

Key

- Site Boundary
- Window Sampler Locations (WS)
- Borehole Installation (I)

enzygo environmental consultants
Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Bellway and Thames Properties

SCALE: 1:500@A3

PROJECT REF: CRM.1265.013

DRAWN: MG

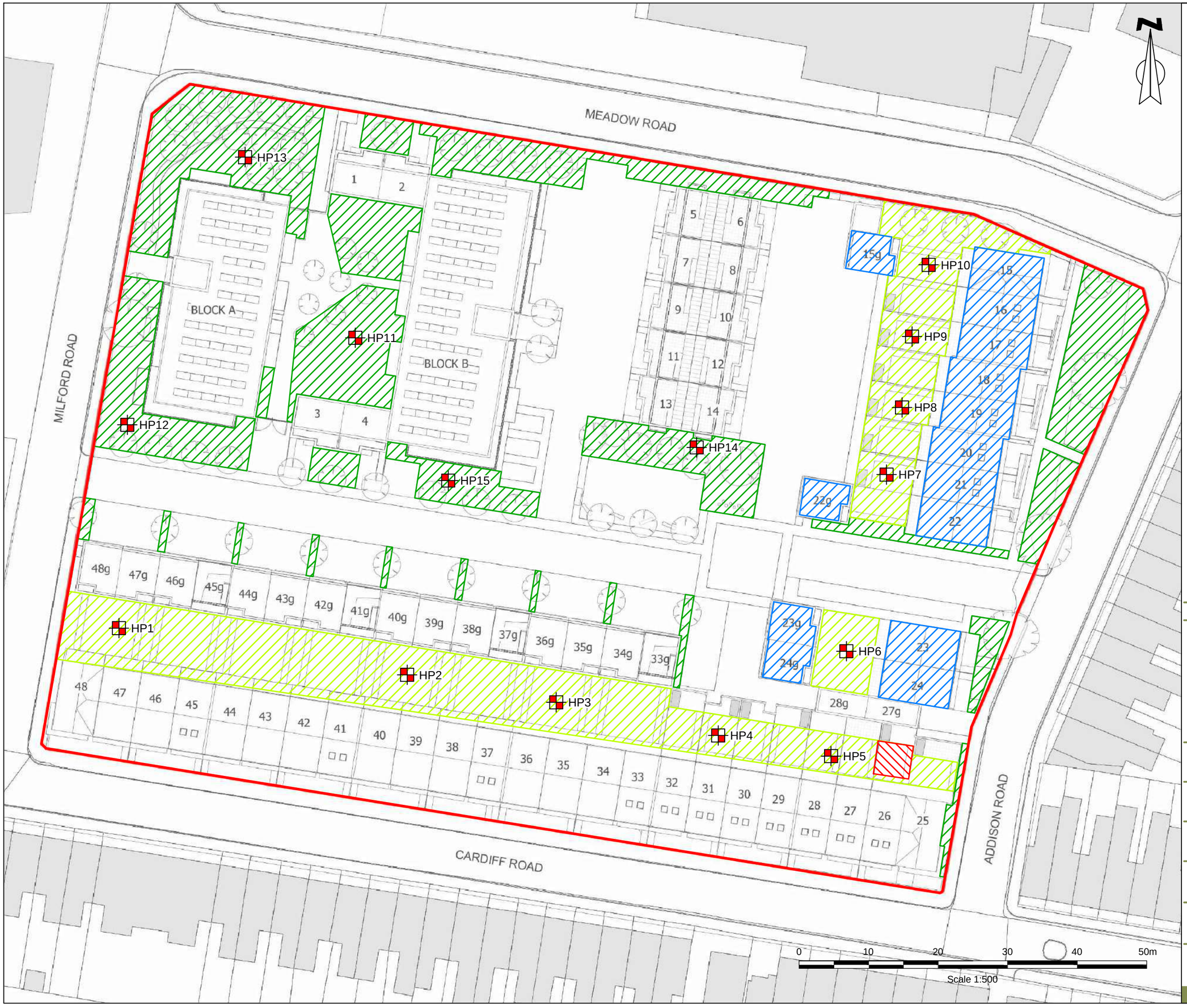
CHECKED: SR

DATE: Apr 2019

PROJECT: Cardiff Road, Reading

TITLE: Site Plan

FIGURE NO: CRM.1265.013.GE.D.001



Key

- Site Boundary
- Communal Area 400mm
- Garden Area 600mm
- Extent of Gas Membrane Proposed
- Area of Mercury Removed
- Validation Pits (HPA - HPM)

Description	Date	Revision
Adding additional Gas Membrane Areas	10/05/19	Rev B
Adding Gas Membrane Area	10/05/19	Rev A

enzygo environmental consultants
Samuel House, 5 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Bellway and Thames Properties

SCALE: 1:500@A3

PROJECT REF: CRM.1265.013

DRAWN: MG

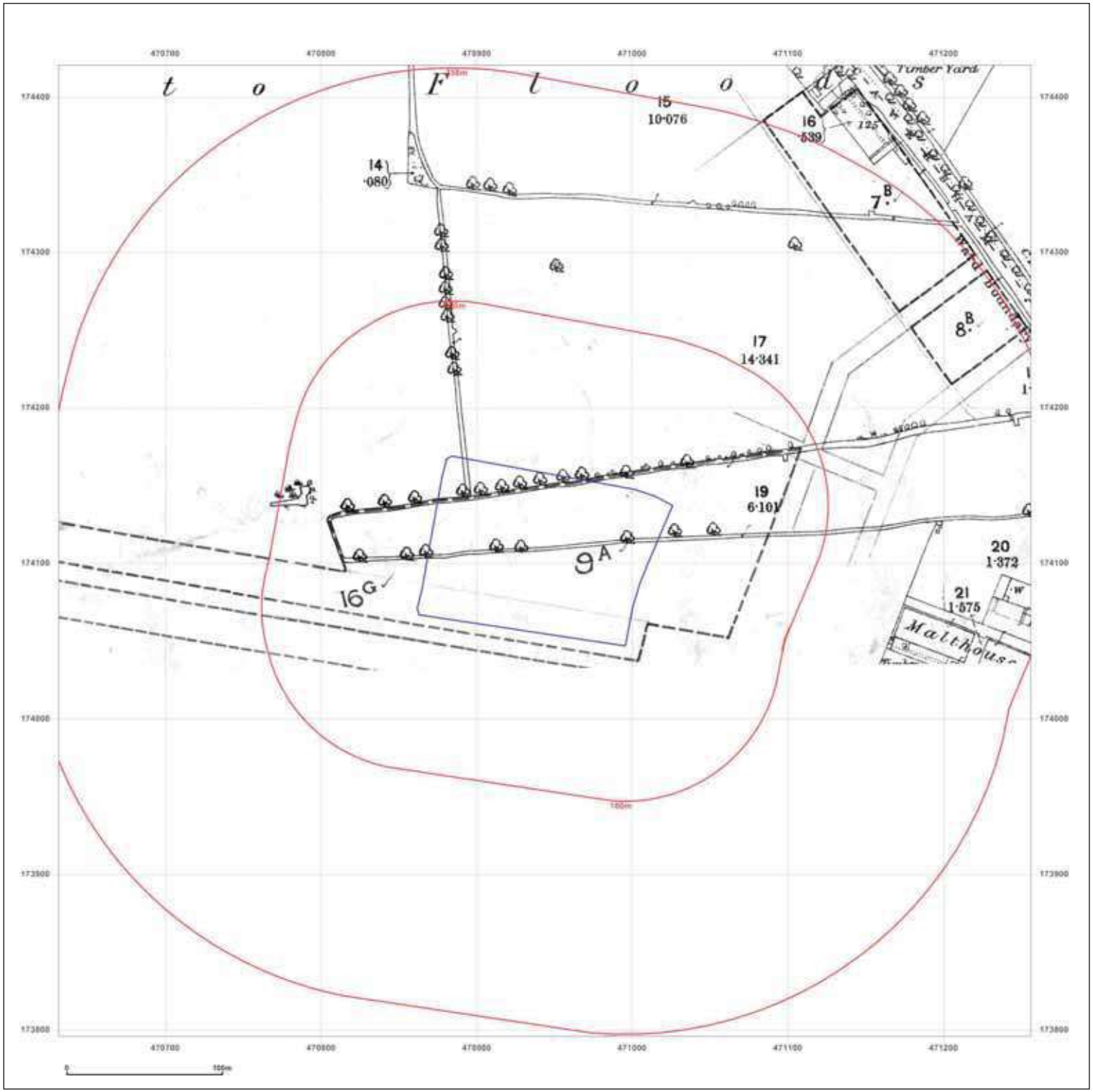
CHECKED: SR

DATE: May 2019

PROJECT: Cardiff Road, Reading

TITLE: Remediation Plan

FIGURE NO: CRM.1265.013.GE.D.002.B



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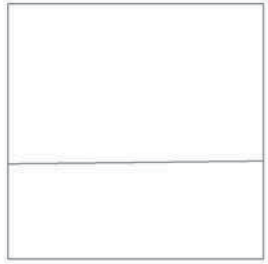
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Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: 1877
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1877
Revised 1877
Edition N/A
Copyright N/A
Levelled N/A



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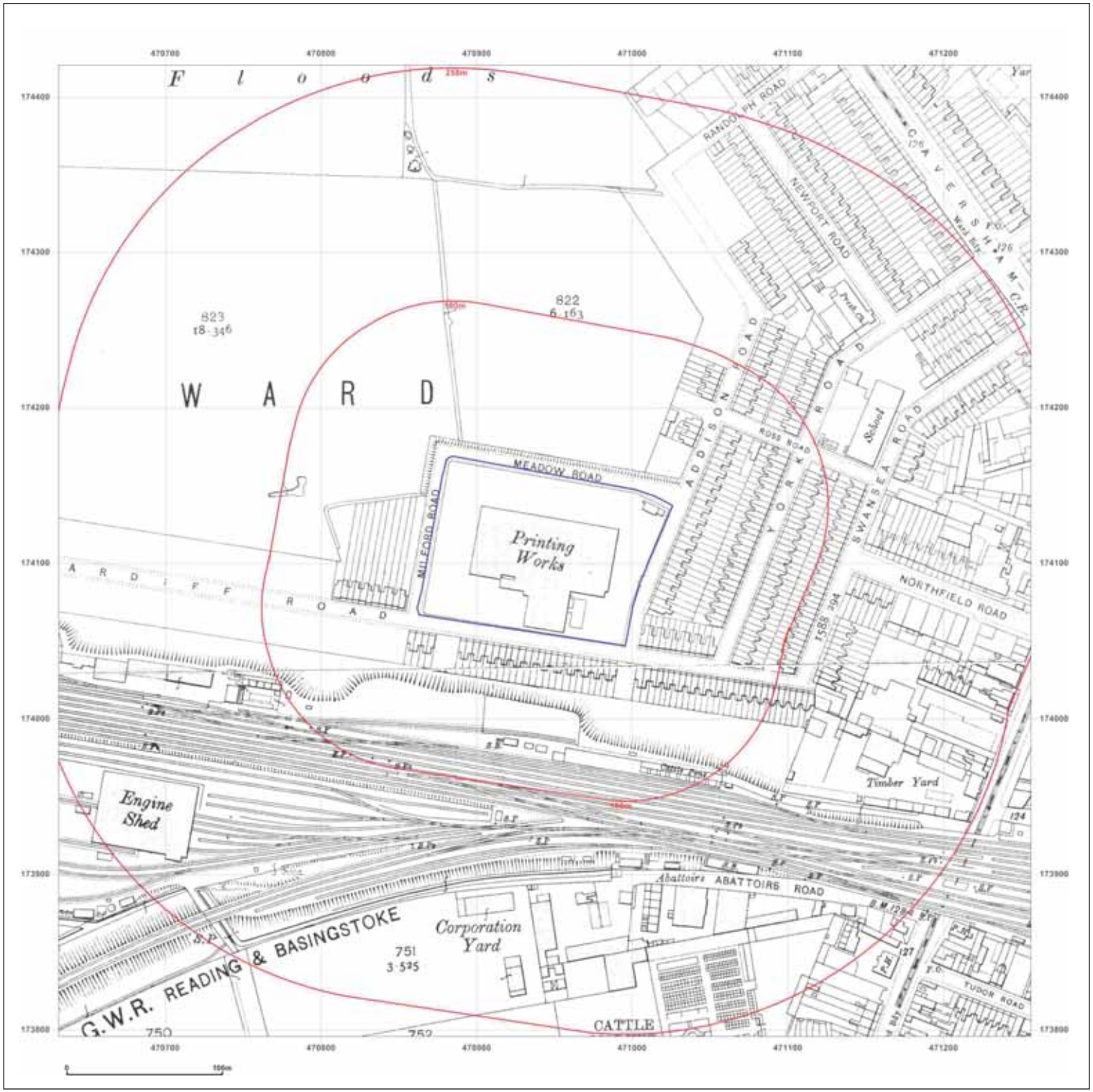
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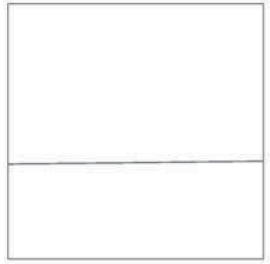
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: 1912-1913
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1913
Revised 1913
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

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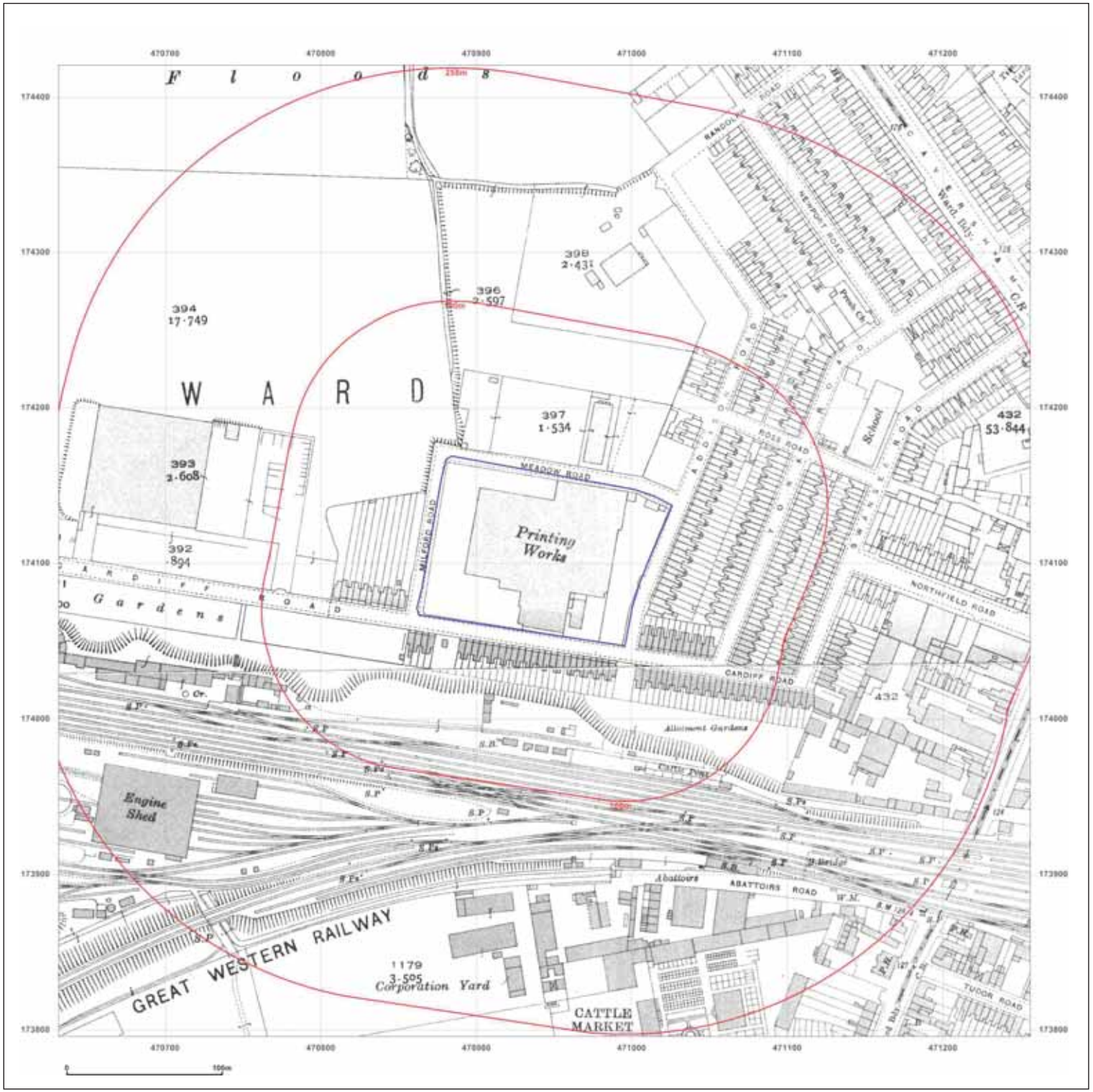
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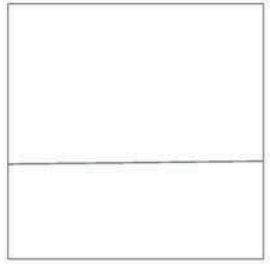
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: 1931-1932
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1931
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

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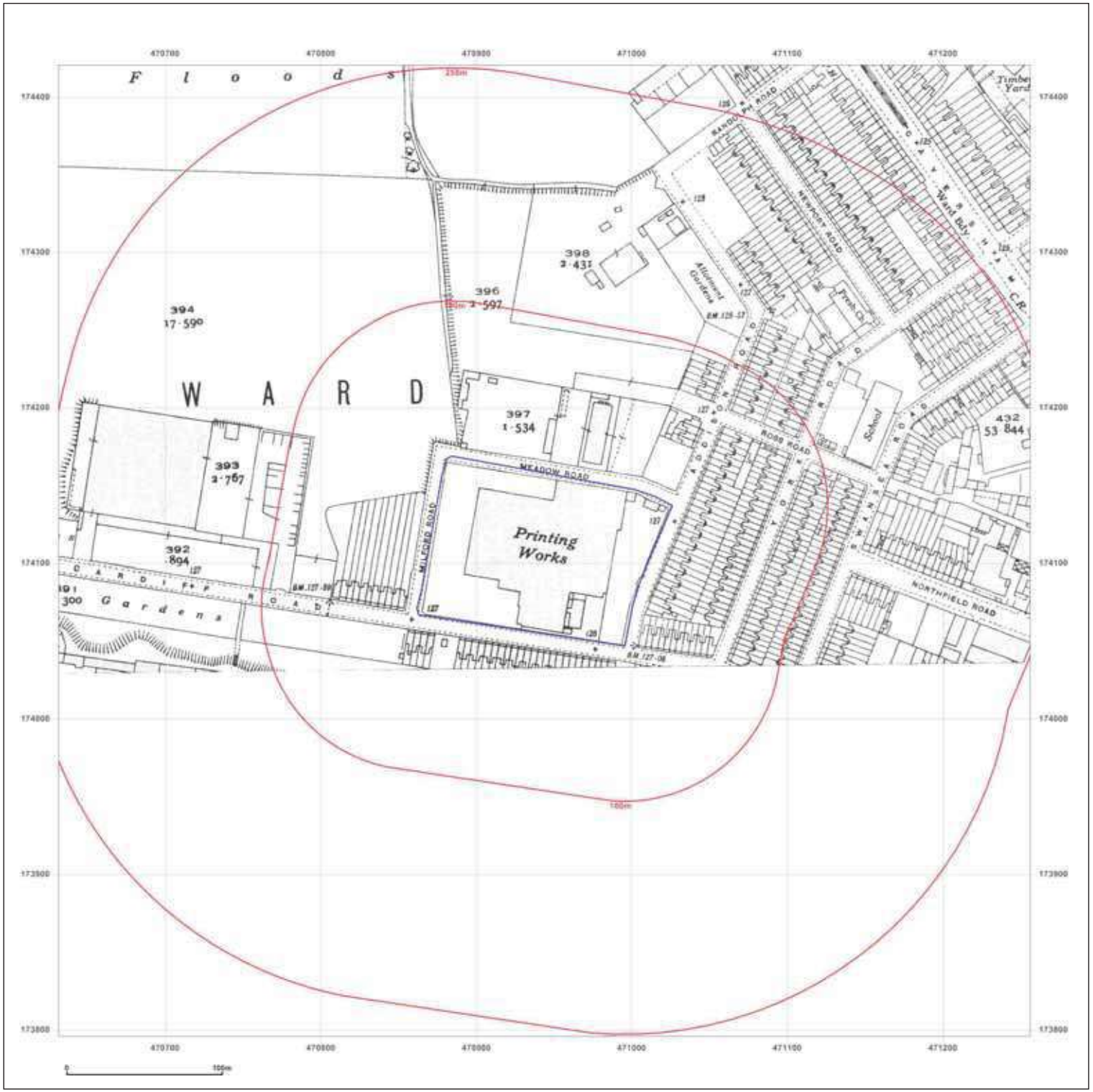
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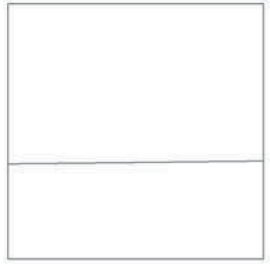
Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: 1936
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1936
Revised 1936
Edition N/A
Copyright N/A
Levelled N/A



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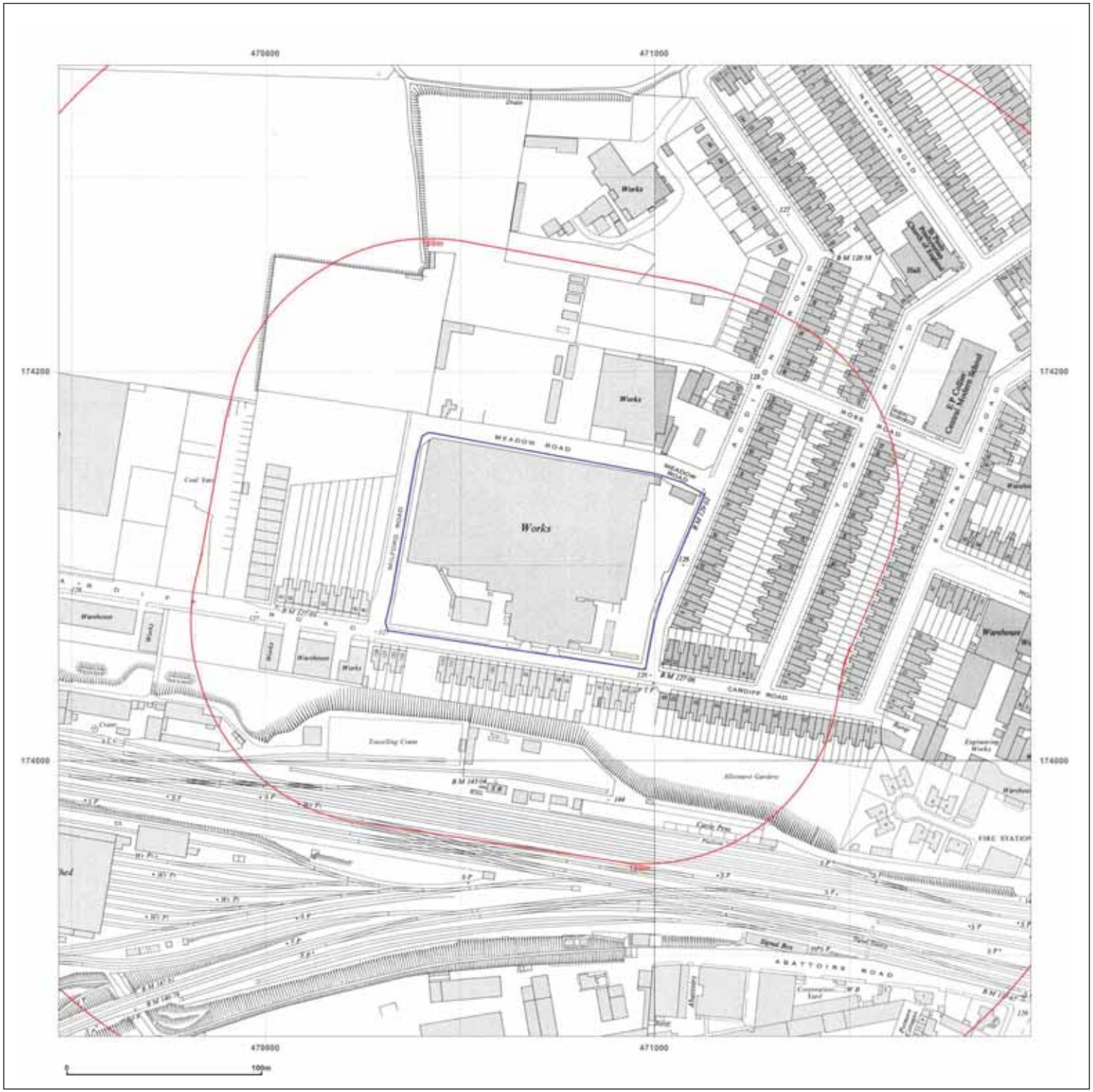
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1956-1959**
Scale: 1:1,250
Printed at: 1:2,000

N
W E
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Surveyed 1959 Revised 1959 Edition N/A Copyright 1959 Levelled 1951	Surveyed 1956 Revised 1956 Edition N/A Copyright N/A Levelled 1951
Surveyed 1958 Revised 1958 Edition N/A Copyright 1959 Levelled 1951	Surveyed 1957 Revised 1957 Edition N/A Copyright N/A Levelled 1951

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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1957-1961**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1956
Revised 1956
Edition 1957
Copyright N/A
Levelled 1951

Surveyed 1958
Revised 1958
Edition 1961
Copyright 1961
Levelled 1951

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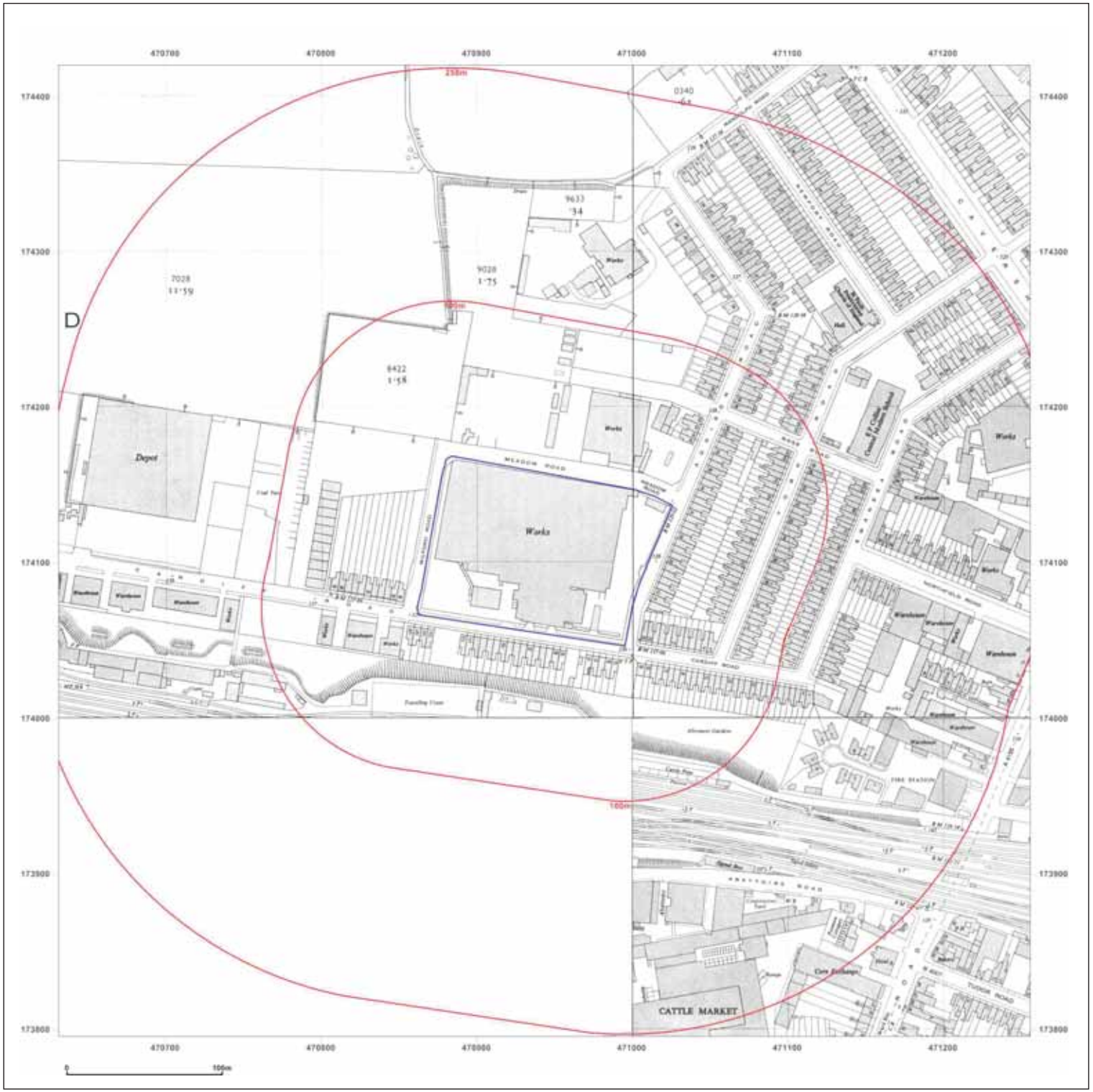
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1958-1961**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1959
Revised 1959
Edition 1961
Copyright 1961
Levelled 1951

Surveyed 1957
Revised 1957
Edition 1958
Copyright N/A
Levelled 1951

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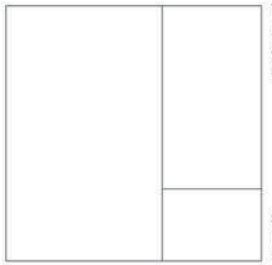
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: 1957-1962
Scale: 1:1,250
Printed at: 1:2,000

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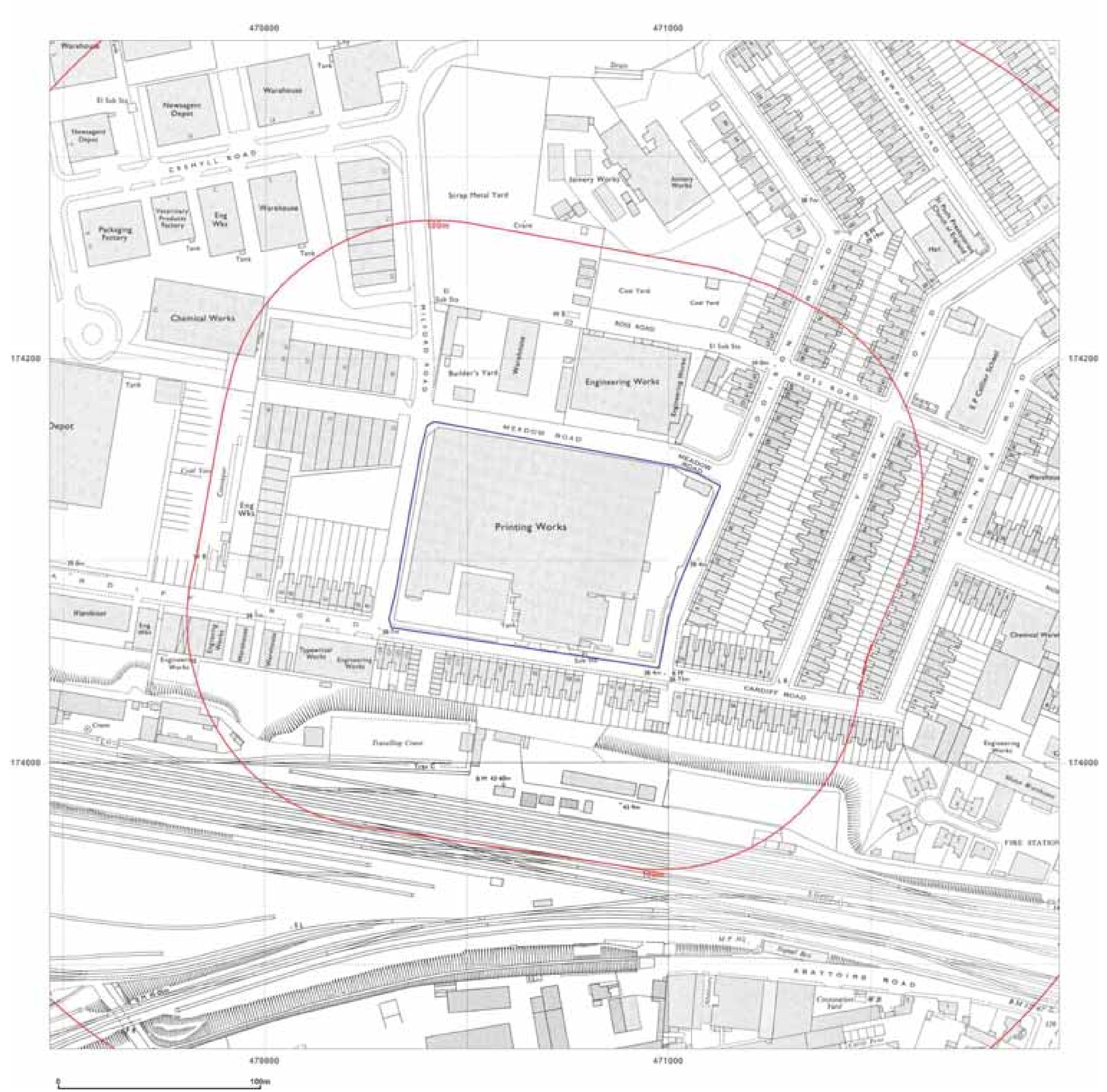
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid

Map date: **1969-1971**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed 1959 Revised 1969 Edition N/A Copyright 1970 Levelled 1951	Surveyed 1956 Revised 1970 Edition N/A Copyright 1971 Levelled 1951
Surveyed 1958 Revised 1971 Edition N/A Copyright 1971 Levelled 1951	Surveyed 1957 Revised 1958 Edition N/A Copyright 1969 Levelled 1951

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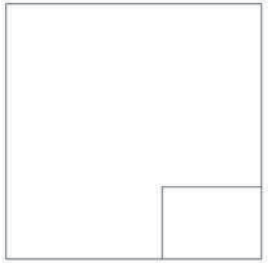
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1974**
Scale: 1:1,250
Printed at: 1:2,000

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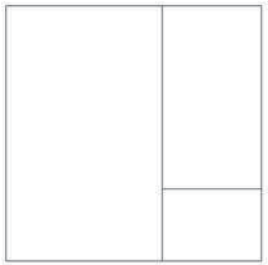
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: 1979-1982
Scale: 1:1,250
Printed at: 1:2,000

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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1984-1988**
Scale: 1:1,250
Printed at: 1:2,000

N
W E
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Surveyed 1973 Revised 1988 Edition N/A Copyright 1988 Levelled 1973	Surveyed 1953 Revised 1983 Edition N/A Copyright 1984 Levelled 1973
Surveyed 1973 Revised 1986 Edition N/A Copyright 1986 Levelled 1973	Surveyed 1957 Revised 1984 Edition N/A Copyright 1986 Levelled 1973

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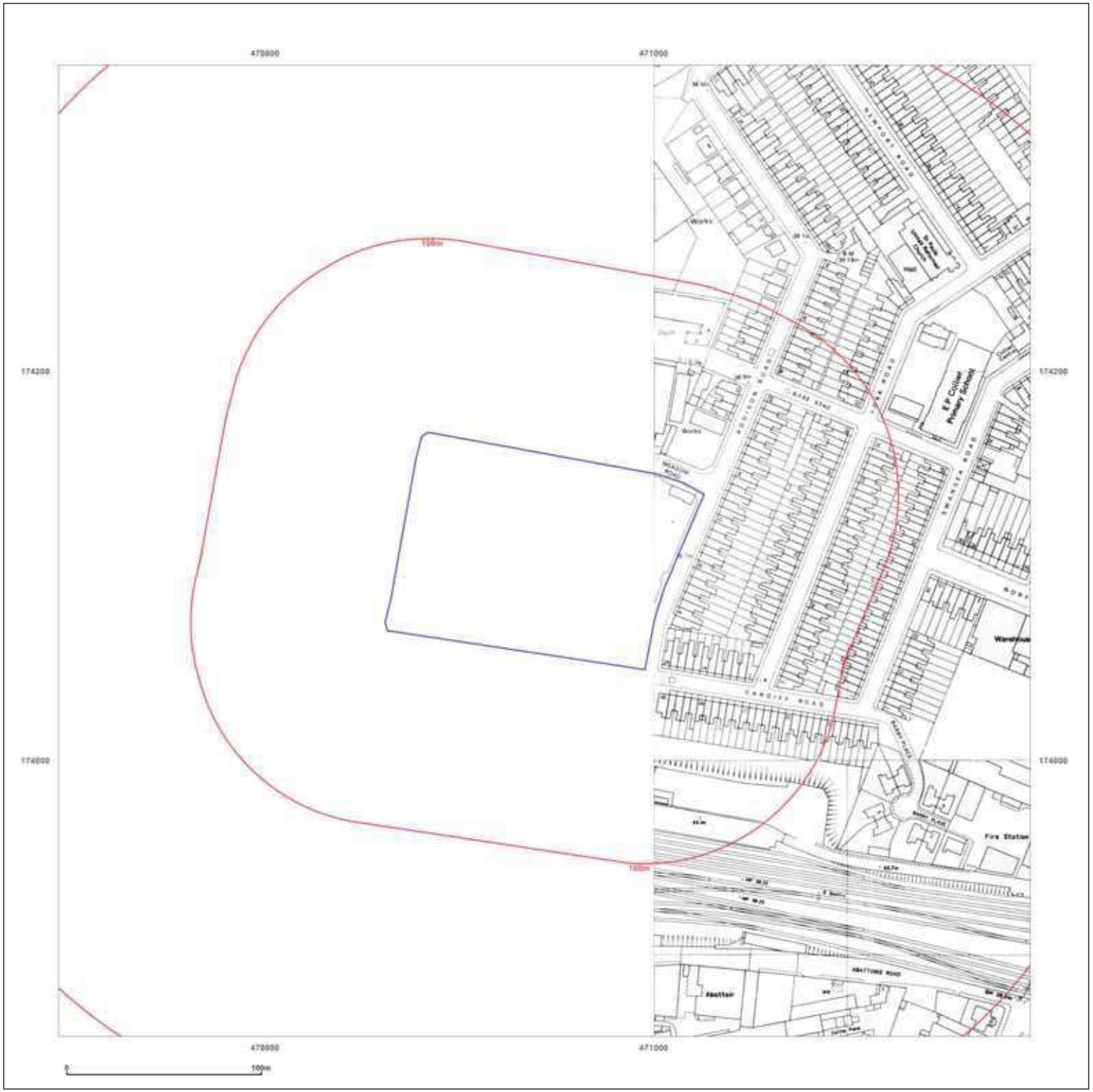
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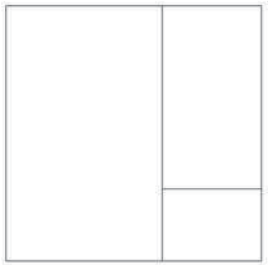
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1984-1988**
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed 1973
Revised 1984
Edition N/A
Copyright 1984
Levelled 1973

Surveyed 1973
Revised 1988
Edition N/A
Copyright 1988
Levelled 1973

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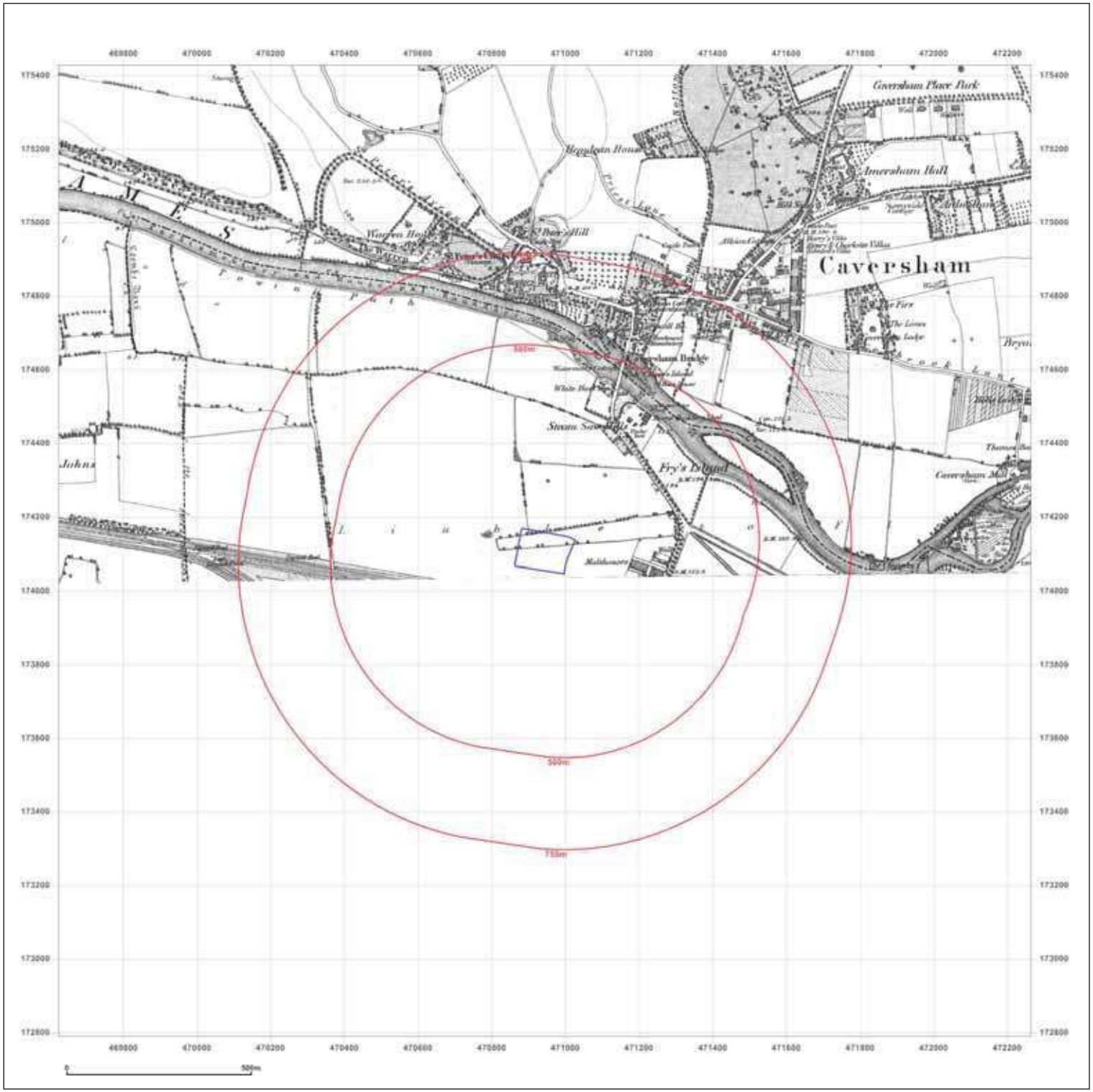
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: **1878**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
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Surveyed 1878
Revised 1878
Edition N/A
Copyright N/A
Levelled N/A

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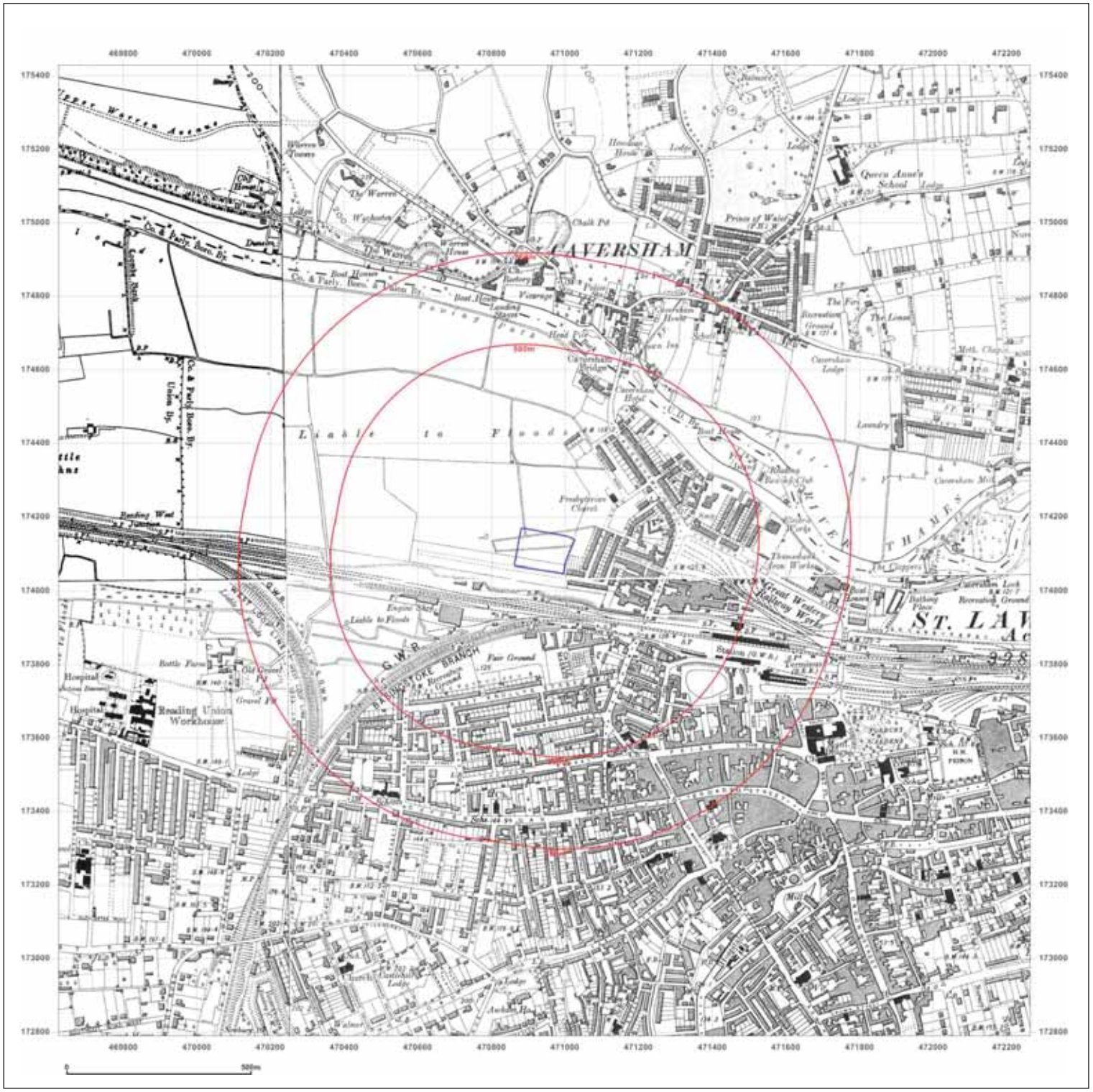
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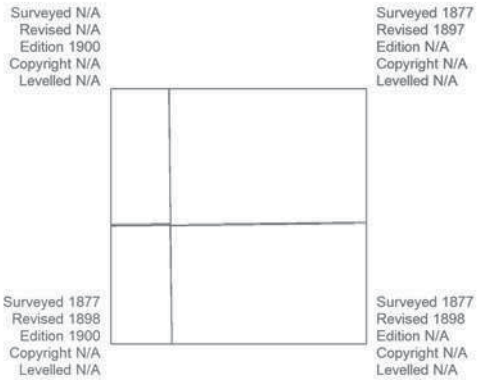
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: **1897-1900**
Scale: 1:10,560
Printed at: 1:10,560

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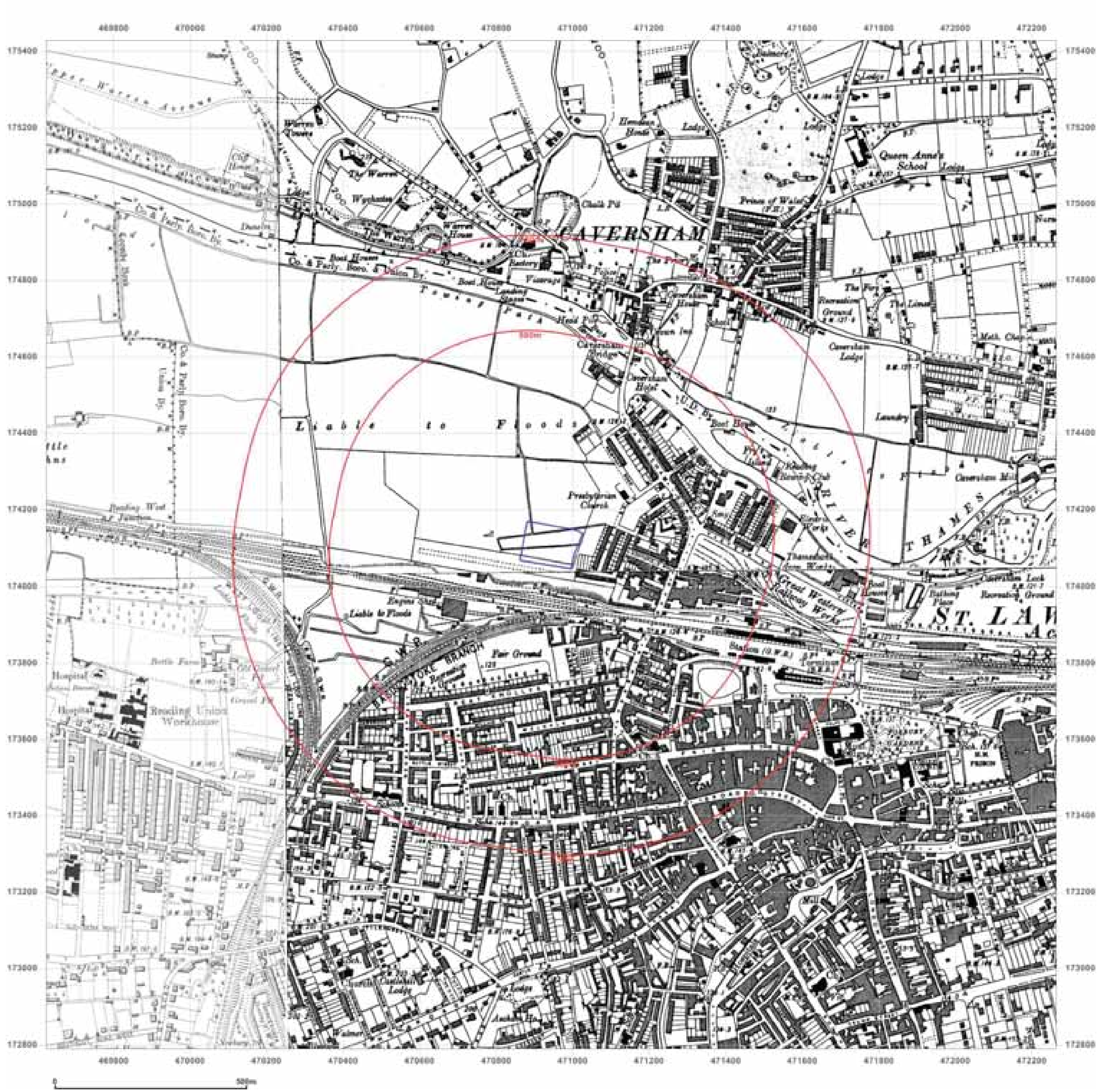
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1877
Revised 1897
Edition 1900
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1898
Edition 1900
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

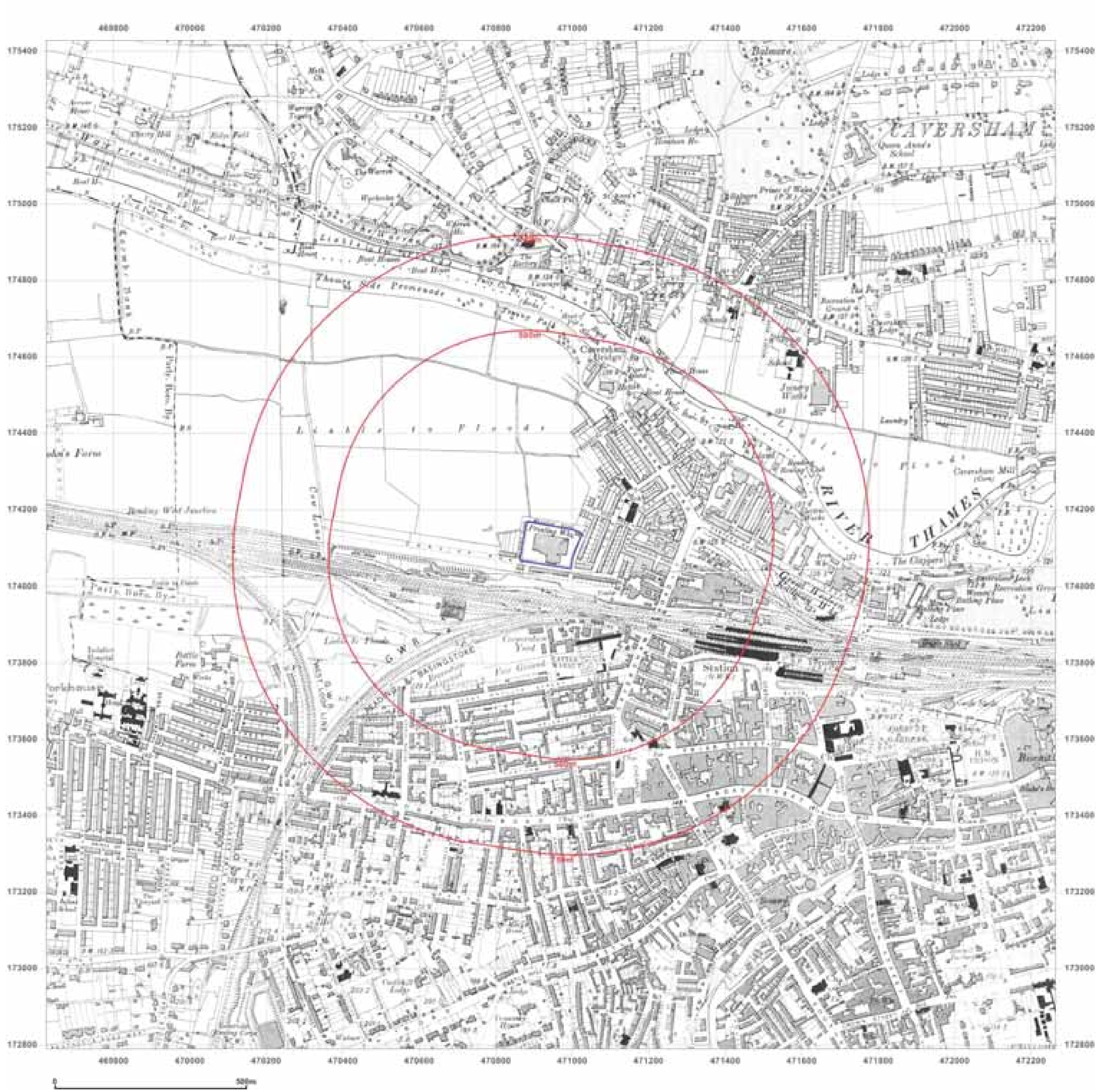
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series

Map date: **1910-1913**

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1877 Revised 1910 Edition N/A Copyright N/A Levelled N/A	Surveyed 1877 Revised 1910 Edition N/A Copyright N/A Levelled N/A
Surveyed 1877 Revised 1910 Edition N/A Copyright N/A Levelled N/A	Surveyed 1877 Revised 1910 Edition 1913 Copyright N/A Levelled N/A

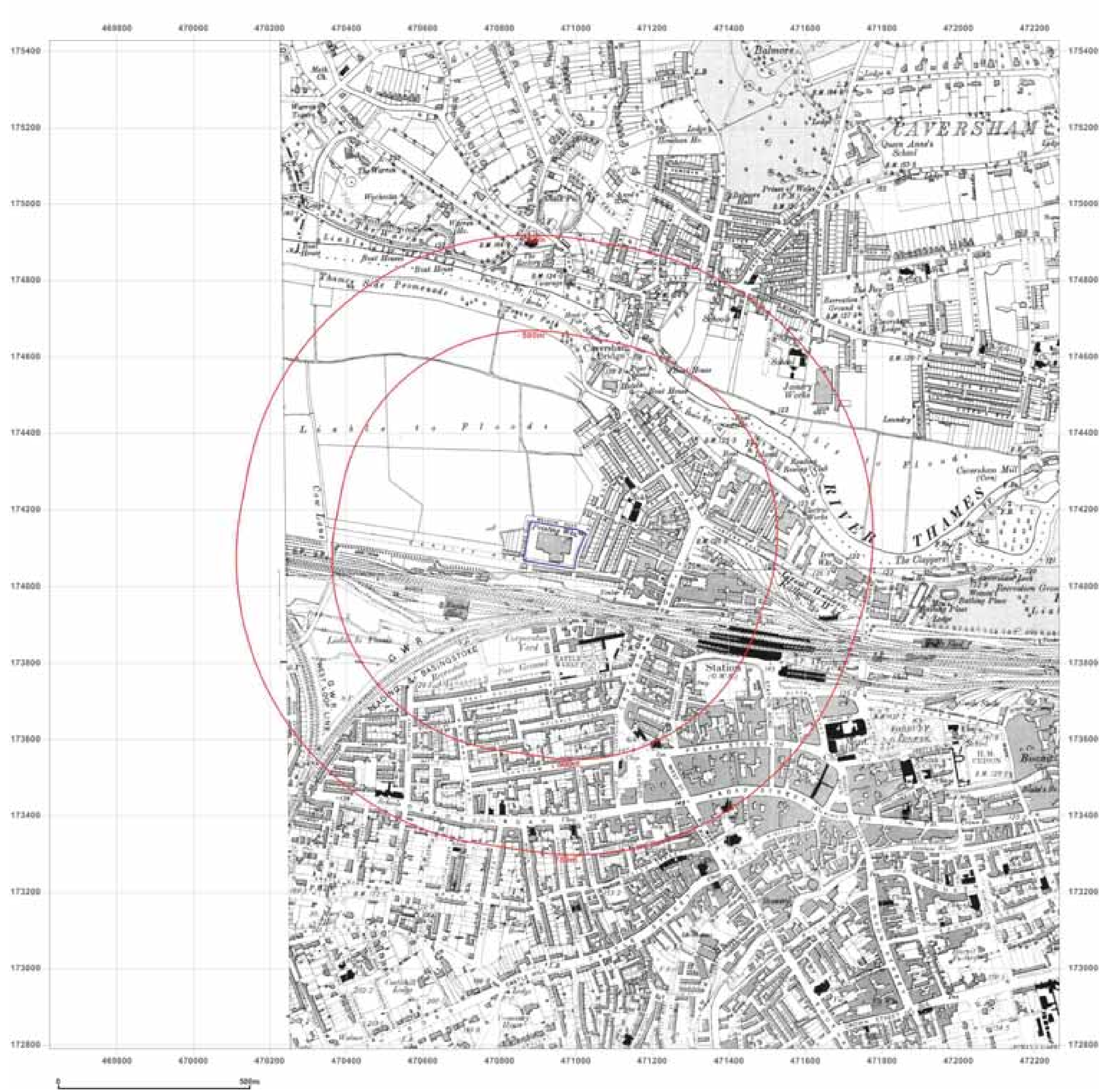
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series

Map date: 1914

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1877
Revised 1910
Edition 1914
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1914
Edition 1913
Copyright N/A
Levelled N/A

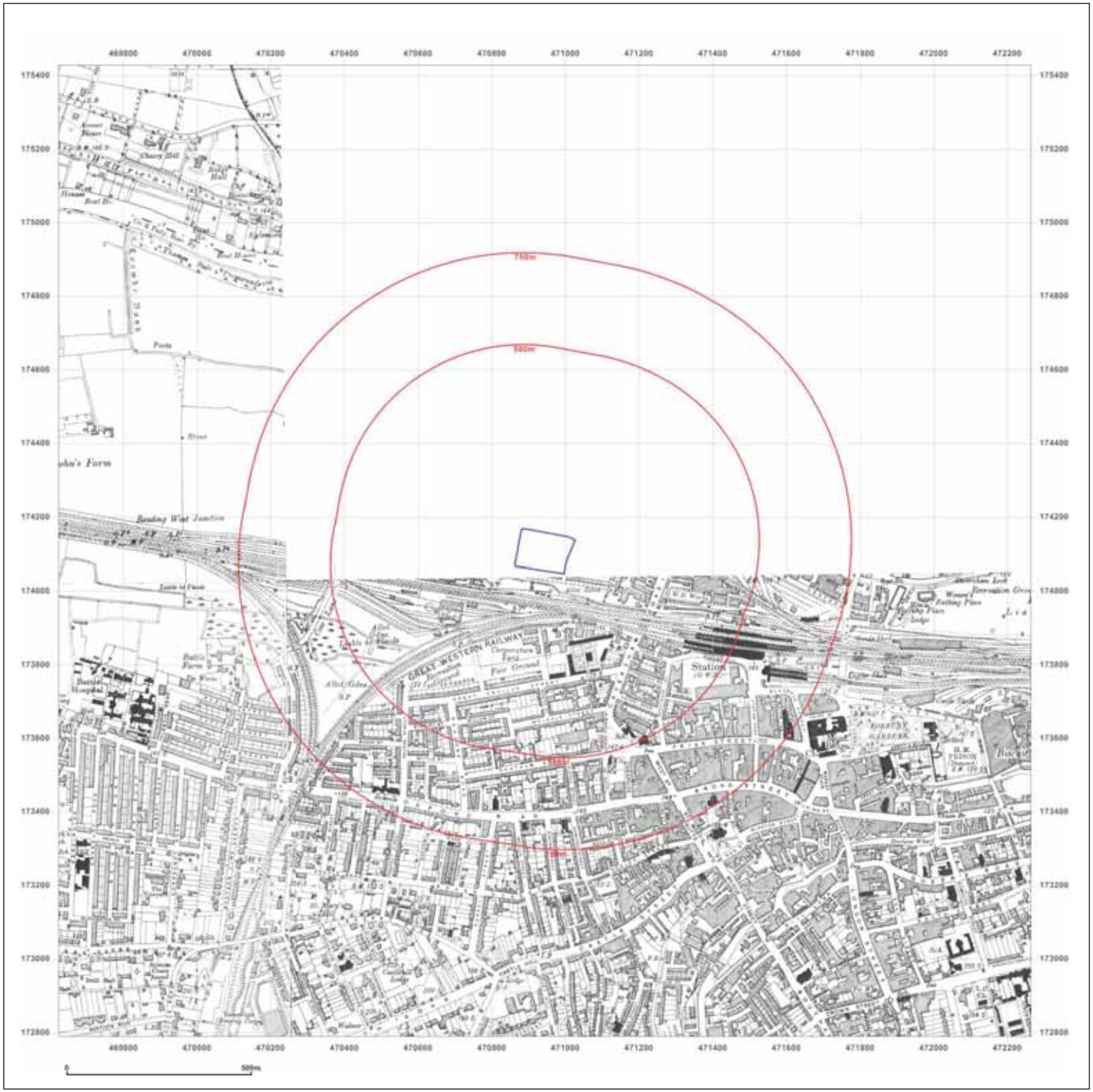
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: **1932-1933**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
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Surveyed 1877
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1933
Edition N/A
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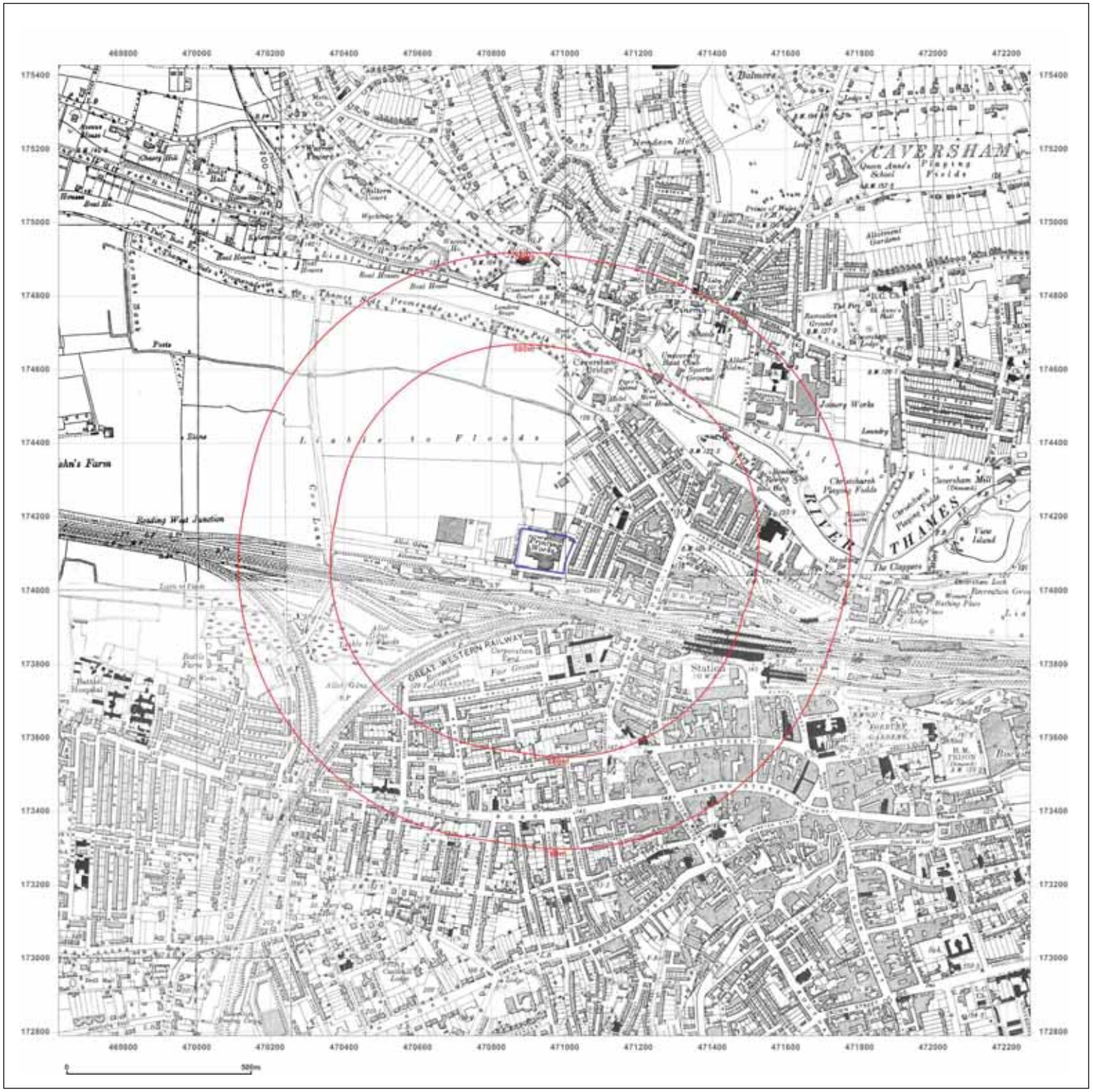
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Site Details:

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Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: County Series
Map date: **1938**
Scale: 1:10,560
Printed at: 1:10,560

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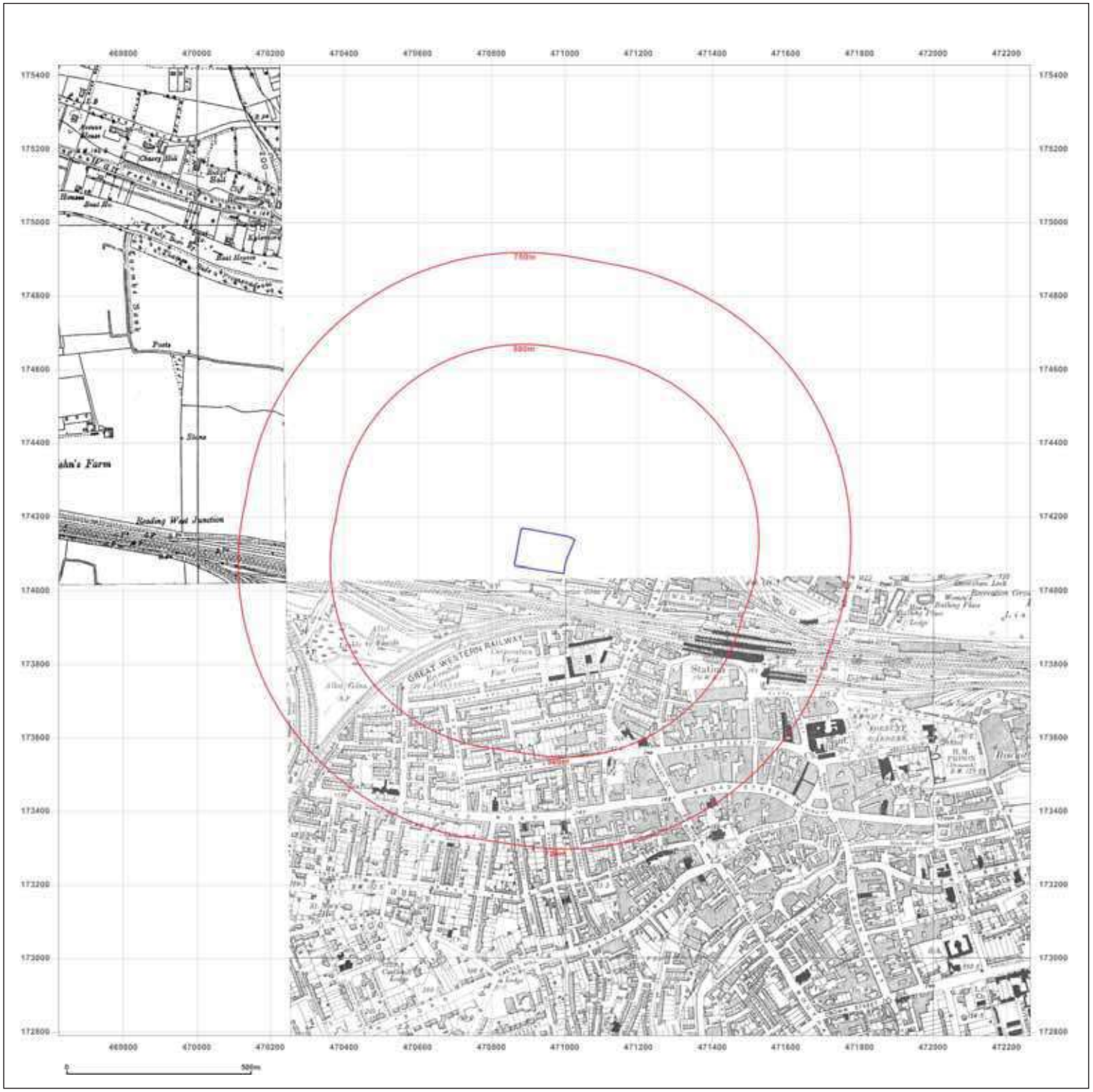
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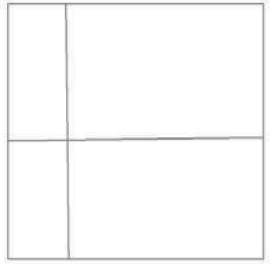
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Map Name: County Series
Map date: 1938
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Revised N/A
Edition 1938
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Revised 1938
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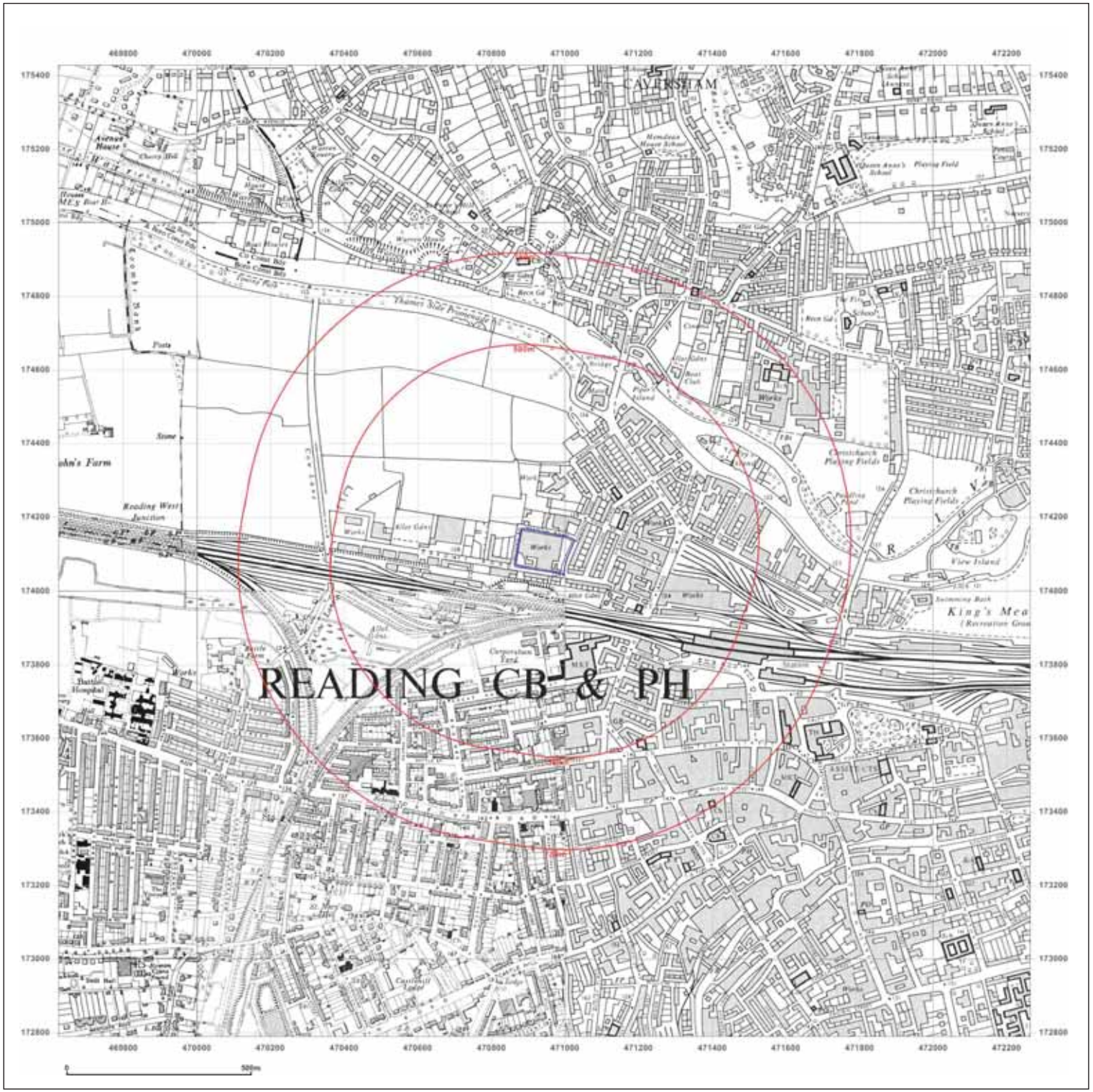
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Grid Ref: 470944, 174108

Map Name: Provisional
Map date: 1960-1962
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed 1956
Revised 1956
Edition N/A
Copyright 1960
Levelled N/A

Surveyed 1877
Revised 1956
Edition N/A
Copyright 1961
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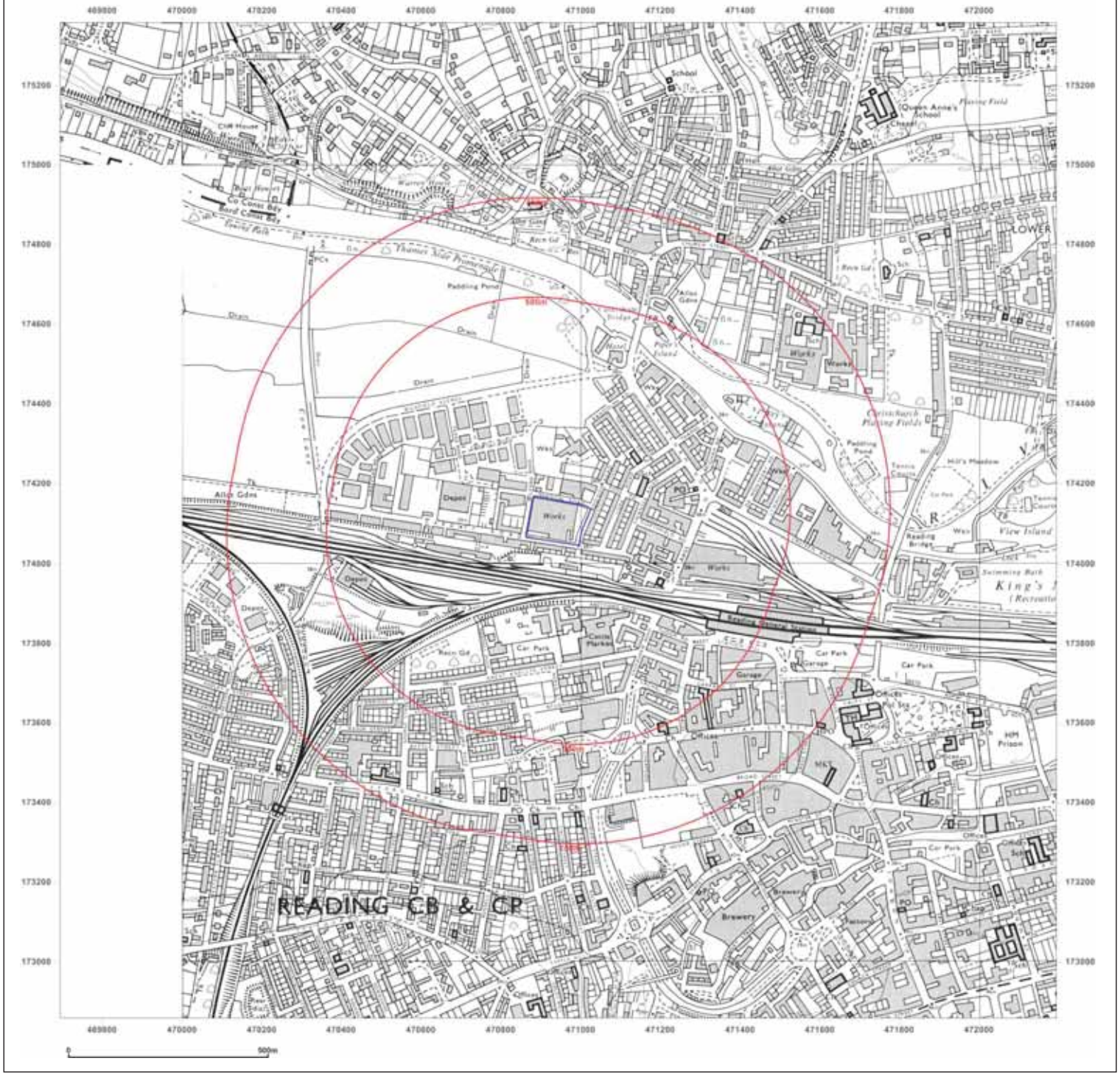
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Grid Ref: 470944, 174108

Map Name: National Grid
Map date: 1970-1973
Scale: 1:10,000
Printed at: 1:10,000

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Revised 1970
Edition N/A
Copyright 1970
Levelled 1969

Surveyed 1971
Revised 1973
Edition N/A
Copyright 1973
Levelled 1969

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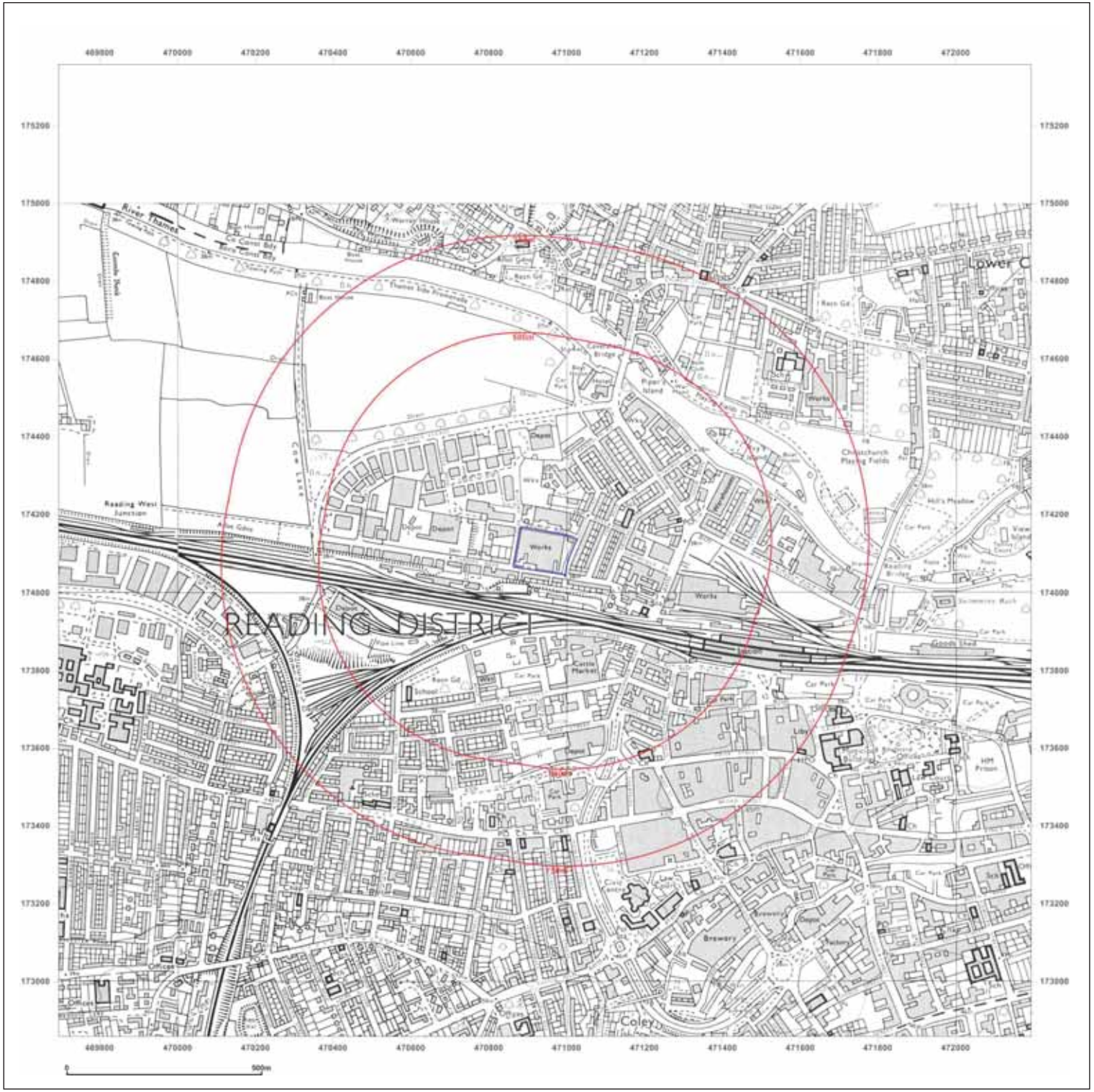
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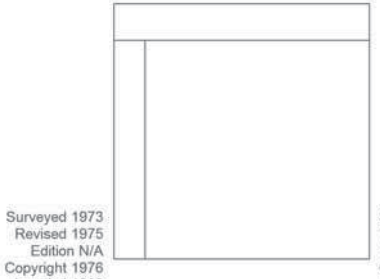
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Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1976-1979**
Scale: 1:10,000
Printed at: 1:10,000

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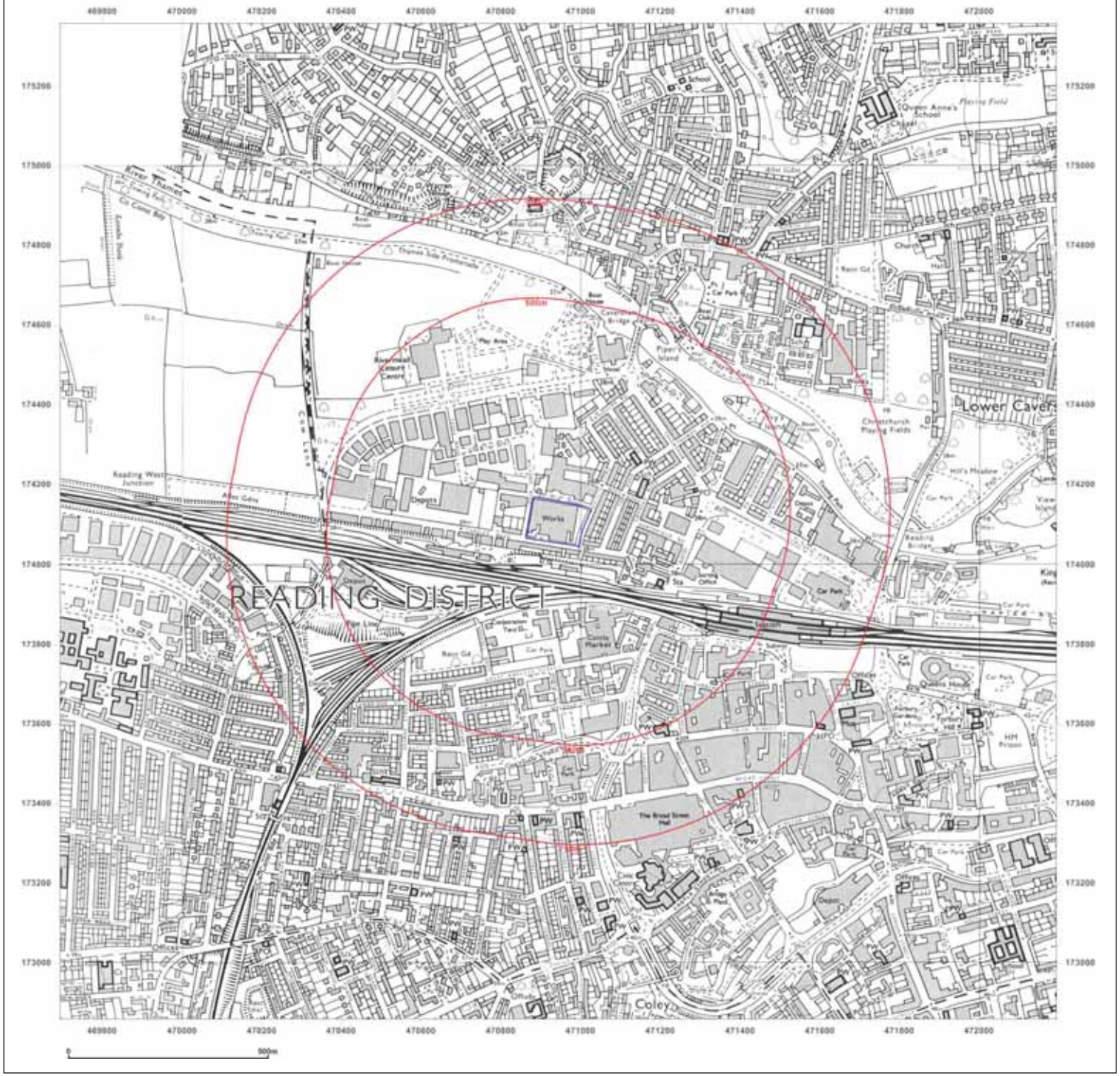
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Grid Ref: 470944, 174108

Map Name: National Grid
Map date: 1989-1991
Scale: 1:10,000
Printed at: 1:10,000

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Surveyed 1985
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Edition N/A
Copyright N/A
Levelled N/A

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Revised 1991
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Surveyed 1987
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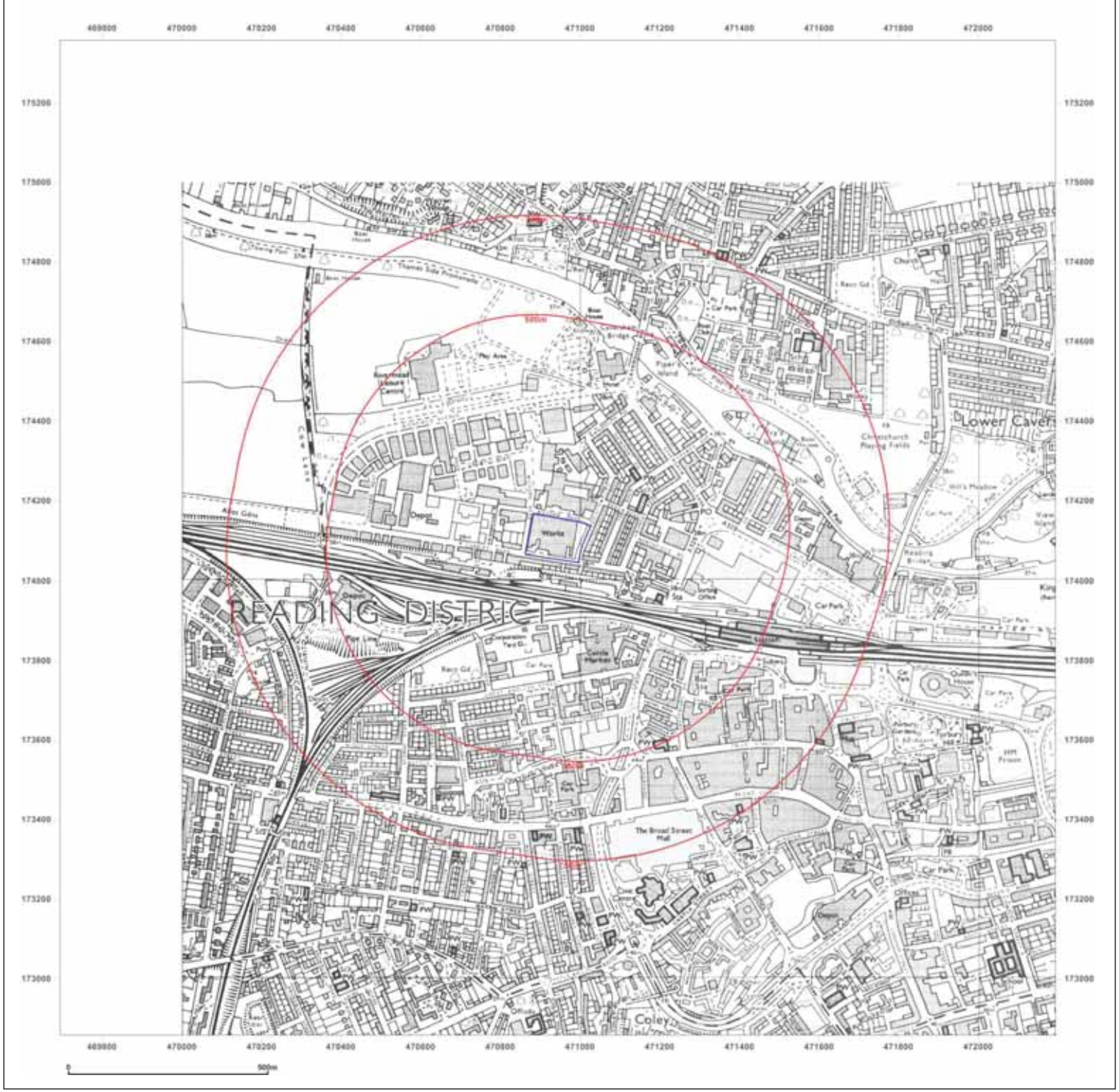
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Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: **1994**
Scale: 1:10,000
Printed at: 1:10,000

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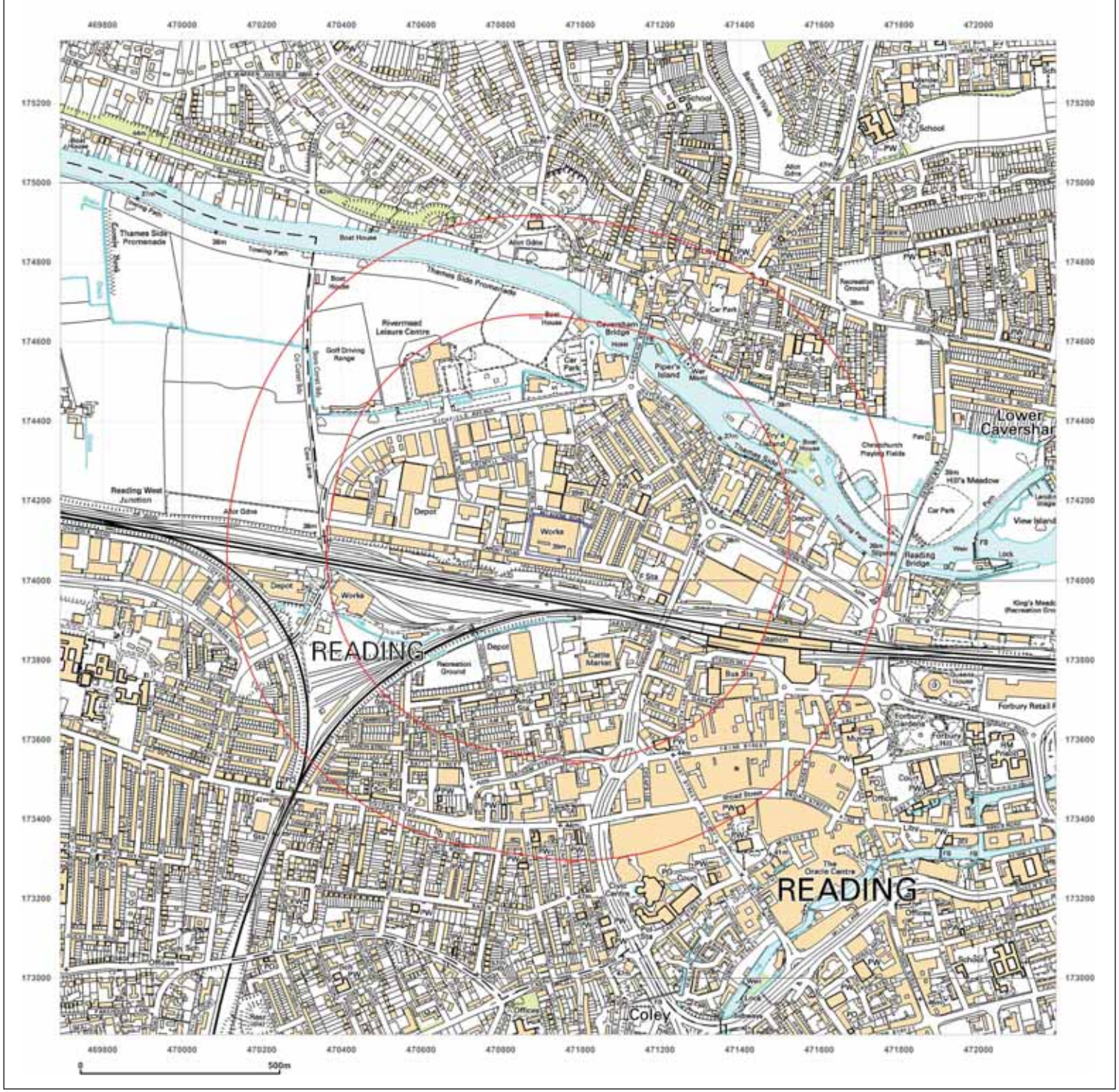
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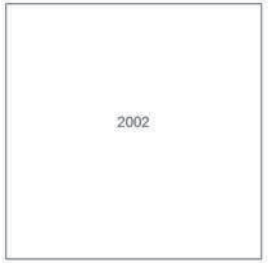
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Site Details:

Client Ref: EMS_538905_724898
Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: 1:10,000 Raster
Map date: 2002
Scale: 1:10,000
Printed at: 1:10,000

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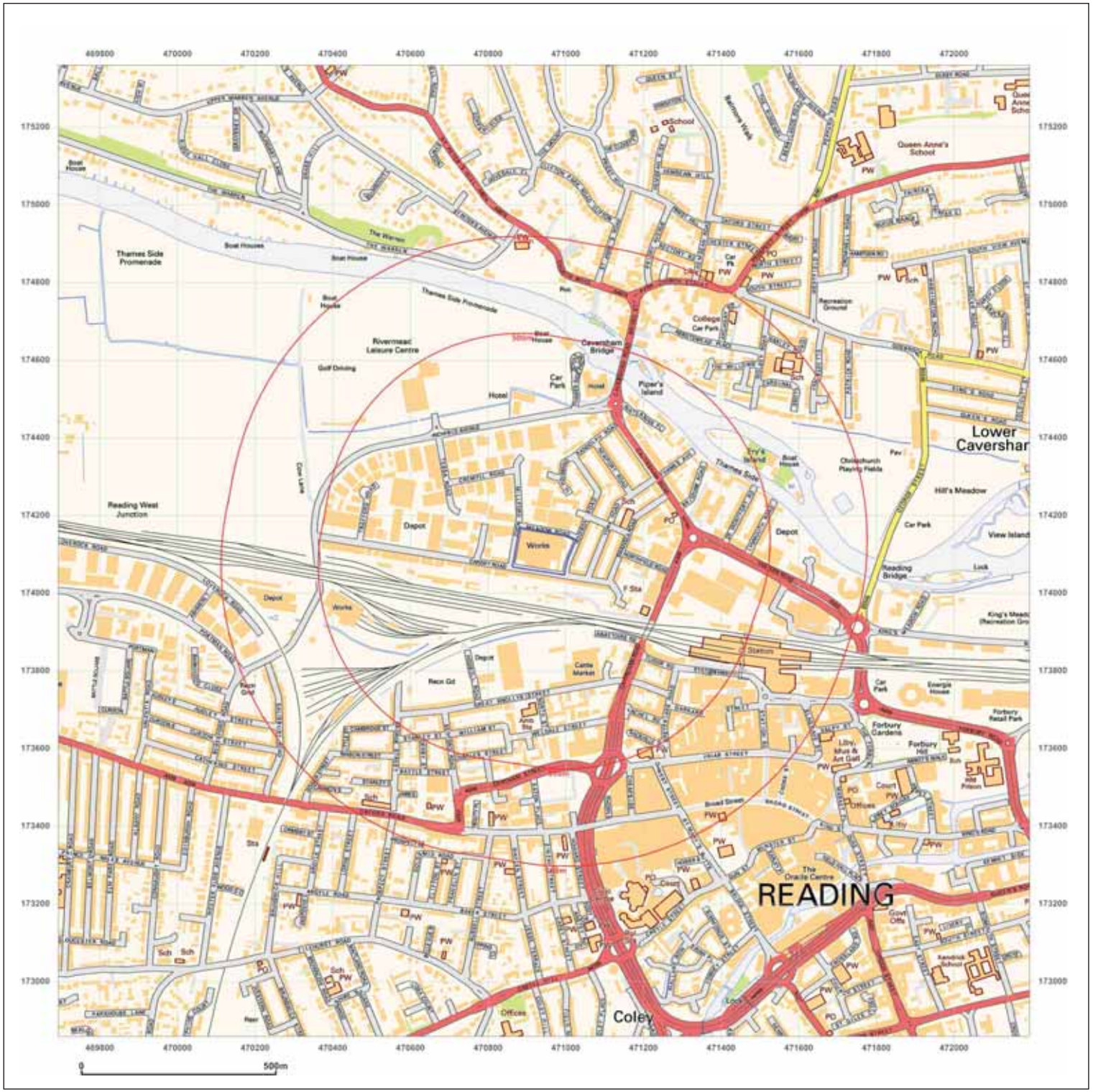
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Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: 2010
Scale: 1:10,000
Printed at: 1:10,000

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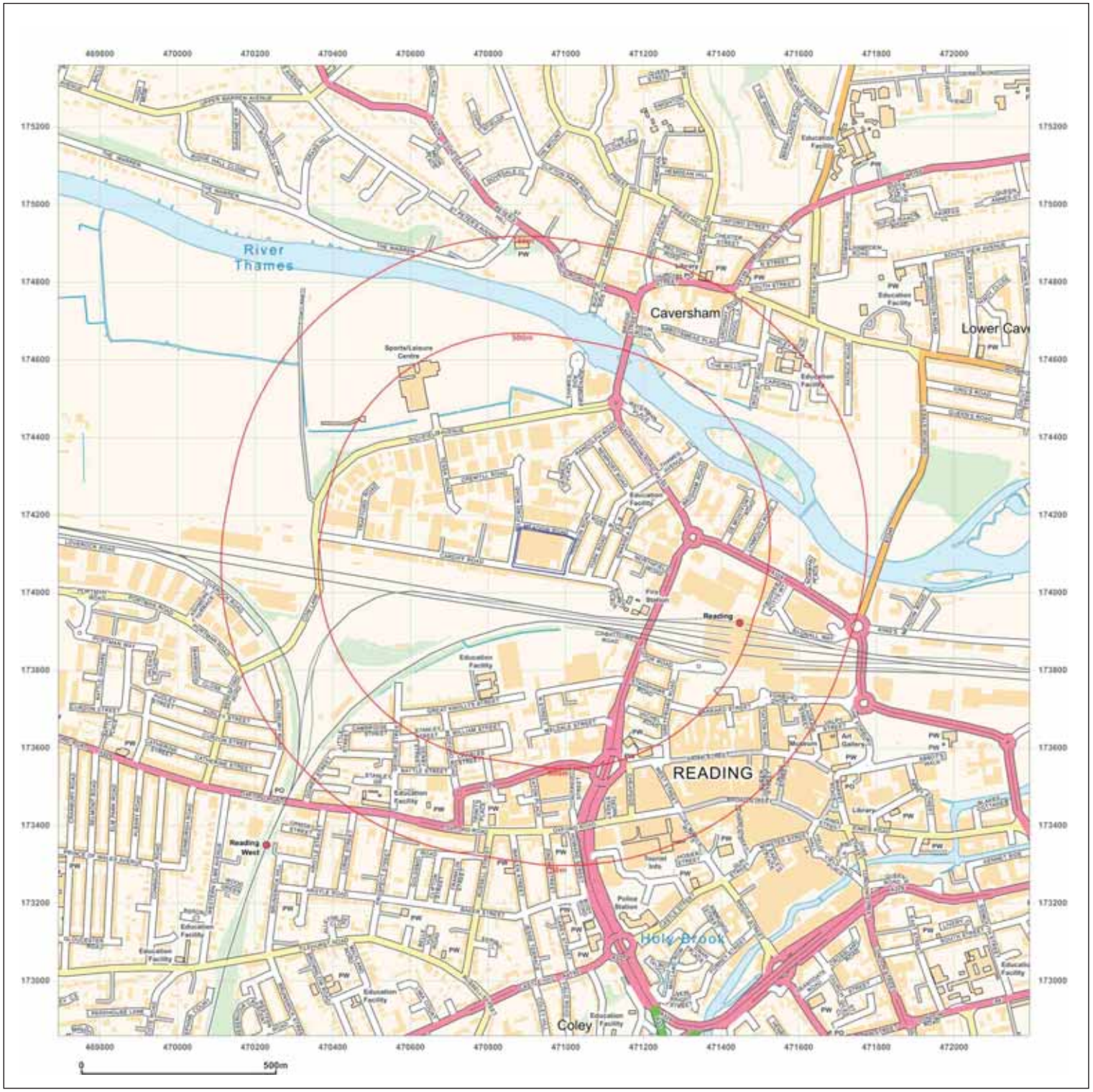
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Report Ref: EMS-538905_724898
Grid Ref: 470944, 174108

Map Name: National Grid
Map date: 2014
Scale: 1:10,000
Printed at: 1:10,000

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2014

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Building A2 Office 1052 Cody Technology Park,
Old Ively Road,
Farnborough, GU14 0LX

Report Reference: EMS-538905_724899

Your Reference: EMS_538905_724899

Report Date 15 Apr 2019

Report Delivery Method: Email - pdf

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Address: ,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**,**
Date:	**15 Apr 2019**
Reference:	**EMS-538905_724899**
Client:	**emapsite**

NW N NE



W E

SW S SE

Aerial Photograph Capture date:	20-Apr-2015
Grid Reference:	470940,174108
Site Size:	1.4214ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	2	2	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	2

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	2	2	0	0	4
5.4 Non-Coal Mining*	0	0	0	2	10
5.5 Non–Coal Mining Cavities	0	0	0	0	2
5.5 Natural Cavities	0	0	0	0	7

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Very Low
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Negligible

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	4	1	42

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	2	2	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	3	59	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	110	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability

NW N NE

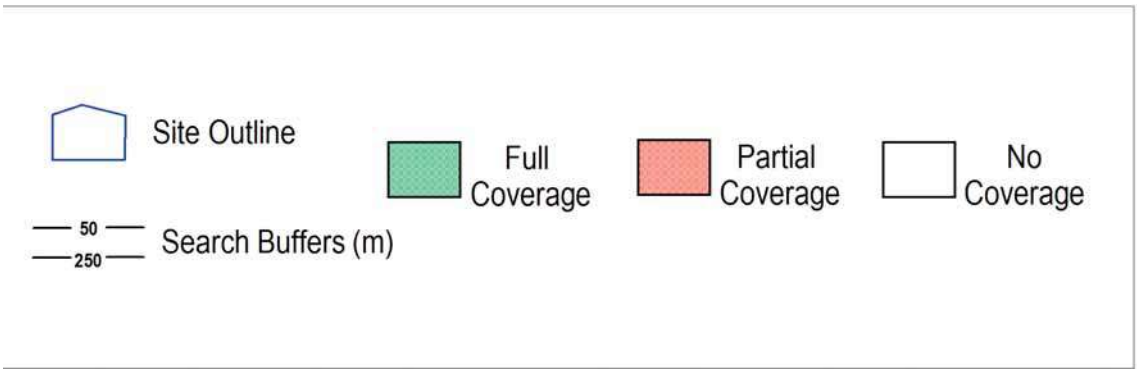


W E

SW S SE

1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	831.0	Some deposits are mapped	Full	Full	No coverage
3	862.0	Some deposits are mapped	Full	Full	No coverage
4	1212.0	Some deposits are mapped	Full	Full	No coverage

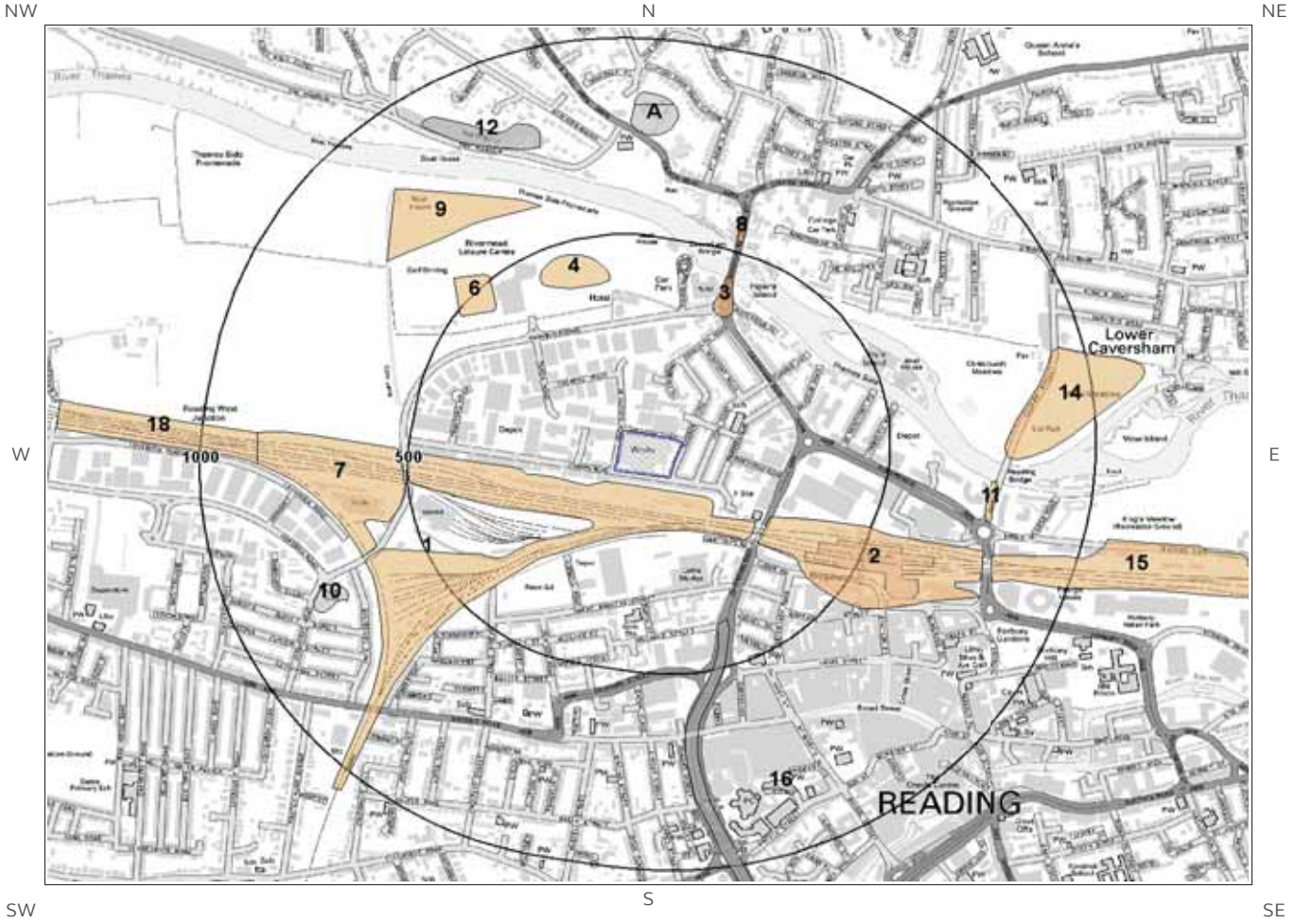
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

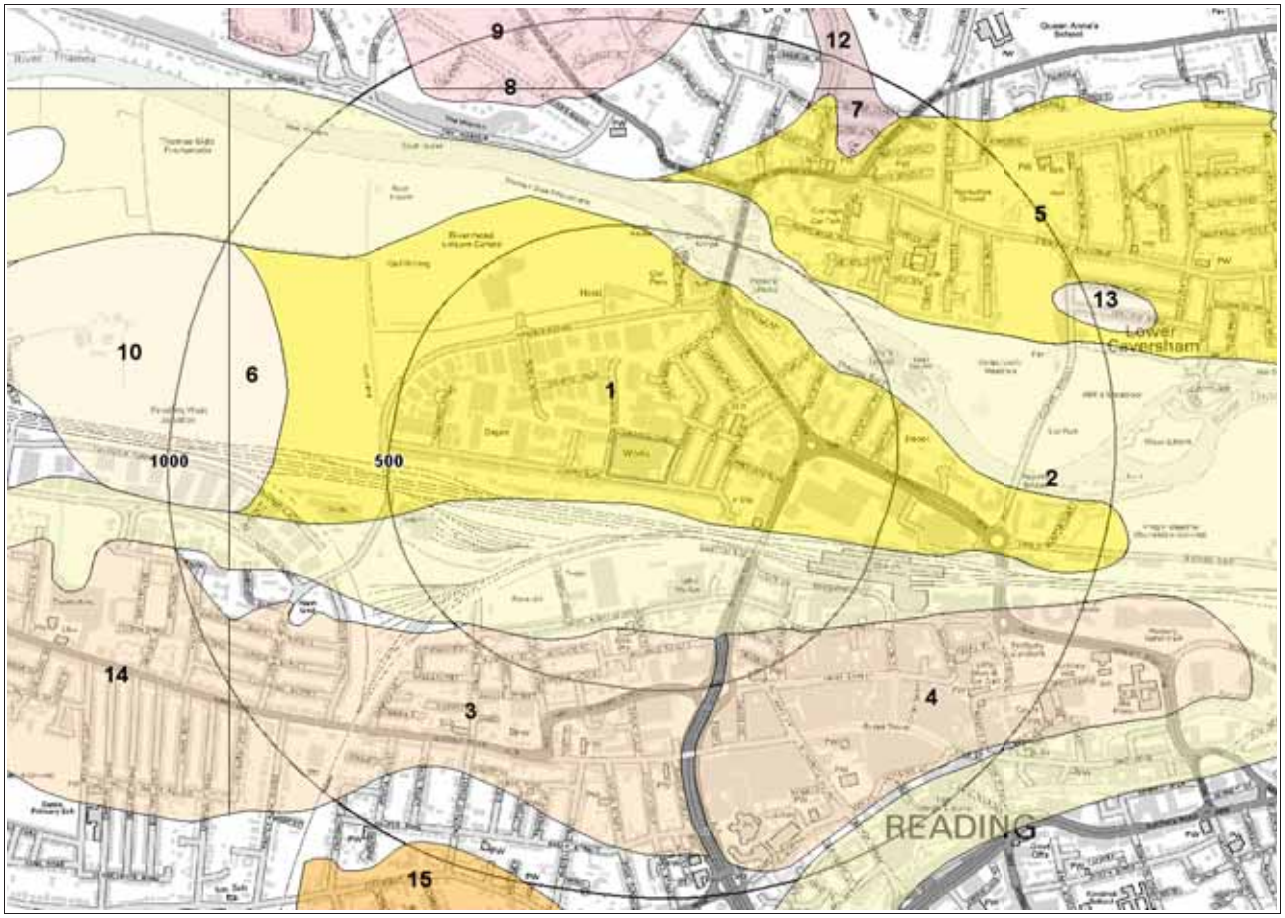
The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	30.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	260.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	331.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	378.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	384.0	S	WGR-VOID	Worked Ground (Undivided)	Void
6	435.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

1.2 Superficial Deposits and Landslips map (1:10,000 scale)

NW N NE



W E

SW S SE

Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LASI-XCZ	Langley Silt Member - Clay And Silt	Clay And Silt
2	58.0	S	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
3	359.0	S	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel
4	388.0	S	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

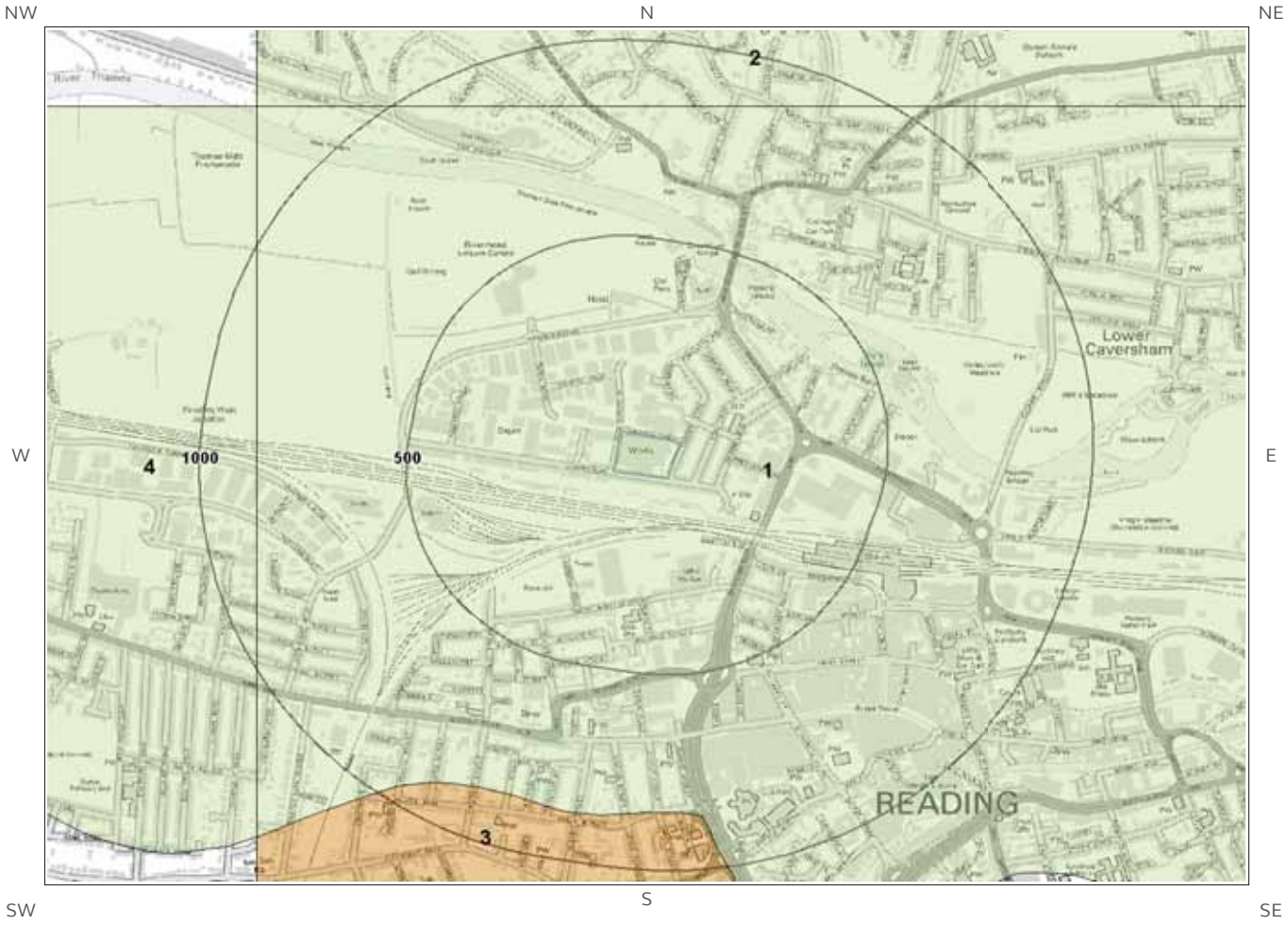
No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LSNCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) - Chalk	Campanian Age - Turonian Age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

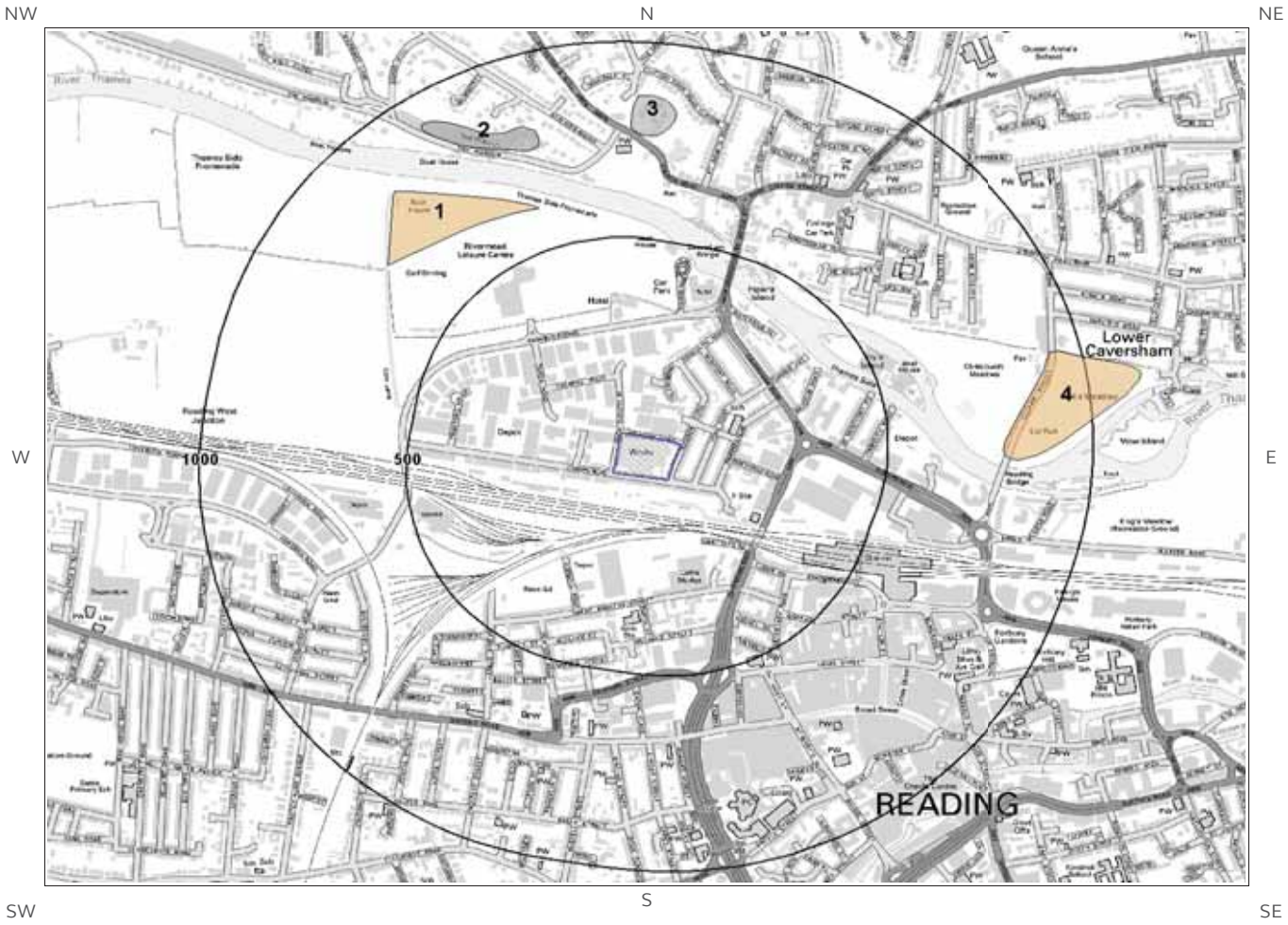
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 268

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? No

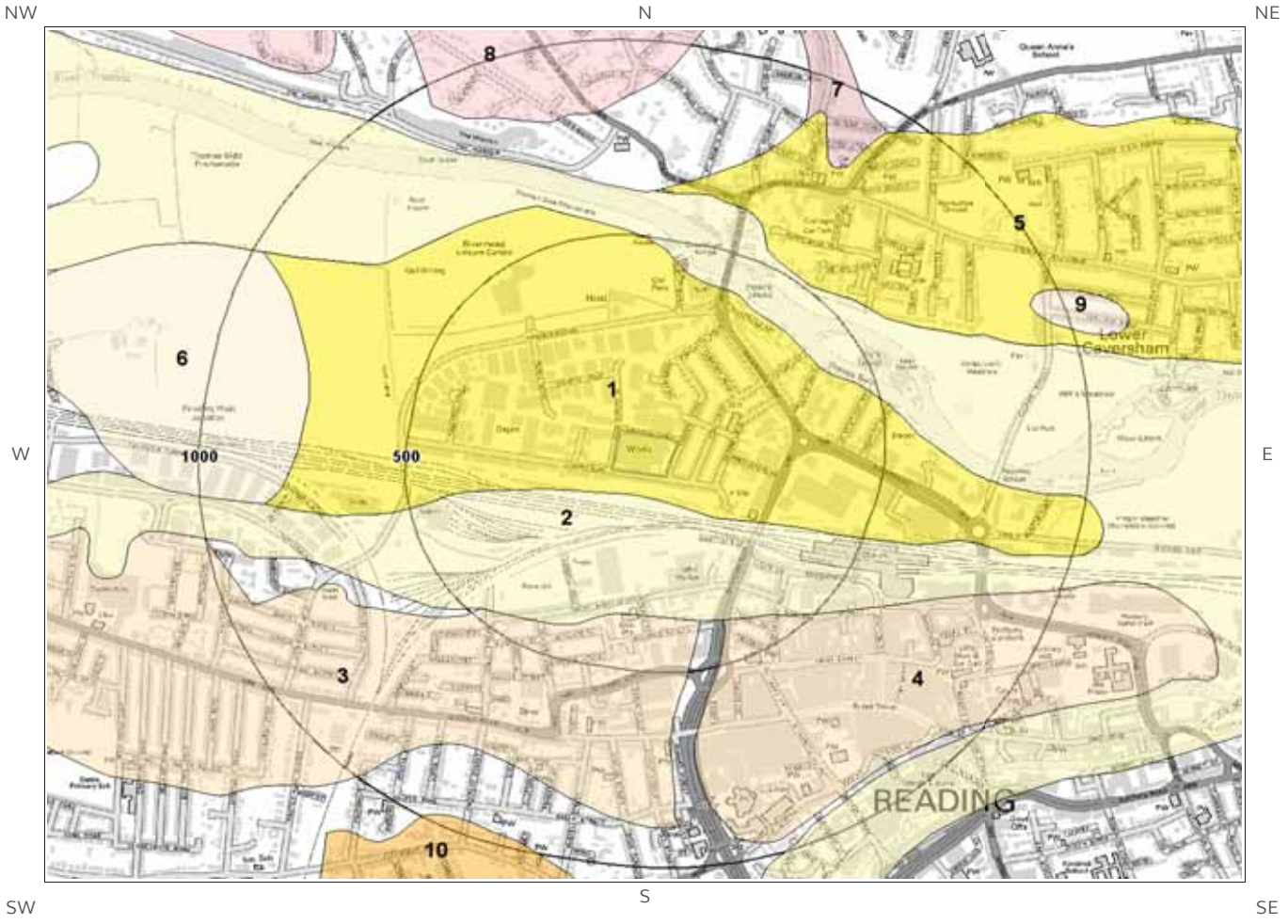
Database searched and no data found.

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
2	55.0	S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	357.0	S	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL
4	387.0	S	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Low	Very Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

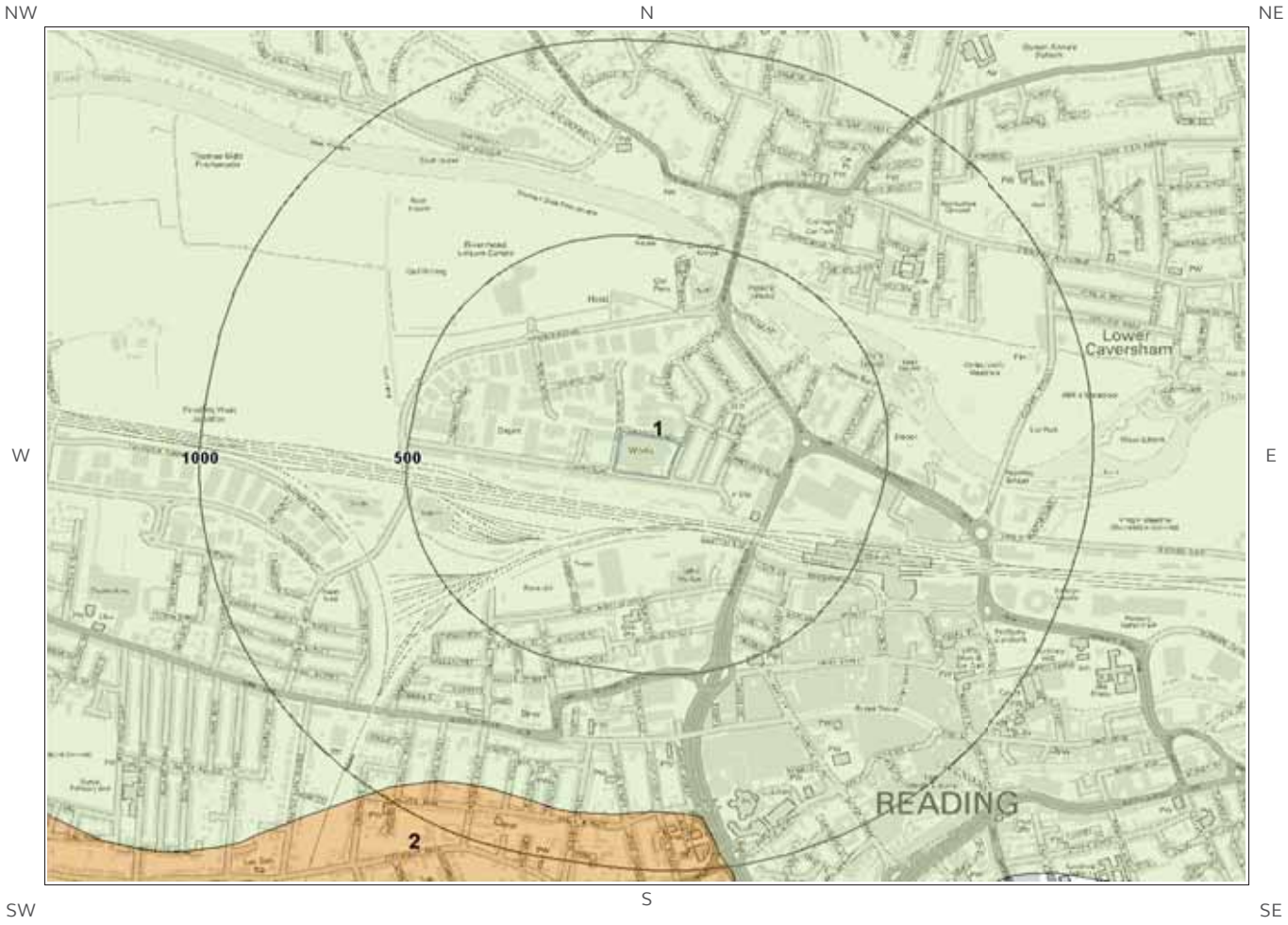
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 268

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	SNCK-CHLK	SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	CONIACIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Very High	Very High

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

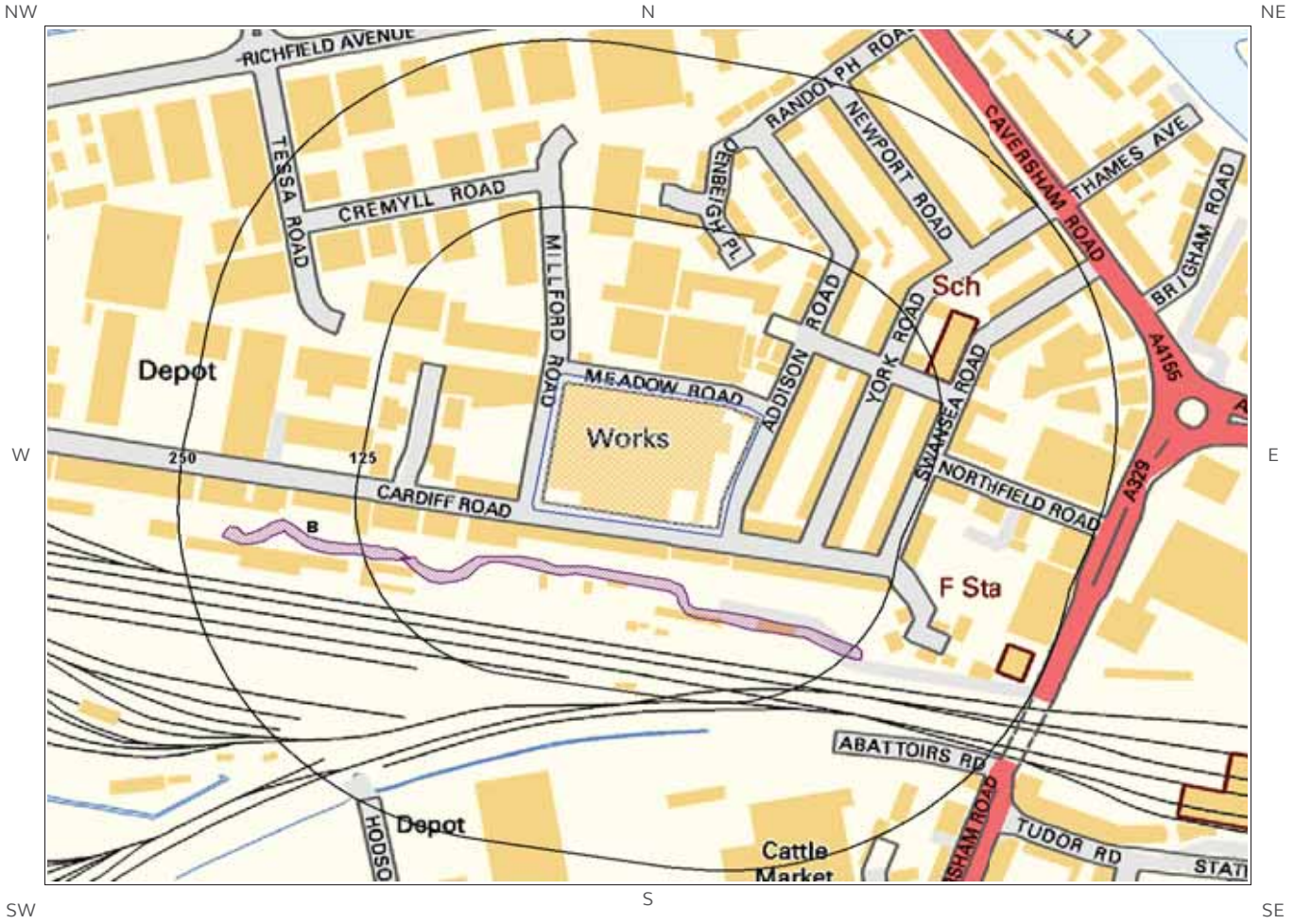
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

---

4 Ground Workings map



Ground Workings Legend

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Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	36.0	S	470973 173994	Unspecified Ground Workings	1938
2A	36.0	S	470973 173994	Unspecified Ground Workings	1913
3B	95.0	SW	470709 174044	Unspecified Ground Workings	1938
4B	95.0	SW	470709 174044	Unspecified Ground Workings	1910

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

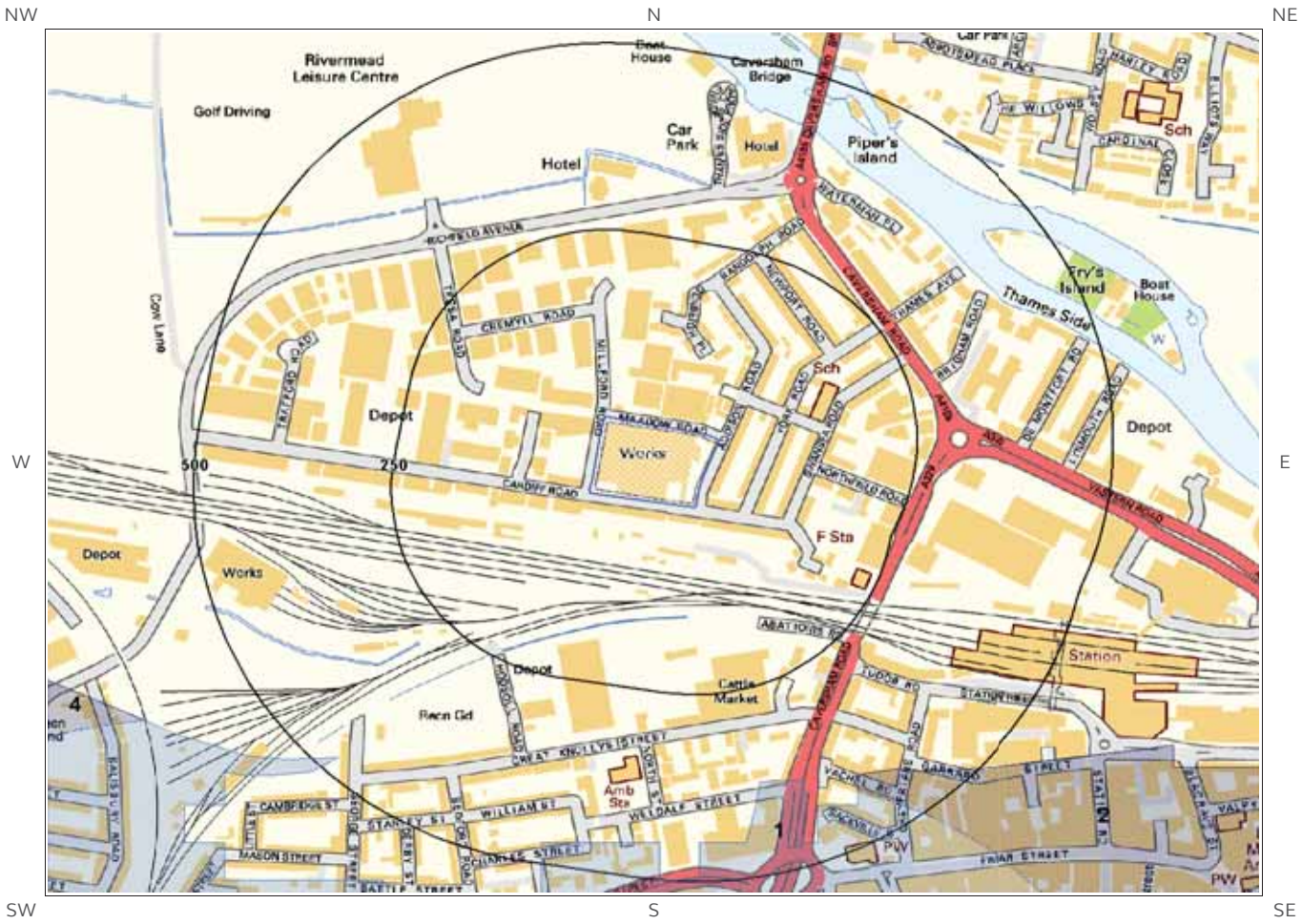
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	745.0	SW	470178 173774	Sand & Gravel	Battle Farm Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

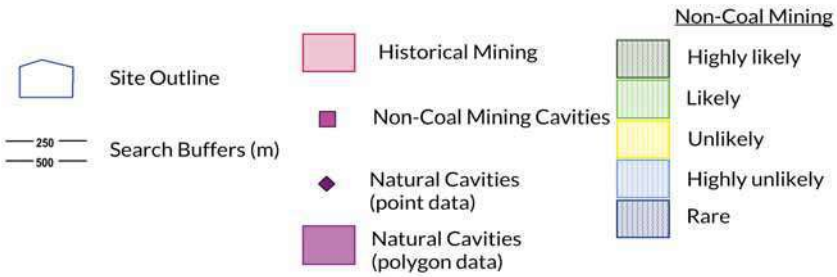
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	815.0	N	470960 174980	Chalk	St Peter's Hill Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? Yes

The following information provided by JPB is not represented on mapping: Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	375.0	S	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
2	411.0	SE	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	613.0	N	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
4	640.0	SW	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	831.0	N	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	892.0	W	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	947.0	SW	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
Not shown	951.0	S	Not available	Chalk	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	962.0	S	Not available	Chalk	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	973.0	S	Not available	Chalk	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	985.0	S	Not available	Chalk	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	989.0	S	Not available	Chalk	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? Yes

The following Non-Coal Mining Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
Not shown	998.0	S	470950 173050	Reading (Coley), Berkshire	-	Lambeth Group, Upper Chalk Formation	Chalk
Not shown	999.0	S	470940 173050	Reading (Coley), Berkshire	-	Lambeth Group, Upper Chalk Formation	Chalk

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? Yes

The following Natural Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
Not shown	656.0	S	471100 173400	Taplow Gravel	Chalk Group	Solution Pipe x 3
Not shown	821.0	SE	471500 173400	Taplow Gravel	Chalk Group	Solution Pipe x 3
Not shown	847.0	S	471010 173200	-	Chalk Group, Lambeth Group	Solution Widened Joint or Fissure x 3
Not shown	852.0	SE	471550 173400	Taplow Gravel	Chalk Group	Solution Pipe x 5
Not shown	902.0	SE	471500 173300	Taplow Gravel	Chalk Group	Solution Pipe x 1
Not shown	939.0	SE	471400 173200	Taplow Gravel	Chalk Group	Solution Pipe x 2
Not shown	987.0	S	470980 173060	-	Chalk Group, Lambeth Group	Solution Pipe x 1

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary?	No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

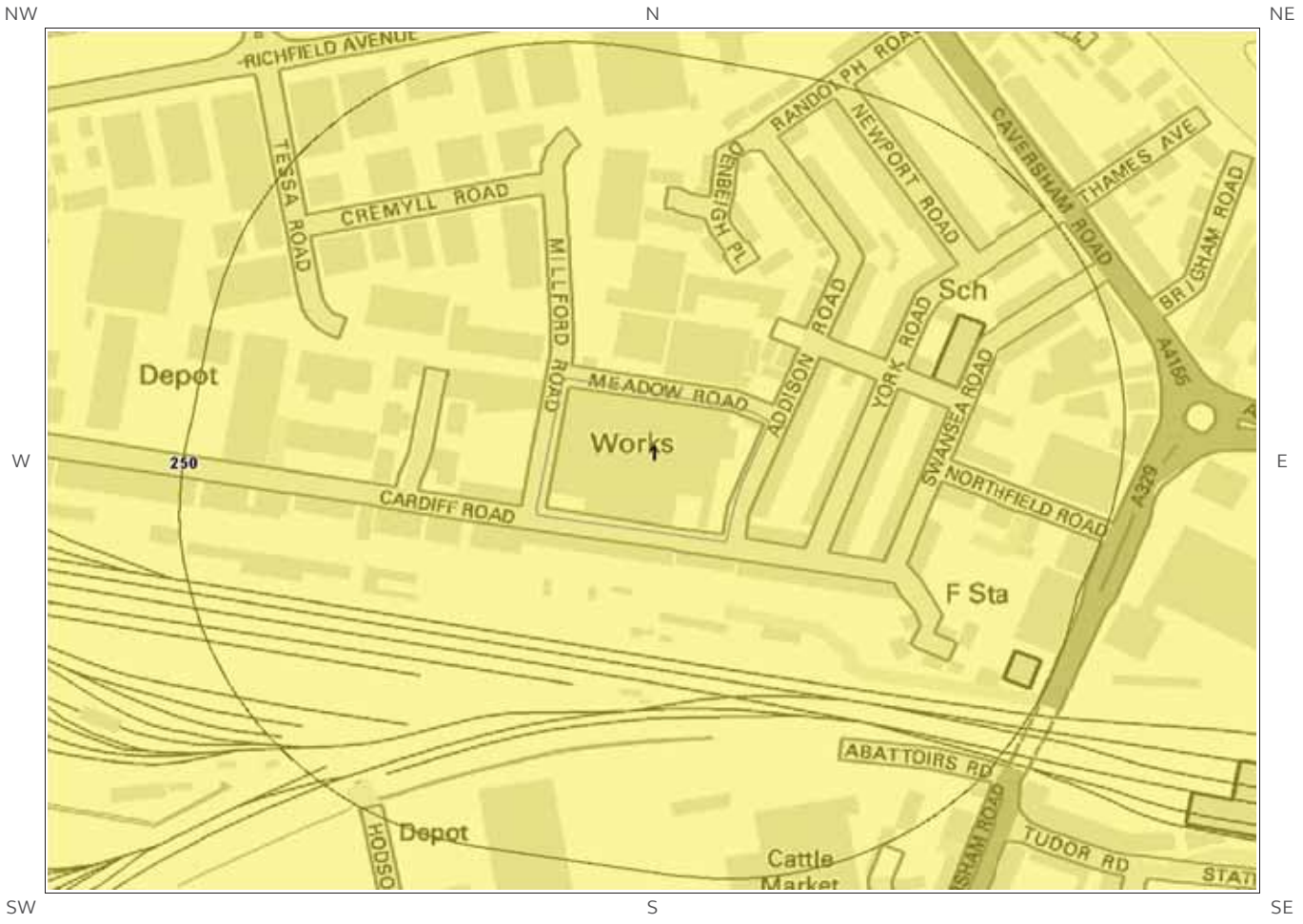
Are there any Clay Mining areas within 1000m of the study site boundary?	No

Database searched and no data found.

---

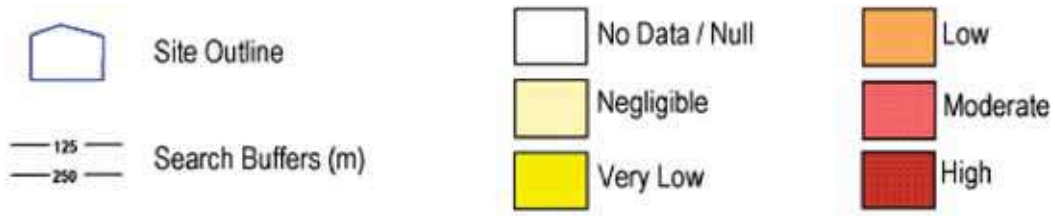
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

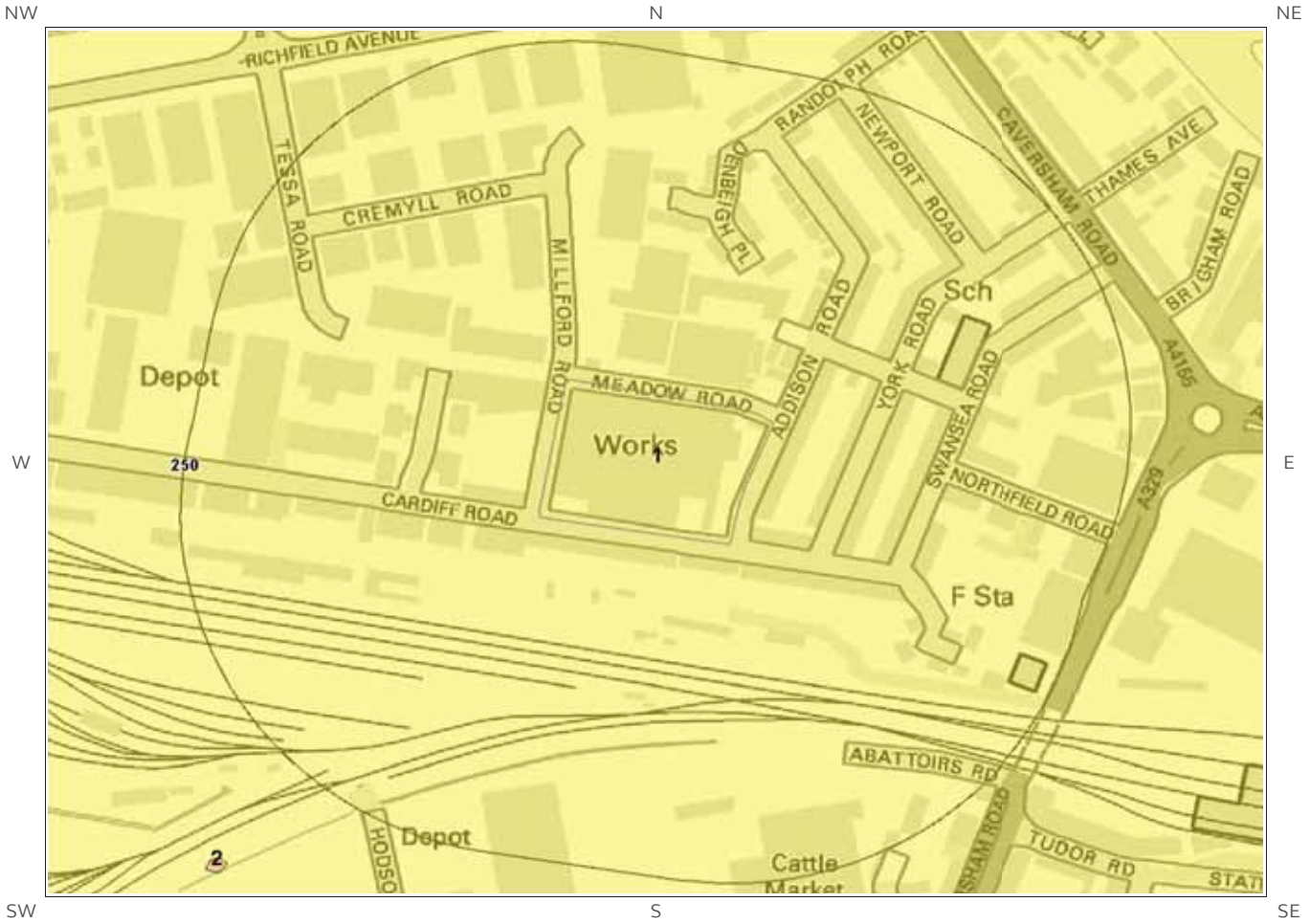


Shrink Swell Clay Legend

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6.2 Landslides map



Landslides Legend

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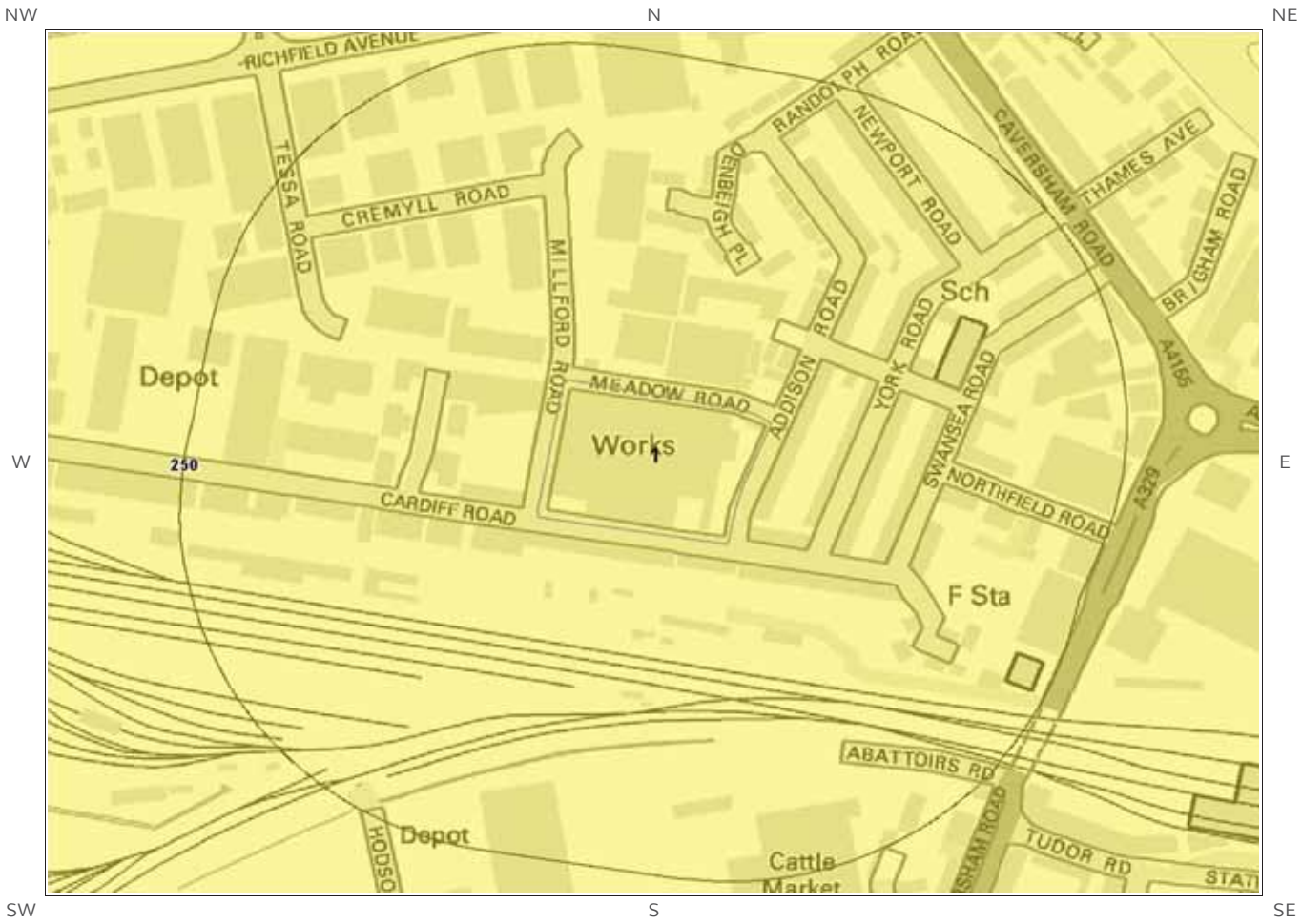
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

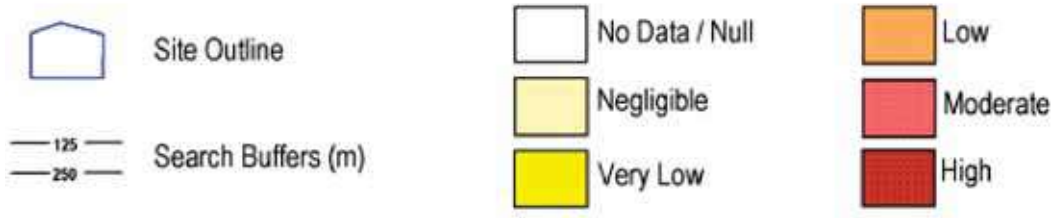
Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map

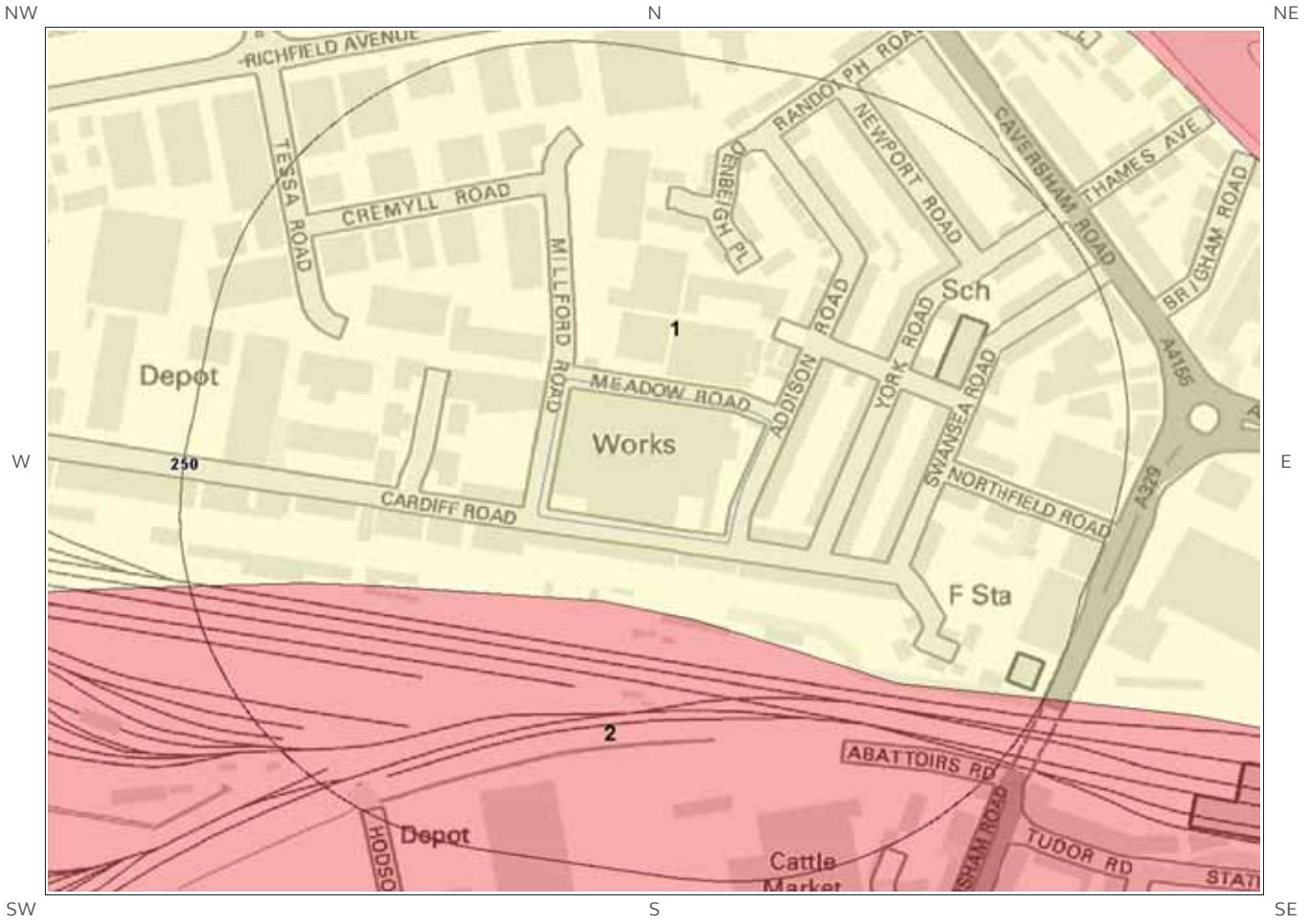


Ground Dissolution Soluble Rocks Legend

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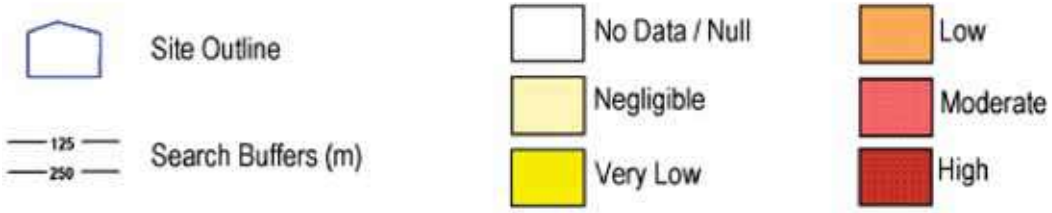


6.4 Compressible Deposits map

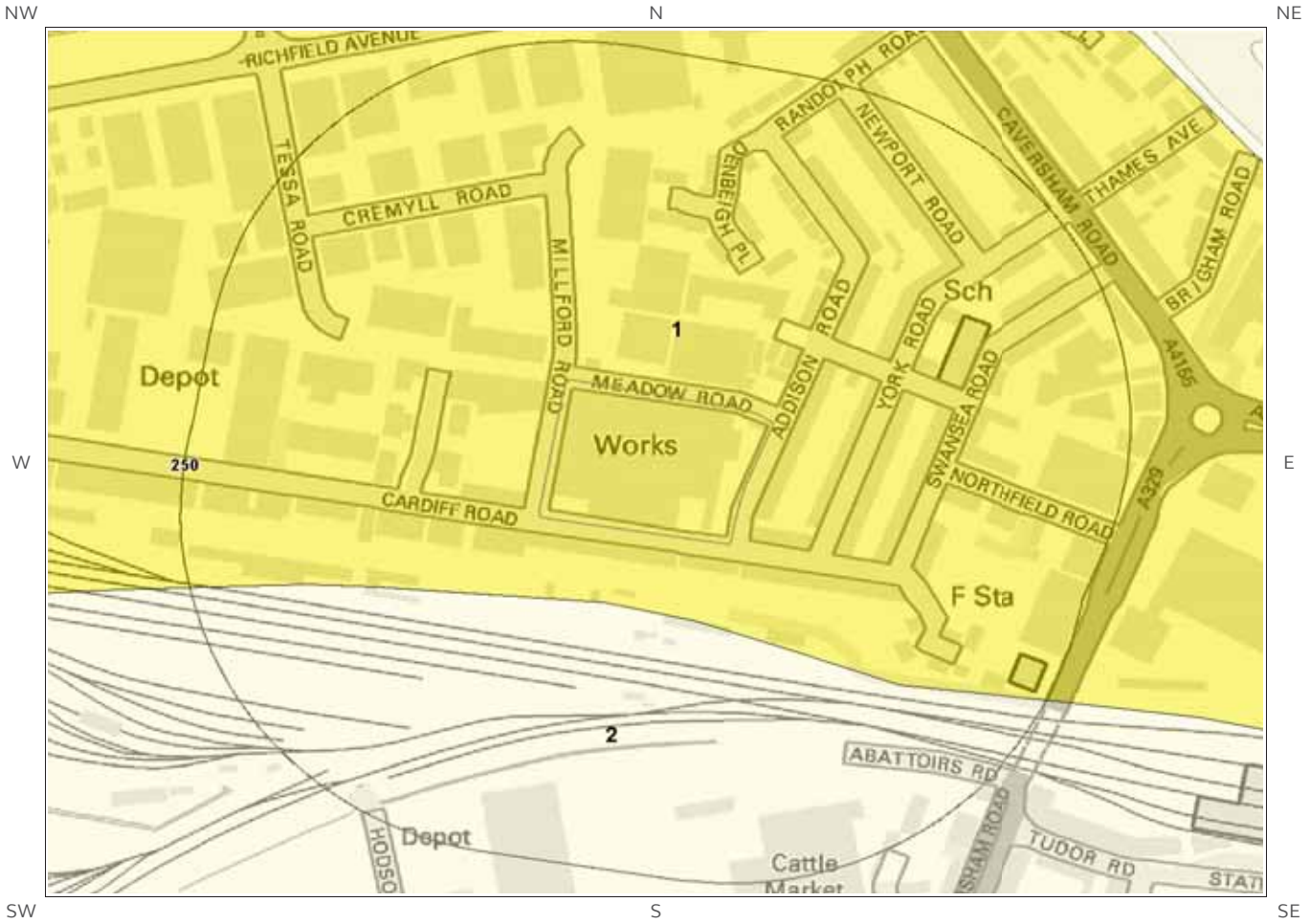


Compressible Deposits Legend

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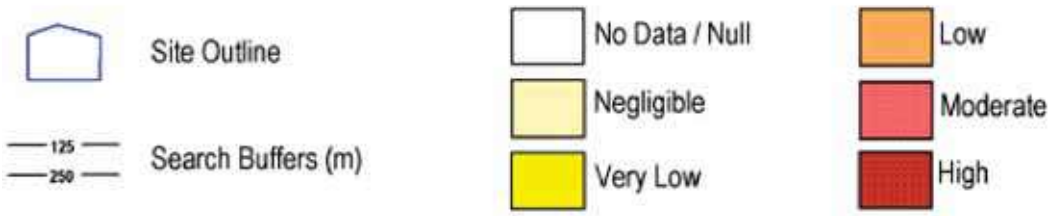


6.5 Collapsible Deposits map

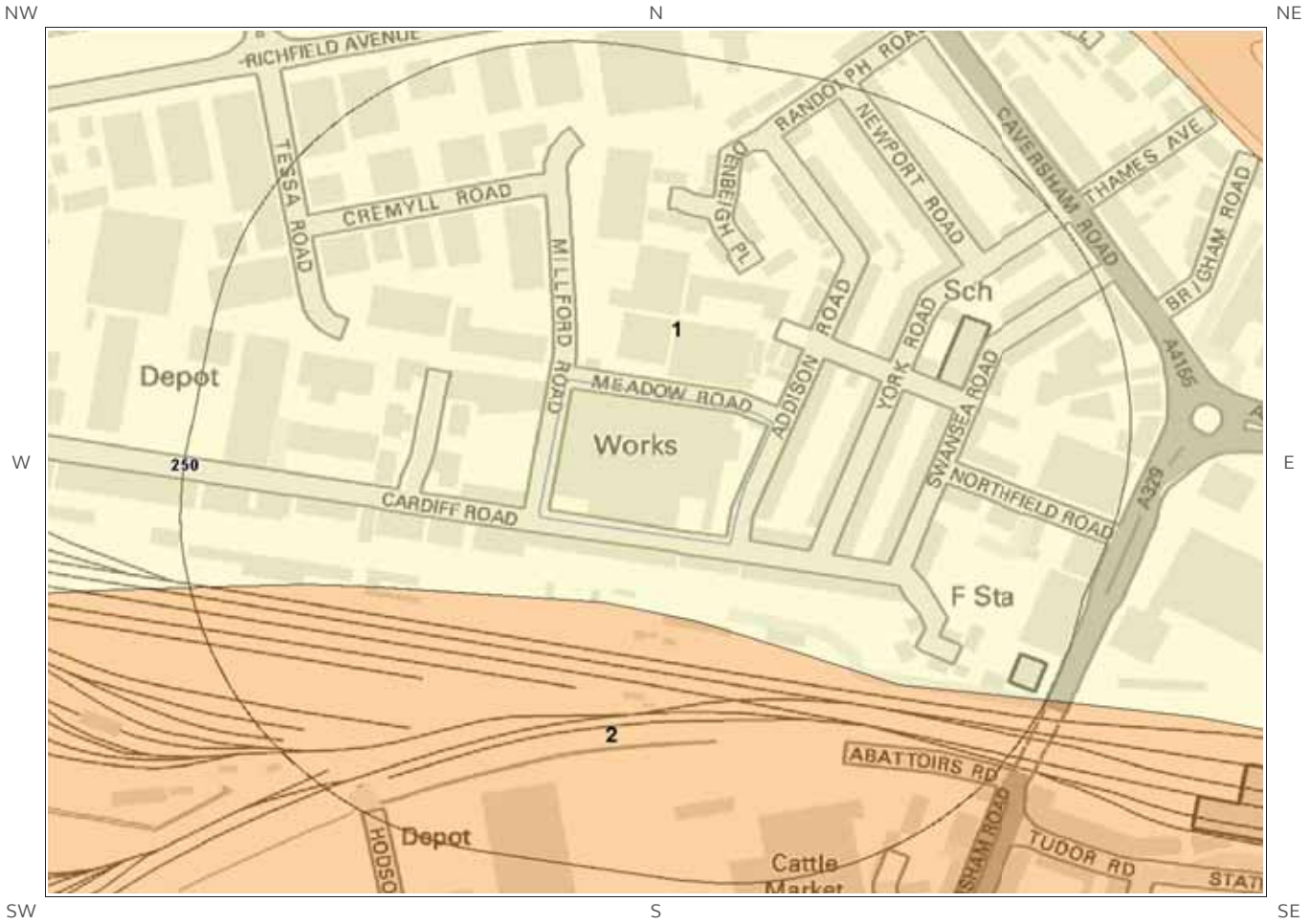


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Very Low

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

* This includes an automatically generated 50m buffer zone around the site

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

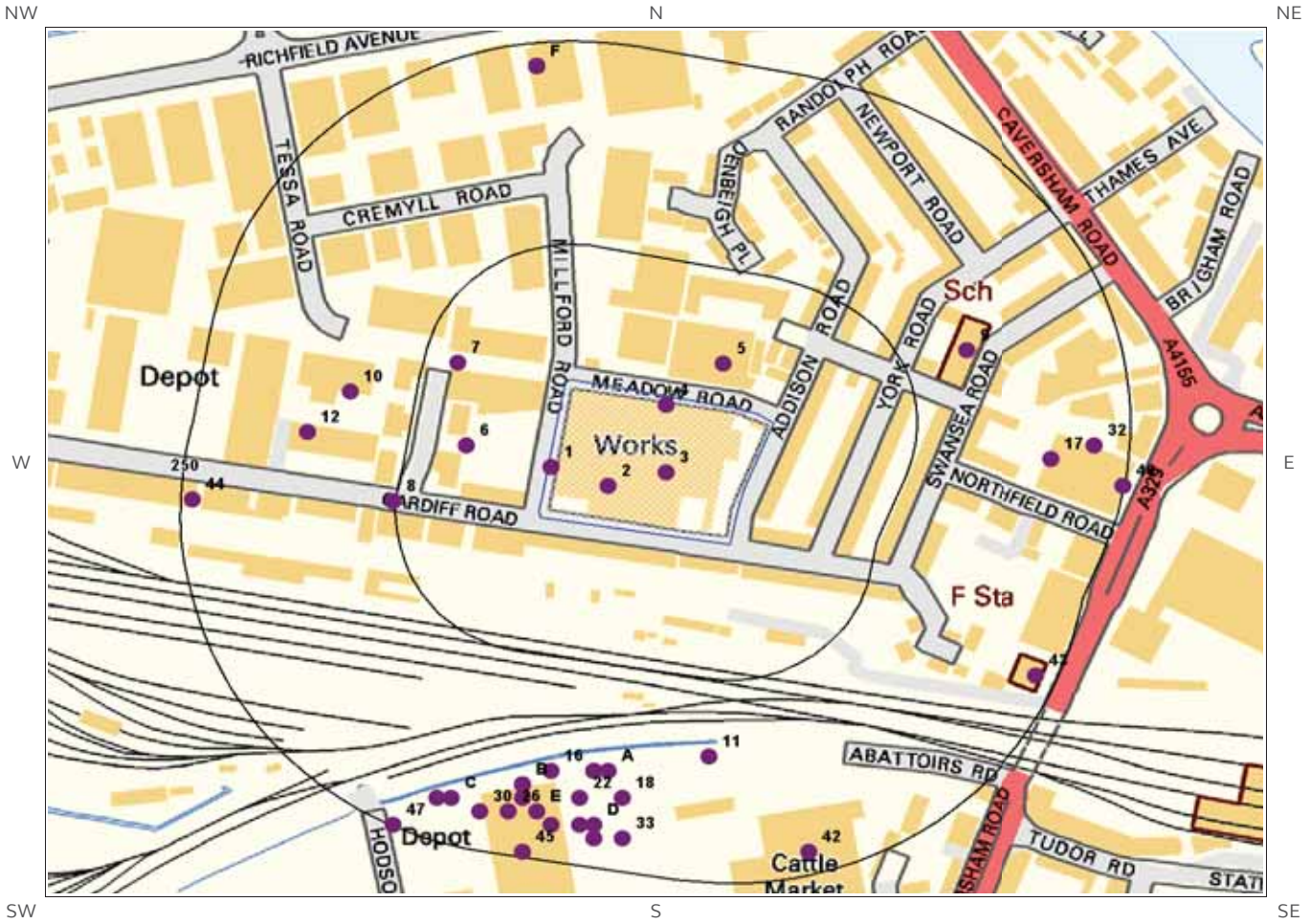
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

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Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 47

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	470870 174104	SU77SW861	6.0	QTR DEPOT CARDIFF ROAD READING 2/2A
2	0.0	On Site	470910 174090	SU77SW660	15.24	ADDISON ROAD READING
3	0.0	On Site	470950 174100	SU77SW190	11.43	14 CROSS ST READING
4	0.0	On Site	470950 174150	SU77SW649	18.28	MEADOW ROAD READING
5	30.0	N	470990 174180	SU77SW48	45.72	MEADOW ROAD WORKS CAVERSHAM
6	59.0	W	470811 174120	SU77SW862	6.0	QTR DEPOT CARDIFF ROAD READING 3
7	77.0	W	470805 174181	SU77SW860	6.0	QTR DEPOT CARDIFF ROAD READING 1
8	102.0	W	470760 174079	SU77SW863	6.0	QTR DEPOT CARDIFF ROAD READING 4
9	144.0	E	471160 174190	SU77SW49	7.31	SCHOOL BOARD SWANSEA ROAD
10	146.0	W	470730 174160	SU77SW659	4.57	CARDIFF ROAD READING
11	158.0	S	470980 173890	SU77SW46	91.44	THE ABATTOIRS READING
12	170.0	W	470700 174130	SU77SW658	3.65	CARDIFF ROAD READING
13A	178.0	S	470910 173880	SU77SW1188	-1.0	READING BUS GARAGE 96/9
14A	180.0	S	470900 173880	SU77SW1080	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 7
15A	180.0	S	470900 173880	SU77SW1173	-1.0	GREAT KNOLLYS STREET READING TP96/6
16	184.0	S	470870 173880	SU77SW1051	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 5
17	196.0	E	471220 174110	SU77SW661	22.86	81 CAVERSHAM ROAD READING
18	196.0	S	470920 173860	SU77SW1175	-1.0	GREAT KNOLLYS STREET READING TP96/8
19B	197.0	S	470850 173870	SU77SW1046	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE 3
20B	197.0	S	470850 173870	SU77SW1079	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 6
21B	197.0	S	470850 173870	SU77SW1179	-1.0	GREAT KNOLLYS STREET READING WS96/1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
22	201.0	S	470890 173860	SU77SW1070	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE 2
23B	207.0	S	470850 173860	SU77SW1177	-1.0	GREAT KNOLLYS STREET READING TP96/10
24E	215.0	S	470860 173850	SU77SW1168	-1.0	GREAT KNOLLYS STREET READING TP96/1
25C	217.0	S	470800 173860	SU77SW1069	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE 1
26	218.0	S	470840 173850	SU77SW1052	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 6
27D	219.0	S	470900 173840	SU77SW1161	-1.0	GREAT KNOLLYS STREET READING 96/2
28C	220.0	S	470790 173860	SU77SW1077	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 4
29D	221.0	S	470890 173840	SU77SW1160	-1.0	GREAT KNOLLYS STREET READING 96/1
30	221.0	S	470820 173850	SU77SW1078	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 5
31E	224.0	S	470870 173840	SU77SW1050	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE TP 4
32	225.0	E	471250 174120	SU77SW623	19.4	CAVERSHAM ROAD READING A
33	226.0	S	470920 173830	SU77SW1176	-1.0	GREAT KNOLLYS STREET READING TP96/9
34D	229.0	S	470900 173830	SU77SW1162	-1.0	GREAT KNOLLYS STREET READING 96/3
35F	232.0	N	470860 174400	SU77SW823	3.4	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM TP 4
36F	232.0	N	470860 174400	SU77SW821	4.2	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM TP 2
37F	232.0	N	470860 174400	SU77SW820	3.6	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM TP 1
38F	232.0	N	470860 174400	SU77SW822	3.6	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM TP 3
39F	232.0	N	470860 174400	SU77SW818	15.0	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM 1
40F	232.0	N	470860 174400	SU77SW819	14.5	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM 2
41F	232.0	N	470860 174400	SU77SW824	3.7	RICHFIELD AVENUE-READING FOR PROPOSED NEW PORSH SHOWROOM TP 5
42	234.0	S	471050 173820	SU77SW51	10.05	CATTLE MARKET READING

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
43	236.0	SE	471210 173950	SU77SW44	5.79	CAVERSHAM ROAD READING
44	242.0	W	470620 174080	SU77SW648	18.29	CARDIFF ROAD READING
45	246.0	S	470850 173820	SU77SW1071	-1.0	GREAT KNOLLYS STREET READING BERKSHIRE 3
46	249.0	E	471270 174090	SU77SW662	3.96	81 CAVERSHAM ROAD READING
47	249.0	SW	470760 173840	SU77SW1174	-1.0	GREAT KNOLLYS STREET READING TP96/7

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/15637606
#2: scans.bgs.ac.uk/sobi_scans/boreholes/428812
#3: scans.bgs.ac.uk/sobi_scans/boreholes/428342
#4: scans.bgs.ac.uk/sobi_scans/boreholes/428801
#5: scans.bgs.ac.uk/sobi_scans/boreholes/428200
#6: scans.bgs.ac.uk/sobi_scans/boreholes/15637607
#7: scans.bgs.ac.uk/sobi_scans/boreholes/15637605
#8: scans.bgs.ac.uk/sobi_scans/boreholes/15637608
#9: scans.bgs.ac.uk/sobi_scans/boreholes/428201
#10: scans.bgs.ac.uk/sobi_scans/boreholes/428811
#11: scans.bgs.ac.uk/sobi_scans/boreholes/428198
#12: scans.bgs.ac.uk/sobi_scans/boreholes/428810
#17: scans.bgs.ac.uk/sobi_scans/boreholes/428813
#32: scans.bgs.ac.uk/sobi_scans/boreholes/428775
#35F: scans.bgs.ac.uk/sobi_scans/boreholes/15617885
#36F: scans.bgs.ac.uk/sobi_scans/boreholes/15617880
#37F: scans.bgs.ac.uk/sobi_scans/boreholes/15617878
#38F: scans.bgs.ac.uk/sobi_scans/boreholes/15617883
#39F: scans.bgs.ac.uk/sobi_scans/boreholes/15617870
#40F: scans.bgs.ac.uk/sobi_scans/boreholes/15617876
#41F: scans.bgs.ac.uk/sobi_scans/boreholes/15617887
#42: scans.bgs.ac.uk/sobi_scans/boreholes/428203
#43: scans.bgs.ac.uk/sobi_scans/boreholes/428196
#44: scans.bgs.ac.uk/sobi_scans/boreholes/428800
#46: scans.bgs.ac.uk/sobi_scans/boreholes/428814

8 Estimated Background Soil Chemistry

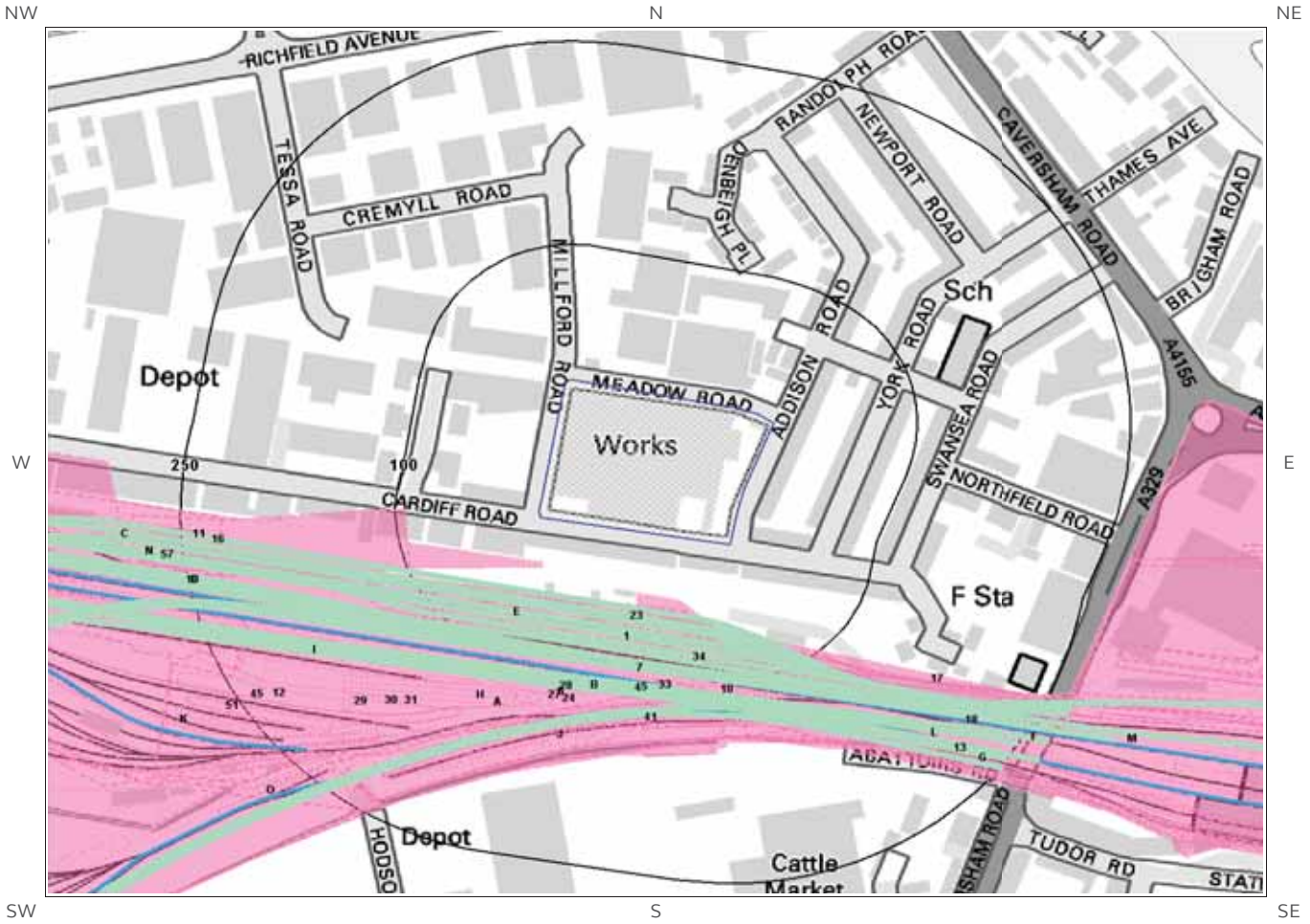
Records of background estimated soil chemistry within 250m of the study site boundary: 4

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
47.0	S	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
47.0	S	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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- Site Outline
- Search Buffers (m): 250, 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
16	32	S	n/a	Railway	1913
17	45	S	n/a	Railway	1910
18	45	S	n/a	Railway	1932
1	53	S	471797 173791	Railway Sidings	1933
2A	54	S	471493 173844	Railway Sidings	1994
3A	54	S	471493 173844	Railway Sidings	1989
4	56	S	471693 173770	Railway Sidings	1938

ID	Distance (m)	Direction	NGR	Details	Date
5	56	S	471677 173761	Railway Sidings	1913
6	57	S	471714 173783	Railway Sidings	1938
7	57	S	471525 173860	Railway Sidings	1962
8B	58	S	470437 173767	Railway Sidings	1971
9B	58	S	470437 173767	Railway Sidings	1977
19	58	S	470188 174076	Railway Sidings	1959
20D	59	S	470545 174034	Railway Sidings	1988
21D	60	S	470587 174033	Railway Sidings	1970
22D	60	S	470587 174033	Railway Sidings	1959
23	61	S	470842 173991	Railway Sidings	1959
24	61	S	471309 173894	Railway Sidings	1958
25E	63	S	470837 173992	Railway Sidings	1986
26E	63	S	470837 173992	Railway Sidings	1993
27	63	S	472120 173730	Railway Sidings	1931
28	63	S	472120 173730	Railway Sidings	1912
29	64	S	n/a	Railway	1931
30	64	S	n/a	Railway	1900
31	73	S	n/a	Railway	1879
10	74	S	471639 173719	Railway Sidings	1898
32E	76	S	470847 173990	Railway Sidings	1971
33	78	S	471629 173867	Railway Sidings	1879
34	79	S	472117 173727	Railway Sidings	1900
35F	81	S	471309 173894	Railway Sidings	1957
11	93	W	470053 174155	Railway Sidings	1901
36F	101	S	n/a	Railway	1879
12	107	S	470607 173955	Railway Sidings	1933
37G	109	S	471209 173878	Railway Sidings	1996
38G	109	S	471209 173878	Railway Sidings	1994
39H	113	S	470892 173935	Railway Sidings	1879
40H	113	S	470892 173935	Railway Sidings	1879
41	113	S	470683 173901	Railway Sidings	1900

ID	Distance (m)	Direction	NGR	Details	Date
13	115	S	470754 173877	Railway Sidings	1933
42I	115	S	470696 173966	Railway Sidings	1993
43I	115	S	470696 173966	Railway Sidings	1986
44I	115	S	470694 173965	Railway Sidings	1971
45	115	S	470739 173940	Railway Sidings	1959
46J	125	S	470830 173898	Railway Sidings	1959
47J	126	S	470824 173899	Railway Sidings	1986
48J	126	S	470824 173899	Railway Sidings	1993
49J	126	S	470824 173898	Railway Sidings	1971
50K	151	S	470510 173929	Railway Sidings	1993
51	151	S	470599 173939	Railway Sidings	1986
52K	151	S	470653 173929	Railway Sidings	1971
53L	164	SE	471138 173906	Railway Sidings	1879
54L	164	SE	471138 173906	Railway Sidings	1879
55M	173	SE	471249 173897	Railway Sidings	1957
56M	173	SE	471249 173897	Railway Sidings	1962
14C	221	W	470440 174077	Railway Sidings	1938
15C	221	W	470440 174077	Railway Sidings	1910
57	231	W	470603 174037	Railway Sidings	1913
58N	231	W	470603 174037	Railway Sidings	1936
59N	231	W	470603 174037	Railway Sidings	1932
60O	241	SW	470675 173864	Railway Sidings	1971
61O	242	SW	470679 173866	Railway Sidings	1993
62O	242	SW	470679 173866	Railway Sidings	1986

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Name	Type
55	S	Not given	rail
55	S	Not given	rail
61	S	Not given	rail
61	S	Not given	rail
65	S	Not given	rail
65	S	Not given	rail
71	S	Not given	rail
71	S	Not given	rail
76	S	Not given	rail
76	S	Not given	rail
82	S	Not given	rail
82	S	Not given	rail
88	S	Great Western Main Line	rail
88	S	Great Western Main Line	rail
88	S	Great Western Main Line	rail
88	S	Great Western Main Line	rail
93	S	Great Western Main Line	rail
93	S	Great Western Main Line	rail
95	S	Reading to Plymouth Line	rail
95	S	Reading to Plymouth Line	rail
97	S	Not given	Multi Track
97	S	Not given	Multi Track
99	S	Reading to Plymouth Line	rail
99	S	Reading to Plymouth Line	rail
107	S	Not given	Multi Track
107	S	Not given	Multi Track
111	S	Great Western Main Line	rail
111	S	Great Western Main Line	rail
112	S	Great Western Main Line	rail
112	S	Great Western Main Line	rail
113	S	Great Western Main Line	rail

Distance (m)	Direction	Name	Type
113	S	Great Western Main Line	rail
115	S	Great Western Main Line	rail
115	S	Great Western Main Line	rail
116	S	Great Western Main Line	rail
116	S	Great Western Main Line	rail
118	SW	Not given	rail
118	S	Great Western Main Line	rail
118	SW	Not given	rail
118	S	Great Western Main Line	rail
119	S	Not given	rail
119	S	Great Western Main Line	rail
119	S	Not given	rail
119	S	Great Western Main Line	rail
121	S	Not given	rail
121	S	Great Western Main Line	rail
121	S	Not given	rail
121	S	Great Western Main Line	rail
123	S	Great Western Main Line	rail
123	S	Not given	Multi Track
123	S	Not given	Multi Track
123	S	Great Western Main Line	rail
126	S	Not given	rail
126	S	Reading to Taunton line	rail
126	S	Not given	rail
126	S	Reading to Taunton line	rail
129	S	Reading to Taunton line	rail
129	S	Reading to Taunton line	rail
130	S	Reading to Plymouth Line	rail
130	S	Reading to Plymouth Line	rail
136	SW	Great Western Main Line	rail
136	SW	Great Western Main Line	rail
145	SE	Reading to Taunton line	rail
145	SE	Reading to Taunton line	rail
159	SW	Great Western Main Line	rail
159	SW	Great Western Main Line	rail
160	SE	Reading to Taunton line	rail
160	SE	Great Western Main Line	rail
160	SE	Reading to Taunton line	rail
160	SE	Great Western Main Line	rail
162	SE	Not given	Multi Track
162	SE	Not given	Multi Track
191	SW	Great Western Main Line	rail
191	SW	Great Western Main Line	rail
196	SE	Great Western Main Line	rail
196	SE	Not given	rail
196	SE	Great Western Main Line	rail
196	SE	Not given	rail
199	SE	Great Western Main Line	rail
199	SE	Great Western Main Line	rail
199	SE	Great Western Main Line	rail
199	SE	Great Western Main Line	rail
201	W	Reading to Plymouth Line	rail
201	W	Reading to Plymouth Line	rail

Distance (m)	Direction	Name	Type
212	SE	Not given	rail
212	SE	Not given	rail
229	SW	Reading to Plymouth Line	rail
229	SW	Reading to Plymouth Line	rail
231	SW	Reading to Taunton line	rail
231	SW	Reading to Taunton line	rail
236	SW	Not given	Multi Track
236	SW	Not given	Multi Track
236	SW	Not given	Multi Track
236	SW	Not given	Multi Track
237	SW	Not given	Multi Track
237	SW	Not given	Multi Track
241	SW	Reading to Plymouth Line	rail
241	SW	Reading to Plymouth Line	rail
242	SE	Not given	rail
242	SE	Not given	rail
242	SE	Not given	rail
242	SE	Not given	rail
243	W	Great Western Main Line	rail
243	SW	Reading to Taunton line	rail
243	W	Great Western Main Line	rail
243	SW	Reading to Taunton line	rail
249	SE	Great Western Main Line	rail
249	SE	Great Western Main Line	rail
249	SE	Great Western Main Line	rail
249	SE	Great Western Main Line	rail

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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emapsite

Building A2 Office 1052 Cody Technology Park,
Old Ively Road,
Farnborough, GU14 0LX

Groundsure Reference:	EMS-538905_724900
Your Reference:	EMS_538905_724900
Report Date	15 Apr 2019
Report Delivery Method:	Email - pdf

Enviro Insight

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If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

emapsite customer services team

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**,**
Date:	**15 Apr 2019**
Reference:	**EMS-538905_724900**
Client:	**emapsite**

NW N NE



W E

SW S SE

Aerial Photograph Capture date:	20-Apr-2015
Grid Reference:	470940,174108
Site Size:	1.4214ha

Report Reference: EMS-538905_724900
Client Reference: EMS_538905_724900

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	7	6	92	110
1.2 Additional Information – Historical Tank Database	1	0	23	47
1.3 Additional Information – Historical Energy Features Database	2	0	14	60
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	10	26
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	2	2	4

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	2
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	1
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	3	4
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	2	7
2.1.9 Records of Water Industry Referrals	0	0	0	1
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	10
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	1

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	1	1	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	2	2	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	3	5	1

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	2	11	47	Not searched
4.2 Records of Petrol and Fuel Sites	1	0	1	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	4	0	0	2	4	7
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	3	3
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	2	0	0	0	1	2
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	10	40	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	1
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	1	0	0	0	1	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Very Low
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Negligible
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

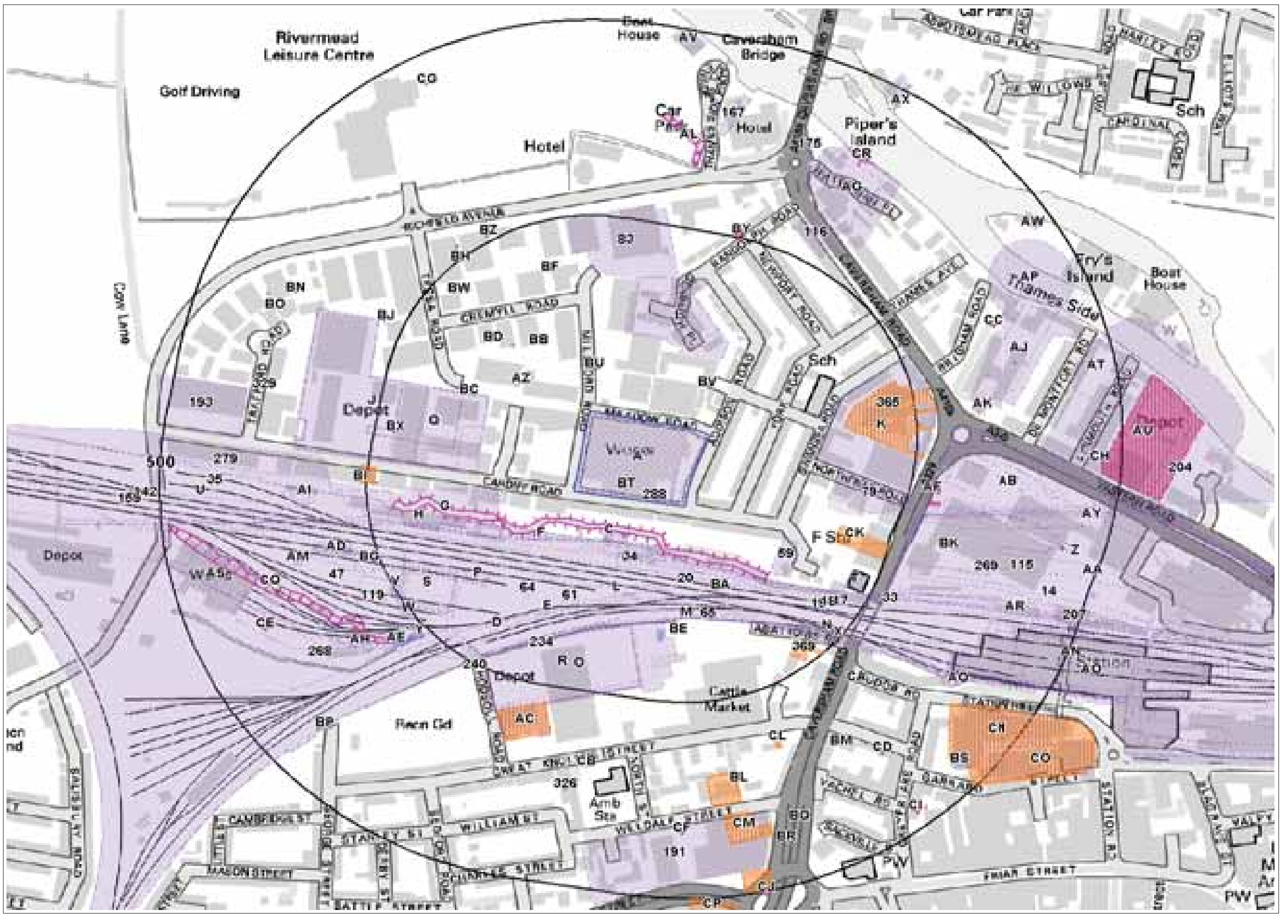
All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

Groundsure
LOCATION INTELLIGENCE

emapsite™

1. Historical Land Use

NW N NE

W  E

SW S SE

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Site Outline

Search Buffers (m): 250, 500

Historical 1:10,000 and 1:10,560 scale mapping
- Industrial Land Use
- Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping
- Energy Features
- Petrol Stations
- Historical military sites
- Tanks
- Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 215

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Unspecified Works	1971
2A	0	On Site	Printing Works	1938
3A	0	On Site	Unspecified Works	1962
4A	0	On Site	Unspecified Works	1977
5A	0	On Site	Unspecified Works	1989
6A	0	On Site	Printing Works	1910
7A	0	On Site	Unspecified Works	1994
8B	36	S	Unspecified Ground Workings	1913
9B	36	S	Unspecified Ground Workings	1938
10C	38	S	Railway Building	1933
11C	43	S	Railway Buildings	1989
12C	43	S	Railway Buildings	1994
13C	45	S	Railway Buildings	1977
14	53	S	Railway Sidings	1933
15D	54	S	Railway Sidings	1994
16D	54	S	Railway Sidings	1989
17	56	S	Railway Sidings	1913
18	56	S	Railway Sidings	1938
19	57	S	Railway Sidings	1938
20	57	S	Railway Sidings	1962
21E	58	S	Railway Sidings	1977
22E	58	S	Railway Sidings	1971
23B	63	S	Railway Buildings	1933
24F	63	SW	Railway Building	1977
25F	63	SW	Railway Building	1989
26F	63	SW	Railway Building	1994
27F	64	SW	Railway Building	1971
28F	64	SW	Railway Building	1962
29B	66	S	Railway Buildings	1938
30B	68	S	Railway Buildings	1938
31B	68	S	Railway Buildings	1913
32B	69	S	Railway Buildings	1962
33	74	S	Railway Sidings	1898

34	74	S	Railway Buildings	1898
35	93	W	Railway Sidings	1901
36I	93	N	Unspecified Works	1962
37G	95	SW	Unspecified Ground Workings	1938
38G	95	SW	Unspecified Ground Workings	1910
39G	98	SW	Railway Buildings	1977
40G	98	SW	Railway Buildings	1989
41G	98	SW	Railway Buildings	1994
42H	99	SW	Railway Buildings	1971
43H	99	SW	Railway Buildings	1962
44I	100	N	Unspecified Works	1971
45I	100	N	Unspecified Commercial/Industrial	1989
46I	100	N	Unspecified Works	1977
47	107	S	Railway Sidings	1933
48BA	108	S	Railway Building	1898
49L	115	S	Railway Building	1913
50N	115	S	Railway Sidings	1933
51J	118	W	Unspecified Depot	1977
52J	121	W	Unspecified Depots	1989
53Q	122	W	Unspecified Depot	1971
54K	124	E	Unspecified Works	1962
55K	124	E	Unspecified Commercial/Industrial	1971
56K	124	E	Unspecified Commercial/Industrial	1989
57K	124	E	Unspecified Commercial/Industrial	1977
58K	124	E	Unspecified Commercial/Industrial	1994
59	126	E	Timber Yard	1913
60L	132	S	Railway Building	1898
61	132	S	Railway Building	1898
62M	135	S	Railway Building	1938
63M	135	S	Railway Building	1913
64	137	S	Railway Building	1898
65	139	S	Railway Building	1913
66N	143	S	Railway Building	1938
67N	143	S	Railway Building	1938
68N	143	S	Railway Building	1913
69P	147	SW	Railway Building	1938
70O	147	S	Corporation Yard	1994
71O	147	S	Corporation Yard	1989
72P	148	SW	Railway Building	1933
73P	150	SW	Railway Building	1962
74P	151	SW	Railway Building	1938

75Q	152	W	Unspecified Depot	1977
76R	156	S	Corporation Yard	1933
77R	158	S	Corporation Yard	1938
78R	160	S	Corporation Yard	1962
79	161	E	Malthouses	1878
80O	162	S	Corporation Yard	1913
81O	162	S	Corporation Yard	1938
82S	176	SW	Engine Shed	1933
83	176	N	Unspecified Depot	1977
84S	176	SW	Engine Shed	1938
85S	179	SW	Engine Shed	1962
86S	180	SW	Engine Shed	1898
87S	180	SW	Engine Shed	1913
88S	180	SW	Engine Shed	1938
89J	196	W	Unspecified Depot	1994
90T	216	E	Fire Station	1971
91T	216	E	Fire Station	1962
92T	216	E	Fire Station	1977
93T	216	E	Fire Station	1989
94T	216	E	Fire Station	1994
95U	221	W	Railway Sidings	1910
96U	221	W	Railway Sidings	1938
97BG	224	SW	Railway Building	1898
98V	239	SW	Railway Building	1913
99X	242	SE	Railway Building	1898
100V	244	SW	Railway Building	1898
101V	246	SW	Railway Building	1938
102W	248	SW	Railway Building	1938
103V	249	SW	Railway Building	1962
104W	250	SW	Railway Building	1913
105X	250	SE	Railway Building	1913
106W	251	SW	Railway Building	1962
107W	251	SW	Railway Building	1938
108Y	256	SW	Railway Building	1938
109Y	257	SW	Railway Building	1913
110Y	257	SW	Railway Building	1977
111Y	259	SW	Railway Building	1962
112Z	262	SE	Unspecified Works	1971
113Z	262	SE	Unspecified Works	1962
114Z	262	SE	Unspecified Works	1977
115	264	SE	Unspecified Works	1933
116	264	NE	Timber Yard	1878
117AA	265	E	Railway Works	1913
118AA	265	E	Railway Works	1938
119	266	SW	Railway Building	1962
120AA	267	E	Railway Works	1898

121AA	268	E	Unspecified Works	1938
122AB	271	E	Railway Sidings	1897
123AB	272	E	Railway Sidings	1938
124AB	272	E	Railway Sidings	1910
125AF	274	E	Coal Depot	1910
126AC	276	S	Unspecified Works	1977
127AC	276	S	Unspecified Commercial/Industrial	1989
128AC	276	S	Unspecified Commercial/Industrial	1994
129AD	276	W	Railway Building	1938
130AD	277	W	Railway Building	1938
131AD	277	W	Railway Building	1913
132AD	278	W	Railway Building	1933
133AB	279	SE	Railway Sidings	1900
134AE	280	SW	Railway Building	1962
135AD	282	W	Railway Building	1962
136AE	282	SW	Railway Building	1913
137AF	285	E	Coal Depot	1938
138CQ	294	SW	Refuse Heap	1913
139AG	297	NE	Unspecified Shed	1878
140AG	298	NE	Unspecified Works	1971
141AG	298	NE	Unspecified Works	1977
142	308	W	Railway Sidings	1897
143AH	311	SW	Railway Building	1971
144AH	311	SW	Railway Building	1977
145AI	312	W	Railway Building	1977
146AI	312	W	Railway Building	1989
147AI	312	W	Railway Building	1994
148AJ	317	E	Sawmill	1938
149AJ	317	E	Sawmill	1910
150AI	317	W	Railway Building	1971
151AI	317	W	Railway Building	1962
152AH	317	SW	Railway Building	1994
153AH	317	SW	Railway Building	1989
154AK	323	E	Smithy	1900
155AK	324	E	Smithy	1897
156AN	326	SE	Railway Station	1933
157AL	331	N	Unspecified Ground Workings	1938
158AL	331	N	Unspecified Ground Workings	1910
159	337	W	Railway Sidings	1878
160AM	338	W	Railway Building	1938
161AM	340	W	Railway Building	1913
162AM	340	W	Railway Building	1938
163AM	340	W	Railway Building	1933

164AJ	342	E	Unspecified Warehouses	1977
165AM	344	W	Railway Building	1962
166AO	369	SE	Railway Station	1994
167	373	N	Boat House	1977
168AN	374	SE	Railway Station	1971
169AO	374	SE	Railway Station	1962
170AN	374	SE	Railway Station	1977
171AN	374	SE	Railway Station	1989
172AN	375	SE	Railway Station	1938
173AN	375	SE	Railway Station	1913
174AN	376	SE	Railway Station	1938
175	379	N	Boat House	1910
176AP	383	NE	Boat House	1910
177AP	383	NE	Boat House	1938
178AQ	386	SE	Railway Building	1977
179AQ	386	SE	Railway Building	1989
180AQ	386	SE	Railway Building	1994
181AR	394	E	Railway Building	1971
182AR	394	E	Railway Building	1989
183AR	394	E	Railway Building	1977
184AR	394	E	Railway Building	1994
185CR	395	NE	Unspecified Wharf	1878
186AS	396	W	Unspecified Depot	1994
187AS	396	W	Unspecified Depot	1989
188AS	397	W	Unspecified Depot	1971
189AS	397	W	Unspecified Depot	1977
190AU	399	E	Electric Works	1910
191	401	S	Unspecified Depot	1977
192AN	402	SE	Railway Station	1898
193	409	W	Unspecified Works	1962
194CN	416	SE	Bus Station	1994
195AT	444	E	Unspecified Works	1971
196AT	444	E	Unspecified Works	1977
197AU	451	E	Unspecified Depot	1994
198AU	451	E	Unspecified Depot	1989
199BS	455	SE	Smithy	1913
200AY	460	E	Railway Sidings	1900
201AW	467	NE	Boat House	1900
202AV	469	N	Boat House	1989
203AV	469	N	Boat House	1994
204	472	E	Railway Sidings	1901
205AW	472	NE	Boat House	1897
206CO	474	SE	Garage	1971
207	476	E	Railway Building	1898
208AW	476	NE	Boat House	1938
209AW	476	NE	Boat House	1910

210AX	478	NE	Boat House	1878
211AX	480	NE	Boat House	1910
212AX	480	NE	Boat House	1938
213AU	481	E	Electric Works	1900
214AU	482	E	Electric Works	1897
215AY	486	E	Railway Sidings	1900

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 71

ID	Distance (m)	Direction	Use	Date
216BT	0	On Site	Unspecified Tank	1970
217AZ	92	NW	Tanks	1970
218AZ	93	NW	Tanks	1988
219BA	105	S	Tank or Trough	1879
220BB	107	NW	Unspecified Tank	1970
221BB	108	NW	Unspecified Tank	1988
222BB	124	NW	Unspecified Tank	1970
223BB	125	NW	Unspecified Tank	1988
224BC	140	W	Tanks	1988
225BC	144	W	Unspecified Tank	1970
226BD	147	NW	Unspecified Tank	1970
227BD	148	NW	Unspecified Tank	1988
228BE	158	S	Unspecified Tank	1986
229BE	158	S	Unspecified Tank	1993
230BE	159	S	Tanks	1986
231BE	159	S	Tanks	1993
232BF	185	N	Unspecified Tank	1970
233BF	186	N	Unspecified Tank	1988
234	201	S	Tank or Trough	1879
235BW	218	NW	Unspecified Tank	1988
236BG	238	SW	Unspecified Tank	1958
237BG	238	SW	Unspecified Tank	1959
238BH	248	NW	Unspecified Tank	1970
239BH	248	NW	Unspecified Tank	1988
240	255	SW	Tank or Trough	1879
241BI	256	W	Unspecified Tank	1970
242BI	256	W	Unspecified Tank	1988
243BH	264	NW	Unspecified Tank	1970
244BH	264	NW	Unspecified Tank	1988

245AE	268	SW	Unspecified Tank	1958
246AE	268	SW	Unspecified Tank	1959
247AE	269	SW	Tanks	1971
248AE	269	SW	Tanks	1986
249AE	271	SW	Unspecified Tank	1912
250AE	271	SW	Unspecified Tank	1931
251BJ	271	NW	Unspecified Tank	1970
252BJ	272	NW	Unspecified Tank	1988
253Y	275	SW	Tanks	1958
254Y	275	SW	Tanks	1959
255AE	279	SW	Tanks	1959
256AE	280	SW	Tanks	1986
257AE	280	SW	Unspecified Tank	1993
258Y	282	SW	Unspecified Tank	1900
259BK	319	SE	Tank or Trough	1879
260BK	319	SE	Tank or Trough	1879
261BK	323	SE	Tank or Trough	1879
262BL	355	S	Pump and Tank	1880
263BL	355	S	Pump and Tank	1880
264BM	356	SE	Tank or Trough	1879
265BM	356	SE	Tank or Trough	1879
266BM	358	SE	Tank or Trough	1879
267BM	358	SE	Tank or Trough	1879
268	371	SW	Unspecified Tank	1993
269	371	E	Tank or Trough	1879
270BN	385	NW	Unspecified Tank	1988
271BN	385	NW	Unspecified Tank	1970
272BO	401	W	Unspecified Tank	1988
273BO	401	W	Unspecified Tank	1970
274BO	414	W	Unspecified Tank	1972
275BO	416	W	Unspecified Tank	1972
276BP	418	SW	Filter Tanks	1986
277BP	418	SW	Filter Tanks	1993
278BP	418	SW	Filter Tanks	1971
279	418	W	Unspecified Tank	1972
280BQ	422	S	Unspecified Tank	1880
281BQ	422	S	Unspecified Tank	1880
282BQ	425	S	Unspecified Tank	1880
283BQ	425	S	Unspecified Tank	1880
284BR	441	S	Tank or Trough	1880
285BR	441	S	Tank or Trough	1880
286BS	472	SE	Unspecified Tank	1969

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 76

ID	Distance (m)	Direction	Use	Date
287BT	0	On Site	Electricity Substation	1988
288	0	On Site	Electricity Substation	1970
289BU	54	N	Electricity Substation	1988
290BU	54	N	Electricity Substation	1970
291BV	55	N	Electricity Substation	1971
292BV	55	N	Electricity Substation	1984
293BV	55	N	Electricity Substation	1993
294BV	55	N	Electricity Substation	1982
295BV	55	N	Electricity Substation	1984
296BW	212	NW	Electricity Substation	1970
297BW	212	NW	Electricity Substation	1988
298BX	224	W	Electricity Substation	1970
299BX	225	W	Electricity Substation	1988
300BI	237	W	Gas Governor	1970
301BI	237	W	Gas Governor	1988
302BY	246	N	Electricity Substation	1984
303BY	253	N	Electricity Substation	1971
304BY	253	N	Electricity Substation	1984
305BY	253	N	Electricity Substation	1982
306BY	254	N	Electricity Substation	1993
307BZ	255	NW	Electricity Substation	1970
308BZ	256	NW	Electricity Substation	1988
309BJ	271	NW	Electricity Substation	1988
310AF	274	E	Electricity Substation	1984
311AF	276	E	Electricity Substation	1982
312AF	277	E	Electricity Substation	1971
313AF	277	E	Electricity Substation	1984
314AF	277	E	Electricity Substation	1993
315CA	300	SE	Electricity Substation	1996
316CA	300	SE	Electricity Substation	1994
317CA	300	SE	Electricity Substation	1993
318CA	300	SE	Electricity Substation	1988
319CB	341	S	Electricity Substation	1993
320CB	341	S	Electricity Substation	1986
321CC	366	NE	Electricity Substation	1984
322CC	366	NE	Electricity Substation	1982
323CC	367	NE	Electricity Substation	1993

324CC	367	NE	Electricity Substation	1971
325CC	367	NE	Electricity Substation	1984
326	373	S	Electricity Substation	1971
327AJ	380	E	Electricity Substation	1956
328AJ	381	E	Electricity Substation	1956
329	388	W	Electricity Substation	1972
330CD	389	SE	Electricity Substation	1994
331CD	389	SE	Electricity Substation	1996
332CD	390	SE	Electricity Substation	1993
333CE	409	SW	Electricity Substation	1993
334CE	409	SW	Electricity Substation	1988
335CF	410	S	Electricity Substation	1986
336CF	411	S	Electricity Substation	1971
337Z	448	E	Electricity Substation	1993
338Z	449	E	Electricity Substation	1994
339Z	449	E	Electricity Substation	1996
340CG	461	NW	Electricity Substation	1993
341CG	462	NW	Electricity Substation	1988
342CH	471	E	Electricity Substation	1982
343CH	471	E	Electricity Substation	1984
344CI	471	SE	Electricity Substation	1996
345CI	471	SE	Electricity Substation	1994
346CH	471	E	Electricity Substation	1993
347CH	471	E	Electricity Substation	1971
348CH	471	E	Electricity Substation	1984
349AU	475	E	Electricity Depot	1972
350CH	475	E	Electricity Substation	1972
351CH	475	E	Electricity Substation	1989
352CI	478	SE	Electricity Substation	1988
353CI	478	SE	Electricity Substation	1979
354CI	478	SE	Electricity Substation	1993
355CI	478	SE	Electricity Substation	1986
356CI	479	SE	Electricity Substation	1969
357CJ	494	S	Electricity Substation	1994
358CJ	494	S	Electricity Substation	1996
359CJ	495	S	Electricity Substation	1986
360CJ	495	S	Electricity Substation	1988
361CJ	495	S	Electricity Substation	1993
362CJ	495	S	Electricity Substation	1979

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 36

ID	Distance (m)	Direction	Use	Date
363K	162	E	Coach Building Motor Car Engineering Works	1971
364K	162	E	Coach Building Engineering Works	1956
365	184	E	Coach Building and Engineering Works	1956
366CK	185	E	Car Depot	1971
367CK	193	E	Garage	1986
368CK	193	E	Garage	1988
369	216	SE	Garage	1969
370BI	240	W	Garage	1970
371BI	240	W	Garage	1959
372BI	241	W	Garage	1959
373AC	271	S	Agricultural Engineering Works	1971
374CL	307	S	Garage	1962
375CL	307	S	Garage	1969
376CL	307	S	Garage	1957
377CL	307	S	Garage	1958
378CL	307	S	Garage	1957
379BL	343	S	Garage	1996
380BL	343	S	Garage	1994
381BL	345	S	Garage	1993
382BL	345	S	Garage	1988
383BL	345	S	Garage	1986
384CM	395	S	Garage	1962
385CM	396	S	Garage	1957
386CM	396	S	Garage	1958
387CM	396	S	Garage	1957
388CN	407	SE	Garage	1957
389CN	407	SE	Garage	1958
390CN	407	SE	Garage	1957
391CO	464	SE	Garage	1962

392CO	464	SE	Garage	1969
393CJ	470	S	Garage	1962
394CJ	470	S	Garage	1957
395CJ	470	S	Garage	1958
396CJ	471	S	Garage	1957
397CP	500	S	Car Park and Garage	1994
398CP	500	S	Car Park and Garage	1996

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

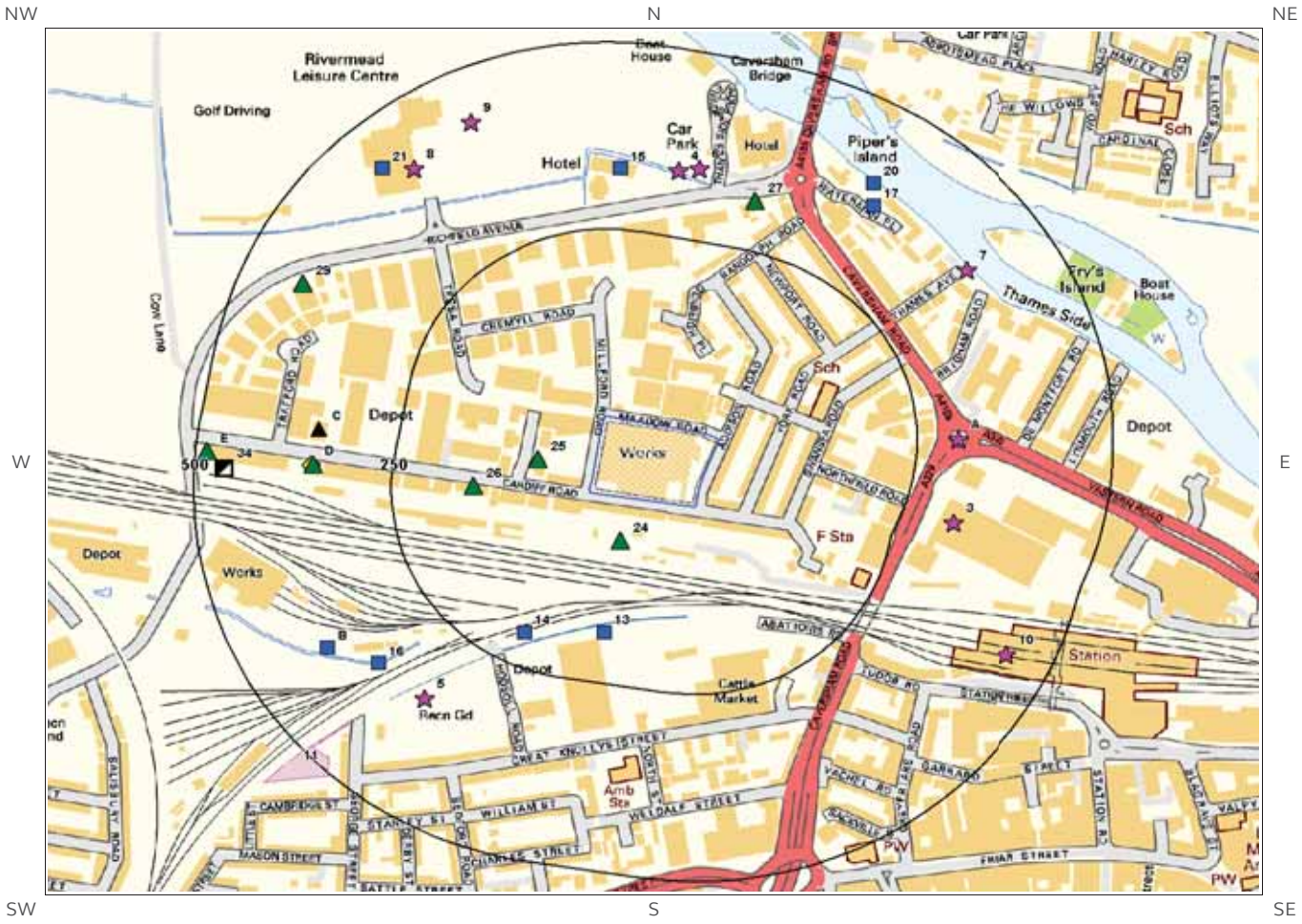
1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 8

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
399B	36	S	Unspecified Ground Workings	1913
400B	36	S	Unspecified Ground Workings	1938
401G	95	SW	Unspecified Ground Workings	1910
402G	95	SW	Unspecified Ground Workings	1938
403CQ	294	SW	Refuse Heap	1913
404AL	331	N	Unspecified Ground Workings	1938
405AL	331	N	Unspecified Ground Workings	1910
406CR	395	NE	Unspecified Wharf	1878

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- 250 / 500 Search Buffers (m)
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

2

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
32C	350	W	470520 174150	Operator: KINGFISHER COLOURS LIMITED Installation Name: KINGFISHER COLOURS LIMITED Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS	Permit Number: LP3338DD Original Permit Number: LP3338DD EPR Reference: - Issue Date: 12/12/2016 Effective Date: 12/12/2016 Last date noted as effective: 2019-01-31 Status: SUPERCEDED
33C	350	W	470520 174150	Operator: KINGFISHER COLOURS LIMITED Installation Name: KINGFISHER COLOURS LIMITED Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS	Permit Number: MP3332QJ Original Permit Number: LP3338DD EPR Reference: - Issue Date: - Effective Date: 14/12/2018 Last date noted as effective: 2019-01-31 Status: SURRENDER EFFECTIVE

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

1

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
12D	353	W	470510 174103	Name: Unimet Enamellers Ltd Status: Not Active Receiving Water: Kennet	Authorised Substances: Chromium

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2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

7

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
24	61	S	470900 174000	Address: Scenery Salvage, Cardiff Road, Reading, Berkshire, RG1 8ES Process: Combustion & Incineration Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
25	72	W	470796 174109	Address: Rivermead Accident Repair Centre Limited, 64 Cardiff Road, Reading, Berkshire, RG1 8LL Process: Respraying of Road Vehicles Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
26	147	W	470715 174073	Address: Sprayworks Limited, Unit 5, 151-155 Cardiff Road, Reading, RG1 8ES Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
27	314	N	471070	Address: Snax 24 Limited, Richfield	Enforcement: No Enforcements Notified

ID	Distance (m)	Direction	NGR	Details	
			174454	Avenue, Reading, Berkshire, RG1 8EQ Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
28D	351	W	470512 174102	Address: Unimet Enamellers Limited, 183 Cardiff Road, Reading, Berks, RG1 8HD Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
29	421	NW	470499 174344	Address: Grosvenor Motor Company Ltd, 10 Richfield Avenue, Reading, RG1 8EQ Process: Waste Oil Burner <0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
30E	486	W	470378 174120	Address: E Hillier & Son Ltd, Cardiff Road, RG1 8HX Process: Other Metal Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

9

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
13	183	S	470880 173880	Address: GREAT KNOLLEYS STREET,READING,BERKS, GREAT KNOLLEYS STREET,READING,BE, RKSHIRE,RG1 7HP Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.3308 Permit Version: 1	Receiving Water: ABATTOIR DITCH Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 06/07/1998 Effective Date: 06-Jul-1998 Revocation Date: -
14	205	SW	470780 173880	Address: GREAT KNOLLEYS STREET,READING,BERKS, GREAT KNOLLEYS STREET,READING,BE, RKSHIRE,RG1 7HP Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CATM.3307 Permit Version: 1	Receiving Water: ABATTOIR DITCH Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 06/07/1998 Effective Date: 06-Jul-1998 Revocation Date: -
15	332	N	470900 174500	Address: CALENDARS RESTAURANT, RICHFIELD AVE, CALENDARS	Receiving Water: PORTMAN BROOK Status: TRANSFERRED FROM COPA 1974

ID	Distance (m)	Direction	NGR	Details	
				RESTAURANT, RICHFIELD, AVENUE, CAVERSHAM, READING, BERK, S Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2379 Permit Version: 1	Issue date: 22/04/1988 Effective Date: 22-Apr-1988 Revocation Date: -
16	352	SW	470595 173839	Address: COW LANE BRIDGE, COW LANE, READING, BERKSHIRE, RG1 8NA Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: EPRHB3597RH Permit Version: 1	Receiving Water: TRIBUTARY OF RIVER THAMES Status: NEW ISSUED UNDER EPR 2010 Issue date: 10/05/2018 Effective Date: 01-Jun-2018 Revocation Date: -
17	368	NE	471220 174450	Address: RETIREMENT HOMES DEVELOPMENT, CAVER, RETIREMENT HOMES DEVELOPMENT, CA, VERSHAM ROAD, READING, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2313 Permit Version: 1	Receiving Water: RIVER THAMES Status: REVOKED - UNSPECIFIED Issue date: 25/03/1988 Effective Date: 25-Mar-1988 Revocation Date: 31/10/1991
18B	392	SW	470530 173860	Address: PERMANENT WAY STAFF ACCOMMODATION B, PERMANENT WAY STAFF ACCOMMODATIO, N BLOCK, COW LANE, READING. Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.0130 Permit Version: 1	Receiving Water: MADE GROUNDOVERLYING ALLUVIUM Status: TRANSFERRED FROM COPA 1974 Issue date: 10/07/1985 Effective Date: 10-Jul-1985 Revocation Date: 12/05/2007
19B	392	SW	470530 173860	Address: PERMANENT WAY STAFF ACCOMMODATION B, PERMANENT WAY STAFF ACCOMMODATIO, N BLOCK, COW LANE, READING. Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.0130 Permit Version: 2	Receiving Water: MADE GROUNDOVERLYING ALLUVIUM Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 12/05/2007 Effective Date: 12-May-2007 Revocation Date: 24/05/2010
20	394	NE	471220 174480	Address: OFFICES, CAVERSHAM ROAD, READING, B, OFFICES, CAVERSHAM ROAD, READING, , BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2078 Permit Version: 1	Receiving Water: RIVER THAMES Status: REVOKED - UNSPECIFIED Issue date: 02/12/1987 Effective Date: 02-Dec-1987 Revocation Date: 06/02/1995
21	435	NW	470600 174500	Address: RIVERSIDE LEISURE CENTRE, READING, RIVERSIDE LEISURE CENTRE, READIN, G, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2509 Permit Version: 1	Receiving Water: PORTMAN BROOK Status: TRANSFERRED FROM COPA 1974 Issue date: 09/06/1988 Effective Date: 09-Jun-1988 Revocation Date: -

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

1

The following Water Industry Referral records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Address	Permission reference	Local Authority	First Date Received	Last Date Received	Status
34	462	W	E HILLIER AND SON (HOLDINGS) LTD, 215 CARDIFF ROAD, 215 CARDIFF ROAD, READING, BERKSHIRE, RG1 8HX	AF5158	READING BOROUGH COUNCIL	01-Jun-2001	01-Jan-2018	EFFECTIVE

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

10

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1A	301	E	471327.0 174138.0	Incident Date: 17-Sep-2002 Incident Identification: 108560.0 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2A	301	E	471327.0 174138.0	Incident Date: 17-Sep-2002 Incident Identification: 108560.0	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
				Pollutant: Oils and Fuel Pollutant Description: Diesel	Air Impact: Category 4 (No Impact)
3	316	E	471321.0 174026.0	Incident Date: 12-Sep-2001 Incident Identification: 42851.0 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Composted Material	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
4	339	N	470974.0 174497.0	Incident Date: 13-Aug-2002 Incident Identification: 99851.0 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
5	346	SW	470653.0 173792.0	Incident Date: 23-Jul-2007 Incident Identification: 516354.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
6	347	N	471000.0 174500.0	Incident Date: 10-Jul-2001 Incident Identification: 15233.0 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7	385	NE	471337.0 174364.0	Incident Date: 22-Aug-2001 Incident Identification: 25897.0 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Food and Drink	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8	411	NW	470640.0 174500.0	Incident Date: 26-Feb-2002 Incident Identification: 60718.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
9	429	NW	470711.0 174562.0	Incident Date: 27-Feb-2002 Incident Identification: 60853.0 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
10	441	SE	471390.0 173850.0	Incident Date: 26-Apr-2002 Incident Identification: 74851.0 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

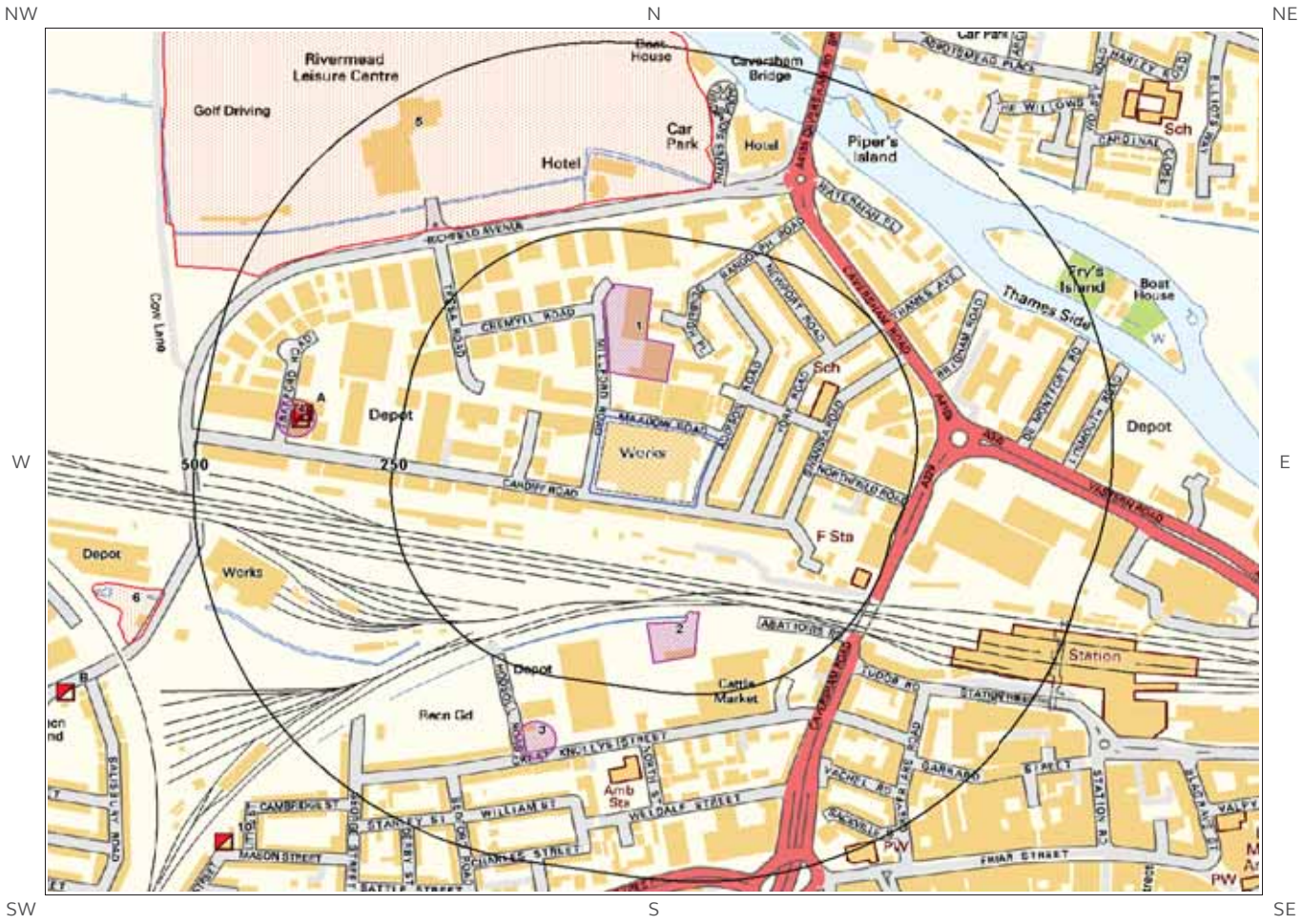
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 1

The following records are represented as polygons on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Description	Location	Category	Year Identified
11	428	SW	470506 173722	B(a)P in made ground and compost. Source of B(a)P probably ash added by allotment holders & adjacent railway runoff.	George Street Allotments, George Street, Reading	Potentially Contaminated Land - Remediated	2008

3. Landfill and Other Waste Sites Map



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Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

2

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
5	281	N		Site Address: Richfield Avenue, Reading, Berkshire Waste Licence: - Site Reference: RDG11, TP0122 Waste Type: Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1970 Last Recorded: 31-Dec-1979
6	554	W		Site Address: Cow Lane, Reading, Berkshire Waste Licence: - Site Reference: TP0340, RDG4 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1950 Last Recorded: 31-Dec-1959

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

4

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1	58	N	470923 174279	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2	140	S	470967 173873	Type of Site: Refuse Yard Site Address: N/A	Planning Application Reference: N/A Date: 1879	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3	313	S	470794 173736	Type of Site: Surface Car Park/Waste Station Site Address: Great Knollys Street, Hodsoll Road, READING, Berkshire, RG1 7HP	Planning Application Reference: 96/0097/R3/NJP Date: 01/09/1996	Further Details: Relocation of a public car park and civic amenity recycling centre with associated landscaping. Relocation of a public car park and civic amenity recycling centre with associated landscaping. Detailed plans approved 29th May, 1996. An application (ref: 96/0097/R3/NJP) for Detailed Planning permission was submitted to Reading B.C. on 14th February 1996. Data Source: Historic Planning Application Data Type: Point
4	357	W	470491 174166	Type of Site: Waste Transfer Building Site Address: 128-130 Cardiff Road, READING, Berkshire, RG1 8PQ	Planning Application Reference: 01/316/FUL Date: -	Further Details: Scheme comprises construction of a new steel-framed prefabricated building of 375 sqm, to form waste transfer, sorting and recycling centre. Associated works include landscaping, site services, infrastructure and access. Construction - Goosewing greystic-coated profiled steel cladding, internal partitions walls; insitu concrete floor; Goosewing grey plastic-coated profiled steel cladding roof; aluminium framed, double glazed, rooflight windows; industrial doors (unspecified),

ID	Distance (m)	Direction	NGR	Details	
					timber doors; pad foundations; steel frame; bathroom fittings. An application (ref: 01/316/FUL) for Detailed Planning permission was submitted to Reading Borough Council, no committee date as yet. Contract details to be advised. A building programme remains to be advised. Detailed plans submitted, no committee date as yet. Data Source: Historic Planning Application Data Type: Point

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

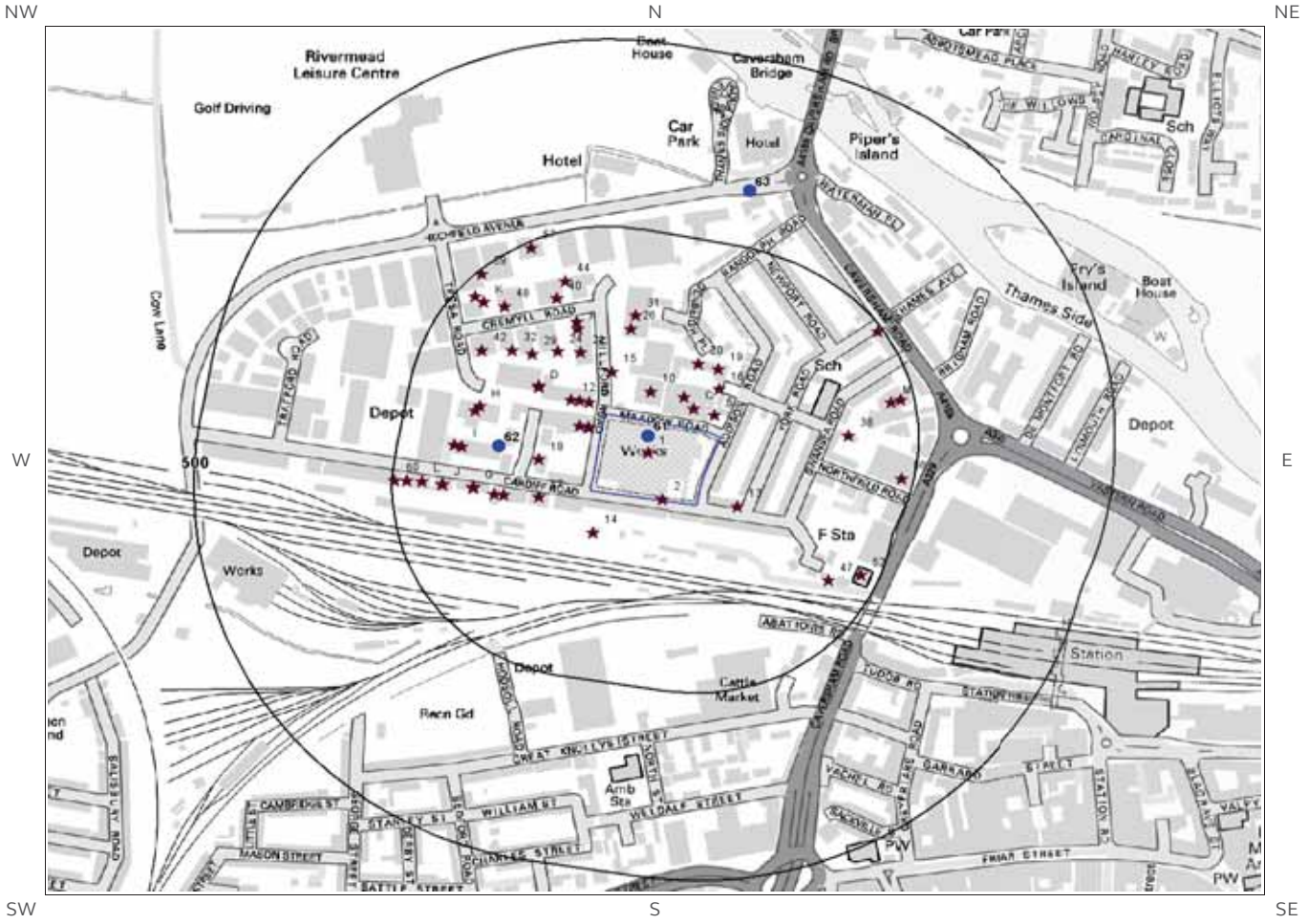
9

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
7A	375	W	470500 174174	Site Address: 128, Cardiff Road, Reading, Berkshire, RG1 8PQ Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCO003 EPR reference: EA/EPR/EP3893VZ/V002 Operator: M Collard Waste Management Services Ltd Waste Management licence No: 101199 Annual Tonnage: 74999.0	Issue Date: 11/02/2010 Effective Date: - Modified: 09/07/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: M Collard Waste Management Services Ltd Correspondence Address: -
8A	375	W	470500 174174	Site Address: 128, Cardiff Road, Reading, Berkshire, RG1 8PQ Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: RCO001 EPR reference: EA/EPR/EB3500KB/V002 Operator: R Collard Limited Waste Management licence No: 101199 Annual Tonnage: 74999.0	Issue Date: 11/02/2010 Effective Date: 11/10/2016 Modified: 16/10/2018 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: R Collard Limited Correspondence Address: -
9A	376	W	470497 174166	Site Address: 128, Cardiff Road, Reading, Berkshire, RG1 8PQ Type: 75kte Materials Recycling Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCO003 EPR reference: EP3893VZ/A001 Operator: M Collard Waste Management Services Ltd Waste Management licence No: 101199 Annual Tonnage: 0.0	Issue Date: 11/02/2010 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: M Collard Waste Management Services Ltd Correspondence Address: -
10	658	SW	470400 173600	Site Address: E.G.W Carter, 54, Gower Street, Reading, Berkshire, RG1 7PE	Issue Date: 19/03/1996 Effective Date: -

ID	Distance (m)	Direction	NGR	Details	
				Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CAR001 EPR reference: EA/EPR/LP3699EF/S004 Operator: E G W Carter Waste Management licence No: 86001 Annual Tonnage: 9322.0	Modified: - Surrendered Date: Jul 23 1999 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: E G W Carter Correspondence Address: -
11B	715	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, Berkshire, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM001 EPR reference: EA/EPR/LP3199EB/V005 Operator: Sims Group Uk Limited Waste Management licence No: 86002 Annual Tonnage: 74999.0	Issue Date: 06/04/1993 Effective Date: 27/04/2002 Modified: 20/04/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Sims Group U K Ltd Correspondence Address: -
12B	715	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM001 EPR reference: - Operator: Simsmetal Uk Limited Waste Management licence No: 86002 Annual Tonnage: 4999.0	Issue Date: 06/04/1993 Effective Date: 27/04/2002 Modified: 26/04/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Simsmetal U K Limited Correspondence Address: 4, The Uplands, Nailsea, Somerset, BS48 4RR
13B	715	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, Berkshire, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: PAR197 EPR reference: EA/EPR/CB3909KB/S002 Operator: Parsons Metal Recycling Limited Waste Management licence No: 86002 Annual Tonnage: 0.0	Issue Date: 06/04/1993 Effective Date: 26/06/2015 Modified: 27/08/2014 Surrendered Date: Mar 8 2016 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Parsons Metal Recycling Limited Correspondence Address: -
14B	715	W	470200 173800	Site Address: Elliot Metal Company Ltd, 3, Loverock Road, Battle Farm Indus Est, Reading, Berkshire, RG3 1NL Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM001 EPR reference: EA/EPR/LP3199EB/V006 Operator: Sims Group U K Ltd Waste Management licence No: 86002 Annual Tonnage: 74999.0	Issue Date: 06/04/1993 Effective Date: 27/04/2002 Modified: 27/08/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Sims Group U K Ltd Correspondence Address: -
Not shown	1144	W	469718 174096	Site Address: Part A, Unit B, 75, Loverock Road, Tilehurst, Reading, Berkshire, RG30 1DZ Type: 75kte HCI Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: OAK056 EPR reference: EA/EPR/EP3993VE/A001 Operator: Oakford U K Ltd Waste Management licence No: 101222 Annual Tonnage: 74999.0	Issue Date: 18/11/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Loverock Road Waste Transfer Station Correspondence Address: -

4. Current Land Use Map



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Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Stes

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 60

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Works	470934 174118	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
2	0	On Site	Electricity Sub Station	470952 174056	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
3A	17	W	C F M Engineering	470859 174151	Unit 21, Milford Road, Reading, Berkshire, RG1 8LG	Vehicle Repair, Testing and Servicing	Repair and Servicing
4A	18	W	Car & Motor Sports Services	470859 174152	Unit 21-23, Milford Road, Reading, Berkshire, RG1 8LG	Vehicle Repair, Testing and Servicing	Repair and Servicing
5	25	N	Works	471018 174168	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
6C	27	N	Manrose	470992 174176	Unit 1-6, Meadow Road, Reading, Berkshire, RG1 8LB	Cooling and Refrigeration	Industrial Products
7B	27	NW	Lewington & Son	470859 174184	Unit 43-45, Milford Road, Reading, Berkshire, RG1 8LG	Conservatories	Consumer Products
8A	29	W	Body Vision	470848 174153	Unit 25, Milford Road, Reading, Berkshire, RG1 8LG	Vehicle Repair, Testing and Servicing	Repair and Servicing
9B	38	NW	V-tech Auto Ltd	470848 174187	Unit 47, Milford Road, Reading, Berkshire, RG1 8LG	Vehicle Repair, Testing and Servicing	Repair and Servicing
10	40	N	Warehouse	470937 174200	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
11C	41	N	Works	470979 174193	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
12	48	NW	Climate Cooling Ltd	470837 174188	Unit 51, Milford Road, Reading, Berkshire, RG1 8LG	Construction Completion Services	Construction Services
13	50	E	Euro Car Parts	471046 174046	4 Weighbridge Row, Cardiff Road, Reading, Berkshire, RG1 8LX	Vehicle Parts and Accessories	Motoring
14	54	S	Travelling Crane	470864 174012	Berkshire, RG1	Travelling Cranes and Gantries	Industrial Features
15	57	N	Electricity Sub Station	470888 174226	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
16	60	N	Electricity Sub Station	471024 174203	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
17	67	W	Reading	470796	137-139, Cardiff Road,	Vehicle Repair, Testing	Repair and Servicing

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
			Drive in Ltd	174059	Reading, Berkshire, RG1 8JF	and Servicing	
18	72	W	Rivermead Accident & Repair Centre Ltd	470795 174109	64, Cardiff Road, Reading, Berkshire, RG1 8LL	Vehicle Repair, Testing and Servicing	Repair and Servicing
19	84	N	Samka	471023 174229	Ground Floor Talbot House, 2 Ross Road, Reading, Berkshire, RG1 8EL	Metalworkers Including Blacksmiths	Construction Services
20	87	N	Depot	470997 174237	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
21	90	N	Voke Flooring & Interiors	470849 174252	67, Milford Road, Reading, Berkshire, RG1 8LG	Construction Completion Services	Construction Services
22D	93	NW	Tank	470796 174205	Berkshire, RG1	Tanks (Generic)	Industrial Features
23D	94	NW	Tank	470796 174208	Berkshire, RG1	Tanks (Generic)	Industrial Features
24	105	NW	Tank	470820 174253	Berkshire, RG1	Tanks (Generic)	Industrial Features
25E	110	W	Reading Body Works	470752 174062	Dec House 145, Cardiff Road, Reading, Berkshire, RG1 8JF	Vehicle Repair, Testing and Servicing	Repair and Servicing
26	118	N	C E M B R I T	470913 174284	54-60, Milford Road, Reading, Berkshire, RG1 8LJ	Construction Completion Services	Construction Services
27F	121	N	Complete Connections	470845 174283	Unit 75, Milford Road, Reading, Berkshire, RG1 8LG	Electronic Equipment	Industrial Products
28E	122	W	Mark Allen Cars	470739 174062	149, Cardiff Road, Reading, Berkshire, RG1 8JF	Vehicle Repair, Testing and Servicing	Repair and Servicing
29	124	NW	Tank	470788 174250	Berkshire, RG1	Tanks (Generic)	Industrial Features
30F	130	N	Twofold Ltd	470844 174292	77, Milford Road, Reading, Berkshire, RG1 8LG	Office and Shop Equipment	Industrial Products
31	136	N	Cembrit Ltd	470919 174301	Unit 54-60 Milford Commercial Estate, Milford Road, Reading, Berkshire, RG1 8LJ	General Construction Supplies	Industrial Products
32	147	NW	Tank	470763 174255	Berkshire, RG1	Tanks (Generic)	Industrial Features
33G	147	W	Holt Screen Print	470714 174072	Unit 5 151-155, Cardiff Road, Reading, Berkshire, RG1 8JR	Plate Makers, Print Finishers and Type Setters	IT, Advertising, Marketing and Media Services
34G	147	W	Pentagon Glass-tech	470714 174072	Unit 2-3 151-155, Cardiff Road, Reading, Berkshire, RG1 8JR	Industrial Coatings and Finishings	Industrial Products
35G	148	W	B & H Motor Services	470714 174072	Unit 5 151-155, Cardiff Road, Reading, Berkshire, RG1 8JR	Vehicle Repair, Testing and Servicing	Repair and Servicing
36G	148	W	R D S	470714 174072	Unit 2 151-155, Cardiff Road, Reading, Berkshire, RG1 8JR	Vehicle Repair, Testing and Servicing	Repair and Servicing
37H	157	W	Goodman Steel	470722 174180	98, Cardiff Road, Reading, Berkshire, RG1 8LL	Metals Manufacturers, Fabricators and	Industrial Products

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
			Services			Stockholders	
38	161	E	Warehouse	471187 174141	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
39H	162	W	Depot	470716 174175	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
40	168	NW	R E S Systems	470819 174324	14, Cremyll Road, Reading, Berkshire, RG1 8NQ	Special Purpose Machinery and Equipment	Industrial Products
41I	171	W	Direct Distribution Services	470698 174126	2 Barrett Court 70, Cardiff Road, Reading, Berkshire, RG1 8ED	Distribution and Haulage	Transport, Storage and Delivery
42	179	NW	Rainbow Body Shops Reading	470725 174255	Unit 11, Tessa Road, Reading, Berkshire, RG1 8HH	Vehicle Repair, Testing and Servicing	Repair and Servicing
43I	180	W	P B E Marking Systems	470690 174129	Unit 5 Barrett Court, 70 Cardiff Road, Reading, Berkshire, RG1 8ED	Plate Makers, Print Finishers and Type Setters	IT, Advertising, Marketing and Media Services
44	186	N	Tank	470830 174347	Berkshire, RG1	Tanks (Generic)	Industrial Features
45J	186	W	N R Engineering Ltd	470675 174075	159, Cardiff Road, Reading, Berkshire, RG1 8JR	Precision Engineers	Engineering Services
46J	188	W	Adenville Ltd	470674 174076	157, Cardiff Road, Reading, Berkshire, RG1 8JR	Industrial Coatings and Finishings	Industrial Products
47	193	SE	Pylon	471161 173948	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
48	194	NW	Expro North Sea Ltd	470753 174313	2-4, Cremyll Road, Reading, Berkshire, RG1 8NQ	Oil and Gas Extraction, Refinery and Product Manufacture	Extractive Industries
49L	213	W	Hills Rubber Co Ltd	470649 174080	161-163, Cardiff Road, Reading, Berkshire, RG1 8HD	Rubber, Silicones and Plastics	Industrial Products
50K	216	NW	Tank	470727 174319	Berkshire, RG1	Tanks (Generic)	Industrial Features
51M	221	E	Works	471241 174185	Berkshire, RG1	Unspecified Works Or Factories	Industrial Features
52	227	SE	Caversham Road Fire Station	471202 173955	Caversham Road, Reading, Berkshire, RG1 8AA	Fire Brigade Stations	Central and Local Government
53K	229	NW	Electricity Sub Station	470716 174326	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
54L	232	W	Warehouse	470630 174081	Berkshire, RG1	Container and Storage	Transport, Storage and Delivery
55M	232	E	Caversham MOT	471252 174189	109, Caversham Road, City Centre, Reading, Berkshire, RG1 8AR	Vehicle Repair, Testing and Servicing	Repair and Servicing
56	234	E	Shurgard Self Storage	471253 174083	75, Caversham Road, Reading, Berkshire, RG1 8AN	Container and Storage	Transport, Storage and Delivery
57	243	NW	Delta Air Conditioning Services Reading Ltd	470786 174391	20-22, Richfield Avenue, Reading, Berkshire, RG1 8EQ	Construction Completion Services	Construction Services
58	244	NE	The Scooter Cafe Ltd	471223 174279	153, Caversham Road, Reading, Berkshire, RG1 8AU	New Vehicles	Motoring

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
59	246	NW	Tank	470725 174357	Berkshire, RG1	Tanks (Generic)	Industrial Features
60	248	W	P L Auto Services	470613 174081	165-167, Cardiff Road, Reading, Berkshire, RG1 8HD	Vehicle Repair, Testing and Servicing	Repair and Servicing

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 3

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
61	0	On Site	470934 174140	OBSOLETE	Cardiff Road, Reading, Reading, RG1 8HW	Not Applicable	Obsolete
62	124	W	470746 174126	OBSOLETE	165-7, Cardiff Road, Reading, Reading, RG1 8HY	Not Applicable	Obsolete
63	325	N	471062 174466	BP	Richfield Avenue, Reading, Reading, RG1 8EQ	No	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT

5.3 Bedrock and Solid Geology

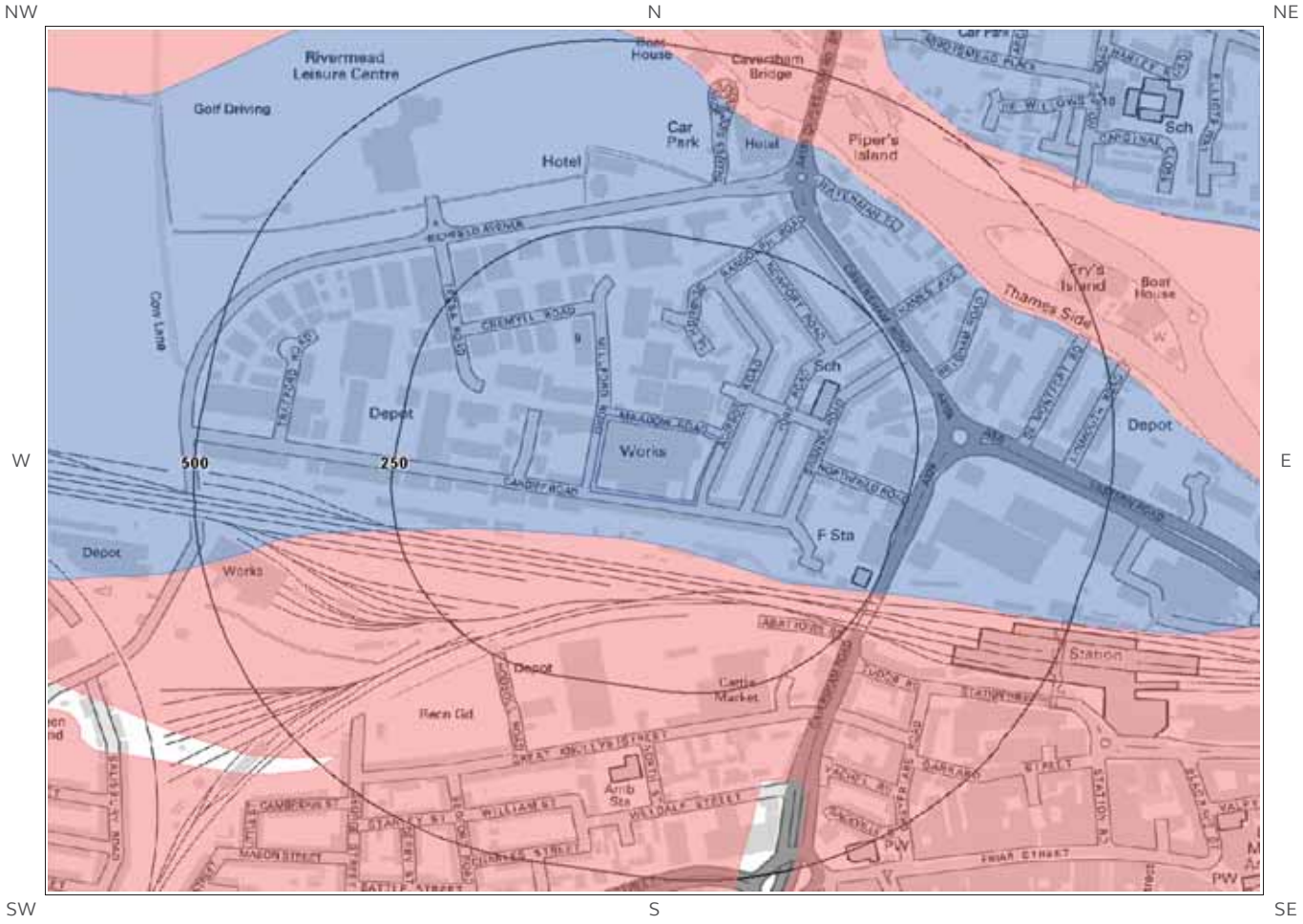
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
SNCK-CHLK	SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED)	CHALK

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

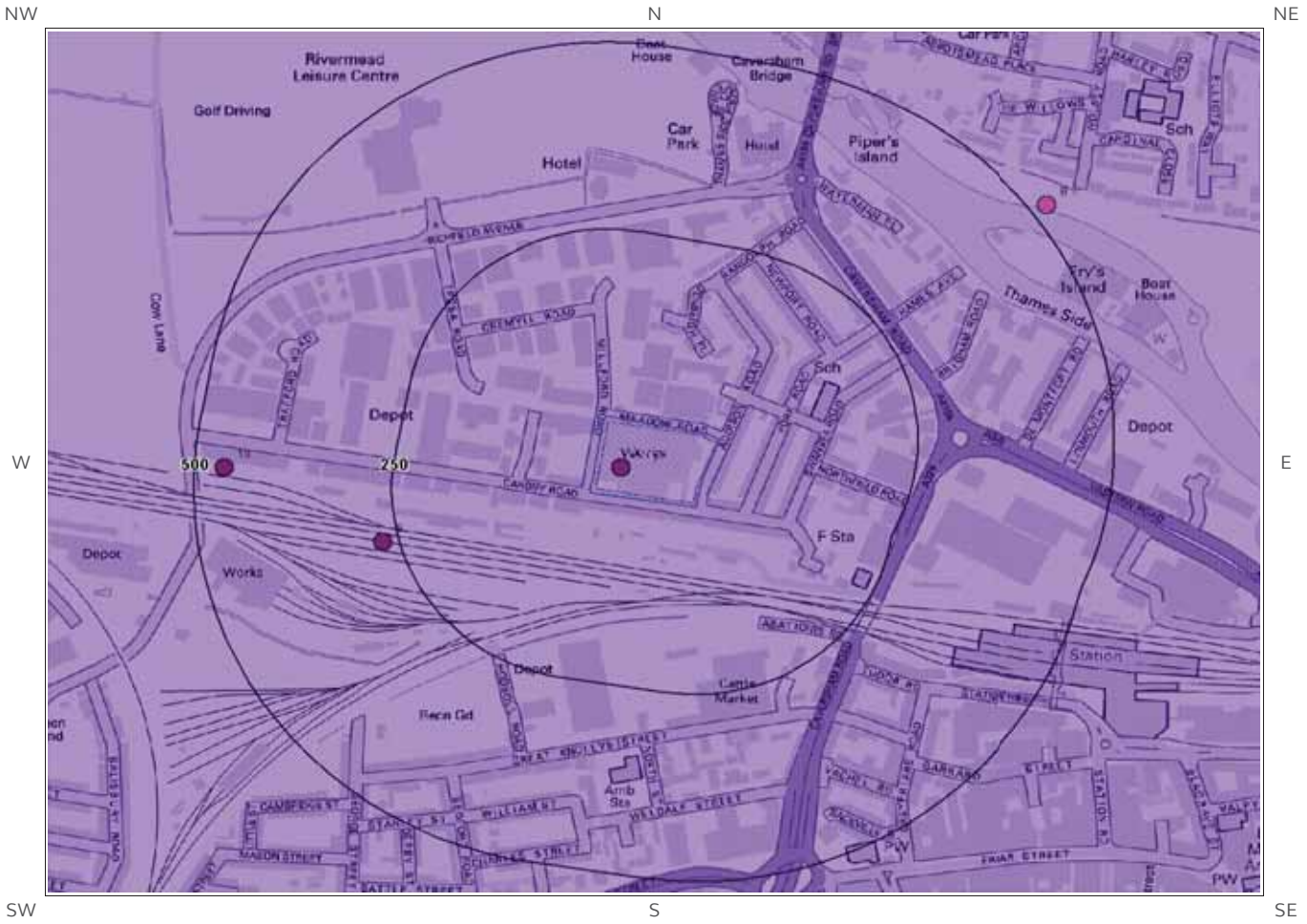
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licences



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Site Outline

250 — 500 — Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

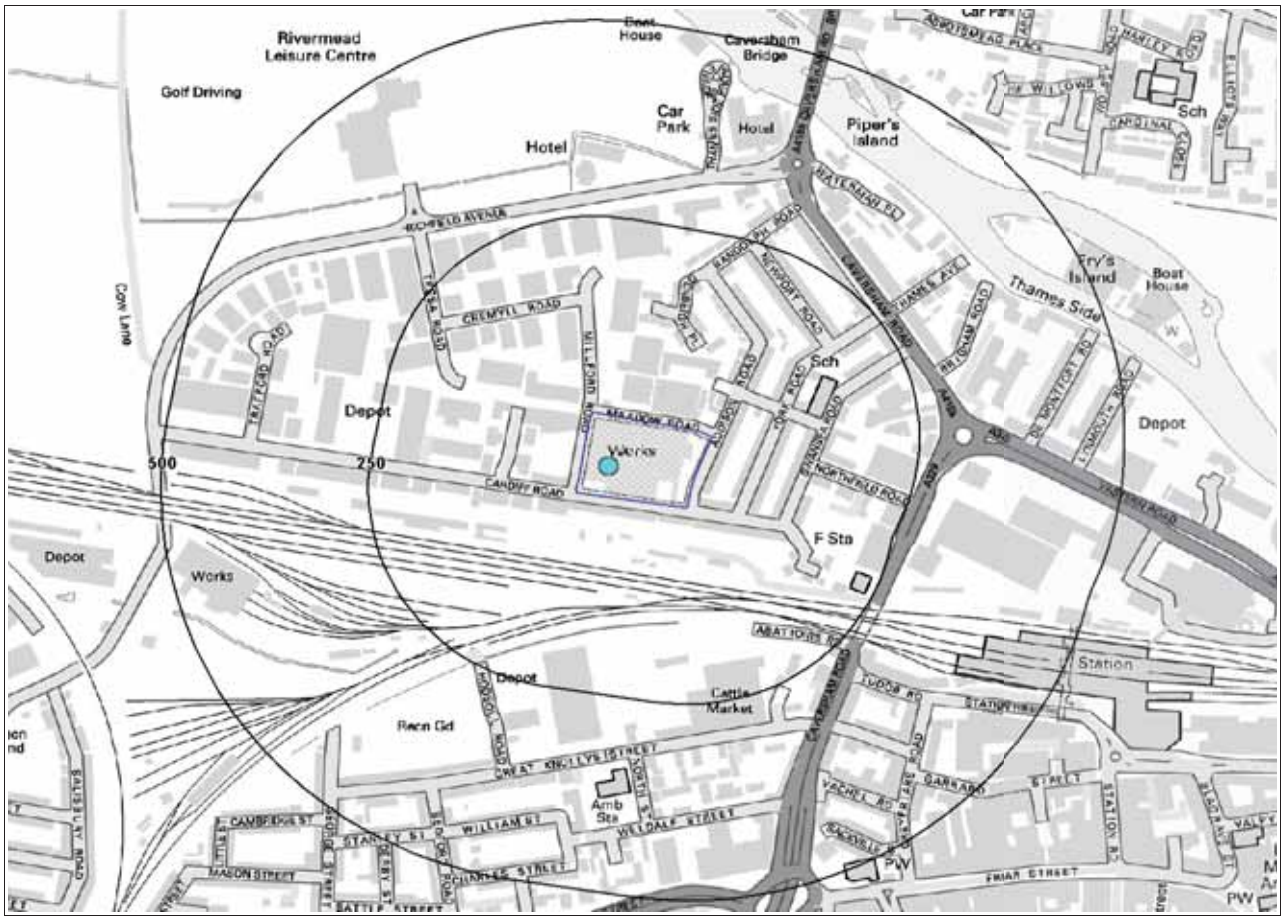
Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences

NW N NE

W E

SW S SE



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Site Outline

250 500 Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

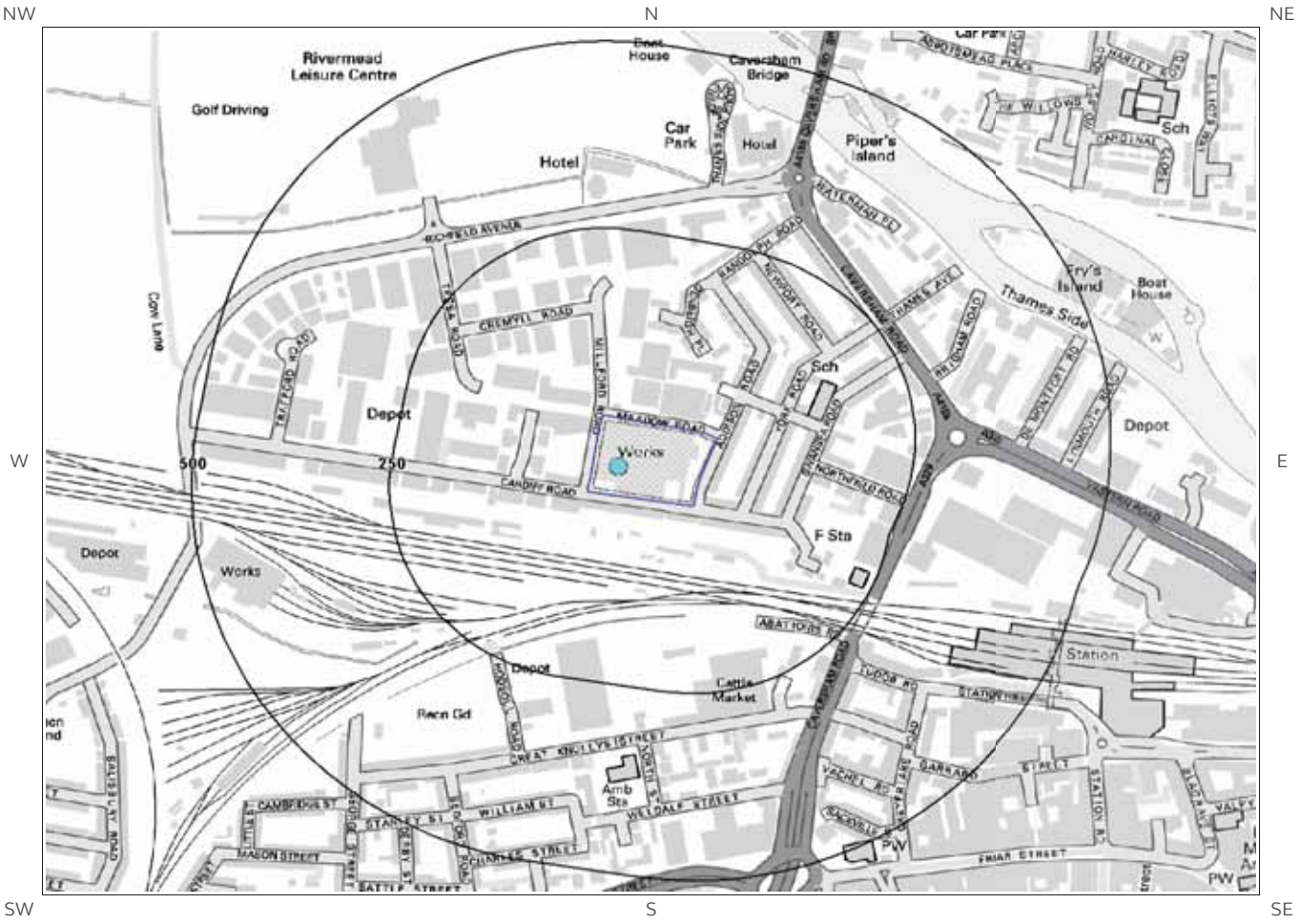
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



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Site Outline

250 Search Buffers (m)
500

Source Protection Zone 1 - Inner Catchment

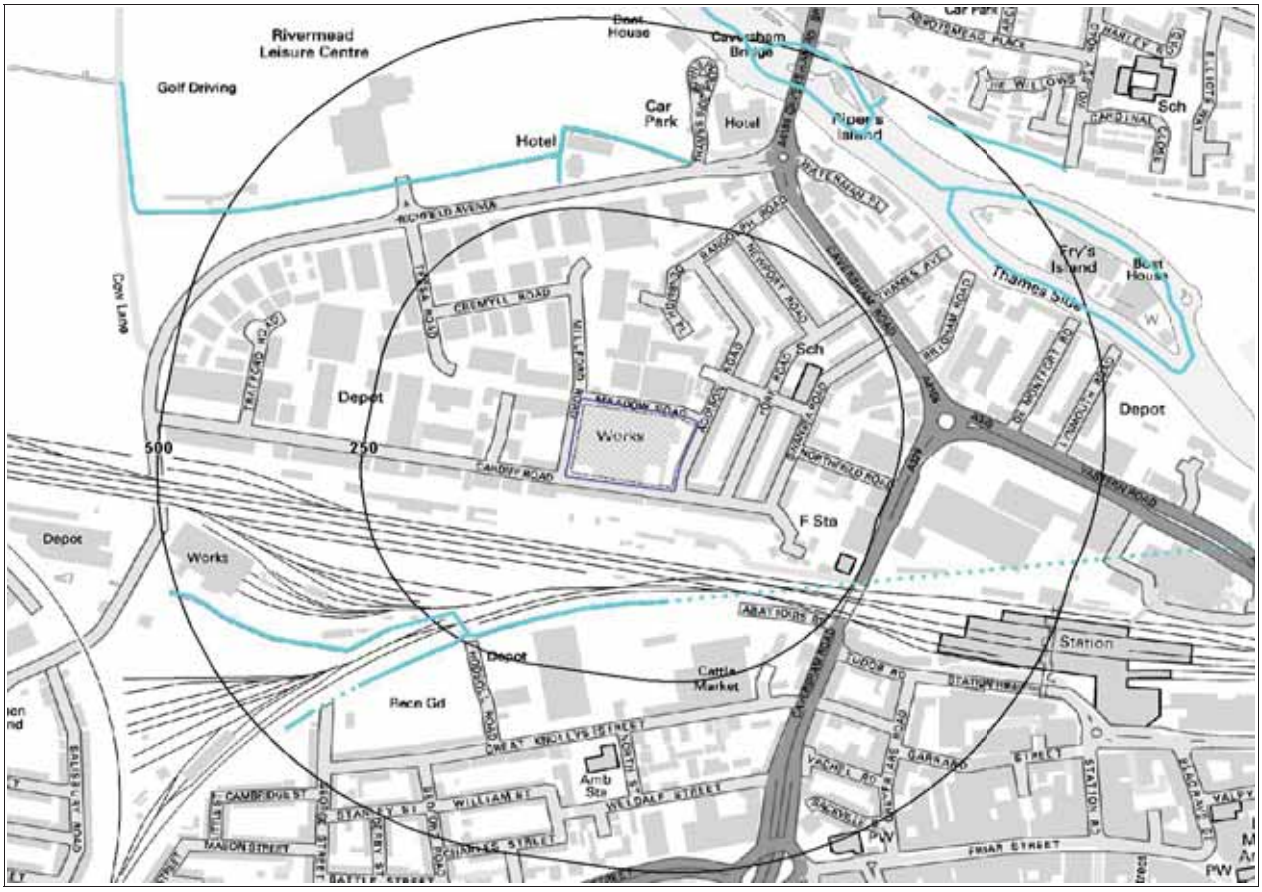
Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE



W E

SW S SE

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Site Outline

250 Search Buffers (m)
500

Watercourse type

- Tidal River
- Inland River
- Canal
- Lock or Flight of Locks
- Lake, Reservoir, or Marsh
- Foreshore
- Drain or Transfer

Watercourse level

- On ground surface
- Underground or Elevated
- Level unknown

- General Quality Assessment: Biology
- General Quality Assessment: Chemistry

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
9	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
1	55	S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
5A	0	On Site	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m^3): 90920 Max Daily Volume (m^3): 727.4 Original Application No: - Original Start Date: 23/01/1990 Expiry Date: - Issue No: 101 Version Start Date: 30/06/2006 Version End Date:
6A	0	On Site	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m^3): 90920 Max Daily Volume (m^3): 727.4 Original Application No: - Original Start Date: 23/01/1990 Expiry Date: - Issue No: 101 Version Start Date: 30/06/2006 Version End Date:
7A	0	On Site	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/07/1966 Version End Date:
8A	0	On Site	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/07/1966 Version End Date:
9	271	W	470600 174000	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT B Data Type: Point Name: HILLIER GROUP OF COMPANIES	Annual Volume (m^3): 6682 Max Daily Volume (m^3): 27.28 Original Application No: - Original Start Date: 22/01/1975 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date:
10	462	W	470400 174100	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT A Data Type: Point Name: HILLIER GROUP OF COMPANIES	Annual Volume (m^3): 6682 Max Daily Volume (m^3): 27.28 Original Application No: - Original Start Date: 22/01/1975 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	584	S	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CHEAPSIDE, READING, BERKSHIRE Data Type: Point Name: PRIMARK STORES LIMITED	Annual Volume (m^3): 14933 Max Daily Volume (m^3): 40.91 Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date:
Not shown	791	W	470100 174300	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (E) Data Type: Point Name: DRAYTON	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date:
Not shown	893	NW	470100 174600	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (D) Data Type: Point Name: DRAYTON	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date:
Not shown	913	E	471900 174400	Status: Active Licence No: 28/39/23/0020 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: 72 GEORGE STREET, CAVERSHAM, - BOREHOLE 'A' Data Type: Point Name: Berendsen UK Limited	Annual Volume (m^3): 68190 Max Daily Volume (m^3): 300.04 Original Application No: - Original Start Date: 09/05/1966 Expiry Date: - Issue No: 102 Version Start Date: 12/01/2016 Version End Date:
Not shown	1075	W	469800 173900	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BATTLE HOSPITAL, OXFORD ROAD, READING Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY	Annual Volume (m^3): 136875 Max Daily Volume (m^3): 400 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: 07/01/1999 Version End Date:
Not shown	1203	W	469700 174400	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHM'S FARM, READING (B) Data Type: Point Name: DRAYTON	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date:
Not shown	1203	W	469700 174400	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (C) Data Type: Point Name: DRAYTON	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1368	W	469500 174200	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (A) Data Type: Point Name: DRAYTON	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: - Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date:
Not shown	1758	E	472700 173600	Status: Historical Licence No: 28/39/22/0600 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: FORMER GASWORKS, KENAVON DRIVE, READING (5 BOREHOLES) Data Type: Point Name: M J GLEESON GROUP PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 31/07/2000 Expiry Date: 31/08/2001 Issue No: 1 Version Start Date: 31/07/2000 Version End Date:
Not shown	1832	W	469100 174600	Status: Historical Licence No: 28/39/23/0137 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING (A - R) Data Type: Point Name: READING BOROUGH COUNCIL	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/11/1976 Expiry Date: - Issue No: 100 Version Start Date: 17/11/1976 Version End Date:
Not shown	1878	SE	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: ROYAL BERKSHIRE HOSPITAL Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL	Annual Volume (m^3): 127750 Max Daily Volume (m^3): 350 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: 17/01/1992 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
22B	519	NE	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THAMES AT CHRISTCHURCH MEADOW Data Type: Point Name: READING BOROUGH COUNCIL	Annual Volume (m^3): 31536 Max Daily Volume (m^3): 86.4 Application No: - Original Start Date: 12/05/2003 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 01/04/2006 Version End Date:
23B	519	NE	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Transfer between sources Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THAMES AT CHRISTCHURCH MEADOW Data Type: Point Name: READING BOROUGH COUNCIL	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 12/05/2003 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 12/05/2003 Version End Date:
24B	519	NE	471440	Status: Historical	Annual Volume (m^3): 1.752e+006

ID	Distance (m)	Direction	NGR	Details	
			174450	Licence No: 28/39/23/0199/TR Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER THAMES - CHRISTCHURCH MEADOWS Data Type: Point Name: READING BOROUGH COUNCIL	Max Daily Volume (m^3): 4800 Application No: - Original Start Date: 10/09/2008 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 10/09/2008 Version End Date:
Not shown	1047	E	472072 174185	Status: Active Licence No: TH/039/0023/022 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER THAMES AT CAVERSHAM WEIR Data Type: Point Name: The Reading Sustainability Centre CIC	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 19/02/2016 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 19/02/2016 Version End Date:
Not shown	1076	SE	471590 173150	Status: Historical Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THE ORACLE CENTRE, READING Data Type: Point Name: ORACLE SHOPPING CENTRE LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 16/02/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/02/2000 Version End Date:
Not shown	1076	SE	471590 173150	Status: Active Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: ST.GILES STREAM AT THE ORACLE CENTRE, READING Data Type: Point Name: ORACLE SHOPPING CENTRE LTD	Annual Volume (m^3): 737856 Max Daily Volume (m^3): 2016 Application No: - Original Start Date: 16/02/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/02/2000 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
1A	0	On Site	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m^3): 90920 Max Daily Volume (m^3): 727.4 Original Application No: - Original Start Date: 23/01/1990 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
2A	0	On Site	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date:

ID	Distance (m)	Direction	NGR	Details	
				Data Type: Point Name: COX & WYMAN LTD	Version End Date:
Not shown	584	S	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CHEAPSIDE, READING, BERKSHIRE Data Type: Point Name: PRIMARK STORES LIMITED	Annual Volume (m^3): 14933 Max Daily Volume (m^3): 40.91 Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1075	W	469800 173900	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BATTLE HOSPITAL, OXFORD ROAD, READING Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY	Annual Volume (m^3): 136875 Max Daily Volume (m^3): 400 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1878	SE	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: ROYAL BERKSHIRE HOSPITAL Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL	Annual Volume (m^3): 127750 Max Daily Volume (m^3): 350 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site — None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
Not shown	1112	E	472135 174053	River Name: Thames Reach: Whitchurch Stw - Kennet End/Start of Stretch: Sample Point NGR	A	A	A	A	A
Not shown	1191	SE	472020 173440	River Name: Kennet Reach: Holy Brook - Thames End/Start of Stretch: Start of Stretch NGR	B	A	A	A	A
Not shown	1191	SE	472020 173440	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: End of Stretch NGR	B	A	A	A	A
Not shown	1290	S	471351 172807	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: Sample Point NGR	B	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	142 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	142 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	145 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
38	145 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
3	226 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	226 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
39	226 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	226 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
5	239 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
41	239 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	285 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
Not shown	285 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
7	296 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
43	296 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
8	321 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
Not shown	321 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
9	323 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
Not shown	323 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.5
10	357 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
Not shown	357 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
11	374 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	374	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
12	410 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
48	410 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
13	424 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
Not shown	424 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
14	427 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	427 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	428 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 43.9
Not shown	428 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 43.9
16	430 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
Not shown	430 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
17	431 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
53	431 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 2.2
18	437 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
Not shown	437 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 35.6
19	440 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	440 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
20	458 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	458 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	462 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.9
22	462 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	462 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.9
Not shown	462 NE	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	484 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.3
24	484 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.3

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	484 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.3
Not shown	484 N	River Thames	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 45.3
25	491 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
Not shown	491 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7

6.11 Surface Water Features

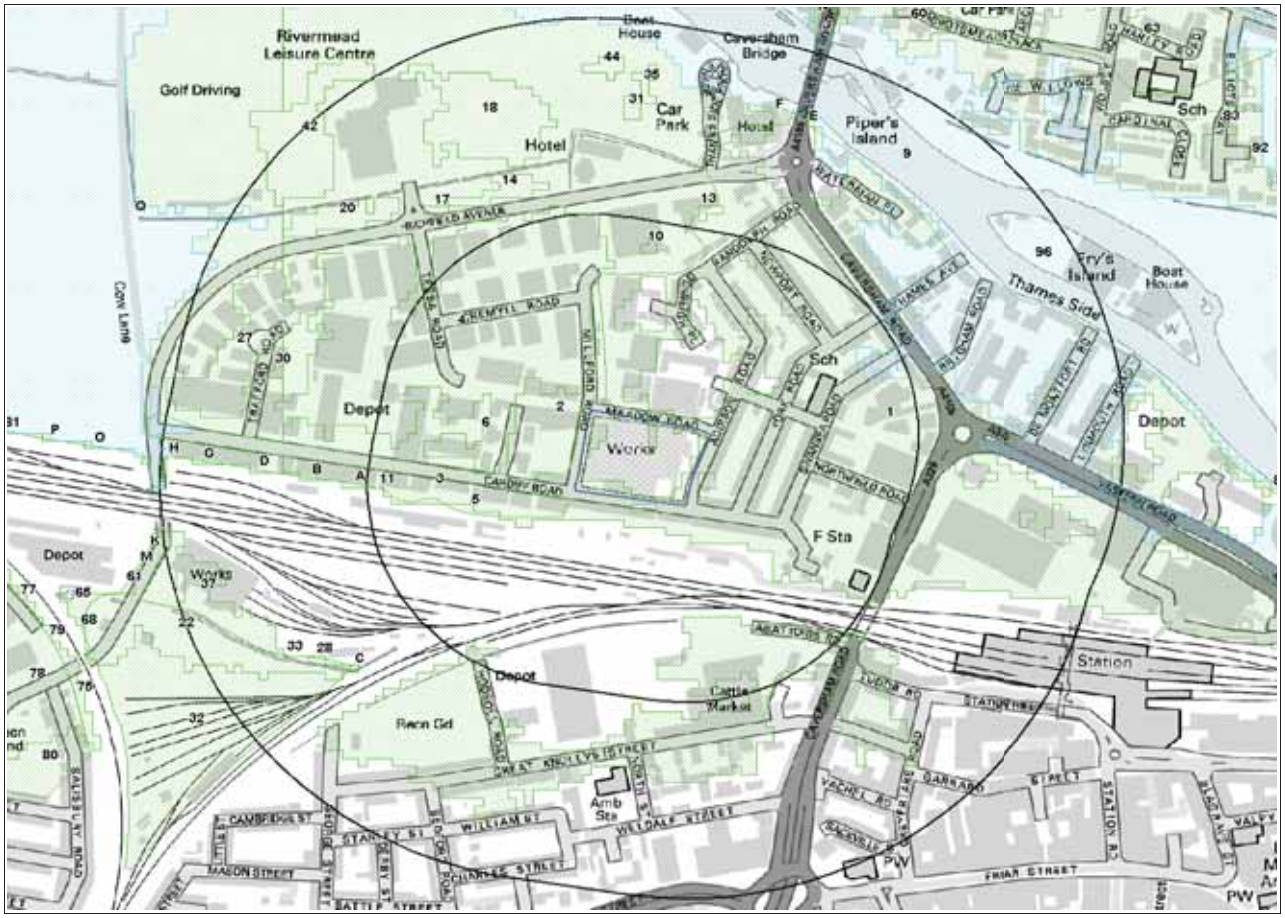
Surface water features within 250m of the study site Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
229	SW
245	SW

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)

NW N NE



W E

SW S SE

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Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

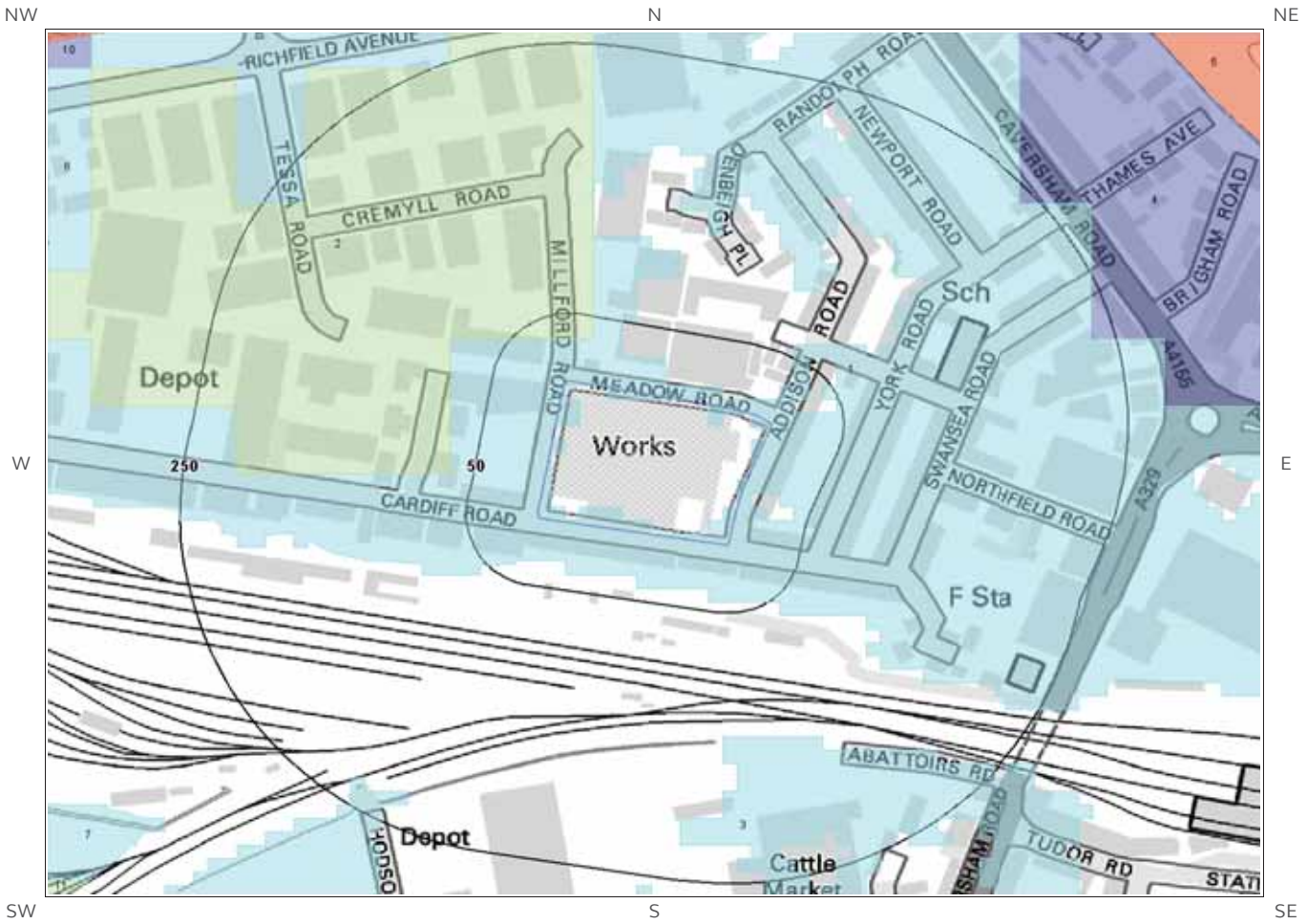
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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Site Outline

100
250
Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
2	8	NW	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
3	16	SW	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
4	25	NW	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
5	97	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
6	116	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
7	141	S	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
8	160	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
9	169	N	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
10	208	N	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
11	232	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
12A	237	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	198	NE	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Low (greater than 1 in 1000 but less than 1 in 100) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	Low
2	31.0	N	Very Low

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site — None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site — Identified

Clearwater Flooding or Superficial Deposits Flooding — Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

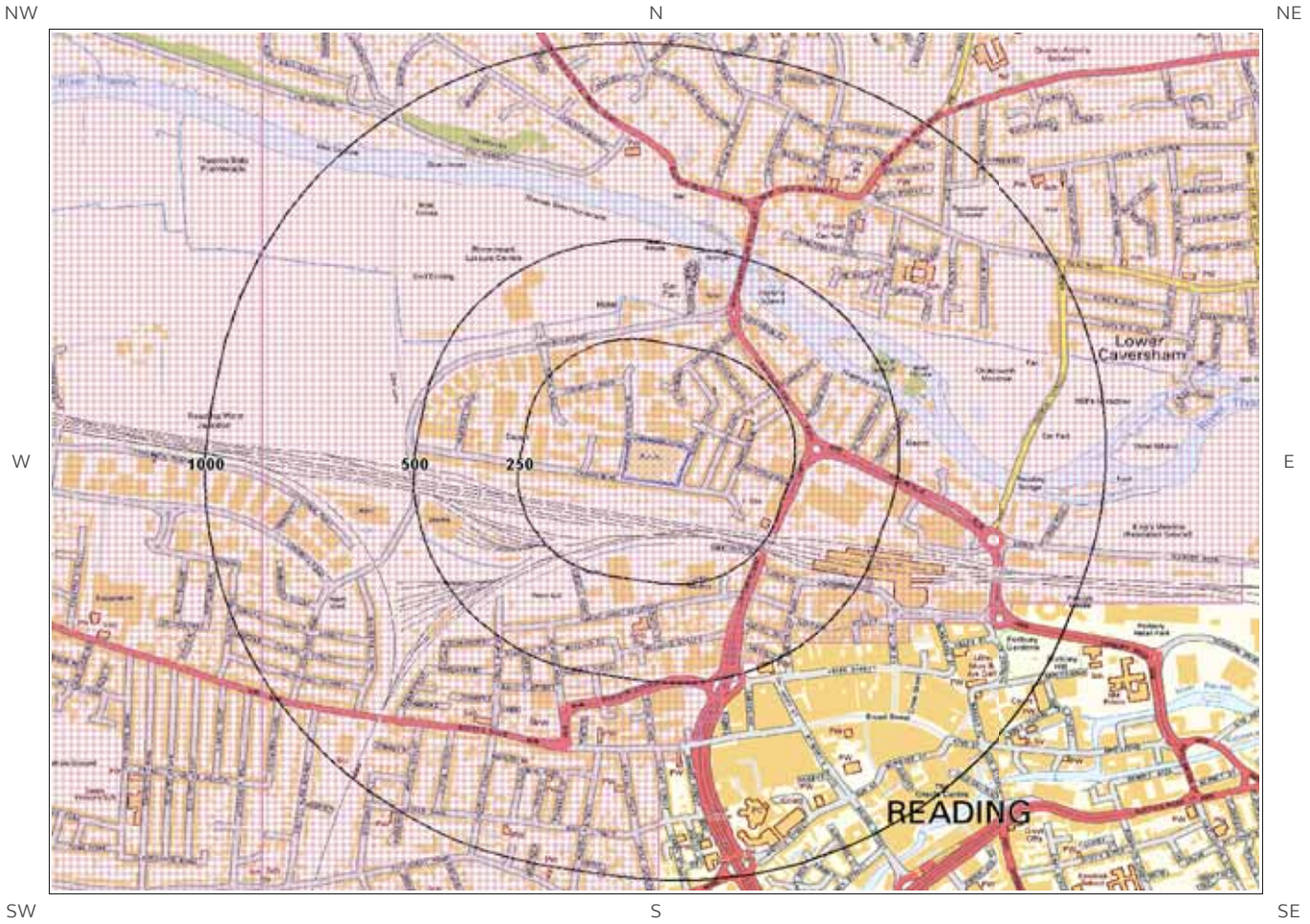
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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Site Outline

100 250 Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

1

The following Area of Outstanding Natural Beauty (AONB) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	AONB/NSA Name	Data Source
Not shown	1955	NW	Chilterns	Natural England

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

2

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
1	0	On Site	Existing	DEFRA
2	862	W	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

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COX & WYMAN BUILDING,

CARDIFF ROAD, READING

INTERPRETATIVE REPORT ON GROUND INVESTIGATION

Prepared for THAMES PROPERTIES LTD

Report Ref: 32933/02

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PROJECT: Proposed residential development

CONSULTANT: Barton Willmore

VOLUME - VERSION	STATUS	ORIGINATOR	CHECKER	APPROVED	DATE
1 of 1 – A	FINAL	MM	NP	NP	25/07/17

ORIGINATOR	APPROVER
	
MARTIN MCDOWELL BSc (Hons) CGeol EurGeol FGS UK Registered Ground Engineering Professional Senior Geotechnical Engineer	N.V. PARRY BEng MSc CEng MICE MCIHT SiLC Director

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FIGURES **Nos.**

EXPLORATORY HOLE LOCATION PLAN 1

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1. INTRODUCTION

It is proposed to demolish the existing Cox & Wyman premises at Cardiff Road, Reading and replace with a residential development comprising 112 dwellings. Geotechnical Engineering Limited (GEL) was instructed by Thames Properties Ltd to carry out a desk study to determine the geoenvironmental conditions at the site.

The scope of work was defined in correspondence by GEL, reference T25180 dated 20th December 2016, being broadly in accordance with the guidance of BS 5930:2015 and BS 10175:2011+A1:2013.

This report describes the investigation, presents the findings and comments accordingly. The comments given in this report and the opinions expressed assume that ground conditions do not vary beyond the range revealed by this investigation. There may however, be conditions at or adjacent to the site, which have not been disclosed by the investigation and which, therefore, have not been considered in this report. Accordingly, a careful watch should be maintained during any future groundworks and the recommendations of this report reviewed as necessary.

Many aspects of the proposed development have yet to be agreed/determined. The comments given in this report should therefore be considered in the context of a general overview of the site. It is recommended that the report is reviewed when the design is finalised.

The recommendations given in this report should not be used for any other schemes on or adjacent to this site without further reference to GEL.

This report should be read in conjunction with the previous GEL Phase 1 Geoenvironmental Desk Study, GEL Report reference 32933/01, dated June 2017.

2. SITE LOCATION AND GEOLOGY

The site is situated at Cardiff Road, Reading, RG1 8EX and may be located by its National Grid co-ordinates SU ^{4}7094, ^{1}7411, see Figure 1. The rectangular shaped site is approximately 1.3Ha and is positioned at an estimated elevation of approximately 38.7m above Ordnance Datum (AOD), based upon Ordnance Survey spot heights adjacent to the site on Cardiff Road to the south and Addison Road to the east, with little discernible variation in topography across the site.

At the time of the reconnaissance, the site was being let to the current tenants by Cox & Wyman for the storage of film, theatre and television props, stage equipment, costumes and sets, some in boxes and containers. Also present in the building were seating, electrical equipment, furniture and 205-litre drums of concentrated fruit juices. Some of the larger set and stage items were also stored outside the building.

The land to the south and east of the site comprised mainly terraced residential properties. Opposite the site on Meadow Road were “Manrose Manufacturing Ltd” (ventilation fans manufacturers) and a derelict plot of land previously occupied by a company named “Waymaster”. On the western side were terraced residential properties fronting onto Cardiff Road and units of the “Milford Road Trading Estate”, the occupied units including vehicle maintenance and repair premises, car rental, window fabricators and carpet suppliers/fitters.

British Geological Survey (BGS) England and Wales (Sheet No SU 77 SW 1:10,000 and Sheet No. 268, 1:50,000) and the BGS online geology (1:50,000) indicate the site is underlain by superficial deposits of the Langley Silt Member (predominantly clays and silts). Underlying the superficial deposits are undifferentiated solid strata of the Lewes Nodular Chalk Formation, Seaford Chalk Formation and the Newhaven Chalk Formation.

Made Ground is anticipated locally, associated with current and previous outbuildings and structures.

3. PROPOSED WORKS

It is understood that the proposed development will comprise one hundred and twelve residential properties, assumed to comprise mixed apartments, up to four stories high, and two-storey houses, some with private gardens, with an access road leading from "Milford Road" to the west.

At the time of preparing this report details of the likely foundation loads have not been provided.

4. GROUND INVESTIGATION

4.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930:2015 during the period 24th April to 4th May 2017 and comprised thirteen boreholes and three hand-dug inspection pits.

The exploratory hole locations were selected and set out by this Company and are shown on Figure 1. The ground level and co-ordinates exploratory holes located outside the buildings were established by this Company using GPS techniques.

The boreholes, referenced BH01 to BH05 (Appendix A), were formed using a track-mounted Geotechnical Pioneer Rig. Initially, an inspection pit was hand excavated at each borehole location to a maximum depth of 1.20m to check for buried services, with surface coring of hardstanding undertaken in BH02, BH02A, BH04, BH04A, BH04B and BH05. Inspection pit BH04 refused on hard strata while BH04A was abandoned due to encountering possible Asbestos Containing Material (ACM). BH02A was formed as an inspection pit only to obtain additional shallow samples. Disturbed samples were taken and retained in a combination of plastic tubs, bags and glass jars. Heavy duty dynamic sampling techniques were then employed to produce a continuous disturbed sample of 112mm and 97mm nominal diameter. The samples were recovered in semi-rigid plastic liner.

On refusal to dynamic sampling the boreholes were continued by rotary core drilling techniques utilising a water flush. A double-tube swivel core barrel with semi-rigid plastic liner was utilised to recover a continuous sample of 90mm diameter. Where appropriate, dynamic sampling techniques were carried out to recover dropped core or where rotary core drilling was not suitable.

The boreholes, referenced WS01 to WS08 (Appendix A), were formed using a Terrier 2000 rig. Initially, an inspection pit was hand excavated at each borehole location to a maximum depth of 1.20m to check for buried services, with rotary coring of surface hardstanding undertaken in WS01, WS03, WS05, WS06, WS07 and WS08. Disturbed samples were taken and retained in a combination of plastic tubs, bags and glass jars. Dynamic sampling techniques were then employed to produce a continuous disturbed sample of 83mm diameter; borehole WS05 subsequently reduced to 60mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

The dynamic samples and rotary core were extracted horizontally from the sampler and core barrel respectively, the semi-rigid liner was cut to length and caps placed at each end to retain moisture content. All samples and core were retained in sequence in labelled, wooden coreboxes.

Standard penetration tests (SPT) were carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011. A split barrel or a solid cone was used depending upon the materials encountered and the split barrel samples retained in airtight jars. The SPT N value was taken as the number of blows to penetrate the 300mm test drive following a 150mm seating drive. Where low penetration was recorded the seating drive was terminated at 25 blows and the test drive completed after a further 50 blows. Detailed SPT results, together with the energy ratio (E_r), are presented in Appendix A and summarised as uncorrected N values on the borehole logs.

Boreholes were monitored for groundwater ingress as dynamic sampling proceeded. Upon encountering water, sampling was temporarily stopped to allow the level to stabilise. Water levels were also recorded at the start and finish of each day's work and on completion of the borehole and are presented on the relevant log.

On completion gas/water monitoring standpipes were installed in BH01, BH02, BH03, WS01, WS02, WS03, WS04 and WS06. Each installation consisted of a 50mm ID HDPE slotted tube set in a filter response zone of non-calcareous pea gravel. The installation was sealed above with a bentonite plug and accessed via a valve: installations in BH02, BH03, WS01 and WS04 were also sealed below. The installations were protected at the surface by a lockable stopcock cover set in concrete. Installation details are given on the relevant borehole log.

The installations were monitored for gas flow and then tested for methane, carbon dioxide, oxygen, hydrogen sulphide, and carbon monoxide using a Gas Data GFM 435 gas analyser. Subsequent readings, along with water level records, are tabulated in Appendix A.

The installations were also monitored for Volatile Organic Compounds (VOC's) using a MiniRAE 2000/3000 Portable Photo-Ionisation Detector (PID) with a 10.6eV gas discharge lamp. The detector uses an ultra violet light source to break down the chemicals into positive and negative ions (ionisation). The detector measures the charge of the ionised gas and converts the signal into current. The current is then amplified and displayed as "ppm"; after measurement the ions reform the original gas or vapour allowing it to be sampled. The readings are presented in Appendix A.

On completion, the uninstalled boreholes were backfilled with arisings/bentonite pellets and the surface reinstated.

Samples for chemical analyses were dispatched directly to i2 Analytical (Watford) under a Chain of Custody. The remaining samples were brought to this Company's laboratory for logging, testing and storage.

4.2 Logging

The logging of soils and rocks was carried out by an Engineering Geologist in general accordance with BS5930:2015. A key to the exploratory hole logs is presented in Appendix A.

Detailed descriptions of the core and samples are given in the borehole logs, Appendix A, along with details of sampling, in situ testing, groundwater ingress, installations and relevant comments on drilling techniques.

Prior to logging, photographs of the core were taken and are presented separately.

4.3 Laboratory Testing

A schedule of laboratory tests was prepared by GEL, the following tests being carried out in accordance with BS1377:1990, unless stated otherwise. The number in brackets refers to the test number given in that standard. The results are presented in Appendix B.

The natural water content was determined on six selected samples in accordance with BS EN ISO 17892-1:2014.

The saturation moisture content [Part 2:3.3] was determined on fifteen selected samples.

Liquid limit, plastic limit and plasticity index tests [Part 2:4.3, 5.3 and 5.4] were carried out on six selected samples. An Atterberg line plot has also been presented.

Particle size distributions were determined for six samples by wet sieving [Part 2:9.2]. The fine fractions of these samples were further analysed by sedimentation using the pipette method [Part 2:9.4]. The results are presented as grading curves.

The BRE SD1 (2005) reduced suite of tests was carried out on ten samples by Chemtest Ltd (Newmarket) using in-house methods.

The following tests on rock samples were carried out in accordance with ISRM (2007) unless stated otherwise. Test results are presented in Appendix B.

Two rock cores were tested for their unconfined compressive strength.

Point load index tests were carried out on sixteen selected lengths of core.

Selected samples were despatched to i2 Analytical (Watford), where chemical analyses were carried out to in-house methods for a suite of contaminants. The results are presented in Appendix C.

5. DISCUSSION AND CONCLUSIONS

5.1 Ground Conditions

The ground conditions revealed by the investigation generally confirm the strata indicated by the geological records, however an additional layer of flint gravel was present between the Langley Silt Member and the Chalk, and is likely to represent the Kempton Park Gravel Formation in this area.

Made Ground

Made Ground was present in all of the boreholes to a maximum depth of 2.90m below ground level (bgl). BH03, WS02 and WS04 comprised soil cover whilst all other boreholes were located on hardstanding of concrete or tarmacadam. The hardstanding had a maximum thickness of 0.30m thick, except in BH05 where 0.90m of concrete was proved.

The underlying layers of Made Ground were variable, generally comprising:

- Slightly sandy to sandy gravel, often silty or clayey.
- Firm, sandy, gravelly clay.
- Clayey or silty, slightly gravelly to very gravelly sand. Gravel locally absent.
- Sandy, gravelly silt.
- Rarely soft, slightly sandy to sandy, slightly gravelly clay.

A low to high cobble content of brick and concrete was generally present within the Made Ground.

Anthropogenic content included brick, tile, concrete, charcoal, glass, metal and slag. Some layers were also identified as containing ash. Suspected Asbestos Containing Material (ACM) in the form of cement board fragments were encountered in BH04A.

Langley Silt Member

The Langley Silt Member was encountered at depths of between 1.40m and 2.40m bgl, reaching a maximum depth of 3.50m bgl.

The stratum was typically encountered as a very soft to soft (locally firm), slightly sandy to sandy, locally slightly gravelly, silty clay. A layer of slightly gravelly, clayey sand in BH04B was probably part of this stratum but there is some uncertainty: it is possible that this layer was a disturbed band comprising the Langley Silt Member and the underlying Kempton Park Gravel Formation.

The stratum was not encountered in boreholes BH02A, BH04 and BH04A due to the shallow depth of those holes, and was proven to be absent in BH03.

The top and bottom of the stratum appeared to be disturbed, with some elements of Made Ground apparent in the top of the stratum (included within "Made Ground" above), and flint gravels present within the base of the clay.

Kempton Park Gravel Formation

Strata interpreted as being the Kempton Park Gravel Formation was present at depths of between 2.80m and 7.70m bgl. The stratum was typically encountered as a sandy to very sandy flint gravel, often slightly silty. Alternatively, the stratum tended towards a slightly gravelly to gravelly sand.

Chalk (Undifferentiated)

Chalk bedrock was encountered at depths of between 7.25m to 7.70m bgl, and was proven all the way to the base of the deeper boreholes (20.54m bgl in BH01).

The upper part of the chalk was structureless, typically comprising clast supported (Grade Dc), extremely weak and very weak, low and medium dense chalk gravel to depths of

between 12.40m and 15.30m. Rarely, matrix supported chalk (Grade Dm) was present as a slightly sandy, gravelly silt.

The lower part of the chalk was structured, typically Grade A3 to A5 or Grade B4 to B5, generally comprising very weak and weak, medium density chalk.

Groundwater

Groundwater was encountered in boreholes WS01 to WS08 during drilling, at depths of between 3.09m and 4.00m bgl (34.50 to 35.15m OD), rising to between 1.70m and 3.00m bgl (35.30 to 36.80m OD) over a period of twenty minutes.

Post-fieldwork monitoring recorded groundwater levels of 2.06m to 2.72m bgl (36.44 to 36.28m OD).

It should be noted that water levels can vary seasonally and further monitoring is advised up to the commencement of siteworks.

The water levels recorded may not necessarily reflect standing groundwater level due to the addition of water during the formation of the boreholes. Similarly, groundwater strikes may have been masked by the addition of water as the borehole was advanced.

5.2 Geotechnical Appraisal

Made Ground

SPT N values obtained from tests within the granular Made Ground indicated the material to be very loose to medium dense.

SPT N values of <1 to 10 were obtained for the cohesive Made Ground inferring a very soft to firm consistency, after the application of a 5kPa correlation factor (Stroud, 1974).

A SPT/depth and strength/depth plot is presented in Appendix E based on the SPT N values.

Langley Silt Member

Index tests within the Langley Silt Member indicate the material is of low to intermediate plasticity. Based upon the plasticity indices, this material is considered to be of low to medium volume change potential in response to changes in moisture content (NHBC, 2017).

SPT N values of <1 to 9 were obtained for the cohesive Langley Silt Member inferring a very soft to firm consistency, after the application of a 5kPa correlation factor (Stroud, 1974). A single result of 17 appeared to indicate that the material is locally stiff, however it is likely that this was a raised value influenced by the presence of flint gravels.

A strength/depth plot is presented in Appendix E based on the SPT N values.

Kempton Park Gravel Formation

Particle size distribution tests carried out on samples of the Kempton Park Gravel Formation indicate the material to be slightly silty, sandy to very sandy gravel with an occasional medium cobble content.

SPT N values obtained from tests within the Kempton park Gravel Formation indicated the material to be typically medium dense to very dense, and rarely loose.

A SPT/depth plot is presented in Appendix E.

Chalk (Undifferentiated)

Saturation Moisture Content (SMC) testing of the chalk determined values of 19 to 27%, consistent with a medium density, locally high density chalk.

UCS testing of the chalk indicated the rock to be extremely weak to very weak. SPT tests indicate a similar strength with a single test indicating a weak rock.

Point Load testing of the chalk indicated the rock to be typically very weak, rarely extremely weak.

A SPT/depth plot is presented in Appendix E.

5.3 Foundation Considerations

Since limited detail is available with respect to the proposed scheme and/or loadings at the time of reporting, the following comments are of a general nature and should be reviewed when appropriate information becomes available.

The combined thickness of the Made Ground and Langley Silt Member comprises a minimum thickness of around 3m. The boreholes indicate that the materials that make up these strata are highly variable and are frequently very low strength. The low strength clays are also liable to produce excessive settlements under loading. It is therefore recommended that shallow footings are not adopted for the site and that piled foundations are considered.

The underlying Kempton Park Gravel Formation represents an approximately 5m thick unit of typically medium dense and dense sandy gravels. It is expected that this would provide sufficient bearing capacity for the proposed development if piles are sufficiently toed into the stratum.

The following assumptions have been made:

1. Skin friction has been ignored for the upper 3m of the pile.
2. Negative skin friction has not been taken into account.

3. The average coefficient of earth pressure over the embedded length (K_s) is assumed to be 1.5 for a medium density soil.
4. Overall factor of safety of 3.0.

Based on the above assumptions, a 450mm pile toed 2m into the Kempton Park Gravel Formation should provide a design bearing resistance of approximately 125kN. The overall pile length would therefore be around 5m and would leave at least 2m of gravel beneath the piles to avoid encroaching upon the chalk.

If higher loadings are required, larger diameter piles could be used. Alternatively, smaller diameter, longer piles could be taken down into the chalk strata instead. It would be recommended to take such piles down to the structured chalk which would be stronger and less variable than the shallower structureless chalk.

It is recommended that specialist piling contractors should be consulted to advise further on the most suitable pile type, installation method and to provide working loads on their chosen system.

Ground bearing slabs are unlikely to be suitable based on the variability of the shallow soils. A suspended ground floor slab should be used with a minimum sub-floor void space of 50mm for suspended cast in situ concrete floors, or 200mm for suspended pre-cast concrete floors.

5.4 Excavations

Excavations should be within the scope of conventional backhoe excavators. Recourse to hydraulic breakers may be required to break out existing obstructions and foundation bases.

Excavations should remain stable in the short term, although minor spalling of the excavation sides may occur. In the vicinity of former excavations, the stability any new excavation is likely to be significantly reduced. Based on the materials encountered, it is considered unlikely that excavations will remain stable, even in the short term. Temporary support is therefore likely to be necessary.

If potentially unstable excavations or any excavations deeper than 1.00m are to be entered then the sides should be battered back and/or shoring methods and equipment should be utilised in accordance with the relevant Health and Safety legislation.

Prior to development any existing foundation structures and/or obstructions should be broken out and replaced with materials compatible with the surrounding ground.

All excavations should be closely inspected and any loose or soft spots should be removed and replaced with suitably compacted granular material. In order to prevent formation softening and deterioration it is recommended that all foundations be cast as soon as possible after the excavation or a concrete blinding is placed to protect the formation.

5.5 Pavement Design

CBR testing was not undertaken as part of the works. The variability and general weakness of the Made Ground along with the typically soft to very soft nature of the underlying natural strata makes it likely that weak pavement sub grade conditions exist across the site. Most of the site was covered by hardstanding however. It is recommended that a more detailed subgrade assessment is undertaken post-demolition when the hardstanding has been removed and the sub grade can be inspected and tested in more detail.

5.6 Buried Concrete

In accordance with the BRE Special Digest 1 (2005) the site is regarded as brownfield.

The chemical analyses recorded in the investigation fall within the Design Sulfate Class DS-2, based upon the water soluble sulphates. Taking into account potentially mobile groundwater conditions and with typical pH values of 6.9 to 11.3, an ACEC site classification of AC-2 is proposed.

5.7 Environmental Considerations

5.7.1 Basis of Assessment – Soils

The concentration of contamination present at a site must be assessed in relation to a recognised system of defining whether a site presents a significant possibility of significant harm to human health. In the UK, the Department of the Environment Food and Rural Affairs (DEFRA) and the Environment Agency (EA) prepared a method for deriving generic and site-specific assessment criteria to establish actual or potential risk to human health. This comprised the Contaminated Land Exposure Assessment (CLEA) methodology, and the associated DEFRA/EA Soil Guideline Value (SGV) reports.

Further guidance was produced by DEFRA in "Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance (2012)" supporting the use of Generic Assessment Criteria (GACs) as screening tools in generic quantitative human health risk assessment to help assessors decide when land can be excluded from the need for further inspection and assessment, or when further work may be warranted. They may be used to indicate when land is very unlikely to pose a significant possibility of significant harm to human health but they should not be used as direct indicators of whether a significant possibility of significant harm to human health may exist. Furthermore the Category 4 Screening Levels (C4SLs)

derived by DEFRA in 2014 will generally be used in place of SGVs and other guidance. In the absence of a suitable C4SL or SGV, risk assessors are advised to identify and select appropriate generic assessment criteria in accordance with established good practice.

The CLEA computer model has been used for this assessment to derive S4ULs and similarly EIC/AGS/CL:AIRE values, in lieu of any other available guidance. The basis for assessment of soils is discussed in full in Appendix D.

5.7.2 Basis of Assessment – Groundwater

In the absence of any National Standards relating to groundwater, it is recommended by the Environment Agency to compare the results with the general water quality guidelines from the UK, European Union and World Health Organisation. These are published in Appendix A of the Environment Agency technical advice to third parties on Pollution of Controlled Waters (2002).

5.7.3 Basis of Assessment – Ground Gas

Approved Document Part C2 of the Building Regulations (DoE) recommends a tiered risk assessment approach in respect of “methane and other gases” (used to define hazardous soil gases which originate either from waste deposited in landfill sites or are generated naturally). Approved Document C does not include radon (which is dealt with separately) but does include volatile organic compounds (VOCs). The methodology for the semi-quantitative risk assessment is defined in BS 8485:2015 “Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings”, which provides a framework in line with CLR 11 “Model Procedures for the Management of Land Contamination” (2004).

5.7.4 Comparison of Results – Soils

Generally, potential contamination at the site has been compared with the GAC screening values for a 'residential with plant uptake' end use: this is on the basis that the proposed development will comprise residential properties with gardens. The screening values are defined by SGVs or C4SLs (where available), calculated using the CLEA (2009) computer model. Where none of these screening values are available, recently developed S4UL values (Nathanail et al 2015) have been used instead. A Soil Organic Matter content of 1% SOM was used for the SSVs and LQM values (where applicable), being derived from Soil Organic Matter test results. C4SL and S4UL values are based upon a SOM of 6%.

Twenty-one tests were carried out on samples of shallow Made Ground between 0.10m and 2.50m bgl, with a further three tests carried out on samples of natural strata between 1.50m and 2.40m bgl. A further four samples of Made Ground underwent Waste Acceptance Criteria (WAC) testing.

General Contaminants

Contaminant	Concentration ranges with exceedances	GACs (mg/kg)
Arsenic	Range: 9.5 – 27mg/kg	37†*
Beryllium	Range: 0.36 – **2.1**mg/kg **BH01 (1.20-1.40) 2.1mg/kg**	1.7*
Boron	Range: 0.50 – 5.0mg/kg	290*
Cadmium	Range: <0.20 – 0.6mg/kg	11*, 22†
Chromium (Trivalent)	Range: 8.0 – 59mg/kg	910*
Chromium (Hexavalent)	All less than 4.0mg/kg	6*, 21†
Copper	Range: 11 – 150mg/kg	2,400*
Cyanide	Range: <1.0 – 9.0mg/kg	34[X]
Lead	Range: 11 - **1900**mg/kg **BH01 (1.20-1.40) 260mg/kg** **BH02A (0.20-0.40m) 350mg/kg** **BH02A (0.80-1.00m) 260mg/kg** **BH03 (0.60-0.80m) 680mg/kg** **WS01 (0.20-0.40m) 220mg/kg** **WS01 (0.60-0.80m) 730mg/kg** **WS04 (1.00-1.20m) 320mg/kg** **WS05 (1.50-1.70m) 220mg/kg** **WS06 (0.40-0.60m) 1900mg/kg** **WS07 (0.40-0.60m) 660mg/kg** **WS08 (1.00-1.20m) 1700mg/kg**	200†
Mercury	Range: <0.30 – **8.2**mg/kg **BH01 (1.20-1.40) 8.2mg/kg** **BH02A (0.80-1.00m) 3.3mg/kg** **WS01 (0.60-0.80m) 2.2mg/kg**	1.2*
Nickel	Range: 12 – 28mg/kg	130*
Phenol	All less than 1.0mg/kg	120*
Selenium	All less than 1.0mg/kg	250*
Vanadium	Range: 20 – 44mg/kg	410*
Zinc	Range: 28 – 350mg/kg	3,700*

†C4SL (2013) for residential with plant uptake end use (6% SOM)
*S4UL (2015) for residential with plant uptake end use (6% SOM except Phenol which uses 1% SOM). Figure in square brackets [ ] refer to where GAC presented exceeds the solubility saturation limit [ ][sol]
Exceedances marked in **bold**
[X] AtriskSoil (2017)

Table 5.1: GAC for General Contaminants

When compared with the published screening values for published C4SLs, LQM/CIEH S4ULs and AtriskSoil SSVs, exceedances were apparent for beryllium, lead and mercury. The exceedance for beryllium is relatively minor and only occurred in borehole BH01.

The exceedances for lead and mercury, however, are more significant, with lead in particular reaching concentrations of almost ten times the GAC. The exceedances of mercury only occur along the eastern edge of the site, an area currently occupied by an open air yard with hardstanding but which has previously been occupied by buildings. Mercury may have been used in the former printing works, specifically in the development of photography. The Lead exceedances are more widespread across the site and cannot be defined to specific areas. The presence of lead could be associated with printing processes (e.g. ink products), lead pipework or contaminated soils imported to raise the ground level at the site when it was first developed. It is considered that the presence of significant concentrations of lead and mercury present a significant possibility of harm to human health. The results are summarised in Table 5.1 above.

Polyaromatic Hydrocarbons

Contaminant	Concentration ranges and exceedances	GACs(mg/kg)
Acenaphthene	Range: <0.05 – 1.1mg/kg	210*
Acenaphthylene	Range: <0.05 – 2.5mg/kg	170*
Anthracene	Range: <0.05 – 6.1mg/kg	2,400*
Benzo(a)anthracene	Range: <0.05 – **35**mg/kg **WS01 (0.20-0.40m) 35mg/kg** **WS05 (1.50-1.70m) 10mg/kg**	7.2*
Benzo(a)pyrene	Range: <0.05 – **57**mg/kg **BH01 (1.20-1.40m) 2.3mg/kg** **BH02A (0.20-0.40m) 7.7mg/kg** **BH02A (0.80-1.00m) 2.8mg/kg** **WS01 (0.20-0.40m) 57mg/kg** **WS02 (0.50-0.70m) 5.7mg/kg** **WS05 (1.50-1.70m) 12mg/kg**	2.2*, 5.0†
Benzo(b)fluoranthene	Range: <0.05 – **60**mg/kg **BH02A (0.20-0.40m) 7.3mg/kg** **WS01 (0.20-0.40m) 60mg/kg** **WS02 (0.50-0.70m) 6.1mg/kg** **WS05 (1.50-1.70m) 12mg/kg**	2.6*
Benzo(ghi)perylene	Range: <0.05 – 34mg/kg	320*
Benzo(k)fluoranthene	Range: <0.05 – 25mg/kg	77*
Chrysene	Range: <0.05 – 30mg/kg **WS01 (0.20-0.40m) 30mg/kg**	15*
Dibenz(a,h)anthracene	Range: <0.05 – **8.1**mg/kg **WS01 (0.20-0.40m) 8.1mg/kg** **WS02 (0.50-0.70m) 0.72mg/kg** **WS05 (1.50-1.70m) 1.6mg/kg** **WS06 (0.40-0.60m) 0.28mg/kg** **BH02A (0.20-0.40m) 1.2mg/kg** **BH02A (0.80-1.00m) 0.33mg/kg**	0.24*
Fluoranthene	Range: <0.05 – 50mg/kg	280*
Fluorene	Range: <0.05 – 1.0mg/kg	170*
Indeno(123-cd)pyrene	Range: <0.05 – 30mg/kg **WS01 (0.20-0.40m) 30mg/kg**	27*
Naphthalene	Range: <0.05 – 1.0mg/kg	2.3*
Phenanthrene	Range: <0.05 – 12mg/kg	95*
Pyrene	Range: <0.05 – 49mg/kg	620*

*S4UL (2015) for residential with plant uptake end use (1% SOM). Figure in square brackets [ ] refer to where GAC presented exceeds the solubility saturation limit [ ]^{sol}
†C4SL (2013) for residential with plant uptake end use (6% SOM)
Exceedances marked in **bold.**

Table 5.2: GAC for Polyaromatic Hydrocarbons

When compared with the published C4SLs and LQM/CIEH S4ULs screening values, the polyaromatic hydrocarbon (PAH) results were above the screening values for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Dibenz(a,h)anthracene, and Indeno(a)pyrene. Of these, Benzo(a)pyrene and Dibenz(a,h)anthracene appear to be particularly widespread. The highest exceedances were from borehole WS01 which had the highest concentrations of each individual PAH. The origin of the contamination is unclear but based its widespread nature, it is possible that it comprises contamination that was part of fill materials imported to the site to raise ground levels when it was first developed. Based on the concentrations observed, it is considered that the exceedances of PAHs are likely to present a significant possibility of significant harm to human health. The results are shown in Table 5.2 above.

Petroleum Hydrocarbons and associated contaminants

Contaminant	Concentration ranges and exceedances	GACs(mg/kg)
Benzene	All less than 0.001mg/kg	0.087*, 0.87†
Toluene	All less than 0.001mg/kg	130
Ethylbenzene	All less than 0.001mg/kg	47
p & m-xylene	All less than 0.001mg/kg	56
o-xylene	All less than 0.001mg/kg	60
MTBE (Methyl Tertiary Butyl Ether)	All less than 0.001mg/kg	49
TPH-CWG – Aliphatic >EC5 – EC6	All less than 0.001mg/kg	42
TPH-CWG – Aliphatic >EC6 – EC8	All less than 0.001mg/kg	100
TPH-CWG – Aliphatic >EC8 – EC10	All less than 0.001mg/kg	27
TPH-CWG – Aliphatic >EC10 – EC12	Range: <1.0 – 1.8mg/kg	130 [48]
TPH-CWG – Aliphatic >EC12 – EC16	Range: <2.0 – 20mg/kg	1,100 [24]
TPH-CWG – Aliphatic >EC16 – EC35	Range: <8.0 – 64mg/kg **WS01 (0.20-0.40m) 64mg/kg** **WS06 (1.00-1.20m) 12mg/kg**	65,000 [8.48]
TPH-CWG – Aromatic >EC5 – EC7	All less than 0.001mg/kg	70
TPH-CWG – Aromatic >EC7 – EC8	All less than 0.001mg/kg	130
TPH-CWG – Aromatic >EC8 – EC10	All less than 0.001mg/kg	34
TPH-CWG – Aromatic >EC10 – EC12	Range: <1.0 – 9.3mg/kg	74
TPH-CWG – Aromatic >EC12 – EC16	Range: <2.0 – 40mg/kg	140
TPH-CWG – Aromatic >EC16 – EC21	Range: <10 – 360mg/kg **WS01 (0.20-0.40m) 360mg/kg**	260
TPH-CWG – Aromatic >EC21 – EC35	Range: <10 – 1900mg/kg **WS01 (0.20-0.40m) 1900mg/kg**	1,100

*S4UL (2015) for residential with plant uptake end use (1% SOM). Figure in square brackets [ ] refer to where GAC presented exceeds the solubility saturation limit [ ]^{sol}
†C4SL (2013) for residential with plant uptake end use (6% SOM).
Exceedances marked in **bold.**

Table 5.3: GAC for Total Petroleum Hydrocarbons

The concentrations of Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) were compared with the GAC screening values for a residential end use. The results for BTEX were below their respective generic assessment criteria with respect to soil concentrations.

The concentrations of Total Petroleum Hydrocarbons (TPH) aromatic C16-21 and C21-35 carbon bands exceeded their respective GAC screening values at borehole WS01. The carbon bands and location of the site suggest this could originate from oil products from vehicles operating in the open air yard. Two exceedances of the aliphatic C16-35 carbon band were also noted but these only related to the solubility saturation limit. It is worth noting that the TPH results for WS06 were generally elevated and that this borehole was positioned adjacent to an existing oil tank; the possibility of higher TPH concentrations in that area cannot be discounted. Based on the concentrations observed, it is considered that the exceedances of TPHs are likely to present a significant possibility of significant harm to human health. The results are shown in Table 5.3 above.

VOCs and SVOCs

Analysis completed for a suite of 56 Volatile Organic Compounds (VOC's) recorded no exceedances of the laboratory limit of detection (LOD) within the analysed samples.

The results of the Semi-Volatile Organic Compound (SVOC) analysis suite, covering 55 individual determinands, recorded exceedances of the laboratory limits of detection (LOD) for several determinands. Excluding PAHs (already addressed above), the only exceedances of the LOD were for the following individual determinands (figures in brackets represent the highest reported concentration):

- Anthraquinone (2.2mg/kg);
- Carbozole (0.9mg/kg);
- Dibenzofuran (0.6mg/kg).

Detectable concentrations of the above determinands were reported in borehole WS01 (0.20-0.40m).

No health effect or human health assessment criteria information was available relating to any of the detected SVOCs. The recorded concentrations were three to seven times higher than their respective laboratory LOD but the maximum concentrations were still considered to be low and unlikely to be significant within the proposed residential land-use.

Based upon the above it is considered that these soils are unlikely to present a significant possibility of significant harm to human health relating to VOC's or SVOC's.

Asbestos Screen

Asbestos screening was undertaken on sixteen shallow soil samples.

Four samples tested positive for loose asbestos fibres and fibrous debris of chrysotile and crocidolite with follow-up quantification testing recorded concentrations of less than 0.10%.

A fifth sample was taken of suspected Asbestos Containing Material (ACM) in BH04A. The material was determined to be cement bound chrysotile with a concentration of 0.022%.

The sample containing loose asbestos fibres and fibrous debris was from Made Ground containing brick and masonry. These types of material can often carry asbestos fragments from whatever building they originated came from but could also originate from historical demolition of buildings on the site. The further presence of ACMs in the Made Ground should not be discounted.

5.7.5 Comparison of Results – Water

The Water Quality Standards (WQS) employed as Tier 1 Water Environment screening criteria are given in Table 5.4 below. The more conservative values of the UK Drinking Water Standards (UK DWS) and Environmental Quality Standards (EA EQS) (Freshwater) have been

selected as the primary Tier 1 Screening Values.

Groundwater samples were obtained from the monitoring installations in boreholes BH01, BH02, BH03, WS02 and WS06 over two separate phases of monitoring (Phase 2 – 9th May 2017, and Phase 5 – 2nd June 2017). The results are summarised in Table 5.4 below and presented in Appendix C.

Contaminant	Concentration ranges exceeding LOD	EA EQS (µg/l)	UK DWS (µg/l)	WFD Groundwater freshwater (µg/l)
Arsenic	Range: 0.16 – 0.60µg/l	50	10	7.5◊
Boron	Range: 170 – 330µg/l	2,000	1,000	750◊
Cadmium	Range: 0.04 – **0.13**µg/l	5	5	0.08
Calcium	Range: 120 – 170µg/l	-	250,000	-
Chromium	Range: <1.0 – 2.1µg/l	250*	50	4.7(III) / 3.4(VI) / 37.5◊
Copper	Range: 0.9 – **4.3**µg/l	28**	2,000	1 (bioavailable)
Cyanide	Range: <10 – **11**µg/l	-	50	1
Lead	Range: <0.2 – 1.6µg/l	250*	10	7.5◊
Magnesium	Range: 5.4 – 7.7µg/l	-	50,000	-
Mercury	Range: <0.05 – **1.07**µg/l	1	1	0.75◊
Nickel	Range: 6.5 – **29**µg/l	200**	50	15◊
Selenium	Range: <0.6 – 1.4µg/l	-	10	7.5◊
Vanadium	Range: <0.2 – 0.6µg/l	60	-	-
Zinc	Range: 2.4 – **18**µg/l	500*	5,000	10.9 (bioavailable)
Sulphate	Range: 42,800 – 118,000µg/l	400,000	250,000	188,000
Phenols	All less than 10µg/l	300	0.5	7.7
Benzene	All less than 1.0µg/l	30	1	0.75
Toluene	All less than 1.0µg/l	-	-	74
Xylene	All less than 1.0µg/l	-	-	15.5
PAH***	All less than 0.01µg/l	-	0.1	0.00017
TPH	All less than 10µg/l	-	10▲	-
Cis-1,2-dichloroethene	Range: <1.0 – 5.7µg/l	WHO value of 50µg/l used		
1,1-Dichloroethane	Range: <1.0 – 1.5µg/l	WHO value of 30µg/l used		

Contaminant	Concentration ranges exceeding LOD	EA EQS (µg/l)	UK DWS (µg/l)	WFD Groundwater freshwater (µg/l)
Trichloroethene	Range: <1.0 – 9.4µg/l	10	10	-
Chlorobenzene	Range: <1.0 – **11.6**µg/l	No screening value available		
1,3-Dichlorobenzene	Range: <1.0 – 3.4µg/l	WHO value of 1000µg/l for 1,2-Dichlorobenzene used		

* For freshwater, suitable for coarse fish; hardness band CaCO3 >250mg/l
** For freshwater, suitable for all fish life; hardness band CaCO3 >250mg/l
*** UK DWS for total PAHs relates to the sum of the individual concentrations of benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3cd)pyrene and benzo(b)fluoranthene
▲ Drinking Water Guidance. 1989 Water Quality Regulations (superseded).
◊ Groundwater Drinking Water Protected Areas.
Exceedances marked in **bold.**

Table 5.4: Inorganic and Organic Tier 1 Water Environment Screening Criteria

Exceedances of the Tier 1 groundwater criteria for copper and zinc were recorded but only when compared against the value for bioavailability. The exceedances are not considered significant when compared against the EA EQS or UK DWS criteria.

A single exceedance of the Tier 1 groundwater criteria for Mercury was recorded in the Phase 2 sample from WS02. The exceedance is considered slight and unlikely to present a significant risk.

BH01, BH03 and WS06 recorded exceedances of Nickel when compared against the WFD Groundwater freshwater criteria. Most of the exceedances were relatively minor, although the Phase 5 sample for BH01 was twice the Tier 1 screening value.

A slight exceedance of cyanide was reported in the Phase 2 sample from BH03, and the Phase 5 sample from BH01. While the exceedance is very minor, the presence of cyanide could be an indicator of further contamination.

Elevated concentrations of five VOCs (Cis-1,2-dichloroethene, 1,1-Dichloroethane, Trichloroethene, Chlorobenzene and 1,3-Dichlorobenzene) were also reported. No exceedances of the Tier 1 screening criteria were apparent for Cis-1,2-dichloroethene, 1,1-

Dichloroethane and Trichloroethene, although the result for Trichloroethene was only 0.6µg/l below. Specific comparison values were not available for Chlorobenzene and 1,3-Dichlorobenzene however based on the relative low concentrations and comparison with similar 'parent' compounds where available, it is unlikely that these would pose a risk. While the concentrations of VOCs are relatively low, their presence within the deeper groundwater is a concern. These VOCs were not detected within the soil testing undertaken and the groundwater results therefore point to a possible off-site source of contamination with the potential for higher concentrations of VOCs in the surrounding area. This could present a risk to potable water abstractions that have been licensed on and near to the site with associated risks to human health.

5.7.6 Comparison of Results – Gas

Ground gas monitoring was undertaken on six occasions (phases) from standpipe installations in boreholes BH01, BH02, BH03, WS01, WS02, WS03, WS04 and WS06 between 5th May and 9th June 2017 in periods of varying atmospheric conditions. The results are summarised in Table 5.5 below.

Borehole	Response zone	No. of visits	Visual / Olfactory Evidence of Contamination	Carbon Dioxide (%)	Methane (%)	Oxygen (%)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	VOCs by PID (ppm)	Flow Rate (l/hr)	Range of Atmospheric Pressure (Mb)	Groundwater depth (m bgl)
BH01	7.90-15.00m bgl (Chalk)	6	None	0.0 – 0.3	0.0	18.3 – 20.9	0.0	0.0	0.0 – 2.5	0.0	1005 – 1021	2.06 – 2.22
BH02	8.30-15.00m bgl (Chalk)	6	None	0.0 – 0.3	0.0 – 0.1	19.8 – 20.9	0.0	0.0	0.0 – 9.9	0.0	1005 – 1021	2.38 – 2.52
BH03	7.80-15.00m bgl (Chalk)	6	None	0.0 – 0.6	0.0	19.8 – 20.9	0.0	0.0	0.0 – 5.3	0.0	1003 – 1020	2.22 – 2.35
WS01	1.00-1.50m bgl (Made Ground)	6	None	1.6 – 14.1	0.0	3.9 – 18.1	0.0	0.0	0.0 – 9.9	0.0	1009 – 1020	Dry
WS02	2.60-5.45m bgl (KPGF)	3	None	0.0 – 0.1	0.0	20.8 – 20.9	0.0	0.0	0.0 – 0.5	0.0	1010 – 1021	2.10 – 2.27
WS03	2.80-5.45m bgl (KPGF)	6	None	0.0 – 1.3	0.0	19.2 – 20.9	0.0	0.0	0.0 – 9.6	0.0	1005 – 1023	2.57 – 2.72
WS04	1.00-1.50m bgl (Made Ground)	6	None	0.0 – 0.9	0.0 – 0.1	19.2 – 20.8	0.0	0.0	0.0 – 14.7	-0.3 – 0.1	1004 – 1020	Dry
WS06	2.40-5.30m bgl (KPGF)	6	None	0.0 – 0.1	0.0	20.0 – 20.9	0.0	0.0 – 4.0	0.0 – 17.5	0.0	1009 – 1022	2.09 – 2.30

Table 5.5: Summary of Ground Gas Monitoring

Key:

KPGF = Kempton Park Gravel Formation

Carbon dioxide was recorded in all borehole installations at low concentrations of up to 1.3%, except in WS01 where concentrations of up to 14.1% were recorded.

Methane concentrations were negligible, rarely reaching 0.1%.

Hydrogen sulphide concentrations were negligible while carbon monoxide reached a peak concentration of 4ppm (WS06 – Phase 5).

Oxygen levels were highly variable throughout the monitoring phases, ranging from 3.9% to 20.9%.

On-site screening was also carried out using a MiniRAE 2000/3000 Portable Photo-Ionisation Detector (PID) to check soil samples during fieldwork, and as part of ground gas measurements from monitoring wells during the post-fieldwork period. The measurements revealed VOC concentrations of up to 17.5ppm (WS06).

Flow readings were generally low, ranging between minus 0.3 and plus 0.1l/hr.

Further comment is made on the gas monitoring results in 5.7.7 below.

5.7.7 Qualitative Risk Assessment

To determine the potential for contamination at the site, it is necessary to establish whether an environmental risk is present. For a potential risk to occur it is necessary to understand whether contaminants are present; what (if any) are the target receptors within and surrounding the site, and whether pathways exist, or could exist, between the contaminant and the receptor;

Source (e.g. primary sources – leaking above ground storage tanks; secondary sources – free phase product within the ground or soil/groundwater migration).

Receptor (e.g. on-site contractor, off-site residential property, groundwater, surface water and fauna and flora).

Target mechanism between the source and receptor (e.g. groundwater migration), *i.e. Pathway.*

The main risks identified are those to human health, the proposed buildings/structures and controlled waters.

Soils

The results of the soil testing indicate that there are site wide concentrations of lead and some PAHs that are significantly above their respective GAC values. Locally, elevated concentrations of mercury, additional PAHs and the heavier aromatic TPHs were also recorded.

Borehole WS01 appears to represent an area where there are significant exceedances of contamination, frequently reporting the highest levels of the above determinands when compared with other boreholes. However, the widespread presence of lead and PAHs is considered sufficient to determine that there is a site wide source of contamination and therefore a significant possibility of harm to human health.

Based on the findings, it will be necessary to prepare a Remediation Strategy for the site. This may include the removal of soils or the installation of a cover layer, but regardless should involve the input of the developer to better understand the development proposals including proposed site levels. The Remediation Strategy would require approval by the Local Authority and would need to be followed up by a Verification Report on completion of the works.

Risks to concrete services due to sulphate attack by natural and reworked soils have already been assessed (refer to Section 5.6).

Controlled waters

The results of the Phase 2 and Phase 5 groundwater samples indicate some exceedances for cyanide, mercury and nickel, with further exceedances relating to bioaccessibility criteria for copper and zinc.

Several VOCs were also reported at concentrations above their respective detection limits, although these did not exceed the Tier 1 screening criteria (where available).

The presence of VOCs, along with the likes of cyanide and mercury, in the deeper groundwater is a concern based on the presence of licensed potable water abstractions on or near to the site. The potential exists for higher concentrations of these determinands to develop, likely resulting from seasonal fluctuations in groundwater level. This presents a risk to controlled waters (the River Thames and Principal Aquifer in the chalk) and to human health (via potable water abstraction).

It is recommended that a further three phases of groundwater monitoring and testing are undertaken at bi-monthly intervals. This will allow for data to be obtained through into the latter half of the year, in particular the winter months when groundwater levels would normally be rising. This should be followed by a detailed quantitative risk assessment (DQRA), including liaising with the local Environment Agency office, to try and confirm whether the source of contamination is from an offsite source, to determine the level of risk to receptors and whether further action is required (i.e. remediation measures).

Ground gases

Ground gas monitoring has indicated the presence of carbon dioxide at up to 14.1% which could present a risk. The high carbon dioxide concentrations occurred in borehole WS01 only and may represent a localised source of ground gas.

In order to characterise the gas regime of the site, reference has been made to current guidance in the British Standards document BS 8485:2015. The semi-quantitative methodology presented in this document is a risk based assessment process for carbon dioxide and methane.

The data obtained during monitoring for gas concentrations and flow rates is utilised to calculate a 'hazardous gas flow rate' (Q_{HG}) based upon the data acquired for each monitoring point for each monitoring event. It is recommended that the worst-case condition should be calculated utilising the maximum recorded flow in any standpipe and the maximum gas concentration in any standpipe discounting any peaks/irregularities that could be unrepresentative.

Assessment of the derived Q_{HG} is then undertaken to determine a 'characteristic gas situation' for the site, which is then utilised in establishing the likely level of gas protection measures required dependent upon the nature of the proposed development (i.e. Type A – private, Type B – private or commercial/public, Type C – commercial/public, or Type D – commercial/industrial). It is assumed that the proposed development would be categorised as a Type A private use.

The derived Q_{HG} of 0.04l/hr for carbon dioxide implies Characteristic Gas Situation 1 would be applicable for the site. However, the concentrations of carbon dioxide exceed 5% by a significant margin and therefore warrants an increase to Characteristic Gas Situation 2 or 'Low Hazard Potential'. On this basis, it is likely that gas protection measures will be

required for the proposed site development. Based on a private use, an approved gas resistant membrane should be provided in conjunction with one of the following:

- reinforced cast in situ suspended floor slab with minimal penetrations;
- passive sub floor dispersal layer;
- active dispersal layer; or
- active positive pressurisation.

The specific protection measures will need to be approved by the local Building Control body before installation and should be included as part of the Remediation Strategy for the site.

Asbestos

Screening for asbestos has been undertaken and confirmed the presence of loose asbestos fibres and fibrous debris of chrysotile and crocidolite. A further sample of suspected Asbestos Containing Materials (ACMs) confirmed chrysotile in a cement bound form. The presence of further ACMs cannot be ruled out and all site workers should be vigilant for such materials occurring within any Made Ground on the site. As such, proposed works should be assessed in respect of the Control of Asbestos Regulations (2012). The presence of asbestos fibres within soils also presents a risk to end-users of the site.

5.8 Waste Classification Testing

Four soil samples were tested for a standard WAC (Inert) test suite. The results suggest that the shallow soils do not exceed the Inert Waste Landfill Limits in three of the four samples. The sample from WS05 indicated elevated concentrations of antimony, sulphates, and total dissolved solids (TDS) were present that exceeded the Inert Waste Landfill Limits but were within the Stable Nonreactive Hazardous Landfill Limits. The results are presented in

Appendix C. WAC analysis, however, is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

It is recommended that a suitably competent and licensed waste broker be contacted for advice/guidance on how to proceed and to provide a suitable classification of any waste material that may have to be removed from site. The waste broker will need to be provided with the attached chemical analyses together with the Phase 1 Geoenvironmental Desk Study (GEL report reference 32933/01, 2017) to allow them to properly assess and classify the waste material. Such waste classification must be carried out in accordance with the Environment Agency publication "Guidance on the Assessment and Classification of Waste – Technical Guidance WM3" (2015) in order to meet statutory requirements.

6. CONCLUSIONS

The main sources of contamination appear to be related to the Made Ground which is present across the majority of the site. It is believed that this largely comprises an imported fill that was used to raise the site level prior to its original development as a printing works, but has also been affected by site use over the past century.

The most significant soil based contaminants appear to be lead and PAHs, with mercury and TPHs also occurring locally at significant concentrations. Asbestos Containing Material (ACM) was also proved to be present within the soils as loose fibres, asbestos debris and cement bound asbestos.

In groundwater samples, low concentrations of cyanide, mercury, and some VOCs were recorded. Whilst relatively low, their presence in the deeper groundwater could point to an underlying contamination issue and the possibility of higher concentrations developing through lateral or vertical migration cannot be discounted.

Ground gas concentrations across the site generally appear low, with the exception of borehole WS01 which recorded carbon dioxide of up to 14.1%. This is significantly above the 5% threshold that is normally considered to present a risk from carbon dioxide.

Based on the information known to date, the site is considered to present a **HIGH** risk to the human health of end-users when compared to the published GAC screening values for a proposed residential end use. This assumes that most properties will have gardens or access to soft cover landscaping with the potential to come into contact with soil based contamination through direct contact, inhalation and ingestion. This risk extends to construction workers. Appropriate advice from suitably qualified experts should be taken on how this may affect construction working methods which will need to be carried out by suitably trained personnel.

The presence of cyanide, mercury and VOCs in the groundwater samples is considered to pose a **MEDIUM** risk to controlled waters, specifically the underlying Principal Aquifers and to some extent the nearby River Thames. The risk is based on the nature of the contaminants identified although the concentrations detected did not exceed the Tier 1 screening criteria. However, there is a concern that this could indicate an underlying contamination issue with the possibility of higher concentrations of contaminants able to develop over time. The risk level therefore reflects this uncertainty. It is also recognised that there are licensed potable water abstractions on or near the site that could be affected and this presents a potential additional risk to human health.

Ground gases are considered to pose a **MEDIUM** risk to the human health of end-users, construction workers in confined spaces and the proposed building itself. This is based on the presence of carbon dioxide above 5%. It is recognised that the ground gas assessment for carbon dioxide indicates a Low Hazard Potential and the **MEDIUM** risk rating is mainly due to the high concentration of carbon dioxide in WS01, possibly indicating a localised source of ground gas generation.

The ground conditions observed are considered to be unsuitable for shallow foundation solutions. Piled foundations would be suitable and could include driven or bored pile methods. A nominal 450mm diameter, 5m long pile – toed to a minimum of 2m into the Kempton Park Gravel Formation – should provide a design bearing resistance of approximately 125kN. The principal risks to piling operations are anticipated to be the potential for buried hardstanding and foundations associated with former site uses, or issues with shallow groundwater in the gravels or local flint obstructions in the gravels.

The risk of sulphate attack on buildings is considered to be relatively low, with a determined Design Sulfate Class of DS-2 and a proposed ACEC site classification of AC-2.

7. RECOMMENDATIONS

It is recommended that further groundwater monitoring and testing is undertaken on at least 3 occasions at bi-monthly intervals followed by a detailed quantitative risk assessment (DQRA) of the groundwater. This would include discussion with the local Environment Agency office to determine the level of risk and agree any mitigation measures where required.

A Remediation Strategy for the site is recommended to determine appropriate mitigation measures for the site with specific regard to the influence of contaminated soils and ground gas on human health. The results of the DQRA may also feed into the Remediation Strategy should it be determined that groundwater mitigation measures are required. The Remediation Strategy should be prepared with input from the Local Authority Contaminated Land Officer to confirm that it meets both local and statutory requirements. Following implementation of the Remediation Strategy, a Verification Report would need to be completed to confirm that the proposed works have been undertaken as outlined.

It is recommended that a suitable and approved gas protection system is incorporated into the building designs to help mitigate the risk posed by elevated carbon dioxide concentrations in WS01. The protection system is likely to require both a gas membrane and either a ventilation system or reinforced cast in situ suspended slab.

Piled foundations are recommended on the basis of the weak soils of the Made Ground and Langley Silt Member. The use of bored pile methods, including CFA, is considered appropriate and driven piles may be suitable. It is recommended that specialist piling contractors should be consulted to advise further on the most suitable pile type, installation method and to provide working loads on their chosen system.

A Design Sulfate Class of DS-2 has been determined for the site, with a proposed ACEC site classification of AC-2. This should be used to inform the concrete requirements of the site with regards to soil aggressivity.

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Key.

WS03,05,07,08 and BH05 all measured from identifiable features (locations approximate)

Dynamic Continuous Sampler Borehole.

Rotary Core Borehole.

Notes:

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Monitoring installations highlighted red.

geotechnical

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Client: THAMES PROPERTIES LTD

Project: COX & WYMAN BUILDING
CARDIFF ROAD
READING

Title: EXPLORATORY HOLE LOCATION PLAN

Drawn By:	Checked By:	Paper Size:
GR	MM	A3

Scale:	Date:
1:500	JULY 2017

Contract:	Figure:
32933	1

APPENDIX A

FIELDWORK DATA

Geotechnical Engineering Limited

KEY TO EXPLORATORY HOLE LOGS

Sample type

D	Small disturbed	U	Undisturbed	X/L	Dynamic	D*/ES	Environmental - soil	Cs	Core subsample (prepared)
B	Bulk disturbed	UT	Undisturbed thin wall	C	Core	EW	Environmental - water	Xs/Ls	Dynamic subsample (prepared)
LB	Large bulk disturbed	P	Piston	W	Water				

Test type

S SPT - Split spoon sampler followed by uncorrected SPT 'N' Value

C SPT - Solid cone followed by uncorrected SPT 'N' Value

(*250 - Where full test drive not completed, linearly extrapolated 'N' value reported, ** - Denotes no effective penetration)

H Hand vane - direct reading in kPa - not corrected for BS1377 (1990). Re* denotes refusal

M Mackintosh probe - number of blows to achieve 100mm penetration

PP Pocket penetrometer - direct reading in kg/sq.cm

Vo Headspace vapour reading, uncorrected peak values in ppm, using a PID (calibrated with Isobutylene, using a 10.6eV bulb)

Sample/core range/I_f

Dynamic sample

Undisturbed sample - open drive including thin wall. Symbol length reflects recovery

x x = Total Core Recovery (TCR) as percentage of core run

y y = Solid Core Recovery (SCR) as percentage of core run. Assessment of core is based on full diameter.

z z = Rock Quality Designation (RQD). The amount of solid core greater than 100mm expressed as percentage of core run.

Where SPT has been carried out at beginning of core run, disturbed section of core excluded from SCR and RQD assessment.

I_f - fracture spacing - the modal fracture spacing (mm) over the indicated length of core. Where spacing varies significantly, the minimum, mode and maximum values are given. NI = non-intact core NA = not applicable

Instrumentation

Porous tip | Perforated standpipe | Granular response zone | Bentonite seal | Cement/ bentonite grout | Soil Backfill | Concrete

Stratum boundaries

Estimated boundary

Grading boundary

Logging

The logging of soils and rocks has been carried out in general accordance with BS 5930:2015.

Chalk is logged in general accordance with Lord et al (2002) CIRIA C574. Where possible, dynamic samples in chalk have been logged in accordance with CIRIA C574; descriptions and gradings (if presented) should be treated with caution given the potential for sample disturbance.

For rocks the term fracture has been used to identify a mechanical break within the core. Where possible incipient and drilling induced fractures have been excluded from the assessment of fracture state. Where doubt exists, a note has been made in the descriptions. All fractures are considered to be continuous unless otherwise reported.

Made Ground is readily identifiable when, within the material make up, man made constituents are evident. Where Made Ground appears to be reworked natural material the differentiation between in situ natural deposits and Made Ground is much more difficult to ascertain. The interpretation of Made Ground within the logs should therefore be treated with caution.

The descriptors "topsoil" and "tarmacadam" are used as generic terms and do not imply conformation to any particular standard or composition.

Rootlets are defined as being less than 2mm in diameter, roots are defined as in excess of 2mm diameter.

General Comments

The process of drilling and sampling will inevitably lead to disturbance, mixing or loss of material in some soil and rocks.

Indicated water levels are those recorded during the process of drilling or excavating exploratory holes and may not represent standing water levels.

All depths are measured along the axis of the borehole and are related to ground level at the point of entry. All inclinations are measured normal to the axis of the core.

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BOREHOLE LOG

BH01

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 3

Start Date 3 May 2017 — Easting 470984.0 — Scale 1 : 50

End Date 4 May 2017 — Northing 174066.0 — Ground level 38.50mOD — Depth 20.46 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
03/05/17 0700hrs	1B	0.10	0.30						MADE GROUND comprising black TARMACADAM.	0.10	38.40	
	1ES	0.10	0.30							0.30	38.20	
	2B	0.50	0.70						Brown and reddish brown slightly sandy silty angular to rounded fine to coarse brick and flint GRAVEL with a low subangular brick cobble content. (MADE GROUND)			
	3D	0.50	0.70									
	2ES	0.50	0.70						0.10 - 0.20m: High subangular brick cobble content.	0.80	37.70	
	4B	1.00	1.20									
	3ES	1.00	1.20						Firm brown mottled orangish brown sandy gravelly CLAY. Gravel is angular and subangular fine to coarse chalk, brick, concrete and charcoal. (MADE GROUND)			
	5D	1.20	1.65	Nil	S 4					1.20	37.30	
	6L	1.20	2.20							1.40	37.10	
	7D	1.20	1.40									
	4ES	1.20	1.40						Light brown clayey sandy angular to subrounded fine to coarse nodular flint, brick, tile and chalk GRAVEL. (MADE GROUND)			
	8D	1.70	1.90									
	5ES	1.70	1.90									
	9D	2.20	2.65	2.20	S 4				Soft brown slightly sandy (ashy) slightly gravelly silty CLAY. Gravel is subangular fine and medium slag, charcoal, chalk and brick. (MADE GROUND)			
	10L	2.20	3.20									
	6ES	2.40	2.60									
	11D	2.40	2.60						Soft orangish brown slightly sandy silty CLAY.	2.70	35.80	
									2.00 - 2.45m: Frequent black spots (up to 5mm). 2.00 - 2.70m: Orangish brown mottled light brown. 2.60 - 2.70m: Sandy.	2.90	35.60	
	7ES	3.00	3.20									
	12D	3.20	3.65	3.20	S 23				Firm light brown sandy gravelly CLAY. Gravel is subangular to rounded fine to coarse flint.			
	13L	3.20	4.20									
									Medium dense becoming dense light brown sandy subangular to rounded fine to coarse flint GRAVEL. 3.45m: Subangular flint cobble.			
	14D	4.20	4.65	4.20	S 46							
	15L	4.20	5.20									
										4.70	33.80	
									Medium dense light brown very sandy subangular to rounded fine to coarse flint GRAVEL.			
	16D	5.20	5.65	5.20	S 27							
	17L	5.20	6.70									
									6.15 - 6.25m: Slightly silty gravelly fine sand. 6.25 - 7.70m: Slightly silty.			
	18D	6.70	7.15	6.70	S 27							
	19L	6.70	8.20									
										7.70	30.80	
									Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (128mm) 1.20-2.20m and (113mm) 2.20-12.70m. Waterflush rotary core drilled (116mm) 12.70-20.20m.

CASING: 140mm diam to 12.70m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 15.00m. A granular response zone was installed 20.46-7.90m, bentonite seal 7.90-0.60m, gravel drainage 0.60-0.50m, concrete and stopcock cover 0.50-0.00m.

REMARKS: Dynamic sampling carried out to recover dropped core. 15.70-17.20m recovered 1.50m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

CONTRACT	CHECKED
32933	CT

Geotechnical Engineering Ltd. Tel. 01452 527743 32933 MASTER.GPJ TRIALJH.GPJ GEOTECH2.GLB 25/07/2017 16:51:02 SR CT

Geotechnical Engineering Limited

BOREHOLE LOG

BH01

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 2 of 3

Start Date 3 May 2017 — Easting 470984.0 — Scale 1 : 50

End Date 4 May 2017 — Northing 174066.0 — Ground level 38.50mOD — Depth 20.46 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	20D 21L	8.20 - 8.65 8.20 - 9.70	8.20	S 6				Structureless CHALK composed of slightly sandy silty subangular fine to coarse GRAVEL with rare rounded fine to coarse nodular rinded flint gravel. Clasts are very weak low to medium density white with rare brown and black specks. Matrix is white and creamish white. (probably CIRIA Grade Dc).			
	22D 23L	9.70 - 10.15 9.70 - 11.20	9.70	S 5				10.50 - 10.55m: Stained orange.	10.80	27.70	
	24D 25L	11.20 - 11.65 11.20 - 12.70	11.20	S 5				Structureless CHALK composed of slightly sandy silty angular and subangular fine to coarse GRAVEL with a low subangular chalk and rounded nodular flint cobble content. Clasts are extremely weak and very weak medium density white, cream and light orange rarely with black specks. Matrix is cream and white. Rare rounded medium and coarse flint gravel. (probably CIRIA Grade Dc).			
	26D 27C	12.70 - 13.15 12.70 - 14.20	12.70	S 10	100 0 0	NA			13.25	25.25	
						NA		Structureless CHALK composed of slightly sandy slightly silty angular and subangular fine to coarse GRAVEL with rare subrounded coarse flint gravel. Clasts are very weak medium density white. Matrix is white with rare orange staining. (CIRIA Grade Dc).	13.80	24.70	
03/05/17 1700hrs 4.00m	28D	14.20 - 14.65	12.70	S 24		NI NI 90					
04/05/17 0700hrs 2.60m	29C	14.20 - 15.70			100 5 0			Very weak medium density white rarely stained orange with frequent grey specks CHALK. Fractures are subhorizontal to 30°, subvertical and randomly orientated extremely closely and very closely rarely closely spaced undulating rough. Locally highly fractured. Rare subangular and subrounded medium and coarse flint gravel. (CIRIA Grade A5/A4).	15.00	23.50	
						NI 20 140					
	30D 31C	15.70 - 16.08 15.70 - 17.20	12.70	S*66	100 21 21			Very weak low and medium density white with rare black specks rarely stained light orangish brown CHALK. Fractures are 30° to 40°, 80° to subvertical and randomly orientated extremely closely to closely spaced undulating rough. (CIRIA Grade A5/A4). 15.05 - 15.25m: Non intact. Recovered as slightly silty angular fine and medium gravel. 15.40 - 15.60m: Non intact. Recovered as slightly silty angular fine and medium gravel. 15.70 - 15.35m: Recovered as subrounded fine and medium mainly coarse flint and chalk gravel. 16.30 - 16.75m: Fractures are subhorizontal to 20° and 70° to subvertical extremely closely and closely spaced undulating rough. 17.20 - 17.60m: Recovered as subrounded fine and medium mainly coarse flint and chalk gravel. 17.45 - 17.65m: Frequent orange staining.			
	32D 33C	17.20 - 17.64 17.20 - 18.70	12.70	S*56	100 10 10						
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH01

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 3 of 3

Start Date 3 May 2017 — Easting 470984.0 — Scale 1 : 50

End Date 4 May 2017 — Northing 174066.0 — Ground level 38.50mOD — Depth 20.46 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	34D 35C	18.70 18.70	19.07 20.20	12.70	S*70	100 14 9						
							NI 45 160		Very weak low and medium density white with rare black specks rarely stained light orangish brown CHALK. Fractures are 30° to 40°, 80° to subvertical and randomly orientated extremely closely to closely spaced undulating rough. (CIRIA Grade A5/A4). 19.30 - 20.54m: Fractures are 50° to subvertical and randomly orientated rarely subhorizontal very closely and closely spaced undulating rough rarely infilled (up to 3mm) with light grey calcite.	19.10	19.40	
04/05/17 1815hrs 3.00m	36D	20.20	20.46	12.70	S*111					20.54	17.96	
									Borehole completed at 20.46m.			
										{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH02

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 3

Start Date 27 April 2017 — Easting 471013.0 — Scale 1 : 50

End Date 2 May 2017 — Northing 174132.0 — Ground level 38.80mOD — Depth 20.20 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
27/04/17 0700hrs	C	0.00 - 0.15			100			MADE GROUND comprising grey CONCRETE.	0.15	38.65	
	1B	0.15 - 0.25						Dark grey sandy angular to subrounded fine to coarse flint GRAVEL. (MADE GROUND)	0.25	38.55	
	2B	0.30 - 0.50						Brown silty gravelly fine to coarse SAND with a medium angular and subangular flint and brick cobble content. Gravel is angular to subrounded fine to coarse flint and brick. (MADE GROUND)			
	3B	0.90 - 1.10									
	4D	1.20 - 1.65	Nil	S 1							
	5L	1.20 - 2.20						1.20 - 1.60m: Very loose. Glass bottle fragments (up to 40mm).			
	6D	1.40							1.60	37.20	
	7D	1.70						Very soft brown and orangish brown mottled dark reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular and subrounded fine and medium flint. Rare rootlets.			
	8D	1.80									
	9D	2.20 - 2.65	Nil	S 4							
	10L	2.20 - 3.20						1.60 - 1.75m: Dark grey mottled orangish brown.	2.30	36.50	
	11D	2.40						Very soft greenish grey mottled light brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine and medium flint.			
	12D	3.00						2.65 - 2.90m: Gravelly.	2.90	35.90	
	13D	3.20 - 3.65	3.20	S 32				Dense light brown sandy angular to subrounded fine and medium flint GRAVEL.			
	14L	3.20 - 4.20							3.50	35.30	
	15D	3.60						Dense light brown slightly gravelly fine to coarse SAND. Gravel is angular and subangular fine and medium flint.			
	16D	4.15							4.05	34.75	
	17D	4.20 - 4.65	4.20	S 32				Dense light brown slightly silty very sandy subangular to rounded fine and medium flint GRAVEL.			
	18L	4.20 - 5.20									
	19D	5.00									
	20D	5.20 - 5.65	5.20	S 30							
	21L	5.20 - 6.70									
	22D	6.00							5.90	32.90	
	23D	6.60						Light brown gravelly fine to coarse SAND. Gravel is subangular and subrounded fine to coarse flint.			
	24D	6.70 - 7.15	6.70	S 29					6.50	32.30	
	25L	6.70 - 8.20						Light brown sandy subangular to rounded fine and medium flint GRAVEL.	6.70	32.10	
								Medium dense light brown sandy subangular to rounded fine and medium flint GRAVEL.	7.25	31.55	
	26D	7.65						Structureless CHALK composed of white slightly gravelly sandy SILT. Gravel is subrounded and rounded fine to coarse very weak low and medium density white with rare black specks chalk, frequently angular and subangular			
								Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Waterflush rotary core drilled (300mm) 0.00-0.15m. Hand dug inspection pit 0.15-1.20m. Dynamic sampled (113mm) 1.20-12.70m. Waterflush rotary core drilled (116mm) 12.70-20.20m.

CASING: 140mm diam to 14.20m.

BACKFILL: On completion, hole backfilled with bentonite pellets 20.20-15.00m. A slotted standpipe (50mm) was installed to 15.00m, granular response zone 15.00-8.30m, bentonite seal 8.30-0.50m, concrete and stopcock cover 0.50- 0.00m.

REMARKS: Borehole completed to 20.20m on 28/04/2017. Installed on 02/05/2017.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH02

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 2 of 3

Start Date 27 April 2017 — Easting 471013.0 — Scale 1 : 50

End Date 2 May 2017 — Northing 174132.0 — Ground level 38.80mOD — Depth 20.20 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	27D 28D 29L	8.10 8.20 - 8.65 8.20 - 9.70	8.20	S 8		NA		medium and coarse flint. (probably CIRIA Grade Dm). 7.45 - 8.20m: No recovery. 8.20 - 9.70m: Limited recovery. 9.20 - 9.40m: Angular and subangular flint cobbles. 9.65 - 9.70m: Angular to subrounded coarse flint gravel.			
	30D 31D 32L	9.50 9.70 - 10.15 9.70 - 11.20	9.70	S 14					10.40	28.40	
27/04/17 1540hrs 3.30m	33D 34D	10.50 11.20 - 11.65	11.20	S 18		NA		Structureless CHALK composed of slightly sandy silty subangular and subrounded fine to coarse GRAVEL. Clasts are very weak and weak low and medium density white with rare black specks and orangish brown staining. Matrix is white locally mottled light yellowish brown. Rare angular to subrounded coarse gravel sized flint. (probably CIRIA Grade Dc). 11.40 - 11.50m: Angular and subangular flint cobble. 11.80m: Thick lamination of light yellowish brown staining.			
28/04/17 0700hrs 2.40m	35L 36D 37L	11.20 - 11.60 11.50 11.60 - 12.70							12.40	26.40	
	38D 39D 40C	12.50 12.70 - 13.15 12.70 - 14.20	12.70	S 22	63 4 0	NA NI		Extremely weak and very weak low density white with rare black specks CHALK. Fractures are randomly orientated extremely closely and very closely spaced undulating rough clean. (CIRIA Grade A5). 12.55 - 12.70m: Angular and subangular flint cobbles. 13.70 - 13.80m: Frequent orange staining. 14.00 - 14.05m: Frequent orange staining.			
	41D 42C	14.20 - 14.66 14.20 - 15.70	14.20	S 35	60 3 0						
	43D 44C	15.70 - 16.15 15.70 - 17.20	14.20	S 39	83 41 31			15.15 - 15.20m: Frequent orange staining. 15.30 - 15.35m: Frequent orange staining. 15.35 - 15.70m: Frequent inocerimid bivalve (up to 40mm).			
						NI 100 140		Extremely weak and very weak medium rarely low density white with rare black specks CHALK. Fractures are 50° to 70° rarely 30° very closely and closely spaced undulating rough clean. Rare grey trace fossils (up to 40mm). Rare orange staining. (CIRIA Grade A4/A3). 16.10 - 16.25m: Subvertical undulating rough clean fracture.	16.10	22.70	
	45D 46C	17.20 - 17.65 17.20 - 18.70	14.20	S 26	90 31 21						
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH02

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 3 of 3

Start Date 27 April 2017 — Easting 471013.0 — Scale 1 : 50

End Date 2 May 2017 — Northing 174132.0 — Ground level 38.80mOD — Depth 20.20 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
							60 115 200		18.00 - 18.10m: Rare finger flints (up to 50mm).	18.20	20.60	
	47D 48C	18.70 18.70	18.98 20.20	14.20	S*120	60 18 7	NI		Very weak medium rarely low density white with rare black specks CHALK. Fractures are subhorizontal closely spaced undulating rough clean. (CIRIA Grade A3). 18.40m: Frequent orangish brown staining. 18.60 - 18.65m: Conjugate 30° and 40° undulating rough clean fractures. 18.60 - 18.70m: Frequent grey marl whisps and light grey streaks. Rare bivalve fossils (up to 20mm). 18.70 - 19.50m: Drilling disturbed. 19.15m: 10mm light greyish green silty marl.	19.50	19.30	
28/04/17 1400hrs 3.40m							NI 60 100		Very weak medium rarely low density white with rare black specks CHALK. Fractures are 30° to 40° and subvertical very closely and closely spaced undulating rough clean. Rare light grey marl whisps. Frequent subrounded coarse gravel sized flint nodules. (CIRIA Grade A4). 19.95 - 20.00m: Frequent light grey marl whisps.	20.20	18.60	
02/05/17 0940hrs 2.40m		20.20	20.47	14.20	C*125				Borehole completed at 20.20m.	{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

CLIENT THAMES PROPERTIES LIMITED

BH02A

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 1

Start Date 2 May 2017

Scale 1 : 50

End Date 2 May 2017

Depth 1.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
02/05/17 1245hrs	C	0.00 - 0.15			100			MADE GROUND comprising light grey CONCRETE.	0.15		
	1ES	0.20 - 0.40						Brown mottled dark brown and orange clayey very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint and brick. (MADE GROUND)			
	2B	0.20 - 0.40									
	2ES	0.40 - 0.60									
02/05/17 1335hrs Dry	3B	0.40 - 0.60									
	3ES	0.80 - 1.00									
	4B	0.80 - 1.00							1.00		
								Borehole completed at 1.00m.	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Waterflush rotary core drilled (300mm) 0.00-0.15m. Hand dug inspection pit 0.15-1.00m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 1.00-0.15m and concrete 0.15-0.00m.

REMARKS: Located 2m adjacent to borehole BH02.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks

Groundwater not encountered.

AGS

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BOREHOLE LOG

BH03

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 3

Start Date 25 April 2017 — Easting 470880.0 — Scale 1 : 50

End Date 26 April 2017 — Northing 174154.0 — Ground level 38.75mOD — Depth 19.80 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
25/04/17 0700hrs	1B	0.20	0.40						Grass over brown silty gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, sandstone and brick fragments. (MADE GROUND)			
	1ES	0.20	0.40									
	2B	0.60	0.80							0.60	38.15	
	2ES	0.60	0.80						Brown silty gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, sandstone, clinker and brick fragments. (MADE GROUND)			
	3B	1.00	1.20							1.00	37.75	
	3ES	1.00	1.20									
	4D	1.20	1.65	Nil	S 1				Very loose dark brown slightly sandy gravelly SILT. Gravel is angular to subrounded fine and medium flint and chalk and rare brick fragments. Rare glass fragments (up to 30mm). (MADE GROUND)			
	5L	1.20	2.20							1.65	37.10	
	6D	1.50								1.75	37.00	
	4ES	1.60							Orangish brown clayey fine to coarse SAND with low subangular sandstone cobble content. Frequent glass fragments (up to 35mm). (MADE GROUND)			
	7D	1.65										
	8D	1.75										
	5ES	1.85										
	9D	2.00										
	10D	2.20	2.65	Nil	S 4				Soft dark greenish grey mottled dark grey slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine and medium flint. Rare glass fragments (up to 30mm). Frequent rootlets. (MADE GROUND)			
	11L	2.20	3.20							2.90	35.85	
	6ES	2.50							1.85 - 2.00m: Very gravelly with rare brick fragments (up to 40mm).			
	12D	3.00										
	13D	3.20	3.65	3.20	S 20							
	14L	3.20	4.20							3.45	35.30	
	15D	3.55							Medium dense light brown gravelly medium and coarse SAND. Gravel is subangular to rounded fine and medium flint.			
	16D	4.20	4.65	4.20	S 31				Medium dense orangish brown slightly silty very sandy subangular to rounded fine and medium flint GRAVEL.			
	17L	4.20	5.20						4.20m: Dense. 4.20 - 5.20m: Limited recovery (20%).			
	18D	4.70										
	19D	5.20	5.65	5.20	S 31					5.20	33.55	
	20L	5.20	6.30						Dense light brown slightly gravelly fine to coarse SAND. Gravel is subangular to rounded fine and medium flint.	5.40	33.35	
	21D	5.70							Medium dense and dense orangish brown sandy subangular to rounded fine to coarse flint and quartzite GRAVEL.			
	22D	6.30	6.75	6.30	S 27							
	23L	6.30	7.80						6.30 - 7.80m: Limited recovery.			
	24D	7.00										
	7.80	8.25		7.80	S 7					7.70	31.05	
	25L	7.80	9.30									
									Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-13.80m. Waterflush rotary core drilled (116mm) 13.80-19.80m.

CASING: 140mm diam to 13.80m.

BACKFILL: On completion, hole backfilled with bentonite pellets 19.80-15.00m. A slotted standpipe (50mm) was installed to 15.00m, granular response zone 15.00-7.80m, bentonite seal 7.80-0.50m, concrete and stopcock cover 0.50- 0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH03

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 2 of 3

Start Date 25 April 2017 — Easting 470880.0 — Scale 1 : 50

End Date 26 April 2017 — Northing 174154.0 — Ground level 38.75mOD — Depth 19.80 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	26D	8.50						Structureless CHALK composed of white slightly gravelly sandy SILT. Gravel is subrounded and rounded fine to coarse very weak low and medium density white with rare black specks chalk, frequently angular and subangular medium and coarse flint. (probably CIRIA Grade Dm). 7.70 - 8.80m: Frequent coarse sand sized flint. 7.80 - 9.30m: Limited recovery. 8.80 - 11.50m: Locally mottled orangish brown.			
	27D	9.30 - 9.75	9.30	S 13							
	28L	9.30 - 10.80									
	29D	10.00									
	30D	10.80 - 11.25	10.80	S 12							
	31L	10.80 - 12.30									
									11.50	27.25	
	32D	11.60						Structureless CHALK composed of slightly sandy silty subangular and subrounded fine to coarse GRAVEL. Clasts are very weak and weak low and medium density with rare black specks and orangish brown staining. Rare angular to subrounded coarse gravel sized flint. (probably CIRIA Grade Dc).			
	33D	12.30 - 12.75	12.30	S 27							
	34L	12.30 - 13.80									
	35D	13.00									
25/04/17 1700hrs 2.50m											
	36D	13.80 - 14.25	13.80	S 30							
26/04/17 0715hrs 2.20m	37C	13.80 - 15.30			27	NA		13.80 - 15.30m: Limited recovery, subangular flint cobble stuck in the end of the barrel.			
	38D	15.30 - 15.71	13.80	S*58					15.30	23.45	
	39C	15.30 - 16.80			77 15 8	40 60 120		Very weak medium density white with rare black specks CHALK. Fractures are subhorizontal to 20° very closely and closely spaced planar smooth clean. (CIRIA Grade A4/A3).			
	40D	15.80							15.95	22.80	
	41D	16.00				NI		Extremely weak medium density white with rare black specks CHALK. Fractures are randomly orientated extremely closely spaced planar smooth locally speckled black and infilled with a veneer of white silt. Frequent angular to subrounded medium and coarse gravel sized flint (CIRIA Grade A5).			
		16.80 - 17.07	13.80	C*130							
	42C	16.80 - 18.30			100 59 49	NI 100 160			17.00	21.75	
	43D	17.10						Very weak medium and high density white locally mottled orangish brown with rare black specks CHALK. Fractures are 10° to 30° and randomly orientated closely locally extremely and very closely spaced undulating smooth clean locally stained light grey. (CIRIA A5 to A3).			
						NI					
						65 120					
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH03

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 3 of 3

Start Date 25 April 2017 — Easting 470880.0 — Scale 1 : 50

End Date 26 April 2017 — Northing 174154.0 — Ground level 38.75mOD — Depth 19.80 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	44D	18.00					170					
		18.30 - 18.47		13.80	C*231				17.40 - 17.70m: Frequent angular and subangular coarse gravel sized flint.			
	45C	18.30 - 19.80				97 50 39			17.95 - 19.40m: Mottled light orangish brown with whisps of grey.			
							NI					
							90 145 200					
	46D	19.00										
26/04/17 1105hrs 2.80m							NI		19.40 - 19.80m: Frequent angular and subangular medium and coarse gravel sized flint.	19.80	18.95	
		19.80 - 19.94		13.80	C*429				Borehole completed at 19.80m.			
										{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

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BOREHOLE LOG

BH04

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 1

Start Date 24 April 2017 Easting 470882.0 Scale 1 : 50

End Date 24 April 2017 Northing 174070.0 Ground level 38.80mOD Depth 0.40 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
24/04/17 1350hrs	C 1B 2D	0.00 - 0.05 0.10 - 0.30 0.30						MADE GROUND comprising black TARMACADAM.	0.05	38.75	
24/04/17 1430hrs Dry								Greyish brown silty slightly sandy angular to subrounded fine to coarse concrete, brick and tarmacadam GRAVEL. (MADE GROUND) 0.30m: Steel reinforcing bar (18mm diam).	0.40	38.40	
								Borehole completed at 0.40m.	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Waterflush rotary core drilled (300mm) 0.00-0.05m. Hand dug inspection pit 0.05-0.40m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 0.40-0.05m and concrete 0.05-0.00m.

REMARKS: Inspection pit terminated due to reinforced concrete obstruction at 0.40m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
32933	CT

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BOREHOLE LOG

BH04A

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 1

Start Date 2 May 2017 — Easting 470883.0 — Scale 1 : 50

End Date 2 May 2017 — Northing 174076.0 — Ground level 38.80mOD — Depth 0.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range		instru -ment	description	depth (m)	reduced level (m)	legend
24/04/17 1430hrs	C	0.00 - 0.10						MADE GROUND comprising light grey CONCRETE.	0.10	38.70	
	1ES	0.20 - 0.40									
24/04/17 1500hrs Dry	1B	0.20 - 0.40						Dark brown and brown mottled slightly gravelly clayey SAND. Gravel is angular to subrounded fine and medium flint and brick. Frequent metal fragments (up to 4mm diam). (MADE GROUND) 0.30m: Fragment of cement board (50mm diam) identified as asbestos containing material (ACM).	0.50	38.30	
02/05/17 1435hrs Dry								Borehole completed at 0.50m.	{8.00}		
02/05/17 1445hrs Dry											

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Waterflush rotary core drilled (300mm) 0.00-0.10m. Hand dug inspection pit 0.10-0.50m.

CASING: None used.

BACKFILL: On completion, hole backfilled with arisings 0.50-0.15m and concrete 0.15-0.00m.

REMARKS: Inspection pit temporarily suspended at 0.30m on 24/04/17 due to suspected pACM, subsequently recommenced on 02/05/17 after laboratory screening and completion of dynamic risk assessment. Inspection pit terminated due to concrete obstruction at 0.50m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered.

AGS

CONTRACT	CHECKED
32933	CT

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BOREHOLE LOG

CLIENT THAMES PROPERTIES LIMITED

BH04B

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 3

Start Date 2 May 2017

Scale 1 : 50

End Date 4 May 2017

Depth 20.20 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
02/05/17 1540hrs	C	0.00 - 0.20						MADE GROUND comprising light grey CONCRETE.	0.20		
02/05/17 1635hrs Dry	1B 1ES 2ES	0.50 - 0.70 0.50 - 0.70 1.00 - 1.20						Dark brown and brown mottled slightly gravelly clayey fine to coarse SAND. Gravel is angular to subrounded fine and medium flint and brick. Frequent metal fragments (up to 4mm diam). (MADE GROUND)	0.45		
03/05/17 0740hrs Dry	2L 3D 4L	0.80 - 1.20 1.20 - 1.65 1.20 - 2.20	1.20	S 9				Orangish brown and dark brown sandy angular and subangular fine to coarse flint and brick GRAVEL with a low subangular brick cobble content. (MADE GROUND)	1.30		
	5D 6L	2.20 - 2.65 2.20 - 3.20	1.20	S 6				Soft dark orangish brown slightly gravelly sandy CLAY. Gravel is angular and subangular fine and medium flint. Rare fragments of metal (up to 6mm diam). (MADE GROUND)	2.20		
								Loose orangish brown slightly gravelly clayey fine to coarse SAND. Gravel is angular and subangular fine and medium flint.	2.90		
	7D 8L	3.20 - 3.65 3.20 - 4.20	3.20	S 32				Dense and very dense orangish brown mottled light grey and dark purple slightly silty very sandy angular to subrounded fine to coarse flint GRAVEL.			
	9D 10L	4.20 - 4.58 4.20 - 5.20	4.20	S*67							
	11D 12L	5.20 - 5.61 5.20 - 6.70	5.20	S*58							
	13D 14L	6.70 - 7.15 6.70 - 8.20	6.70	S 34							
						NI		Structureless CHALK composed of slightly sandy silty subangular and subrounded fine to coarse GRAVEL with	7.60		
								Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Waterflush rotary core drilled (300mm) 0.00-0.20m. Hand dug inspection pit 0.20-0.80m. Dynamic sampled (128mm) 0.80-1.20m and (113mm) 1.20-12.70m. Waterflush rotary core drilled (116mm) 12.70-20.20m.

CASING: 140mm diam to 14.20m.

BACKFILL: On completion, hole backfilled with local materials and bentonite pellets 20.20-0.50m and concrete 0.50-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

CONTRACT	CHECKED
32933	**CT**

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BOREHOLE LOG

BH04B

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 2 of 3

Start Date 2 May 2017

Scale 1 : 50

End Date 4 May 2017

Depth 20.20 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	15D 16L	8.20 - 8.65 8.20 - 9.70	8.20	S 6				a low subangular cobble content. Clasts are very weak and weak medium density white with light orangish brown staining. Matrix is light brown. (probably CIRIA Grade Dc)			
						NI			9.20		
	17D 18L	9.70 - 10.15 9.70 - 11.20	9.70	S 11				Structureless CHALK composed of slightly sandy silty subangular and subrounded fine to coarse GRAVEL with a low subrounded cobble content. Clasts are very weak and weak medium density white. Matrix is cream. (probably CIRIA Grade Dc)			
	19L	11.20 - 12.70	11.20	S 18				11.70 - 11.75m: Cobble sized subrounded rinded nodular flint.			
	20D 21C	12.70 - 13.15 12.70 - 14.20	12.70	S 21	66 0 0						
	22D 23C	14.20 - 14.65 14.20 - 15.70	14.20	S 36	76 0 0			14.15 - 14.30m: Cobble sized subrounded rinded nodular flint.			
						NI		14.90 - 14.95m: Cobble sized subrounded rinded nodular flint.	15.10		
03/05/17 1650hrs 2.80m						NI 90		Very weak low and medium density white with rare black specks CHALK. Fractures are subhorizontal to 20°, 70° to 80° and randomly orientated extremely closely rarely closely spaced undulating rough locally infilled (up to 2mm) with white silt. (CIRIA Grade B5).			
04/05/17 0750hrs 2.40m	24D 25C	15.70 - 16.15 15.70 - 17.20	14.20	S 39	73 10 0						
						NI			16.60		
						NI 30		Very weak low and medium density white with rare black specks CHALK. Fractures are randomly orientated extremely closely spaced undulating and planar rough infilled (up to 2mm) with white silt. (CIRIA Grade B5).			
	26D 27C	17.20 - 17.65 17.20 - 18.70	14.20	S 40	86 13 0						
						NI 40			17.70		
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

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BOREHOLE LOG

BH04B

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 3 of 3

Start Date 2 May 2017

Scale 1 : 50

End Date 4 May 2017

Depth 20.20 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	28D 29C	18.70 18.70	19.08 20.20	14.20	S*67	95 8 0	100		Very weak medium density white with rare black specks CHALK. Fractures are subhorizontal to 20°, 50° to 60° and 80° to subvertical very closely and closely spaced undulating rough. (CIRIA Grade A4/A3). 18.10 - 18.20m: Cobble sized subrounded rinded nodular flint.			
04/05/17 1210hrs 2.80m										20.20		
		20.20	20.35	14.20	C*214				Borehole completed at 20.20m.	{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

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BOREHOLE LOG

BH05

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 3

Start Date 27 April 2017 — Scale 1 : 50

End Date 2 May 2017 — Depth 20.49 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
27/04/17 0700hrs	C	0.00 - 0.90			100			MADE GROUND comprising grey CONCRETE.	0.90		
	1B	0.90 - 1.10						Very loose dark brown clayey subangular and subrounded fine and medium flint and brick GRAVEL. (MADE GROUND)	1.50		
	2D	1.20 - 1.65	1.20	S 2							
	3L	1.20 - 2.20									
	4D	1.50 - 1.60									
	1ES	1.50 - 1.60						Soft dark grey mottled brown slightly sandy slightly gravelly CLAY. Gravel is subangular and subrounded fine and medium flint. Rare rootlets.			
	5D	2.00 - 2.10		PP 0.8							
	2ES	2.00 - 2.10									
	6D	2.20 - 2.65	2.20	S 4							
	7L	2.20 - 3.20									
		2.50		PP 0.6							
	8D	2.50 - 2.60							2.80		
	3ES	2.50 - 2.60						Dense brown slightly silty very sandy subangular and subrounded fine to coarse flint GRAVEL.			
		2.75		PP 0.5							
	9D	3.20 - 3.65	3.20	S 32							
	10L	3.20 - 4.20									
	11D	3.40 - 3.50									
	4ES	3.40 - 3.50									
	12D	4.20 - 4.60	4.20	S*64					4.20		
	13L	4.20 - 5.20						Very dense light brown and orangish brown slightly silty very sandy angular to subrounded fine to coarse flint GRAVEL.			
								4.80m: Subangular and subrounded flint cobbles.			
	14D	5.20 - 5.65	5.20	S 32							
	15L	5.20 - 6.70						5.20 - 7.70m: Dense.			
27/04/17 1700hrs 3.10m											
	16D	6.70 - 7.15	6.70	S 35				6.40m: Subangular and subrounded flint cobble.			
28/04/17 0700hrs 3.80m	17L	6.70 - 8.20						6.65m: Subangular and subrounded flint cobble.	7.70		
								Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Waterflush rotary cored (300mm) 0.00-0.90m. Hand dug inspection pit 0.90-1.20m. Dynamic sampled (128mm) 1.20-4.20m and (113mm) 4.20-12.70m. Waterflush rotary core drilled (116mm) 12.70-20.20m.

CASING: 168mm diam to 4.20m and 140mm to 12.70m.

BACKFILL: On completion, hole backfilled with bentonite pellets 20.49-0.50m and concrete 0.50-0.00m.

REMARKS: Coordinates and level not surveyed due to borehole being located inside building.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
				Groundwater not encountered prior to use of water flush.

AGS

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32933	CT

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BOREHOLE LOG

BH05

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 2 of 3

Start Date 27 April 2017 — Scale 1 : 50

End Date 2 May 2017 — Depth 20.49 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	18D 19L	8.20 - 8.65 8.20 - 9.70	8.20	S 5				Structureless CHALK recovered as slightly sandy silty angular and subangular fine to coarse GRAVEL with a high subangular cobble content. Clasts are very weak medium density white locally stained brownish orange. Matrix is white. (probably CIRIA Grade Dc)			
	20D 21L	9.70 - 10.15 9.70 - 11.20	9.70	S 9							
	22D 23L	11.20 - 11.65 11.20 - 12.70	11.20	S 13					12.00		
	24D 25C	12.70 - 13.15 12.70 - 14.20	12.70	S 23	66 5 0	NI NI 80		Very weak medium density white CHALK. Fractures are 30° and subvertical extremely closely to closely spaced undulating smooth locally stained orangish brown. (probably CIRIA Grade B5/B4)	12.50		
	26D 27D 28D 29C	13.80 - 13.90 14.00 - 14.10 14.20 - 14.65 14.20 - 15.70	12.70	S 34	96 0 0	NI 70 140		Structureless CHALK composed of slightly silty slightly sandy angular and subangular fine to coarse GRAVEL with rare angular to rounded medium and coarse flint gravel. Clasts are very weak medium density white with rare light orange staining. Matrix is white. (CIRIA Grade Dc) 12.50m: Subangular flint cobble. 12.70 - 13.20m: No recovery.	13.90		
28/04/17 1400hrs 3.60m	30D	15.70 - 16.15	12.70	S 46				Extremely weak to very weak low and medium density white with rare light orange staining CHALK. Fractures are subhorizontal, subvertical and randomly orientated extremely and very closely spaced undulating rough infilled (up to 2mm) with white silt. Rare rounded medium rinded flint gravel. (CIRIA Grade B4)			
02/05/17 0930hrs 2.80m	31C	15.70 - 17.20			100 15 9						
	32D 33C	17.20 - 17.56 17.20 - 18.70	12.70	S*73	83 21 0			16.30 - 18.45m: Fractures are extremely closely to closely spaced.			
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

CONTRACT 32933

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BOREHOLE LOG

BH05

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 3 of 3

Start Date 27 April 2017

Scale 1 : 50

End Date 2 May 2017

Depth 20.49 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
									17.90 - 18.00m: Frequent subrounded and rounded fine to coarse black rinded flint gravel.			
							NI			18.45		
	34D	18.70	18.97	12.70	S*96		130		Very weak to weak medium density white with rare dark grey specks CHALK. Fractures are subhorizontal to 30° very closely and closely spaced undulating rough infilled (up to 3mm) with white silt. Rare rounded medium and coarse nodular black rinded flint gravel. (CIRIA Grade B4)			
	35C	18.70	20.20			93 56 51	270		18.45m: 30mm band of rounded coarse nodular black rinded flint gravel. 19.35 - 19.50m: Light grey staining. 19.55 - 19.60m: Non intact. 19.60m: 5mm band of light grey silt.			
02/05/17 1530hrs 3.00m	36D	20.20	20.49	12.70	S*99					20.49		
									Borehole completed at 20.49m.			
										{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

Groundwater not encountered prior to use of water flush.

AGS

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BOREHOLE LOG



WS01

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 1

Start Date 25 April 2017 — Easting 470998.0 — Scale 1 : 50

End Date 25 April 2017 — Northing 174103.0 — Ground level 38.80mOD — Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
25/04/17 0755hrs	C	0.00	0.15	Nil				MADE GROUND comprising light grey CONCRETE.	0.15	38.65	
	1B	0.20	0.40					Dark greyish brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint, concrete and brick. (MADE GROUND)	0.55	38.25	
	1ES	0.20	0.40								
	2B	0.60	0.80								
	2ES	0.60	0.80								
	3B	1.00	1.20					Dark brown slightly clayey locally clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint and brick, rarely chalk. (MADE GROUND)			
	3ES	1.00	1.20								
	4D	1.20	1.65	Nil	S 5						
	5L	1.20	2.00	1.20				0.90 - 1.10m: Slightly gravelly.	1.30	37.50	
	4ES	1.50	1.70					Soft brown slightly gravelly sandy silty CLAY. Gravel is angular to subrounded fine and medium brick and flint. (MADE GROUND)	1.50	37.30	
	6D	1.80	2.00								
	7D	2.00	2.45	2.00	S 8			1.35 - 1.45m: Dark brownish grey.			
	8L	2.00	3.00					Soft brown mottled reddish brown sandy silty CLAY. 1.60 - 1.70m: Dark brown. 1.70m: Fine and medium gravel sized angular flint. 2.30 - 2.60m: Rare pockets (up to 40mm) of fine and medium sand.			
	9D	2.60	2.80								
	10D	3.00	3.45	3.00	S 8				2.95	35.85	
	11L	3.00	4.00					Loose light brownish grey very clayey fine and medium SAND. 3.00m: Fine and medium gravel sized subangular flint.	3.40	35.40	
	12D	3.20	3.40								
	13D	4.00	4.45	4.00	S 21			Medium dense light brown very sandy subangular and subrounded fine and medium flint GRAVEL. 4.00 - 5.00m: Limited recovery.			
	14L	4.00	5.00								
	15D	4.20	4.40								
25/04/17 0930hrs 4.60m	16D	5.00	5.45	5.00	S 23				5.45	33.35	
								Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.15m. Hand dug inspection pit 0.15-1.20m. Dynamic sampled (98mm) 1.20-5.00m

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 5.45-1.50m. A slotted standpipe (50mm) was installed to 1.50m, granular response zone 1.50-1.00m, bentonite seal 1.00-0.40m, gravel drain 0.40-0.30m, concrete and stopcock cover 0.30-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.00	4.00	3.50	20	Encountered following sample run 3.00-4.00m

AGS

CONTRACT	CHECKED
32933	CT

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BOREHOLE LOG

WS02

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 1

Start Date 24 April 2017 — Easting 470968.0 — Scale 1 : 50

End Date 24 April 2017 — Northing 174060.0 — Ground level 38.50mOD — Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
24/04/17 1000hrs	1B	0.10	0.30					Dark brown slightly silty gravelly fine to coarse SAND with a low subangular brick cobble content. Gravel is angular to subrounded fine and medium rarely coarse brick, crystalline and flint. (MADE GROUND)			
	1ES	0.10	0.30								
	2B	0.50	0.70								
	2ES	0.50	0.70						0.80	37.70	
	3B	1.00	1.20					Brown slightly clayey sandy angular to subrounded fine to coarse brick and flint GRAVEL. (MADE GROUND)			
	3ES	1.00	1.20								
	4D	1.20	1.65	Nil	S 8			1.20m: Loose.			
	5L	1.20	2.00	1.20							
	4ES	1.30	1.50					1.40 - 1.60m: Dark brown. Slightly sandy clayey.	1.60	36.90	
	6D	1.70	1.90					Soft to firm light brown locally mottled orange and grey slightly sandy silty CLAY with rare partially decomposed rootlets.			
	7D	2.00	2.45	2.00	S 8						
	8L	2.00	3.00								
	5ES	2.20	2.40								
									2.60	35.90	
	9D	2.70	2.90					Medium dense light brown very sandy angular to subrounded fine and medium flint GRAVEL. 2.60 - 2.70m: Clayey.			
	10D	3.00	3.45	2.00	S 20						
	11L	3.00	4.00								
	12D	3.50	3.70								
	13D	4.00	4.45	2.00	S 13						
	14L	4.00	5.00	4.00							
	15D	4.50	4.70					4.50 - 4.80m: Sandy gravel.			
24/04/17 1150hrs 2.60m	16D	5.00	5.45	5.00	S 17				5.45	33.05	
								Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (98mm) 1.20-5.00m

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 5.00m, granular response zone 5.45-2.60m, bentonite seal 2.60-0.50m, gravel drain 0.50-0.30m, concrete and stopcock cover 0.30-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.00	2.00	1.70	20	Encountered following sample run 3.00-4.00m

AGS

CONTRACT **32933**

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BOREHOLE LOG

CLIENT THAMES PROPERTIES LIMITED

WS03

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 1

Start Date 26 April 2017

Scale 1 : 50

End Date 26 April 2017

Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
26/04/17 1235hrs	C	0.00 - 0.25					MADE GROUND comprising light grey CONCRETE.	0.25		
	1B	0.50 - 0.70					Light brown slightly silty gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse brick, concrete and flint. (MADE GROUND)	0.50		
	1ES	0.50 - 0.70								
	2B	1.00 - 1.20					White and brown silty subangular and subrounded fine to coarse chalk and rare flint GRAVEL with frequent pockets (up to 70mm) of brown clay. (MADE GROUND)	1.00		
	2ES	1.00 - 1.20								
	3D	1.20 - 1.65	Nil	S <1						
	4L	1.20 - 2.00	1.20				Very soft brown gravelly silty CLAY. Gravel is subangular and subrounded fine and medium chalk and rare flint. (MADE GROUND)	1.60		
	3ES	1.40 - 1.60								
	5D	1.70 - 1.90						1.90		
	6D	2.00 - 2.45	2.00	S <1			Very soft dark brown and black slightly sandy gravelly clayey SILT. Gravel is angular to subrounded fine and medium flint, concrete and glass. (MADE GROUND)			
	7L	2.00 - 3.00								
	4ES	2.20 - 2.40								
							Very soft brown slightly gravelly silty CLAY. Gravel is subangular to rounded fine and medium flint.			
	8D	2.60 - 2.80								
	9D	3.00 - 3.45	3.00	S 19				3.00		
	10L	3.00 - 4.00					Medium dense light brown gravelly to very gravelly fine to coarse SAND. Gravel is angular to subrounded fine and medium flint and shells.			
	11D	3.60 - 3.80					3.65 - 3.80m: Fine and medium sand.			
	12D	4.00 - 4.45	4.00	S 7						
	13L	4.00 - 5.00					4.00 - 4.45m: Loose.			
	14D	4.40 - 4.60								
26/04/17 1435hrs 2.99m	15D	5.00 - 5.45	5.00	S 15				5.45		
							Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.25m. Hand dug inspection pit 0.25-1.20m. Dynamic sampled (98mm) 1.20-5.00m

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 5.00m, granular response zone 5.45-2.80m, bentonite seal 2.80-0.15m, concrete and stopcock cover 0.15-0.00m.

REMARKS: Coordinates and level not surveyed due to borehole being located inside building.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
3.09	3.00	2.91	20	

AGS

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BOREHOLE LOG

WS04

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 1

Start Date 24 April 2017 — Easting 470874.0 — Scale 1 : 50

End Date 24 April 2017 — Northing 174125.0 — Ground level 38.85mOD — Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
24/04/17 1100hrs	1B	0.10	0.30					Dark brown slightly silty gravelly fine to coarse SAND with a low subangular brick cobble content. Gravel is angular to subrounded fine and medium rarely coarse brick, crystalline and flint. (MADE GROUND)			
	1ES	0.10	0.30								
	2B	0.30	0.50								
	2ES	0.30	0.50								
	3B	1.00	1.20						0.90	37.95	
	3ES	1.00	1.20					Brown slightly clayey sandy angular to subrounded fine to coarse brick and flint GRAVEL. (MADE GROUND)			
	4D	1.20	1.65	Nil	S 4						
	5L	1.20	2.00	1.20					1.35	37.50	
								Very loose to loose dark brown and black slightly silty gravelly fine SAND with rare partially decomposed rootlets. Gravel is angular to subrounded fine and medium brick and flint. (MADE GROUND)	1.60	37.25	
	4ES	1.60	1.80						1.80	37.05	
	6D	1.80	2.00								
	7D	2.00	2.30	2.00	S<1						
	8L	2.00	3.00					Dark brown slightly gravelly sandy SILT. Gravel is angular to subrounded fine flint.	2.10	36.75	
								Very soft greenish grey slightly gravelly sandy silty CLAY. Gravel is subangular and subrounded fine flint.	2.50	36.35	
	9D	2.60	2.80								
	10D	3.00	3.30	3.00	S<1			Very soft dark grey sandy clayey SILT.			
	11L	3.00	4.00					Very soft light blue and greenish brown slightly gravelly silty CLAY. Gravel is subrounded and rounded fine and medium flint.	3.50	35.35	
								Medium dense orangish brown fine and medium rarely coarse SAND. 3.50 - 3.70m: Mottled greyish brown. Slightly clayey.			
	12D	4.00	4.45	4.00	S 12						
	13L	4.00	5.00								
	14D	4.50	4.70								
24/04/17 1400hrs Dry	15D	5.00	5.45	5.00	S 21				5.45	33.40	
								Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (98mm) 1.20-5.00m.

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 5.45-1.50m. A slotted standpipe (50mm) was installed to 1.50m, granular response zone 1.50-1.00m, bentonite seal 1.00-0.40m, gravel drain 0.40-0.30m, concrete and stopcock cover 0.30-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.00	3.00	3.10	20	Encountered following sample run 3.00-4.00m

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BOREHOLE LOG

CLIENT THAMES PROPERTIES LIMITED

WS05

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 1

Start Date 25 April 2017

Scale 1 : 50

End Date 25 April 2017

Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
25/04/17 1020hrs	C	0.00	0.30					MADE GROUND comprising dark grey CONCRETE.	0.03		
	1B	0.40	0.60					MADE GROUND comprising light grey CONCRETE.	0.30		
	1ES	0.40	0.60					Dark brown slightly silty gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse brick, concrete and flint. (MADE GROUND)	0.80		
	2B	0.80	1.00								
	2ES	0.80	1.00								
		1.00	1.45	Nil	S 11						
	3L	1.00	2.00					Medium dense light greyish brown slightly silty gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse brick, concrete and flint. (MADE GROUND) 0.80 - 1.00m: Rare chalk gravel.			
	3ES	1.50	1.70								
	4D	1.80	2.00						1.80		
	5D	2.00	2.45	2.00	S 9			Firm greyish brown slightly gravelly sandy silty CLAY. Gravel is subangular and subrounded fine and medium flint.	2.10		
	6L	2.00	3.00								
	4ES	2.30	2.50					Loose to medium dense light brown very clayey fine to coarse SAND. 2.60m: Band (50mm) of subangular fine and medium flint gravel.			
	7D	2.50	2.70								
	8D	3.00	3.45	2.00	S 13				2.95		
	9L	3.00	4.00	3.00				Medium dense yellowish brown very gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse flint.			
	10D	3.50	3.70					3.70 - 3.80m: Sandy gravel.			
	11D	4.00	4.45	4.00	S 18						
	12L	4.00	5.00								
25/04/17 1200hrs 4.40m	13D	5.00	5.45	5.00	S 17				5.45		
								Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.30m. Hand dug inspection pit 0.30-1.00m. Dynamic sampled (98mm) 1.00-4.00m and (76mm) 4.00-5.00m.

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 5.45-0.50m, concrete 0.50-0.00m.

REMARKS: Coordinates and level not surveyed due to borehole being located inside building.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.00	4.00	3.70	20	Encountered following sample run 3.00-4.00m.

AGS

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BOREHOLE LOG

WS06

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING — Sheet 1 of 1

Start Date 25 April 2017 — Easting 470922.0 — Scale 1 : 50

End Date 4 May 2017 — Northing 174065.0 — Ground level 38.60mOD — Depth 5.30 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
25/04/17 1300hrs	C	0.00 - 0.30					MADE GROUND comprising light grey CONCRETE.	0.30	38.30	
	1B	0.40 - 0.60					Dark brown slightly silty gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse brick, concrete and flint. (MADE GROUND)			
	1ES	0.40 - 0.60								
	2B	1.00 - 1.20								
	2ES	1.00 - 1.20					1.00 - 1.50m: Clayey.			
	3D	1.20 - 1.65	Nil	S<1			1.20m: Very loose.			
	4L	1.20 - 2.00						1.50	37.10	
	3ES	1.50 - 1.70					Very soft brown sandy silty CLAY.			
	5D	1.80 - 2.00								
	6D	2.00 - 2.45	2.00	S 9						
	7L	2.00 - 3.00						2.45	36.15	
							Brown clayey fine and medium SAND.	2.70	35.90	
	8D	2.70 - 2.90					Medium dense yellowish brown gravelly fine to coarse SAND. Gravel is subangular and subrounded fine flint.			
	9D	3.00 - 3.45	3.00	S 25						
	10L	3.00 - 4.00								
25/04/17 1445hrs 3.20m	11D	3.50 - 3.70						4.00	34.60	
04/05/17 1400hrs Dry	12L	4.00 - 4.50	3.00				Orangish brown mottled light grey and dark purple sandy angular to subrounded fine and medium flint and chalk GRAVEL.			
	13L	4.50 - 5.30	4.50							
04/05/17 1730hrs Dry							5.10 - 5.20m: Gravelly medium sand.	5.30	33.30	
							Borehole completed at 5.30m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig and Geotechnical Pioneer rig.

METHOD: Waterflush rotary cored 0.0-0.30m. Hand dug inspection pit 0.30-1.20m. Dynamic sampled (98mm) 1.20-5.30m

CASING: 113mm diam to 5.30m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 5.30m, granular response zone 5.30-2.40m, bentonite seal 2.40-0.50m, concrete and stopcock cover 0.50-0.00m.

REMARKS: Initial Terrier borehole collapsed 4.00-2.40m, temporarily backfilled with bentonite pellets (25/04/17) and redrilled (04/05/17) with Pioneer rig to achieve target depth and install standpipe.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
3.45	3.00	3.20	20	

AGS

CONTRACT **32933**

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BOREHOLE LOG



WS07

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 1

Start Date 26 April 2017

Scale 1 : 50

End Date 26 April 2017

Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
26/04/17 0825hrs	C	0.00 - 0.30					MADE GROUND comprising dark grey CONCRETE.	0.10		
							MADE GROUND comprising light grey CONCRETE.	0.30		
	1B	0.40 - 0.60					Brown slightly silty gravelly fine to coarse SAND with a low subangular brick cobble content. Gravel is angular to subrounded fine to coarse brick, concrete and flint. (MADE GROUND)			
	1ES	0.40 - 0.60								
	2B	1.00 - 1.20						1.00		
	2ES	1.00 - 1.20								
	3D	1.20 - 1.65	Nil	S 10			0.40 - 0.60m: Light greyish brown.			
	4L	1.20 - 2.00	1.20				0.85m: Subangular concrete cobble (190x80mm).			
	3ES	1.60 - 1.80					Firm dark brown slightly sandy gravelly clayey SILT. Gravel is angular to subrounded fine and medium brick, flint and chalk. (MADE GROUND)			
	5D	1.80 - 2.00								
	6D	2.00 - 2.45	2.00	S <1						
	7L	2.00 - 3.00					2.00m: Very soft.	2.40		
	4ES	2.40 - 2.60					Firm becoming stiff dark greyish green mottled greenish brown slightly gravelly slightly sandy silty CLAY. 2.40 - 2.60m: Black.			
	8D	2.80 - 3.00								
	9D	3.00 - 3.45	3.00	S 17						
	10L	3.00 - 4.00					3.00 - 3.40m: Sandy.	3.40		
	11D	3.60 - 3.80					Medium dense yellowish brown slightly gravelly fine to coarse SAND. Gravel is subangular and subrounded fine flint and shells.			
	12D	4.00 - 4.45	4.00	S 14						
	13L	4.00 - 5.00								
	14D	4.40 - 4.60								
26/04/17 1010hrs 3.88m	15D	5.00 - 5.45	5.00	S 16				5.45		
							Borehole completed at 5.45m.			
								{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.0-0.30m. Hand dug inspection pit 0.30-1.20m. Dynamic sampled (98mm) 1.20-5.00m.

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 5.45-1.20m, materials arising 1.20-0.20m and concrete 0.20-0.00m.

REMARKS: Coordinates and level not surveyed due to borehole being located inside building.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
3.71	4.00	3.32	20	

AGS

CONTRACT **32933**

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BOREHOLE LOG

CLIENT THAMES PROPERTIES LIMITED

WS08

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

Sheet 1 of 1

Start Date 26 April 2017

Scale 1 : 50

End Date 26 April 2017

Depth 5.45 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
26/04/17 1010hrs	C	0.00 - 0.25					MADE GROUND comprising dark grey CONCRETE.	0.10		
							MADE GROUND comprising light grey CONCRETE.	0.25		
	1B	0.40 - 0.60					Brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse brick, concrete and flint. (MADE GROUND)	0.80		
	1ES	0.40 - 0.60								
	2B	1.00 - 1.20								
	2ES	1.00 - 1.20								
	3D	1.20 - 1.65	Nil	S 8			Soft dark brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to subrounded fine and medium brick, flint and chalk. (MADE GROUND)			
	4L	1.20 - 2.00	1.20							
	3ES	1.60 - 1.80								
	5D	1.80 - 2.00								
	6D	2.00 - 2.45	2.00	S <1						
	7L	2.00 - 3.00					2.00m: Very soft.	2.30		
	4ES	2.40 - 2.60					Firm dark greyish green mottled greenish brown slightly gravelly slightly sandy silty CLAY. 2.30 - 2.50m: Black.			
	8D	2.60 - 2.80						2.90		
	9D	3.00 - 3.45	3.00	S 20			Medium dense yellowish brown slightly gravelly fine to coarse SAND. Gravel is subangular and subrounded fine flint and shells.			
	10L	3.00 - 4.00								
	11D	3.40 - 3.60					3.60 - 3.80m: Fine and medium sand.			
	12D	4.00 - 4.45	4.00	S 38			4.00 - 4.45m: Dense.			
	L	4.00 - 5.00					4.00 - 5.00m: No recovery.			
26/04/17 1205hrs 3.01m	13D	5.00 - 5.45	5.00	S 24				5.45		
							Borehole completed at 5.45m.	{8.00}		

EQUIPMENT: Geotechnical Terrier 2000 rig.

METHOD: Rotary core drilled (300mm) 0.00-0.25m. Hand dug inspection pit 0.25-1.20m. Dynamic sampled (98mm) 1.20-5.00m

CASING: 113mm diam to 5.00m.

BACKFILL: On completion, hole backfilled with bentonite pellets 5.45-1.20m, materials arising 1.20-0.20m and concrete 0.20-0.00m.

REMARKS: Coordinates and level not surveyed due to borehole being located inside building.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
3.11	3.00	2.91	20	

AGS

CONTRACT **32933**

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STANDARD PENETRATION TEST

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH01	1.20		1.65	Nil	Dry	0 1	75 75	1 1 1 1	75 75 75 75	S	4	69
BH01	2.20		2.65	2.20	1.00	1 2	75 75	1 1 1 1	75 75 75 75	S	4	69
BH01	3.20		3.65	3.20	2.00	3 3	75 75	5 5 6 7	75 75 75 75	S	23	69
BH01	4.20		4.65	4.20	3.00	7 8	75 75	13 13 9 11	75 75 75 75	S	46	69
BH01	5.20		5.65	5.20	3.00	8 10	75 75	8 8 6 5	75 75 75 75	S	27	69
BH01	6.70		7.15	6.70	3.00	6 9	75 75	9 8 6 4	75 75 75 75	S	27	69
BH01	8.20		8.65	8.20	3.00	1 1	75 75	2 1 2 1	75 75 75 75	S	6	69
BH01	9.70		10.15	9.70	3.00	0 1	75 75	0 1 2 2	75 75 75 75	S	5	69
BH01	11.20		11.65	11.20	3.00	0 1	75 75	0 1 2 2	75 75 75 75	S	5	69
BH01	12.70		13.15	12.70	3.90	1 2	75 75	2 2 2 4	75 75 75 75	S	10	69
BH01	14.20		14.65	12.70	3.90	5 7	75 75	7 5 6 6	75 75 75 75	S	24	69
BH01	15.70		16.08	12.70	3.20	2 6	75 75	14 13 20 3	75 75 75 1	S	66	69
BH01	17.20		17.64	12.70	3.00	5 4	75 75	11 13 13 16	75 75 75 60	S	56	69
BH01	18.70		19.07	12.70	3.00	10 13	75 75	17 17 16	75 75 65	S	70	69
BH01	20.20		20.46	12.70	3.00	6 15	75 50	25 25	75 60	S	111	69
BH02	1.20		1.65	Nil	Dry	1 0	75 75	0 1 0 0	75 75 75 75	S	1	61
BH02	2.20		2.65	Nil	Dry	1 0	75 75	0 2 0 2	75 75 75 75	S	4	61
BH02	3.20		3.65	3.20	1.90	3 6	75 75	7 8 8 9	75 75 75 75	S	32	61
BH02	4.20		4.65	4.20	2.70	2 6	75 75	8 8 8 8	75 75 75 75	S	32	61
BH02	5.20		5.65	5.20	2.20	2 4	75 75	6 6 8 10	75 75 75 75	S	30	61
BH02	6.70		7.15	6.70	2.50	3 4	75 75	6 7 8 8	75 75 75 75	S	29	61
BH02	8.20		8.65	8.20	2.40	2 2	75 75	2 2 2 2	75 75 75 75	S	8	61
BH02	9.70		10.15	9.70	2.70	2 3	75 75	3 4 3 4	75 75 75 75	S	14	61
BH02	11.20		11.65	11.20	3.20	2 3	75 75	7 5 3 3	75 75 75 75	S	18	61

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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STANDARD PENETRATION TEST

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH02	12.70		13.15	12.70	2.50	4 5	75 75	5 5 5 7	75 75 75 75	S	22	61
BH02	14.20	0.01	14.66	14.20	2.00	6 6	75 75	7 8 9 11	75 75 75 75	S	35	61
BH02	15.70		16.15	14.20	2.40	4 7	75 75	11 7 10 11	75 75 75 75	S	39	61
BH02	17.20		17.65	14.20	3.20	5 5	75 75	5 5 8 8	75 75 75 75	S	26	61
BH02	18.70		18.98	14.20	3.60	5 10	75 75	30 20	75 50	S	120	61
BH02	20.20		20.47	14.20	3.20	10 14	75 75	20 30	75 45	C	125	61
BH03	1.20		1.65	Nil	Dry	1 0	150	1 0 0 0	75 75 75 75	S	1	61
BH03	2.20		2.65	Nil	Dry	1 0	150	0 0 1 3	75 75 75 75	S	4	61
BH03	3.20		3.65	3.20	1.60	4 4	75 75	4 4 6 6	75 75 75 75	S	20	61
BH03	4.20		4.65	4.20	1.40	4 6	75 75	7 7 8 9	75 75 75 75	S	31	61
BH03	5.20		5.65	5.20	1.50	3 4	75 75	4 7 13 7	75 75 75 75	S	31	61
BH03	6.30		6.75	6.30	1.40	3 3	75 75	6 6 7 8	75 75 75 75	S	27	61
BH03	7.80		8.25	7.80	1.60	3 2	75 75	2 2 1 2	75 75 75 75	S	7	61
BH03	9.30		9.75	9.30	1.70	3 3	75 75	6 2 2 3	75 75 75 75	S	13	61
BH03	10.80		11.25	10.80	2.00	2 3	75 75	3 3 3 3	75 75 75 75	S	12	61
BH03	12.30		12.75	12.30	2.70	3 4	75 75	6 6 7 8	75 75 75 75	S	27	61
BH03	13.80		14.25	13.80	2.30	3 6	75 75	4 6 9 11	75 75 75 75	S	30	61
BH03	15.30		15.71	13.80	3.00	6 6	75 75	10 12 16 12	75 75 75 35	S	58	61
BH03	16.80		17.07	13.80	2.90	3 6	75 75	16 34	75 40	C	130	61
BH03	18.30		18.47	13.80	3.10	15 10	75 25	50	65	C	231	61
BH03	19.80		19.94	13.80	2.80	12 13	75 25	50	35	C	429	61
BH04B	1.20		1.65	1.20	1.10	3 3	75 75	4 3 1 1	75 75 75 75	S	9	61
BH04B	2.20		2.65	1.20	2.00	2 2	75 75	2 1 2 1	75 75 75 75	S	6	61
BH04B	3.20		3.65	3.20	2.60	3 4	75 75	5 6 8 13	75 75 75 75	S	32	61

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

CONTRACT	CHECKED
32933	**CT**

Geotechnical Engineering Limited

STANDARD PENETRATION TEST

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH04B	4.20		4.58	4.20	1.80	4 4	75 75	10 16 20 4	75 75 75 0	S	67	61
BH04B	5.20		5.61	5.20	2.10	4 11	75 75	13 13 15 9	75 75 75 35	S	58	61
BH04B	6.70		7.15	6.70	2.20	3 4	75 75	6 8 9 11	75 75 75 75	S	34	61
BH04B	8.20		8.65	8.20	2.10	2 2	75 75	2 2 1 1	75 75 75 75	S	6	61
BH04B	9.70		10.15	9.70	2.40	2 2	75 75	2 3 3 3	75 75 75 75	S	11	61
BH04B	11.20		11.65	11.20	2.30	3 3	75 75	3 4 5 6	75 75 75 75	S	18	61
BH04B	12.70		13.15	12.70	2.40	2 3	75 75	5 4 5 7	75 75 75 75	S	21	61
BH04B	14.20		14.65	14.20	0.00	7 8	75 75	8 8 10 10	75 75 75 75	S	36	61
BH04B	15.70		16.15	14.20	2.60	5 5	75 75	8 10 12 9	75 75 75 75	S	39	61
BH04B	17.20		17.65	14.20	3.20	8 8	75 75	8 8 9 15	75 75 75 75	S	40	61
BH04B	18.70		19.08	14.20	2.90	8 18	75 75	14 14 22	75 75 75	S	67	61
BH04B	20.20		20.35	14.20	2.80	12 13	75 5	50	70	C	214	61
BH05	1.20		1.65	1.20	Dry	0 1	75 75	0 1 0 1	75 75 75 75	S	2	69
BH05	2.20		2.65	2.20	1.40	0 1	75 75	1 1 1 1	75 75 75 75	S	4	69
BH05	3.20		3.65	3.20	2.40	2 3	75 75	6 9 8 9	75 75 75 75	S	32	69
BH05	4.20		4.60	4.20	2.40	5 12	75 75	15 15 15 8	75 75 75 25	S	64	69
BH05	5.20		5.65	5.20	3.10	5 7	75 75	8 7 8 9	75 75 75 75	S	32	69
BH05	6.70		7.15	6.70	3.10	8 13	75 75	8 10 9 8	75 75 75 75	S	35	69
BH05	8.20		8.65	8.20	2.40	1 2	75 75	1 1 1 2	75 75 75 75	S	5	69
BH05	9.70		10.15	9.70	2.60	2 2	75 75	2 1 3 3	75 75 75 75	S	9	69
BH05	11.20		11.65	11.20	3.10	1 2	75 75	3 3 3 4	75 75 75 75	S	13	69
BH05	12.70		13.15	12.70	3.60	2 3	75 75	5 8 5 5	75 75 75 75	S	23	69
BH05	14.20		14.65	12.70	3.60	7 8	75 75	6 8 9 11	75 75 75 75	S	34	69
BH05	15.70		16.15	12.70	3.60	6 8	75 75	10 12 12 12	75 75 75 75	S	46	69

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
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3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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Geotechnical Engineering Limited

STANDARD PENETRATION TEST

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
BH05	17.20		17.56	12.70	3.00	5 7	75 75	12 16 22	75 75 55	S	73	69
BH05	18.70		18.97	12.70	3.00	11 14	75 35	17 27 6	75 75 6	S	96	69
BH05	20.20		20.49	12.70	3.00	8 17	75 60	21 26 3	75 75 1	S	99	69
WS01	1.20		1.65	Nil	Dry	1 1	75 75	1 1 1 2	75 75 75 75	S	5	65
WS01	2.00		2.45	2.00	Dry	2 2	75 75	2 2 2 2	75 75 75 75	S	8	65
WS01	3.00		3.45	3.00	Dry	1 1	75 75	1 2 2 3	75 75 75 75	S	8	65
WS01	4.00		4.45	4.00	3.50	3 4	75 75	5 5 5 6	75 75 75 75	S	21	65
WS01	5.00		5.45	5.00	4.60	5 5	75 75	6 6 5 6	75 75 75 75	S	23	65
WS02	1.20		1.65	Nil	Dry	2 2	75 75	2 2 2 2	75 75 75 75	S	8	65
WS02	2.00		2.45	2.00	Dry	1 1	75 75	2 1 2 3	75 75 75 75	S	8	65
WS02	3.00		3.45	2.00	Dry	3 3	75 75	4 5 5 6	75 75 75 75	S	20	65
WS02	4.00		4.45	2.00	1.70	3 3	75 75	3 3 4 3	75 75 75 75	S	13	65
WS02	5.00		5.45	5.00	2.60	2 3	75 75	3 4 5 5	75 75 75 75	S	17	65
WS03	1.20	0.30	1.50	Nil	Dry					S	<1	72
WS03	2.00	0.45	2.45	2.00	Dry					S	<1	72
WS03	3.00		3.45	3.00	3.09	3 4	75 75	5 4 4 6	75 75 75 75	S	19	72
WS03	4.00		4.45	4.00	3.01	1 1	75 75	1 2 2 2	75 75 75 75	S	7	72
WS03	5.00		5.45	5.00	3.00	1 2	75 75	2 3 4 6	75 75 75 75	S	15	72
WS04	1.20		1.65	Nil	Dry	1 1	75 75	2 2 0 0	75 75 75 75	S	4	65
WS04	2.00	0.30	2.30	2.00	Dry					S		65
WS04	3.00	0.30	3.30	3.00	Dry					S		65
WS04	4.00		4.45	4.00	3.00	2 2	75 75	3 3 3 3	75 75 75 75	S	12	65
WS04	5.00		5.45	5.00	Dry	4 5	75 75	4 5 6 6	75 75 75 75	S	21	65
WS05	1.00		1.45	Nil	Dry	3 4	75 75	3 2 2 4	75 75 75 75	S	11	65

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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Geotechnical Engineering Limited

STANDARD PENETRATION TEST

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole no.	borehole depth (m)	s.w.p (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive blows	seating drive pen (mm)	test drive blows	test drive pen (mm)	test type	N	energy ratio (%)
WS05	2.00		2.45	2.00	Dry	1 2	75 75	2 2 3 2	75 75 75 75	S	9	65
WS05	3.00		3.45	2.00	Dry	2 3	75 75	3 3 4 3	75 75 75 75	S	13	65
WS05	4.00		4.45	4.00	3.70	4 4	75 75	5 3 5 5	75 75 75 75	S	18	65
WS05	5.00		5.45	5.00	4.40	5 5	75 75	4 4 5 4	75 75 75 75	S	17	65
WS06	1.20	0.45	1.65	Nil	Dry					S	<1	65
WS06	2.00		2.45	2.00	Dry	2 2	75 75	2 2 3 2	75 75 75 75	S	9	65
WS06	3.00		3.45	3.00	Dry	3 4	75 75	5 7 6 7	75 75 75 75	S	25	65
WS07	1.20		1.65	Nil	Dry	1 2	75 75	2 2 3 3	75 75 75 75	S	10	72
WS07	2.00	0.45	2.45	2.00	Dry					S	<1	72
WS07	3.00		3.45	3.00	Dry	0 0	75 75	0 3 6 8	75 75 75 75	S	17	72
WS07	4.00		4.45	4.00	0.00	3 3	75 75	3 3 4 4	75 75 75 75	S	14	72
WS07	5.00		5.45	5.00	0.00	2 3	75 75	3 4 4 5	75 75 75 75	S	16	72
WS08	1.20		1.65	Nil	Dry	1 2	75 75	2 2 2 2	75 75 75 75	S	8	72
WS08	2.00		2.00	2.00	Dry					S	<1	72
WS08	3.00		3.45	3.00	Dry	6 5	75 75	5 5 5 5	75 75 75 75	S	20	72
WS08	4.00		4.45	4.00	2.78	2 4	75 75	8 10 10 10	75 75 75 75	S	38	72
WS08	5.00		5.45	5.00	3.01	2 3	75 75	4 6 7 7	75 75 75 75	S	24	72

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005 + A1:2011
2. s.w.p = self weight penetration.
3. N values have not been subjected to any correction.
4. Test carried out using split spoon S, solid cone C.
5. Where full test drive not completed, linearly extrapolated N value reported.
6. ** Denotes no effective penetration.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
BH01	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH01	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH01	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH01	05/05/17 11:11:00	1021										15		
BH01	05/05/17 11:12:00		0								0.0			
BH01	05/05/17 11:13:00		0								0.0			
BH01	05/05/17 11:14:00		0								0.0			
BH01	05/05/17 11:15:00		0								0.0			
BH01	05/05/17 11:16:00		0								0.0			
BH01	05/05/17 11:17:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:18:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:19:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:20:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:21:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:22:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:23:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:24:00			0.0	0.0	20.9	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	05/05/17 11:25:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:26:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH01	05/05/17 11:27:00												2.22	
BH01	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
BH01	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH01	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
BH01	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH01	09/05/17 10:50:00	1021										12		
BH01	09/05/17 10:51:00		0								0.0			
BH01	09/05/17 10:52:00		0								0.0			
BH01	09/05/17 10:53:00		0								0.0			
BH01	09/05/17 10:54:00		0								0.0			
BH01	09/05/17 10:55:00		0								0.0			
BH01	09/05/17 10:56:00			0.0	0.0	19.9	0.0	0	0	1.1				
BH01	09/05/17 10:57:00			0.0	0.0	20.2	0.0	0	0	0.0				
BH01	09/05/17 10:58:00			0.0	0.0	20.3	0.0	0	0	0.0				
BH01	09/05/17 10:59:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH01	09/05/17 11:00:00			0.0	0.0	20.5	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	09/05/17 11:01:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	09/05/17 11:02:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	09/05/17 11:03:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	09/05/17 11:04:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	09/05/17 11:05:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	09/05/17 11:06:00												2.22	
BH01	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH01	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
BH01	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
BH01	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
BH01	19/05/17 12:09:00	1005										13		Showers
BH01	19/05/17 12:10:00		0								0.0			
BH01	19/05/17 12:11:00		0								0.0			
BH01	19/05/17 12:12:00		0								0.0			
BH01	19/05/17 12:13:00		0								0.0			
BH01	19/05/17 12:14:00		0								0.0			
BH01	19/05/17 12:15:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH01	19/05/17 12:16:00			0.0	0.0	18.3	0.0	0	0	0.0				

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	19/05/17 12:17:00			0.0	0.0	18.9	0.0	0	0	0.0				
BH01	19/05/17 12:18:00			0.0	0.0	19.3	0.0	0	0	0.0				
BH01	19/05/17 12:19:00			0.0	0.0	19.5	0.0	0	0	0.0				Stable readings
BH01	19/05/17 12:20:00												2.06	
BH01	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH01	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
BH01	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH01	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
BH01	26/05/17 10:10:00	1017										24		
BH01	26/05/17 10:11:00		0								0.0			
BH01	26/05/17 10:12:00		0								0.0			
BH01	26/05/17 10:13:00		0								0.0			
BH01	26/05/17 10:14:00		0								0.0			
BH01	26/05/17 10:15:00		0								0.0			
BH01	26/05/17 10:16:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH01	26/05/17 10:17:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH01	26/05/17 10:18:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH01	26/05/17 10:19:00			0.0	0.0	20.6	0.0	0	0	0.0				

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	26/05/17 10:20:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH01	26/05/17 10:21:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	26/05/17 10:22:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	26/05/17 10:23:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	26/05/17 10:24:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	26/05/17 10:25:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH01	26/05/17 10:26:00												2.22	
BH01	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
BH01	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
BH01	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
BH01	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
BH01	02/06/17 12:30:00	1011	-0.02								0.0	20		
BH01	02/06/17 12:31:00										0.0			
BH01	02/06/17 12:32:00										0.0			
BH01	02/06/17 12:33:00										0.0			
BH01	02/06/17 12:34:00										0.0			
BH01	02/06/17 12:35:00			0.3	0.0	20.4	0.0	0	0	2.5				
BH01	02/06/17 12:36:00			0.2	0.0	20.4	0.0	0	0	2.0				

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	02/06/17 12:37:00			0.2	0.0	20.4	0.0	0	0	1.9				
BH01	02/06/17 12:38:00			0.2	0.0	20.4	0.0	0	0	1.9				
BH01	02/06/17 12:39:00			0.2	0.0	20.4	0.0	0	0	1.8				Stable Readings
BH01	02/06/17 12:40:00												2.14	
BH01	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
BH01	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
BH01	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
BH01	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
BH01	09/06/17 10:55:00	1008										15		
BH01	09/06/17 10:56:00		0								0.0			
BH01	09/06/17 10:57:00		0								0.0			
BH01	09/06/17 10:58:00		0								0.0			
BH01	09/06/17 10:59:00		0								0.0			
BH01	09/06/17 11:00:00		0								0.0			
BH01	09/06/17 11:01:00			0.1	0.0	19.7	0.0	0	0	0.0				
BH01	09/06/17 11:02:00			0.0	0.0	20.0	0.0	0	0	0.0				
BH01	09/06/17 11:03:00			0.0	0.0	20.1	0.0	0	0	0.0				
BH01	09/06/17 11:04:00			0.0	0.0	20.2	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH01	09/06/17 11:05:00			0.0	0.0	20.3	0.0	0	0	0.0				
BH01	09/06/17 11:06:00			0.0	0.0	20.3	0.0	0	0	0.0				
BH01	09/06/17 11:07:00			0.0	0.0	20.3	0.0	0	0	0.0				
BH01	09/06/17 11:08:00			0.0	0.0	20.4	0.0	0	0	0.0				
BH01	09/06/17 11:09:00			0.0	0.0	20.4	0.0	0	0	0.0				
BH01	09/06/17 11:10:00			0.0	0.0	20.4	0.0	0	0	0.0				
BH01	09/06/17 11:11:00												2.13	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
32933	**CT**

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
BH02	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH02	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH02	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH02	05/05/17 12:25:00	1020										16		
BH02	05/05/17 12:26:00		0								0.0			
BH02	05/05/17 12:27:00		0								0.0			
BH02	05/05/17 12:28:00		0								0.0			
BH02	05/05/17 12:29:00		0								0.0			
BH02	05/05/17 12:30:00		0								0.0			
BH02	05/05/17 12:31:00			0.0	0.0	20.9	0.0	0	0	0.1				
BH02	05/05/17 12:32:00			0.2	0.0	20.8	0.0	0	0	0.0				
BH02	05/05/17 12:33:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH02	05/05/17 12:34:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	05/05/17 12:35:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH02	05/05/17 12:36:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH02	05/05/17 12:37:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	05/05/17 12:38:00			0.0	0.0	20.8	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	05/05/17 12:39:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH02	05/05/17 12:40:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH02	05/05/17 12:41:00												2.52	
BH02	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
BH02	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH02	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
BH02	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH02	09/05/17 10:17:00	1021										11		
BH02	09/05/17 10:18:00		0								0.0			
BH02	09/05/17 10:19:00		0								0.0			
BH02	09/05/17 10:20:00		0								0.0			
BH02	09/05/17 10:21:00		0								0.0			
BH02	09/05/17 10:22:00		0								0.0			
BH02	09/05/17 10:23:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH02	09/05/17 10:24:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH02	09/05/17 10:25:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH02	09/05/17 10:26:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH02	09/05/17 10:27:00			0.0	0.0	20.9	0.0	0	0	0.0				Stable readings

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	09/05/17 10:28:00												2.52	
BH02	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH02	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
BH02	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
BH02	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
BH02	19/05/17 11:49:00	1005										13		Showers
BH02	19/05/17 11:50:00		0								0.0			
BH02	19/05/17 11:51:00		0								0.0			
BH02	19/05/17 11:52:00		0								0.0			
BH02	19/05/17 11:53:00		0								0.0			
BH02	19/05/17 11:54:00		0								0.0			
BH02	19/05/17 11:55:00			0.1	0.0	20.6	0.0	0	0	0.1				
BH02	19/05/17 11:56:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH02	19/05/17 11:57:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH02	19/05/17 11:58:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH02	19/05/17 11:59:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH02	19/05/17 12:00:00			0.0	0.0	20.5	0.0	0	0	0.0				Stable readings
BH02	19/05/17 12:01:00												2.38	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH02	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
BH02	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH02	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
BH02	26/05/17 10:59:00	1016										25		
BH02	26/05/17 11:00:00		0								0.0			
BH02	26/05/17 11:01:00		0								0.0			
BH02	26/05/17 11:02:00		0								0.0			
BH02	26/05/17 11:03:00		0								0.0			
BH02	26/05/17 11:04:00		0								0.0			
BH02	26/05/17 11:05:00			0.3	0.0	20.1	0.0	0	0	0.3				
BH02	26/05/17 11:06:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH02	26/05/17 11:07:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH02	26/05/17 11:08:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	26/05/17 11:09:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	26/05/17 11:10:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	26/05/17 11:11:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	26/05/17 11:12:00			0.0	0.0	20.8	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	26/05/17 11:13:00			0.0	0.0	20.8	0.0	0	0	0.0				
BH02	26/05/17 11:14:00			0.0	0.0	20.7	0.0	0	0	0.0				
BH02	26/05/17 11:15:00												2.47	
BH02	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
BH02	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
BH02	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
BH02	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
BH02	02/06/17 13:40:00	1010	0.35								0.0	20		
BH02	02/06/17 13:41:00										0.0			
BH02	02/06/17 13:42:00										0.0			
BH02	02/06/17 13:43:00										0.0			
BH02	02/06/17 13:44:00										0.0			
BH02	02/06/17 13:45:00			0.0	0.1	19.8	1.0	0	0	9.9				
BH02	02/06/17 13:46:00			0.0	0.1	19.9	1.0	0	0	8.2				
BH02	02/06/17 13:47:00			0.0	0.1	19.9	1.0	0	0	6.9				
BH02	02/06/17 13:48:00			0.0	0.1	19.9	1.0	0	0	6.3				
BH02	02/06/17 13:49:00			0.0	0.1	19.9	1.0	0	0	6.1				
BH02	02/06/17 13:50:00												2.45	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
BH02	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
BH02	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
BH02	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
BH02	09/06/17 11:28:00		0								0.0			
BH02	09/06/17 11:29:00		0								0.0			
BH02	09/06/17 11:30:00		0								0.0			
BH02	09/06/17 11:31:00		0								0.0			
BH02	09/06/17 11:32:00		0								0.0			
BH02	09/06/17 11:33:00			0.2	0.0	20.5	0.0	0	0	0.3				
BH02	09/06/17 11:34:00			0.1	0.0	20.5	0.0	0	0	0.0				
BH02	09/06/17 11:35:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH02	09/06/17 11:36:00			0.0	0.0	20.5	0.0	0	0	0.0				
BH02	09/06/17 11:37:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH02	09/06/17 11:38:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH02	09/06/17 11:39:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH02	09/06/17 11:40:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH02	09/06/17 11:41:00			0.0	0.0	20.6	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH02	09/06/17 11:42:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH02	09/06/17 11:43:00												2.48	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
BH03	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH03	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH03	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH03	05/05/17 14:13:00	1017										16		
BH03	05/05/17 14:14:00		0								0.0			
BH03	05/05/17 14:15:00		0								0.0			
BH03	05/05/17 14:16:00		0								0.0			
BH03	05/05/17 14:17:00		0								0.0			
BH03	05/05/17 14:18:00		0								0.0			
BH03	05/05/17 14:19:00			0.2	0.0	20.7	0.0	0	0	0.0				
BH03	05/05/17 14:20:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:21:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:22:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:23:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:24:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:25:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:26:00			0.0	0.0	20.9	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	05/05/17 14:27:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:28:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	05/05/17 14:29:00												2.34	
BH03	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
BH03	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH03	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
BH03	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH03	09/05/17 13:49:00	1020										15		
BH03	09/05/17 13:50:00		0								0.0			
BH03	09/05/17 13:51:00		0								0.0			
BH03	09/05/17 13:52:00		0								0.0			
BH03	09/05/17 13:53:00		0								0.0			
BH03	09/05/17 13:54:00		0								0.0			
BH03	09/05/17 13:55:00			0.1	0.0	20.8	0.0	0	0	0.0				
BH03	09/05/17 13:56:00			0.2	0.0	20.8	0.0	0	0	0.0				
BH03	09/05/17 13:57:00			0.5	0.0	20.6	0.0	0	0	0.0				
BH03	09/05/17 13:58:00			0.4	0.0	20.7	0.0	0	0	0.0				
BH03	09/05/17 13:59:00			0.3	0.0	20.8	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	09/05/17 14:00:00			0.2	0.0	20.8	0.0	0	0	0.0				
BH03	09/05/17 14:01:00			0.2	0.0	20.8	0.0	0	0	0.0				
BH03	09/05/17 14:02:00			0.2	0.0	20.9	0.0	0	0	0.0				
BH03	09/05/17 14:03:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	09/05/17 14:04:00			0.1	0.0	20.9	0.0	0	0	0.0				
BH03	09/05/17 14:05:00												2.35	
BH03	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH03	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
BH03	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
BH03	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
BH03	19/05/17 09:49:00	1003										12		Showers
BH03	19/05/17 09:50:00		0								0.0			
BH03	19/05/17 09:51:00		0								0.0			
BH03	19/05/17 09:52:00		0								0.0			
BH03	19/05/17 09:53:00		0								0.0			
BH03	19/05/17 09:54:00		0								0.0			
BH03	19/05/17 09:55:00			0.5	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 09:56:00			0.3	0.0	20.6	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
32933	**CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	19/05/17 09:57:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 09:58:00			0.1	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 09:59:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 10:00:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 10:01:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 10:02:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 10:03:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 10:04:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	19/05/17 10:05:00												2.22	
BH03	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
BH03	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
BH03	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
BH03	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
BH03	26/05/17 12:30:00	1014										26		
BH03	26/05/17 12:31:00		0								0.0			
BH03	26/05/17 12:32:00		0								0.0			
BH03	26/05/17 12:33:00		0								0.0			
BH03	26/05/17 12:34:00		0								0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	26/05/17 12:35:00		0								0.0			
BH03	26/05/17 12:36:00			0.2	0.0	20.8	0.0	0	0	0.0				
BH03	26/05/17 12:37:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:38:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:39:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:40:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:41:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:42:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:43:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:44:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:45:00			0.0	0.0	20.9	0.0	0	0	0.0				
BH03	26/05/17 12:46:00												2.27	
BH03	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
BH03	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
BH03	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
BH03	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
BH03	02/06/17 10:30:00	1012	-0.26								0.0	19		
BH03	02/06/17 10:31:00										0.0			

remarks
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GAS AND GROUNDWATER LEVELS

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SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	02/06/17 10:32:00										0.0			
BH03	02/06/17 10:33:00										0.0			
BH03	02/06/17 10:34:00										0.0			
BH03	02/06/17 10:35:00			0.6	0.0	19.8	1.0	0	0	2.3				
BH03	02/06/17 10:36:00			0.6	0.0	19.8	1.0	0	0	1.6				
BH03	02/06/17 10:37:00			0.5	0.0	19.9	1.0	0	0	1.2				
BH03	02/06/17 10:38:00			0.4	0.0	20.0	1.0	0	0	1.0				
BH03	02/06/17 10:39:00			0.3	0.0	20.0	1.0	0	0	0.9				
BH03	02/06/17 10:40:00			0.3	0.0	20.1	0.0	0	0	4.4				
BH03	02/06/17 10:41:00			0.3	0.0	20.1	0.0	0	0	5.0				
BH03	02/06/17 10:42:00			0.3	0.0	20.1	0.0	0	0	5.3				
BH03	02/06/17 10:43:00			0.2	0.0	20.2	0.0	0	0	5.3				
BH03	02/06/17 10:44:00			0.2	0.0	20.2	0.0	0	0	5.2				
BH03	02/06/17 10:45:00												2.24	
BH03	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
BH03	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
BH03	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
BH03	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

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SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
BH03	09/06/17 13:00:00	1008										17		
BH03	09/06/17 13:01:00		0								0.0			
BH03	09/06/17 13:02:00		0								0.0			
BH03	09/06/17 13:03:00		0								0.0			
BH03	09/06/17 13:04:00		0								0.0			
BH03	09/06/17 13:05:00		0								0.0			
BH03	09/06/17 13:06:00			0.3	0.0	20.3	0.0	0	0	0.0				
BH03	09/06/17 13:07:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:08:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:09:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:10:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:11:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:12:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:13:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:14:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:15:00			0.0	0.0	20.6	0.0	0	0	0.0				
BH03	09/06/17 13:16:00												2.27	

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
WS01	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS01	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS01	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS01	05/05/17 12:00:00	1020										15		
WS01	05/05/17 12:01:00		0								0.0			
WS01	05/05/17 12:02:00		0								0.0			
WS01	05/05/17 12:03:00		0								0.0			
WS01	05/05/17 12:04:00		0								0.0			
WS01	05/05/17 12:05:00		0								0.0			
WS01	05/05/17 12:06:00			2.2	0.0	18.1	0.0	0	0	0.0				
WS01	05/05/17 12:07:00			3.3	0.0	16.6	0.0	0	0	0.0				
WS01	05/05/17 12:08:00			3.5	0.0	16.4	0.0	0	0	0.0				
WS01	05/05/17 12:09:00			5.1	0.0	14.4	0.0	0	0	0.0				
WS01	05/05/17 12:10:00			6.3	0.0	13.2	0.0	0	0	1.0				
WS01	05/05/17 12:11:00			6.6	0.0	12.7	0.0	0	0	1.4				
WS01	05/05/17 12:12:00			7.7	0.0	11.5	0.0	0	0	2.3				
WS01	05/05/17 12:13:00			8.4	0.0	10.6	0.0	0	0	3.0				

remarks
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CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	05/05/17 12:14:00			9.3	0.0	10.6	0.0	0	0	3.3				
WS01	05/05/17 12:15:00			9.2	0.0	10.6	0.0	0	0	3.8				
WS01	05/05/17 12:16:00												Dry	
WS01	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
WS01	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS01	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
WS01	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS01	09/05/17 11:10:00	1020										12		
WS01	09/05/17 11:11:00		0								0.0			
WS01	09/05/17 11:12:00		0								0.0			
WS01	09/05/17 11:13:00		0								0.0			
WS01	09/05/17 11:14:00		0								0.0			
WS01	09/05/17 11:15:00		0								0.0			
WS01	09/05/17 11:16:00			3.2	0.0	16.9	0.0	0	0	0.0				
WS01	09/05/17 11:17:00			4.5	0.0	15.2	0.0	0	0	0.0				
WS01	09/05/17 11:18:00			5.9	0.0	13.7	0.0	0	0	0.0				
WS01	09/05/17 11:19:00			7.0	0.0	12.3	0.0	0	0	0.9				
WS01	09/05/17 11:20:00			7.6	0.0	11.7	0.0	0	0	1.2				

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GAS AND GROUNDWATER LEVELS

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SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	09/05/17 11:21:00			8.5	0.0	10.7	0.0	0	0	1.7				
WS01	09/05/17 11:22:00			9.1	0.0	10.1	0.0	0	0	2.2				
WS01	09/05/17 11:23:00			9.3	0.0	9.7	0.0	0	0	2.4				
WS01	09/05/17 11:24:00			9.4	0.0	9.5	0.0	0	0	2.5				
WS01	09/05/17 11:25:00			9.6	0.0	9.3	0.0	0	0	2.5				
WS01	09/05/17 11:26:00												Dry	
WS01	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS01	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS01	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
WS01	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
WS01	19/05/17 12:53:00	1010										14		Showers
WS01	19/05/17 12:54:00		0								0.0			
WS01	19/05/17 12:55:00		0								0.0			
WS01	19/05/17 12:56:00		0								0.0			
WS01	19/05/17 12:57:00		0								0.0			
WS01	19/05/17 12:58:00		0								0.0			
WS01	19/05/17 12:59:00			3.9	0.0	15.4	0.0	0	0	0.2				
WS01	19/05/17 13:00:00			5.9	0.0	13.3	0.0	0	0	0.4				

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GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	19/05/17 13:01:00			9.0	0.0	10.0	0.0	0	0	0.3				
WS01	19/05/17 13:02:00			10.5	0.0	8.5	0.0	0	0	0.2				
WS01	19/05/17 13:03:00			11.2	0.0	7.1	0.0	0	0	0.1				
WS01	19/05/17 13:04:00			12.2	0.0	6.6	0.0	0	0	0.0				
WS01	19/05/17 13:05:00			12.7	0.0	5.5	0.0	0	0	0.0				
WS01	19/05/17 13:06:00			12.9	0.0	5.5	0.0	0	0	0.0				
WS01	19/05/17 13:07:00			13.1	0.0	5.1	0.0	0	0	0.0				
WS01	19/05/17 13:08:00			13.1	0.0	5.1	0.0	0	0	0.0				
WS01	19/05/17 13:09:00												Dry	
WS01	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS01	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
WS01	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS01	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS01	26/05/17 10:38:00	1017										24		
WS01	26/05/17 10:39:00		0								0.0			
WS01	26/05/17 10:40:00		0								0.0			
WS01	26/05/17 10:41:00		0								0.0			
WS01	26/05/17 10:42:00		0								0.0			

remarks
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GAS AND GROUNDWATER LEVELS

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SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	26/05/17 10:43:00		0								0.0			
WS01	26/05/17 10:44:00			13.3	0.0	4.6	0.0	0	0	1.1				
WS01	26/05/17 10:45:00			13.8	0.0	4.1	0.0	0	0	0.7				
WS01	26/05/17 10:46:00			14.0	0.0	3.9	0.0	0	0	0.5				
WS01	26/05/17 10:47:00			14.1	0.0	4.0	0.0	0	0	0.0				
WS01	26/05/17 10:48:00			14.1	0.0	4.0	0.0	0	0	0.0				
WS01	26/05/17 10:49:00			12.0	0.0	6.6	0.0	0	0	0.0				
WS01	26/05/17 10:50:00			11.0	0.0	7.6	0.0	0	0	0.0				
WS01	26/05/17 10:51:00			11.4	0.0	7.3	0.0	0	0	0.0				
WS01	26/05/17 10:52:00			11.9	0.0	6.9	0.0	0	0	0.0				
WS01	26/05/17 10:53:00			12.2	0.0	6.6	0.0	0	0	0.0				
WS01	26/05/17 10:54:00												Dry	
WS01	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS01	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
WS01	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
WS01	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS01	02/06/17 13:15:00	1011	0.19								0.0	20		
WS01	02/06/17 13:16:00										0.0			

remarks
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Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	02/06/17 13:17:00										0.0			
WS01	02/06/17 13:18:00										0.0			
WS01	02/06/17 13:19:00										0.0			
WS01	02/06/17 13:20:00			8.1	0.0	10.3	0.0	0	0	9.9				
WS01	02/06/17 13:21:00			8.7	0.0	9.7	0.0	0	0	8.8				
WS01	02/06/17 13:22:00			9.5	0.0	9.0	0.0	0	0	7.9				
WS01	02/06/17 13:23:00			10.4	0.0	8.0	0.0	0	0	7.1				
WS01	02/06/17 13:24:00			11.2	0.0	7.2	0.0	0	0	6.7				
WS01	02/06/17 13:25:00			11.9	0.0	6.5	0.0	0	0	6.3				
WS01	02/06/17 13:26:00			12.4	0.0	6.0	0.0	0	0	6.0				
WS01	02/06/17 13:27:00			12.9	0.0	5.6	0.0	0	0	5.7				
WS01	02/06/17 13:28:00			13.1	0.0	5.3	0.0	0	0	5.7				
WS01	02/06/17 13:29:00			13.2	0.0	5.2	0.0	0	0	5.6				
WS01	02/06/17 13:30:00												Dry	
WS01	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
WS01	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
WS01	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
WS01	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

CHECKED **CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS01	09/06/17 10:27:00	1009										15		
WS01	09/06/17 10:28:00		0								0.0			
WS01	09/06/17 10:29:00		0								0.0			
WS01	09/06/17 10:30:00		0								0.0			
WS01	09/06/17 10:31:00		0								0.0			
WS01	09/06/17 10:32:00		0								0.0			
WS01	09/06/17 10:33:00			1.6	0.0	17.8	0.0	0	0	0.0				
WS01	09/06/17 10:34:00			3.4	0.0	15.8	0.0	0	0	0.0				
WS01	09/06/17 10:35:00			6.6	0.0	12.5	0.0	0	0	0.0				
WS01	09/06/17 10:36:00			8.5	0.0	10.1	0.0	0	0	0.0				
WS01	09/06/17 10:37:00			9.5	0.0	8.6	0.0	0	0	0.0				
WS01	09/06/17 10:38:00			11.2	0.0	6.7	0.0	0	0	0.0				
WS01	09/06/17 10:39:00			12.0	0.0	6.7	0.0	0	0	0.0				
WS01	09/06/17 10:40:00			12.4	0.0	5.1	0.0	0	0	0.0				
WS01	09/06/17 10:41:00			12.5	0.0	4.9	0.0	0	0	0.0				
WS01	09/06/17 10:42:00			12.8	0.0	4.5	0.0	0	0	0.0				
WS01	09/06/17 10:43:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
32933	**CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS02	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
WS02	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS02	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS02	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS02	05/05/17 10:50:00	1021										14		
WS02	05/05/17 10:51:00		0								0.0			
WS02	05/05/17 10:52:00		0								0.0			
WS02	05/05/17 10:53:00		0								0.0			
WS02	05/05/17 10:54:00		0								0.0			
WS02	05/05/17 10:55:00		0								0.0			
WS02	05/05/17 10:56:00			0.1	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 10:57:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 10:58:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 10:59:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 11:00:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 11:01:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 11:02:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 11:03:00			0.0	0.0	20.9	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS02	05/05/17 11:04:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 11:05:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	05/05/17 11:06:00												2.22	
WS02	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
WS02	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS02	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
WS02	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS02	09/05/17 10:31:00	1021										11		
WS02	09/05/17 10:32:00		0								0.0			
WS02	09/05/17 10:33:00		0								0.0			
WS02	09/05/17 10:34:00		0								0.0			
WS02	09/05/17 10:35:00		0								0.0			
WS02	09/05/17 10:36:00		0								0.0			
WS02	09/05/17 10:37:00			0.0	0.0	20.9	0.0	0	0	0.5				
WS02	09/05/17 10:38:00			0.0	0.0	20.9	0.0	0	0	0.3				
WS02	09/05/17 10:39:00			0.0	0.0	20.9	0.0	0	0	0.4				
WS02	09/05/17 10:40:00			0.0	0.0	20.9	0.0	0	0	0.4				
WS02	09/05/17 10:41:00			0.0	0.0	20.9	0.0	0	0	0.4				

remarks
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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS02	09/05/17 10:42:00			0.0	0.0	20.9	0.0	0	0	0.4				
WS02	09/05/17 10:43:00			0.0	0.0	20.9	0.0	0	0	0.4				
WS02	09/05/17 10:44:00												2.27	
WS02	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS02	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS02	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
WS02	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
WS02	19/05/17 13:13:00	1010										14		Showers
WS02	19/05/17 13:14:00		0								0.0			
WS02	19/05/17 13:15:00		0								0.0			
WS02	19/05/17 13:16:00		0								0.0			
WS02	19/05/17 13:17:00		0								0.0			
WS02	19/05/17 13:18:00		0								0.0			
WS02	19/05/17 13:19:00			0.1	0.0	20.8	0.0	0	0	0.0				
WS02	19/05/17 13:20:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	19/05/17 13:21:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	19/05/17 13:22:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS02	19/05/17 13:23:00			0.0	0.0	20.9	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS02	19/05/17 13:24:00												2.10	Stable readings
WS02	26/05/17 13:00:00													Borehole covered by JCB access ramp and inaccessable

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
WS03	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS03	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS03	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS03	05/05/17 10:30:00	1023										14		
WS03	05/05/17 10:31:00		0								0.0			
WS03	05/05/17 10:32:00		0								0.0			
WS03	05/05/17 10:33:00		0								0.0			
WS03	05/05/17 10:34:00		0								0.0			
WS03	05/05/17 10:35:00		0								0.0			
WS03	05/05/17 10:36:00			0.3	0.0	20.0	0.0	0	0	0.0				
WS03	05/05/17 10:37:00			0.1	0.0	20.5	0.0	0	0	0.0				
WS03	05/05/17 10:38:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS03	05/05/17 10:39:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	05/05/17 10:40:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	05/05/17 10:41:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	05/05/17 10:42:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	05/05/17 10:43:00			0.0	0.0	20.8	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	05/05/17 10:44:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	05/05/17 10:45:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	05/05/17 10:46:00												2.72	
WS03	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
WS03	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS03	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
WS03	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS03	09/05/17 09:40:00	1021										11		
WS03	09/05/17 09:41:00		0								0.0			
WS03	09/05/17 09:42:00		0								0.0			
WS03	09/05/17 09:43:00		0								0.0			
WS03	09/05/17 09:44:00		0								0.0			
WS03	09/05/17 09:45:00		0								0.0			
WS03	09/05/17 09:46:00			0.4	0.0	20.5	0.0	0	0	0.0				
WS03	09/05/17 09:47:00			0.1	0.0	20.7	0.0	0	0	0.0				
WS03	09/05/17 09:48:00			0.1	0.0	20.7	0.0	0	0	0.0				
WS03	09/05/17 09:49:00			0.1	0.0	20.7	0.0	0	0	0.0				
WS03	09/05/17 09:50:00			0.0	0.0	20.7	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	09/05/17 09:51:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	09/05/17 09:52:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	09/05/17 09:53:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	09/05/17 09:54:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	09/05/17 09:55:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS03	09/05/17 09:56:00												2.72	
WS03	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS03	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS03	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
WS03	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
WS03	19/05/17 12:31:00	1005										16		Showers
WS03	19/05/17 12:32:00		0								0.0			
WS03	19/05/17 12:33:00		0								0.0			
WS03	19/05/17 12:34:00		0								0.0			
WS03	19/05/17 12:35:00		0								0.0			
WS03	19/05/17 12:36:00		0								0.0			
WS03	19/05/17 12:37:00			1.3	0.0	20.2	0.0	0	0	0.0				
WS03	19/05/17 12:38:00			0.8	0.0	19.7	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	19/05/17 12:39:00			0.6	0.0	20.0	0.0	0	0	0.0				
WS03	19/05/17 12:40:00			0.5	0.0	20.0	0.0	0	0	0.0				
WS03	19/05/17 12:41:00			0.5	0.0	20.0	0.0	0	0	0.0				
WS03	19/05/17 12:42:00			0.4	0.0	20.1	0.0	0	0	0.0				
WS03	19/05/17 12:43:00			0.3	0.0	20.3	0.0	0	0	0.0				
WS03	19/05/17 12:44:00			0.2	0.0	20.4	0.0	0	0	0.0				
WS03	19/05/17 12:45:00			0.2	0.0	20.5	0.0	0	0	0.0				
WS03	19/05/17 12:46:00			0.2	0.0	20.5	0.0	0	0	0.0				
WS03	19/05/17 12:47:00												2.57	
WS03	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS03	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
WS03	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS03	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS03	26/05/17 11:24:00	1016										19		
WS03	26/05/17 11:25:00		0								0.0			
WS03	26/05/17 11:26:00		0								0.0			
WS03	26/05/17 11:27:00		0								0.0			
WS03	26/05/17 11:28:00		0								0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	26/05/17 11:29:00		0								0.0			
WS03	26/05/17 11:30:00			0.1	0.0	20.8	0.0	0	0	0.0				
WS03	26/05/17 11:31:00			0.2	0.0	20.8	0.0	0	0	0.0				
WS03	26/05/17 11:32:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:33:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:34:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:35:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:36:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:37:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:38:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:39:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS03	26/05/17 11:40:00												2.68	
WS03	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS03	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
WS03	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
WS03	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS03	02/06/17 11:20:00	1012	-0.27								0.0	18		
WS03	02/06/17 11:21:00										0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

CHECKED **CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	02/06/17 11:22:00										0.0			
WS03	02/06/17 11:23:00										0.0			
WS03	02/06/17 11:24:00										0.0			
WS03	02/06/17 11:25:00			0.4	0.0	20.2	0.0	0	0	9.6				
WS03	02/06/17 11:26:00			0.4	0.0	20.2	0.0	0	0	8.1				
WS03	02/06/17 11:27:00			0.3	0.0	20.3	0.0	0	0	6.9				
WS03	02/06/17 11:28:00			0.2	0.0	20.4	0.0	0	0	6.4				
WS03	02/06/17 11:29:00			0.2	0.0	20.4	0.0	0	0	6.1				
WS03	02/06/17 11:30:00			0.3	0.0	20.4	0.0	0	0	5.8				
WS03	02/06/17 11:31:00			0.3	0.0	20.4	0.0	0	0	5.5				
WS03	02/06/17 11:32:00			0.3	0.0	20.4	0.0	0	0	5.4				
WS03	02/06/17 11:33:00			0.2	0.0	20.5	0.0	0	0	5.3				
WS03	02/06/17 11:34:00			0.2	0.0	20.5	0.0	0	0	5.2				
WS03	02/06/17 11:35:00												2.67	
WS03	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
WS03	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
WS03	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
WS03	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS03	09/06/17 11:54:00	1008										16		
WS03	09/06/17 11:55:00		0								0.0			
WS03	09/06/17 11:56:00		0								0.0			
WS03	09/06/17 11:57:00		0								0.0			
WS03	09/06/17 11:58:00		0								0.0			
WS03	09/06/17 11:59:00		0								0.0			
WS03	09/06/17 12:00:00			1.3	0.0	19.2	0.0	0	0	0.0				
WS03	09/06/17 12:01:00			1.1	0.0	19.3	0.0	0	0	0.0				
WS03	09/06/17 12:02:00			1.0	0.0	19.4	0.0	0	0	0.0				
WS03	09/06/17 12:03:00			0.8	0.0	19.7	0.0	0	0	0.0				
WS03	09/06/17 12:04:00			1.0	0.0	19.4	0.0	0	0	0.0				
WS03	09/06/17 12:05:00			1.2	0.0	19.3	0.0	0	0	0.0				
WS03	09/06/17 12:06:00			0.8	0.0	19.6	0.0	0	0	0.0				
WS03	09/06/17 12:07:00			0.7	0.0	19.8	0.0	0	0	0.0				
WS03	09/06/17 12:08:00			0.9	0.0	19.6	0.0	0	0	0.0				
WS03	09/06/17 12:09:00			0.9	0.0	19.6	0.0	0	0	0.0				
WS03	09/06/17 12:10:00												2.64	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
WS04	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS04	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS04	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS04	05/05/17 14:41:00	1016										18		
WS04	05/05/17 14:42:00		0								0.0			
WS04	05/05/17 14:43:00		0								0.0			
WS04	05/05/17 14:44:00		0								0.0			
WS04	05/05/17 14:45:00		0								0.0			
WS04	05/05/17 14:46:00		0								0.0			
WS04	05/05/17 14:47:00			0.2	0.0	20.7	0.0	0	0	0.4				
WS04	05/05/17 14:48:00			0.2	0.0	20.6	0.0	0	0	0.9				
WS04	05/05/17 14:49:00			0.2	0.0	20.6	0.0	0	0	1.0				
WS04	05/05/17 14:50:00			0.2	0.0	20.7	0.0	0	0	1.1				
WS04	05/05/17 14:51:00			0.3	0.0	20.6	0.0	0	0	1.5				
WS04	05/05/17 14:52:00			0.3	0.0	20.7	0.0	0	0	1.6				
WS04	05/05/17 14:53:00			0.3	0.0	20.6	0.0	0	0	1.7				
WS04	05/05/17 14:54:00			0.3	0.0	20.6	0.0	0	0	1.5				

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	05/05/17 14:55:00			0.3	0.0	20.5	0.0	0	0	1.9				
WS04	05/05/17 14:56:00			0.2	0.0	20.6	0.0	0	0	1.8				
WS04	05/05/17 14:57:00												Dry	
WS04	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
WS04	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS04	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
WS04	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS04	09/05/17 11:33:00	1020										14		
WS04	09/05/17 11:34:00		0								0.0			
WS04	09/05/17 11:35:00		0								0.0			
WS04	09/05/17 11:36:00		0								0.0			
WS04	09/05/17 11:37:00		0								0.0			
WS04	09/05/17 11:38:00		0								0.0			
WS04	09/05/17 11:39:00			0.1	0.0	20.8	0.0	0	0	0.0				
WS04	09/05/17 11:40:00			0.1	0.0	20.8	0.0	0	0	0.0				
WS04	09/05/17 11:41:00			0.1	0.0	20.8	0.0	0	0	0.0				
WS04	09/05/17 11:42:00			0.1	0.0	20.8	0.0	0	0	0.0				
WS04	09/05/17 11:43:00			0.1	0.0	20.8	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	09/05/17 11:44:00			0.1	0.0	20.8	0.0	0	0	0.0				Stable readings
WS04	09/05/17 11:45:00												Dry	
WS04	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS04	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS04	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
WS04	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
WS04	19/05/17 10:25:00	1004										12		Showers
WS04	19/05/17 10:26:00		0								0.0			
WS04	19/05/17 10:27:00		0								0.0			
WS04	19/05/17 10:28:00		0								0.0			
WS04	19/05/17 10:29:00		0								0.0			
WS04	19/05/17 10:30:00		0								0.0			
WS04	19/05/17 10:31:00			0.1	0.0	20.6	0.0	0	0	0.0				
WS04	19/05/17 10:32:00			0.1	0.0	20.6	0.0	0	0	0.0				
WS04	19/05/17 10:33:00			0.1	0.0	20.6	0.0	0	0	0.0				
WS04	19/05/17 10:34:00			0.3	0.0	20.4	0.0	0	0	0.0				
WS04	19/05/17 10:35:00			0.5	0.0	20.2	0.0	0	0	0.0				
WS04	19/05/17 10:36:00			0.6	0.0	20.1	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	19/05/17 10:37:00			0.6	0.0	20.1	0.0	0	0	0.0				
WS04	19/05/17 10:38:00			0.6	0.0	20.1	0.0	0	0	0.0				
WS04	19/05/17 10:39:00			0.5	0.0	20.1	0.0	0	0	0.0				
WS04	19/05/17 10:40:00			0.5	0.0	20.1	0.0	0	0	0.0				
WS04	19/05/17 10:41:00												Dry	
WS04	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS04	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
WS04	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS04	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS04	26/05/17 12:52:00	1014										26		
WS04	26/05/17 12:53:00		0								0.0			
WS04	26/05/17 12:54:00		0								0.0			
WS04	26/05/17 12:55:00		0								0.0			
WS04	26/05/17 12:56:00		0								0.0			
WS04	26/05/17 12:57:00		0								0.0			
WS04	26/05/17 12:58:00			0.5	0.0	20.0	0.0	0	0	0.1				
WS04	26/05/17 12:59:00			0.6	0.0	19.9	0.0	0	0	0.1				
WS04	26/05/17 13:00:00			0.6	0.0	20.1	0.0	0	0	0.0				

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

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SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	26/05/17 13:01:00			0.6	0.0	20.1	0.0	0	0	0.0				
WS04	26/05/17 13:02:00			0.6	0.0	20.2	0.0	0	0	0.0				
WS04	26/05/17 13:03:00			0.6	0.0	20.2	0.0	0	0	0.0				
WS04	26/05/17 13:04:00			0.6	0.0	20.2	0.0	0	0	0.0				
WS04	26/05/17 13:05:00			0.5	0.0	20.2	0.0	0	0	0.0				
WS04	26/05/17 13:06:00			0.6	0.0	20.2	0.0	0	0	0.0				
WS04	26/05/17 13:07:00			0.6	0.0	20.3	0.0	0	0	0.0				
WS04	26/05/17 13:08:00												Dry	
WS04	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS04	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
WS04	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
WS04	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS04	02/06/17 10:10:00	1013	-0.52								0.1	18		
WS04	02/06/17 10:11:00										0.0			
WS04	02/06/17 10:12:00										0.0			
WS04	02/06/17 10:13:00										0.0			
WS04	02/06/17 10:14:00										0.0			
WS04	02/06/17 10:15:00			0.4	0.0	19.7	1.0	0	0	14.7				

remarks
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VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

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Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	02/06/17 10:16:00			0.5	0.0	19.6	0.0	0	0	11.3				
WS04	02/06/17 10:17:00			0.7	0.0	19.5	0.0	0	0	10.0				
WS04	02/06/17 10:18:00			0.7	0.0	19.4	0.0	0	0	9.5				
WS04	02/06/17 10:19:00			0.9	0.0	19.2	0.0	0	0	8.6				
WS04	02/06/17 10:20:00			0.9	0.1	19.2	0.0	0	0	8.1				
WS04	02/06/17 10:21:00			0.9	0.0	19.2	0.0	0	0	7.9				
WS04	02/06/17 10:22:00			0.9	0.0	19.3	0.0	0	0	7.6				
WS04	02/06/17 10:23:00			0.9	0.0	19.3	0.0	0	0	7.4				
WS04	02/06/17 10:24:00			0.9	0.0	19.3	0.0	0	0	7.3				
WS04	02/06/17 10:25:00												Dry	
WS04	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
WS04	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
WS04	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
WS04	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
WS04	09/06/17 13:27:00	1008										17		
WS04	09/06/17 13:28:00		0								0.0			
WS04	09/06/17 13:29:00		-1								-0.3			
WS04	09/06/17 13:30:00		0								0.0			

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS04	09/06/17 13:31:00		-1								-0.3			
WS04	09/06/17 13:32:00		0								0.0			
WS04	09/06/17 13:33:00			0.0	0.0	20.5	0.0	0	0	0.0				
WS04	09/06/17 13:34:00			0.1	0.0	20.5	0.0	0	0	0.0				
WS04	09/06/17 13:35:00			0.2	0.0	20.4	0.0	0	0	0.0				
WS04	09/06/17 13:36:00			0.3	0.0	20.2	0.0	0	0	0.0				
WS04	09/06/17 13:37:00			0.6	0.0	20.0	0.0	0	0	0.0				
WS04	09/06/17 13:38:00			0.6	0.0	19.9	0.0	0	0	0.0				
WS04	09/06/17 13:39:00			0.6	0.0	19.9	0.0	0	0	0.0				
WS04	09/06/17 13:40:00			0.6	0.0	19.9	0.0	0	0	0.0				
WS04	09/06/17 13:41:00			0.6	0.0	19.9	0.0	0	0	0.0				
WS04	09/06/17 13:42:00			0.6	0.0	19.9	0.0	0	0	0.0				
WS04	09/06/17 13:43:00												Dry	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

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GAS AND GROUNDWATER LEVELS

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SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	02/05/17 00:00:00	1019												Barometric Pressure Atmospherics (Benson)
WS06	03/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS06	04/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS06	05/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS06	05/05/17 13:26:00	1018										17		
WS06	05/05/17 13:27:00		0								0.0			
WS06	05/05/17 13:28:00		0								0.0			
WS06	05/05/17 13:29:00		0								0.0			
WS06	05/05/17 13:30:00		0								0.0			
WS06	05/05/17 13:31:00		0								0.0			
WS06	05/05/17 13:32:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:33:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:34:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:35:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:36:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:37:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:38:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:39:00			0.0	0.0	20.7	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	05/05/17 13:40:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:41:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	05/05/17 13:42:00												2.30	
WS06	06/05/17 00:00:00	1014												Barometric Pressure Atmospherics (Benson)
WS06	07/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS06	08/05/17 00:00:00	1027												Barometric Pressure Atmospherics (Benson)
WS06	09/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS06	09/05/17 09:24:00	1022										11		
WS06	09/05/17 09:25:00		0								0.0			
WS06	09/05/17 09:26:00		0								0.0			
WS06	09/05/17 09:27:00		0								0.0			
WS06	09/05/17 09:28:00		0								0.0			
WS06	09/05/17 09:29:00		0								0.0			
WS06	09/05/17 09:30:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS06	09/05/17 09:31:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS06	09/05/17 09:32:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS06	09/05/17 09:33:00			0.0	0.0	20.8	0.0	0	0	0.0				
WS06	09/05/17 09:34:00			0.0	0.0	20.8	0.0	0	0	0.0				Stable readings

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
32933	**CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	09/05/17 09:35:00												2.30	
WS06	16/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS06	17/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS06	18/05/17 00:00:00	1013												Barometric Pressure Atmospherics (Benson)
WS06	19/05/17 00:00:00	1012												Barometric Pressure Atmospherics (Benson)
WS06	19/05/17 13:42:00	1010										15		Showers
WS06	19/05/17 13:43:00		0								0.0			
WS06	19/05/17 13:44:00		0								0.0			
WS06	19/05/17 13:45:00		0								0.0			
WS06	19/05/17 13:46:00		0								0.0			
WS06	19/05/17 13:47:00		0								0.0			
WS06	19/05/17 13:48:00			0.0	0.0	20.7	0.0	0	0	0.0				
WS06	19/05/17 13:49:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	19/05/17 13:50:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	19/05/17 13:51:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	19/05/17 13:52:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	19/05/17 13:53:00			0.0	0.0	20.9	0.0	0	0	0.0				Stable readings
WS06	19/05/17 13:54:00												2.09	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
32933	**CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	23/05/17 00:00:00	1021												Barometric Pressure Atmospherics (Benson)
WS06	24/05/17 00:00:00	1026												Barometric Pressure Atmospherics (Benson)
WS06	25/05/17 00:00:00	1023												Barometric Pressure Atmospherics (Benson)
WS06	26/05/17 00:00:00	1017												Barometric Pressure Atmospherics (Benson)
WS06	26/05/17 11:56:00	1013										25		
WS06	26/05/17 11:57:00		0								0.0			
WS06	26/05/17 11:58:00		0								0.0			
WS06	26/05/17 11:59:00		0								0.0			
WS06	26/05/17 12:00:00		0								0.0			
WS06	26/05/17 12:01:00		0								0.0			
WS06	26/05/17 12:02:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:03:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:04:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:05:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:06:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:07:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:08:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:09:00			0.0	0.0	20.9	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT	CHECKED
32933	**CT**

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	26/05/17 12:10:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:11:00			0.0	0.0	20.9	0.0	0	0	0.0				
WS06	26/05/17 12:12:00												2.29	
WS06	30/05/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS06	31/05/17 00:00:00	1022												Barometric Pressure Atmospherics (Benson)
WS06	01/06/17 00:00:00	1020												Barometric Pressure Atmospherics (Benson)
WS06	02/06/17 00:00:00	1016												Barometric Pressure Atmospherics (Benson)
WS06	02/06/17 12:00:00	1011	-0.25								0.0	20		
WS06	02/06/17 12:01:00										0.0			
WS06	02/06/17 12:02:00										0.0			
WS06	02/06/17 12:03:00										0.0			
WS06	02/06/17 12:04:00										0.0			
WS06	02/06/17 12:05:00			0.1	0.0	20.0	0.0	0	4	17.5				
WS06	02/06/17 12:06:00			0.1	0.0	20.1	0.0	0	3	13.4				
WS06	02/06/17 12:07:00			0.1	0.0	20.2	0.0	0	2	11.9				
WS06	02/06/17 12:08:00			0.1	0.0	20.2	0.0	0	2	10.7				
WS06	02/06/17 12:09:00			0.1	0.0	20.2	0.0	0	2	10.3				
WS06	02/06/17 12:10:00			0.0	0.0	20.1	0.0	0	1	9.5				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	02/06/17 12:11:00			0.0	0.0	20.1	0.0	0	1	8.4				
WS06	02/06/17 12:12:00			0.0	0.0	20.1	0.0	0	1	7.8				
WS06	02/06/17 12:13:00			0.0	0.0	20.1	0.0	0	0	7.8				
WS06	02/06/17 12:14:00			0.0	0.0	20.1	0.0	0	1	7.6				
WS06	02/06/17 12:15:00												2.21	
WS06	06/06/17 00:00:00	996												Barometric Pressure Atmospherics (Benson)
WS06	07/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
WS06	08/06/17 00:00:00	1009												Barometric Pressure Atmospherics (Benson)
WS06	09/06/17 00:00:00	1011												Barometric Pressure Atmospherics (Benson)
WS06	09/06/17 12:33:00	1009										16		
WS06	09/06/17 12:34:00		0								0.0			
WS06	09/06/17 12:35:00		0								0.0			
WS06	09/06/17 12:36:00		0								0.0			
WS06	09/06/17 12:37:00		0								0.0			
WS06	09/06/17 12:38:00		0								0.0			
WS06	09/06/17 12:39:00			0.1	0.0	20.5	0.0	0	0	0.0				
WS06	09/06/17 12:40:00			0.0	0.0	20.5	0.0	0	0	0.0				
WS06	09/06/17 12:41:00			0.0	0.0	20.6	0.0	0	0	0.0				

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: THAMES PROPERTIES LIMITED

SITE: COX & WYMAN BUILDING, CARDIFF ROAD, READING

Borehole /trial pit no.	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
WS06	09/06/17 12:42:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:43:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:44:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:45:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:46:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:47:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:48:00			0.0	0.0	20.6	0.0	0	0	0.0				
WS06	09/06/17 12:49:00												2.21	

remarks
denotes result exceeding capacity of gas monitoring equipment
VOC - Photoionisation Detector Mini RAE 2000 measures VOC vapours with 10.6eV lamp calibrated against isobutylene.

CONTRACT **32933**

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APPENDIX B

LABORATORY TESTING

2718

GEOTECHNICAL ENGINEERING LIMITED

Version No. 2

For the attention of Martin McDowell/Dave Owen

Date of Issue 21/07/2017

TEST REPORT

PROJECT/SITE	Cox & Wyman Building, Cardiff Road, Reading	Samples received	16/05/2017
GEL REPORT NUMBER	32933	Schedule received	16/05/2017
Your ref/PO:	0	Testing commenced	19/05/2017
Test report refers to	Schedule 1	Status	Final

SUMMARY OF RESULTS ATTACHED

TEST METHOD & DESCRIPTION	QUANTITY	ACCREDITED TEST
BS EN ISO 17892-1: 2014:5. Water Content	6	YES
BS1377: Part 2: 1990:3.3, Saturation Moisture Content	15	YES
BS1377: Part 2: 1990:4.2-4.4&5.2-5.4, Liquid & Plastic Limits	6	YES
BS EN ISO 17892-4: 2016: 5.2, Particle Size Distribution - Wet Sieve	6	YES
BS EN ISO 17892-4: 2016: 5.4, Particle Size Distribution - Pipette	6	YES
ISRM: Suggested Methods: 2007 Editon: Uniaxial Compressive Strength of Rock	2	YES
ISRM: Suggested Methods 2007 Edition: Point Load Strength Test	16	NO
BRE SD1 Reduced Suite: pH, Sulphate - water and acid soluble, sulphur (Subcontracted)	10	YES

Remarks

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Approved Signatories:

S Robinson (Client Manager) W Jones (Technical Support)

J Hanson (Director) N Parry (Director)

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Geotechnical Engineering Limited

SATURATION MOISTURE CONTENT OF CHALK

BS.1377 : PART 2 : 1990 : 3.3

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole /trial pit no.	sample		specimen depth (m)	natural moisture content (%)	bulk density (Mg/m3)	dry density (Mg/m3)	saturation moisture content (%)	porosity (%)	description and remarks
	no./type	depth (m)							
BH01	29C	14.20	14.80	27.00	1.99	1.57	27	42	Off white CHALK
BH01	33C	17.20	18.20	27.50	1.98	1.56	27	42	Off white CHALK #
BH01	35C	18.70	18.80	26.10	2.01	1.59	26	41	Off white CHALK #
BH02	32L	9.70	11.70	25.30	2.02	1.61	25	40	Off white CHALK #
BH02	42C	14.20	15.00	26.40	2.00	1.58	26	41	Off white CHALK
BH02	48C	18.70	20.10	23.90	2.04	1.65	24	39	Off white CHALK
BH03	28L	9.30	10.70	24.40	2.03	1.63	24	39	Off white CHALK #
BH03	31L	10.80	11.50	24.60	1.96	1.57	27	42	Off white CHALK #
BH03	45C	18.30	18.80	19.40	2.11	1.77	19	34	Off white CHALK
BH04B	19L	11.20	12.40	27.20	1.99	1.56	27	42	Off white CHALK #
BH04B	27C	17.20	18.60	25.30	2.02	1.61	25	40	Off white CHALK #
BH04B	29C	18.70	19.65	23.50	2.04	1.66	23	39	Off white CHALK #
BH05	23L	11.20	12.00	24.00	2.03	1.64	24	39	Off white CHALK #
BH05	29C	14.20	15.00	25.50	2.02	1.61	25	40	Off white CHALK #
BH05	31C	15.70	16.70	25.80	2.02	1.60	25	41	Off white CHALK

general remarks

natural moisture content determined in accordance with BS1377 : Part 2 : 1990 : 3.2 (unless specified)

denotes sample tested is smaller than that which is recommended in accordance with BS1377

test method

immersion in water (test 3.3)

CONTRACT	CHECKED
32933	**SR**

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LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole /trial pit no.	sample		specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plastic limit (%)	plasticity index (%)	description and remarks
	no./type	depth (m)								
BH01	8D	1.70	1.70	26.8	AXE	0	49	19	30	Orangish brown slightly sandy silty CLAY
BH02	7D	1.70	1.70	27.7	BXE	18	45	22	23	Brown slightly sandy slightly gravelly CLAY
BH02	11D	2.40	2.40	22.2	BXE	8	39	17	22	Light brown slightly sandy slightly gravelly CLAY
BH04B	5D	2.20	2.20	15.7	BYE	53	30	16	14	Orangish brown slightly gravelly clayey SAND
BH05	5D	2.00	2.00	23.9	BXE	8	41	18	23	Brown slightly sandy slightly gravelly CLAY
BH05	8D	2.50	2.50	12.4	BXE	20	38	16	22	Greyish brown slightly sandy slightly gravelly CLAY

general remarks

natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)

NP denotes non plastic

denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

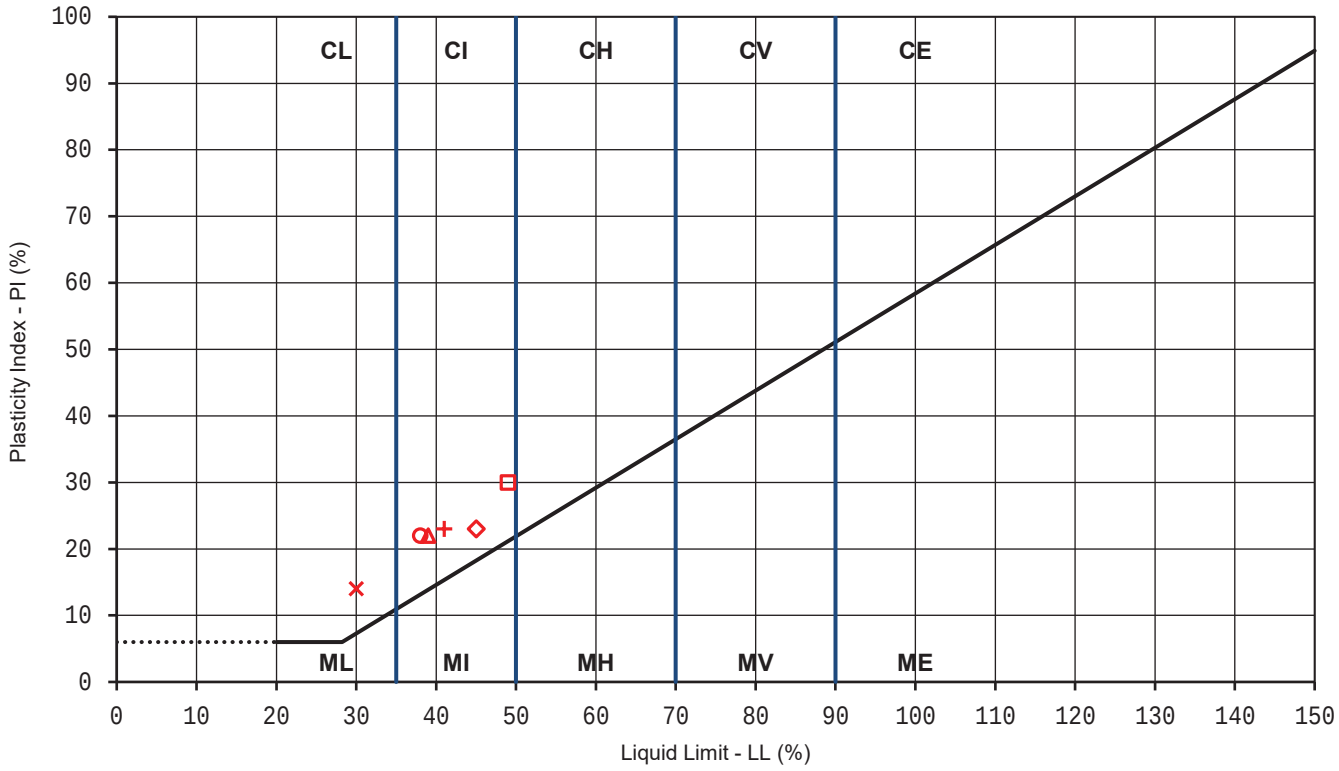
specimen preparation		test method	CONTRACT	CHECKED
A - as received	D - oven dried (60oC)	X - cone penetrometer (test 4.3)		
B - washed on 0.425mm sieve	E - oven dried (105oC)	Y - cone penetrometer (test 4.4)	**32933**	**SR**
C - air dried	F - not known	Z - casagrande apparatus (test 4.5)		

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ATTERBERG LINE PLOT

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING



	BH/TP No.	depth (m)	LL	PL	PI	remarks
□	BH01	1.70	49	19	30	
◇	BH02	1.70	45	22	23	
△	BH02	2.40	39	17	22	
×	BH04B	2.20	30	16	14	
+	BH05	2.00	41	18	23	
○	BH05	2.50	38	16	22	

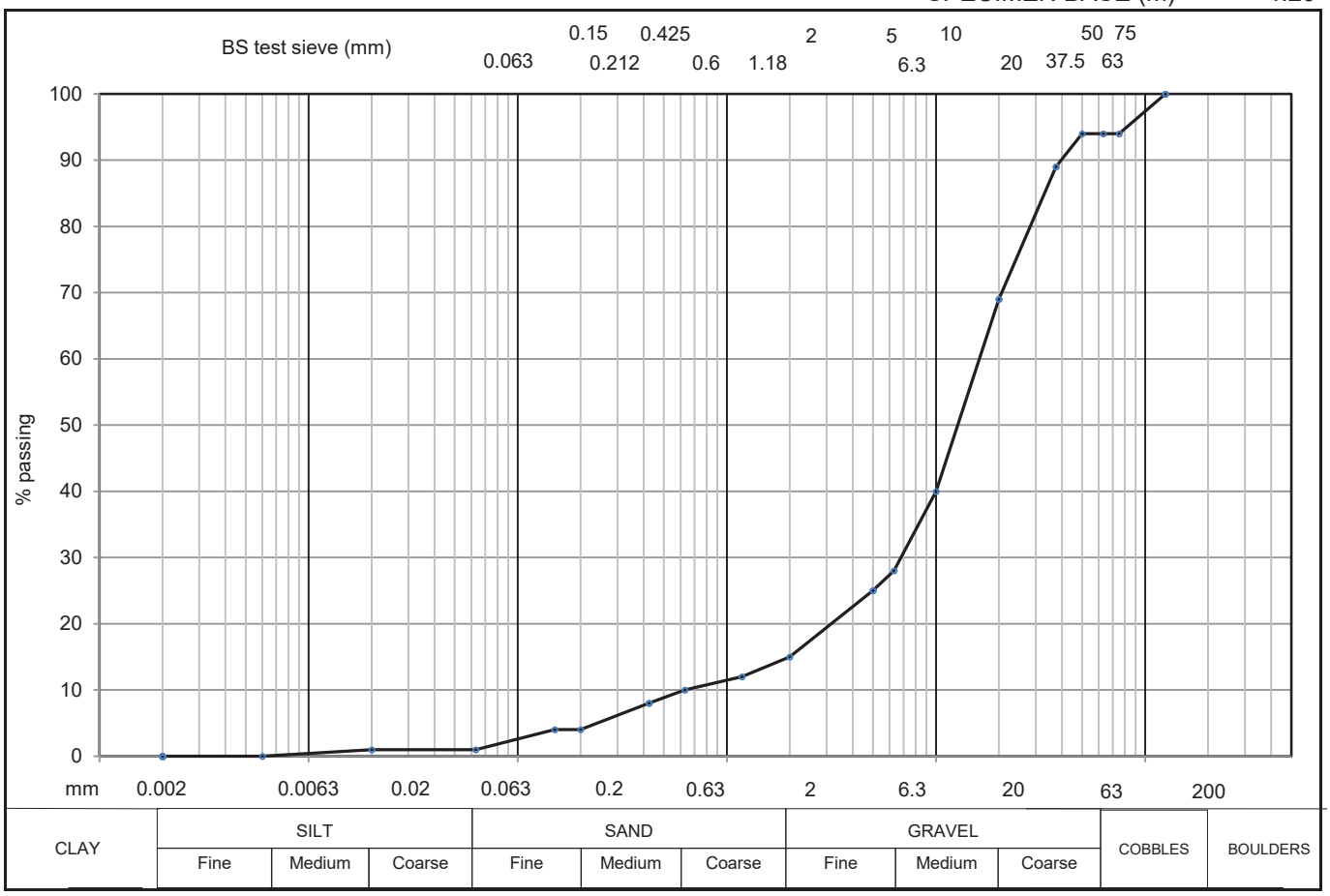
CONTRACT	CHECKED
32933	**SR**

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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	THAMES PROPERTIES LIMITED	BH/TP No.	BH01
SITE	COX & WYMAN BUILDING, CARDIFF ROAD, READING	SAMPLE No./TYPE	13L
		SAMPLE DEPTH (m)	3.20
DESCRIPTION	Light brown slightly silty sandy GRAVEL with a medium cobble content	SPECIMEN TOP (m)	3.20
		SPECIMEN BASE (m)	4.20



soil type	% fraction
CLAY	0
SILT	1
SILT & CLAY	1
SAND	13
GRAVEL	79
COBBLE & BOULDER	6
test method(s)	5.2# & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	25	20	1
75	94	2	15	6	0
63	94	1.18	12	2	0
50	94	0.63	10		
37.5	89	0.425	8		
20	69	0.2	4		
10	40	0.15	4		
6.3	28	0.063	1		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

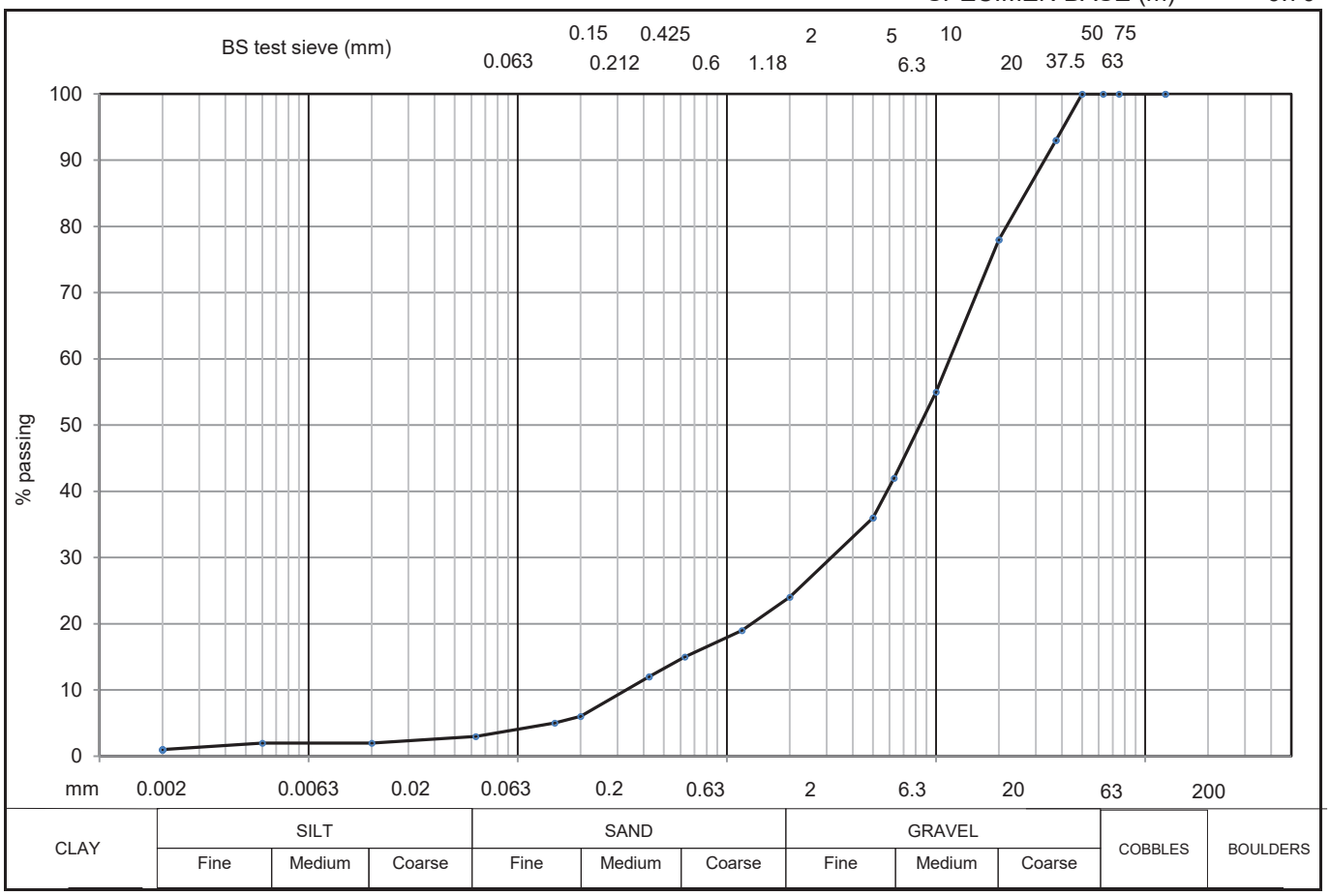
CONTRACT	CHECKED
32933	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	THAMES PROPERTIES LIMITED	BH/TP No.	BH01
SITE	COX & WYMAN BUILDING, CARDIFF ROAD, READING	SAMPLE No./TYPE	17L
		SAMPLE DEPTH (m)	5.20
DESCRIPTION	Light brown slightly silty very sandy GRAVEL	SPECIMEN TOP (m)	6.00
		SPECIMEN BASE (m)	6.70



soil type	% fraction
CLAY	1
SILT	2
SILT & CLAY	3
SAND	21
GRAVEL	76
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	36	20	2
75		2	24	6	2
63		1.18	19	2	1
50	100	0.63	15		
37.5	93	0.425	12		
20	78	0.2	6		
10	55	0.15	5		
6.3	42	0.063	3		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

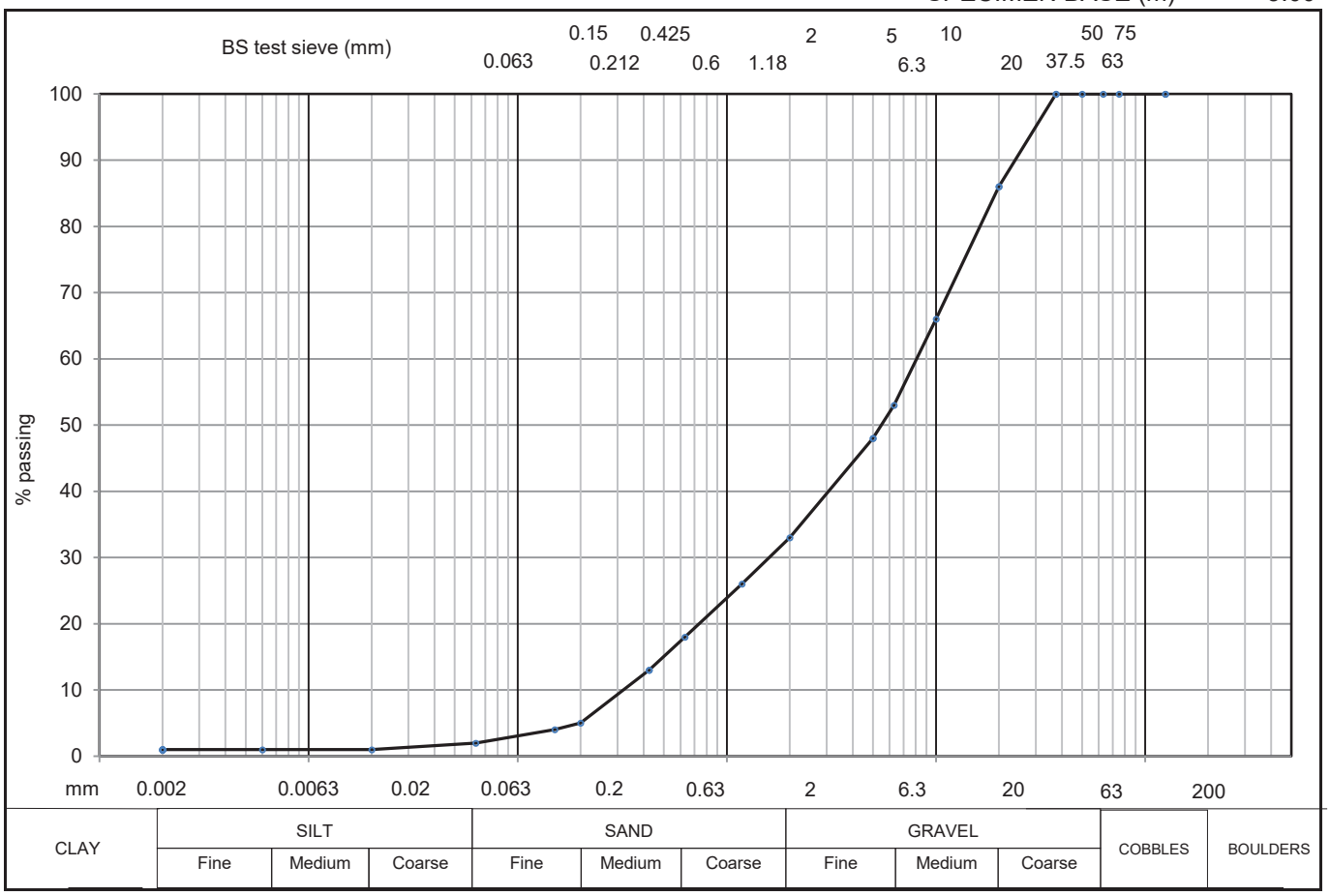
CONTRACT	CHECKED
32933	**SR**

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PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	THAMES PROPERTIES LIMITED	BH/TP No.	BH02
SITE	COX & WYMAN BUILDING, CARDIFF ROAD, READING	SAMPLE No./TYPE	18L
		SAMPLE DEPTH (m)	4.20
DESCRIPTION	Light brown slightly silty very sandy GRAVEL	SPECIMEN TOP (m)	4.30
		SPECIMEN BASE (m)	5.00



soil type	% fraction
CLAY	1
SILT	2
SILT & CLAY	2
SAND	31
GRAVEL	67
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	48	20	1
75		2	33	6	1
63		1.18	26	2	1
50		0.63	18		
37.5	100	0.425	13		
20	86	0.2	5		
10	66	0.15	4		
6.3	53	0.063	2		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

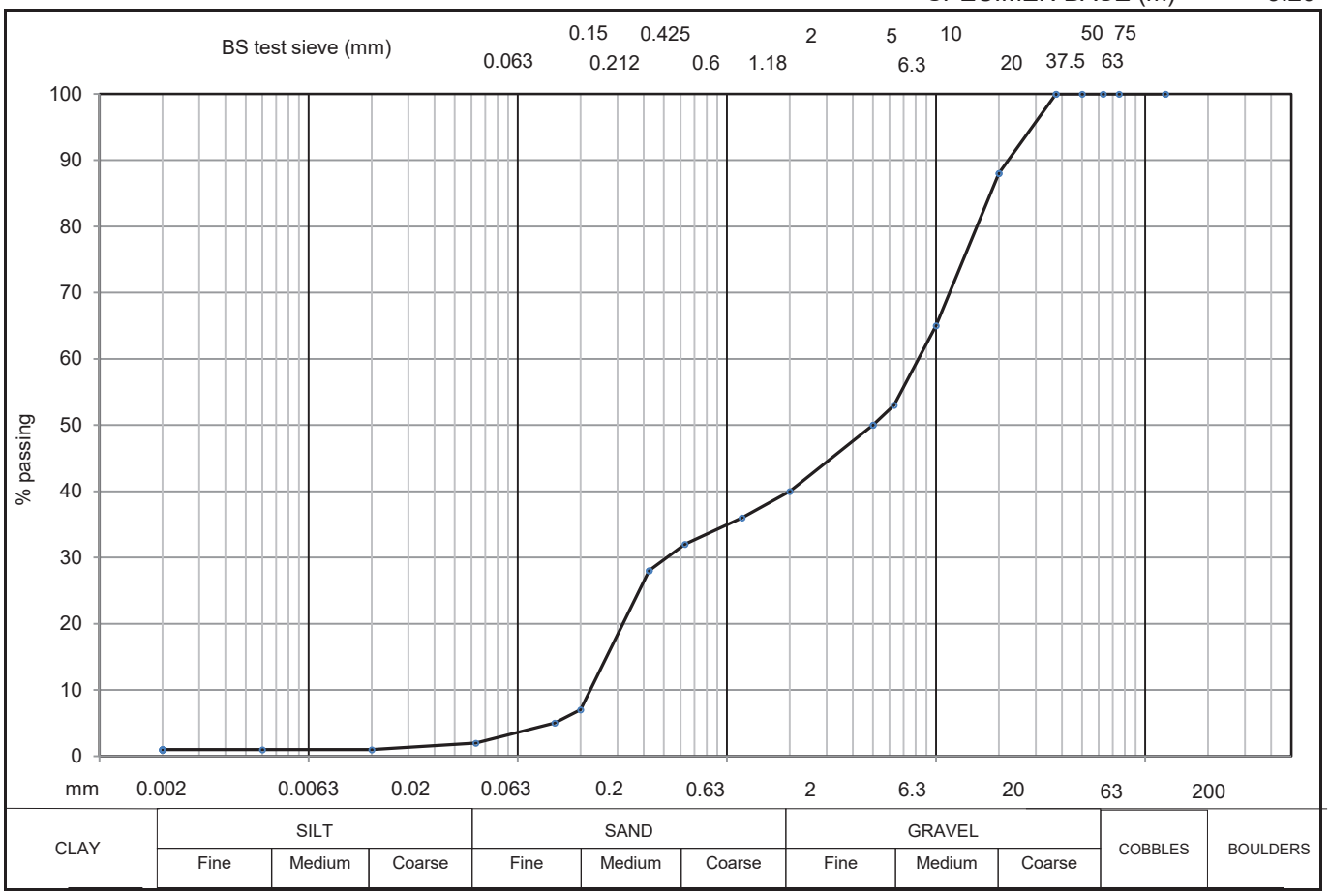
CONTRACT	CHECKED
32933	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	THAMES PROPERTIES LIMITED	BH/TP No.	BH03
SITE	COX & WYMAN BUILDING, CARDIFF ROAD, READING	SAMPLE No./TYPE	17L
		SAMPLE DEPTH (m)	4.20
DESCRIPTION	Light brown slightly silty very sandy GRAVEL	SPECIMEN TOP (m)	4.20
		SPECIMEN BASE (m)	5.20



soil type	% fraction
CLAY	1
SILT	2
SILT & CLAY	2
SAND	38
GRAVEL	60
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	50	20	1
75		2	40	6	1
63		1.18	36	2	1
50		0.63	32		
37.5	100	0.425	28		
20	88	0.2	7		
10	65	0.15	5		
6.3	53	0.063	2		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

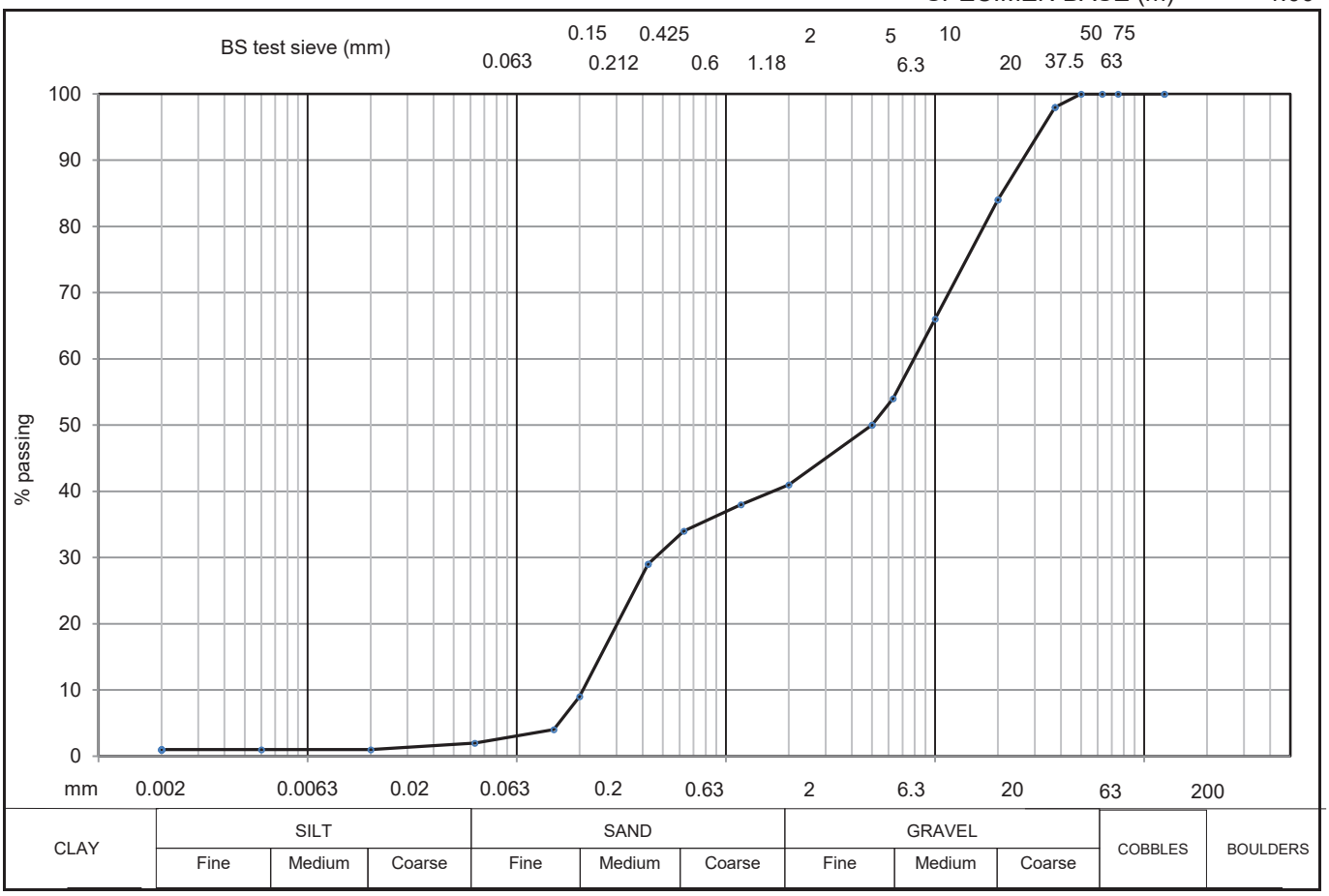
CONTRACT	CHECKED
32933	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	THAMES PROPERTIES LIMITED	BH/TP No.	BH04B
SITE	COX & WYMAN BUILDING, CARDIFF ROAD, READING	SAMPLE No./TYPE	8L
		SAMPLE DEPTH (m)	3.20
DESCRIPTION	Light brown slightly silty very sandy GRAVEL	SPECIMEN TOP (m)	3.40
		SPECIMEN BASE (m)	4.00



soil type	% fraction
CLAY	1
SILT	1
SILT & CLAY	2
SAND	39
GRAVEL	59
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	50	20	1
75		2	41	6	1
63		1.18	38	2	1
50	100	0.63	34		
37.5	98	0.425	29		
20	84	0.2	9		
10	66	0.15	4		
6.3	54	0.063	2		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

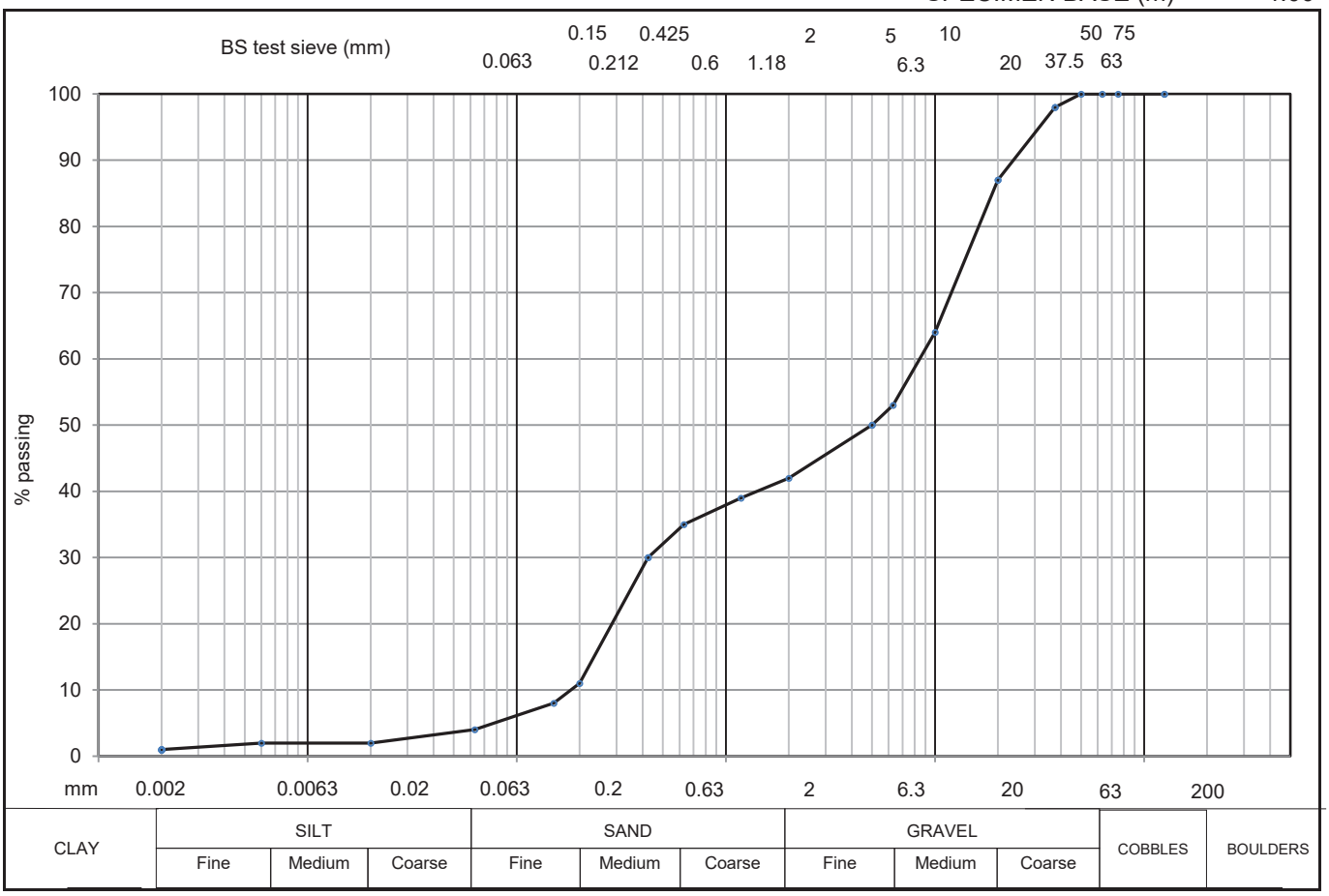
CONTRACT	CHECKED
32933	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892 - 4 : 2016 : 5

CLIENT	THAMES PROPERTIES LIMITED	BH/TP No.	BH05
SITE	COX & WYMAN BUILDING, CARDIFF ROAD, READING	SAMPLE No./TYPE	10L
		SAMPLE DEPTH (m)	3.20
DESCRIPTION	Light brown slightly silty very sandy GRAVEL	SPECIMEN TOP (m)	3.40
		SPECIMEN BASE (m)	4.00



soil type	% fraction
CLAY	1
SILT	3
SILT & CLAY	4
SAND	38
GRAVEL	58
COBBLE & BOULDER	0
test method(s)	5.2# & 5.4

test method

5.2 - sieving

5.3 - sedimentation by hydrometer

5.4 - sedimentation by pipette

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	50	20	2
75		2	42	6	2
63		1.18	39	2	1
50	100	0.63	35		
37.5	98	0.425	30		
20	87	0.2	11		
10	64	0.15	8		
6.3	53	0.063	4		

remarks

denotes sample tested is smaller than that which is recommended in accordance with BS EN 17892

CONTRACT	CHECKED
32933	**SR**

Geotechnical Engineering Limited

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	diameter D (mm)	height H (mm)	H/D	moisture content (%)	bulk density (Mg/m3)	loading rate (kN/min)	time to failure (min:sec)	UCS (MPa)	description, codes and remarks
BH02	46C	17.20	18.70	86.9	176.9	2.04	22.8	2.03	4	03:38	2.65	Off white CHALK , P, Ax. Sample H/D ratio falls outside of ISRM specification
BH02	48C	18.70	18.74	102.4	194.4	1.90	24.6	1.31	10	00:49	0.98	Off white CHALK , P, Ax. Sample H/D ratio falls outside of ISRM specification

general remarks

sample obtained from vertically drilled core (unless specified), test machine - ELE 1500

coding:

moisture condition	sample storage	failure mode
N - natural moisture content	U - not wrapped	Ax - axial cleavage
F - fully saturated	F - wrapped in cling film/foil	Ca - cataclasis
S - soaked	W - waxed	Sh - shear
P - air/partially dried	G - contained in sealed Geoline	Ex - explosive
		Ot - other

CONTRACT	CHECKED
32933	**SR**

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condi-tion	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH01	10.93	I	U	P	95	103	65	0.74	88.67	0.09	1.29	0.12	Off white CHALK
BH01	16.20	D	Y	P		60	90	0.03	90.00	0.00	1.30	0.00	Off white CHALK
BH01	16.20	A	X	P	90		65	0.74	86.30	0.10	1.28	0.13	Off white CHALK
BH01	19.90	I	U	P	90	110	90	0.44	101.55	0.04	1.38	0.06	Off white CHALK
BH02	14.10	I	U	P	65	90	70	0.44	76.11	0.08	1.21	0.09	Off white CHALK
BH02	17.10	D	Y	P		60	90	0.32	90.00	0.04	1.30	0.05	Off white CHALK
BH02	17.10	A	X	P	90		60	0.21	82.92	0.03	1.26	0.04	Off white CHALK
BH02	19.60	I	U	P	80	90	70	0.78	84.44	0.11	1.27	0.14	Off white CHALK
BH03	15.70	D	Y	P		40	90	0.63	90.00	0.08	1.30	0.10	Off white CHALK
BH03	15.70	A	X	P	90		45	0.72	71.81	0.14	1.18	0.16	Off white CHALK
BH03	17.20	D	Y	P		45	90	0.83	90.00	0.10	1.30	0.13	Off white CHALK
BH03	17.20	A	X	P	90		50	1.02	75.69	0.18	1.21	0.21	Off white CHALK
BH03	19.40	D	Y	P		40	90	0.97	90.00	0.12	1.30	0.16	Off white CHALK
BH03	19.40	A	X	P	90		35	0.57	63.33	0.14	1.11	0.16	Off white CHALK
BH04B	15.55	I	U	P	90	120	70	0.70	89.56	0.09	1.30	0.11	Off white CHALK
BH04B	17.90	I	U	P	90	90	70	0.57	89.56	0.07	1.30	0.09	Off white CHALK
BH04B	19.45	D	Y	P		65	90	0.95	90.00	0.12	1.30	0.15	Off white CHALK
BH04B	19.45	A	X	P	90		65	0.77	86.30	0.10	1.28	0.13	Off white CHALK
BH05	11.20	I	U	P	90	90	80	0.68	95.75	0.07	1.34	0.10	Off white CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength.

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**32933**	**SR**
I - irregular lump	Z - oblique		S - soaked		

Geotechnical Engineering Limited

POINT LOAD STRENGTH TEST

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING

borehole /trial pit no.	sample depth (m)	test type	test orien-tation	moisture condi-tion	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. diam. De (mm)	Is (MPa)	size factor	Is(50) (MPa)	description and remarks
BH05	16.70	I	U	P	85	70	65	0.68	83.87	0.10	1.26	0.12	Off white CHALK
BH05	18.45	I	U	P	90	90	90	0.58	101.55	0.06	1.38	0.08	Off white CHALK
BH05	19.90	D	Y	P		50	90	0.50	90.00	0.06	1.30	0.08	Off white CHALK
BH05	19.90	A	X	P	90		50	0.80	75.69	0.14	1.21	0.17	Off white CHALK

general remarks

tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength.

test type	test orientation relative to discontinuities		moisture condition	CONTRACT	CHECKED
A - axial	X - perpendicular	U - unknown	N - natural moisture content		
D - diametral	Y - parallel		P - partially air dried	**32933**	**SR**
I - irregular lump	Z - oblique		S - soaked		

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

UKAS TESTING
2183

Final Report

Report No.:	17-12356-1
Initial Date of Issue:	25-May-2017
Client	Geotechnical Engineering Ltd
Client Address:	Centurion House Olympus Park Quedgeley Gloucester Gloucestershire GL2 4NF
Contact(s):	Stewart Robinson
Project	32933 Cox & Wyman Building, Cardiff Rd, Reading

Quotation No.:		**Date Received:**	19-May-2017
Order No.:	32933	**Date Instructed:**	19-May-2017
No. of Samples:	10		
Turnaround (Wkdays):	5	**Results Due:**	25-May-2017
Date Approved:	25-May-2017		

Approved By:



Details: Robert Monk, Technical Development Chemist

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 32933 Cox & Wyman Building, Cardiff Rd, Reading

Client: Geotechnical Engineering Ltd					**Chemtest Job No.:**	17-12356	17-12356	17-12356	17-12356	17-12356	17-12356	17-12356	17-12356
Quotation No.:					**Chemtest Sample ID.:**	454644	454645	454646	454647	454648	454649	454650	454651
Order No.: 32933					Client Sample Ref.:	BH01	BH01	BH02	BH02	BH03	BH03	BH04B	BH04B
					Client Sample ID.:	9D	16D	8D	15D	9D	15D	3D	7D
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	2.20	5.20	1.80	3.60	2.00	3.55	1.20	3.20
					Date Sampled:	17-May-2017	17-May-2017	17-May-2017	17-May-2017	17-May-2017	17-May-2017	17-May-2017	17-May-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020		20	6.8	19	16	30	5.6	6.5	8.7
pH	U	2010		N/A		7.9	8.7	7.8	8.7	6.9	8.7	11.3	9.0
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		< 0.010	< 0.010	0.042	< 0.010	0.57	< 0.010	0.11	< 0.010
Total Sulphur	U	2175	%	0.010		0.030	0.030	0.040	0.030	0.22	0.040	0.070	0.030
Sulphate (Acid Soluble)	U	2430	%	0.010		< 0.010	0.033	0.064	0.024	0.32	0.032	0.14	0.022

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 32933 Cox & Wyman Building, Cardiff Rd, Reading

Client: Geotechnical Engineering Ltd			**Chemtest Job No.:**		17-12356	17-12356
Quotation No.:			**Chemtest Sample ID.:**		454652	454653
Order No.: 32933			Client Sample Ref.:		BH05	BH05
			Client Sample ID.:		4D	9D
			Sample Type:		SOIL	SOIL
			Top Depth (m):		1.50	3.20
			Date Sampled:		17-May-2017	17-May-2017
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	18	13
pH	U	2010		N/A	7.8	8.4
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.20	0.013
Total Sulphur	U	2175	%	0.010	0.070	0.020
Sulphate (Acid Soluble)	U	2430	%	0.010	0.079	0.020

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

APPENDIX C

CHEMICAL ANALYSES

Gary Riches
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Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 17-46722

Project / Site name:	Cox & Vyman, Cardiff Road, Reading	**Samples received on:**	26/04/2017
Your job number:	32933	**Samples instructed on:**	26/04/2017
Your order number:		**Analysis completed by:**	02/05/2017
Report Issue Number:	1	**Report issued on:**	02/05/2017
Samples Analysed:	1 bulk sample - 1 soil sample		

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-46722

Project / Site name: Cox & Vyman, Cardiff Road, Reading

Lab Sample Number				740385				
Sample Reference				BH04A				
Sample Number				None Supplied				
Depth (m)				0.10-0.30				
Date Sampled				25/04/2017				
Time Taken				1500				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile				
Asbestos in Soil	Type	N/A	ISO 17025	Detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.022				
Asbestos Quantification Total	%	0.001	ISO 17025	0.022				

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-46722

Project / Site name: Cox & Vyman, Cardiff Road, Reading

Lab Sample Number				740386				
Sample Reference				BH04A				
Sample Number				None Supplied				
Depth (m)				0.30				
Date Sampled				25/04/2017				
Time Taken				1500				
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos Identification Name	Type	N/A	ISO 17025	Chrysotile-Hard/Cement Type Material				

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-46722
Project / Site name: Cox & Vyman, Cardiff Road, Reading
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
740385	BH04A	0.10-0.30	134	Loose Fibrous Debris & Loose Fibres	**Chrysotile**	0.022	**0.022**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 17-46722

Project / Site name: Cox & Vyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in ouse method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Gary Riches
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Analytical Report Number : 17-47041

Replaces Analytical Report Number : 17-47041, issue no. 1

Project / Site name:	Cox and Wyman, Cardiff Road, Reading	**Samples received on:**	02/05/2017
Your job number:	32933	**Samples instructed on:**	02/05/2017
Your order number:		**Analysis completed by:**	12/05/2017
Report Issue Number:	2	**Report issued on:**	12/05/2017
Samples Analysed:	16 soil samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741848	741849	741858	741859	741860
Sample Reference				WS08	WS08	WS01	WS01	WS02
Sample Number				1	2	1	2	1
Depth (m)				0.40-0.60	1.00-1.20	0.20-0.40	0.60-0.80	0.10-0.30
Date Sampled				26/04/2017	26/04/2017	25/04/2017	25/04/2017	24/04/2017
Time Taken				1020	1030	1247	1247	1020
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
Moisture Content	%	N/A	NONE	-	15	6.2	14	-
Total mass of sample received	kg	0.001	NONE	-	2.0	2.0	1.9	-
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	Chrysotile	-	Chrysotile & Crocidolite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	Not-detected	Detected
Asbestos Quantification 0.1%	%	0.1	ISO 17025	< 0.10	-	< 0.10	-	< 0.10
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	8.5	8.3	8.2	-
Total Cyanide	mg/kg	1	MCERTS	-	9	< 1	1	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.13	0.031	0.048	-
Organic Matter	%	0.1	MCERTS	-	1.4	3.1	2.1	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	1.0	0.41	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.15	2.5	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	1.1	0.22	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	1.0	0.23	-
Phenanthrene	mg/kg	0.05	MCERTS	-	1.2	12	1.6	-
Anthracene	mg/kg	0.05	MCERTS	-	0.38	6.1	0.24	-
Fluoranthene	mg/kg	0.05	MCERTS	-	2.1	50	1.8	-
Pyrene	mg/kg	0.05	MCERTS	-	1.8	49	1.6	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.4	35	1.0	-
Chrysene	mg/kg	0.05	MCERTS	-	1.1	30	0.77	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	1.6	60	1.3	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.72	25	0.49	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	1.6	57	1.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.85	30	0.55	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.23	8.1	0.17	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	1.0	34	0.65	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	14.2	401	12.2	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	19	20	21	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	0.90	0.71	1.3	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	4.3	1.2	2.2	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	0.6	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	< 4.0	-
Chromium (III)	mg/kg	1	NONE	-	59	19	21	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	59	20	22	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	89	47	150	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	1700	220	730	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	0.4	0.9	2.2	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	28	23	24	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	34	31	32	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	76	81	350	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741848	741849	741858	741859	741860
Sample Reference				WS08	WS08	WS01	WS01	WS02
Sample Number				1	2	1	2	1
Depth (m)				0.40-0.60	1.00-1.20	0.20-0.40	0.60-0.80	0.10-0.30
Date Sampled				26/04/2017	26/04/2017	25/04/2017	25/04/2017	24/04/2017
Time Taken				1020	1030	1247	1247	1020
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.8	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	20	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	64	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	190	19	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	270	21	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.3	6.2	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	23	6.2	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	360	19	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	1900	40	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	2300	71	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741848	741849	741858	741859	741860
Sample Reference				WS08	WS08	WS01	WS01	WS02
Sample Number				1	2	1	2	1
Depth (m)				0.40-0.60	1.00-1.20	0.20-0.40	0.60-0.80	0.10-0.30
Date Sampled				26/04/2017	26/04/2017	25/04/2017	25/04/2017	24/04/2017
Time Taken				1020	1030	1247	1247	1020
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741848	741849	741858	741859	741860
Sample Reference				WS08	WS08	WS01	WS01	WS02
Sample Number				1	2	1	2	1
Depth (m)				0.40-0.60	1.00-1.20	0.20-0.40	0.60-0.80	0.10-0.30
Date Sampled				26/04/2017	26/04/2017	25/04/2017	25/04/2017	24/04/2017
Time Taken				1020	1030	1247	1247	1020
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	< 0.2	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	1.0	0.41	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.15	2.5	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	1.1	0.22	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	0.6	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	1.0	0.23	-
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
Phenanthrene	mg/kg	0.05	MCERTS	-	1.2	12	1.6	-
Anthracene	mg/kg	0.05	MCERTS	-	0.38	6.1	0.24	-
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	0.9	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	2.2	< 0.3	-
Fluoranthene	mg/kg	0.05	MCERTS	-	2.1	50	1.8	-
Pyrene	mg/kg	0.05	MCERTS	-	1.8	49	1.6	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	< 0.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.4	35	1.0	-
Chrysene	mg/kg	0.05	MCERTS	-	1.1	30	0.77	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	1.6	60	1.3	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.72	25	0.49	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	1.6	57	1.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.85	30	0.55	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.23	8.1	0.17	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	1.0	34	0.65	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741861	741862	741863	741864	741865
Sample Reference				WS02	WS03	WS03	WS04	WS04
Sample Number				2	1	4	2	3
Depth (m)				0.50-0.70	0.50-0.70	2.20-2.40	0.30-0.50	1.00-1.20
Date Sampled				24/04/2017	26/04/2017	26/04/2017	24/04/2017	24/04/2017
Time Taken				1020	1240	1330	1115	1130
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	-	< 0.1
Moisture Content	%	N/A	NONE	11	17	16	-	11
Total mass of sample received	kg	0.001	NONE	2.0	1.4	2.0	-	2.0
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	-	-	Not-detected	Not-detected
Asbestos Quantification 0.1%	%	0.1	ISO 17025	< 0.10	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.8	8.1	7.8	-	8.8
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	-	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.23	0.21	-	0.031
Organic Matter	%	0.1	MCERTS	1.6	0.7	0.9	-	0.5
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.43	< 0.05	< 0.05	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.45	< 0.05	< 0.05	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.55	< 0.05	< 0.05	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	6.5	< 0.05	< 0.05	-	1.0
Anthracene	mg/kg	0.05	MCERTS	2.3	< 0.05	< 0.05	-	0.23
Fluoranthene	mg/kg	0.05	MCERTS	14	< 0.05	< 0.05	-	0.99
Pyrene	mg/kg	0.05	MCERTS	11	< 0.05	< 0.05	-	0.84
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.8	< 0.05	< 0.05	-	0.45
Chrysene	mg/kg	0.05	MCERTS	4.8	< 0.05	< 0.05	-	0.32
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	6.1	< 0.05	< 0.05	-	0.42
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	3.2	< 0.05	< 0.05	-	0.18
Benzo(a)pyrene	mg/kg	0.05	MCERTS	5.7	< 0.05	< 0.05	-	0.38
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.6	< 0.05	< 0.05	-	0.16
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.72	< 0.05	< 0.05	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.0	< 0.05	< 0.05	-	0.22
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	68.2	< 0.80	< 0.80	-	5.19
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	9.5	16	-	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.64	0.37	0.79	-	0.52
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	5.0	3.7	-	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	-	< 4.0
Chromium (III)	mg/kg	1	NONE	24	14	30	-	49
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	15	30	-	49
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	11	13	-	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	11	22	-	320
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	12	21	-	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32	20	44	-	29
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	28	49	-	77

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741861	741862	741863	741864	741865
Sample Reference				WS02	WS03	WS03	WS04	WS04
Sample Number				2	1	4	2	3
Depth (m)				0.50-0.70	0.50-0.70	2.20-2.40	0.30-0.50	1.00-1.20
Date Sampled				24/04/2017	26/04/2017	26/04/2017	24/04/2017	24/04/2017
Time Taken				1020	1240	1330	1115	1130
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	47	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	52	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	12	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	110	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	130	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	250	-	-	-	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741861	741862	741863	741864	741865
Sample Reference				WS02	WS03	WS03	WS04	WS04
Sample Number				2	1	4	2	3
Depth (m)				0.50-0.70	0.50-0.70	2.20-2.40	0.30-0.50	1.00-1.20
Date Sampled				24/04/2017	26/04/2017	26/04/2017	24/04/2017	24/04/2017
Time Taken				1020	1240	1330	1115	1130
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	NONE	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	NONE	-	-	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741861	741862	741863	741864	741865
Sample Reference				WS02	WS03	WS03	WS04	WS04
Sample Number				2	1	4	2	3
Depth (m)				0.50-0.70	0.50-0.70	2.20-2.40	0.30-0.50	1.00-1.20
Date Sampled				24/04/2017	26/04/2017	26/04/2017	24/04/2017	24/04/2017
Time Taken				1020	1240	1330	1115	1130
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741866	741867	741868	741869	741870
Sample Reference				WS05	WS06	WS06	WS06	WS07
Sample Number				3	1	2	3	1
Depth (m)				1.50-1.70	0.40-0.60	1.00-1.20	1.50-1.70	0.40-0.60
Date Sampled				25/04/2017	25/04/2017	25/04/2017	25/04/2017	26/04/2017
Time Taken				1303	1330	1330	1331	0845
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	15	13	18	14
Total mass of sample received	kg	0.001	NONE	1.4	2.0	2.0	1.8	2.0
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	-	Not-detected
Asbestos Quantification 0.1%	%	0.1	ISO 17025	-	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	8.0	-	-	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	-	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.31	0.023	-	-	0.39
Organic Matter	%	0.1	MCERTS	1.5	1.5	-	-	0.9
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.51	< 0.05	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	1.3	< 0.05	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.10	0.31	-	-	0.19
Fluorene	mg/kg	0.05	MCERTS	0.21	0.18	-	-	0.18
Phenanthrene	mg/kg	0.05	MCERTS	5.0	3.2	-	-	2.9
Anthracene	mg/kg	0.05	MCERTS	1.6	0.74	-	-	0.54
Fluoranthene	mg/kg	0.05	MCERTS	19	4.7	-	-	4.4
Pyrene	mg/kg	0.05	MCERTS	17	4.0	-	-	3.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	10	2.4	-	-	2.3
Chrysene	mg/kg	0.05	MCERTS	8.1	1.7	-	-	1.6
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	12	2.1	-	-	2.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	7.0	0.98	-	-	0.92
Benzo(a)pyrene	mg/kg	0.05	MCERTS	12	2.1	-	-	1.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	6.9	0.94	-	-	0.90
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.6	0.28	-	-	0.24
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	8.1	1.1	-	-	1.1
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	112	24.7	-	-	22.9
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	16	-	-	16
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.69	0.71	-	-	0.50
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6	0.5	-	-	3.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	-	< 4.0
Chromium (III)	mg/kg	1	NONE	11	20	-	-	39
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	20	-	-	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	51	95	-	-	56
Lead (aqua regia extractable)	mg/kg	1	MCERTS	220	1900	-	-	660
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.9	1.0	-	-	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	22	-	-	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	25	32	-	-	22
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	90	99	-	-	66

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741866	741867	741868	741869	741870
Sample Reference				WS05	WS06	WS06	WS06	WS07
Sample Number				3	1	2	3	1
Depth (m)				1.50-1.70	0.40-0.60	1.00-1.20	1.50-1.70	0.40-0.60
Date Sampled				25/04/2017	25/04/2017	25/04/2017	25/04/2017	26/04/2017
Time Taken				1303	1330	1330	1331	0845
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	1.7	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	9.0	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	12	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	24	< 8.0	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	47	< 10	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	2.0	9.3	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	8.3	40	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	31	190	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	48	230	< 10	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	89	470	< 10	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741866	741867	741868	741869	741870
Sample Reference				WS05	WS06	WS06	WS06	WS07
Sample Number				3	1	2	3	1
Depth (m)				1.50-1.70	0.40-0.60	1.00-1.20	1.50-1.70	0.40-0.60
Date Sampled				25/04/2017	25/04/2017	25/04/2017	25/04/2017	26/04/2017
Time Taken				1303	1330	1330	1331	0845
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Chloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Tribromomethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741866	741867	741868	741869	741870
Sample Reference				WS05	WS06	WS06	WS06	WS07
Sample Number				3	1	2	3	1
Depth (m)				1.50-1.70	0.40-0.60	1.00-1.20	1.50-1.70	0.40-0.60
Date Sampled				25/04/2017	25/04/2017	25/04/2017	25/04/2017	26/04/2017
Time Taken				1303	1330	1330	1331	0845
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741871				
Sample Reference				WS07				
Sample Number				3				
Depth (m)				1.60-1.80				
Date Sampled				26/04/2017				
Time Taken				0915				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	11				
Total mass of sample received	kg	0.001	NONE	2.0				
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-				
Asbestos in Soil	Type	N/A	ISO 17025	-				
Asbestos Quantification 0.1%	%	0.1	ISO 17025	-				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.0				
Total Cyanide	mg/kg	1	MCERTS	< 1				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.25				
Organic Matter	%	0.1	MCERTS	0.4				
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.28				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	0.19				
Phenanthrene	mg/kg	0.05	MCERTS	1.8				
Anthracene	mg/kg	0.05	MCERTS	0.31				
Fluoranthene	mg/kg	0.05	MCERTS	1.7				
Pyrene	mg/kg	0.05	MCERTS	1.4				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.72				
Chrysene	mg/kg	0.05	MCERTS	0.54				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.59				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.31				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.57				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.30				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.33				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	8.95				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14				
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.59				
Boron (water soluble)	mg/kg	0.2	MCERTS	3.2				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (III)	mg/kg	1	NONE	24				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	130				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	33				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	46				

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Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741871				
Sample Reference				WS07				
Sample Number				3				
Depth (m)				1.60-1.80				
Date Sampled				26/04/2017				
Time Taken				0915				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-				
Toluene	µg/kg	1	MCERTS	-				
Ethylbenzene	µg/kg	1	MCERTS	-				
p & m-xylene	µg/kg	1	MCERTS	-				
o-xylene	µg/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-				

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-				

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Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741871				
Sample Reference				WS07				
Sample Number				3				
Depth (m)				1.60-1.80				
Date Sampled				26/04/2017				
Time Taken				0915				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-				
Chloroethane	µg/kg	1	NONE	-				
Bromomethane	µg/kg	1	ISO 17025	-				
Vinyl Chloride	µg/kg	1	NONE	-				
Trichlorofluoromethane	µg/kg	1	NONE	-				
1,1-Dichloroethene	µg/kg	1	NONE	-				
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-				
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-				
1,1-Dichloroethane	µg/kg	1	MCERTS	-				
2,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloromethane	µg/kg	1	MCERTS	-				
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-				
1,2-Dichloroethane	µg/kg	1	MCERTS	-				
1,1-Dichloropropene	µg/kg	1	MCERTS	-				
Trans-1,2-dichloroethene	µg/kg	1	NONE	-				
Benzene	µg/kg	1	MCERTS	-				
Tetrachloromethane	µg/kg	1	MCERTS	-				
1,2-Dichloropropane	µg/kg	1	MCERTS	-				
Trichloroethene	µg/kg	1	MCERTS	-				
Dibromomethane	µg/kg	1	MCERTS	-				
Bromodichloromethane	µg/kg	1	MCERTS	-				
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-				
Toluene	µg/kg	1	MCERTS	-				
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-				
1,3-Dichloropropane	µg/kg	1	ISO 17025	-				
Dibromochloromethane	µg/kg	1	ISO 17025	-				
Tetrachloroethene	µg/kg	1	NONE	-				
1,2-Dibromoethane	µg/kg	1	ISO 17025	-				
Chlorobenzene	µg/kg	1	MCERTS	-				
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Ethylbenzene	µg/kg	1	MCERTS	-				
p & m-Xylene	µg/kg	1	MCERTS	-				
Styrene	µg/kg	1	MCERTS	-				
Tribromomethane	µg/kg	1	NONE	-				
o-Xylene	µg/kg	1	MCERTS	-				
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-				
Isopropylbenzene	µg/kg	1	MCERTS	-				
Bromobenzene	µg/kg	1	MCERTS	-				
n-Propylbenzene	µg/kg	1	ISO 17025	-				
2-Chlorotoluene	µg/kg	1	MCERTS	-				
4-Chlorotoluene	µg/kg	1	MCERTS	-				
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-				
tert-Butylbenzene	µg/kg	1	MCERTS	-				
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-				
sec-Butylbenzene	µg/kg	1	MCERTS	-				
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-				
p-Isopropyltoluene	µg/kg	1	ISO 17025	-				
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-				
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-				
Butylbenzene	µg/kg	1	MCERTS	-				
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-				
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-				
Hexachlorobutadiene	µg/kg	1	MCERTS	-				
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-				

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Analytical Report Number: 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				741871				
Sample Reference				WS07				
Sample Number				3				
Depth (m)				1.60-1.80				
Date Sampled				26/04/2017				
Time Taken				0915				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-				
Phenol	mg/kg	0.2	ISO 17025	-				
2-Chlorophenol	mg/kg	0.1	MCERTS	-				
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-				
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-				
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-				
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-				
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-				
2-Methylphenol	mg/kg	0.3	MCERTS	-				
Hexachloroethane	mg/kg	0.05	MCERTS	-				
Nitrobenzene	mg/kg	0.3	MCERTS	-				
4-Methylphenol	mg/kg	0.2	NONE	-				
Isophorone	mg/kg	0.2	MCERTS	-				
2-Nitrophenol	mg/kg	0.3	MCERTS	-				
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-				
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-				
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-				
Naphthalene	mg/kg	0.05	MCERTS	-				
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-				
4-Chloroaniline	mg/kg	0.1	NONE	-				
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-				
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-				
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-				
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-				
2-Methylnaphthalene	mg/kg	0.1	NONE	-				
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-				
Dimethylphthalate	mg/kg	0.1	MCERTS	-				
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-				
Acenaphthylene	mg/kg	0.05	MCERTS	-				
Acenaphthene	mg/kg	0.05	MCERTS	-				
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-				
Dibenzofuran	mg/kg	0.2	MCERTS	-				
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-				
Diethyl phthalate	mg/kg	0.2	MCERTS	-				
4-Nitroaniline	mg/kg	0.2	MCERTS	-				
Fluorene	mg/kg	0.05	MCERTS	-				
Azobenzene	mg/kg	0.3	MCERTS	-				
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-				
Hexachlorobenzene	mg/kg	0.3	MCERTS	-				
Phenanthrene	mg/kg	0.05	MCERTS	-				
Anthracene	mg/kg	0.05	MCERTS	-				
Carbazole	mg/kg	0.3	MCERTS	-				
Dibutyl phthalate	mg/kg	0.2	MCERTS	-				
Anthraquinone	mg/kg	0.3	MCERTS	-				
Fluoranthene	mg/kg	0.05	MCERTS	-				
Pyrene	mg/kg	0.05	MCERTS	-				
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-				
Chrysene	mg/kg	0.05	MCERTS	-				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-				

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Analytical Report Number: 17-47041
Project / Site name: Cox and Wyman, Cardiff Road, Reading
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection of this method is around 0.1 %

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
741848	WS08	0.40-0.60	124	Loose Fibrous Debris	**Chrysotile**	< 0.10	**< 0.10**
741858	WS01	0.20-0.40	142	Loose Fibres	**Chrysotile**	< 0.10	**< 0.10**
741860	WS02	0.10-0.30	140	Loose Fibres	**Chrysotile & Crocidolite**	< 0.10	**< 0.10**
741861	WS02	0.50-0.70	162	Loose Fibres	**Chrysotile**	< 0.10	**< 0.10**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

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Analytical Report Number : 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
741848	WS08	1	0.40-0.60	-
741849	WS08	2	1.00-1.20	Brown loam and clay with gravel and brick.
741858	WS01	1	0.20-0.40	Brown loam and sand with gravel and rubble.
741859	WS01	2	0.60-0.80	Light brown loam and clay with gravel and rubble.
741860	WS02	1	0.10-0.30	-
741861	WS02	2	0.50-0.70	Light brown loam and clay with gravel and rubble.
741862	WS03	1	0.50-0.70	Beige loam and clay with chalk.
741863	WS03	4	2.20-2.40	Light brown clay.
741864	WS04	2	0.30-0.50	-
741865	WS04	3	1.00-1.20	Light brown loam and sand with gravel and rubble.
741866	WS05	3	1.50-1.70	Brown sandy loam with gravel and rubble.
741867	WS06	1	0.40-0.60	Brown loam and clay with gravel and rubble.
741868	WS06	2	1.00-1.20	Brown loam and clay with gravel and rubble.
741869	WS06	3	1.50-1.70	Light brown clay.
741870	WS07	1	0.40-0.60	Light brown loam and clay with gravel and rubble.
741871	WS07	3	1.60-1.80	Light brown loam and clay with gravel and rubble.

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Analytical Report Number : 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification (SemiQ) 0.1%	Asbestos quantification by gravimetric method - in ouse method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil by Gallery 16hr	Determination of water soluble Sulphate by discrete analyser (precipitation method).	In house method based on BS1377-3: 1990.	L082B-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS

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Analytical Report Number : 17-47041

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 17-47046

Project / Site name:	Cox and Wyman, Cardiff Road, Reading	**Samples received on:**	02/05/2017
Your job number:	32933	**Samples instructed on:**	02/05/2017
Your order number:		**Analysis completed by:**	08/05/2017
Report Issue Number:	1	**Report issued on:**	08/05/2017
Samples Analysed:	4 WAC 10:1 Samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Waste Acceptance Criteria Analytical Results

Report No:	**17-47046**							
					Client:	**GEOENG**		
Location	**Cox and Wyman, Cardiff Road, Reading**							
Lab Reference (Sample Number)	741885 / 741886				**Landfill Waste Acceptance Criteria Limits**			
Sampling Date	26/04/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS08 1						
Depth (m)	0.40-0.60						
Solid Waste Analysis							
TOC (%)**	0.6				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	34				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:01	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0054			0.0491	0.5	2	25
Barium *	0.0171			0.155	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0074			0.067	0.5	10	70
Copper *	0.013			0.12	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0029			0.0265	0.5	10	30
Nickel *	0.012			0.11	0.4	10	40
Lead *	0.020			0.18	0.5	10	50
Antimony *	0.0029			0.027	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.025			0.22	4	50	200
Chloride *	0.35			3.2	800	4000	25000
Fluoride	0.094			0.86	10	150	500
Sulphate *	20			180	1000	20000	50000
TDS	86			780	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.88			35.2	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	85						
Moisture (%)	15						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation ** = MCERTS accrediited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	**17-47046**						
					Client:	**GEOENG**	
Location	**Cox and Wyman, Cardiff Road, Reading**						
Lab Reference (Sample Number)	741887 / 741888				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	24/04/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS02 1						
Depth (m)	0.10-0.30						
Solid Waste Analysis							
TOC (%)**	1.4				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	160				500	--	--
Total PAH (WAC-17) (mg/kg)	41				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:01	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0055			0.0459	0.5	2	25
Barium *	0.0234			0.195	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0026			0.021	0.5	10	70
Copper *	0.019			0.16	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0010			0.0087	0.5	10	30
Nickel *	0.0036			0.030	0.4	10	40
Lead *	0.014			0.12	0.5	10	50
Antimony *	0.0064			0.054	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.025			0.21	4	50	200
Chloride *	0.62			5.2	800	4000	25000
Fluoride	0.15			1.3	10	150	500
Sulphate *	1.1			9.1	1000	20000	50000
TDS	40			330	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.45			37.1	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	91						
Moisture (%)	9.4						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation ** = MCERTS accrediited

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Waste Acceptance Criteria Analytical Results

Report No:	**17-47046**						
					Client:	**GEOENG**	
Location	**Cox and Wyman, Cardiff Road, Reading**						
Lab Reference (Sample Number)	741889 / 741890				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	24/04/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS04 2						
Depth (m)	0.30-0.50						
Solid Waste Analysis							
TOC (%)**	1.1				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	8.9				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:01	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0091			0.0697	0.5	2	25
Barium *	0.0184			0.141	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0035			0.027	0.5	10	70
Copper *	0.018			0.14	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0006			0.0049	0.5	10	30
Nickel *	0.0047			0.036	0.4	10	40
Lead *	0.011			0.087	0.5	10	50
Antimony *	0.0049			0.038	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.020			0.15	4	50	200
Chloride *	< 0.15			< 1.5	800	4000	25000
Fluoride	0.063			< 0.50	10	150	500
Sulphate *	0.69			5.3	1000	20000	50000
TDS	39			300	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	5.33			40.8	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.9						
Dry Matter (%)	91						
Moisture (%)	8.8						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation
** = MCERTS accrediited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
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Waste Acceptance Criteria Analytical Results

Report No:	**17-47046**						
					Client: GEOENG		
Location	**Cox and Wyman, Cardiff Road, Reading**						
Lab Reference (Sample Number)	741891 / 741892				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	25/04/2017				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS05 2						
Depth (m)	0.80-1.00						
Solid Waste Analysis							
TOC (%)**	0.7				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	14				100	--	--
pH (units)**	-				--	>6	--
Acid Neutralisation Capacity (mol / kg)	-				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:01	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0020			0.0167	0.5	2	25
Barium *	0.0283			0.237	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0012			0.010	0.5	10	70
Copper *	0.024			0.20	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0013			0.0111	0.5	10	30
Nickel *	0.0017			0.014	0.4	10	40
Lead *	0.016			0.13	0.5	10	50
Antimony *	0.023			0.19	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.030			0.26	4	50	200
Chloride *	1.8			15	800	4000	25000
Fluoride	0.056			< 0.50	10	150	500
Sulphate *	1500			13000	1000	20000	50000
TDS	1200			10000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.30			36.1	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	89						
Moisture (%)	11						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation
** = MCERTS accrediited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Analytical Report Number : 17-47046

Project / Site name: Cox and Wyman, Cardiff Road, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
741885	WS08	1	0.40-0.60	Light brown sandy clay with gravel and rubble.
741887	WS02	1	0.10-0.30	Brown sandy loam with gravel and rubble.
741889	WS04	2	0.30-0.50	Brown sandy loam with gravel and rubble.
741891	WS05	2	0.80-1.00	Light brown sand with gravel and rubble.

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Analytical Report Number : 17-47046

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033-PL	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	in-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 17-47415

Project / Site name:	Cox And Wyman, Cardiff Rd, Reading	**Samples received on:**	02/05/2017
Your job number:	32933	**Samples instructed on:**	04/05/2017
Your order number:		**Analysis completed by:**	11/05/2017
Report Issue Number:	1	**Report issued on:**	11/05/2017
Samples Analysed:	5 soil samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-47415

Project / Site name: Cox And Wyman, Cardiff Rd, Reading

Lab Sample Number				743950	743951	743952	743953	743954
Sample Reference				BH02A P	BH02A P	BH02A P	BH03	BH03
Sample Number				1	2	3	2	6
Depth (m)				0.20-0.40	0.40-0.60	0.80-1.00	0.60-0.80	2.50
Date Sampled				02/05/2017	02/05/2017	02/05/2017	24/04/2017	25/04/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	40	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	8.8	15	12	16	34
Total mass of sample received	kg	0.001	NONE	1.9	1.8	1.9	2.0	1.7
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.8	-	8.0	8.0	-
Total Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	< 1	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.033	-	0.041	0.012	-
Organic Matter	%	0.1	MCERTS	1.3	-	1.2	2.1	4.5
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.21	-	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	0.10	-	0.47	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	0.26	-	0.12	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	0.24	-	0.32	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	3.1	-	4.4	0.39	-
Anthracene	mg/kg	0.05	MCERTS	0.94	-	0.76	0.10	-
Fluoranthene	mg/kg	0.05	MCERTS	9.9	-	5.4	0.81	-
Pyrene	mg/kg	0.05	MCERTS	8.8	-	4.5	0.69	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	6.7	-	2.4	0.46	-
Chrysene	mg/kg	0.05	MCERTS	5.5	-	2.5	0.50	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	7.3	-	2.4	0.57	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	4.8	-	1.9	0.32	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.7	-	2.8	0.49	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5.2	-	1.5	0.37	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.2	-	0.33	0.09	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	6.0	-	1.9	0.45	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	67.8	-	31.6	5.24	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	-	11	11	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.56	-	0.36	0.38	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	-	0.8	0.9	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	-
Chromium (III)	mg/kg	1	NONE	17	-	8.0	11	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	-	8.4	11	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	100	-	65	29	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	350	-	260	680	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	-	3.3	1.0	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	-	15	13	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	-	22	20	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	81	-	60	57	-

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Analytical Report Number: 17-47415

Project / Site name: Cox And Wyman, Cardiff Rd, Reading

Lab Sample Number				743950	743951	743952	743953	743954
Sample Reference				BH02A P	BH02A P	BH02A P	BH03	BH03
Sample Number				1	2	3	2	6
Depth (m)				0.20-0.40	0.40-0.60	0.80-1.00	0.60-0.80	2.50
Date Sampled				02/05/2017	02/05/2017	02/05/2017	24/04/2017	25/04/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	< 0.001	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	16	-	-	-

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Analytical Report Number: 17-47415

Project / Site name: Cox And Wyman, Cardiff Rd, Reading

Lab Sample Number				743950	743951	743952	743953	743954
Sample Reference				BH02A P	BH02A P	BH02A P	BH03	BH03
Sample Number				1	2	3	2	6
Depth (m)				0.20-0.40	0.40-0.60	0.80-1.00	0.60-0.80	2.50
Date Sampled				02/05/2017	02/05/2017	02/05/2017	24/04/2017	25/04/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Chloroethane	µg/kg	1	NONE	-	< 1.0	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Vinyl Chloride	µg/kg	1	NONE	-	< 1.0	-	-	-
Trichlorofluoromethane	µg/kg	1	NONE	-	< 1.0	-	-	-
1,1-Dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
2,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1-Dichloropropene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
Benzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dichloropropane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Bromodichloromethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Tetrachloroethene	µg/kg	1	NONE	-	< 1.0	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
p & m-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Styrene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Tribromomethane	µg/kg	1	NONE	-	< 1.0	-	-	-
o-Xylene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Isopropylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
n-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
2-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
4-Chlorotoluene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
tert-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
sec-Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Butylbenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
Hexachlorobutadiene	µg/kg	1	MCERTS	-	< 1.0	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	-	-	-

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Analytical Report Number : 17-47415

Project / Site name: Cox And Wyman, Cardiff Rd, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
743950	BH02A P	1	0.20-0.40	Brown loam and sand with gravel and stones.
743951	BH02A P	2	0.40-0.60	Brown loam and sand with gravel and brick.
743952	BH02A P	3	0.80-1.00	Brown loam and sand with rubble and brick.
743953	BH03	2	0.60-0.80	Brown loam and sand with rubble and brick.
743954	BH03	6	2.50	Brown clay and loam with gravel and vegetation.

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Analytical Report Number : 17-47415

Project / Site name: Cox And Wyman, Cardiff Rd, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil by Gallery 16hr	Determination of water soluble Sulphate by discrete analyser (precipitation method).	In house method based on BS1377-3: 1990.	L082B-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

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Analytical Report Number : 17-47415

Project / Site name: Cox And Wyman, Cardiff Rd, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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The results included within the report are representative of the samples submitted for analysis.

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Analytical Report Number : 17-47708

Project / Site name:	Cox & Wyman, Cardiff Road, Reading	**Samples received on:**	03/05/2017
Your job number:	32933	**Samples instructed on:**	09/05/2017
Your order number:		**Analysis completed by:**	15/05/2017
Report Issue Number:	1	**Report issued on:**	15/05/2017
Samples Analysed:	3 soil samples		

Signed: 

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-47708

Project / Site name: Cox & Wyman, Cardiff Road, Reading

Lab Sample Number				745417	745418	745419		
Sample Reference				BH05	BH01	BH01		
Sample Number				1	4	2		
Depth (m)				1.50-1.60	1.20-1.40	0.50-0.70		
Date Sampled				27/04/2017	03/05/2017	03/05/2017		
Time Taken				None Supplied	0800	0800		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	16	18	16		
Total mass of sample received	kg	0.001	NONE	1.7	1.7	2.0		
Asbestos in Soil	Type	N/A	ISO 17025	-	-	Not-detected		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.6	7.7	-		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	-		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.17	0.0097	-		
Organic Matter	%	0.1	MCERTS	1.2	2.9	-		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.12	-		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.08	-		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.94	-		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.24	-		
Fluoranthene	mg/kg	0.05	MCERTS	0.26	2.5	-		
Pyrene	mg/kg	0.05	MCERTS	0.20	2.2	-		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	1.6	-		
Chrysene	mg/kg	0.05	MCERTS	0.16	1.8	-		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.13	2.4	-		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.11	1.2	-		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.15	2.3	-		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.11	1.2	-		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.24	-		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.12	1.5	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.40	18.4	-		

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Analytical Report Number: 17-47708

Project / Site name: Cox & Wyman, Cardiff Road, Reading

Lab Sample Number				745417	745418	745419		
Sample Reference				BH05	BH01	BH01		
Sample Number				1	4	2		
Depth (m)				1.50-1.60	1.20-1.40	0.50-0.70		
Date Sampled				27/04/2017	03/05/2017	03/05/2017		
Time Taken				None Supplied	0800	0800		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	27	-		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.99	2.1	-		
Boron (water soluble)	mg/kg	0.2	MCERTS	3.7	1.6	-		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-		
Chromium (III)	mg/kg	1	NONE	20	22	-		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	22	-		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	83	-		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	76	260	-		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	8.2	-		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	27	-		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	43	-		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	130	-		
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	< 1.0		
Toluene	µg/kg	1	MCERTS	-	-	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0		
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0		
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0		
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	< 0.001		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	16		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	31		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	49		

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Analytical Report Number: 17-47708

Project / Site name: Cox & Wyman, Cardiff Road, Reading

Lab Sample Number				745417	745418	745419		
Sample Reference				BH05	BH01	BH01		
Sample Number				1	4	2		
Depth (m)				1.50-1.60	1.20-1.40	0.50-0.70		
Date Sampled				27/04/2017	03/05/2017	03/05/2017		
Time Taken				None Supplied	0800	0800		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0		
Chloroethane	µg/kg	1	NONE	-	-	< 1.0		
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0		
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0		
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0		
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0		
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0		
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0		
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0		
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0		
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0		
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0		
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0		
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0		
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0		
Benzene	µg/kg	1	MCERTS	-	-	< 1.0		
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0		
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0		
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0		
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0		
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0		
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0		
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0		
Toluene	µg/kg	1	MCERTS	-	-	< 1.0		
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0		
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0		
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0		
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0		
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0		
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0		
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0		
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0		
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0		
Styrene	µg/kg	1	MCERTS	-	-	< 1.0		
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0		
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0		
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0		
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0		
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0		
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0		
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0		
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0		
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0		
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0		
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0		
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0		
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0		
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0		
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0		
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0		
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0		
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0		
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0		
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0		
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0		

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 17-47708

Project / Site name: Cox & Wyman, Cardiff Road, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
745417	BH05	1	1.50-1.60	Brown clay and sand with gravel and clinker.
745418	BH01	4	1.20-1.40	Brown clay and sand with gravel.
745419	BH01	2	0.50-0.70	Brown clay and sand with gravel.

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Analytical Report Number : 17-47708

Project / Site name: Cox & Wyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 17-47918

Project / Site name:	Cox And Wyman, Cardiff Road, Reading	**Samples received on:**	10/05/2017
Your job number:	32933	**Samples instructed on:**	10/05/2017
Your order number:		**Analysis completed by:**	17/05/2017
Report Issue Number:	1	**Report issued on:**	17/05/2017
Samples Analysed:	5 water samples		

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Analytical Report Number: 17-47918

Project / Site name: Cox And Wyman, Cardiff Road, Reading

Lab Sample Number				746673	746674	746675	746676	746677
Sample Reference				BH01	BH02	BH03	WS02	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.22	2.52	2.35	2.27	2.30
Date Sampled				09/05/2017	09/05/2017	09/05/2017	09/05/2017	09/05/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.2	7.2	7.2	7.3	7.2
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	11	< 10	< 10
Sulphate as SO_4	µg/l	45	ISO 17025	118000	75200	69300	42800	55000
Hardness - Total	mgCaCO3/l	1	ISO 17025	466	442	437	313	430
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.21	0.19	0.16	0.60	0.30
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	170	280	210	200	170
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.04	0.07	0.07
Calcium (dissolved)	mg/l	0.012	ISO 17025	170	170	160	120	160
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	0.2	< 0.2	< 0.2	0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	1.4	1.6	0.9	1.4	1.1
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	7.4	7.2	7.5	5.4	7.7
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	0.21	0.16	1.07	0.08
Nickel (dissolved)	µg/l	0.5	ISO 17025	19	8.4	15	6.5	18
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.8	< 0.6	< 0.6	1.4	< 0.6
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	0.2	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.8	4.4	3.9	6.0	2.4

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Analytical Report Number: 17-47918

Project / Site name: Cox And Wyman, Cardiff Road, Reading

Lab Sample Number				746673	746674	746675	746676	746677
Sample Reference				BH01	BH02	BH03	WS02	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.22	2.52	2.35	2.27	2.30
Date Sampled				09/05/2017	09/05/2017	09/05/2017	09/05/2017	09/05/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 17-47918

Project / Site name: Cox And Wyman, Cardiff Road, Reading

Lab Sample Number				746673	746674	746675	746676	746677
Sample Reference				BH01	BH02	BH03	WS02	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.22	2.52	2.35	2.27	2.30
Date Sampled				09/05/2017	09/05/2017	09/05/2017	09/05/2017	09/05/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	3.2	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	6.1	< 1.0	4.9	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 17-47918

Project / Site name: Cox And Wyman, Cardiff Road, Reading

Lab Sample Number				746673	746674	746675	746676	746677
Sample Reference				BH01	BH02	BH03	WS02	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.22	2.52	2.35	2.27	2.30
Date Sampled				09/05/2017	09/05/2017	09/05/2017	09/05/2017	09/05/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCB Congener 52	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCB Congener 101	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCB Congener 118	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCB Congener 138	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCB Congener 153	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCB Congener 180	µg/l	0.02	NONE	-	-	-	< 0.02	< 0.02
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	-	-	-	< 0.14	< 0.14

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 17-47918

Project / Site name: Cox And Wyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 17-50496

Project / Site name:	Cox and Wyman, Cardiff Road, Reading	**Samples received on:**	02/06/2017
Your job number:	32933	**Samples instructed on:**	06/06/2017
Your order number:		**Analysis completed by:**	13/06/2017
Report Issue Number:	1	**Report issued on:**	13/06/2017
Samples Analysed:	4 water samples		

Signed: 

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 17-50496

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				761107	761108	761109	761110	
Sample Reference				BH01	BH02	BH03	WS06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.14	2.45	2.24	2.21	
Date Sampled				02/06/2017	02/06/2017	02/06/2017	02/06/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.1	7.1	7.1	7.2	
Total Cyanide	µg/l	10	ISO 17025	11	< 10	< 10	< 10	
Sulphate as SO_4	µg/l	45	ISO 17025	73800	74300	71800	49500	
Hardness - Total	mgCaCO3/l	1	ISO 17025	405	361	374	321	
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16	< 0.16	< 0.16	
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.24	0.30	0.22	0.27	
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	
Boron (dissolved)	µg/l	10	ISO 17025	210	330	220	180	
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.03	0.13	
Calcium (dissolved)	mg/l	0.012	ISO 17025	150	130	140	120	
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	
Chromium (III)	µg/l	1	NONE	2.1	1.4	2.1	1.4	
Chromium (dissolved)	µg/l	0.2	ISO 17025	2.1	1.4	2.1	1.4	
Copper (dissolved)	µg/l	0.5	ISO 17025	4.2	2.9	3.2	4.3	
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	1.6	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	7.1	6.6	6.7	6.4	
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.40	0.15	0.09	0.05	
Nickel (dissolved)	µg/l	0.5	ISO 17025	29	8.0	18	14	
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.7	0.6	< 0.6	< 0.6	
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	0.6	
Zinc (dissolved)	µg/l	0.5	ISO 17025	18	15	6.2	3.8	

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Analytical Report Number: 17-50496

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				761107	761108	761109	761110	
Sample Reference				BH01	BH02	BH03	WS06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.14	2.45	2.24	2.21	
Date Sampled				02/06/2017	02/06/2017	02/06/2017	02/06/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C5 - C7	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	

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Lab Sample Number				761107	761108	761109	761110	
Sample Reference				BH01	BH02	BH03	WS06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.14	2.45	2.24	2.21	
Date Sampled				02/06/2017	02/06/2017	02/06/2017	02/06/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	5.7	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	µg/l	1	ISO 17025	1.5	< 1.0	< 1.0	< 1.0	
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trichloroethene	µg/l	1	ISO 17025	9.4	< 1.0	3.7	< 1.0	
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Chlorobenzene	µg/l	1	ISO 17025	11.6	< 1.0	< 1.0	< 1.0	
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,3-Dichlorobenzene	µg/l	1	ISO 17025	3.4	< 1.0	< 1.0	< 1.0	
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	

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Analytical Report Number: 17-50496

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Lab Sample Number				761107	761108	761109	761110	
Sample Reference				BH01	BH02	BH03	WS06	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				2.14	2.45	2.24	2.21	
Date Sampled				02/06/2017	02/06/2017	02/06/2017	02/06/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	-	-	-	< 0.02	
PCB Congener 52	µg/l	0.02	NONE	-	-	-	< 0.02	
PCB Congener 101	µg/l	0.02	NONE	-	-	-	< 0.02	
PCB Congener 118	µg/l	0.02	NONE	-	-	-	< 0.02	
PCB Congener 138	µg/l	0.02	NONE	-	-	-	< 0.02	
PCB Congener 153	µg/l	0.02	NONE	-	-	-	< 0.02	
PCB Congener 180	µg/l	0.02	NONE	-	-	-	< 0.02	
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	-	-	-	< 0.14	

U/S = Unsuitable Sample I/S = Insufficient Sample

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Analytical Report Number : 17-50496

Project / Site name: Cox and Wyman, Cardiff Road, Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L0102B-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH01		W	17-50496	761107	c	pH at 20oC in water (automated)	L099-PL	c
BH02		W	17-50496	761108	c	pH at 20oC in water (automated)	L099-PL	c
BH03		W	17-50496	761109	c	pH at 20oC in water (automated)	L099-PL	c
WS06		W	17-50496	761110	c	pH at 20oC in water (automated)	L099-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

APPENDIX D

BASIS OF ASSESSMENT FOR SOILS

BASIS FOR ASSESSMENT OF SOILS

The Contaminated Land Exposure Assessment (CLEA) model

The package consists of three main reports (SR2, SR3 and SR4) and supporting toxicology reviews for individual substances. Together, they provide a coherent, consistent approach for assessing risks to human health from contaminated soil.

The development of the CLEA (2009) model was a programme of work supported by DEFRA and the EA. Future publications will include evolution of the CLEA model and individual toxicology reviews.

The three reports (SC050021) are published as part of the SR (Science Report) series of documents and are briefly introduced below.

SR2 Human Health Toxicological Assessment of Contaminants in Soil. This report incorporates the updates to how the toxicity of chemicals in soil are assessed that were introduced in *Guidance on the legal definition of contaminated land* (Defra, 2008b) together with further guidance on chemical risk assessments for soil. The report describes a framework developed by the Environment Agency (in collaboration with the Health Protection Agency and the Food Standards Agency) for the collation and review of toxicological data in order to derive Health Criteria Values (HCVs).

HCVs describe a benchmark level of exposure to a chemical at which, unless stated otherwise, long-term human exposure to chemicals in soil is tolerable or poses a minimal risk. HCVs are derived from available toxicity data. HCVs are used to derive SGVs.

SR3 Updated Technical Background to the CLEA Model. This report incorporates many of the updates to exposure assessment introduced in *Soil Guideline Values: The Way Forward* (Defra, 2006a) together with other changes. The report describes the technical principles of the Contaminated Land Exposure Assessment (CLEA) model.

The CLEA model uses generic assumptions about the fate and transport of chemicals in the environment, and a generic conceptual model (referred to in this report as generic land use scenarios) for site conditions and human behaviour, to estimate child and adult exposures to soil contaminants for those living, working and/or playing on contaminated sites over long time periods. The CLEA model is used to derive SGVs.

SR4 CLEA Software (Version 1.06) & Handbook (Version 1.05). The software enables assessors to derive assessment criteria (AC) to assist in the evaluation of the risks posed to human health from chronic exposure to chemicals in soil in relation to land use. Assumptions in the CLEA software apply to the derivation of generic assessment criteria (GAC), but also offer a useful starting point for the development of site-specific assessment criteria (SSAC). The introduction of version 1.05 will have only a minor effect on assessment criteria calculated using the CLEA software v1.04.

The accompanying handbook contains further information on using the CLEA software (outside the scope of the CLEA report SR3) for deriving SSAC. The CLEA software version 1.05 handbook is still relevant to version 1.06 and has not been changed. The CLEA software is used to derive SGVs.

The introduction of the new CLEA methodology now means that the SGVs and GACs derived using the old methodology will require updating. The former SGVs have been withdrawn and the Environment Agency have published revised SGV reports and associated TOX reports for the following eleven substances:

- Benzene
- Toluene
- Ethylbenzene
- Xylenes
- Mercury
- Selenium
- Arsenic
- Nickel

- Cadmium
- Phenol
- Dioxins, furans and dioxin-like PCBs

The publication of further SGVs is unlikely as HM Government and DEFRA have produced the document "Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance". This introduces new Category 4 Screening Levels (C4SLs) where further guidance is proposed.

SGVs are scientifically based generic assessment criteria that can be used to simplify the assessment of human health risks arising from long-term and on-site exposure to chemical contamination in soil. They do not, however, consider risks to construction workers or risks from occupational exposure arising from activities in the work place.

SGVs are a screening tool for the generic quantitative risk assessment of land contamination. They are not (unless clearly stated otherwise) relevant for assessing risks to human health from short-term exposure to chemicals in soil including injury arising from direct bodily contact and do not take account of other types of risks to humans such as explosion or suffocation risks (associated with the build-up of gases such as methane and carbon dioxide) or aesthetic issues such as odour or colour.

SGVs do not take account of other non soil based sources of contamination such as contamination in groundwater, surface waters or drinking waters. They cannot be used to evaluate risks to non-human receptors such as controlled waters, ecosystems, buildings and services, domestic pets or garden plants. Where, for example, phytotoxic effects are an important consideration in the current or future intended land use further investigation should be undertaken.

SGVs are guidelines on the level of long-term human exposure to individual chemicals in soil that, unless stated otherwise, are tolerable or pose a minimal risk to human health. They represent an indicator to a risk assessor of when land is very unlikely to pose a

significant possibility of significant harm to human health. Soil concentrations well above this level **may** pose a possibility of *significant harm* to human health. *Significance* is linked to:

- the magnitude of contamination;
- the duration and frequency of exposure;
- other site-specific factors that the enforcing authority may wish to take into account.

SGVs do not represent the threshold at which there is a *significant possibility of significant harm* (SPOSH). Nor do they automatically represent an unacceptable intake in the context of Part 2A of the Environmental Protection Act 1990. However, they are considered to be a useful starting point for such an assessment.

- SGVs can be used as a starting point for evaluating long-term risks to human health from chemicals in soil.
- SGVs can be used as an indication of chemical contamination in soil below which the long-term human health risks are considered to be tolerable or minimal.
- SGVs do not represent the "trigger" for an unacceptable intake.
- Unless specifically stated, SGVs do not cover other types of risk to humans such as fire, suffocation or explosion, or short term and acute exposures.
- SGVs cannot be used to evaluate risks to construction workers or nonhuman receptors.
- SGVs are not explicitly derived to define remediation standards.

Category 4 Screening Levels

The Impact Assessment that accompanied the revised Part 2A Statutory Guidance identified a potential role for new 'Category 4 Screening Levels' (C4SLs) in providing a simple test for deciding when land is suitable for use and definitely not contaminated land. It was envisaged that these new screening levels would allow 'low-risk' land to be dismissed from the need for further risk assessment more quickly and easily and allow regulators to focus efforts on the highest-risk land. The C4SLs were proposed to be more pragmatic (whilst still

strongly precautionary) compared to existing generic screening levels. It is anticipated that, where they exist, C4SLs will be used as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the currently or previously available SGVs.

The Part 2A regime and the planning regime are inter-linked such that the National Planning Policy Framework states that "after development, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990" and that "Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner." The Part 2A Statutory Guidance and accompanying Impact Assessment were developed on the basis that Category 4 Screening Levels could be used under the planning regime, as they would be in Part 2A investigations directly. The estimated benefits that were expected to accrue from the changes to the Part 2A Statutory Guidance and specifically from the use of the new Category 4 Screening Levels were based on this assumption. However, policy responsibility for the National Planning Policy Framework and associated Planning Practice Guidance falls to the Department for Communities and Local Government.

The Category 4 Screening Levels consist of estimates of contaminant concentrations in soil that are considered to present an 'acceptable' level of risk, within the context of Part 2A. The methodology for deriving both the Category 4 Screening Levels is based on CLEA methodology.

Where a valid Soil Guideline Value exists for a contaminant where a Category 4 Screening Level has also been derived, it is anticipated that risk assessors will use the Category 4 Screening Level in line with the Part 2A Statutory Guidance. In the absence of a suitable C4SL, risk assessors should identify and select appropriate generic assessment criteria in accordance with established good practice. It is for the Environment Agency to decide whether or not any of the Soil Guideline Values will be updated in the light of more recent toxicological data or whether any particular Soil Guideline Value should be withdrawn (as has already been the case with the SGV for lead).

LQM/CIEH Suitable for Use (S4UL) values

The "new" LQM/CIEH S4ULs[1] replace the 2nd edition of the LQM/CIEH Generic Assessment Criteria published in 2009. Generic values were developed by Land Quality Management Ltd (LQM) and the Chartered Institute of Environmental Health (CIEH) in 2014 to provide Generic Assessment Criteria (GACs) for a variety of land-uses, using the CLEA 1.06 (2009) model. These values are in accordance with Environment Agency publication SR4 (2009) which states that "You can derive GAC and SSAC using the CLEA software". The properties used in the model were subject to a peer review process during a workshop in July 2014.

The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and as transparently-derived and cautious "trigger values" above which further assessment of the risks or remedial action may be needed.

In the absence of LQM/CIEH S4ULS values developed by EIC/AGS/CL:AIRE and described below will be used.

EIC/AGS/CL:AIRE values

The CL:AIRE project involved the collation and review of physico-chemical data, toxicological data and information on background exposure for 44 contaminants sometimes encountered on land affected by contamination in the UK and the derivation of Generic Assessment Criteria (GACs) for 351 of these using the CLEA model (v1.06). The GAC are intended to complement soil guideline values (SGV) produced by the Environment Agency of England and Wales and the 2nd edition GAC produced by LQM and CIEH (Nathanail et al, 2009). All three sets of assessment criteria have been derived in general accordance with the Environment Agency of England and Wales Contaminated Land Exposure Assessment (CLEA) guidance and thus the combined efforts of these three groups have resulted in a useful set of screening criteria for the assessment of risks to human health from soil contamination for more than 120 potentially contaminative substances.

Definition of what EIC/AGS/CL:AIRE GAC are:

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- They are scientifically based screening criteria that have been derived using the CLEA model (v1.06) in general accordance with the CLEA framework;
- They can be used as a starting point for evaluating long-term risks to human health from chemicals in soil; and
- They provide an indication of the chemical concentration in soil below which the long-term human health risks for site occupants (for various generic land-use scenarios) are considered to be tolerable or minimal;
- They are screening criteria to determine the need for further investigations and the need for a DQRA.

Definition of what EIC/AGS/CL:AIRE GAC are NOT:

- They do not represent the "trigger" for unacceptable intake, i.e. exceedance of the GAC does not necessarily imply significant possibility of significant harm (SPOSH);
- They do not cover other types of risk to humans such as fire, suffocation or explosion, risks from chemicals in groundwater or ground gas or short term and acute exposures;
- They cannot be used to evaluate risks to construction workers or non-human receptors; and
- They are not explicitly derived to define remediation standards.

AtriskSoil values

The ATRISKSOIL SSVs have been calculated using CLEA v1.071 to incorporate changes to exposure assessment parameters, methodology, and land uses as set out in the Department for Environment, Food and Rural Affairs (Defra) Category 4 Screening Level (C4SL) Project Methodology Report (2014).

With exception to contaminants with published C4SLs (arsenic, benzene, benzo(a)pyrene, cadmium, chromium VI, and lead), the toxicological assessment for contaminants is based on minimal toxicological risk in accordance with Environment Agency guidance (SR2) [3]. Toxicological data for some contaminants have been sourced from the CLAIRE-EIC Report (2013). Where Atkins have updated or derived their own HCVs, compound specific

toxicological data sheets can be found on the ATRISKSOIL website http://www.atrisksoil.co.uk/.

CLEA and other Guidance References

Atkins (2017) AtriskSoil. http://www.atrisksoil.co.uk/.

CL:AIRE (2010): Soil Generic Assessment Criteria for Human Health Risk Assessment. In association with the Association of Geotechnical and Geoenvironmental Specialists and The Environmental Industries Commission.

CL:AIRE (2013): Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. PS1010 – Final Project Report. Contaminated Land: Applications in Real Environments (CL:AIRE) dated 20th December 2013.

Department for Environment, Food and Rural Affairs (2012). Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance.

Department for Environment, Food and Rural Affairs (2014). SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document. March 2014.

Environment Agency. (2008), Science Report – SC050021/SR7 Compilation of data for priority organic pollutants for derivation of Soil Guideline Values. Science Report. Bristol.

Environment Agency. (2009), Science Report – SC050021/ SGV introduction Using Soil Guideline Values Science Report. Bristol: Environment Agency.

Environment Agency. (2009), Science Report – SC050021/SR3. Updated technical background to the CLEA model. Bristol: Environment Agency.

Environment Agency. (2009), Science Report – SC050021/SR2. Human health toxicological assessment of contaminants in soil. Science Report Final. Bristol: Environment Agency.

Environment Agency. (2009). CLEA software version 1.06. Bristol: Environment Agency.

Environment Agency. (2009). CLEA software (version 1.05) handbook. Science Report SC050021/SR4. Bristol: Environment Agency.

Jeffries, J., (2009). A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA). Project SC050021/ Technical Review 1. Bristol: Environment Agency.

Land Quality Management Ltd (2009): LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment 2nd Edition.

Nathanail,C P, McCaffrey C, Gillett AG, Ogden RC and Nathanail JF (2014) The LQM/CIEH S4ULs for Human Health Risk Assessment. Land Quality Press, Nottingham.

SGV Reports References

Environment Agency. (2009), Science Report - SC050021/Arsenic SGV. Soil Guideline Values for Inorganic Arsenic in Soil.

Environment Agency. (2009), Science Report - SC050021/Mercury SGV. Soil Guideline Values for Mercury in Soil.

Environment Agency. (2009), Science Report - SC050021/Nickel SGV. Soil Guideline Values for Inorganic Nickel in Soil.

Environment Agency. (2009), Science Report - SC050021/Cadmium SGV. Soil Guideline Values for Cadmium in Soil.

Environment Agency. (2009), Science Report - SC050021/Selenium SGV. Soil Guideline Values for Selenium in Soil.

Environment Agency. (2009), Science Report - SC050021/Benzene SGV. Soil Guideline Values for Benzene in Soil.

Environment Agency. (2009), Science Report - SC050021/Toluene SGV. Soil Guideline Values for Toluene in Soil.

Environment Agency. (2009), Science Report - SC050021/Ethylbenzene SGV. Soil Guideline Values for Ethylbenzene in Soil.

Environment Agency. (2009), Science Report - SC050021/Xylenes SGV. Soil Guideline Values for Xylenes in Soil.

Environment Agency. (2009), Science Report - SC050021/Dioxins SGV. Soil Guideline Values for dioxins, furans and dioxin-like PCBs in soil. Bristol: Environment Agency.

Environment Agency. (2009), Science Report - SC050021/Phenol SGV. Soil Guideline Values for Phenol in Soil.

Toxicological reports published under the new approach

Environment Agency. (2009), Science Report - SC050021/TOX1 Contaminants in soil: updated collation of toxicological data and intake values for humans Inorganic Arsenic.

Environment Agency. (2009), Science Report - SC050021//TOX8 Contaminants in soil: updated collation of toxicological data and intake values for humans Nickel.

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Mercury.

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Selenium.

Environment Agency. (2009), Science Report - SC050021/TOX3 Contaminants in soil: updated collation of toxicological data and intake values for humans. Cadmium

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Benzene.

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Toluene.

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Ethylbenzene.

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Xylene.

Environment Agency. (2009), Science Report - SC050021/ Contaminants in soil: updated collation of toxicological data and intake values for humans Dioxins, furans and dioxin-like PCBs.

Environment Agency. (2009), Science Report - SC050021/ TOX9 Contaminants in soil: updated collation of toxicological data and intake values for humans Cadmium.

Toxicological reports published under the old approach

Environment Agency. (2002), Science Report – R&D Publication/ TOX4 Contaminants in soil: collation of toxicological data and intake values for humans. Chromium.

Environment Agency. (2002), Science Report - R&D Publication / TOX5 Contaminants in soil: collation of toxicological data and intake values for humans. Inorganic Cyanide.

Environment Agency. (2002), Science Report - R&D Publication / TOX6 Contaminants in soil: collation of toxicological data and intake values for humans. Lead.

Environment Agency. (2002), Science Report - R&D Publication / TOX2 Contaminants in soil: collation of toxicological data and intake values for humans. Benzo(a)Pyrene.

Environment Agency. (2003), Science Report - R&D Publication / TOX20 Contaminants in soil: collation of toxicological data and intake values for humans. Naphthalene.

Environment Agency. (2004), Science Report - R&D Publication / TOX22 Contaminants in soil: collation of toxicological data and intake values for humans. 1,2-Dichloroethane.

Environment Agency. (2004), Science Report - R&D Publication / TOX16 Contaminants in soil: collation of toxicological data and intake values for humans. Tetrachloroethane.

Environment Agency. (2004), Science Report - R&D Publication / TOX24 Contaminants in soil: collation of toxicological data and intake values for humans. Trichloroethene.

Environment Agency. (2004), Science Report - R&D Publication / TOX18 Contaminants in soil: collation of toxicological data and intake values for humans. Vinyl Chloride.

Environment Agency. (2004), Science Report - R&D Publication / TOX21 Contaminants in soil: collation of toxicological data and intake values for humans. Carbon Tetrachloride.

Environment Agency. (2004), Science Report - R&D Publication / TOX23 Contaminants in soil: collation of toxicological data and intake values for humans. Tetrachloroethene.

Environment Agency. (2004), Science Report - R&D Publication / TOX25 Contaminants in soil: collation of toxicological data and intake values for humans. 1,1,1-Trichloroethane.

APPENDIX E

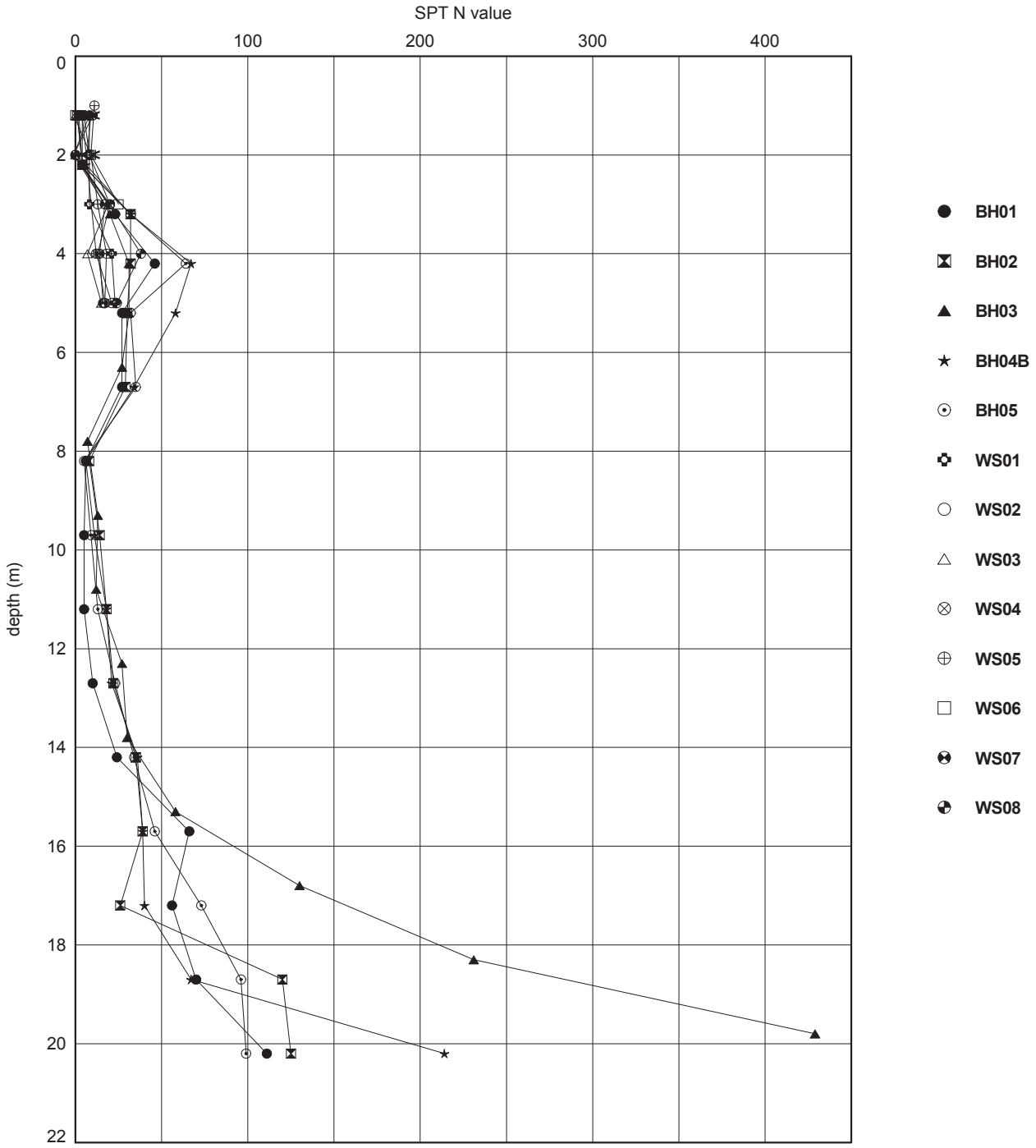
GEOTECHNICAL PLOTS

Geotechnical Engineering Limited

SPT N VALUE v DEPTH PLOT

CLIENT THAMES PROPERTIES LIMITED

SITE COX & WYMAN BUILDING, CARDIFF ROAD, READING



CONTRACT	CHECKED
32933	**CT**

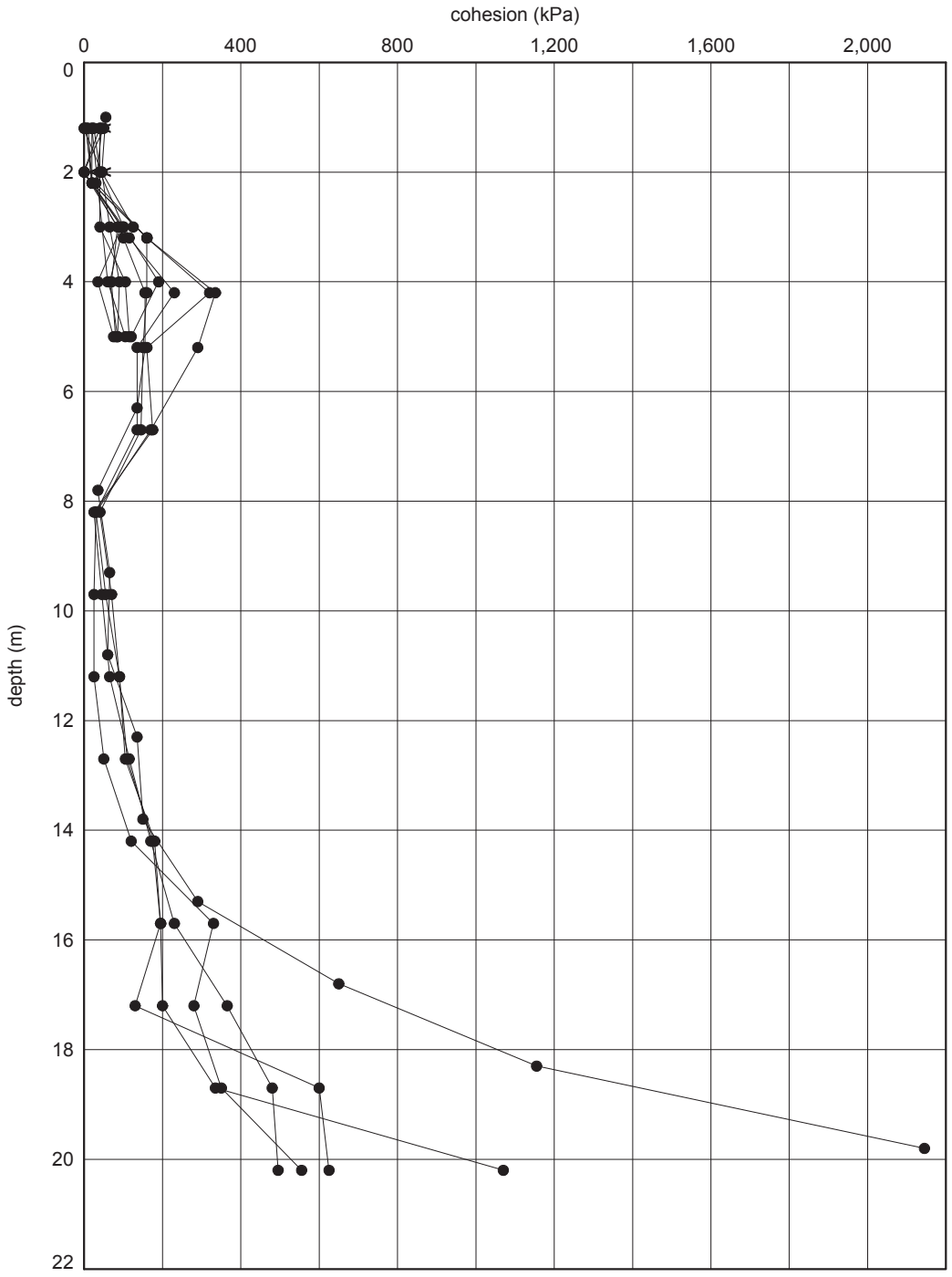
Geotechnical Engineering Ltd, Tel. 01452 527743 32933 MASTER.GPJ TRIALJH.GPJ GEOTECH2.GLB 25/7/17

Geotechnical Engineering Limited

STRENGTH v DEPTH PLOT

CLIENT THAMES PROPERTIES LIMITED

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● denotes a cohesion determined from SPT results using a factor of 5kPa (Stroud,1974)

⊠ denotes cohesion determined from triaxial test results

CONTRACT	CHECKED
32933	**CT**

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Web: www.enzygo.com

Site
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WS101

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1265.013	Start 11-04-19 Finish 11-04-19		

Client
Bellway and Thames Properties

Sheet
1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	Samples & In Situ Testing: No/Type	Samples & In Situ Testing: Results	Depth (m)	Level (mAD)	Legend	Stratum Description
					0.30			MADE GROUND: Re-inforced concrete.
		0.40	ES		0.40			MADE GROUND: Light grey gravelly slightly silty sandy subangular and subrounded fine to coarse flint GRAVEL.
		0.50	B		0.80			MADE GROUND: Dark grey slightly ashy slightly gravelly SILT with rare fine to coarse gravel sized fragments of glass. Gravel is subangular and subrounded fine to coarse of flint, brick and ash.
		1.00	ES					MADE GROUND: Dark grey slightly ashy slightly sandy SILT.
					1.50			
					1.60			MADE GROUND: Soft orangish brown and mottled grey and yellowish brown slightly sandy silty CLAY.
								Firm orangish brown and mottled reddish brown locally gravelly CLAY. Gravel is subangular and subrounded fine to coarse of flint.
					2.60			
					2.90			Firm orangish brown slightly sandy very gravelly CLAY. Gravel is subangular and subrounded fine to coarse of flint.
					3.00			Orangish brown gravelly fine to coarse SAND. Gravel is subangular and subrounded fine to coarse of flint.
								Borehole completed at 3.00m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks
Window sample borehole advanced from groundlevel to 3.0 m bgl. No services encountered. No groundwater encountered. 50 monitoring well installed upon completion.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By
ED

1.0 ENZYGO BH LOG CRM.1265.013 CARDIFF ROAD, READING.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 14/5/19

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Web: www.enzygo.com

Site
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WS102

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1265.013	Start 11-04-19 Finish 11-04-19		

Client
Bellway and Thames Properties

Sheet
1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	Samples & In Situ Testing: No/Type	Samples & In Situ Testing: Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.40	ES		0.35			MADE GROUND: Re-inforced concrete.
		0.50	B		0.70			MADE GROUND: Brown reddish brown and slightly silty sandy subangular and subrounded fine to coarse brick, concrete, chalk and flint GRAVEL.
		1.00	ES		1.30			MADE GROUND: Dark grey slightly ashy sandy subangular and subrounded fine to coarse brick, concrete, chalk and flint GRAVEL with rare fine to coarse gravel sized glass fragments.
					1.50			MADE GROUND: Soft orangish brown slightly sandy gravelly CLAY. Gravel is subangular and subrounded fine to coarse of flint.
					1.80			MADE GROUND: Firm dark grey slightly gravelly CLAY. Gravel is subangular and subrounded fine to coarse brick and ash.
					2.20			MADE GROUND: Firm orangish brown and mottled reddish brown rarely mottled black silty CLAY.
					3.00			Firm orangish brown and bluish grey locally slightly sandy gravelly CLAY. Gravel is subangular fine flint.
					{8.00}			Borehole completed at 3.00m.

0 1 2 3 4 5 6 7 8

General Remarks
Window sample borehole advanced from groundlevel to 3.0 m bgl. No services encountered. No groundwater encountered. 50 mm monitoring well installed upon completion.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By
ED

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WS103

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1265.013	Start 11-04-19 Finish 11-04-19		

Client
Bellway and Thames Properties

Sheet
1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	Samples & In Situ Testing: No/Type	Samples & In Situ Testing: Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.30	ES					MADE GROUND: Brown slightly silty sandy subangular and subrounded fine to coarse brick and concrete GRAVEL.
		0.50	B		0.50			
					0.80			MADE GROUND: Brown slightly clayey sandy subangular and subrounded fine to coarse brick and concrete with rare rounded flint GRAVEL.
		1.00	ES					MADE GROUND: Firm brown gravelly CLAY. Gravel is subangular and subrounded fine to coarse brick and concrete.
					1.20			MADE GROUND: Firm brown mottled reddish brown rarely mottled black silty CLAY.
					1.50			Firm orangish brown slightly silty sandy CLAY.
					2.60			Yellowish brown slightly silty sandy subangular and subrounded fine to coarse flint GRAVEL.
					3.00			Borehole completed at 3.00m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks
Window sample borehole advanced from groundlevel to 3.0 m bgl. No services encountered. No groundwater encountered. 50 mm monitoring well installed upon completion.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By
ED

1.0 ENZYGO BH LOG CRM.1265.013 CARDIFF ROAD, READING.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 14/5/19

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Site
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WS105

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1265.013	Start 11-04-19 Finish 11-04-19		

Client
Bellway and Thames Properties

Sheet
1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.30	ES		0.20			MADE GROUND: Re-inforced concrete.
		0.50	B		0.70			MADE GROUND: Light yellowish brown gravelly SAND with rare fine to coarse gravel sized glass fragments. Gravel is subangular to subrounded fine to coarse of flint.
		1.00	ES					MADE GROUND: Brown slightly sandy gravelly SILT with rare fine to coarse gravel sized fragments of glass. Gravel is subangular and subrounded fine to coarse flint, brick and ash.
		2.00	ES		2.40			
					2.50			MADE GROUND: Firm brown mottled reddish brown rarely mottled black silty CLAY.
					2.80			Orangish brown slightly clayey sandy subangular and subrounded fine to coarse flint GRAVEL.
					3.00			Orangish brown slightly silty sandy subangular and subrounded fine to coarse flint GRAVEL.
								Borehole completed at 3.00m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks
Window sample borehole advanced from groundlevel to 3.0 m bgl. No services encountered. No groundwater encountered. 50 mm monitoring well installed upon completion.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By
ED

1.0 ENZYGO BH LOG CRM.1265.013 CARDIFF ROAD, READING.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 14/5/19

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WS106

Job No	Dates	Ground Level (m)	Co-Ordinates
CRM.1265.013	Start 11-04-19 Finish 11-04-19		

Client
Bellway and Thames Properties

Sheet
1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
		0.30	ES		0.20			MADE GROUND: Re-inforced concrete.
		0.50	B					MADE GROUND: Orangish brown very gravelly fine to coarse SAND. Gravel is subangular and tabular fine to coarse concrete and brick with rare slate. Note: Borehole refused on brick structure.
		1.00	ES		1.00			Borehole completed at 1.00m.
					{8.00}			

0 1 2 3 4 5 6 7 8

General Remarks
Window sample borehole advanced from groundlevel to 1.0 m bgl. No services encountered. No groundwater encountered. Backfilled with arisings upon completion.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

All dimensions in metres
Scale 1:50

Logged By
ED

1.0 ENZYGO BH LOG CRM.1265.013 CARDIFF ROAD, READING.GPJ GINT STD AGS 3_1 ENZYGO.GPJ 14/5/19

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Croxley Green
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Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 19-37305

Project / Site name:	Carfiff Rd Reading	**Samples received on:**	12/04/2019
Your job number:	CRM.1265.013	**Samples instructed on:**	12/04/2019
Your order number:		**Analysis completed by:**	23/04/2019
Report Issue Number:	1	**Report issued on:**	23/04/2019
Samples Analysed:	6 soil samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-37305

Project / Site name: Carfiff Rd Reading

Lab Sample Number				1200180	1200181	1200182	1200183	1200184
Sample Reference				WS101	WS102	WS103	WS105	WS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.40	0.30	0.30	0.30
Date Sampled				11/04/2019	11/04/2019	11/04/2019	11/04/2019	11/04/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	34	< 0.1	21	< 0.1
Moisture Content	%	N/A	NONE	13	8.5	10	3.1	9.0
Total mass of sample received	kg	0.001	NONE	1.3	1.2	1.2	1.5	1.2
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	< 0.001
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.6	8.5	8.3	11.5	9.4
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.6	0.5	1.2	0.3	0.2
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.25	< 0.05	< 0.05	0.38	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.45	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.50	0.34	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.53	0.43	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.78	1.1	3.6	4.6	0.75
Anthracene	mg/kg	0.05	MCERTS	0.25	0.30	2.2	1.4	0.22
Fluoranthene	mg/kg	0.05	MCERTS	1.1	2.2	13	5.8	1.4
Pyrene	mg/kg	0.05	MCERTS	1.1	2.1	12	4.9	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.75	0.98	7.4	2.3	0.58
Chrysene	mg/kg	0.05	MCERTS	1.1	1.3	5.7	1.8	0.46
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2	1.4	8.5	2.0	0.50
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.48	0.68	3.3	0.65	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.99	1.2	7.0	1.6	0.39
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.63	0.68	4.3	1.1	0.26
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.18	1.4	0.33	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.82	0.86	5.1	1.2	0.34
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	9.33	13.0	75.7	28.8	6.27
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	14	22	18	13
Boron (water soluble)	mg/kg	0.2	MCERTS	5.9	2.7	1.1	1.9	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	0.6	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	190	14	23	19	8.8
Copper (aqua regia extractable)	mg/kg	1	MCERTS	380	42	180	230	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	7100	680	1100	110	200
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.3	0.7	1.8	< 0.3	1.0
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	17	22	19	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	130	400	99	40

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Analytical Report Number: 19-37305

Project / Site name: Carfiff Rd Reading

Lab Sample Number				1200180	1200181	1200182	1200183	1200184
Sample Reference				WS101	WS102	WS103	WS105	WS106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.40	0.30	0.30	0.30
Date Sampled				11/04/2019	11/04/2019	11/04/2019	11/04/2019	11/04/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	13	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	26	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	150	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	190	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	15	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	100	31	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	230	42	17
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	350	73	26
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	-	-	-	-	-
TPH (>C5 - C7)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (>C7 - C8)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C8 - C10)	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	-	-	-
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	-	-	-
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C21 - C35)	mg/kg	1	MCERTS	-	-	-	-	-
TPH (C35 - C44)	mg/kg	10	NONE	-	-	-	-	-
TPH Total C5 - C44	mg/kg	10	NONE	-	-	-	-	-

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Analytical Report Number: 19-37305

Project / Site name: Carfiff Rd Reading

Lab Sample Number				1200481				
Sample Reference				WS106				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				11/04/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	16				
Total mass of sample received	kg	0.001	NONE	1.1				
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-				
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected				
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-				
Asbestos Quantification Total	%	0.001	ISO 17025	-				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.0				
Total Organic Carbon (TOC)	%	0.1	MCERTS	8.1				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.58				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	1.4				
Anthracene	mg/kg	0.05	MCERTS	0.32				
Fluoranthene	mg/kg	0.05	MCERTS	1.8				
Pyrene	mg/kg	0.05	MCERTS	1.6				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.85				
Chrysene	mg/kg	0.05	MCERTS	1.3				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.2				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.55				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.77				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.68				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.82				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	11.8				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14				
Boron (water soluble)	mg/kg	0.2	MCERTS	12				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	80				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.8				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120				

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Analytical Report Number: 19-37305

Project / Site name: Carfiff Rd Reading

Lab Sample Number				1200481				
Sample Reference				WS106				
Sample Number				None Supplied				
Depth (m)				1.00				
Date Sampled				11/04/2019				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	ug/kg	1	MCERTS	-				
Toluene	µg/kg	1	MCERTS	-				
Ethylbenzene	µg/kg	1	MCERTS	-				
p & m-xylene	µg/kg	1	MCERTS	-				
o-xylene	µg/kg	1	MCERTS	-				
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-				
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10				
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001				
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	12				
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	12				
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	24				
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	24				
TPH (>C5 - C7)	mg/kg	1	MCERTS	< 1.0				
TPH (>C7 - C8)	mg/kg	1	MCERTS	< 1.0				
TPH (C8 - C10)	mg/kg	0.1	MCERTS	< 0.1				
TPH (C10 - C12)	mg/kg	2	MCERTS	< 2.0				
TPH (C12 - C16)	mg/kg	4	MCERTS	< 4.0				
TPH (C16 - C21)	mg/kg	1	MCERTS	12				
TPH (C21 - C35)	mg/kg	1	MCERTS	12				
TPH (C35 - C44)	mg/kg	10	NONE	< 10				
TPH Total C5 - C44	mg/kg	10	NONE	24				

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Analytical Report Number: 19-37305
Project / Site name: Carfiff Rd Reading
Your Order No:

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1200184	WS106	0.30	148	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Analytical Report Number : 19-37305

Project / Site name: Carfiff Rd Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1200180	WS101	None Supplied	0.40	Brown loam and clay with gravel.
1200181	WS102	None Supplied	0.40	Brown clay and gravel with stones and chalk.
1200182	WS103	None Supplied	0.30	Brown loam and clay with gravel and rubble.
1200183	WS105	None Supplied	0.30	Beige sand with gravel and stones.
1200184	WS106	None Supplied	0.30	Light brown sand with rubble and gravel.
1200481	WS106	None Supplied	1.00	Brown clay and sand with gravel.

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Analytical Report Number : 19-37305

Project / Site name: Carfiff Rd Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 19-39409

Project / Site name:	Carfiff Rd Reading	**Samples received on:**	12/04/2019
Your job number:	CRM.1265.013	**Samples instructed on:**	01/05/2019
Your order number:		**Analysis completed by:**	08/05/2019
Report Issue Number:	1	**Report issued on:**	08/05/2019
Samples Analysed:	2 wac multi samples		

Signed:

Zina Abdul Razzak
Assistant Quality/Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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Waste Acceptance Criteria Analytical Results

Report No:	**19-39409**						
					Client:	**ENZYGOGEO**	
Location	**Carfiff Rd Reading**						
Lab Reference (Sample Number)	1212095				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	11/04/2019				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS101+02+03 Combined						
Depth (m)	0.30-0.40						
Solid Waste Analysis							
TOC (%)**	1.6				3%	5%	6%
Loss on Ignition (%) **	4.2				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) #	150				500	--	--
Total PAH (WAC-17) (mg/kg)	20				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mol / kg)	9.9				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	< 0.010		0.055	0.5	2	25
Barium *	0.093	0.028		0.34	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.31	0.43		4.2	0.5	10	70
Copper *	0.012	0.011		0.11	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.019	0.0060		0.072	0.5	10	30
Nickel *	0.0017	< 0.0010		< 0.0050	0.4	10	40
Lead *	< 0.0050	0.0078		0.074	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0023	0.0030		0.029	4	50	200
Chloride *	7.4	< 4.0		19	800	4000	25000
Fluoride	0.53	0.41		4.2	10	150	500
Sulphate *	750	61		1200	1000	20000	50000
TDS*	740	120		1800	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	11	6.2		67	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	90						
Moisture (%)	10						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.16						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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i2 Analytical
7 Woodshots Meadow
Croxley Green Business Park
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Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	**19-39409**						
					Client:	**ENZYGOGEO**	
Location	**Carfiff Rd Reading**						
Lab Reference (Sample Number)	1212096				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	11/04/2019				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS105+6 Combined						
Depth (m)	0.30-0.30						
Solid Waste Analysis							
TOC (%)**	4.2				3%	5%	6%
Loss on Ignition (%) **	13				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.30				1	--	--
Mineral Oil (mg/kg) #	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	43				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mol / kg)	7.6				--	To be evaluated	To be evaluated
Eluate Analysis	2:1	8:1		Cumulative 10:1	Limit values for compliance leaching test		
(BS EN 12457 - 3 preparation utilising end over end leaching procedure)	mg/l	mg/l		mg/kg	using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.010	0.010		0.095	0.5	2	25
Barium *	0.026	0.015		0.17	20	100	300
Cadmium *	< 0.0005	< 0.0005		< 0.0020	0.04	1	5
Chromium *	0.12	0.020		0.35	0.5	10	70
Copper *	0.036	0.017		0.20	2	50	100
Mercury *	< 0.0015	< 0.0015		< 0.010	0.01	0.2	2
Molybdenum *	0.049	0.0098		0.16	0.5	10	30
Nickel *	0.0027	0.0012		0.014	0.4	10	40
Lead *	< 0.0050	< 0.0050		< 0.020	0.5	10	50
Antimony *	< 0.0050	< 0.0050		< 0.020	0.06	0.7	5
Selenium *	< 0.010	< 0.010		< 0.040	0.1	0.5	7
Zinc *	0.0014	0.0073		0.064	4	50	200
Chloride *	11	< 4.0		30	800	4000	25000
Fluoride	0.45	0.41		4.1	10	150	500
Sulphate *	990	110		2500	1000	20000	50000
TDS*	990	200		3200	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.13	< 0.13		< 0.50	1	-	-
DOC	16	11		120	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	91						
Moisture (%)	9.0						
Stage 1							
Volume Eluate L2 (litres)	0.33						
Filtered Eluate VE1 (litres)	0.27						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation

** = MCERTS accrediited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
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Analytical Report Number : 19-39409

Project / Site name: Carfiff Rd Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1212095	WS101+02+0	Combined	0.30-0.40	Brown loam and sand with gravel and vegetation.
1212096	WS105+6	Combined	0.30-0.30	Brown loam and sand with gravel and vegetation.

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Analytical Report Number : 19-39409

Project / Site name: Carfiff Rd Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046-PL	W	NONE
BTEX (Sum of BTEX compounds) in soil	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride in WAC leachate (BS EN 12457-3 Prep)	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
DOC in WAC leachate (BS EN 12457-3 Prep)	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR analyser.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L037-PL	W	NONE
Fluoride in WAC leachate (BS EN 12457-3 Prep)	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L033-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in WAC leachate (BS EN 12457-3 Prep)	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
Mineral Oil in Soil C10 - C40	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method based on USEPA 8270	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
PCB's by GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Phenol Index in WAC leachate (BS EN 12457-3 Prep)	Determination of monohydric phenols in leachate by continuous flow analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Speciated WAC-17 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270. MCERTS accredited except Coronene.	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in WAC leachate (BS EN 12457-3 Prep)	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L039-PL	W	ISO 17025
TDS in WAC leachate (BS EN 12457-3 Prep)	Determination of total dissolved solids in leachate by electrometric measurement.	In-house method based on Standard Methods for the Examination of Water and Waste Water, 21st Ed.	L031-PL	W	NONE
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS

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Analytical Report Number : 19-39409

Project / Site name: Carfiff Rd Reading

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

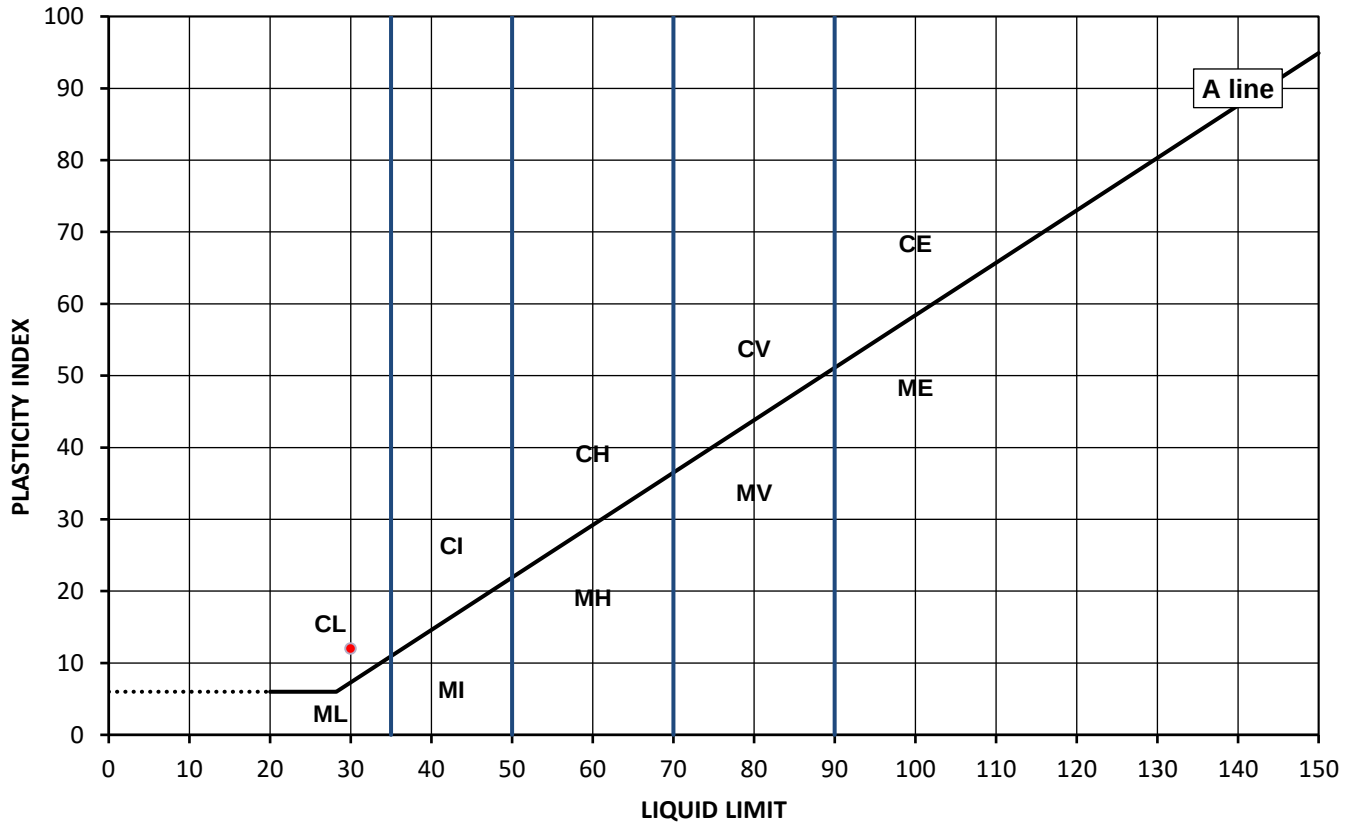
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1265.013
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	19-37448
		Date Sampled:	11/04/2019
		Date Received:	12/04/2019
Contact:	Steve Rhodes	Date Tested:	18/04/2019
Site Name:	Cardiff Road, Reading	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1201057	Depth Top [m]:	0.50
Hole No.:	WS102	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Reddish brown gravelly very clayey SAND		

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
14	30	18	12	43



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Note: Moisture Content by BS 1377-2: 1990: Caluse 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 232.5**

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

"Any assessment of compliance with specifications based the analytical results in a report take in to account no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request."

TEST CERTIFICATE

Liquid and Plastic Limits

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7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

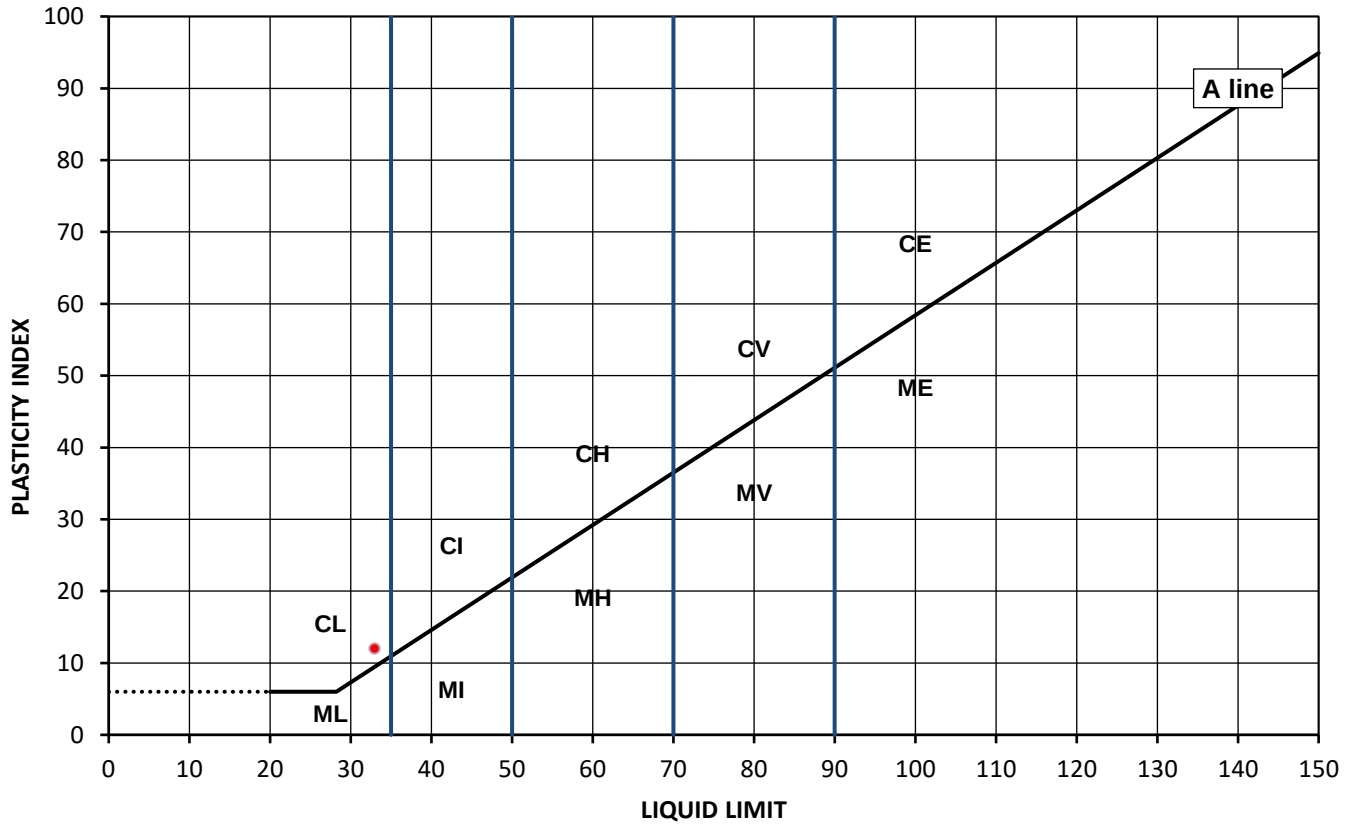
Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1265.013
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	19-37448
		Date Sampled:	11/04/2019
		Date Received:	12/04/2019
Contact:	Steve Rhodes	Date Tested:	18/04/2019
Site Name:	Cardiff Road, Reading	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1201059	Depth Top [m]:	0.50
Hole No.:	WS105	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Grey very sandy very clayey GRAVEL		

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
6.0	33	21	12	29



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Note: Moisture Content by BS 1377-2: 1990: Caluse 3.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 232.5**

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SUMMARY REPORT

Summary of Classification Test Results

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; WC by BS EN 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Enzygo Geoenvironmental Ltd

Client Address: The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA

Contact: Steve Rhodes

Site Name: Cardiff Road, Reading

Site Address: Not Given

Client Reference: CRM.1265.013

Job Number: 19-37448

Date Sampled: 11/04/2019

Date Received: 12/04/2019

Date Tested: 18/04/2019

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC	WC	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	LL	PL	PI	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
1201057	WS102	Not Given	0.50	Not Given	B	Reddish brown gravelly very clayey SAND	Atterberg 1 Point	14		43	30	18	12						
1201059	WS105	Not Given	0.50	Not Given	B	Grey very sandy very clayey GRAVEL	Atterberg 1 Point	6.0		29	33	21	12						

Note: # Non accredited; NP - Non plastic

Comments:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 234.7**

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TEST CERTIFICATE

California Bearing Ratio Top Only

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1265.013
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	19-37448
		Date Sampled:	11/04/2019
		Date Received:	12/04/2019
Contact:	Steve Rhodes	Date Tested:	23/04/2019
Site Name:	Cardiff Road, Reading	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

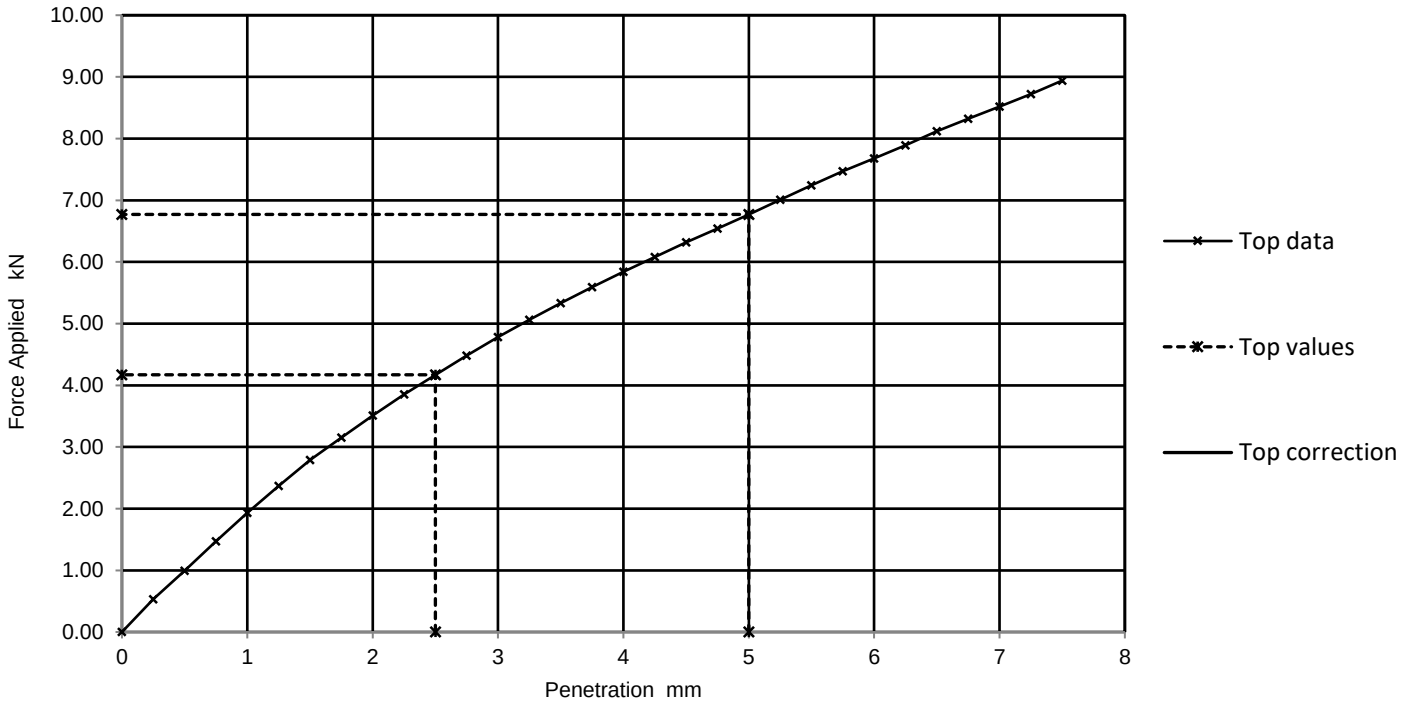
Laboratory Reference:	1201056	Depth Top [m]:	0.50
Hole No.:	WS101	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Greyish brown gravelly SAND		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	13 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	16 kg
	Dry density	1.76	Mg/m3		9.7 kPa
	Moisture content	14	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	32.0	34.0	34.0	N/A	14

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 277.4**

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TEST CERTIFICATE

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7 Woodshots Meadow
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Watford Herts WD18 8YS

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1265.013
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	19-37448
		Date Sampled:	11/04/2019
		Date Received:	12/04/2019
Contact:	Steve Rhodes	Date Tested:	23/04/2019
Site Name:	Cardiff Road, Reading	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

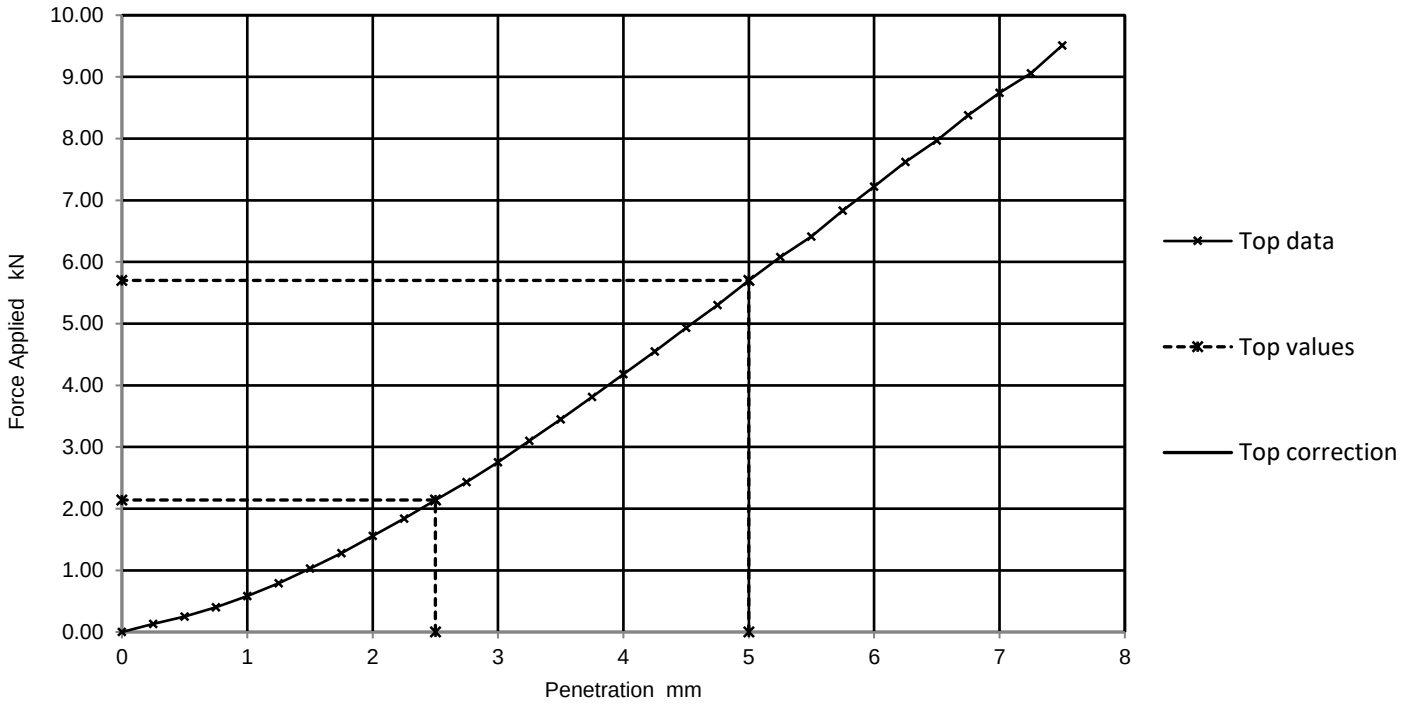
Laboratory Reference:	1201057	Depth Top [m]:	0.50
Hole No.:	WS102	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Reddish brown gravelly very clayey SAND		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	10 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.12	Mg/m3	Surcharge applied	16 kg
	Dry density	1.88	Mg/m3		9.7 kPa
	Moisture content	13	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	16.0	29.0	29.0	N/A	12

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 277.4**

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TEST CERTIFICATE

California Bearing Ratio Top Only

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4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1265.013
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	19-37448
		Date Sampled:	11/04/2019
		Date Received:	12/04/2019
Contact:	Steve Rhodes	Date Tested:	23/04/2019
Site Name:	Cardiff Road, Reading	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

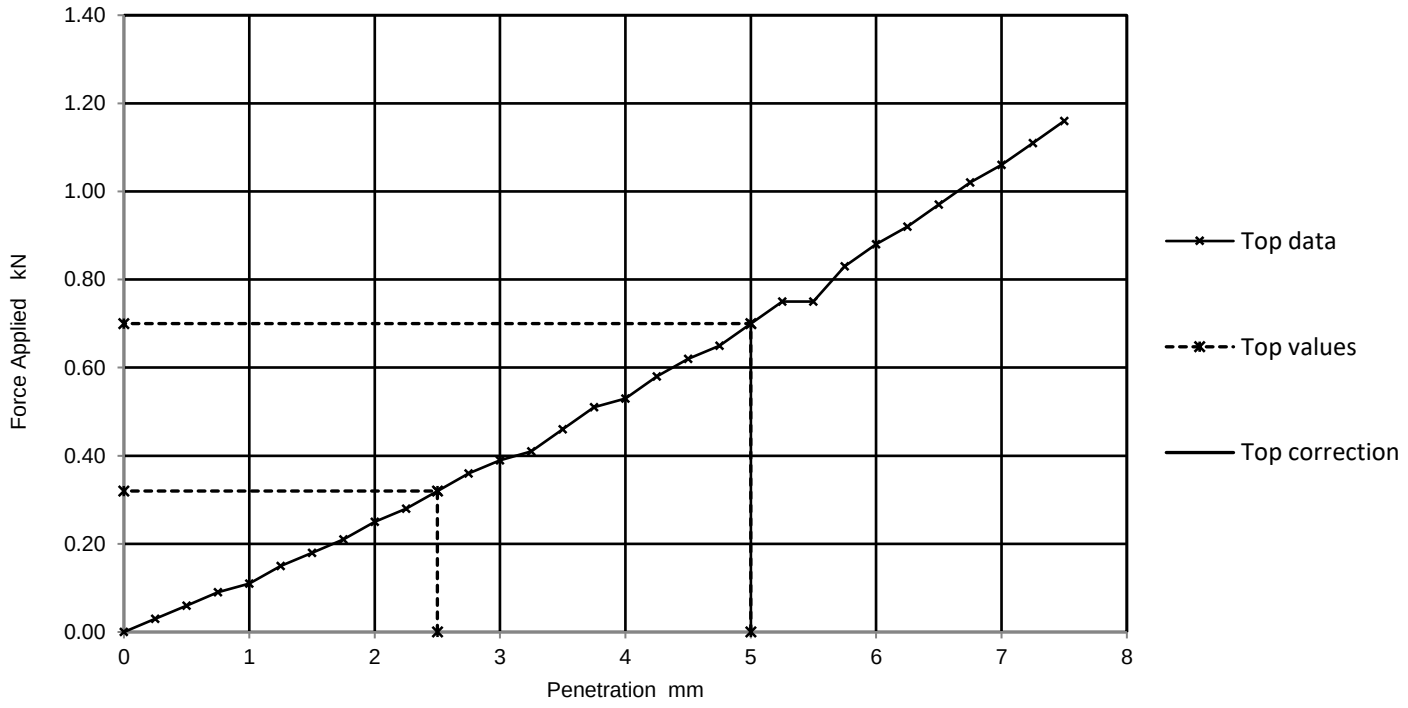
Laboratory Reference:	1201058	Depth Top [m]:	0.50
Hole No.:	WS103	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown clayey very gravelly SAND		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	12 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.09	Mg/m3	Surcharge applied	16 kg
	Dry density	1.81	Mg/m3		9.7 kPa
	Moisture content	15	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.4	3.5	3.5	N/A	16

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 277.4**

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The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

"Any assessment of compliance with specifications based the analytical results in a report take in to account no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request."

TEST CERTIFICATE

California Bearing Ratio Top Only

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Enzygo Geoenvironmental Ltd	Client Reference:	CRM.1265.013
Client Address:	The Byre, Woodend Lane, Cromhall, Gloucestershire, GL12 8AA	Job Number:	19-37448
		Date Sampled:	11/04/2019
		Date Received:	12/04/2019
Contact:	Steve Rhodes	Date Tested:	23/04/2019
Site Name:	Cardiff Road, Reading	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

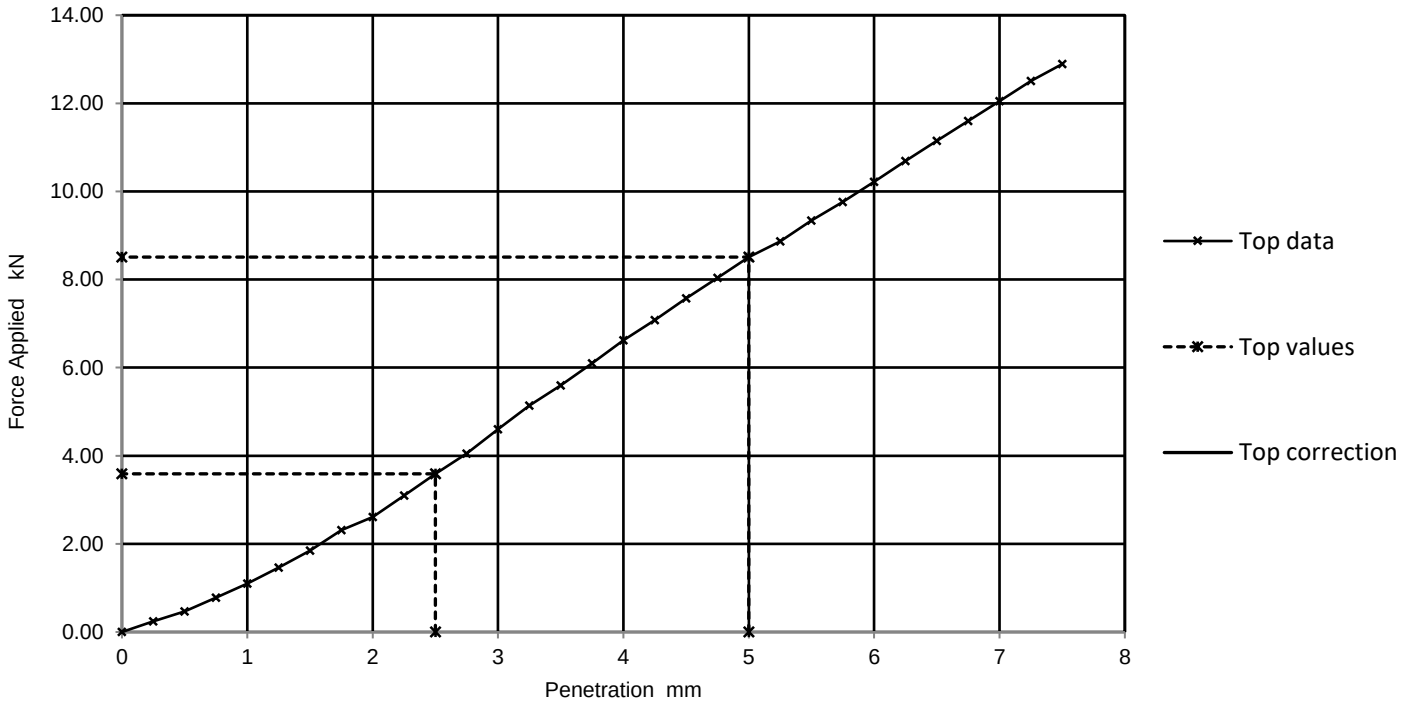
Laboratory Reference:	1201060	Depth Top [m]:	0.50
Hole No.:	WS106	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown clayey very gravelly SAND		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	37 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.05	Mg/m3	Surcharge applied	16 kg
	Dry density	1.77	Mg/m3		9.7 kPa
	Moisture content	16	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	27.0	43.0	43.0	N/A	15

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 25/04/2019

Signed: Darren Berrill
Geotechnical General Manager
for and on behalf of i2 Analytical Ltd **GF 277.4**

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

"Any assessment of compliance with specifications based the analytical results in a report take in to account no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request."

Determinant	Units	GAC Value Residential					
		With Plant Uptake			Without Plant Uptake		
Arsenic	mg/kg	37			40		
Cadmium	mg/kg	11			85		
Chromium	mg/kg	910			910		
Chromium VI	mg/kg	6			6		
Lead	mg/kg	200			310		
Mercury	mg/kg	40			56		
Nickel	mg/kg	130			180		
Selenium	mg/kg	250			430		
Copper	mg/kg	2400			7100		
Zinc	mg/kg	3700			40000		
Cyanide	mg/kg	791			800		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	280	550	1100	750	1300	2300
Napthalene	mg/kg	2.3	5.6	13	2.3	5.6	13
Acenaphtylene	mg/kg	170	420	920	2900	4600	6000
Acenaphthene	mg/kg	210	510	1100	3000	4700	6000
Flourene	mg/kg	170	400	860	2800	3800	4500
Phenanthrene	mg/kg	95	220	440	1300	1500	1500
Anthracene	mg/kg	2400	5400	11000	31000	35000	37000
Fluoranthene	mg/kg	280	560	890	1500	1600	1600
Pyrene	mg/kg	620	1200	2000	3700	3800	3800
Benzo(a)Anthracene	mg/kg	7.2	11	13	11	14	15
Chrysene	mg/kg	15	22	27	30	31	32
Benzo(b)Flouranthene	mg/kg	2.6	3.3	3.7	3.9	4.0	4.0
Benzo(k)Flouranthene	mg/kg	77	93	100	110	110	110
Benzo(a)Pyrene	mg/kg	2.2	2.7	3.0	3.2	3.2	3.2
Indeno(123-cd)Pyrene	mg/kg	27	36	41	45	46	46
Dibenzo(a,h)Anthracene	mg/kg	0.24	0.28	0.3	0.31	0.32	0.32
Benzo(ghi)Perylene	mg/kg	320	340	350	360	360	360
TPH C_5-C_6 Aliphatic	mg/kg	**42**	**78**	**160**	**42**	**78**	**160**
TPH C_6-C_8 Aliphatic	mg/kg	**100**	**230**	**530**	**100**	**230**	**530**
TPH C_8-C_{10} Aliphatic	mg/kg	**27**	**65**	**150**	**27**	**65**	**150**
TPH C_{10}-C_{12} Aliphatic	mg/kg	130	330	760	**130**	**330**	**770**
TPH C_{12}-C_{16} Aliphatic	mg/kg	1100	2400	4300	**1100**	2400	4400
TPH C_{16}-C_{35} Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C_{35}-C_{44} Aliphatic	mg/kg	65000	92000	110000	65000	92000	110000
TPH C_5-C_7 Aromatic	mg/kg	70	140	300	370	690	1400
TPH C_7-C_8 Aromatic	mg/kg	130	290	660	860	1800	3900
TPH C_8-C_{10} Aromatic	mg/kg	34	83	190	47	110	270
TPH C_{10}-C_{12} Aromatic	mg/kg	**74**	**180**	**380**	250	590	1200
TPH C_{12}-C_{16} Aromatic	mg/kg	**140**	**330**	**660**	1800	**2300**	**2500**
TPH C_{16}-C_{21} Aromatic	mg/kg	**260**	**540**	**930**	**1900**	**1900**	**1900**
TPH C_{21}-C_{35} Aromatic	mg/kg	**1100**	**1500**	**1700**	**1900**	**1900**	**1900**
TPH C_{35}-C_{44} Aromatic	mg/kg	**1100**	**1500**	**1700**	**1900**	**1900**	**1900**
Benzene	mg/kg	0.087	0.17	0.37	0.38	0.70	1.4
Toluene	mg/kg	130	290	660	880	1900	3900
Ethylebenzene	mg/kg	47	110	260	83	190	440
Xylene	mg/kg	56	130	310	79	180	430

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Determinant	Units	GAC Value					
		Residential POS			Commercial		
Arsenic	mg/kg	79			640		
Cadmium	mg/kg	120			190		
Chromium	mg/kg	1500			8600		
Chromium VI	mg/kg	7.7			33		
Lead	mg/kg	630			2330		
Mercury	mg/kg	120			1100		
Nickel	mg/kg	230			980		
Selenium	mg/kg	1100			12000		
Copper	mg/kg	12000			68000		
Zinc	mg/kg	81000			730000		
Cyanide	mg/kg	N/A			16200		
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	760	1500	3200
Napthalene	mg/kg	4900	4900	4900	190	460	1100
Acenaphtylene	mg/kg	15000	15000	15000	83000	97000	100000
Acenaphthene	mg/kg	15000	15000	15000	84000	97000	100000
Flourene	mg/kg	9900	9900	9900	63000	68000	71000
Phenanthrene	mg/kg	3100	3100	3100	22000	22000	23000
Anthracene	mg/kg	74000	74000	74000	520000	540000	540000
Fluoranthene	mg/kg	3100	3100	3100	23000	23000	23000
Pyrene	mg/kg	7400	7400	7400	54000	54000	54000
Benzo(a)Anthracene	mg/kg	29	29	29	170	170	180
Chrysene	mg/kg	57	57	57	350	350	350
Benzo(b)Flouranthene	mg/kg	7.1	7.2	7.2	44	44	45
Benzo(k)Flouranthene	mg/kg	190	190	190	1200	1200	1200
Benzo(a)Pyrene	mg/kg	5.7	5.7	5.7	35	35	36
Indeno(123-cd)Pyrene	mg/kg	82	82	82	500	510	510
Dibenzo(a,h)Anthracene	mg/kg	0.57	0.57	0.58	3.5	3.6	3.6
Benzo(ghi)Perylene	mg/kg	640	640	640	3900	4000	4000
TPH C_5-C_6 Aliphatic	mg/kg	570000	590000	600000	**3200**	**5900**	**12000**
TPH C_6-C_8 Aliphatic	mg/kg	600000	610000	620000	**7800**	**17000**	**40000**
TPH C_8-C_{10} Aliphatic	mg/kg	13000	13000	13000	**2000**	**4800**	**11000**
TPH C_{10}-C_{12} Aliphatic	mg/kg	13000	13000	13000	**9700**	**23000**	47000
TPH C_{12}-C_{16} Aliphatic	mg/kg	13000	13000	13000	59000	82000	90000
TPH C_{16}-C_{35} Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C_{35}-C_{44} Aliphatic	mg/kg	250000	250000	250000	1600000	1700000	1800000
TPH C_5-C_7 Aromatic	mg/kg	**56000**	**56000**	**56000**	26000	46000	86000
TPH C_7-C_8 Aromatic	mg/kg	**56000**	**56000**	**56000**	56000	110000	180000
TPH C_8-C_{10} Aromatic	mg/kg	**5000**	**5000**	**5000**	3500	8100	17000
TPH C_{10}-C_{12} Aromatic	mg/kg	**5000**	**5000**	**5000**	16000	28000	**34000**
TPH C_{12}-C_{16} Aromatic	mg/kg	**5100**	**5100**	**5000**	**36000**	**37000**	**38000**
TPH C_{16}-C_{21} Aromatic	mg/kg	**3800**	**3800**	**3800**	**28000**	**28000**	**28000**
TPH C_{21}-C_{35} Aromatic	mg/kg	**3800**	**3800**	**3800**	**28000**	**28000**	**28000**
TPH C_{35}-C_{44} Aromatic	mg/kg	**3800**	**3800**	**3800**	**28000**	**28000**	**28000**
Benzene	mg/kg	72	72	73	27	47	90
Toluene	mg/kg	56000	56000	56000	56000	110000	180000
Ethylebenzene	mg/kg	24000	24000	25000	5700	13000	27000
Xylene	mg/kg	41000	42000	43000	5900	14000	30000

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Determinant	Units	GAC Value					
		Park POS			Allotments		
Arsenic	mg/kg	170			43		
Cadmium	mg/kg	532			1.9		
Chromium	mg/kg	33000			18000		
Chromium VI	mg/kg	220			1.8		
Lead	mg/kg	1300			80		
Mercury	mg/kg	240			19		
Nickel	mg/kg	800			53		
Selenium	mg/kg	1800			88		
Copper	mg/kg	44000			520		
Zinc	mg/kg	170000			620		
Cyanide	mg/kg						
SOM	%	1	2.5	6	1	2.5	6
Phenol	mg/kg	760	1500	3200	66	140	280
Napthalene	mg/kg	1200	1900	3000	4.1	10	24
Acenaphtylene	mg/kg	29000	30000	30000	28	69	160
Acenaphthene	mg/kg	29000	30000	30000	34	85	200
Flourene	mg/kg	20000	20000	20000	27	67	160
Phenanthrene	mg/kg	6200	6200	6300	15	38	90
Anthracene	mg/kg	150000	150000	150000	380	950	2200
Fluoranthene	mg/kg	6300	6300	6400	52	130	290
Pyrene	mg/kg	15000	15000	15000	110	270	620
Benzo(a)Anthracene	mg/kg	49	56	62	2.9	6.5	13
Chrysene	mg/kg	93	110	120	4.1	9.4	19
Benzo(b)Flouranthene	mg/kg	13	15	16	0.99	2.1	3.9
Benzo(k)Flouranthene	mg/kg	370	410	440	37	75	130
Benzo(a)Pyrene	mg/kg	11	12	13	0.97	2.0	3.5
Indeno(123-cd)Pyrene	mg/kg	150	170	180	9.5	21	39
Dibenzo(a,h)Anthracene	mg/kg	1.1	1.3	1.4	0.14	0.27	0.43
Benzo(ghi)Perylene	mg/kg	1400	1500	1600	290	470	640
TPH C_5-C_6 Aliphatic	mg/kg	95000	130000	180000	730	1700	3900
TPH C_6-C_8 Aliphatic	mg/kg	150000	220000	320000	2300	5600	13000
TPH C_8-C_{10} Aliphatic	mg/kg	14000	18000	21000	320	770	1700
TPH C_{10}-C_{12} Aliphatic	mg/kg	21000	23000	24000	2200	4400	7300
TPH C_{12}-C_{16} Aliphatic	mg/kg	25000	25000	26000	11000	13000	13000
TPH C_{16}-C_{35} Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C_{35}-C_{44} Aliphatic	mg/kg	450000	480000	490000	260000	270000	270000
TPH C_5-C_7 Aromatic	mg/kg	**76000**	**84000**	**92000**	**13**	**27**	**57**
TPH C_7-C_8 Aromatic	mg/kg	**87000**	**95000**	**100000**	**22**	**51**	**120**
TPH C_8-C_{10} Aromatic	mg/kg	**7200**	**8500**	**9300**	**8.6**	**21**	**51**
TPH C_{10}-C_{12} Aromatic	mg/kg	**9200**	**9700**	**10000**	**13**	**31**	**74**
TPH C_{12}-C_{16} Aromatic	mg/kg	**10000**	**10000**	**10000**	**23**	**57**	**130**
TPH C_{16}-C_{21} Aromatic	mg/kg	**7600**	**7700**	**7800**	**46**	**110**	**260**
TPH C_{21}-C_{35} Aromatic	mg/kg	**7800**	**7800**	**7900**	**370**	**820**	**1600**
TPH C_{35}-C_{44} Aromatic	mg/kg	**7800**	**7800**	**7900**	**370**	**820**	**1600**
Benzene	mg/kg	90	100	110	0.017	0.034	0.075
Toluene	mg/kg	87000	95000	100000	22	51	120
Ethylebenzene	mg/kg	17000	22000	27000	16	39	91
Xylene	mg/kg	17000	23000	31000	28	67	160

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Controlled Waters Assessment Reference Values

Contaminant	Remedial Target	
	Within Soils (mg/kg)	Within Groundwater (mg/l)
Trichloroethane	26.5	2.01 E^{58}
Cis 1,2 Dichloroethane	4.35	4.35 E^{32}
1,3 Chlorobenzene	6.98 E^{5}	8.17 E^{101}
1,1 Dichloroethane	2.1 E^{3}	4.28 E^{84}