HS2 Phase One Central Section, Archaeological Works, M25 Access Slip Roads, 1C17MSRTT Survey Report

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Revision	Author	Checked by	Approved by	Date Approved	Issued for/ Revision details
P01 draft	J. Streatfield-James	P. Boyer	Richard Brown		Acceptance
P01	J. Streatfield-James	J. Sulikowska	I. Williamson	19/4/18	For issue

Contents

List of Figures

1 Works Summary

1.1 Introduction

1.1.1 COPA Archaeology was commissioned by Fusion to undertake a trial trench evaluation on land either side of the M25 motorway, to the west of West Hyde, Hertfordshire, centred on NGR TQ 02157 91967.

1.2 Works Carried out

1.2.1 The archaeological fieldwork consisted of test pit and trial trenching evaluation carried out in advance of construction work associated with the southern portal of the Chiltern Tunnel, and works associated with the M25 (Figure 1, M25 Access Slip Roads - Survey Control Plan).

1.2.2 The aims and objectives of the trial trench evaluation are set out in the Project Plan (Document No.: 1D037-EDP-EV-REP-040-000018). The project background, methodology, standards and document references are contained in the fieldwork report.

1.2.3 This survey report specifically sets out the survey methodology and locates the works as outlined in the Location Specific Witten Scheme of Investigation (Document No.: 1EW03-FUS-EV-SPE-CS02_CL04-000054 Revision 1).

1.2.4 Some of the evaluation trenches were moved because the planned trench location had been derived from survey drawings which suggested that the polylines demarcating the M25 corridor were representing the top of the road cutting batter slopes, not the base as was discovered at the beginning of the fieldwork. Hence many trenches in Field 1 were moved to the west to ensure a safe working distance for plant movements from the edge of the M25 road cutting.

1.2.5 In agreement with Fusion's Historic Environment Manager some trenches in Fields 1 and 2 were split into two segments. This was due to Health and Safety issues accommodating the safe and effective access/egress of Principal Contractor's (Jackson Civil Engineering - JCE) plant and equipment into the south of both fields, whilst COPA were still undertaking the archaeological evaluation.

1.2.6 Because of the need to retain the farm track running along the west edge of Field 2, as a safe access route for JCE plant and equipment, in conjunction with the narrow nature of the land-take area to the immediate west of the overhead power lines, many trenches in the north of Field 2 had a predominantly north/south alignment. Because of the 'bunching' of the trench array, Trench 53 was not undertaken. All these changes were undertaken after agreement with Fusion's Historic Environment Manager. In the very south of Field 2, trenches 56, 58, 64 were shortened and re-orientated to fit within the available area following the fencing of Field

2. Tr 81 was moved southwards to avoid cutting across plant/vehicle access corridor across Field 3.

2 Survey Methodology

2.1 Set out and Survey

2.1.1 Nine Permanent Ground Markers (PGM) were installed across the site (three for each of Fields 1, 2 and 3) and located with Real Time Kinematic (RTK) Global Navigation Satellite System (GNSS) equipment. Coordinate values for each PGM were calculated in Leica GeoOffice from the average of two 180 epoch occupations taken an hour apart. PGMs were surveyed at the start and finish of each survey job, giving an estimate of the absolute accuracy of each day's survey, in accordance with the LSWSI. Setting out for all 109 No. trenches was undertaken with coordinate data supplied by the Employer using Leica GS08 RTK GNSS set in network RTK mode, accessing corrections data from Leica Smartnet.

2.1.2 Survey work of trench limits and archaeological features was conducted by trained and competent COPA staff using Leica GS08 RTK GNSS equipment. Survey control was set out in accordance with *Methodology for GNSS total station survey* in Technical Standard - Specification for historic environment investigations (Document No.: HS2-HS2-EV-STD-000-000035), which sets out standards for the installation of highly accurate control stations, providing quality control checks to ensure consistent RTK GNSS measurements during fieldwork. All features were surveyed in accordance with *Fieldwork Manual 2: Survey Manual* (Cotswold Archaeology 2017), compliant with Historic England *Metric Survey Specifications* (Historic England 2015). Survey data was related to the Ordnance Survey National Grid (OSGB36/15), with heights given above Ordnance Datum Newlyn (ODN).

2.1.3 Prior to commencement, all equipment was checked and pre-survey information was downloaded onto survey equipment from COPA's File Transfer Protocol (FTP) server. Field recording software for RTK GNSS equipment (Leica SmartWorx) was verified as up-to-date prior to commencement.

2.1.4 Trench limits were recorded at the top and base of excavation. The limits of archaeological features were surveyed immediately following the excavation of each trench in order to provide a plan of all archaeological features prior to hand-excavation. Following hand-excavation, the limits of each feature were re-surveyed, along with the limits of each hand-excavated intervention and the feature base. Sections were hand-drawn, and located using RTK GNSS equipment with drawing points surveyed at each end of the section line.

2.2 Standards and Guidance

2.2.1 All spatial data was recorded by Leica RTK GNSS on an appropriate memory card, and transferred to the office using FTP. Non-spatial information was recorded either in a field

notebook. Survey data was processed daily in Leica GeoOffice, and exported in ESRI Shapefile format before being collated and stored in ESRI File Geodatabase (.gdb) format. The File Geodatabase provided scaled digital data of all required elements of the project and located them within the Ordnance Survey grid with heights given above Ordnance Datum Newlyn (ODN). These files were backed up with originals being stored on COPA's server in Kemble, near Cirencester.

2.2.2 All drawings are composed of closed polygons, polylines or points in accordance with the requirements of GIS construction and COPA Geomatics protocols. In all instances, GIS work has, and will, follow the guidelines set out in the Employer's GIS Standards (HS2-HS2-GI-SPE-000-000004).

2.2.3 The GIS drawing contains an information layout which included all the relevant details appertaining to that drawing. Information (metadata) on all other digital files will be created and stored as appropriate. At the end of the survey all raw measurements are made available as hard copy for archiving purposes.

2.2.4 All digital data was backed up on COPA's servers.

2.3 Archive Deposition

2.3.1 The digital data will be temporarily stored on the server at COPA Kemble (near Cirencester), which is backed up on a daily basis. In due course, the data will be passed on to HS2 for long-term archival deposition. For long term storage of the digital data, CDs/DVDs will be used. Each disk will be fully indexed and accompanied by the relevant metadata as provenance.

3 Appendix 1 - Figures

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Height 86.21

STN04
E 502222.84
N 192099.64
Height 79.82

STN02
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STN08
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Height 68.02

STN09
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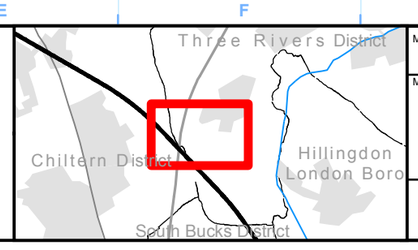
Height 62.99

Legend

- Control Points
- Excavated trench
- Site Boundary



Map Number 1C17MSRTT_1

Map Name

M25 Access Slip Roads Survey Control Plan

Community Forum Area 07-08
Colne Valley - Chalfonts and Amersham

Registered in England. Registration number 06791686.
Registered office: 2 Snowhill, Queensway, Birmingham B4 6GA.

Scale at A3: 1:5,000

0 50 100 150 200
Metres

Doc Number: Figure1

Date: 19/04/18