

APPENDIX 3 – HISTORICAL MAPPING DATA

Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1865

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A



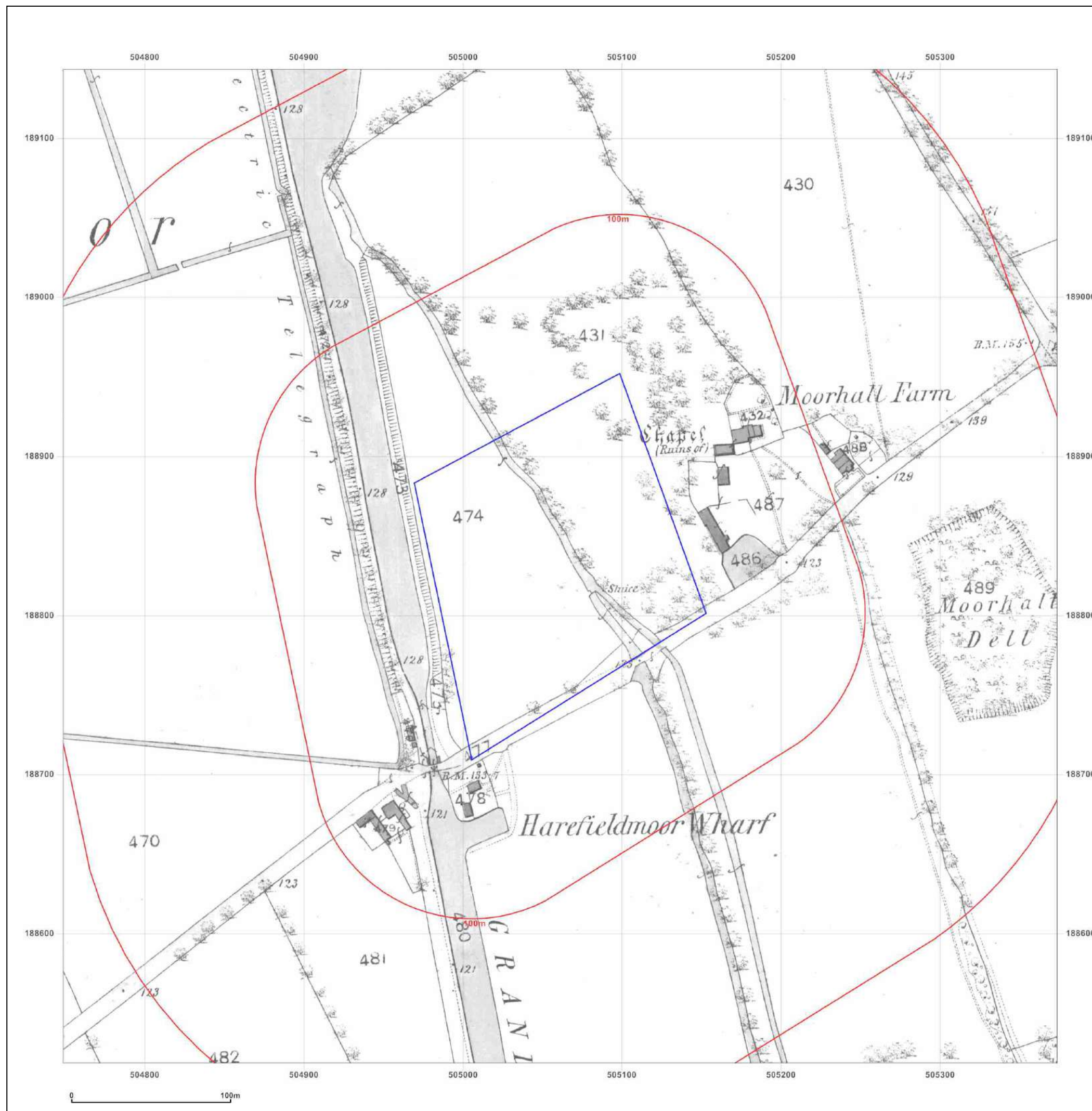
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Production date: 20 June 2017

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Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1876-1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

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

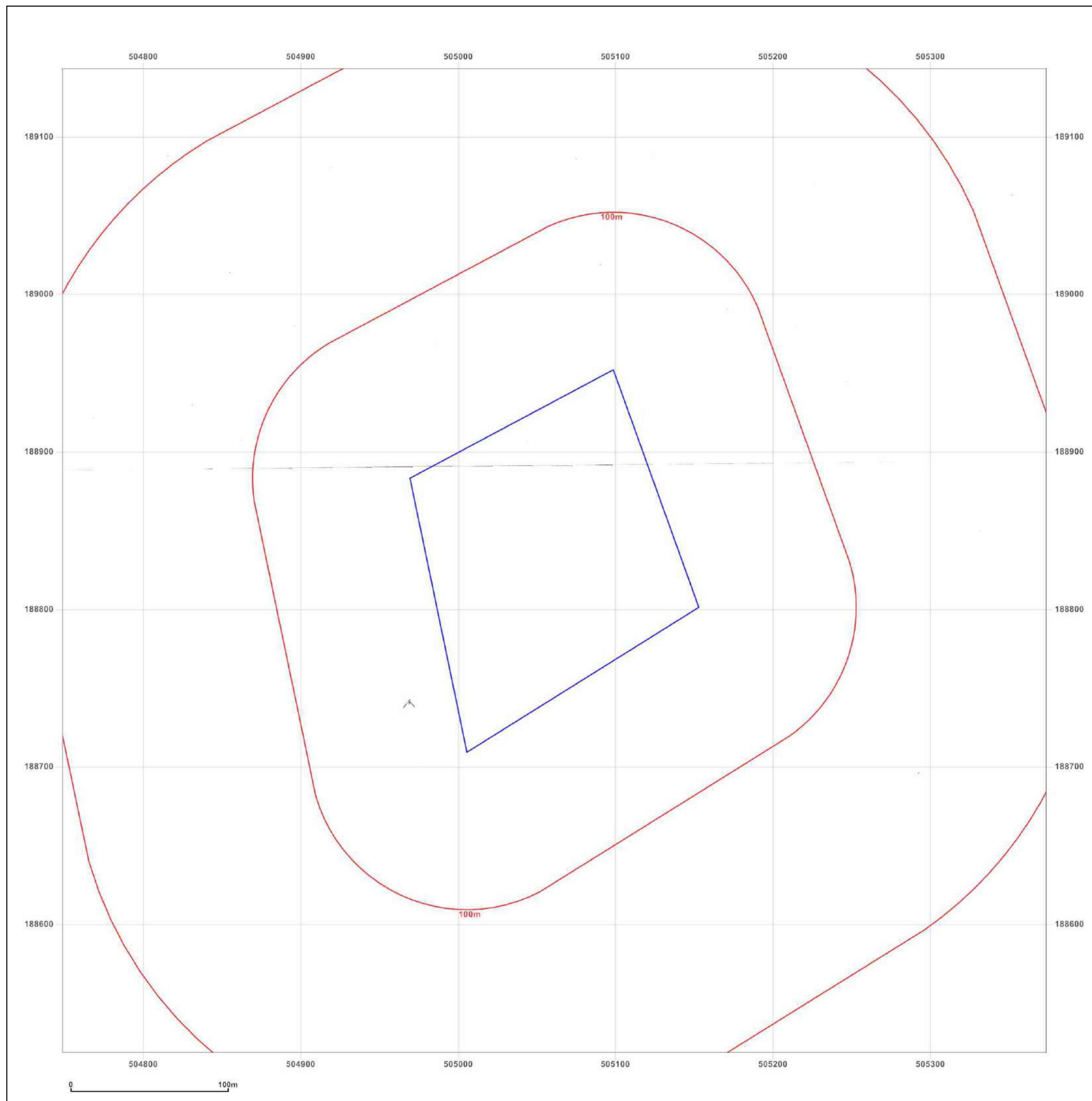


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Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1896

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1896
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

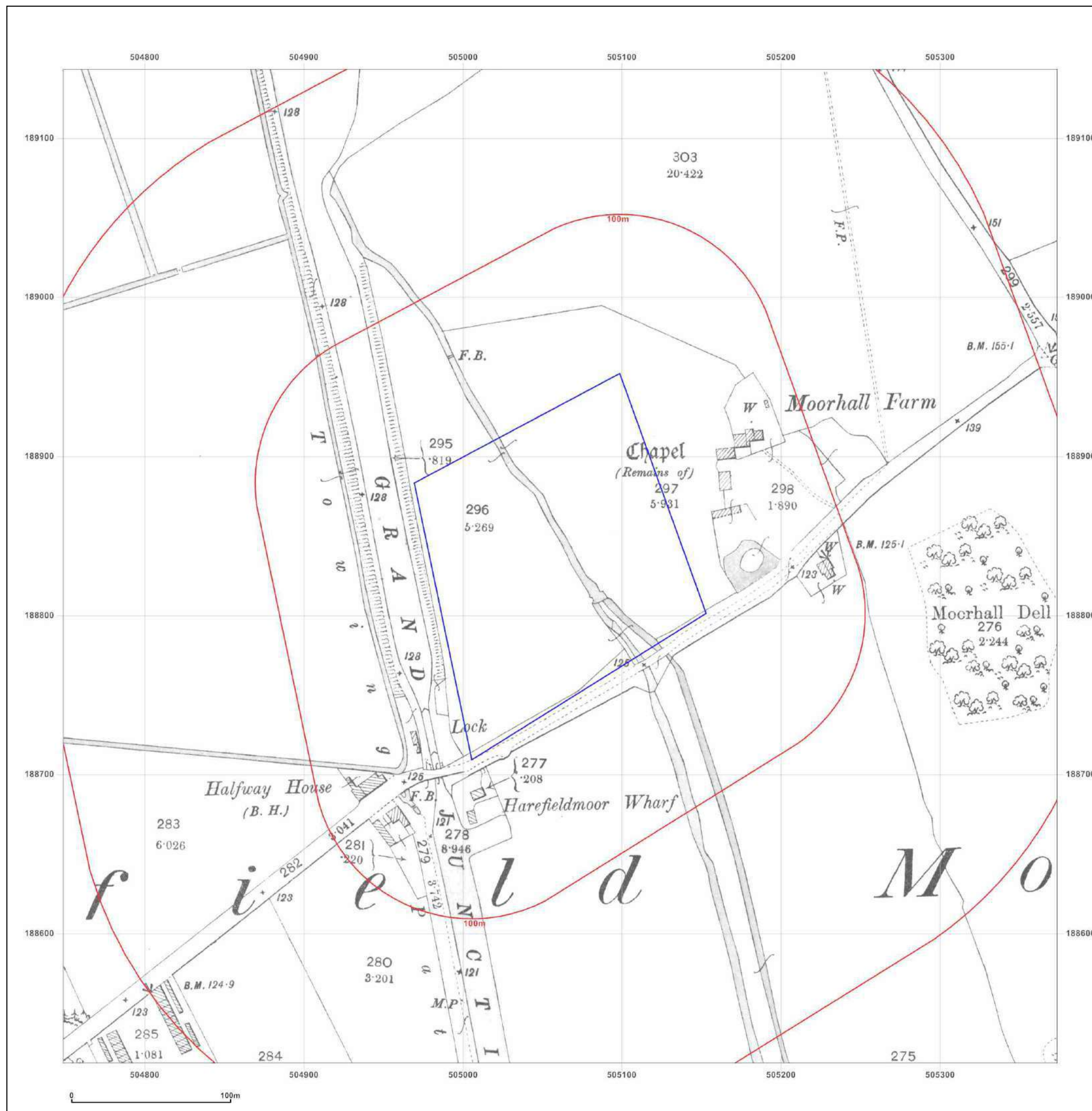


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Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1899

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

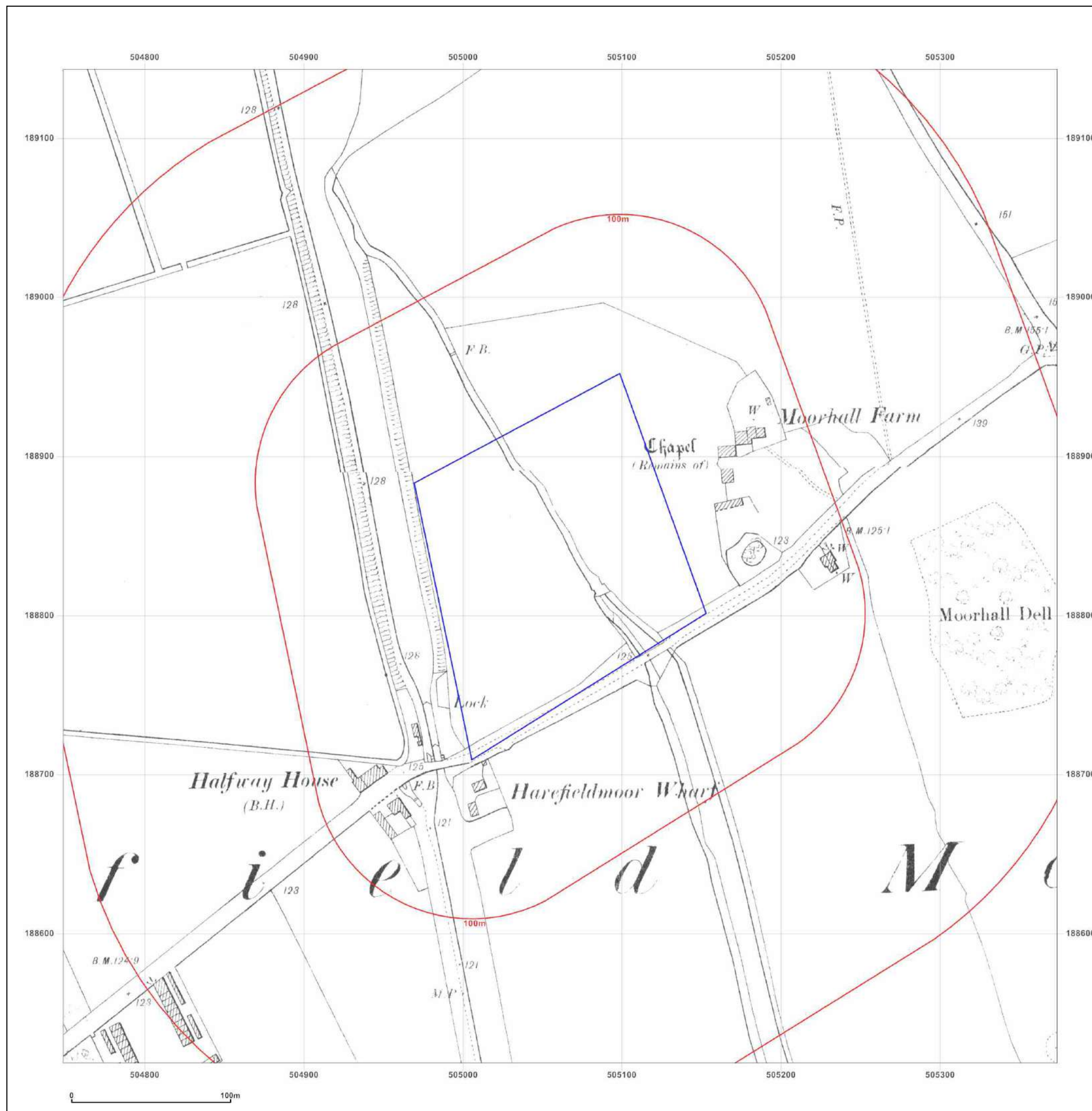


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Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1914

Scale: 1:2,500

Printed at: 1:2,500



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

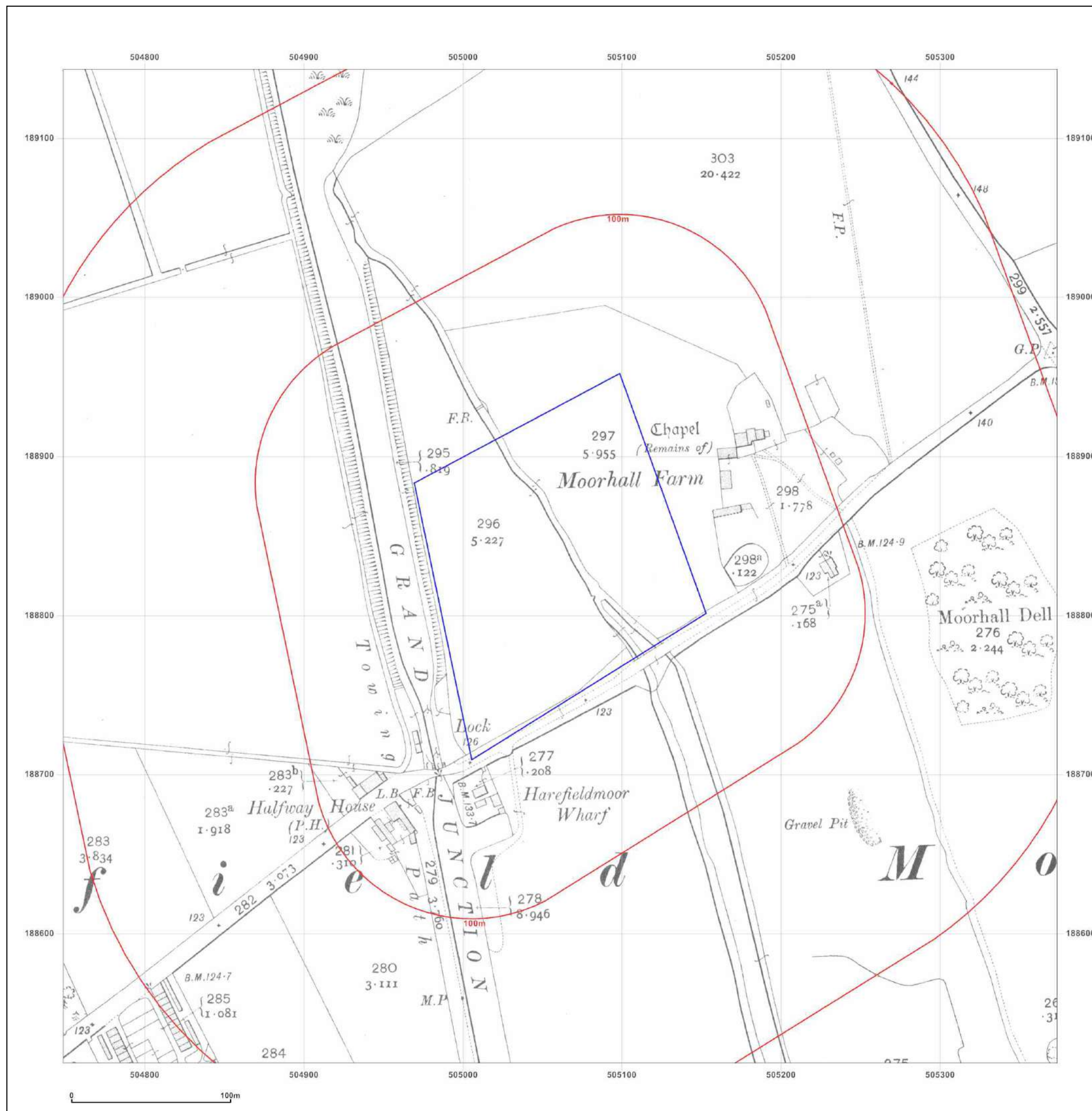


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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1934

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1934
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A



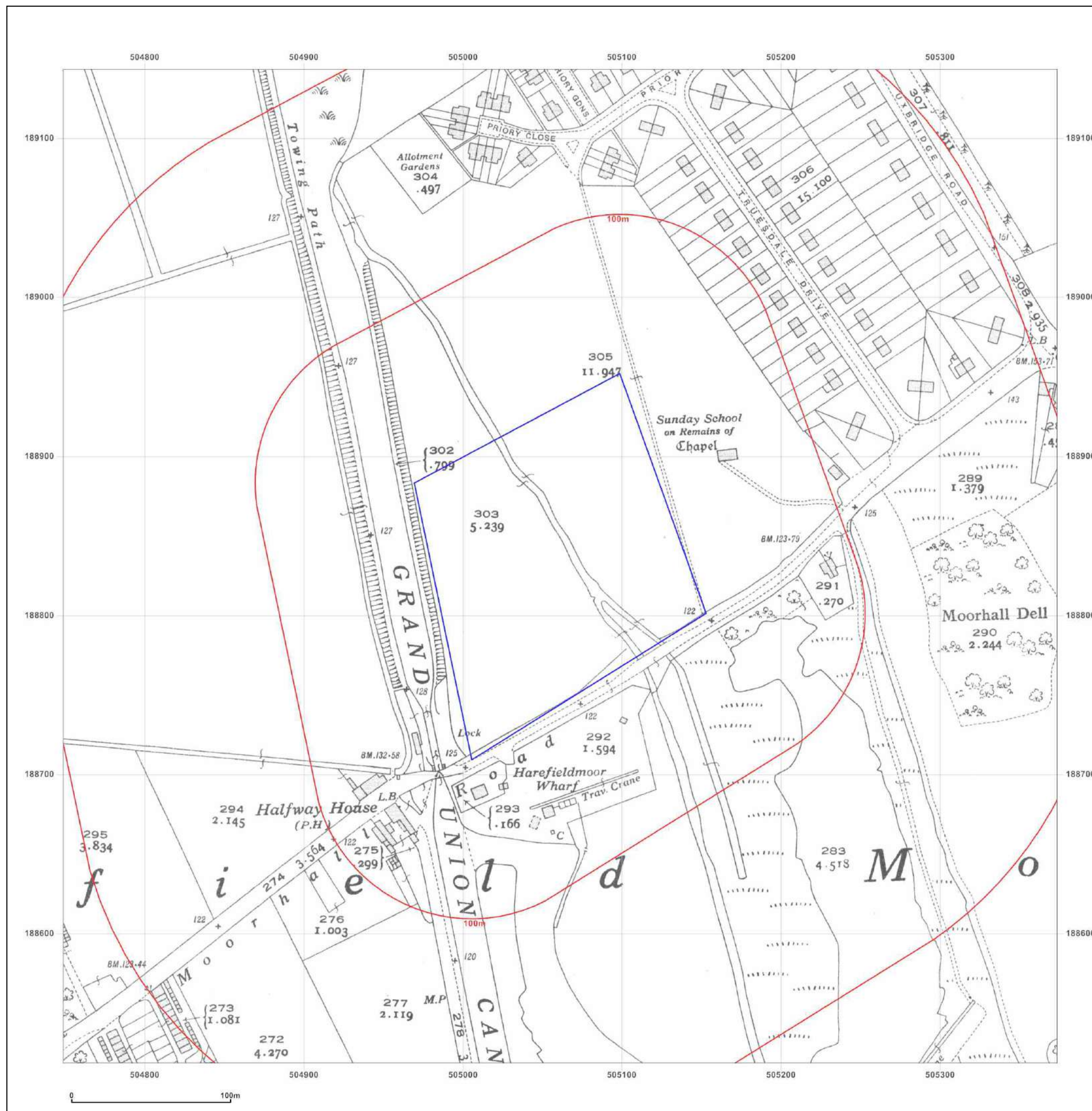
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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

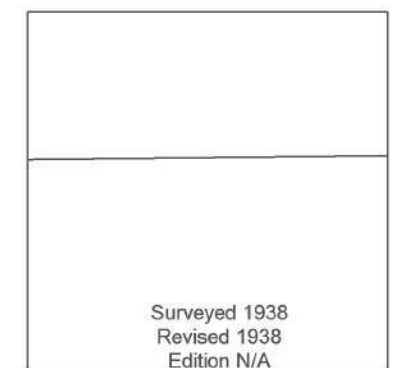
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Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1938

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1938
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

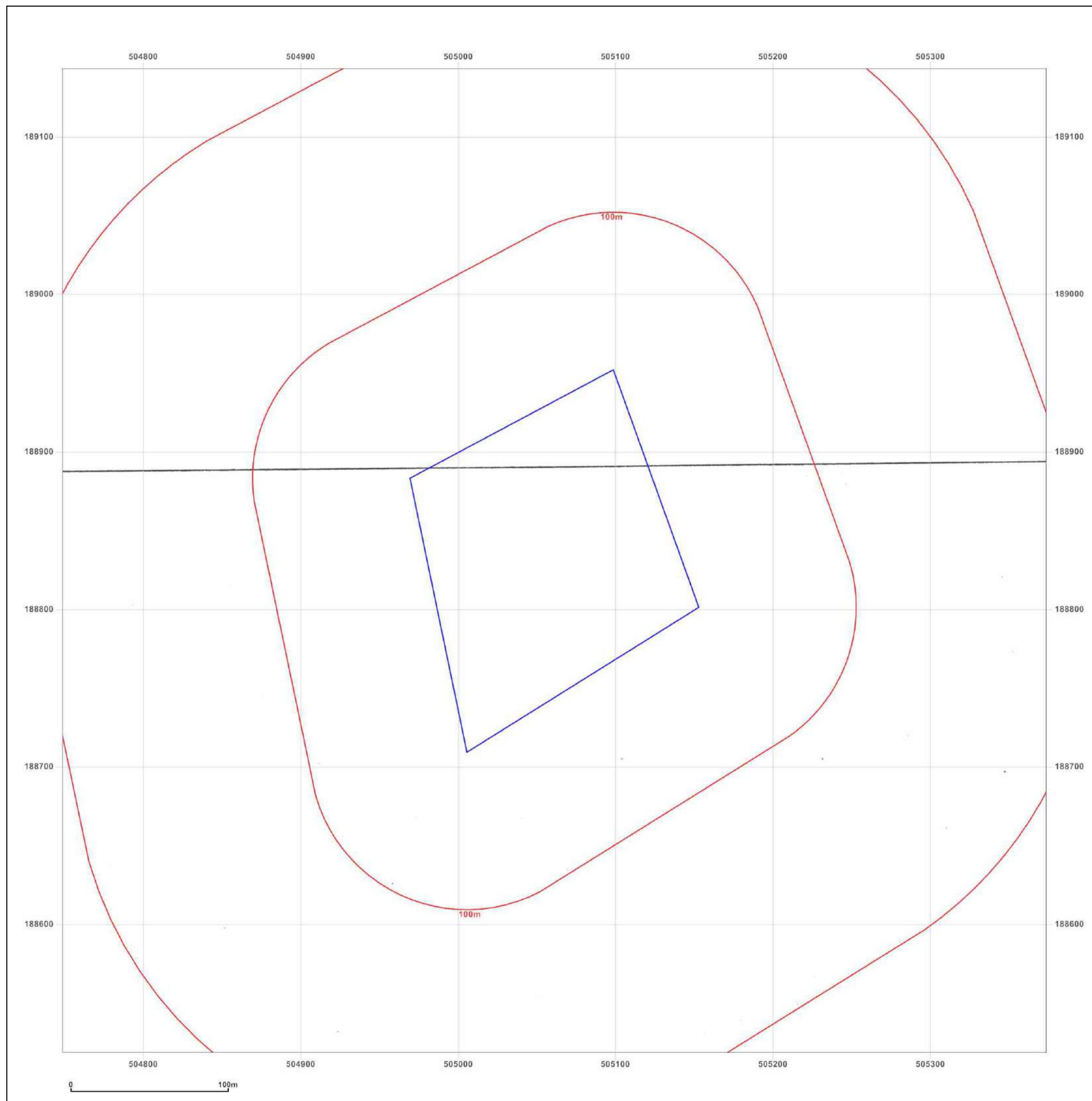


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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

Map date: 1971

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1957

Surveyed 1971
Revised 1971
Edition N/A
Copyright 1972
Levelled 1957



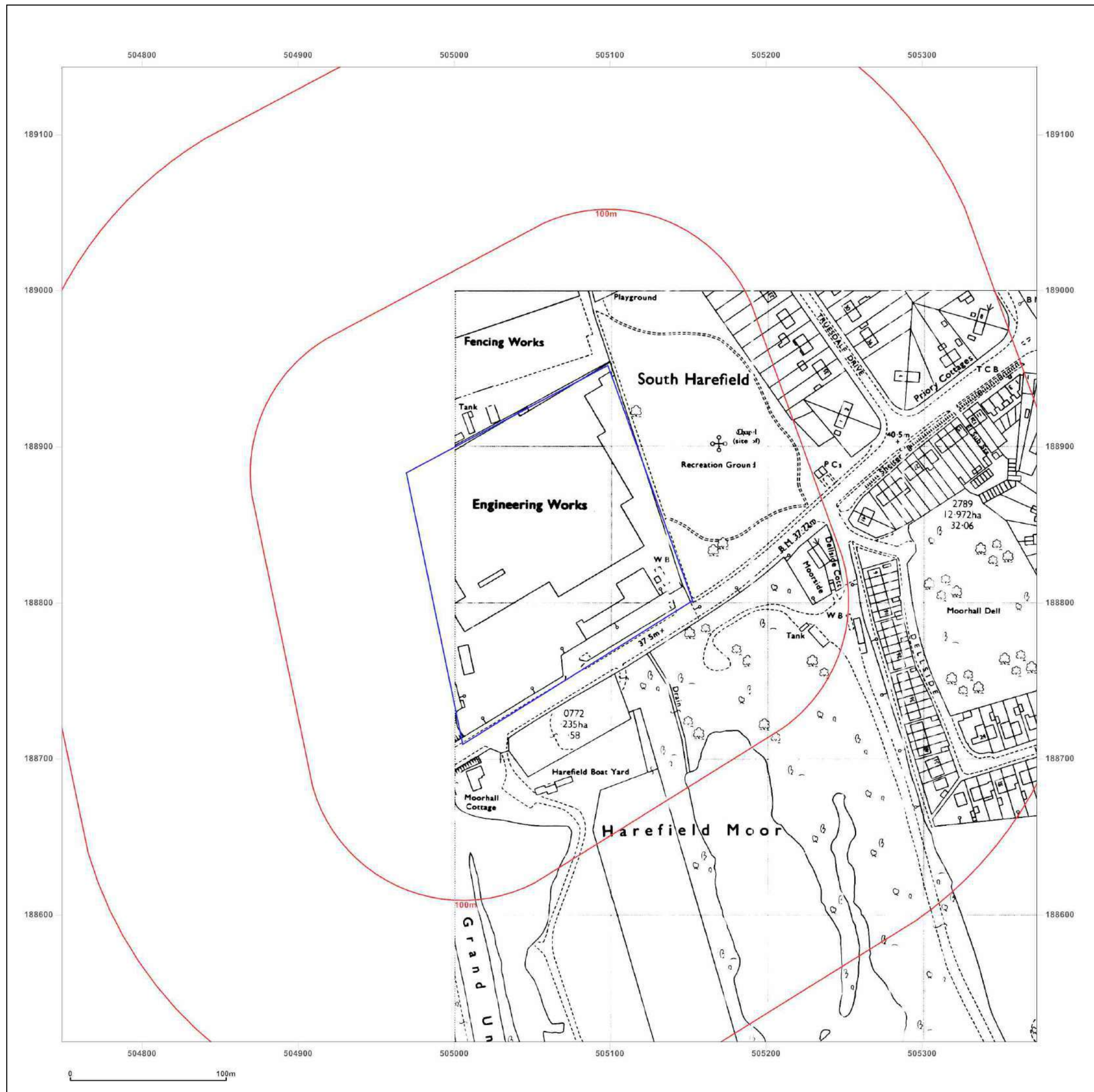
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Site Details:

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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid
Map date: 1972
Scale: 1:2,500
Printed at: 1:2,500



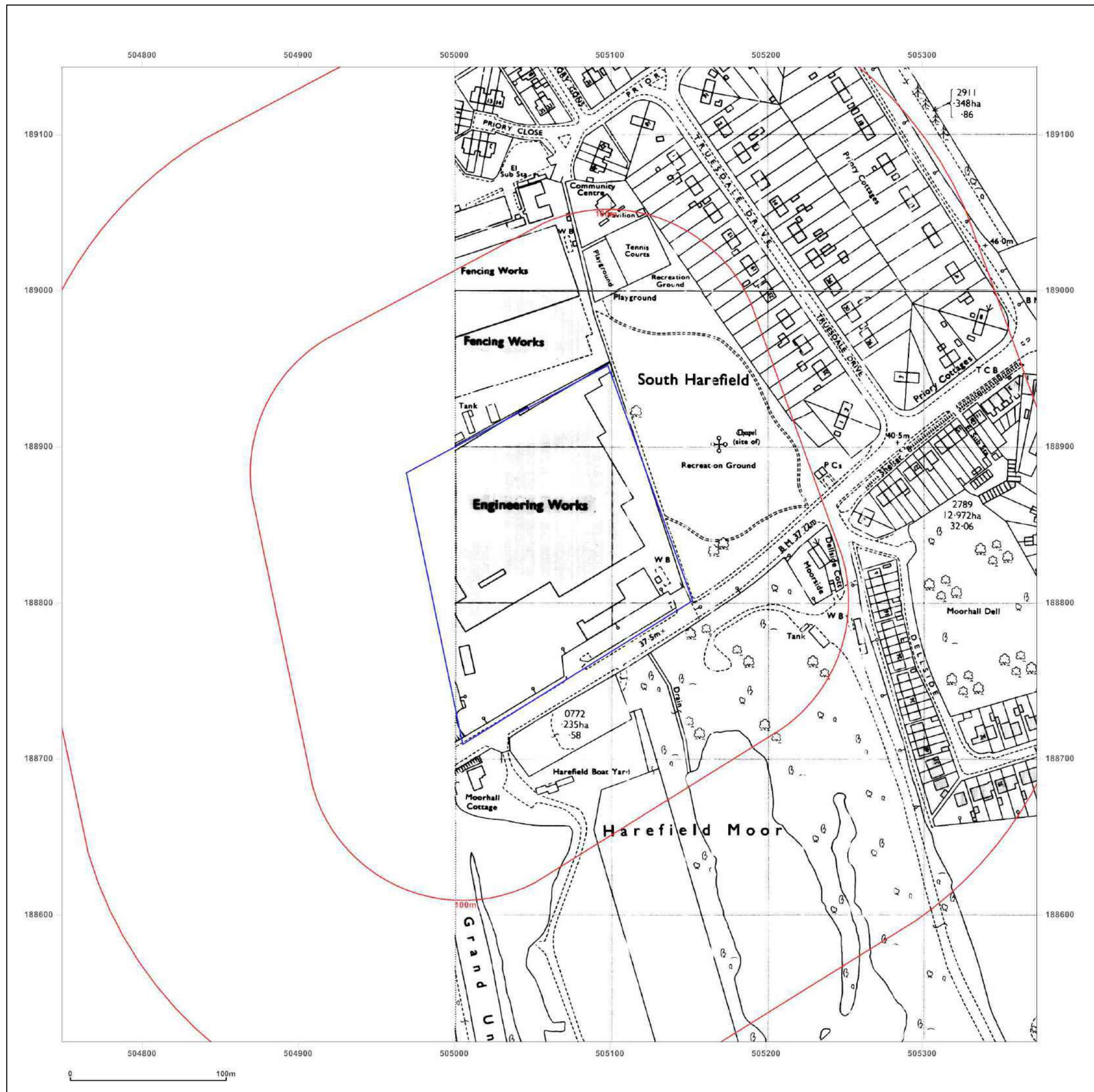
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Revised N/A
Edition N/A
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Levelled N/A

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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid
Map date: 1972
Scale: 1:2,500
Printed at: 1:2,500



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

Surveyed N/A
Revised N/A
Edition N/A
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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

Map date: 1987-1992

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
Levelled 1959

Surveyed 1976
Revised 1989
Edition N/A
Copyright 1989
Levelled 1976

Surveyed 1957
Revised 1989
Edition N/A
Copyright 1989
Levelled 1957

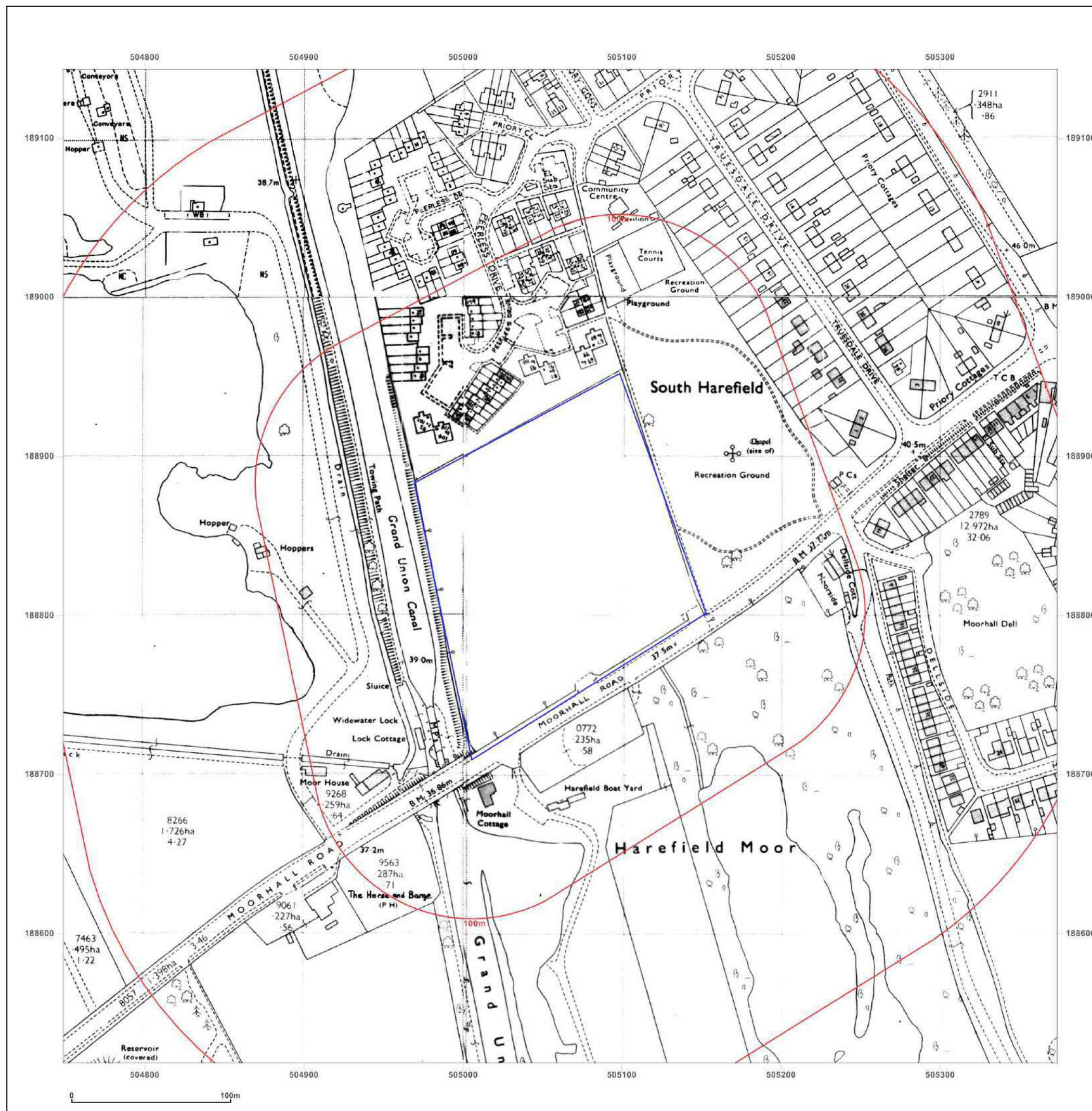


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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

Map date: 1992

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

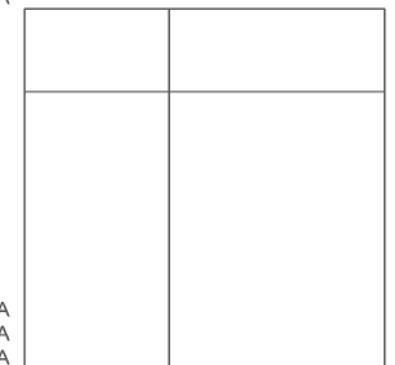
Map date: 1992

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
Levelled N/A



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A

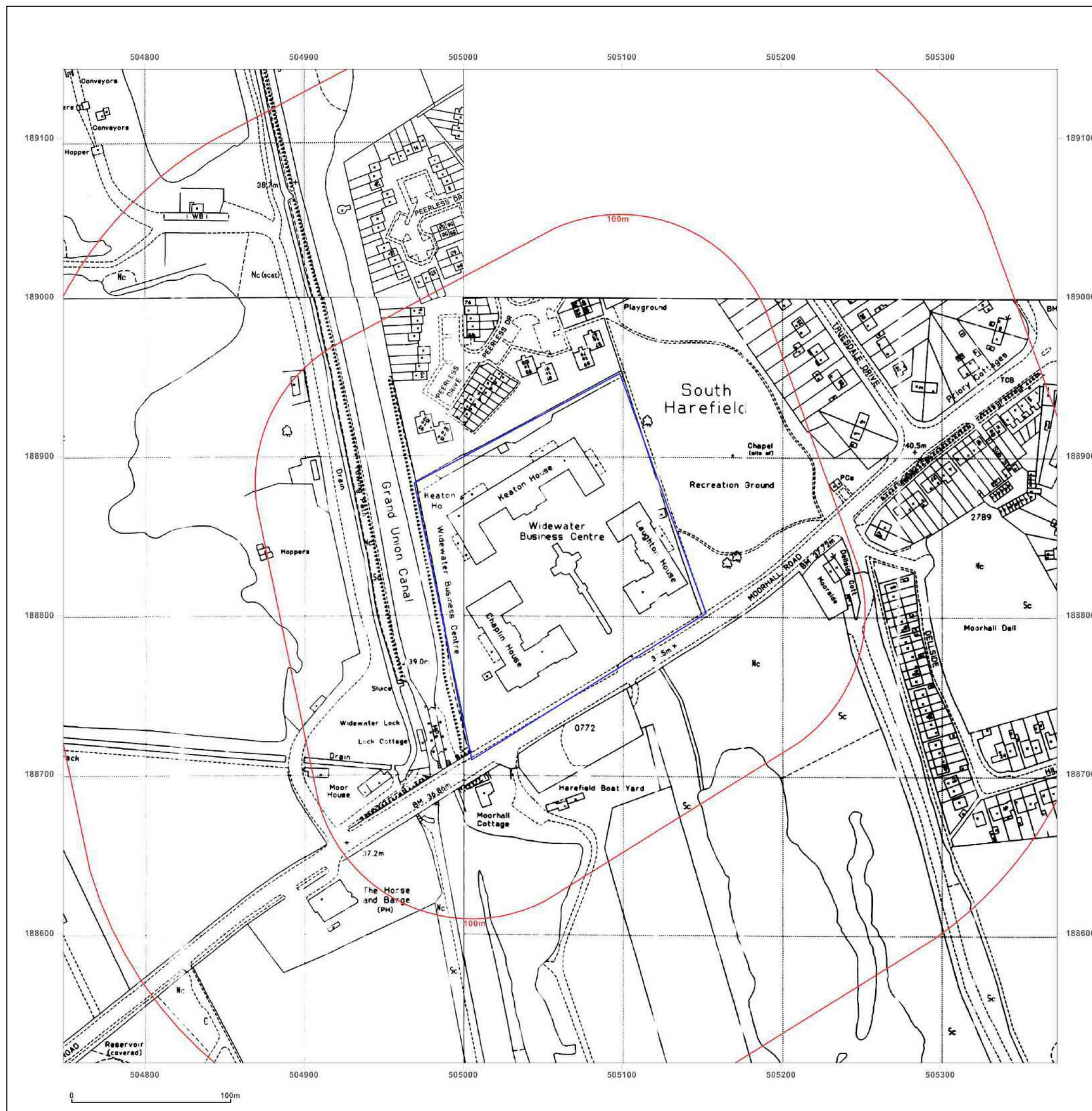


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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

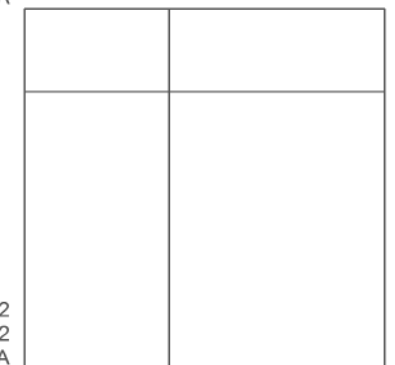
Map date: 1992

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled N/A



Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
Levelled N/A

Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
Levelled N/A



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Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1865

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865
Revised 1865
Edition 1865
Copyright N/A
Levelled N/A

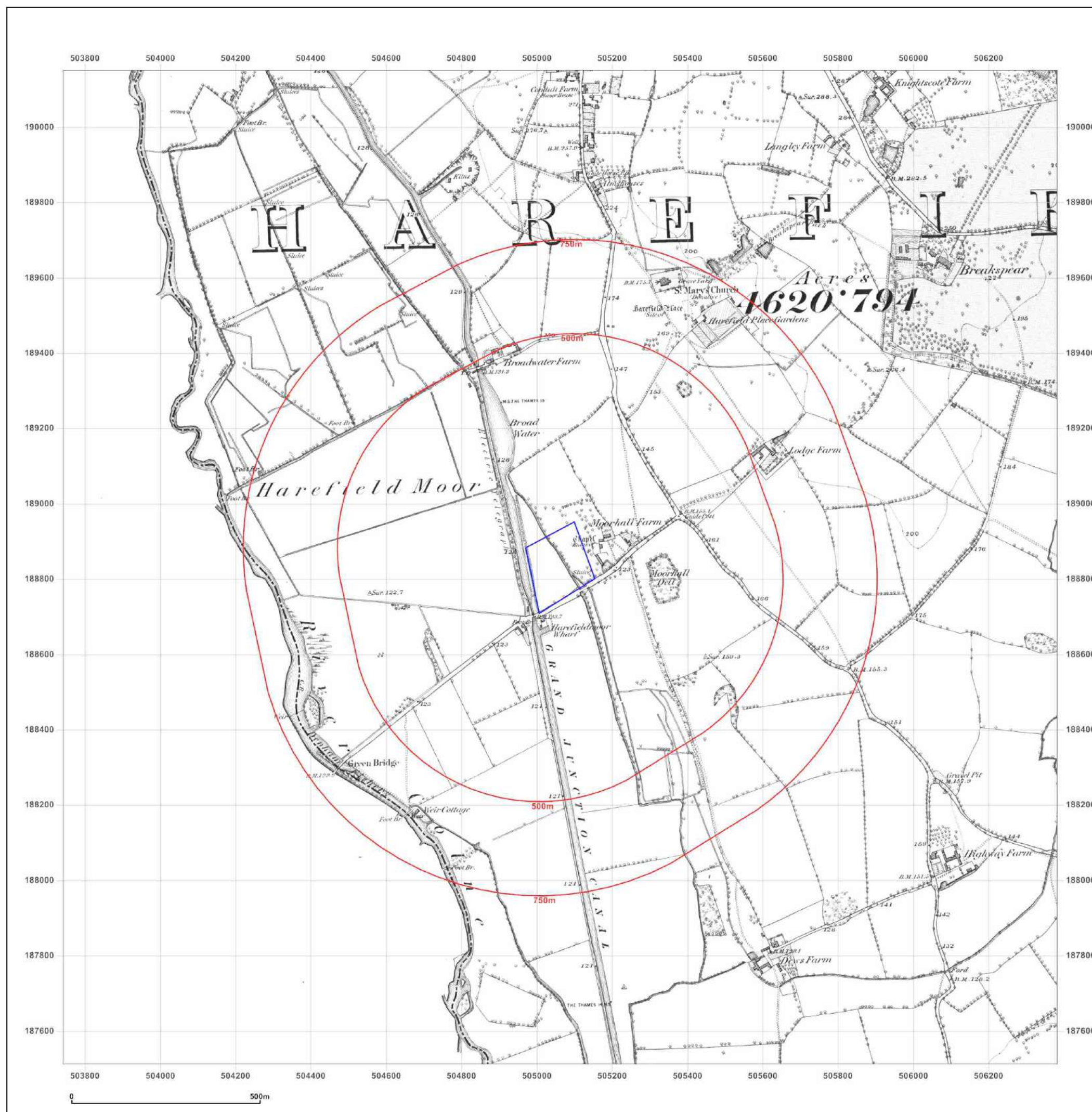


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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1883

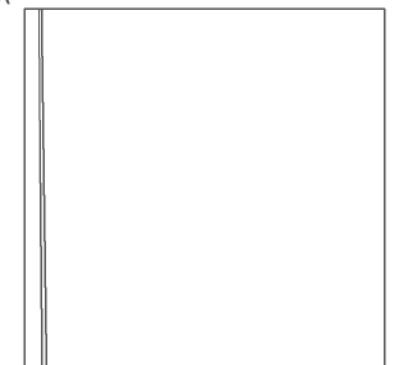
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1876
Revised N/A
Edition 1883
Copyright N/A
Levelled N/A

Surveyed 1872
Revised N/A
Edition 1883
Copyright N/A
Levelled N/A

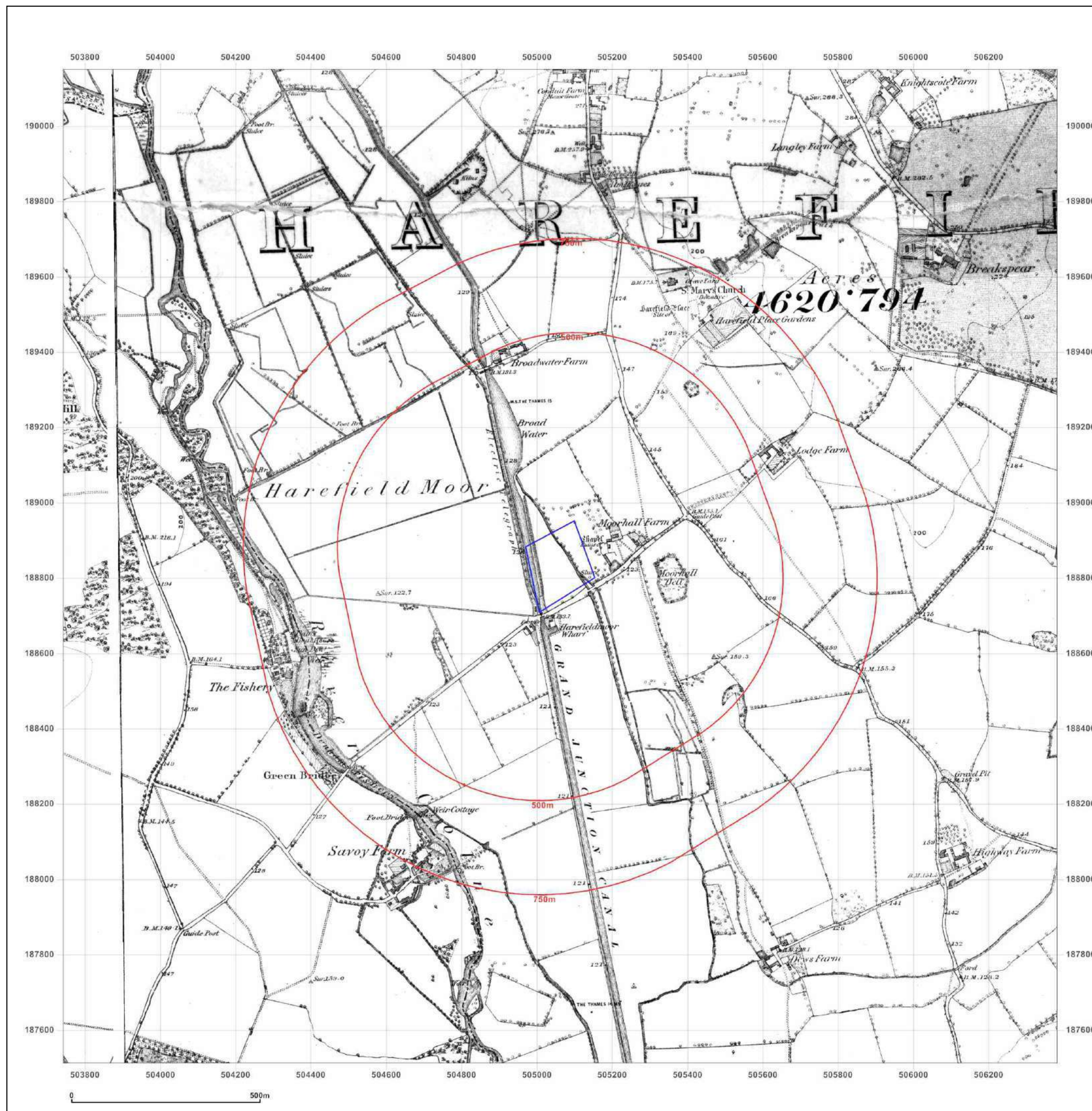


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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1895-1897

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1895
Edition 1897
Copyright N/A
Levelled N/A



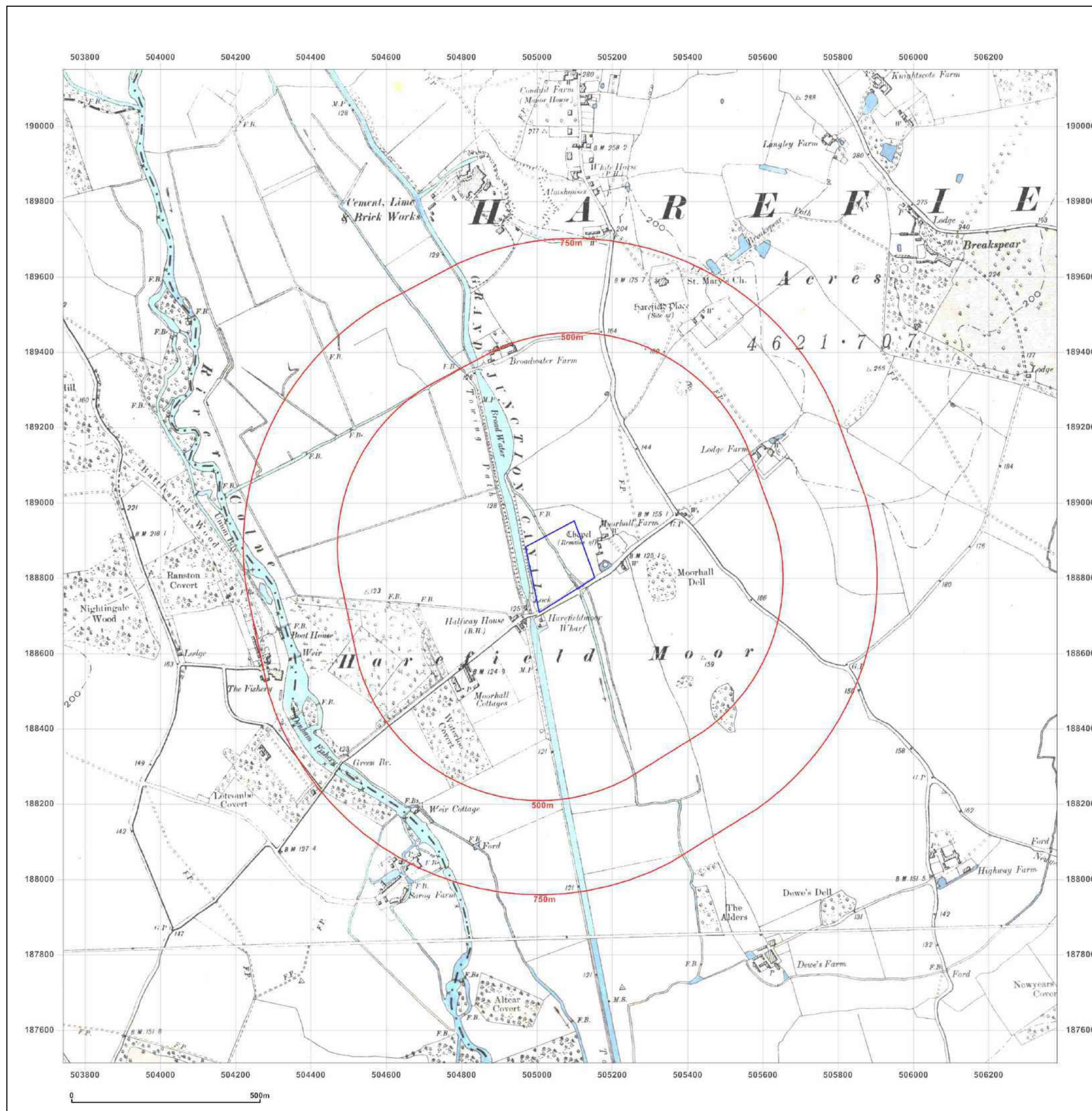
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Site Details:

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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1898

Scale: 1:10,560

Printed at: 1:10,560



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

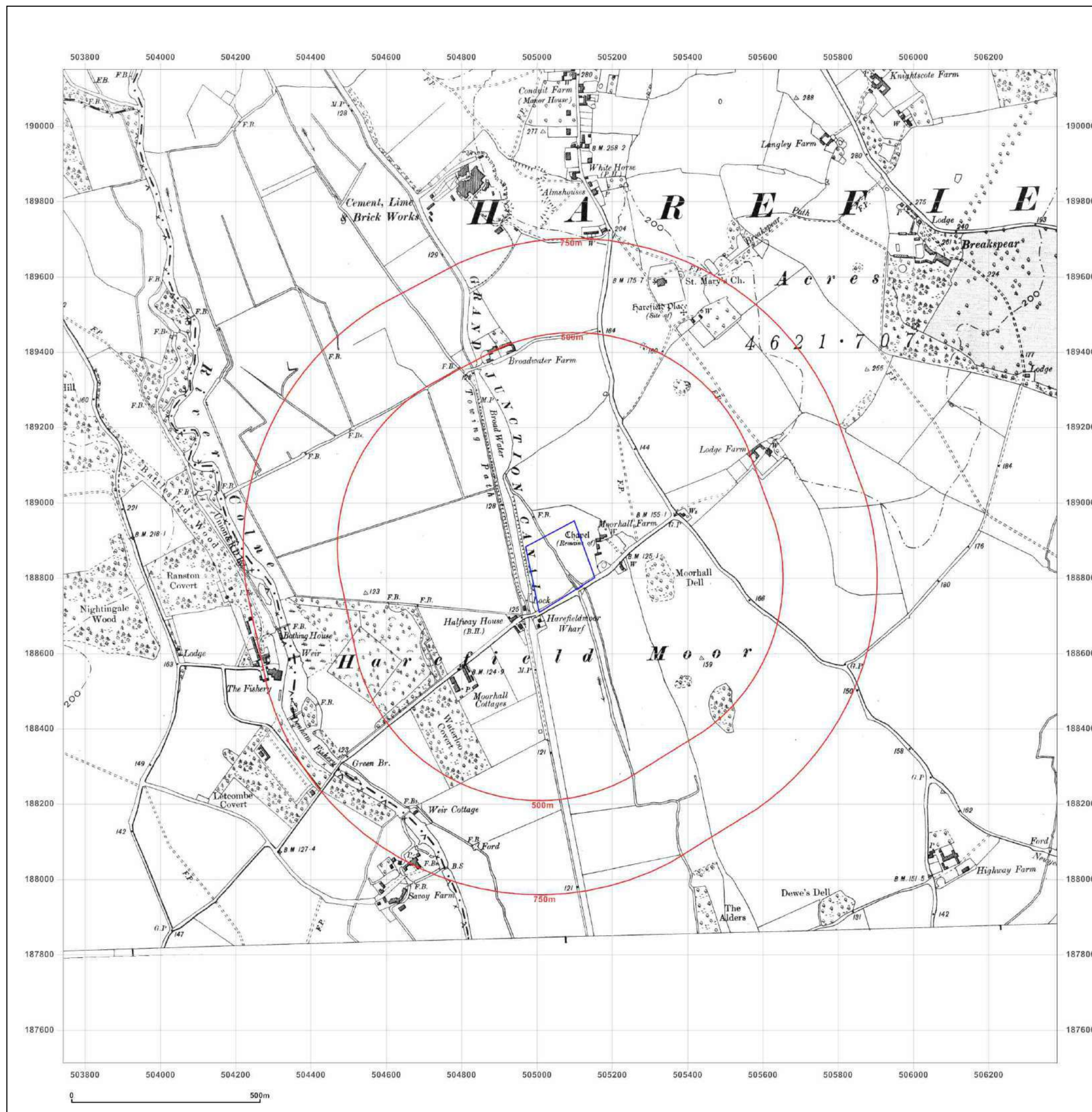


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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1912

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1871
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1912
Edition 1920
Copyright N/A
Levelled 1913



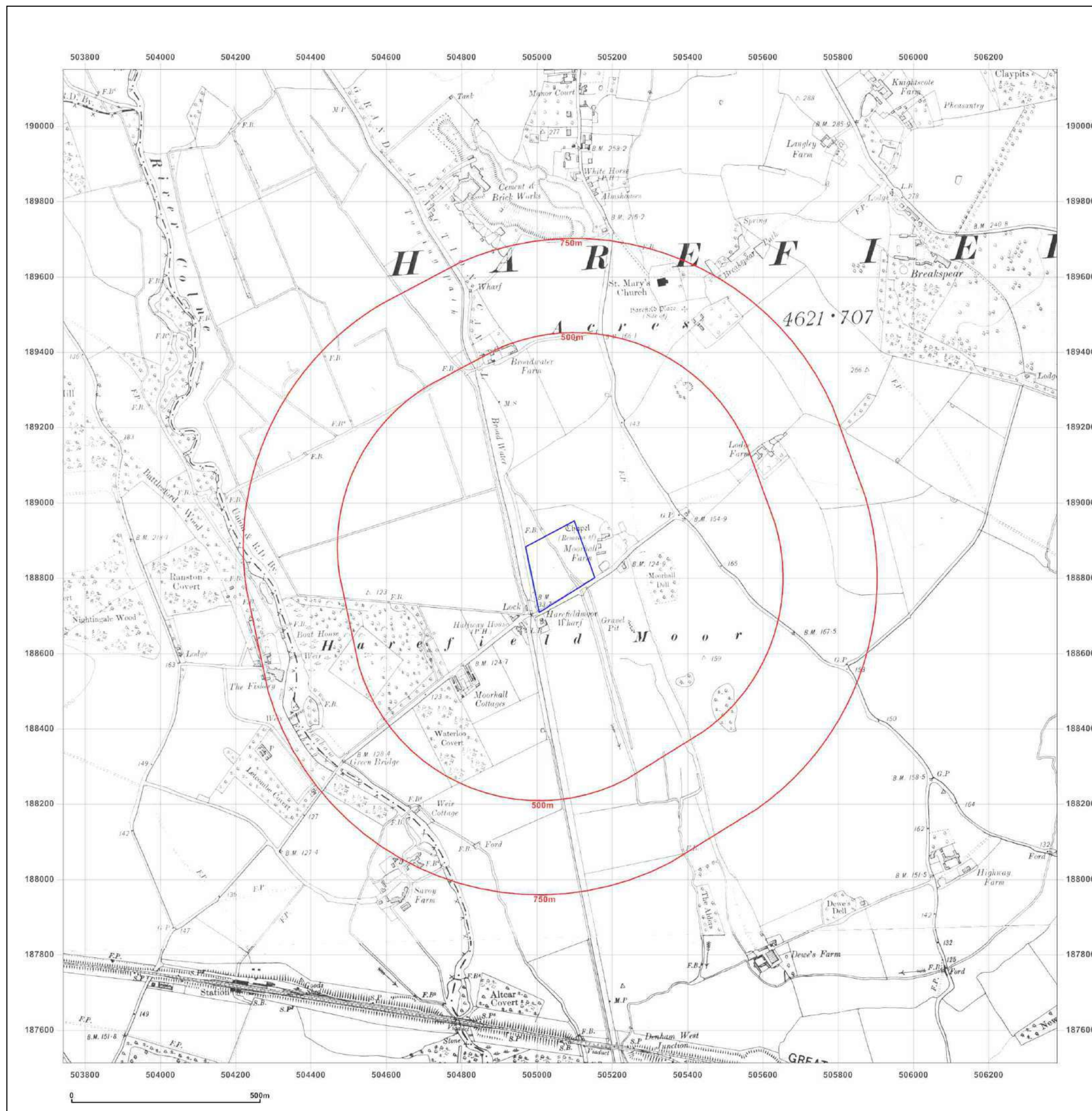
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Site Details:

WIDEWATER, MOORHALL
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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1934-1935

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1871
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A



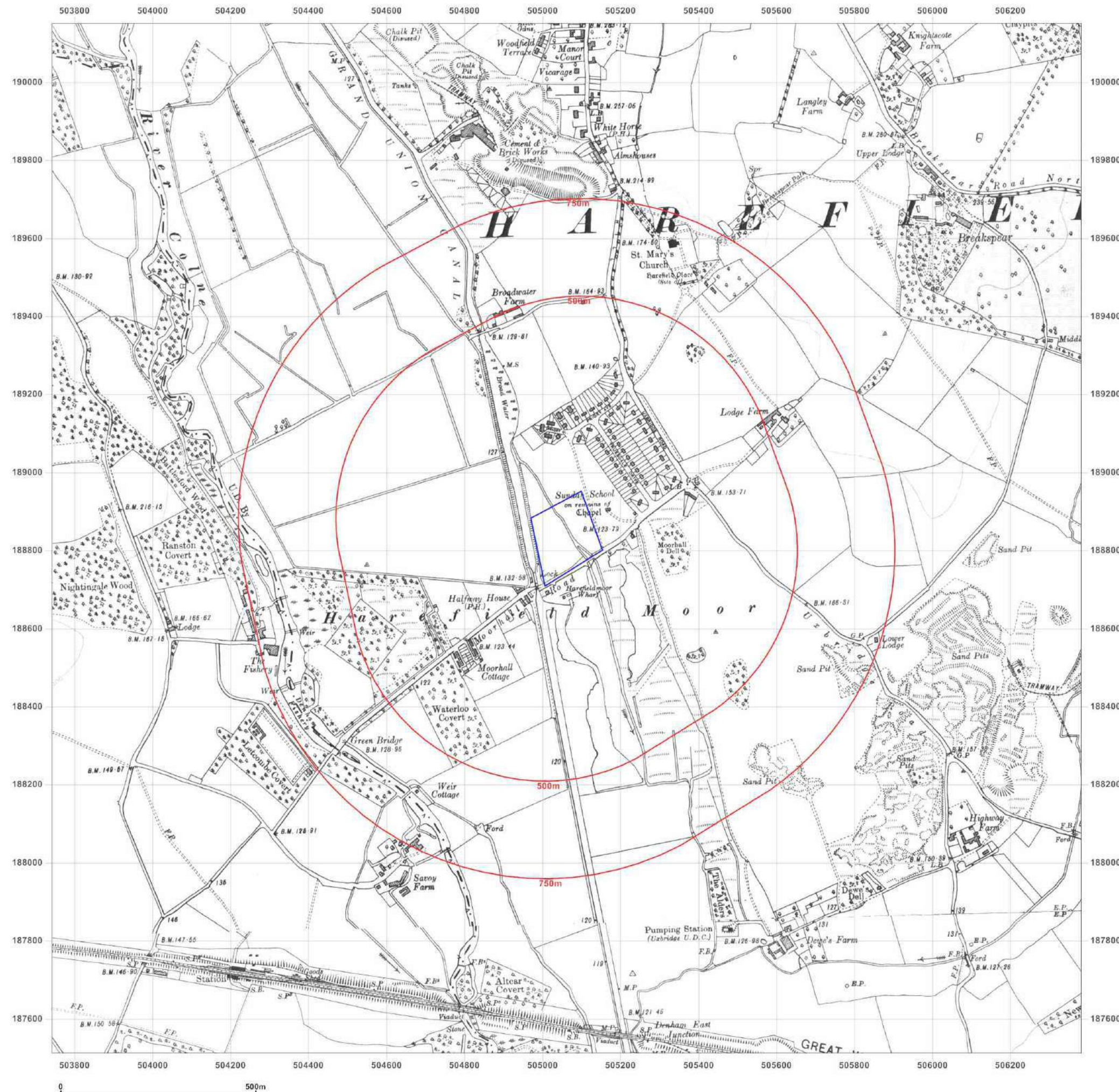
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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1864
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

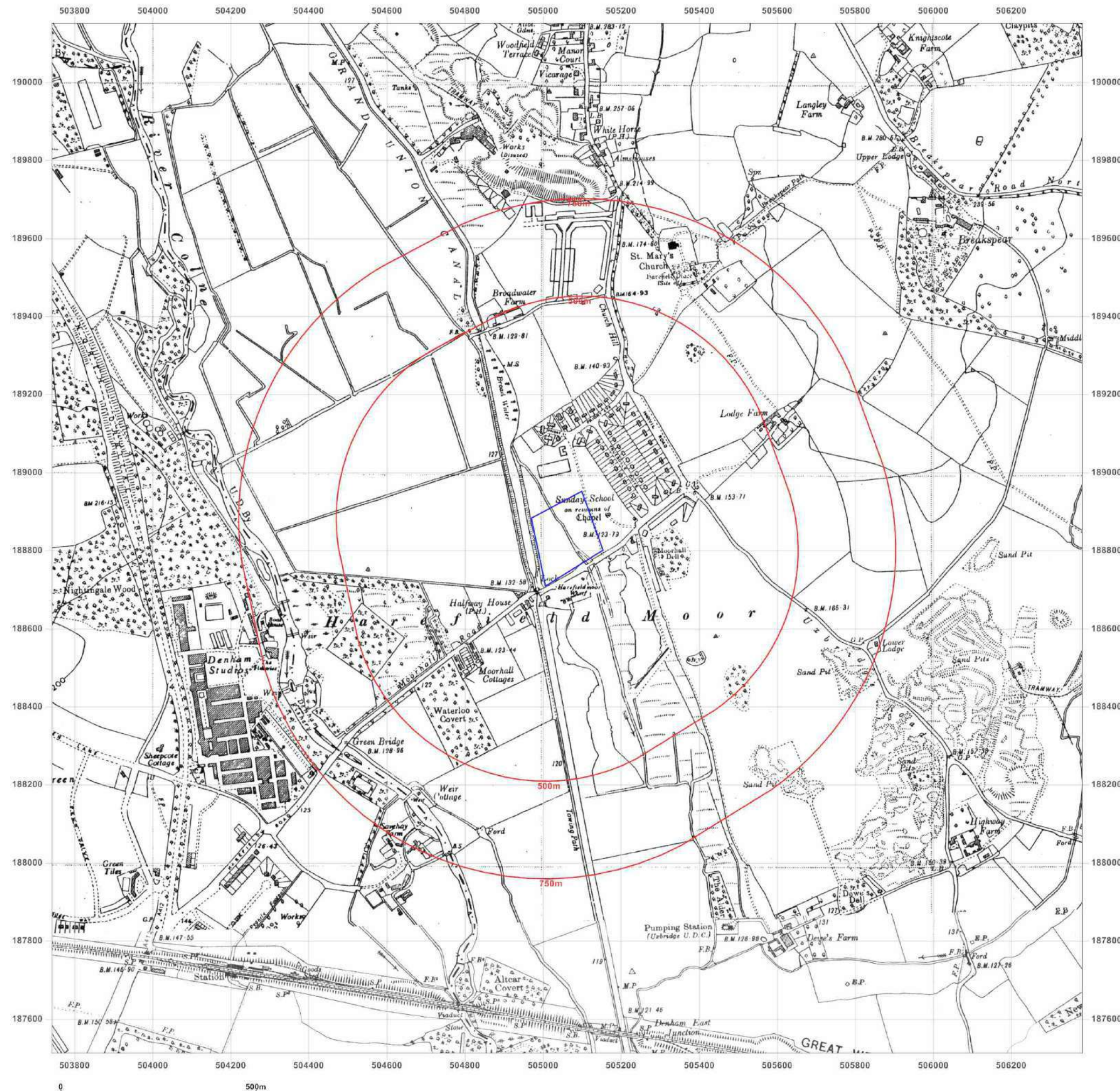


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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: County Series

Map date: 1949

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1871
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A



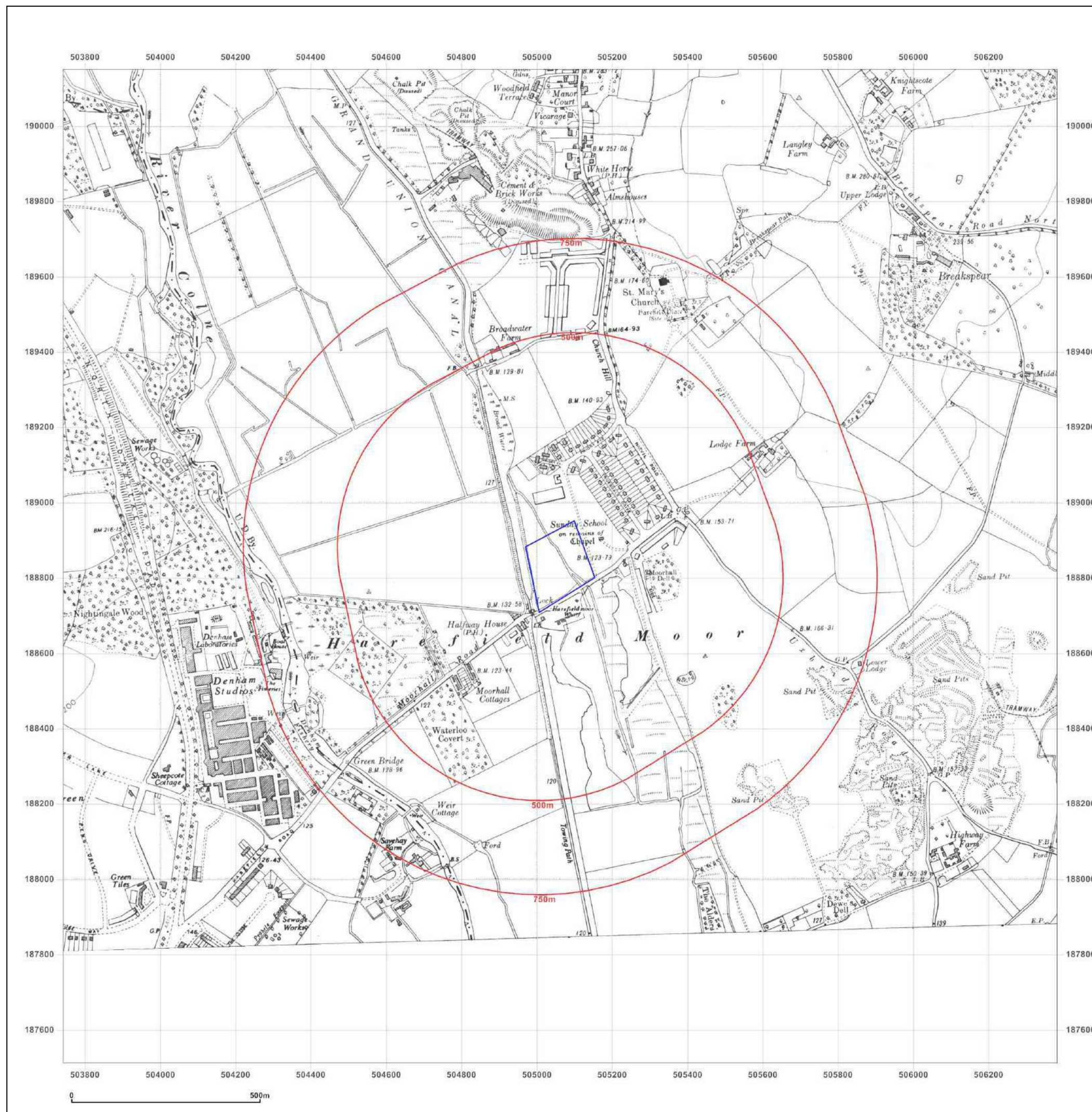
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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: Provisional

Map date: 1955-1960

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1955
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1955
Edition N/A
Copyright 1960
Levelled N/A

Surveyed N/A
Revised 1959
Edition N/A
Copyright 1960
Levelled N/A

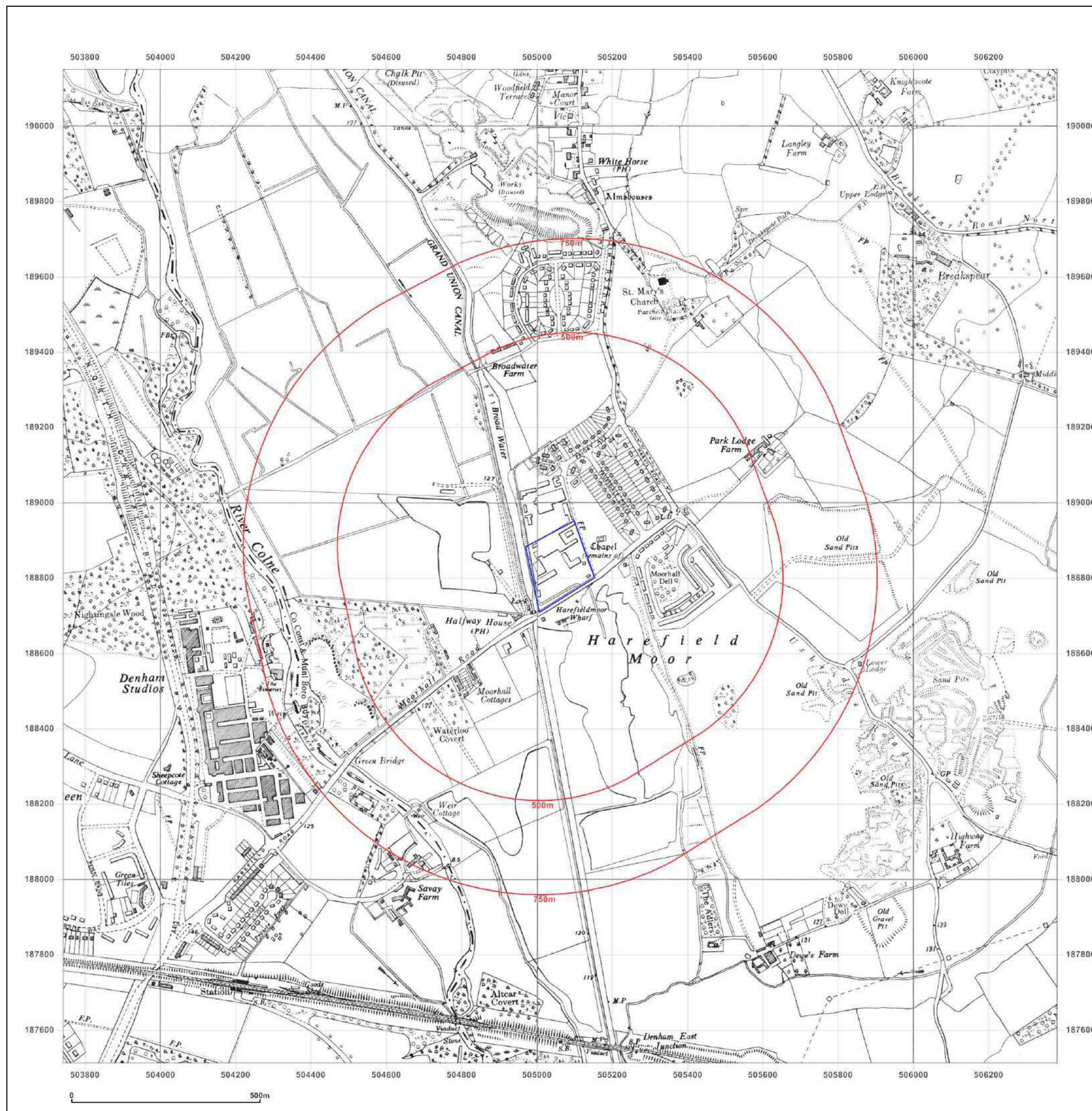


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Site Details:

WIDEWATER, MOORHALL
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Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: Provisional

Map date: 1965-1970

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1956
Revised 1970
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1965
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1967
Edition N/A
Copyright 1967
Levelled 1965

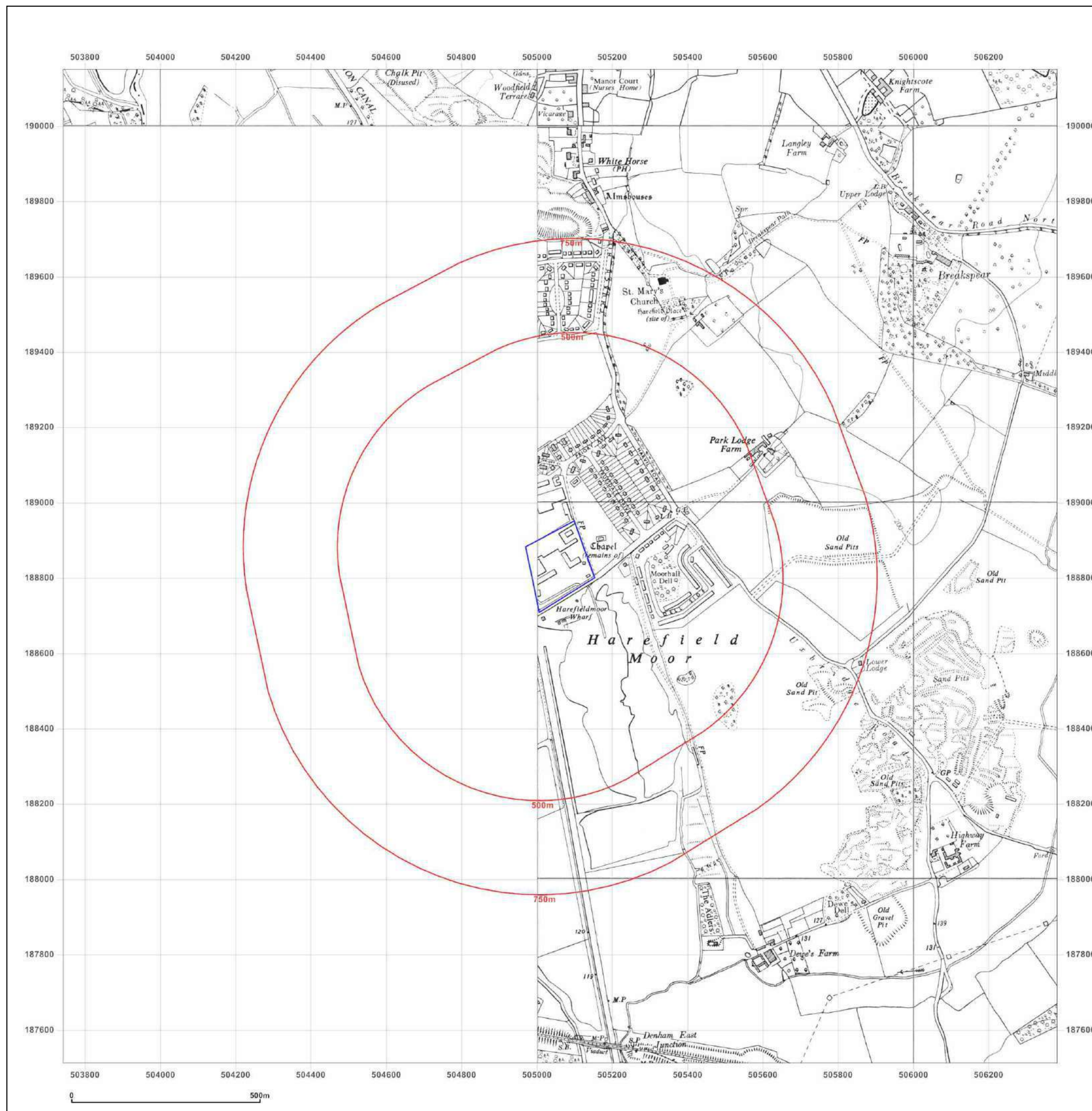


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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

Map date: 1973-1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1976
Edition N/A
Copyright 1976
Levelled 1972

Surveyed 1974
Revised 1976
Edition N/A
Copyright 1976
Levelled 1972

Surveyed 1972
Revised 1974
Edition N/A
Copyright 1975
Levelled 1972

Surveyed 1972
Revised 1973
Edition N/A
Copyright 1974
Levelled 1972



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ROAD, UXBRIDGE, UB9 6NS

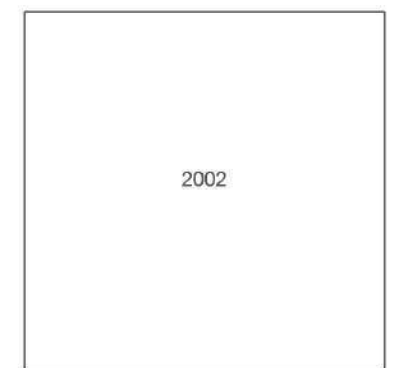
Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

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ROAD, UXBRIDGE, UB9 6NS

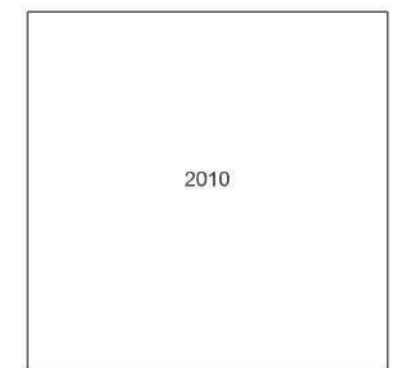
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Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

WIDEWATER, MOORHALL
ROAD, UXBRIDGE, UB9 6NS

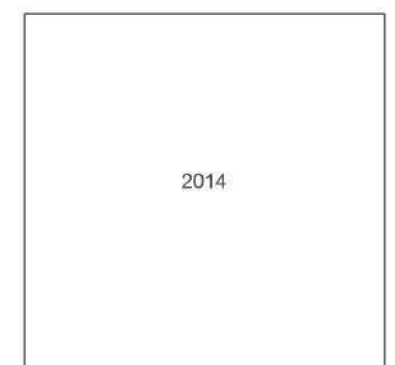
Client Ref: P1001J1102-1
Report Ref: HMD-377-4002615
Grid Ref: 505061, 188831

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000

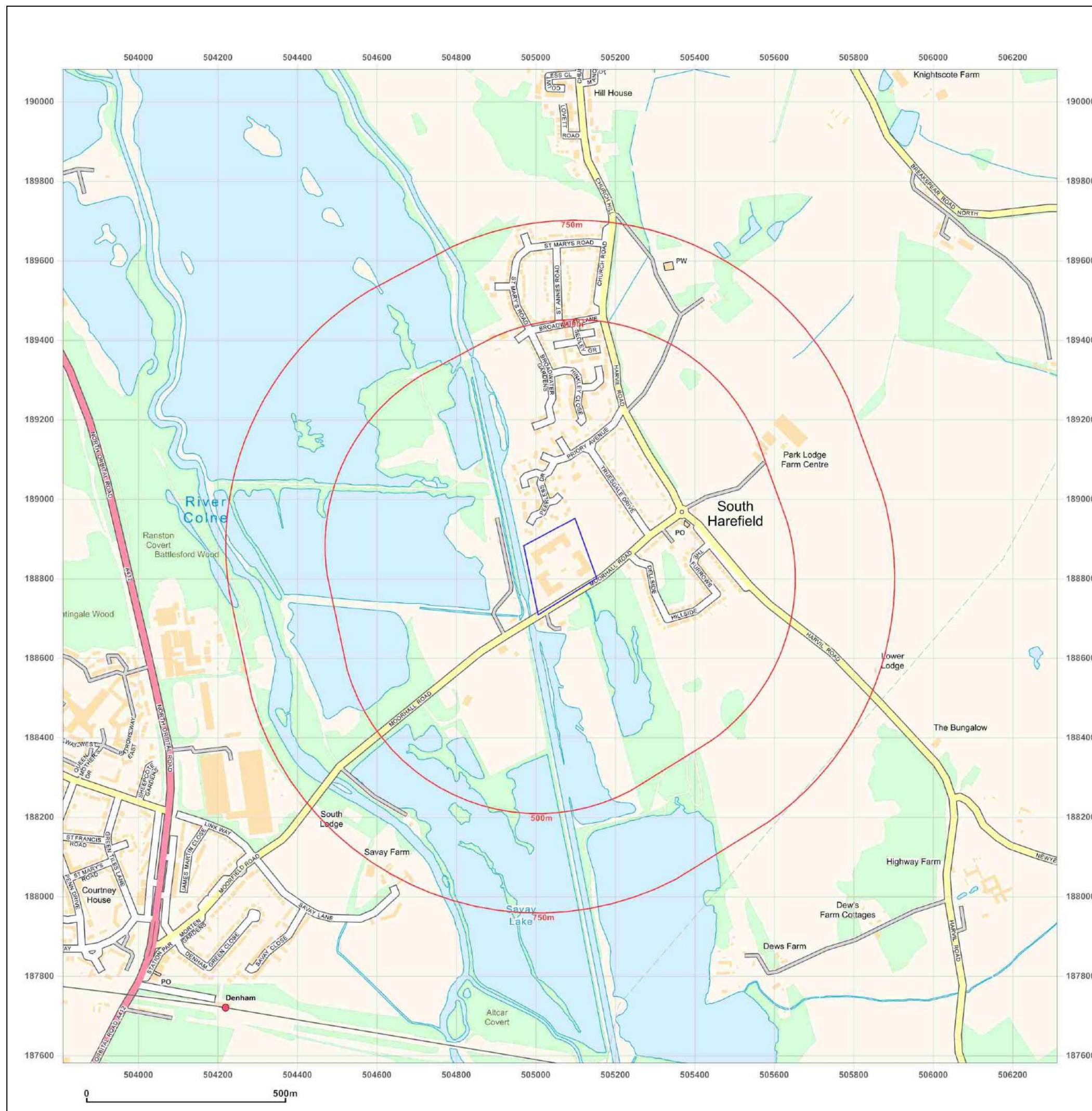


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Production date: 20 June 2017

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APPENDIX 4 – QUALITATIVE RISK ASSESSMENT METHODOLOGY

QUALITATIVE RISK ASSESSMENT METHODOLOGY

The following Contaminated Land Risk Assessment methodology is based on CIRIA C552 (2001) *Contaminated Land Risk Assessment – A Guide to Good Practice*, in order to quantify potential risk via **risk estimation** and **risk evaluation**, which can be adopted at the Phase I stage. This will then determine an overall risk category which can be used to identify likely actions. This methodology uses qualitative descriptors and therefore is a qualitative approach.

The methodology requires the classification of:

- the magnitude of the **consequence** (severity) of a risk occurring, and
- the magnitude of the **probability** (likelihood) of a risk occurring.

The potential consequences of contamination risks occurring at this site are classified in accordance with Table A4.1 below, which is adapted from the CIRIA guidance.

Table A4.1: Classification of Consequence

Classification	Definition of Consequence
Severe	• Short-term (acute) risks to human health. • Short-term risk of pollution of sensitive water resource or ecosystem. • Catastrophic damage to crops/buildings/property/infrastructure, including off-site soils.
Medium	• Medium/long-term (chronic) risks to human health. • Medium/long-term risk of pollution of sensitive water resource or ecosystem. • Significant damage to crops/buildings/property/infrastructure (on or off-site). • Contamination of off-site soils.
Mild	• Easily preventable, permanent health effects on humans. • Pollution of non-sensitive water resources. • Localised damage to crops/buildings/property/infrastructure (on or off-site).
Minor	• Easily preventable, non-permanent health effects on humans, or no effects. • Minor, low-level and localised contamination of on-site soils. • Easily repairable damage to crops/buildings/property/infrastructure.

The probability of contamination risks occurring at this site will be classified in accordance with Table A4.2 below which is also adapted from the CIRIA guidance. Note that for each category, it is assumed that a pollution linkage exists. Where a pollution linkage does not exist, the likelihood is zero, as is the risk.

Table A4.2: Classification of Probability

Classification	Definition of Probability
High Likelihood	Circumstances are such that an event appears very likely in the short-term or almost inevitable in the long-term; or there is already evidence that such an event has occurred.
Likely	Circumstances are such that such an event is not inevitable, but is possible in the short-term and is likely over the long-term.
Low Likelihood	Circumstances are such that it is by no means certain that an event would occur even over a longer period, and it is less likely in the short-term.
Unlikely	Circumstances are such that it is improbable that an event would occur even in the very long-term.

For each possible pollution linkage (source-pathway-receptor) identified, the potential risk can be evaluated, as presented in Table A3.3. Based upon this, CIRIA C552 presents definitions of the risk categories, together with the investigatory and remedial actions that are likely to be necessary in each case, as in Table A3.4. These risk categories apply to each possible pollutant linkage, and not simply to each hazard/source of contamination or sensitive receptor.

Table A4.3: Overall Contamination Risk Matrix

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Moderate risk	Low risk
	Low likelihood	Moderate risk	Moderate risk	Low risk	Very low risk
	Unlikely	Low risk	Low risk	Very low risk	Very low risk

Table A4.4: Definition of Risk Categories and Likely Actions Required

Risk Category	Definition and likely actions required
Very high	• Severe harm to a defined receptor is very likely, or has already occurred. • The risk is likely to result in a substantial liability. • Urgent investigation (if not already undertaken) is likely to be required. • Urgent remediation is likely to be required.
High	• Harm to a defined receptor is likely. • The risk, if realised, may result in a substantial liability. • Urgent investigation (if not already undertaken) is likely to be required. • Remediation is likely to be required in the long term, possibly sooner.
Moderate	• Harm to a defined receptor is possible, but severe harm is unlikely. • Investigation is likely to be required to clarify the level of potential liability and risk. • Some remediation may be required in the longer term
Low	• Harm to a defined receptor is possible, but is likely to be mild at worst. • Liabilities could theoretically arise, but are unlikely. • Further investigation is not required at this stage • Remediation is unlikely to be required.
Very low	• Harm to a defined receptor is unlikely, and would be minor at worst. • No liabilities are likely to arise. • Further investigation is not required at this stage • Remediation is very unlikely to be required.

APPENDIX 5 – BGS BOREHOLE RECORDS



**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 575329 : BGS Reference: TO08NW116

British National Grid (27700) : 504890,188470

[Report an issue with this borehole](#)

<<

[< Prev](#)

Page 3 of 58 ▼

[Next >](#)

>>

GEOLOGICAL CLASSIFICATION (For Survey use only) If measurements start below ground surface, state how far		THICKNESS		DEPTH	
		Feet	Inches	Feet	Inches
	Topsoil	-	6	-	6
	Clay	-	6	1	-
	Peat	-	9	1	9
	Blue loam	3	3	5	0
	Gravel	7	0	12	0
	Black silt	1	0	13	0
	Gravel	12	0	25	0
	Chalk + large flints	5	0	30	0
	" " " " " " " "	30	0	60	0
	" " " " " " " "	150	0	210	0
	" " " " " " " "	2	0	212	0
	" " " " " " " "	4	0	216	0
	" " " " " " " "	4	0	220	0
	" " " " " " " "	2	0	222	0
	" " " " " " " "	3	0	225	0
	" " " " " " " "	2	0	227	0
	" " " " " " " "	3	0	230	0
	" " " " " " " "	2	0	232	0
	" " " " " " " "	4	0	236	0
	" " " " " " " "	2	0	238	0
	" " " " " " " "	7	0	245	0
	" " " " " " " "				
	" " " " " " " "	41	0	286	0
	" " " " " " " "	4	0	290	0
	" " " " " " " "	10	0	300	0
	* according to Robert's section log				

APPENDIX 6 – EXPLORATORY HOLE RECORDS

APPENDIX 6 – LABORATORY CHEMICAL TESTING DATA



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Windmill Road
Ponswood Industrial Estate
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TN38 9BY
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info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number: 17-12971

Issue: 2

Date of Issue: 14/07/2017

Contact: Emma Hacker

Customer Details: Jomas Associates Ltd
Lakeside House
1 Furzeground Way

UB11 1BD

Quotation No: Q16-00597

Order No: P1001JJ1102.8

Customer Reference: JJ1102

Date Received: 04/07/2017

Date Approved: 14/07/2017

Details: Widewater Place, Harefield

Approved by:

John Wilson, Operations Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)



Sample Summary

Report No.: 17-12971

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
105368	WS3 1.00	01/07/2017	06/07/2017	Loamy sand	c
105369	WS8 1.00	01/07/2017	06/07/2017	Sandy silty loam	c
105370	WS5 0.80	01/07/2017	13/07/2017	Sandy loam	
105371	WS3 2.00	01/07/2017	06/07/2017	Silty loam	c
105372	WS3 0.20	01/07/2017	06/07/2017		
105373	WS3 0.30	01/07/2017	06/07/2017		
105374	WS3 0.50	01/07/2017	06/07/2017		
105375	WS3 3.00	01/07/2017	06/07/2017		
105376	WS3 4.00	01/07/2017	06/07/2017		
105377	WS3 5.00	01/07/2017	06/07/2017		
105378	WS5 0.20	01/07/2017	06/07/2017		
105379	WS5 0.30	01/07/2017	06/07/2017		
105380	WS5 1.00	01/07/2017	06/07/2017		
105381	WS5 2.00	01/07/2017	06/07/2017		
105382	WS5 3.00	01/07/2017	06/07/2017		
105383	WS5 3.50	01/07/2017	06/07/2017		
105384	WS5 4.00	01/07/2017	06/07/2017		
105385	WS5 5.00	01/07/2017	06/07/2017		
105386	WS5 6.00	01/07/2017	06/07/2017		
105387	WS8 0.20	01/07/2017	06/07/2017		
105388	WS8 0.30	01/07/2017	06/07/2017		
105389	WS8 2.00	01/07/2017	06/07/2017		
105390	WS8 3.00	01/07/2017	06/07/2017		
105391	WS8 4.00	01/07/2017	06/07/2017		
105392	WS8 5.00	01/07/2017	06/07/2017		
105393	WS8 6.00	01/07/2017	06/07/2017		



Results Summary

Report No.: 17-12971

ELAB Reference				105368	105369	105370	105371
Customer Reference							
Sample ID							
Sample Type				SOIL	SOIL	SOIL	SOIL
Sample Location				WS3	WS8	WS5	WS3
Sample Depth (m)				1.00	1.00	0.80	2.00
Sampling Date				01/07/2017	01/07/2017	01/07/2017	01/07/2017
Determinand	Codes	Units	LOD				
Metals							
Arsenic	M	mg/kg	1	7.9	6.8	9.2	10.8
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	16.9	17.8	55.9	48.9
Copper	M	mg/kg	5	32.2	29.8	29.9	42.1
Lead	M	mg/kg	5	26.6	80.5	263	60.5
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	0.7
Nickel	M	mg/kg	5	21.3	15.5	17.7	31.6
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	5.0
Zinc	M	mg/kg	5	44.0	74.5	102	69.6
Anions							
Water Soluble Sulphate	M	g/l	0.02	0.33	0.49	0.28	0.22
Inorganics							
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8
Total Cyanide	M	mg/kg	1	< 1.0	1.2	< 1.0	1.9
Acid Soluble Sulphate (SO4)	U	%	0.02	0.23	0.11	0.25	0.17
Water Soluble Boron	N	mg/kg	0.5	< 0.5	0.6	< 0.5	0.9
Miscellaneous							
pH	M	pH units	0.1	11.0	8.7	11.0	8.0
Total Organic Carbon	N	%	0.01	n/t	n/t	n/t	11
Organics							
>C8-C10 BCB	N	mg/kg	1	n/t	n/t	n/t	c < 1.0
>C10-C12 BCB	N	mg/kg	1	n/t	n/t	n/t	c < 1.0
>C12-C16 BCB	N	mg/kg	1	n/t	n/t	n/t	c < 1.0
>C16-C21 BCB	N	mg/kg	1	n/t	n/t	n/t	c 2.1
>C21-C35 BCB	N	mg/kg	1	n/t	n/t	n/t	c 16.3
>C35-C40 BCB	N	mg/kg	1	n/t	n/t	n/t	c < 1.0
Total (>C8-C40) BCB	N	mg/kg	1	n/t	n/t	n/t	c 18.4
Phenols							
Total Monohydric Phenols	N	mg/kg	5	n/t	n/t	n/t	c < 5



Results Summary

Report No.: 17-12971

ELAB Reference	105368	105369	105370	105371
Customer Reference				
Sample ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sample Location	WS3	WS8	WS5	WS3
Sample Depth (m)	1.00	1.00	0.80	2.00
Sampling Date	01/07/2017	01/07/2017	01/07/2017	01/07/2017

Determinand	Codes	Units	LOD				
Polyaromatic hydrocarbons							
Naphthalene	M	mg/kg	0.1	n/t	n/t	n/t	c < 0.1
Acenaphthylene	M	mg/kg	0.1	n/t	n/t	n/t	c < 0.1
Acenaphthene	M	mg/kg	0.1	n/t	n/t	n/t	c < 0.1
Fluorene	M	mg/kg	0.1	n/t	n/t	n/t	c < 0.1
Phenanthrene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.2
Anthracene	M	mg/kg	0.1	n/t	n/t	n/t	c < 0.1
Fluoranthene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.3
Pyrene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.2
Benzo(a)anthracene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.1
Chrysene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.2
Benzo (b) fluoranthene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.4
Benzo(k)fluoranthene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.3
Benzo (a) pyrene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.3
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.1	n/t	n/t	n/t	c < 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1	n/t	n/t	n/t	c 0.3
Total PAH(16)	M	mg/kg	0.4	n/t	n/t	n/t	c 2.6
Naphthalene GCMS	N	mg/kg	0.01	c 0.19	c 0.04	0.08	n/t
Acenaphthylene GCMS	N	mg/kg	0.01	c 0.36	c 0.05	0.12	n/t
Acenaphthene GCMS	N	mg/kg	0.01	c 0.95	c 0.04	0.03	n/t
Fluorene GCMS	N	mg/kg	0.01	c 0.94	c 0.05	0.07	n/t
Phenanthrene GCMS	N	mg/kg	0.01	c 19.0	c 1.30	0.62	n/t
Anthracene GCMS	N	mg/kg	0.01	c 4.67	c 0.25	0.23	n/t
Fluoranthene GCMS	N	mg/kg	0.01	c 28.2	c 2.49	2.05	n/t
Pyrene GCMS	N	mg/kg	0.01	c 23.8	c 3.92	1.76	n/t
Benzo(a)anthracene GCMS	N	mg/kg	0.01	c 14.0	c 1.93	1.18	n/t
Chrysene GCMS	N	mg/kg	0.01	c 12.9	c 2.25	1.20	n/t
Benzo (b) fluoranthene GCMS	N	mg/kg	0.01	c 13.2	c 1.91	1.69	n/t
Benzo(k)fluoranthene GCMS	N	mg/kg	0.01	c 13.3	c 1.95	1.36	n/t
Benzo (a) pyrene GCMS	N	mg/kg	0.01	c 16.6	c 3.13	1.98	n/t
Indeno (1,2,3-cd) pyrene GCMS	N	mg/kg	0.01	c 13.5	c 2.40	2.29	n/t
Dibenzo(a,h)anthracene GCMS	N	mg/kg	0.01	c 7.34	c 0.89	0.89	n/t
Benzo(g,h,i)perylene GCMS	N	mg/kg	0.01	c 11.6	c 2.35	2.08	n/t
Total PAH(16) GCMS	N	mg/kg	0.04	c 180	c 25.0	17.6	n/t

Results Summary

Report No.: 17-12971

ELAB Reference	105368	105369	105370	105371
Customer Reference				
Sample ID				
Sample Type	SOIL	SOIL	SOIL	SOIL
Sample Location	WS3	WS8	WS5	WS3
Sample Depth (m)	1.00	1.00	0.80	2.00
Sampling Date	01/07/2017	01/07/2017	01/07/2017	01/07/2017

Determinand	Codes	Units	LOD				
BTEX							
Benzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0	n/t
Toluene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0	n/t
Ethylbenzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0	n/t
Xylenes	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0	n/t
MTBE	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0	n/t
TPH CWG							
>C5-C6 Aliphatic	N	mg/kg	0.01	c < 0.01	c < 0.01	< 0.01	n/t
>C6-C8 Aliphatic	N	mg/kg	0.01	c < 0.01	c < 0.01	< 0.01	n/t
>C8-C10 Aliphatic	N	mg/kg	1	c < 1.0	c < 1.0	2.3	n/t
>C10-C12 Aliphatic	N	mg/kg	1	c 3.1	c < 1.0	3.2	n/t
>C12-C16 Aliphatic	N	mg/kg	1	c 17.0	c < 1.0	< 1.0	n/t
>C16-C21 Aliphatic	N	mg/kg	1	c 177	c 6.1	2.1	n/t
>C21-C35 Aliphatic	N	mg/kg	1	c 504	c 226	22.6	n/t
>C35-C40 Aliphatic	N	mg/kg	1	c 13.0	c 16.5	3.3	n/t
>C5-C7 Aromatic	N	mg/kg	0.01	c < 0.01	c < 0.01	< 0.01	n/t
>C7-C8 Aromatic	N	mg/kg	0.01	c < 0.01	c < 0.01	< 0.01	n/t
>C8-C10 Aromatic	N	mg/kg	1	c < 1.0	c < 1.0	< 1.0	n/t
>C10-C12 Aromatic	N	mg/kg	1	c < 1.0	c < 1.0	< 1.0	n/t
>C12-C16 Aromatic	N	mg/kg	1	c 7.7	c < 1.0	< 1.0	n/t
>C16-C21 Aromatic	N	mg/kg	1	c 119	c 3.4	1.5	n/t
>C21-C35 Aromatic	N	mg/kg	1	c 480	c 72.4	30.0	n/t
>C35-C40 Aromatic	N	mg/kg	1	c 25.6	c 6.9	10.7	n/t
Total (>C5-C40) Ali/Aro	N	mg/kg	1	c 1350	c 332	75.7	n/t
PCB (ICES 7 congeners)							
PCB 28	M	mg/kg	0.01	n/t	n/t	< 0.01	n/t
PCB 52	M	mg/kg	0.01	n/t	n/t	< 0.01	n/t
PCB 101	M	mg/kg	0.01	n/t	n/t	< 0.01	n/t
PCB 118	M	mg/kg	0.01	n/t	n/t	< 0.01	n/t
PCB 153	M	mg/kg	0.01	n/t	n/t	0.01	n/t
PCB 138	M	mg/kg	0.01	n/t	n/t	0.02	n/t
PCB 180	M	mg/kg	0.01	n/t	n/t	0.01	n/t
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	n/t	0.07	n/t



Results Summary

Report No.: 17-12971

ELAB Reference	105368	105369	105370
Customer Reference			
Sample ID			
Sample Type	SOIL	SOIL	SOIL
Sample Location	WS3	WS8	WS5
Sample Depth (m)	1.00	1.00	0.80
Sampling Date	01/07/2017	01/07/2017	01/07/2017

Determinand	Codes	Units	LOD			
VOC						
Heptane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Octane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Nonane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Benzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Toluene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Ethylbenzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
m+p-xylene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
o-xylene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
cis-1,2-dichloroethene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,1-Dichloroethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Chloroform	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Tetrachloromethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,1,1-Trichloroethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Trichloroethylene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Tetrachloroethylene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,1,1,2-Tetrachloroethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,1,2,2-Tetrachloroethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Chlorobenzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Bromobenzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Bromodichloromethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Methylethylbenzene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,1-Dichloro-1-propene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Trans - 1-2 -dichloroethylene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
2,2-Dichloropropane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Bromochloromethane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2-Dichloroethane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Dibromomethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2-Dichloropropane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
cis-1,3-Dichloro-1-propene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
trans-1,3-Dichloro-1-propene	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,1,2-Trichloroethane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Dibromochloromethane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,3-Dichloropropane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2-dibromoethane	M	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Styrene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Propylbenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
2-Chlorotoluene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2,4-Trimethylbenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
4-Chlorotoluene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
t-butylbenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,3,5-Trimethylbenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1-methylpropylbenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
o-cymene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,3-Dichlorobenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Butylbenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2-Dibromo-3-chloropropane	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Hexachlorobutadiene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2,3-Trichlorobenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Naphthalene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2,4-Trichlorobenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,4-Dichlorobenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
1,2-Dichlorobenzene	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
Bromoform	N	ug/kg	10	c < 10.0	c < 10.0	< 10.0
VOC TIC						
Vinyl chloride	N	ug/kg	10	c < 10	c < 10	< 10



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Results Summary

Report No.: 17-12971

Asbestos Results

Analytical result only applies to the sample as submitted by the client. Any comments, opinions or interpretations (marked #) in this report are outside UKAS accreditation (Accreditation No2683). They are subjective comments only which must be verified by the client.

Elab No	Depth (m)	Clients Reference	Description of Sample Matrix #	Asbestos Identification	Gravimetric Analysis Total (%)	Gravimetric Analysis by ACM Type (%)	Free Fibre Analysis (%)	Total Asbestos (%)
105368	1.00	WS3	Sand, stones, concrete, brick, clinker	No asbestos detected	n/t	n/t	n/t	n/t
105369	1.00	WS8	Brown sandy soil, stones	No asbestos detected	n/t	n/t	n/t	n/t
105370	0.80	WS5	Brown sandy soil, stones, concrete, clinker	Chrysotile (fibre bundles)	< 0.001	Fibre Bundles (<0.001)	< 0.001	< 0.001

Method Summary

Report No.: 17-12971

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
PAH (GC-MS)	N	As submitted sample	10/07/2017		GC-MS
VOC in solids	M	As submitted sample	10/07/2017		GC-MS
Hexavalent chromium	N	As submitted sample	10/07/2017	110	Colorimetry
pH	M	Air dried sample	11/07/2017	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	11/07/2017	115	Ion Chromatography
Aqua regia extractable metals	M	Air dried sample	10/07/2017	118	ICPMS
PCB (ICES 7 congeners)	M	Air dried sample	10/07/2017	120	GC-MS
Phenols in solids	N	As submitted sample	10/07/2017	121	HPLC
PAH (GC-FID)	M	As submitted sample	10/07/2017	133	GC-FID
Water soluble anions	M	Air dried sample	10/07/2017	172	Ion Chromatography
VOC in solids	M	As submitted sample	10/07/2017	181	GC-MS
BTEX in solids	M	As submitted sample	11/07/2017	181A	GC-MS
Water soluble boron	N	Air dried sample	10/07/2017	202	Colorimetry
Total cyanide	M	As submitted sample	10/07/2017	204	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	11/07/2017	210	IR
Aliphatic hydrocarbons in soil	N	As submitted sample	10/07/2017	214	GC-FID
Aliphatic/Aromatic hydrocarbons in soil	N	As submitted sample	11/07/2017	214	GC-FID
Aromatic hydrocarbons in soil	N	As submitted sample	10/07/2017	214	GC-FID
Low range Aliphatic hydrocarbons soil	N	As submitted sample	11/07/2017	214	GC-MS
Low range Aromatic hydrocarbons soil	N	As submitted sample	11/07/2017	214	GC-MS
Basic carbon banding in soil	N	As submitted sample	10/07/2017	218	GC-FID
Asbestos identification	U	As submitted sample	10/07/2017	260	Microscopy

Tests marked N are not UKAS accredited



Report Information

Report No.: 17-12971

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C)

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

-
- | | |
|---|--|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

**Emma Hucker**

Jomas Associates Ltd
Lakeside House
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Stockley Park
UB11 1BD

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
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e: Jomas Group

Analytical Report Number : 17-53158

Project / Site name:	Widewater Place, Harefield	Samples received on:	28/06/2017
Your job number:	JJ1102	Samples instructed on:	30/06/2017
Your order number:	P1001JJ1102.5	Analysis completed by:	07/07/2017
Report Issue Number:	1	Report issued on:	07/07/2017
Samples Analysed:	9 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 17-53158

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number	775625	775626	775627	775628	775629
Sample Reference	WS2	WS2	WS2	WS4	WS4
Sample Number	T&J	T&J	T&J	T&J	T&J
Depth (m)	0.50	1.00	2.00	0.25	2.00
Date Sampled	25/06/2017	25/06/2017	25/06/2017	25/06/2017	25/06/2017
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	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	8.7	5.7
Total mass of sample received	kg	0.001	NONE	0.83	1.8
				1.7	0.96
				0.96	1.9

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	-
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.0	8.4	7.2	7.5	8.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	2100	480	340	270	620
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	144	41.7	51.4	62.8	171
Water Soluble SO ₄ as SO ₄ (2:1) Gallery 16h extraction	g/l	0.00125	MCERTS	0.144	0.0417	0.0514	0.0628	0.171
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	1.4	-	0.1	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.50	0.20	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.11	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.94	0.62	< 0.05	0.16	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.84	0.58	< 0.05	0.13	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.45	0.41	< 0.05	0.07	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.51	0.34	< 0.05	0.07	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.67	0.51	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.30	0.28	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.57	0.48	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.44	0.28	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.63	0.32	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.96	4.02	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 17-53158

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number				775625	775626	775627	775628	775629
Sample Reference				WS2	WS2	WS2	WS4	WS4
Sample Number				T&J	T&J	T&J	T&J	T&J
Depth (m)				0.50	1.00	2.00	0.25	2.00
Date Sampled				25/06/2017	25/06/2017	25/06/2017	25/06/2017	25/06/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	45	8.1	10	15	6.4
Boron (water soluble)	mg/kg	0.2	MCERTS	2.4	3.0	1.4	0.6	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	3.6	< 0.2	< 0.2	< 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	37	17	22	28	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	1000	26	16	21	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	750	29	14	27	29
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	0.5	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	72	16	11	17	15
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	860	44	26	48	39

Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Toluene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
p & m-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
o-xylene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
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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	< 1.0	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	29	270	-	11	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	33	270	-	16	-

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	< 1.0	< 1.0	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	-	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	37	190	-	< 10	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	43	200	-	< 10	-

TPH (C10 - C12)	mg/kg	2	MCERTS	-	-	< 2.0	-	< 2.0
TPH (C12 - C16)	mg/kg	4	MCERTS	-	-	< 4.0	-	< 4.0
TPH (C16 - C21)	mg/kg	1	MCERTS	-	-	1.1	-	3.3
TPH (C21 - C40)	mg/kg	10	MCERTS	-	-	43	-	13



Analytical Report Number: 17-53158

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number				775625	775626	775627	775628	775629
Sample Reference				WS2	WS2	WS2	WS4	WS4
Sample Number				T&J	T&J	T&J	T&J	T&J
Depth (m)				0.50	1.00	2.00	0.25	2.00
Date Sampled				25/06/2017	25/06/2017	25/06/2017	25/06/2017	25/06/2017
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	< 1.0	-	< 1.0	-
Chloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Vinyl Chloride	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Cis-1,2-dichloroethene	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	-
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Tetrachloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,1,2-Tetrachloroethane	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	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Tribromomethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
o-Xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Butylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-



Analytical Report Number: 17-53158

Project / Site name: Widewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number				775625	775626	775627	775628	775629
Sample Reference				WS2	WS2	WS2	WS4	WS4
Sample Number				T&J	T&J	T&J	T&J	T&J
Depth (m)				0.50	1.00	2.00	0.25	2.00
Date Sampled				25/06/2017	25/06/2017	25/06/2017	25/06/2017	25/06/2017
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

PCBs by GC-MS

PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-

Total PCBs by GC-MS

Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-
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Analytical Report Number: 17-53158

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number	775630	775631	775632	775633	
Sample Reference	WS4	WS3	WS5	WS8	
Sample Number	T&J	T&J	T&J	T&J	
Depth (m)	1.00	0.30	0.20-0.30	0.20-0.30	
Date Sampled	25/06/2017	25/06/2017	25/06/2017	25/06/2017	
Time Taken	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	< 0.1
Moisture Content	%	N/A	NONE	9.0	8.2
Total mass of sample received	kg	0.001	NONE	0.80	0.97

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
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General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.7	9.8	8.8	8.8
Total Cyanide	mg/kg	1	MCERTS	8	< 1	< 1	< 1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	4600	530	210	360
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	807	168	47.9	97.3
Water Soluble SO ₄ as SO ₄ (2:1) Gallery 16h extraction	g/l	0.00125	MCERTS	0.807	0.168	0.0479	0.0973
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	< 0.1	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.39	0.82	< 0.05	0.10
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.20	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.97	0.79	< 0.05	0.16
Pyrene	mg/kg	0.05	MCERTS	0.88	0.64	< 0.05	0.14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.47	0.37	< 0.05	0.09
Chrysene	mg/kg	0.05	MCERTS	0.51	0.22	< 0.05	0.07
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.65	0.28	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.31	0.15	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.52	0.24	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.34	0.12	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.37	0.15	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.41	3.98	< 0.80	< 0.80
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Analytical Report Number: 17-53158

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number				775630	775631	775632	775633	
Sample Reference				WS4	WS3	WS5	WS8	
Sample Number				T&J	T&J	T&J	T&J	
Depth (m)				1.00	0.30	0.20-0.30	0.20-0.30	
Date Sampled				25/06/2017	25/06/2017	25/06/2017	25/06/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	11	11	11	
Boron (water soluble)	mg/kg	0.2	MCERTS	3.5	0.9	1.0	0.9	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	160	19	12	17	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	83	21	120	150	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	280	19	41	75	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3	< 0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	26	13	9.2	9.2	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	350	36	73	92	

Monoaromatics

Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	
Toluene	ug/kg	1	MCERTS	< 1.0	-	-	-	
Ethylbenzene	ug/kg	1	MCERTS	< 1.0	-	-	-	
p & m-xylene	ug/kg	1	MCERTS	< 1.0	-	-	-	
o-xylene	ug/kg	1	MCERTS	< 1.0	-	-	-	
MTBE (Methyl Tertiary Butyl Ether)	ug/kg	1	MCERTS	< 1.0	-	-	-	

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	
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	12	-	-	-	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	79	-	-	-	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	290	-	-	-	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	380	-	-	-	
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	3.3	-	-	-	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	37	-	-	-	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	140	-	-	-	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	180	-	-	-	
TPH (C10 - C12)	mg/kg	2	MCERTS	-	< 2.0	< 2.0	< 2.0	
TPH (C12 - C16)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	< 4.0	
TPH (C16 - C21)	mg/kg	1	MCERTS	-	15	< 1.0	1.8	
TPH (C21 - C40)	mg/kg	10	MCERTS	-	77	< 10	< 10	

Analytical Report Number: 17-53158

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number				775630	775631	775632	775633	
Sample Reference				WS4	WS3	WS5	WS8	
Sample Number				T&J	T&J	T&J	T&J	
Depth (m)				1.00	0.30	0.20-0.30	0.20-0.30	
Date Sampled				25/06/2017	25/06/2017	25/06/2017	25/06/2017	
Time Taken				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	-	-	-	



Analytical Report Number: 17-53158

Project / Site name: Widewater Place, Harefield

Your Order No: P1001JJ1102.5

Lab Sample Number				775630	775631	775632	775633	
Sample Reference				WS4	WS3	WS5	WS8	
Sample Number				T&J	T&J	T&J	T&J	
Depth (m)				1.00	0.30	0.20-0.30	0.20-0.30	
Date Sampled				25/06/2017	25/06/2017	25/06/2017	25/06/2017	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
PCBs by GC-MS								
PCB Congener 28				mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 52				mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 101				mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 118				mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 138				mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 153				mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 180				mg/kg	0.001	MCERTS	< 0.001	-
Total PCBs by GC-MS								
Total PCBs				mg/kg	0.007	MCERTS	< 0.007	-



Analytical Report Number : 17-53158

Project / Site name: Widewater Place, Harefield

* 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 *
775625	WS2	T&J	0.50	Brown sand with gravel.
775626	WS2	T&J	1.00	Brown sand with gravel.
775627	WS2	T&J	2.00	Brown sand with gravel.
775628	WS4	T&J	0.25	Light brown clay with gravel.
775629	WS4	T&J	2.00	Brown sand with gravel.
775630	WS4	T&J	1.00	Brown sand with gravel.
775631	WS3	T&J	0.30	Light brown clay and sand with gravel.
775632	WS5	T&J	0.20-0.30	Brown sand with gravel.
775633	WS8	T&J	0.20-0.30	Brown sand with gravel.

Analytical Report Number : 17-53158

Project / Site name: Widewater Place, Harefield

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
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
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 (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

Analytical Report Number : 17-53158

Project / Site name: Widdewater Place, Harefield

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
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	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 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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	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.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS2	T&J	S	17-53158	775625	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS2	T&J	S	17-53158	775625	b	TPHCWG (Soil)	L088/76-PL	b
WS2	T&J	S	17-53158	775625	b	Volatile organic compounds in soil	L073B-PL	b
WS2	T&J	S	17-53158	775626	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS2	T&J	S	17-53158	775626	b	TPHCWG (Soil)	L088/76-PL	b
WS2	T&J	S	17-53158	775626	b	Volatile organic compounds in soil	L073B-PL	b
WS2	T&J	S	17-53158	775627	b	PRO (Soil)	L088-PL	b
WS3	T&J	S	17-53158	775631	b	PRO (Soil)	L088-PL	b
WS4	T&J	S	17-53158	775628	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS4	T&J	S	17-53158	775628	b	TPHCWG (Soil)	L088/76-PL	b
WS4	T&J	S	17-53158	775628	b	Volatile organic compounds in soil	L073B-PL	b
WS4	T&J	S	17-53158	775629	b	PRO (Soil)	L088-PL	b
WS4	T&J	S	17-53158	775630	b	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
WS4	T&J	S	17-53158	775630	b	TPHCWG (Soil)	L088/76-PL	b
WS4	T&J	S	17-53158	775630	b	Volatile organic compounds in soil	L073B-PL	b
WS5	T&J	S	17-53158	775632	b	Monohydric phenols in soil	L080-PL	b
WS5	T&J	S	17-53158	775632	b	PRO (Soil)	L088-PL	b
WS5	T&J	S	17-53158	775632	b	Speciated EPA-16 PAHs in soil	L064-PL	b
WS5	T&J	S	17-53158	775632	b	TPH in (Soil)	L076-PL	b
WS8	T&J	S	17-53158	775633	b	Monohydric phenols in soil	L080-PL	b
WS8	T&J	S	17-53158	775633	b	PCB's By GC-MS in soil	L027-PL	b
WS8	T&J	S	17-53158	775633	b	PRO (Soil)	L088-PL	b
WS8	T&J	S	17-53158	775633	b	Speciated EPA-16 PAHs in soil	L064-PL	b
WS8	T&J	S	17-53158	775633	b	TPH in (Soil)	L076-PL	b

**Emma Hucker**

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e: Jomas Group

Analytical Report Number : 17-53862

Project / Site name:	Widewater Place,Harefield	Samples received on:	07/07/2017
Your job number:	JJ1102	Samples instructed on:	07/07/2017
Your order number:	P1001JJ1102.7	Analysis completed by:	14/07/2017
Report Issue Number:	1	Report issued on:	14/07/2017
Samples Analysed:	4 water 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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Analytical Report Number: 17-53862

Project / Site name: Widdewater Place, Harefield

Your Order No: P1001JJ1102.7

Lab Sample Number				779414	779415	779416	779417	
Sample Reference				WS2	WS3	WS4	WS8	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				06/07/2017	06/07/2017	06/07/2017	06/07/2017	
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	7.3	9.1	6.8	7.2	
Electrical Conductivity at 20 °C	µS/cm	10	NONE	840	930	830	730	
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
Sulphate as SO ₄	µg/l	45	ISO 17025	37400	93500	93800	60800	
Sulphate as SO ₄	mg/l	0.045	ISO 17025	37	94	94	61	
Ammonium as NH ₄	µg/l	15	ISO 17025	120	3100	230	21	
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	174	152	244	288	

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
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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	
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	10	9.1	8.7	4.9	
Boron (dissolved)	µg/l	10	ISO 17025	36	63	66	98	
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	
Calcium (dissolved)	mg/l	0.012	ISO 17025	67	58	92	110	
Chromium (dissolved)	µg/l	0.4	ISO 17025	4.0	1.1	0.4	< 0.4	
Copper (dissolved)	µg/l	0.7	ISO 17025	7.7	1.2	1.7	7.5	
Lead (dissolved)	µg/l	1	ISO 17025	4.7	3.6	1.9	1.9	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	1.9	1.6	3.5	4.0	
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	
Nickel (dissolved)	µg/l	0.3	ISO 17025	5.8	2.6	11	9.2	
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	
Zinc (dissolved)	µg/l	0.4	ISO 17025	5.7	6.5	7.2	2.3	



Analytical Report Number: 17-53862

Project / Site name: Widewater Place,Harefield

Your Order No: P1001JJ1102.7

Lab Sample Number				779414	779415	779416	779417	
Sample Reference				WS2	WS3	WS4	WS8	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	
Date Sampled				06/07/2017	06/07/2017	06/07/2017	06/07/2017	
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	360	< 10	490	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	360	< 10	490	

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 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	



Analytical Report Number: 17-53862

Project / Site name: Widewater Place,Harefield

Your Order No: P1001JJ1102.7

Lab Sample Number				779414	779415	779416	779417
Sample Reference				WS2	WS3	WS4	WS8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				06/07/2017	06/07/2017	06/07/2017	06/07/2017
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	< 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
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 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	< 1.0	< 1.0	< 1.0	< 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	< 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
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	< 1.0	< 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

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 17-53862

Project / Site name: Widdewater Place, Harefield

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
Ammonium as NH ₄ in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
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
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Low level 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
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
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 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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
WS2		W	17-53862	779414	c	Ammoniacal Nitrogen as N in water	L082-PL	c
WS2		W	17-53862	779414	c	Ammonium as NH4 in water	L082-PL	c
WS2		W	17-53862	779414	c	Electrical conductivity at 20oC of water	L031-PL	c
WS2		W	17-53862	779414	c	pH at 20oC in water (automated)	L099-PL	c
WS3		W	17-53862	779415	c	Ammoniacal Nitrogen as N in water	L082-PL	c
WS3		W	17-53862	779415	c	Ammonium as NH4 in water	L082-PL	c
WS3		W	17-53862	779415	c	Electrical conductivity at 20oC of water	L031-PL	c
WS3		W	17-53862	779415	c	pH at 20oC in water (automated)	L099-PL	c
WS4		W	17-53862	779416	c	Ammoniacal Nitrogen as N in water	L082-PL	c
WS4		W	17-53862	779416	c	Ammonium as NH4 in water	L082-PL	c
WS4		W	17-53862	779416	c	Electrical conductivity at 20oC of water	L031-PL	c
WS4		W	17-53862	779416	c	pH at 20oC in water (automated)	L099-PL	c
WS8		W	17-53862	779417	c	Ammoniacal Nitrogen as N in water	L082-PL	c
WS8		W	17-53862	779417	c	Ammonium as NH4 in water	L082-PL	c
WS8		W	17-53862	779417	c	Electrical conductivity at 20oC of water	L031-PL	c
WS8		W	17-53862	779417	c	pH at 20oC in water (automated)	L099-PL	c



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Analytical Report Number : 17-54472

Project / Site name:	Widewater Place, Harefield	Samples received on:	14/07/2017
Your job number:	JJ1102	Samples instructed on:	14/07/2017
Your order number:	P1001JJ1102.9	Analysis completed by:	21/07/2017
Report Issue Number:	1	Report issued on:	21/07/2017
Samples Analysed:	1 water sample		

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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Analytical Report Number: 17-54472

Project / Site name: Widewater Place, Harefield

Your Order No: P1001JJ1102.9

Lab Sample Number				783027				
Sample Reference				WS5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				14/07/2017				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.3				
Electrical Conductivity at 20 °C	µS/cm	10	NONE	890				
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0				
Sulphate as SO ₄	µg/l	45	ISO 17025	48300				
Sulphate as SO ₄	mg/l	0.045	ISO 17025	48				
Ammonium as NH ₄	µg/l	15	ISO 17025	1000				
Hardness - Total	mgCaCO ₃ /l	1	ISO 17025	277				

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10				
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01				

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16				
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	1	ISO 17025	12				
Boron (dissolved)	µg/l	10	ISO 17025	130				
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08				
Calcium (dissolved)	mg/l	0.012	ISO 17025	100				
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.6				
Copper (dissolved)	µg/l	0.7	ISO 17025	7.8				
Lead (dissolved)	µg/l	1	ISO 17025	7.4				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	3.8				
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5				
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.9				
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0				
Zinc (dissolved)	µg/l	0.4	ISO 17025	15				



Analytical Report Number: 17-54472

Project / Site name: Widewater Place, Harefield

Your Order No: P1001JJ1102.9

Lab Sample Number				783027				
Sample Reference				WS5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				14/07/2017				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	NONE	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	NONE	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	NONE	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10				



Analytical Report Number: 17-54472

Project / Site name: Widewater Place, Harefield

Your Order No: P1001JJ1102.9

Lab Sample Number				783027				
Sample Reference				WS5				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				14/07/2017				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

VOCs

Chloromethane	µg/l	1	ISO 17025	< 1.0				
Chloroethane	µg/l	1	ISO 17025	< 1.0				
Bromomethane	µg/l	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/l	1	NONE	< 1.0				
Trichlorofluoromethane	µg/l	1	NONE	< 1.0				
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloromethane	µg/l	1	ISO 17025	< 1.0				
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
Benzene	µg/l	1	ISO 17025	< 1.0				
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloroethene	µg/l	1	ISO 17025	< 1.0				
Dibromomethane	µg/l	1	ISO 17025	< 1.0				
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0				
Chlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-Xylene	µg/l	1	ISO 17025	< 1.0				
Styrene	µg/l	1	ISO 17025	< 1.0				
Tribromomethane	µg/l	1	ISO 17025	< 1.0				
o-Xylene	µg/l	1	ISO 17025	< 1.0				
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0				
Bromobenzene	µg/l	1	ISO 17025	< 1.0				
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0				
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 17-54472

Project / Site name: Widdewater Place, Harefield

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
Ammonium as NH ₄ in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
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
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement.	In-house method	L031-PL	W	NONE
Low level 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
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
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 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.

APPENDIX 8 – SOIL GAS MONITORING TEST RESULTS

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Widewater	Operative(s): JWT	Date: 05/07/17	Time: 15:10	Round: 1	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000		07/10/2016		
PID	Phocheck tiger		20/05/2016		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Sunny		Ground Conditions: Dry		Temperature: 24°C	
Barometric Pressure (mbar): 1014		Barometric Pressure Trend (24hr): Steady		Ambient Concentration: 0.1 %CH ₄ , 0.0%CO ₂ , 20.1 %O ₂	

MONITORING RESULTS													
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	Methane %	Methane % LEL	Carbon Dioxide %	Oxygen %	VOC (ppm)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Average						Peak	Average				
WS4	+0.3	+0.3	1014	0.0	-	9.5	10.1	33	15	0	6	2.52	5.81
WS8	+0.4	+0.4	1014	0.1	-	3.0	17.4	38	17	0	27	2.32	5.61
WS3	+0.4	+0.4	1014	0.0	-	3.2	15.7	33	22	0	6	2.25	5.70
WS2	+0.4	+0.4	1013	0.0	-	4.3	15.1	29	17	0	4	2.33	5.12

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Widewater	Operative(s): JWT	Date: 05/07/17	Time: 15:10	Round: 2	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000		07/10/2016		
PID	Phocheck tiger		20/05/2016		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Overcast		Ground Conditions: Dry		Temperature: 22°C	
Barometric Pressure (mbar): 1013		Barometric Pressure Trend (24hr): Rising		Ambient Concentration: 0.0 %CH ₄ , 0.1 %CO ₂ , 21.1 %O ₂	

MONITORING RESULTS													
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	Methane %	Methane % LEL	Carbon Dioxide %	Oxygen %	VOC (ppm)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Average						Peak	Average				
WS4	+0.3	+0.3	1014	0.0	-	10.7	10.8	2	2	0	0	2.60	5.81
WS8	+0.4	+0.4	1014	0.0	-	5.4	16.2	5	3	0	2	2.32	5.55
WS3	+0.5	+0.5	1014	0.0	-	4.9	14.7	2	2	0	0	2.24	5.70
WS2	+0.3	+0.3	1015	0.0	-	5.5	15.1	2	2	0	0	2.32	5.12
WS5	+0.3	+0.3	1013	0.0	-	0.9	17.5	4	4	0	0	2.34	4.87

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Widewater	Operative(s): JWT	Date: 18/07/17	Time: 8:30	Round: 3	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000		07/10/2016		
PID	Phocheck tiger		20/05/2016		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Overcast		Ground Conditions: Dry		Temperature: 22°C	
Barometric Pressure (mbar): 1015		Barometric Pressure Trend (24hr): Falling		Ambient Concentration: 0.0 %CH ₄ , 0.1 %CO ₂ , 20.9 %O ₂	

MONITORING RESULTS													
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	Methane %	Methane % LEL	Carbon Dioxide %	Oxygen %	VOC (ppm)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Average						Peak	Average				
WS4	+0.3	+0.3	1015	0.0	-	10.5	10.7	2	1	0	0	2.50	5.81
WS8	+0.4	+0.4	1015	0.0	-	5.4	15.6	3	2	0	1	2.34	5.55
WS3	0.0	0.0	1015	0.0	-	5.1	13.0	3	3	0	1	2.25	5.68
WS2	+0.3	+0.3	1015	0.0	-	5.3	14.9	1	1	0	0	2.33	5.12
WS5	+0.1	+0.1	1015	0.1	-	1.3	16.8	16	16	0	0	2.28	4.87

GAS AND GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Widewater	Operative(s): JWT	Date: 27/07/2017	Time: 15.45	Round: 4	Page: 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
Analox	GA5000		07/10/2016		
PID	Phocheck tiger		20/05/2016		
Dip Meter	GeoTech				
MONITORING CONDITIONS					
Weather Conditions: Overcast/light rain		Ground Conditions: Damp		Temperature: 15°C	
Barometric Pressure (mbar): 1005		Barometric Pressure Trend (24hr): Rising		Ambient Concentration: 0.0 %CH ₄ , 0.1 %CO ₂ , 20.8 %O ₂	

MONITORING RESULTS													
Monitoring Point Location	Flow		Atmospheric Pressure (mbar)	Methane %	Methane % LEL	Carbon Dioxide %	Oxygen %	VOC (ppm)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	Depth to water (mbgl)	Depth to Base of well (mbgl)
	Peak	Average						Peak	Average				
WS4	+0.4	+0.4	1001	0.0	-	11.9	8.1	2	2	0	0	2.46	5.81
WS8	+0.3	+0.3	1001	0.0	-	5.5	16.5	0	0	0	0	2.24	5.55
WS3	+0.2	+0.2	1002	0.0	-	5.1	14.5	0	0	0	0	2.12	5.68
WS2	0.0	0.0	1002	0.0	-	5.3	15.4	1	1	0	0	2.25	5.12
WS5*													

*Inaccessible due to car parked on top.

LOW FLOW GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Widewater	Operative(s): JWT	Date: 06/07/17	Time: 12:00	Round: 1	Page: 1 of 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
SmarTROLL MP	In-Situ				
Dip Meter	In-Situ				
MONITORING CONDITIONS					
Weather Conditions: Sunny		Ground Conditions: Dry		Temperature: 26°C	

Hole ID	Temperature (°C)	Specific Conductivity (µS/cm)	pH	(ORP) Oxidation-Reduction Potential (mV)	(RDO) Rugged Dissolved Oxygen Concentration (mg/L)	Water Level	Hole Depth	Comments
WS4	16.68	858.62	6.57	106.6	0.10	2.56	5.82	18mins to stabilize, low turbidity, no aroma
WS2	18.30	869.84	6.84	105.1	0.19	2.35	5.12	21mins to stabilize, slightly turbid, no aroma
WS3	18.87	1045.6	9.85	90.4	0.21	2.25	5.70	18mins to stabilize, yellowish colour, slight metallic aroma
WS8	17.35	760.65*	6.83	-148.9*	0.30*	2.33	5.61	See below about stabilization, slightly turbid, no aroma

*Ipad ran out of battery before results stabilized. Readings taken at the end of the 5th x 3min interval (15mins).

Flow rate – 15sec to fill 40ml vile (same for every hole).

LOW FLOW GROUNDWATER MONITORING BOREHOLE RECORD SHEET					
Site: Widewater	Operative(s): JWT	Date: 14/07/17	Time: 07:40	Round: 1	Page: 1 of 1
MONITORING EQUIPMENT					
Instrument Type	Instrument Make	Serial No.	Date Last Calibrated		
SmarTROLL MP	In-Situ				
Dip Meter	In-Situ				
MONITORING CONDITIONS					
Weather Conditions: Overcast		Ground Conditions: Dry		Temperature: 22°C	

Hole ID	Temperature (°C)	Specific Conductivity (µS/cm)	pH	(ORP) Oxidation-Reduction Potential (mV)	(RDO) Rugged Dissolved Oxygen Concentration (mg/L)	Water Level	Hole Depth	Comments
WS5	17.45	915.31	6.92	73.5	3.60	2.34	4.87	18 mins to stabilize, low turbidity, no aroma

Flow rate – 20secs to fill 40ml vile.

Specific Conductivity (µS/cm)

This is a measure of the capability of a solution such as water in a stream to pass an electric current. This is an indicator of the concentration of dissolved electrolyte ions in the water. It doesn't identify the specific ions in the water. However, significant increases in conductivity may be an indicator that polluting discharges have entered the water.

Every creek will have a baseline conductivity depending on the local geology and soils. Higher conductivity will result from the presence of various ions including nitrate, phosphate, and sodium.

The basic unit of measurement for conductivity is micromhos per centimeter (µmhos/cm) or microsiemens per centimeter (µS/cm). Either can be used, they are the same. It is a measure of the inverse of the amount of resistance an electric charge meets in traveling through the water. Distilled water has a conductivity ranging from 0.5 to 3 µS/cm, while most streams range between 50 to 1500 µS/cm. Freshwater streams ideally should have a conductivity between 150 to 500 µS/cm to support diverse aquatic life.

pH

A measure of a solution's acidity. In water, small numbers of water molecules (H₂O) will break apart or disassociate into hydrogen ions (H⁺) and hydroxide ions (OH⁻). Other compounds entering the water may react with these, leaving an imbalance in the numbers of hydrogen and hydroxide ions. When more hydrogen ions react, more hydroxide ions are left in solution and the water is basic; when more hydroxide ions react, more hydrogen ions are left and the water is acidic. pH is a measure of the number of hydrogen ions and thus a measure of acidity.

pH is measured on a logarithmic scale between 1 and 14 with 1 being extremely acid, 7 neutral, and 14 extremely basic. Because it is a logarithmic scale there is a ten fold increase in acidity for a change of one unit of pH, e.g. 5 is 100 times more acid than 7 on the pH scale. The largest variety of freshwater aquatic organisms prefer a pH range between 6.5 to 8.0.

(RDO) Rugged Dissolved Oxygen Concentration (mg/L)

Dissolved oxygen is oxygen gas molecules (O₂) present in the water. Plants and animals cannot directly use the oxygen that is part of the water molecule (H₂O), instead depending on dissolved oxygen for respiration. Oxygen enters streams from the surrounding air and as a product of photosynthesis from aquatic plants. Consistently high levels of dissolved oxygen are best for a healthy ecosystem.

Levels of dissolved oxygen vary depending on factors including water temperature, time of day, season, depth, altitude, and rate of flow. Water at higher temperatures and altitudes will have less dissolved oxygen. Dissolved oxygen reaches its peak during the day. At night, it decreases as photosynthesis has stopped while oxygen consuming processes such as respiration, oxidation, and respiration continue, until shortly before dawn.

Human factors that affect dissolved oxygen in streams include addition of oxygen consuming organic wastes such as sewage, addition of nutrients, changing the flow of water, raising the water temperature, and the addition of chemicals.

Dissolved oxygen is measured in mg/L.

0-2 mg/L: not enough oxygen to support life.

2-4 mg/L: only a few fish and aquatic insects can survive.

4-7 mg/L: good for many aquatic animals, low for cold water fish

7-11 mg/L: very good for most stream fish

(ORP) Oxidation- Reduction Potential (mV)

ORP is a measure of the cleanliness of the water & its ability to break down contaminants". It has a range of -2,000 to + 2,000 and units are in "mV" (millivolts).

APPENDIX 9 –STATISTICAL ANALYSIS

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation			20/07/2017 10:37:17								
5	From File			J1102 results for stats.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Arsenic											
12												
13	General Statistics											
14	Total Number of Observations				9		Number of Distinct Observations				8	
15							Number of Missing Observations				0	
16	Minimum				6.8		Mean				14.67	
17	Maximum				45		Median				11	
18	SD				11.93		Std. Error of Mean				3.977	
19	Coefficient of Variation				0.814		Skewness				2.517	
20												
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
25												
26	Normal GOF Test											
27	Shapiro Wilk Test Statistic				0.655		Shapiro Wilk GOF Test					
28	5% Shapiro Wilk Critical Value				0.829		Data Not Normal at 5% Significance Level					
29	Lilliefors Test Statistic				0.287		Lilliefors GOF Test					
30	5% Lilliefors Critical Value				0.295		Data appear Normal at 5% Significance Level					
31	Data appear Approximate Normal at 5% Significance Level											
32												
33	Assuming Normal Distribution											
34	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
35	95% Student's-t UCL			22.06		95% Adjusted-CLT UCL (Chen-1995)					24.77	
36						95% Modified-t UCL (Johnson-1978)					22.62	
37												
38	Gamma GOF Test											
39	A-D Test Statistic			0.805		Anderson-Darling Gamma GOF Test						
40	5% A-D Critical Value			0.727		Data Not Gamma Distributed at 5% Significance Level						
41	K-S Test Statistic			0.269		Kolmogrov-Smirnoff Gamma GOF Test						
42	5% K-S Critical Value			0.282		Detected data appear Gamma Distributed at 5% Significance Level						
43	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
44												
45	Gamma Statistics											
46	k hat (MLE)			2.843		k star (bias corrected MLE)					1.969	
47	Theta hat (MLE)			5.159		Theta star (bias corrected MLE)					7.447	
48	nu hat (MLE)			51.18		nu star (bias corrected)					35.45	
49	MLE Mean (bias corrected)			14.67		MLE Sd (bias corrected)					10.45	
50						Approximate Chi Square Value (0.05)					22.83	
51	Adjusted Level of Significance			0.0231		Adjusted Chi Square Value					20.72	
52												
53	Assuming Gamma Distribution											
54	95% Approximate Gamma UCL (use when n>=50))			22.78		95% Adjusted Gamma UCL (use when n<50)					25.1	
55												

	A	B	C	D	E	F	G	H	I	J	K	L
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.855	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.829	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.236	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.295	Data appear Lognormal at 5% Significance Level					
61	Data appear Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					1.917	Mean of logged Data					2.5
65	Maximum of Logged Data					3.807	SD of logged Data					0.581
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					23.53	90% Chebyshev (MVUE) UCL					22.46
69	95% Chebyshev (MVUE) UCL					26.24	97.5% Chebyshev (MVUE) UCL					31.48
70	99% Chebyshev (MVUE) UCL					41.79						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					21.21	95% Jackknife UCL					22.06
77	95% Standard Bootstrap UCL					20.77	95% Bootstrap-t UCL					38.09
78	95% Hall's Bootstrap UCL					45.57	95% Percentile Bootstrap UCL					21.47
79	95% BCA Bootstrap UCL					24.77						
80	90% Chebyshev(Mean, Sd) UCL					26.6	95% Chebyshev(Mean, Sd) UCL					32
81	97.5% Chebyshev(Mean, Sd) UCL					39.5	99% Chebyshev(Mean, Sd) UCL					54.24
82												
83	Suggested UCL to Use											
84	95% Student's-t UCL					22.06						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
88	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
89	For additional insight the user may want to consult a statistician.											
90												
91												
92	Lead (aqua regia extractable)											
93												
94	General Statistics											
95	Total Number of Observations					9	Number of Distinct Observations					9
96							Number of Missing Observations					0
97	Minimum					19	Mean					168.5
98	Maximum					750	Median					41
99	SD					241.2	Std. Error of Mean					80.4
100	Coefficient of Variation					1.432	Skewness					2.112
101												
102	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
103	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
104	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
105	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
106												
107	Normal GOF Test											
108	Shapiro Wilk Test Statistic					0.684	Shapiro Wilk GOF Test					
109	5% Shapiro Wilk Critical Value					0.829	Data Not Normal at 5% Significance Level					
110	Lilliefors Test Statistic					0.309	Lilliefors GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L	
111	5% Lilliefors Critical Value					0.295	Data Not Normal at 5% Significance Level						
112	Data Not Normal at 5% Significance Level												
113													
114	Assuming Normal Distribution												
115	95% Normal UCL						95% UCLs (Adjusted for Skewness)						
116	95% Student's-t UCL				318	95% Adjusted-CLT UCL (Chen-1995)						361.2	
117						95% Modified-t UCL (Johnson-1978)						327.4	
118													
119	Gamma GOF Test												
120	A-D Test Statistic				0.763	Anderson-Darling Gamma GOF Test							
121	5% A-D Critical Value				0.752	Data Not Gamma Distributed at 5% Significance Level							
122	K-S Test Statistic				0.27	Kolmogrov-Smirnoff Gamma GOF Test							
123	5% K-S Critical Value				0.29	Detected data appear Gamma Distributed at 5% Significance Level							
124	Detected data follow Appr. Gamma Distribution at 5% Significance Level												
125													
126	Gamma Statistics												
127	k hat (MLE)				0.737	k star (bias corrected MLE)						0.566	
128	Theta hat (MLE)				228.4	Theta star (bias corrected MLE)						297.8	
129	nu hat (MLE)				13.27	nu star (bias corrected)						10.18	
130	MLE Mean (bias corrected)				168.5	MLE Sd (bias corrected)						224	
131						Approximate Chi Square Value (0.05)						4.056	
132	Adjusted Level of Significance				0.0231	Adjusted Chi Square Value						3.282	
133													
134	Assuming Gamma Distribution												
135	95% Approximate Gamma UCL (use when n>=50)				422.9	95% Adjusted Gamma UCL (use when n<50)						522.7	
136													
137	Lognormal GOF Test												
138	Shapiro Wilk Test Statistic				0.869	Shapiro Wilk Lognormal GOF Test							
139	5% Shapiro Wilk Critical Value				0.829	Data appear Lognormal at 5% Significance Level							
140	Lilliefors Test Statistic				0.231	Lilliefors Lognormal GOF Test							
141	5% Lilliefors Critical Value				0.295	Data appear Lognormal at 5% Significance Level							
142	Data appear Lognormal at 5% Significance Level												
143													
144	Lognormal Statistics												
145	Minimum of Logged Data				2.944	Mean of logged Data						4.313	
146	Maximum of Logged Data				6.62	SD of logged Data						1.318	
147													
148	Assuming Lognormal Distribution												
149	95% H-UCL			1138	90% Chebyshev (MVUE) UCL						363.3		
150	95% Chebyshev (MVUE) UCL			458.4	97.5% Chebyshev (MVUE) UCL						590.3		
151	99% Chebyshev (MVUE) UCL			849.5									
152													
153	Nonparametric Distribution Free UCL Statistics												
154	Data appear to follow a Discernible Distribution at 5% Significance Level												
155													
156	Nonparametric Distribution Free UCLs												
157	95% CLT UCL			300.7	95% Jackknife UCL						318		
158	95% Standard Bootstrap UCL			290.5	95% Bootstrap-t UCL						493.1		
159	95% Hall's Bootstrap UCL			681.5	95% Percentile Bootstrap UCL						305.2		
160	95% BCA Bootstrap UCL			353.6									
161	90% Chebyshev(Mean, Sd) UCL			409.7	95% Chebyshev(Mean, Sd) UCL						518.9		
162	97.5% Chebyshev(Mean, Sd) UCL			670.6	99% Chebyshev(Mean, Sd) UCL						968.5		
163													
164	Suggested UCL to Use												
165	95% Adjusted Gamma UCL			522.7									

	A	B	C	D	E	F	G	H	I	J	K	L
166												
167	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
168	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
169	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
170	For additional insight the user may want to consult a statistician.											
171												
172												
173	Benzo(a)anthracene GCMS											
174												
175	General Statistics											
176	Total Number of Observations					9	Number of Distinct Observations					9
177							Number of Missing Observations					0
178	Minimum					0.05	Mean					2.103
179	Maximum					14	Median					0.45
180	SD					4.501	Std. Error of Mean					1.5
181	Coefficient of Variation					2.14	Skewness					2.904
182												
183	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
184	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
185	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
186	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
187												
188	Normal GOF Test											
189	Shapiro Wilk Test Statistic					0.498	Shapiro Wilk GOF Test					
190	5% Shapiro Wilk Critical Value					0.829	Data Not Normal at 5% Significance Level					
191	Lilliefors Test Statistic					0.404	Lilliefors GOF Test					
192	5% Lilliefors Critical Value					0.295	Data Not Normal at 5% Significance Level					
193	Data Not Normal at 5% Significance Level											
194												
195	Assuming Normal Distribution											
196	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
197	95% Student's-t UCL					4.893	95% Adjusted-CLT UCL (Chen-1995)					6.122
198							95% Modified-t UCL (Johnson-1978)					5.135
199												
200	Gamma GOF Test											
201	A-D Test Statistic					0.808	Anderson-Darling Gamma GOF Test					
202	5% A-D Critical Value					0.776	Data Not Gamma Distributed at 5% Significance Level					
203	K-S Test Statistic					0.287	Kolmogrov-Smirnoff Gamma GOF Test					
204	5% K-S Critical Value					0.295	Detected data appear Gamma Distributed at 5% Significance Level					
205	Detected data follow Appr. Gamma Distribution at 5% Significance Level											
206												
207	Gamma Statistics											
208	k hat (MLE)					0.469	k star (bias corrected MLE)					0.386
209	Theta hat (MLE)					4.489	Theta star (bias corrected MLE)					5.442
210	nu hat (MLE)					8.435	nu star (bias corrected)					6.956
211	MLE Mean (bias corrected)					2.103	MLE Sd (bias corrected)					3.383
212							Approximate Chi Square Value (0.05)					2.147
213	Adjusted Level of Significance					0.0231	Adjusted Chi Square Value					1.629
214												
215	Assuming Gamma Distribution											
216	95% Approximate Gamma UCL (use when n>=50)					6.816	95% Adjusted Gamma UCL (use when n<50)					8.982
217												
218	Lognormal GOF Test											
219	Shapiro Wilk Test Statistic					0.937	Shapiro Wilk Lognormal GOF Test					
220	5% Shapiro Wilk Critical Value					0.829	Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L	
221	Lilliefors Test Statistic					0.197	Lilliefors Lognormal GOF Test						
222	5% Lilliefors Critical Value					0.295	Data appear Lognormal at 5% Significance Level						
223	Data appear Lognormal at 5% Significance Level												
224													
225	Lognormal Statistics												
226	Minimum of Logged Data					-2.996	Mean of logged Data					-0.626	
227	Maximum of Logged Data					2.639	SD of logged Data					1.693	
228													
229	Assuming Lognormal Distribution												
230	95% H-UCL					42.75	90% Chebyshev (MVUE) UCL					4.595	
231	95% Chebyshev (MVUE) UCL					5.914	97.5% Chebyshev (MVUE) UCL					7.745	
232	99% Chebyshev (MVUE) UCL					11.34							
233													
234	Nonparametric Distribution Free UCL Statistics												
235	Data appear to follow a Discernible Distribution at 5% Significance Level												
236													
237	Nonparametric Distribution Free UCLs												
238	95% CLT UCL					4.571	95% Jackknife UCL					4.893	
239	95% Standard Bootstrap UCL					4.424	95% Bootstrap-t UCL					24.27	
240	95% Hall's Bootstrap UCL					15.9	95% Percentile Bootstrap UCL					4.998	
241	95% BCA Bootstrap UCL					6.548							
242	90% Chebyshev(Mean, Sd) UCL					6.604	95% Chebyshev(Mean, Sd) UCL					8.642	
243	97.5% Chebyshev(Mean, Sd) UCL					11.47	99% Chebyshev(Mean, Sd) UCL					17.03	
244													
245	Suggested UCL to Use												
246	95% Adjusted Gamma UCL					8.982							
247													
248	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
249	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)												
250	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.												
251	For additional insight the user may want to consult a statistician.												
252													
253													
254	Chrysene GCMS												
255													
256	General Statistics												
257	Total Number of Observations					9	Number of Distinct Observations					8	
258							Number of Missing Observations					0	
259	Minimum					0.05	Mean					2.006	
260	Maximum					12.9	Median					0.51	
261	SD					4.144	Std. Error of Mean					1.381	
262	Coefficient of Variation					2.066	Skewness					2.847	
263													
264	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use												
265	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.												
266	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).												
267	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0												
268													
269	Normal GOF Test												
270	Shapiro Wilk Test Statistic					0.524	Shapiro Wilk GOF Test						
271	5% Shapiro Wilk Critical Value					0.829	Data Not Normal at 5% Significance Level						
272	Lilliefors Test Statistic					0.365	Lilliefors GOF Test						
273	5% Lilliefors Critical Value					0.295	Data Not Normal at 5% Significance Level						
274	Data Not Normal at 5% Significance Level												
275													

	A	B	C	D	E	F	G	H	I	J	K	L
276	Assuming Normal Distribution											
277	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
278	95% Student's-t UCL				4.574	95% Adjusted-CLT UCL (Chen-1995)						5.678
279						95% Modified-t UCL (Johnson-1978)						4.793
280												
281	Gamma GOF Test											
282	A-D Test Statistic				0.643	Anderson-Darling Gamma GOF Test						
283	5% A-D Critical Value				0.776	Detected data appear Gamma Distributed at 5% Significance Level						
284	K-S Test Statistic				0.266	Kolmogrov-Smirnoff Gamma GOF Test						
285	5% K-S Critical Value				0.295	Detected data appear Gamma Distributed at 5% Significance Level						
286	Detected data appear Gamma Distributed at 5% Significance Level											
287												
288	Gamma Statistics											
289	k hat (MLE)				0.469	k star (bias corrected MLE)						0.387
290	Theta hat (MLE)				4.275	Theta star (bias corrected MLE)						5.185
291	nu hat (MLE)				8.444	nu star (bias corrected)						6.963
292	MLE Mean (bias corrected)				2.006	MLE Sd (bias corrected)						3.225
293						Approximate Chi Square Value (0.05)						2.15
294	Adjusted Level of Significance				0.0231	Adjusted Chi Square Value						1.632
295												
296	Assuming Gamma Distribution											
297	95% Approximate Gamma UCL (use when n>=50)				6.494	95% Adjusted Gamma UCL (use when n<50)						8.557
298												
299	Lognormal GOF Test											
300	Shapiro Wilk Test Statistic				0.964	Shapiro Wilk Lognormal GOF Test						
301	5% Shapiro Wilk Critical Value				0.829	Data appear Lognormal at 5% Significance Level						
302	Lilliefors Test Statistic				0.167	Lilliefors Lognormal GOF Test						
303	5% Lilliefors Critical Value				0.295	Data appear Lognormal at 5% Significance Level						
304	Data appear Lognormal at 5% Significance Level											
305												
306	Lognormal Statistics											
307	Minimum of Logged Data				-2.996	Mean of logged Data						-0.672
308	Maximum of Logged Data				2.557	SD of logged Data						1.717
309												
310	Assuming Lognormal Distribution											
311	95% H-UCL				45.91	90% Chebyshev (MVUE) UCL						4.555
312	95% Chebyshev (MVUE) UCL				5.868	97.5% Chebyshev (MVUE) UCL						7.691
313	99% Chebyshev (MVUE) UCL				11.27							
314												
315	Nonparametric Distribution Free UCL Statistics											
316	Data appear to follow a Discernible Distribution at 5% Significance Level											
317												
318	Nonparametric Distribution Free UCLs											
319	95% CLT UCL				4.278	95% Jackknife UCL						4.574
320	95% Standard Bootstrap UCL				4.138	95% Bootstrap-t UCL						21
321	95% Hall's Bootstrap UCL				14.36	95% Percentile Bootstrap UCL						4.627
322	95% BCA Bootstrap UCL				6.01							
323	90% Chebyshev(Mean, Sd) UCL				6.15	95% Chebyshev(Mean, Sd) UCL						8.027
324	97.5% Chebyshev(Mean, Sd) UCL				10.63	99% Chebyshev(Mean, Sd) UCL						15.75
325												
326	Suggested UCL to Use											
327	95% Adjusted Gamma UCL				8.557							
328												
329	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
330	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											

	A	B	C	D	E	F	G	H	I	J	K	L
331	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
332	For additional insight the user may want to consult a statistician.											
333												
334												
335	Benzo (b) fluoranthene GCMS											
336												
337	General Statistics											
338	Total Number of Observations				9	Number of Distinct Observations				8		
339						Number of Missing Observations				0		
340	Minimum				0.05	Mean				2.112		
341	Maximum				13.2	Median				0.65		
342	SD				4.21	Std. Error of Mean				1.403		
343	Coefficient of Variation				1.993	Skewness				2.862		
344												
345	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
346	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
347	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
348	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
349												
350	Normal GOF Test											
351	Shapiro Wilk Test Statistic				0.526	Shapiro Wilk GOF Test						
352	5% Shapiro Wilk Critical Value				0.829	Data Not Normal at 5% Significance Level						
353	Lilliefors Test Statistic				0.408	Lilliefors GOF Test						
354	5% Lilliefors Critical Value				0.295	Data Not Normal at 5% Significance Level						
355	Data Not Normal at 5% Significance Level											
356												
357	Assuming Normal Distribution											
358	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
359	95% Student's-t UCL				4.722	95% Adjusted-CLT UCL (Chen-1995)				5.851		
360						95% Modified-t UCL (Johnson-1978)				4.945		
361												
362	Gamma GOF Test											
363	A-D Test Statistic				0.571	Anderson-Darling Gamma GOF Test						
364	5% A-D Critical Value				0.773	Detected data appear Gamma Distributed at 5% Significance Level						
365	K-S Test Statistic				0.235	Kolmogrov-Smirnoff Gamma GOF Test						
366	5% K-S Critical Value				0.295	Detected data appear Gamma Distributed at 5% Significance Level						
367	Detected data appear Gamma Distributed at 5% Significance Level											
368												
369	Gamma Statistics											
370	k hat (MLE)				0.488	k star (bias corrected MLE)				0.4		
371	Theta hat (MLE)				4.324	Theta star (bias corrected MLE)				5.285		
372	nu hat (MLE)				8.792	nu star (bias corrected)				7.195		
373	MLE Mean (bias corrected)				2.112	MLE Sd (bias corrected)				3.341		
374						Approximate Chi Square Value (0.05)				2.278		
375	Adjusted Level of Significance				0.0231	Adjusted Chi Square Value				1.74		
376												
377	Assuming Gamma Distribution											
378	95% Approximate Gamma UCL (use when n>=50)				6.671	95% Adjusted Gamma UCL (use when n<50)				8.734		
379												
380	Lognormal GOF Test											
381	Shapiro Wilk Test Statistic				0.942	Shapiro Wilk Lognormal GOF Test						
382	5% Shapiro Wilk Critical Value				0.829	Data appear Lognormal at 5% Significance Level						
383	Lilliefors Test Statistic				0.14	Lilliefors Lognormal GOF Test						
384	5% Lilliefors Critical Value				0.295	Data appear Lognormal at 5% Significance Level						
385	Data appear Lognormal at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
386												
387	Lognormal Statistics											
388	Minimum of Logged Data				-2.996		Mean of logged Data				-0.557	
389	Maximum of Logged Data				2.58		SD of logged Data				1.765	
390												
391	Assuming Lognormal Distribution											
392	95% H-UCL				65.69		90% Chebyshev (MVUE) UCL				5.509	
393	95% Chebyshev (MVUE) UCL				7.111		97.5% Chebyshev (MVUE) UCL				9.336	
394	99% Chebyshev (MVUE) UCL				13.7							
395												
396	Nonparametric Distribution Free UCL Statistics											
397	Data appear to follow a Discernible Distribution at 5% Significance Level											
398												
399	Nonparametric Distribution Free UCLs											
400	95% CLT UCL				4.421		95% Jackknife UCL				4.722	
401	95% Standard Bootstrap UCL				4.321		95% Bootstrap-t UCL				15.21	
402	95% Hall's Bootstrap UCL				13.04		95% Percentile Bootstrap UCL				4.768	
403	95% BCA Bootstrap UCL				6.193							
404	90% Chebyshev(Mean, Sd) UCL				6.322		95% Chebyshev(Mean, Sd) UCL				8.229	
405	97.5% Chebyshev(Mean, Sd) UCL				10.88		99% Chebyshev(Mean, Sd) UCL				16.08	
406												
407	Suggested UCL to Use											
408	95% Adjusted Gamma UCL				8.734							
409												
410	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
411	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
412	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
413	For additional insight the user may want to consult a statistician.											
414												
415												
416	Benzo(k)fluoranthene GCMS											
417												
418	General Statistics											
419	Total Number of Observations				9		Number of Distinct Observations				8	
420							Number of Missing Observations				0	
421	Minimum				0.05		Mean				1.972	
422	Maximum				13.3		Median				0.3	
423	SD				4.299		Std. Error of Mean				1.433	
424	Coefficient of Variation				2.18		Skewness				2.871	
425												
426	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
427	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
428	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
429	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
430												
431	Normal GOF Test											
432	Shapiro Wilk Test Statistic				0.507		Shapiro Wilk GOF Test					
433	5% Shapiro Wilk Critical Value				0.829		Data Not Normal at 5% Significance Level					
434	Lilliefors Test Statistic				0.391		Lilliefors GOF Test					
435	5% Lilliefors Critical Value				0.295		Data Not Normal at 5% Significance Level					
436	Data Not Normal at 5% Significance Level											
437												
438	Assuming Normal Distribution											
439	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
440	95% Student's-t UCL				4.637		95% Adjusted-CLT UCL (Chen-1995)				5.794	

	A	B	C	D	E	F	G	H	I	J	K	L
441							95% Modified-t UCL (Johnson-1978)					4.865
442												
443	Gamma GOF Test											
444	A-D Test Statistic					0.801	Anderson-Darling Gamma GOF Test					
445	5% A-D Critical Value					0.786	Data Not Gamma Distributed at 5% Significance Level					
446	K-S Test Statistic					0.312	Kolmogrov-Smirnoff Gamma GOF Test					
447	5% K-S Critical Value					0.297	Data Not Gamma Distributed at 5% Significance Level					
448	Data Not Gamma Distributed at 5% Significance Level											
449												
450	Gamma Statistics											
451	k hat (MLE)					0.418	k star (bias corrected MLE)					0.352
452	Theta hat (MLE)					4.723	Theta star (bias corrected MLE)					5.596
453	nu hat (MLE)					7.516	nu star (bias corrected)					6.344
454	MLE Mean (bias corrected)					1.972	MLE Sd (bias corrected)					3.322
455							Approximate Chi Square Value (0.05)					1.818
456	Adjusted Level of Significance					0.0231	Adjusted Chi Square Value					1.354
457												
458	Assuming Gamma Distribution											
459	95% Approximate Gamma UCL (use when n>=50))					6.882	95% Adjusted Gamma UCL (use when n<50)					9.239
460												
461	Lognormal GOF Test											
462	Shapiro Wilk Test Statistic					0.926	Shapiro Wilk Lognormal GOF Test					
463	5% Shapiro Wilk Critical Value					0.829	Data appear Lognormal at 5% Significance Level					
464	Lilliefors Test Statistic					0.229	Lilliefors Lognormal GOF Test					
465	5% Lilliefors Critical Value					0.295	Data appear Lognormal at 5% Significance Level					
466	Data appear Lognormal at 5% Significance Level											
467												
468	Lognormal Statistics											
469	Minimum of Logged Data					-2.996	Mean of logged Data					-0.886
470	Maximum of Logged Data					2.588	SD of logged Data					1.808
471												
472	Assuming Lognormal Distribution											
473	95% H-UCL					59.3	90% Chebyshev (MVUE) UCL					4.249
474	95% Chebyshev (MVUE) UCL					5.494	97.5% Chebyshev (MVUE) UCL					7.222
475	99% Chebyshev (MVUE) UCL					10.62						
476												
477	Nonparametric Distribution Free UCL Statistics											
478	Data appear to follow a Discernible Distribution at 5% Significance Level											
479												
480	Nonparametric Distribution Free UCLs											
481	95% CLT UCL					4.329	95% Jackknife UCL					4.637
482	95% Standard Bootstrap UCL					4.127	95% Bootstrap-t UCL					19.43
483	95% Hall's Bootstrap UCL					18.16	95% Percentile Bootstrap UCL					4.757
484	95% BCA Bootstrap UCL					6.35						
485	90% Chebyshev(Mean, Sd) UCL					6.271	95% Chebyshev(Mean, Sd) UCL					8.218
486	97.5% Chebyshev(Mean, Sd) UCL					10.92	99% Chebyshev(Mean, Sd) UCL					16.23
487												
488	Suggested UCL to Use											
489	99% Chebyshev (Mean, Sd) UCL					16.23						
490												
491	Recommended UCL exceeds the maximum observation											
492												
493	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
494	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
495	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											

	A	B	C	D	E	F	G	H	I	J	K	L
496	For additional insight the user may want to consult a statistician.											
497												
498												
499	Benzo (a) pyrene GCMS											
500												
501	General Statistics											
502	Total Number of Observations				9		Number of Distinct Observations				8	
503							Number of Missing Observations				0	
504	Minimum				0.05		Mean				2.624	
505	Maximum				16.6		Median				0.52	
506	SD				5.341		Std. Error of Mean				1.78	
507	Coefficient of Variation				2.035		Skewness				2.8	
508												
509	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
510	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
511	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
512	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
513												
514	Normal GOF Test											
515	Shapiro Wilk Test Statistic				0.54		Shapiro Wilk GOF Test					
516	5% Shapiro Wilk Critical Value				0.829		Data Not Normal at 5% Significance Level					
517	Lilliefors Test Statistic				0.351		Lilliefors GOF Test					
518	5% Lilliefors Critical Value				0.295		Data Not Normal at 5% Significance Level					
519	Data Not Normal at 5% Significance Level											
520												
521	Assuming Normal Distribution											
522	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
523	95% Student's-t UCL			5.935		95% Adjusted-CLT UCL (Chen-1995)					7.328	
524						95% Modified-t UCL (Johnson-1978)					6.212	
525												
526	Gamma GOF Test											
527	A-D Test Statistic			0.577		Anderson-Darling Gamma GOF Test						
528	5% A-D Critical Value			0.783		Detected data appear Gamma Distributed at 5% Significance Level						
529	K-S Test Statistic			0.274		Kolmogrov-Smirnoff Gamma GOF Test						
530	5% K-S Critical Value			0.296		Detected data appear Gamma Distributed at 5% Significance Level						
531	Detected data appear Gamma Distributed at 5% Significance Level											
532												
533	Gamma Statistics											
534	k hat (MLE)			0.435		k star (bias corrected MLE)					0.364	
535	Theta hat (MLE)			6.028		Theta star (bias corrected MLE)					7.203	
536	nu hat (MLE)			7.837		nu star (bias corrected)					6.558	
537	MLE Mean (bias corrected)			2.624		MLE Sd (bias corrected)					4.348	
538						Approximate Chi Square Value (0.05)					1.931	
539	Adjusted Level of Significance			0.0231		Adjusted Chi Square Value					1.448	
540												
541	Assuming Gamma Distribution											
542	95% Approximate Gamma UCL (use when n>=50)			8.911		95% Adjusted Gamma UCL (use when n<50)					11.88	
543												
544	Lognormal GOF Test											
545	Shapiro Wilk Test Statistic			0.948		Shapiro Wilk Lognormal GOF Test						
546	5% Shapiro Wilk Critical Value			0.829		Data appear Lognormal at 5% Significance Level						
547	Lilliefors Test Statistic			0.174		Lilliefors Lognormal GOF Test						
548	5% Lilliefors Critical Value			0.295		Data appear Lognormal at 5% Significance Level						
549	Data appear Lognormal at 5% Significance Level											
550												

	A	B	C	D	E	F	G	H	I	J	K	L
551	Lognormal Statistics											
552	Minimum of Logged Data					-2.996	Mean of logged Data					-0.526
553	Maximum of Logged Data					2.809	SD of logged Data					1.885
554												
555	Assuming Lognormal Distribution											
556	95% H-UCL					128.8	90% Chebyshev (MVUE) UCL					6.889
557	95% Chebyshev (MVUE) UCL					8.933	97.5% Chebyshev (MVUE) UCL					11.77
558	99% Chebyshev (MVUE) UCL					17.34						
559												
560	Nonparametric Distribution Free UCL Statistics											
561	Data appear to follow a Discernible Distribution at 5% Significance Level											
562												
563	Nonparametric Distribution Free UCLs											
564	95% CLT UCL					5.553	95% Jackknife UCL					5.935
565	95% Standard Bootstrap UCL					5.35	95% Bootstrap-t UCL					21.63
566	95% Hall's Bootstrap UCL					18.94	95% Percentile Bootstrap UCL					5.956
567	95% BCA Bootstrap UCL					7.931						
568	90% Chebyshev(Mean, Sd) UCL					7.965	95% Chebyshev(Mean, Sd) UCL					10.38
569	97.5% Chebyshev(Mean, Sd) UCL					13.74	99% Chebyshev(Mean, Sd) UCL					20.34
570												
571	Suggested UCL to Use											
572	95% Adjusted Gamma UCL					11.88						
573												
574	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
575	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
576	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
577	For additional insight the user may want to consult a statistician.											
578												
579												
580	Indeno (1,2,3-cd) pyrene GCMS											
581												
582	General Statistics											
583	Total Number of Observations					9	Number of Distinct Observations					8
584							Number of Missing Observations					0
585	Minimum					0.05	Mean					2.163
586	Maximum					13.5	Median					0.34
587	SD					4.352	Std. Error of Mean					1.451
588	Coefficient of Variation					2.012	Skewness					2.752
589												
590	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
591	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
592	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
593	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
594												
595	Normal GOF Test											
596	Shapiro Wilk Test Statistic					0.55	Shapiro Wilk GOF Test					
597	5% Shapiro Wilk Critical Value					0.829	Data Not Normal at 5% Significance Level					
598	Lilliefors Test Statistic					0.367	Lilliefors GOF Test					
599	5% Lilliefors Critical Value					0.295	Data Not Normal at 5% Significance Level					
600	Data Not Normal at 5% Significance Level											
601												
602	Assuming Normal Distribution											
603	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
604	95% Student's-t UCL					4.861	95% Adjusted-CLT UCL (Chen-1995)					5.972
605							95% Modified-t UCL (Johnson-1978)					5.083

	A	B	C	D	E	F	G	H	I	J	K	L
606												
607	Gamma GOF Test											
608	A-D Test Statistic					0.636	Anderson-Darling Gamma GOF Test					
609	5% A-D Critical Value					0.785	Detected data appear Gamma Distributed at 5% Significance Level					
610	K-S Test Statistic					0.276	Kolmogrov-Smirnoff Gamma GOF Test					
611	5% K-S Critical Value					0.297	Detected data appear Gamma Distributed at 5% Significance Level					
612	Detected data appear Gamma Distributed at 5% Significance Level											
613												
614	Gamma Statistics											
615	k hat (MLE)					0.422	k star (bias corrected MLE)					0.355
616	Theta hat (MLE)					5.129	Theta star (bias corrected MLE)					6.09
617	nu hat (MLE)					7.592	nu star (bias corrected)					6.395
618	MLE Mean (bias corrected)					2.163	MLE Sd (bias corrected)					3.63
619							Approximate Chi Square Value (0.05)					1.845
620	Adjusted Level of Significance					0.0231	Adjusted Chi Square Value					1.376
621												
622	Assuming Gamma Distribution											
623	95% Approximate Gamma UCL (use when n>=50)					7.499	95% Adjusted Gamma UCL (use when n<50)					10.05
624												
625	Lognormal GOF Test											
626	Shapiro Wilk Test Statistic					0.933	Shapiro Wilk Lognormal GOF Test					
627	5% Shapiro Wilk Critical Value					0.829	Data appear Lognormal at 5% Significance Level					
628	Lilliefors Test Statistic					0.176	Lilliefors Lognormal GOF Test					
629	5% Lilliefors Critical Value					0.295	Data appear Lognormal at 5% Significance Level					
630	Data appear Lognormal at 5% Significance Level											
631												
632	Lognormal Statistics											
633	Minimum of Logged Data					-2.996	Mean of logged Data					-0.775
634	Maximum of Logged Data					2.603	SD of logged Data					1.895
635												
636	Assuming Lognormal Distribution											
637	95% H-UCL					105.7	90% Chebyshev (MVUE) UCL					5.451
638	95% Chebyshev (MVUE) UCL					7.07	97.5% Chebyshev (MVUE) UCL					9.318
639	99% Chebyshev (MVUE) UCL					13.73						
640												
641	Nonparametric Distribution Free UCL Statistics											
642	Data appear to follow a Discernible Distribution at 5% Significance Level											
643												
644	Nonparametric Distribution Free UCLs											
645	95% CLT UCL					4.55	95% Jackknife UCL					4.861
646	95% Standard Bootstrap UCL					4.44	95% Bootstrap-t UCL					12.77
647	95% Hall's Bootstrap UCL					12.91	95% Percentile Bootstrap UCL					4.858
648	95% BCA Bootstrap UCL					6.122						
649	90% Chebyshev(Mean, Sd) UCL					6.516	95% Chebyshev(Mean, Sd) UCL					8.487
650	97.5% Chebyshev(Mean, Sd) UCL					11.22	99% Chebyshev(Mean, Sd) UCL					16.6
651												
652	Suggested UCL to Use											
653	95% Adjusted Gamma UCL					10.05						
654												
655	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
656	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
657	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
658	For additional insight the user may want to consult a statistician.											
659												
660												

	A	B	C	D	E	F	G	H	I	J	K	L
661	Dibenzo(a,h)anthracene GCMS											
662												
663	General Statistics											
664	Total Number of Observations				9		Number of Distinct Observations				3	
665							Number of Missing Observations				0	
666	Minimum				0.05		Mean				1.047	
667	Maximum				7.34		Median				0.05	
668	SD				2.388		Std. Error of Mean				0.796	
669	Coefficient of Variation				2.281		Skewness				2.872	
670												
671	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
672	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
673	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
674	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.0											
675												
676	Normal GOF Test											
677	Shapiro Wilk Test Statistic				0.491		Shapiro Wilk GOF Test					
678	5% Shapiro Wilk Critical Value				0.829		Data Not Normal at 5% Significance Level					
679	Lilliefors Test Statistic				0.415		Lilliefors GOF Test					
680	5% Lilliefors Critical Value				0.295		Data Not Normal at 5% Significance Level					
681	Data Not Normal at 5% Significance Level											
682												
683	Assuming Normal Distribution											
684	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
685	95% Student's-t UCL				2.527		95% Adjusted-CLT UCL (Chen-1995)				3.17	
686							95% Modified-t UCL (Johnson-1978)				2.654	
687												
688	Gamma GOF Test											
689	A-D Test Statistic				1.521		Anderson-Darling Gamma GOF Test					
690	5% A-D Critical Value				0.796		Data Not Gamma Distributed at 5% Significance Level					
691	K-S Test Statistic				0.409		Kolmogrov-Smirnoff Gamma GOF Test					
692	5% K-S Critical Value				0.299		Data Not Gamma Distributed at 5% Significance Level					
693	Data Not Gamma Distributed at 5% Significance Level											
694												
695	Gamma Statistics											
696	k hat (MLE)				0.362		k star (bias corrected MLE)				0.315	
697	Theta hat (MLE)				2.891		Theta star (bias corrected MLE)				3.318	
698	nu hat (MLE)				6.517		nu star (bias corrected)				5.678	
699	MLE Mean (bias corrected)				1.047		MLE Sd (bias corrected)				1.864	
700						Approximate Chi Square Value (0.05)				1.477		
701	Adjusted Level of Significance				0.0231		Adjusted Chi Square Value				1.074	
702												
703	Assuming Gamma Distribution											
704	95% Approximate Gamma UCL (use when n>=50))				4.022		95% Adjusted Gamma UCL (use when n<50)				5.532	
705												
706	Lognormal GOF Test											
707	Shapiro Wilk Test Statistic				0.689		Shapiro Wilk Lognormal GOF Test					
708	5% Shapiro Wilk Critical Value				0.829		Data Not Lognormal at 5% Significance Level					
709	Lilliefors Test Statistic				0.403		Lilliefors Lognormal GOF Test					
710	5% Lilliefors Critical Value				0.295		Data Not Lognormal at 5% Significance Level					
711	Data Not Lognormal at 5% Significance Level											
712												
713	Lognormal Statistics											
714	Minimum of Logged Data				-2.996		Mean of logged Data				-1.802	
715	Maximum of Logged Data				1.993		SD of logged Data				1.892	

	A	B	C	D	E	F	G	H	I	J	K	L
716												
717	Assuming Lognormal Distribution											
718	95% H-UCL				37.31	90% Chebyshev (MVUE) UCL					1.945	
719	95% Chebyshev (MVUE) UCL				2.522	97.5% Chebyshev (MVUE) UCL					3.324	
720	99% Chebyshev (MVUE) UCL				4.898							
721												
722	Nonparametric Distribution Free UCL Statistics											
723	Data do not follow a Discernible Distribution (0.05)											
724												
725	Nonparametric Distribution Free UCLs											
726	95% CLT UCL				2.356	95% Jackknife UCL					2.527	
727	95% Standard Bootstrap UCL				N/A	95% Bootstrap-t UCL					N/A	
728	95% Hall's Bootstrap UCL				N/A	95% Percentile Bootstrap UCL					N/A	
729	95% BCA Bootstrap UCL				N/A							
730	90% Chebyshev(Mean, Sd) UCL				3.435	95% Chebyshev(Mean, Sd) UCL					4.516	
731	97.5% Chebyshev(Mean, Sd) UCL				6.017	99% Chebyshev(Mean, Sd) UCL					8.966	
732												
733	Suggested UCL to Use											
734	Recommendation Provided only for 95% Confidence Coefficient											
735												
736	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
737	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
738	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
739	For additional insight the user may want to consult a statistician.											
740												

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