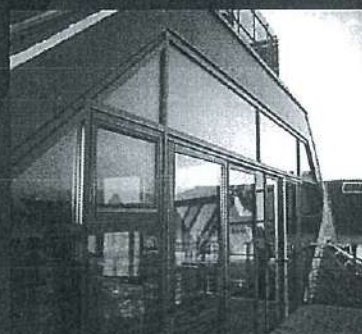




GROUND INVESTIGATION FACTUAL REPORT

FORMER MONCKTON COKE WORKS, NR BARNESLEY

FOR Hargreaves (UK) Services Ltd

June 2016

Ground Investigation Factual Report
Former Monckton Coke Works, Nr Barnsley
for
Hargreaves (UK) Services Ltd

G15009	Ground Investigation Factual Report, Former Monckton Coke Works, Nr Barnsley
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Revision	Date of issue	Comments	Prepared by	Checked by
0	02.05.16	1 st Issue	ARC	AC
1	07.06.16	Minor typographic changes plus additional chemical analysis results	ARC	JH

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1.0 Introduction

1.1 Commission

Patrick Parsons Ltd (PPL) was commissioned by Hargreaves (UK) Services Ltd (HG) to undertake additional ground investigation at their site at the former Monckton Coke Works, near Barnsley. The extent of the site pertaining to this report is presented in the Site Features Plan Drawing No. G15009-700, included in **Appendix A**.

1.2 Proposals

It is proposed to redevelop the site and therefore the existing PPC Permit is required to be surrendered.

1.3 Objectives

The objectives of the intrusive investigation were to obtain samples of soils and groundwater contamination testing. This report is factual and provides no interpretation or comment on the IPC licence.

In order to discharge the IPPC Permit, it is required that the contamination status of the site in its current state is compared against the contamination status of the site in 2002 when the IPPC Permit was first issued. Therefore, this ground investigation aimed to replicate the ground investigation undertaken in 2002 as closely as possible in terms of sampling location, sampling depth, and the testing suite of each sample.

Gas and groundwater monitoring has also been undertaken and the results appended.

1.4 Limitations

This report has been prepared for Hargreaves (UK) Services Ltd and their appointed agents only and should not be relied upon by any third party without the written permission of PPL. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors do not owe them any Duty of Care or Skill. This report is based on and limited to an assessment of the information and ground conditions identified here. PPL is not responsible for ground conditions not revealed during these investigations.

1.5 Previous Reports

PPL has been provided with information/reports prepared by others, including:

- Monckton Coke and Chemical: Phase 1a Site Report. Reference ILM081/1a, Issue 1. ABB Eutech, 22 August 2001.
- Monckton Coke and Chemical: Phase 1b/2 Site Report. Reference ILM092/1b-2, Issue 1. ABB Eutech, 19 April 2002.
- Environmental Due Diligence: Monckton Coke and Chemical Works. Reference 12022228-001. WSP Environmental UK, June 2005.
- Environmental Assessment: Monckton Coke and Chemicals Limited. Reference 16492-R1(00). RSK STATS Geoconsult Limited, dated May 2011.
- RSK letter report on groundwater sampling, reference 321453(H)L01(00), dated 19 August 2013.

- Data Review and Preliminary Risk Assessment: Monckton Coke and Chemicals Limited. Reference 321789(H)-R1(00). RSK Environment Limited, dated November 2014.

These reports were referred to in the design of the latest phase of ground investigation, specifically RSK 2014 report, and should be read in conjunction with this report.

PPL also issued the following ground investigation report in November 2015. The factual information from that ground investigation is also included in this report:

- Ground Investigation Report: Former Monckton Coke Works, Nr Barnsley Issue 2, G15009. Patrick Parsons, Dated 24-11-2015

2.0 Site Details

Site Location: The site is located off Lund Hill Lane, Royston, to the northeast of Barnsley, South Yorkshire. The site is located around NGR 437460mE, 412020mN.

Site Area: The main operational site covers approximately 14 hectares (approximately 36 Acres). The site is divided into 3 separate areas; namely the Stock Yard (northern area), the Former Production and By-Products area (central area) and the Southern area, as presented on Drawing No. G15009-700 included in **Appendix A**.

2.1 Site Description

The site is accessed off the B6428 (Lund Hill Lane). This road forms the southern and eastern site boundaries, with a railway (in cut) forming the western boundary. A path (former railway) and soil bund (approximately 4 to 5m high) and of unknown composition delineates the majority of the northern boundary. This bund also runs along part of the western boundary and north eastern boundary. The 3 principal site areas are discussed below.

Stock Yard - North

Comprising the coke import, storage and loading area including associated static and mobile plant. An engineering workshop and electricity substation are located at the eastern boundary and a plant servicing workshop is present in the southern central part. An above ground fuel tank is located immediately to the south of this workshop building.

The extreme north eastern corner (behind the soil bund) may potentially be infested by Japanese Knotweed, subject to professional inspection and confirmation.

Former Production and By-Products Area - Central

This comprises the former coke manufacturing plant with associated by-product manufacture and electricity generation (CHP plant), which includes offices, workshops and non-production areas. The coke ovens (42 no.) are set within a battery in the northern part with plant associated with production of tar, benzole and ammonia located south of the ovens. The CHP plant occupies the southern part. Generally, the condition of the hardstanding is poor showing evidence of cracking and staining. The vessel bunds are stained and leaking and associated pipe work and tanks are corroded.

Southern Area

An effluent treatment facility discharging into the sewer network occupies this area. Elsewhere, coarse vegetation and semi-mature trees are present.

Existing ground levels are at their highest in the central southern part (By-products area) at approximately 72.0m AOD falling steeply towards the southern boundary (to approximately 62.0m AOD) and steadily northwards where they are at approximately 60.0m AOD in the north western corner of the site.

2.2 Adjacent Land Uses

The site lies to the northeast of the township of Royston in a semi-rural setting, though with the remnants of a significant mining industry, with former collieries and associated infrastructure, now under varied commercial land-use or derelict, awaiting re-development. Residential development is present within 50m of the southwestern site boundary.

3.0 Geoenvironmental Setting and Site History

3.1 Geoenvironmental Setting

The geoenvironmental setting of the site is well documented, however the salient points are listed below.

- The solid strata underlying the site are undifferentiated Carboniferous Middle Coal Measures with the Mexborough Rock sandstone present beneath the majority of the site apart from the north and southern parts. The Royston coal seam outcrops across the south of the site and is present at shallow depth in this area. No superficial soils are present
- Previous intrusive investigations at the site have recorded ash-based made ground to between less than 1m and 3m depth underlain by sandstone and mudstone, weathered in their upper parts. Limited thicknesses of cohesive superficial soils were proved in the northern part of the site
- The southern part is defined as a Development High Risk Area with regard to potential past shallow mining. The northern part of the site was a former deep coal mine with 3 capped disused mine shafts present.
- A former sandstone quarry impinged onto the south eastern site boundary and a former clay pit was present along the northern boundary of the site
- The site has been used for tipping of colliery spoil. Immediately to the west the area was used for disposal of mine waste. A former landfill within 100m southwest received household waste and other landfills within 250m west and southwest received various commercial, domestic and liquid wastes
- The solid strata are classified as a Secondary A aquifer
- The nearest surface watercourse is Lineside Dyke running along the western boundary within the railway cutting and Pools Dike approximately 120m west. The disused Barnsley Canal is present within approximately 20m of the site to the west
- The site is affected by radon.

3.2 Site History

The site history and that of its surroundings are extensively researched. A summary of the main historical features influencing the site are presented below.

Since the mid 19th century the site remained as agricultural land with a railway forming the western boundary.

During the late 19th century until the mid 20th century Monckton Main colliery occupies the northern part with 3 shafts shown. A brickworks and associated clay pit impinge onto the northern site boundary. Coke ovens, a gas works, 'powder magazines' and tanks are shown in the central and central southern part of the site with numerous railway sidings across the majority of the site (a railway tunnel is present in the northern part of the site). A sandstone quarry crosses the south eastern site boundary.

In the 1960s a mine is recorded in the north and mineworks in the south of the site with interconnecting rail lines both on and off site to the east. Earthworks are shown along the north and eastern boundaries.

During the latter part of the 20th century the railway lines on the site become disused. The former mine in the north is shown as 'disused' and a former tip (spoil heap) is present off site to the east.

The current effluent plant is shown during the 1990s. Since 2000, the site is shown generally as existing with the addition of the CHP plant in the southern part.

4.0 Summary of Previous Investigations

Information is available from earlier intrusive investigations undertaken at the site over the last 15 years. The main findings with regard to identified soil and groundwater contamination are presented below.

4.1 Phase 1b/2 Site Report, ABB Eutech (2002)

- Establishment of baseline conditions with regard to soil and groundwater contaminant concentrations within the operational part of the site (re. IPC permitting).
- Evidence of visual and olfactory hydrocarbon impact of soils and groundwater including free phase product.
- Elevated concentrations of TPH, BTEX, PAH, phenols and total sulphate within soils in the by-products area together with PAH, BTEX, SVOC, TPH and cyanide within groundwater (MW5) located close to the western site boundary within the by-products area. In addition, elevated leachate concentrations with respect to BTEX were recorded from the western boundary railway cutting.

4.2 Environmental Assessment, RSK (2011)

- Assessment of the contamination status of soil and groundwater within the operational site area (production and by-products).
- Visual and olfactory evidence of hydrocarbon impact of soils and the underlying solid strata was noted.
- Elevated concentrations of hydrocarbons, PAHs and VOCs with respect to the generic commercial GACs were present within the soils and groundwater in and around the by-products area.

4.3 Additional Groundwater Sampling, RSK (2013)

- Monitoring well BH203 located within the eastern part of the by-products area displayed a significant thickness of DNAPL, possibly comprising PAHs derived from coal tars. Contaminant concentrations with the remaining wells were as the 2011 results.

4.4 Ground Investigation Phase 1, Patrick Parsons (2015)

- Detailed in the PPL 'Ground Investigation Report' dated November 2015
- Excavation of 40 No. trial pits (TP01 to TP14, TP16 to TP28, TP31 to 33, and TP101 to TP110) to assess ground conditions, *in situ* testing and obtain samples for laboratory analysis;
- Drilling of 9 No. mini percussive (window sampler) boreholes (WS1 to WS7, and WS9 to WS10) to assess ground conditions, *in situ* testing and obtain samples for laboratory analysis;
- Drilling of 10 No. rotary boreholes (RBH1D, RBH2A, RBH3A, RBH4A, RBH5, and BH301 and BH305) to install groundwater (and ground gas) monitoring wells
- Laboratory geotechnical testing including water soluble sulphate, pH, moisture content, Atterberg limits and calorific value determinations;
- Laboratory chemical soil testing of Made Ground and natural soils, comprising heavy metals, metalloids, non-metals, hydrocarbons, SVOCs and VOCs and asbestos presence determination.
- The ground investigation fieldwork was undertaken between 29th April and 19th June 2015.
- A plan showing the location of the exploratory holes is included as PPL Drawing No. G15009-702, included in **Appendix A**.

5.0 Fieldwork and Testing

The following scope of fieldwork was undertaken to determine ground conditions and to assess contamination in soils and groundwater.

- Excavation of 28 No. trial pits.
- Laboratory chemical soil testing was undertaken on a total of 40 No. samples from trial pits (TP1005 to TP1006, TP1008 to TP1018, TP1020 to TP1033, TP1101 to TP1105).
- Laboratory chemical soil leachate testing was undertaken on a total of 15 No. samples from trial pits (TP1103, TP1105, TP1005 to TP1006, TP1009 to TP1012, TP1014, TP1017, TP1020 to TP1021, TP1024, TP1026, TP1031).
- 3 Surface Water samples from locations SP1, SP3, and SP4 were obtained and chemical testing was undertaken on these samples.
- 6 Groundwater samples were obtained from boreholes drilled in 2015 (BH301 to BH305, and WS9) and subject to chemical testing.
- 4 site visits to monitor gas and ground water levels have been undertaken on a total of 22 monitoring installations which were installed in the 2015 ground instigation

An exploratory hole location plan is provided as Drawing No. G15009-702C in Appendix A and copies of the logs are included in Appendix B. Gas and Groundwater monitoring results are included in Appendix B. Laboratory chemical test results are included in Appendix C.

Trial pits and surface water sample locations undertaken in 2016 were located adjacent to trial pits and surface water sample locations undertaken 2002. Likewise, exploratory holes and trial pits undertaken in 2015 were also located adjacent to exploratory holes and trial pits undertaken in 2002. Table 1 below lists the corresponding trial pit, borehole, and surface water sample ID's from 2016, 2015 and 2002.

Table 1. Corresponding Exploratory Hole Location ID's in 2016, 2015 and 2002

Exploratory Hole Location ID's 2016	Exploratory Hole Location ID's 2015	Exploratory Hole Location ID's 2002
TP 1104	TP 104	TP 01
TP 1103	TP 103	TP 02
TP 1102	TP 102	TP 03
TP 1105	TP 105	TP 04
TP 1005	TP 5	TP 05
TP 1006	TP 6	TP 06
TP 1101	TP 101	TP 07
TP 1008	TP 8	TP 08
TP 1009	TP 9	TP 09
TP 1010	TP 10	TP 10
TP 1011	TP 11	TP 11
TP 1012	TP 12	TP 12
TP 1013	TP 13	TP 13
TP 1014	TP 14	TP 14
TP 1017	TP 17	TP 17

Exploratory Hole Location ID's 2016	Exploratory Hole Location ID's 2015	Exploratory Hole Location ID's 2002
TP 1018	TP 18	TP 18
TP 1020	TP 20	TP 20
TP 1021	TP 21	TP 21
TP 1023	TP 23	TP 23
TP 1024	TP 24	TP 24
TP 1025	TP 25	TP 25
TP 1026	TP 26	TP 26
TP 1027	TP 27	TP 27
TP 1028	TP 28	TP 28
TP 1030	TP 30	TP 30
TP 1031	TP 31	TP 31
TP 1032	TP 32	TP 32
TP 1033	TP 33	TP 33
N/A	BH301	MW6 / MW6A
N/A	BH302	MW2
N/A	BH303	MW1
N/A	BH304	MW5
N/A	BHR305	MW4
N/A	WS9	MW3
SP1	N/A	SP1
SP3	N/A	SP3
SP4	N/A	SP4

6.0 Ground Conditions

6.1 Reworked Topsoil

Isolated occurrences of reworked topsoil (100 to 400mm thick) were present in the south eastern part of the stock yard and in the production and by-products area. The topsoil was noted to contain angular fragments of coke, coal and brick.

6.2 Hardstandings

Reinforced and unreinforced concrete hardstanding covered the majority of the production and by-product areas as well as the eastern edge of the stock yard. Thicknesses encountered varied between 200 and 500mm.

6.3 Made Ground

Made ground was encountered across the entire site at thicknesses ranging from 0.5m to in excess of 3.0m.

Across the northern stock yard area, made ground comprising reworked coke was present at between 0.3 and 1.5m thick. In other locations, the surface comprised hardstandings and occasionally reworked topsoil. Beneath the surface, made ground is gravelly sand, gravel, and cobbles with variable content of ash, coal, coke, brick, concrete, mudstone and sandstone together with timber and metal constituents was proved. Granular made ground materials comprising reworked gravel and cobble size mudstone and sandstone (colliery spoil) were frequently proved across the site.

Cohesive made ground comprising reworked natural gravelly clays with variable gravel content were present locally within the granular materials.

The full extent of the thickness of made ground was not proved in exploratory holes TP1102 to TP1105, TP1008, TP1010, TP1013, TP1014, TP1017, TP1018, TP1020, TP1021, TP1023, TP1024, TP1027 to TP1028, TP1031 to TP1033 which were terminated at depths of between 0.5m and 3.0m begl. These trial depths were terminated because the sufficient depth had been reached to obtain the required samples.

6.4 Natural Cohesive Soils

Natural cohesive soils were only encountered in trial pit TP1030 in the southern area of the site and consisted of firm brown sandy clay.

6.5 Natural Residual Granular Soils

Natural residual granular soils comprising gravelly sand were occasionally encountered at depths of between 1.5 and 3.0m begl. These are considered to be the result of the in-situ weathering of the underlying coal measures strata (sandstone) and were generally around 1m thick.

6.6 Bedrock

Solid strata comprising medium strong to strong sandstone and medium strong mudstone were encountered at depths of between 0.5 and 2.9m begl, in places directly beneath the made ground materials. Sandstone underlies the majority of the site at rockhead.

6.7 Groundwater

Groundwater ingress was noted in one trial pit excavation during the investigation fieldwork as indicated in the table below.

Table 2 Groundwater Observations

Location	Depth (m begl)	Strata	Description
TP1012	1.3	Gravel (Made Ground)	Slight Water Seepage

6.8 Contamination – Visual and Olfactory

Visual and olfactory evidence of contamination was noted during the excavation of trial pits, summarised below.

Table 3 Visual evidence of contamination

Location and Area on Site	Depth (m begl)	Strata	Evidence
TP1005	0m to 0.4m	Cohesive MADE GROUND Topsoil	Coke
TP1005	0.4m to 1.0m	Granular mudstone and sandstone MADE GROUND	Ash
TP1006	0m to 0.9m	Granular MADE GROUND	Ash, Coke
TP1009	0m to 0.2m	Granular MADE GROUND	Ash, Coke
TP1011 – Production and By-products area	0.4m to 0.5m	Granular brick, concrete and sandstone MADE GROUND	Seepage of oily hydrocarbon liquid
TP1013 -	0.1m to 2.2m	Granular brick concrete MADE GROUND	Coke
TP1017	0.1m to 0.3m 0.5m to 1.0m	Granular brick concrete MADE GROUND	Coke
TP1018	0.3m to 0.5m	Granular brick concrete MADE GROUND	Ash, Coke
TP1024	0.3m to 0.75m	Granular brick concrete MADE GROUND	Coke
TP1031	0m to 0.3m	Granular MADE GROUND	Ash, Coke
TP1032	0m to 0.3m	Granular MADE GROUND	Ash, Coke
TP1101	0m to 0.6m	Granular MADE GROUND	Ash, Coke
TP1102	0m to 0.3m	Granular MADE GROUND	Ash, Coke
TP1103	0m to 0.3m	Granular MADE GROUND	Ash, Coke
TP1104	0m to 1.5m	Granular MADE GROUND	Ash, Coke
TP1105	0m to 0.3m	Granular MADE GROUND	Ash, Coke

6.9 In-ground Obstructions

During the advancement of the trial pits, an obstruction was encountered in TP1017 (electricity cable at 1.0m) which resulted in the termination of the excavation.

6.10 Gas Monitoring

To date, four gas monitoring visits have been undertaken this year; three during high atmospheric pressure conditions and one during low atmospheric pressure condition. Elevated concentrations of carbon dioxide (maximum 8.4% v/v), with corresponding reduced oxygen (minimum 0.7%v/v) concentrations have been recorded. Also recorded were elevated levels of Methane (maximum 3% v/v), Carbon Monoxide (maximum 1% v/v) and Hydrogen Sulphide (maximum 1% v/v). Peak flow rates were recorded as a maximum of 2.6l/hr.

6.11 Chemical Results

Chemical testing results are included in Appendix C.

Chemical testing of groundwater samples included:

- pH
- Chloride
- Metals
- Sulphur
- TPH
- SVOC's
- Ionic Balance
- VOC's

Chemical testing of surface water samples included:

- pH
- TPH
- Metals
- Ionic balance
- VOC's

Chemical testing of leachate samples included:

- pH
- Chloride
- Metals
- SVOC's
- VOC's
- PAH
- TPH

Chemical testing of soil samples included:

- pH
- Chloride
- Metals
- SVOC's
- VOC's
- PAH
- TPH

Appendix A Drawings

1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PATRICK PARSONS LTD.

1.2. DO NOT SCALE FROM THIS DRAWING.



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Client
HARGREAVES (UK) SERVICES LTD

Project
MONCKTON, BARNSELYDrawing
SITE FEATURES AND ZONING
PLAN

Scales: NTS At original size: A2

Drawn AL	Checked JH
Date AUG '15	

Status INFORMATION

Drawing No. G15009-700 Rev.

Appendix B
Exploratory Hole Records & Field Test Data

Trial Pit Log

Trial Pit No
TP1005
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
15/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions (m):

2.00

Scale
1:25

Client: Hargreaves (UK) Services Ltd

Depth
1.00

0.60

Logged
TD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.80	ES		0.40			Grass over black gravelly organic CLAY. Gravel is angular fine to medium of coke coal and brick. (TOPSOIL)
				1.00			Light brown clayey sandy angular fine to coarse ashy GRAVEL of mudstone and sandstone. Sand is fine to medium. (MADE GROUND)
							End of Pit at 1.00m

Remarks: Trial pit complete at 1.00m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

Trial Pit Log

Trial Pit No

TP1006

Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
15/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions (m):

2.00

Depth
3.00

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
							Black angular fine to coarse ashy GRAVEL of coke. (MADE GROUND)	
	1.10	ES		0.90			Greyish brown sandy sub-angular fine to coarse GRAVEL of mudstone and brick with fine coal fragments. Sand is fine to medium. (MADE GROUND)	1
	2.80	ES		2.90 3.00			Medium strong greyish brown laminated MUDSTONE recovered as silty angular fine to coarse GRAVEL. (PENNINE MIDDLE COAL MEASURES) End of Pit at 3.00m	3
								4
								5

Remarks: Trial pit complete at 3.00m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

Trial Pit Log

Trial Pit No

TP1008

Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -

Level:

Date

15/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions
(m):

2.00

Scale

1:25

Client: Hargreaves (UK) Services Ltd

Depth
1.50

0.60

Logged
TD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			Tarmac. (MADE GROUND)
				0.20			Tarmac. (MADE GROUND)
							Reddish brown sandy angular fine to coarse COBBLES and BOULDERS of brick and concrete. (MADE GROUND)
	1.00	ES					
				1.50			Reddish brown sandy angular fine to coarse COBBLES and BOULDERS of brick and concrete. (MADE GROUND)
				1.50			End of Pit at 1.50m

Remarks: Trial pit complete at 1.50m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

Trial Pit Log

Trial Pit No
TP1009
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
16/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions (m):

2.00

Depth
2.00

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			Black angular fine to coarse ashy GRAVEL of coke. (MADE GROUND)	
	0.70	ES					Light brown sandy angular fine to coarse GRAVEL of sandstone. (MADE GROUND)	1
	1.90	ES		1.75			Strong light brown finely grained SANDSTONE recovered as sandy angular fine to coarse GRAVEL. (MEXBOROUGH ROCK)	2
				2.00			End of Pit at 2.00m	5

Remarks: Trial pit complete at 2.00m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

Trial Pit Log

Trial Pit No
TP1010
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
15/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions (m):

2.00

Depth
1.50

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	1.00	ES		0.40			Dark grey sandy sub-angular fine to coarse GRAVEL of brick concrete and sandstone. (MADE GROUND)	
				1.50			Grey damp clayey fine to medium SAND. (MADE GROUND)	1
							End of Pit at 1.50m	2
								3
								4
								5

Remarks: Trial pit complete at 1.50m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.



Trial Pit Log

Trial Pit No
TP1011
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
16/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions
(m):

2.00

Scale
1:25

Client: Hargreaves (UK) Services Ltd

Depth
2.00

0.60

Logged
TD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			Concrete. (MADE GROUND)	
							Dark brown sub-angular fine to coarse GRAVEL of brick concrete and sandstone. (MADE GROUND) <i>Seepage of oily hydrocarbon liquid within made ground between 0.40m and 0.50m bgl. Sewer drain at 0.50m bgl running S-N.</i>	
				0.80			Light brown clayey sandy sub-angular fine to coarse GRAVEL of sandstone.	1
				1.75			Medium strong light brown finely grained SANDSTONE recovered as sandy angular fine to coarse GRAVEL. (MEXBOROUGH ROCK)	2
	1.90	ES		2.00			End of Pit at 2.00m	3
								4
								5

Remarks: Trial pit complete at 2.00m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.



Trial Pit Log

Trial Pit No
TP1012
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
15/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions (m):

2.00

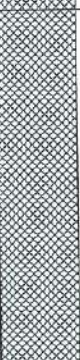
Depth
2.50

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	2.00	ES		0.25			Concrete. (MADE GROUND)
				1.50			Light brown sandy angular fine to coarse GRAVEL of brick mudstone and sandstone. Sand is fine to medium. (MADE GROUND)
				2.50			Pale yellow slightly gravelly fine to medium SAND. Gravel is sub-angular fine to coarse of sandstone.
							End of Pit at 2.50m

Remarks: Trial pit complete at 2.50m bgl. Slightwater seepage encountered at 1.3m. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

 PATRICK PARSONS				<h1 style="text-align: center;">Trial Pit Log</h1>			Trial Pit No TP1013 Sheet 1 of 1		
Project Name: Monckton Coke Works				Project No. G15009		Co-ords: - Level:		Date 15/03/2016	
Location: Lund Hill Lane, Barnsley						Dimensions (m): <div style="display: inline-block; vertical-align: middle;"> <div style="border: 1px solid black; width: 100px; height: 40px; position: relative;"> <div style="position: absolute; top: 0; right: 0;">2.00</div> </div> </div>		Scale 1:25	
Client: Hargreaves (UK) Services Ltd						Depth 2.20		Logged TD	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.10			Grass over black gravelly organic CLAY. Gravel is angular fine to medium of coke coal and brick. (TOPSOIL) Reddish brown and black sandy angular fine to coarse GRAVEL and COBBLES of brick concrete and coke with occasional wire. (MADE GROUND)
	0.50	ES					
	1.70	ES					
	2.10	ES		2.20			End of Pit at 2.20m

Remarks: Trial pit terminated at 2.20m bgl due to collapsed pit sides. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit collapsed below 0.50m bgl.



Trial Pit Log

Trial Pit No
TP1014
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
16/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions
(m):

2.00

Depth
2.00

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Concrete. (MADE GROUND)
	0.80	ES		0.50			Black sandy angular fine to coarse GRAVEL of brick and concrete with frequent metal fragments. (MADE GROUND)
				1.20			Light brown sandy angular fine to coarse GRAVEL of sandstone. (MADE GROUND)
	1.70	ES		2.00			End of Pit at 2.00m

Remarks: Trial pit complete at 2.00m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

Trial Pit Log

Trial Pit No
TP1017
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
16/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions
(m):

2.00

Depth
1.00

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES		0.05			Tarmac. (MADE GROUND)
				0.30			Black sandy angular fine to medium GRAVEL of coke brick and concrete. Sand is fine. (MADE GROUND)
				0.50			Concrete and brick. (MADE GROUND)
	0.80	ES					Black sandy angular fine to medium GRAVEL of coke brick and concrete. Sand is fine. (MADE GROUND)
	1.00	ES		1.00			End of Pit at 1.00m

Remarks: Trial pit terminated at 1.00m bgl due to encountered electricity cable. No groundwater encountered.
Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

Trial Pit Log

Trial Pit No
TP1018
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
16/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions
(m):

2.00

Scale
1:25

Client: Hargreaves (UK) Services Ltd

Depth
0.50

0.60

Logged
TD

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.45	ES		0.10			Tarmac. (MADE GROUND)
				0.30			Dark grey angular fine to coarse GRAVEL of mixed lithologies including sandstone. (MADE GROUND)
				0.50			Dark grey sandy angular fine to coarse ashy GRAVEL of coke brick and concrete. Sand is fine. (MADE GROUND)
							End of Pit at 0.50m

Remarks: Trial pit complete at 0.50m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.



Trial Pit Log

Trial Pit No
TP1020
Sheet 1 of 1

Project Name: Monckton Coke Works

Project No.
G15009

Co-ords: -
Level:

Date
16/03/2016

Location: Lund Hill Lane, Barnsley

Dimensions (m):

2.00

Depth
1.50

0.60

Scale
1:25

Logged
TD

Client: Hargreaves (UK) Services Ltd

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.60	ES					Dark grey and black angular fine to coarse GRAVEL and COBBLES of brick and concrete. (MADE GROUND)
	1.20	ES		1.20			Dark grey and black angular fine to coarse GRAVEL and COBBLES of brick and concrete. (MADE GROUND)
				1.50			Light brown sandy angular fine to coarse GRAVEL and COBBLES of mudstone and sandstone. (MADE GROUND)
				1.50			End of Pit at 1.50m

Remarks: Trial pit complete at 1.50m bgl. No groundwater encountered. Backfilled with arisings upon completion.

Stability: Trial pit remained stable during excavation.

				<h1 style="text-align: center;">Trial Pit Log</h1>			Trial Pit No TP1021 Sheet 1 of 1		
Project Name: Monckton Coke Works				Project No. G15009		Co-ords: - Level:		Date 16/03/2016	
Location: Lund Hill Lane, Barnsley						Dimensions (m): <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">0.60</div> <div style="border: 1px solid black; width: 100px; height: 30px; position: relative;"> <div style="position: absolute; top: -10px; left: 50%; transform: translateX(-50%);">2.00</div> </div> </div>		Scale 1:25	
Client: Hargreaves (UK) Services Ltd						Depth 1.50		Logged TD	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.60	ES		0.40			Dark grey sub-angular fine to coarse GRAVEL of concrete and brick. (MADE GROUND)		
	1.40	ES		1.50			Light brown clayey sandy angular fine to coarse GRAVEL of sandstone. (MADE GROUND)		
							End of Pit at 1.50m		
Remarks: Trial pit complete at 1.50m bgl. No groundwater encountered. Backfilled with arisings upon completion.									
Stability: Trial pit remained stable during excavation.									

