

Archaeological Watching Brief



May 2012



Archaeological Watching Brief

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SITE CODE	84460	ACCESSION CODE	TBC	CLIENT CODE	N/A
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* I= INTERNAL DRAFT E= EXTERNAL DRAFT F= FINAL



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Archaeological Watching Brief

Summary

Wessex Archaeology was commissioned by CgMs to undertake an Archaeological Watching Brief during remediation groundworks at Mill Road Gas Works (NGR 443062 379871). The programme of archaeological work was required in order to fulfil a condition of planning permission to redevelop the site (planning reference 11/01016/FL). This report presents a brief description of the methodology followed, a description of the results and an interpretation of the findings. The watching brief was undertaken between 20.02.12 and 16.04.12.

Archaeological monitoring of ground remediation works focused on two features identified by a previous desk based assessment of the site: a culverted mill tail race that crossed the centre of the Site on a roughly east-west alignment (referred to as 'the Culvert'); and a gas holder in the southeast of the Site (referred to as 'Gas Holder 1').

The original tail race was thought to be associated with Park Mill located to the west of the Site, extant in 1772 and possibly of earlier medieval origin. The tail race was partially culverted over during the establishment of the Eckington Gas Works on the Site from 1860. The gas works was largely closed in 1946, becoming a depot in the early 1960s. All ancillary buildings associated with the Gas Works were demolished *c*. 2000.

The Culvert from Park Mill to Moss Brook was exposed and recorded under archaeological supervision at both ends of the site, revealing two phases of construction. These phases appeared consistent with historic map evidence that indicated the eastern half of the culverted tail race was constructed first between 1855 and 1883, and the western half later between 1883 and 1923. No evidence for the original mill tail race was observed.

The archaeological monitoring also identified structures and deposits relating to the gas works, and deposits from the subsequent recent demolition episodes. Gas Holder 1 was exposed and recorded within the north of the site. Although no evidence remained for the gas holder cylinder or iron frame superstructure, the brick cistern survived in good condition with fixtures and fittings relating to the working of the gas holder.

The results of the watching brief will be published as a short note in the *Derbyshire Archaeological Journal* within the next 2 years.

The site falls within the catchment area of Weston Park Museum, Sheffield. However the Museum is currently not receiving archives or issuing accession numbers and therefore the archive will be retained in the Sheffield office of Wessex Archaeology until further notice.



Archaeological Watching Brief

Acknowledgements

This project was commissioned by CgMs and Wessex Archaeology is grateful to Robert Smith in this regard.

Fieldwork was undertaken by Neil Dransfield and Martin Huggon. This report was compiled by James Thomson. The project was managed for Wessex Archaeology by Richard O'Neill.

Archaeological Watching Brief

1 INTRODUCTION

1.1 Project Background

- 1.1.1 Wessex Archaeology were commissioned by CgMs to undertake an archaeological watching brief during remediation groundworks at Mill Road Gas Works in Eckington, Derbyshire (hereafter 'The Site'). The Site is located at NGR 443062 379871 (Figure 1).
- 1.1.2 The programme of archaeological work was commissioned in order to fulfil a condition of planning permission to redevelop the Site (planning reference 11/01016/FL).
- 1.1.3 Archaeological monitoring focussed on two features identified by previous desk based assessment of the Site (CgMs 2012a): a culverted mill race that crossed the centre of the Site on a roughly east-west alignment (referred to as 'the Culvert'); and a gas holder in the southeast of the Site (referred to as 'Gas Holder 1').
- 1.1.4 The programme of archaeological works was undertaken in line with a Written Scheme of Investigation (WSI) produced by CgMs (2012b), and approved by Steve Baker (Development Control Archaeologist for Derbyshire County Council).

1.2 The Site, Location and Geology

- 1.2.1 The Site, occupying an area of 0.3ha, lies in north Eckington and is bounded by Mill Road to the south, the Moss Brook to the north, a detached residential property to the east and the remains of Park Mill to the west.
- 1.2.2 The underlying geology of the Site consists of Lower Coal Measures Westphalian Sandstone at a depth of 5.6m below ground level (bgl), overlain by 2.0m of alluvium. A 2.0-3.5m thick made ground deposit covers the Site.

2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

- 2.1.1 The following section summarises information presented within the desk based assessment for the Site, compiled and researched by CgMs (2012b).
- 2.1.2 There are no recorded prehistoric, Romano-British, or early medieval sites within the Site. Park Mill, situated beyond the Site to the west, appears on a map of 1772 and may be of earlier medieval origin. A tail race from Park Mill passes through the Site towards Moss Brook. The tail race is shown as open on the 1855 Poor Law map, and was partly culverted in the centre of the Site on the 1883 Ordnance Survey (OS) map. By the production of the 1923 OS



map, the mill tail race had been fully culverted through the central and western parts of the Site.

- 2.1.3 In 1860 the Eckington Gas Works was established on the Site. Whilst the main buildings appeared to have laid beyond the Site boundary to the southeast, two gas holders were shown within the Site on the 1899 OS map. There were further structures associated with the works built in the south of the Site in the early 20th century.
- 2.1.4 The works ceased gas production soon after 1946, before becoming a depot in the early 1960s. All ancillary buildings associated with the Gas Works were demolished *c*. 2000.

2.2 Mid-Late 19th Century Gas Holders

2.2.1 Gas holder design in the mid-late 19th century comprised a cylindrical tank, sealed at the top and open at the bottom, floating in an annular water filled cistern that maintained an air tight seal. Gas was stored in the cylindrical tank which would rise as gas was introduced. Guides, often comprising columns or a lattice framework, ensured that the cylinder would rise and fall vertically. In order to increase the capacity of the gas holder several cylinders were often used arranged with different diameters so that they might telescope out, with seals in place between the cylinders to prevent gas from leaking from within.

3 METHODOLOGY

3.1 Aims

- 3.1.1 The principal aims of the archaeological work were:
 - To control the process of ground remediation works so that any exposed archaeological remains were not destroyed without record;
 - To monitor the ground remediation woks in order to ensure that any below ground archaeological deposits exposed were promptly identified; and
 - To ensure the recording of archaeological remains affected by the ground remediation works, to place this record in its local context and to make this record available.

3.2 Methodology

- 3.2.1 The watching brief was undertaken between 20.02.12 and 16.04.12. Remediation works on Gas Holder 1 and the Culvert were undertaken by a mechanical excavator with a toothless ditching bucket. Constant supervision was maintained during excavation of Gas Holder 1 and during initial excavation of the Culvert. However, due to limited access and the method of excavation which precluded clear observations being made, monitoring of the Culvert was curtailed once sections had been recorded through either end of the structure.
- 3.2.2 All archaeological deposits were recorded using Wessex Archaeology's pro forma recording system. This written record is hierarchically based and



centred on the context record. Each context record fully describes the location, extent, composition and relationship of the subject and is cross-referenced to all other assigned records. Context numbers used in recording the excavation were not repeated.

3.2.3 A full photographic record was maintained during the course of the works comprising 35mm black and white print film duplicated with 35mm colour slide and digital photography at 10 megapixel resolution.

3.3 Best Practice

3.3.1 All works were conducted in compliance with the Institute for Archaeologists' *Standards and Guidance for Archaeological Watching Brief* (1994: revised 2008a). Finds were treated in accordance with the relevant guidance given by the IfA (2008b), the UK Institute of Conservators Guidelines *Conservation Guideline No 2* (1990) and the Museums and Galleries Commission's *Standards in the Museum Care of Archaeological Collections* (1992).

4 RESULTS

4.1 Introduction

4.1.1 The following section provides a summary of the information held in the site archive with observed features and contexts tabulated in **Appendix 1**.

4.2 The Culvert

- 4.2.1 The Culvert (013; Figures 2-3) was constructed in two phases consistent with historic map evidence. The eastern section of the Culvert was constructed from un-frogged redbrick in a sandy mortar with occasional large flecks of lime (Plate 1). The Culvert within this area lay under a yellow-brown clay deposit.
- 4.2.2 The western section of the culvert was constructed from machine-made frogged redbrick (measuring 23.5x11.5x8cm) in a sandy cement mortar (Figure 3a; Plate 2), and overlain by a clayey silt deposit with frequent inclusions of industrial waste and occasional rubble (016).
- 4.2.3 Despite different construction dates, the cross-section of the Culvert appeared to be consistent, comprising straight sides and an arched ceiling. The base of the Culvert was not observed due to obstructions and access restrictions. The internal dimensions of the Culvert were 1.9m wide by approximately 1.3m high. Standing water was observed within the structure.
- 4.2.4 No evidence for the original mill tail race was observed.

4.3 Gas Holder 1

4.3.1 Archaeological monitoring during the excavation of Gas Holder 1 (Figures 2 and 3b) recorded the brick built structure of the gas holder cistern to a depth of around 3m below ground level (Plate 3). The cistern was an un-frogged redbrick built annular structure of pier and panel construction (004), comprising eight piers, with a wrought iron brace of riveted plate encircling the upper portion (Plate 4).

- 4.3.2 Stone coping survived around the top of the cistern incorporating large blocks over the piers of the cistern walls. These larger blocks (context 001/006; Plate 5) contained bolt holes indicating they likely supported the main stanchions of the above ground framework. The thinner coping (003; Plate 6) of the panel walls had regularly spaced small iron oxide stained holes, possibly indicating a fence or similar had surrounded the cistern.
- 4.3.3 The internal face of the cistern was flush with thin vertical strips of iron (014; Plate 3) centred at the point of the piers. These strips likely acted as guides for wheels attached to the cylinders to prevent them wearing against the brickwork.
- 4.3.4 Within the centre of the gas holder structure was a square brick built column (015; Plate 3) of indeterminate function.
- 4.3.5 No construction cut for the cistern was encountered during the monitoring work, indicating that a wide area may have been opened up to facilitate construction. Abutting the outer face of the cistern was a deposit of light yellow silty clay (008) that would have served as back fill within the construction cut and as a sealing layer to prevent water leakage.
- 4.3.6 Within the cistern there was a deposit of modern yellow-brown hardcore crush (011), presumably dating to the clearance of the Site in *c*. 2000.

4.4 Finds

4.4.1 A small assemblage consisting of nine sherds of mid-late 19th century pottery was recovered from deposit 016 overlying the western end of the culverted tail race within the Site. A summary of the finds is listed below in Table 1.

Context	Material	Fragment count	WGT (g)	COMMENT
016	POTTERY	9		Mixed late C19th assemblage comprising a sherd of a blue banded whiteware bowl, 6 sherds of blue transfer print whiteware, a sherd of porcelain, and a sherd of brown glazed courseware.

Table 1: All finds by context

- 4.4.2 The most closely datable element of the assemblage comprise two fragments of an 'Asiatic Pheasants' patterned dish, one bearing a stamp naming the maker as Cochran & Fleming of Glasgow who were producing Asiatic Pheasant wares between 1896 and 1920. The ware is not unusual, and was one of the most popular of the later 19th and 20th century designs.
- 4.4.3 Overall the assemblage suggests a late 19th or early 20th century date for context 016.
- 4.4.4 No further analysis is warranted for any of the components of this assemblage. Given the date-range of the finds recovered, and the quantities represented, retention for long-term curation is not recommended.

5 CONCLUSIONS

5.1 Summary

- 5.1.1 The archaeological monitoring identified structures and deposits relating to the 19th century Eckington Gas Works, and deposits from subsequent recent demolition episodes.
- 5.1.2 A brick built cistern, part of Gas Holder 1, was exposed and recorded within the north of the Site. Although no evidence remained for the gas holder cylinder or iron frame superstructure, the brick cistern survived in good condition with fixtures and fittings relating to the working of the gas holder.
- 5.1.3 A culverted mill tail race from Park Mill to Moss Brook passed roughly eastwest across the Site. This culvert was exposed and recorded under archaeological supervision at both ends revealing two phases of construction. These phases appeared consistent with historic map evidence that indicated the eastern half of the culverted tail race was constructed first between 1855 and 1883, and the western half later between 1883 and 1923.

5.2 Publication statement

5.2.1 The results of the watching brief will be published as a short note in the *Derbyshire Archaeological Journal* within the next 2 years.

6 ARCHIVE

6.1 Preparation

6.1.1 The project archive, consisting of all primary written documents, plans, sections, photographs and electronic data, will be prepared by Wessex Archaeology staff in accordance with the requirements of the repository museum and in line with national guidelines (Brown 2007).

6.2 Deposition

- 6.2.1 The Site falls within the catchment area of Weston Park Museum, Sheffield. However the Museum is currently not receiving archives or issuing accession numbers and therefore the archive will be retained in the Sheffield office of Wessex Archaeology until further notice.
- 6.2.2 A digital copy of the report will be prepared for the client and physical copies will be submitted to Derbyshire County Council and the Peak District National Park Authority. A physical copy of the report will be included with the Site archive.
- 6.2.3 An OASIS form will be completed at http://ads.ahds.ac.uk/project/oasis/ for inclusion in the ADS database. This will include an electronic copy of the report in PDF format.



6.3 References

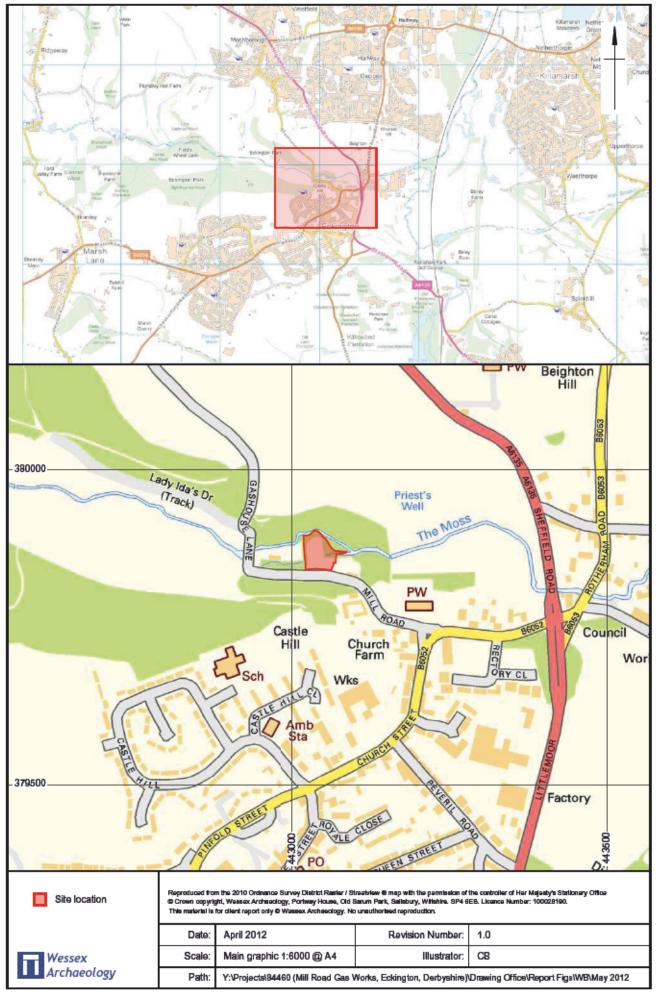
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- United Kingdom Institute of Conservation (UKIC) 1990. Guidelines for the Preparation of Archaeological Archives for Long Term Storage.



APPENDIX I: TABLES

Table 1: Context Descriptions

Area	Context	Category	Description	Depth bgl (m)
Gas Holder 1	001	Fixing stone	Rectangular sandstone block with four circular holes formerly for fixing hold down bolts from stanchions supporting gas holder cylinder	0.15-0.40
Gas Holder 1 002 Brick pier Gas Holder 1 003 Coping		Brick pier	Handmade red brick pier projecting two courses out from the cistern wall 004 and supporting fixing stone 001	0.40+
		Coping	Sandstone coping of panel wall 004 with chamfered edge. Regularly spaced circular holes parallel to the inner face of the stones, possibly for fence or similar.	0.15-0.30
Gas Holder 1	004	Cistern wall	Handmade red brick panel wall between piers 002 and 007.	0.30+
Gas Holder 1	005	Iron brace	Iron brace fabricated from plates with bolted joints, encircling the gas holder.	0.50-065
Gas Holder 1 006 Fixing		Fixing stone	Same as 001	0.15-0.40
Gas Holder 1 007 Brick pier Gas Holder 1 008 Made Ground Gas Holder 1 009 Overburden		Brick pier	Same as 002	0.40+
		Made Ground	Light yellow silty clay with sand and gravel inclusions.	0.44+
		Overburden	Mid brown sandy silt with occasional rubble	0.00-0.44
Gas Holder 1	010 Iron pipe		Iron pipe with 0.04m diameter situated within 004 beneath coping 003.	0.35-0.35
Gas Holder 1	011	Deposit	Yellow-brown hardcore crush	0.50+
Gas Holder 1 012 Deposit		Deposit	Mid yellow-brown sandy silt with inclusions of brick rubble and stone	0.30-0.50
Culvert013Brick mill tail raceGas Holder 1014Fe runnersGas Holder 1015StructureCulvert016Deposit		Brick mill tail race	Machine made red brick arched culvert with an internal width of 1.9m	
		Fe runners	Thin iron plates running down internal face of the gas holder wall opposite to the external piers.	0.30+
		Structure	Approximately 1m square brick pier in centre of gas holder	1.50+
		Deposit	Dark clayey silt with inclusions of clinker, stones and rubble fragments.	



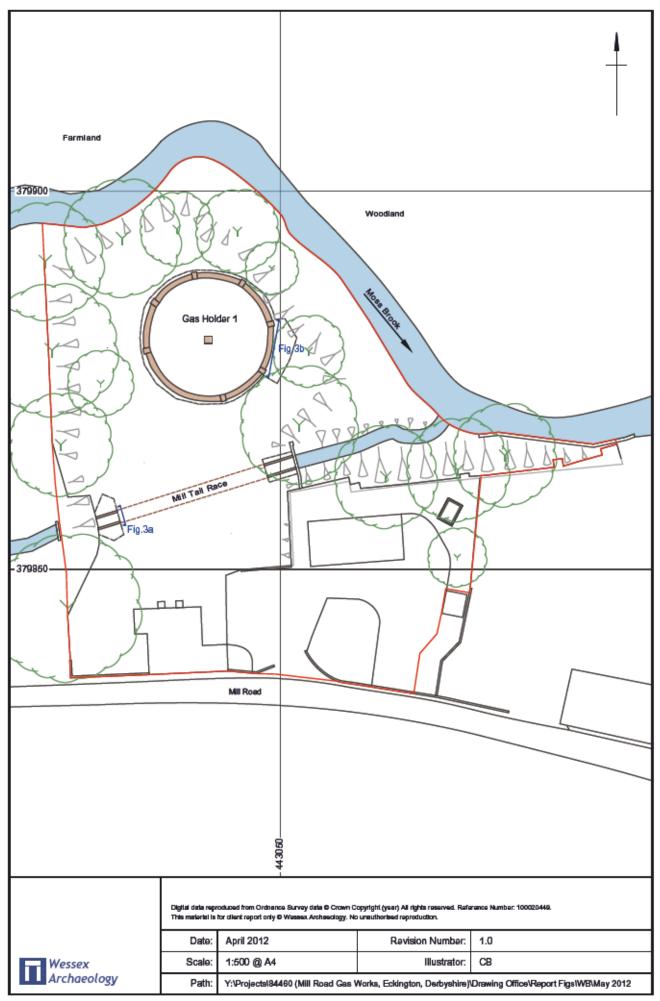


Figure 3 Path: Y3Projects/84460 (Mill Road Cas Works, Eckington, Derbyshre)/Drawing Office/Report Figs/WBIMey 20-12 Revision Number: 1.0 Illustrator. CB Κ z View of the external face of Gas Holder 1's cistern, looking west 600 800 200 900 s ≥ Scale: 1:40 @ A3 Date: April 2012 000 View of the Culvert exposed at the western side of the Site, looking south-west Ę. This matarial is for diant reportionly © Wessex Archaeology. No unauthorised reproduction •∏ 000 Fe pipe 8 0 B 005 ş 000 013

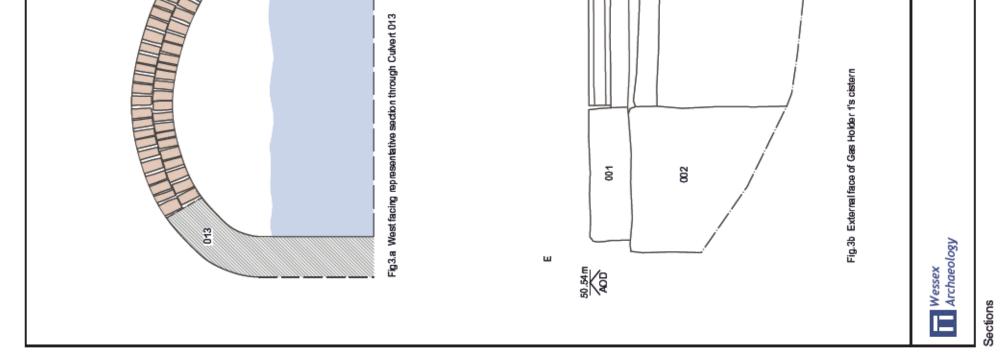




Plate 1: View of the Culvert exposed at the eastern side of the Site



Plate 2: View of the Culvert exposed at the western side of the Site

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Plate 3: General view overlooking Gas Holder 1, noting iron guide rails 014 on internal face of cistern wall and central pier 015



Plate 4: View of the external face of Gas Holder 1's cistern

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