HS2 Phase One Central Section, Archaeological Works, Windmill Hill, 1C17WMHTT Survey Report

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

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1 Works Summary

1.1 Introduction

1.1.1 COPA was commissioned by Fusion undertake a trial trench evaluation on an area of land (CR1080) located c. 2km south of Southam, Warwickshire.

1.2 Works Carried out

1.2.1 The archaeological fieldwork consisted of eight trenches and a watching brief during the excavation of twelve mitigation ponds (Figure 1, Windmill Hill - Survey Control Plan). Trench 3 contained a single undated ditch, possibly a former hedgerow and Trench 6 contained three furrows, two of which were excavated. No features or deposits of archaeological interest were identified in any of the other trench of mitigation ponds.

1.2.2 The aims and objectives of the trial trench evaluation are set out in the Project Plan for Trial Trench Investigations at Windmill Hill (LS093/94) and Southam (LS122); (Document No.: 1EW03-FUS-EV-REP-CS07_CL24002689). The project background, methodology, standards and document references are contained in the fieldwork report (Document No.: 1EW03-FUS-EV-REP-CS07_CL24-007292).

1.2.3 This survey report specifically sets out the survey methodology and locates the works as outlined in the Location Specific Written Scheme of Investigation (Document No. 1EW03-FUS-EV-REP-C000-002691).

1.2.4 All trenches, shown on Figure 1, were excavated in the pre-determined positions identified in the Project Plan (Document No.: 1EW03-FUS-EV-REP-CS07_CL24002689).

2 Survey Methodology

2.1 Set out and Survey

2.1.1 3 No. Permanent Ground Markers (PGM) were installed across the site, two to the east and one to the west, 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.

2.1.2 Setting out for 8 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.

2.1.3 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).

2.1.4 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.

2.1.5 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 (Figure 1) 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

STN01
E 442232.63485
N 259467.55707
Height 90.86865

STN02
E 442300.3002
N 259407.12161
Height 92.11606

STN03
E 441977.70902
N 259130.57635
Height 90.16964

Windmill Hill
Spinney

Windmill Hill

SOUTHAM ROAD

LADBROKE BY PASS

WINDMILL LANE

Track

90.9m

The Close

Cotswold

Little Wood

Briarwood

Well

Forge

Hillview

Tew Cottage

Newlands

Legend

- Control Points
- Excavated Trenches
- Site Boundary

Stratford-on-Avon District

Map Number 1C17WMHTT_1

Map Name

Windmill Hill -
Survey Control Plan

Community Forum Area 16
Ladbroke and Southam

Scale at A3: 1:2,000

0 20 40 60 80
Metres

Doc Number: Figure 1

Date: 19/04/18

This figure forms part of report 1EW03-FUS-EV-REP-CS07_CL24-007388.