Farm (SHER 21877)

Plate 12: View north-east-east of former Manor Farm buildings

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