

Site Details:

MIRFIELD AIR CADET CENTRE,
 HUDDERSFIELD ROAD,
 MIRFIELD, WF14 9DQ

Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: National Grid

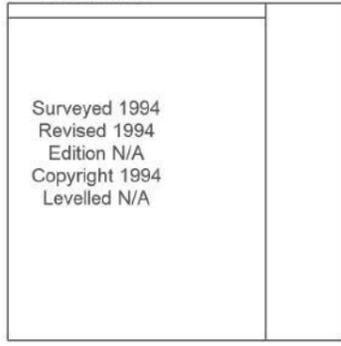
Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



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 Edition N/A
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Surveyed 1994
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 Edition N/A
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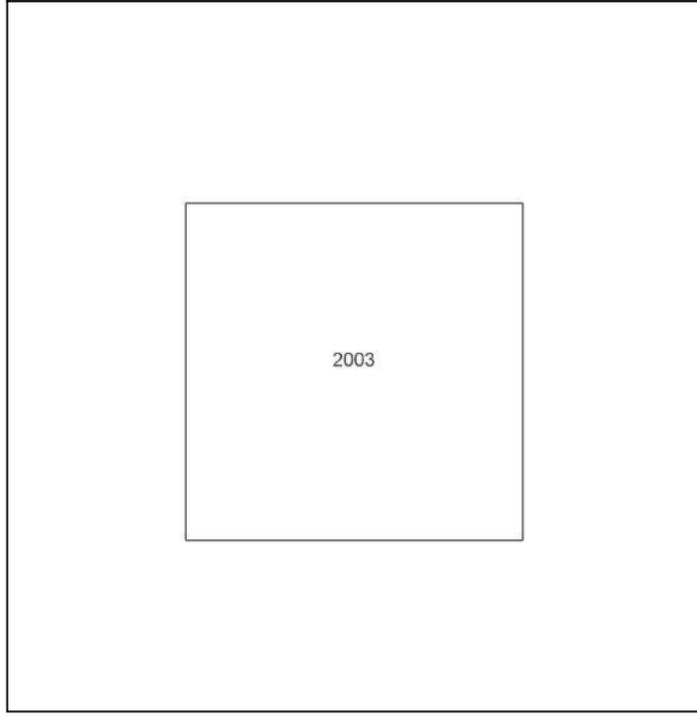
Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1855

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1851
Revised N/A
Edition 1855
Copyright N/A
Levelled N/A

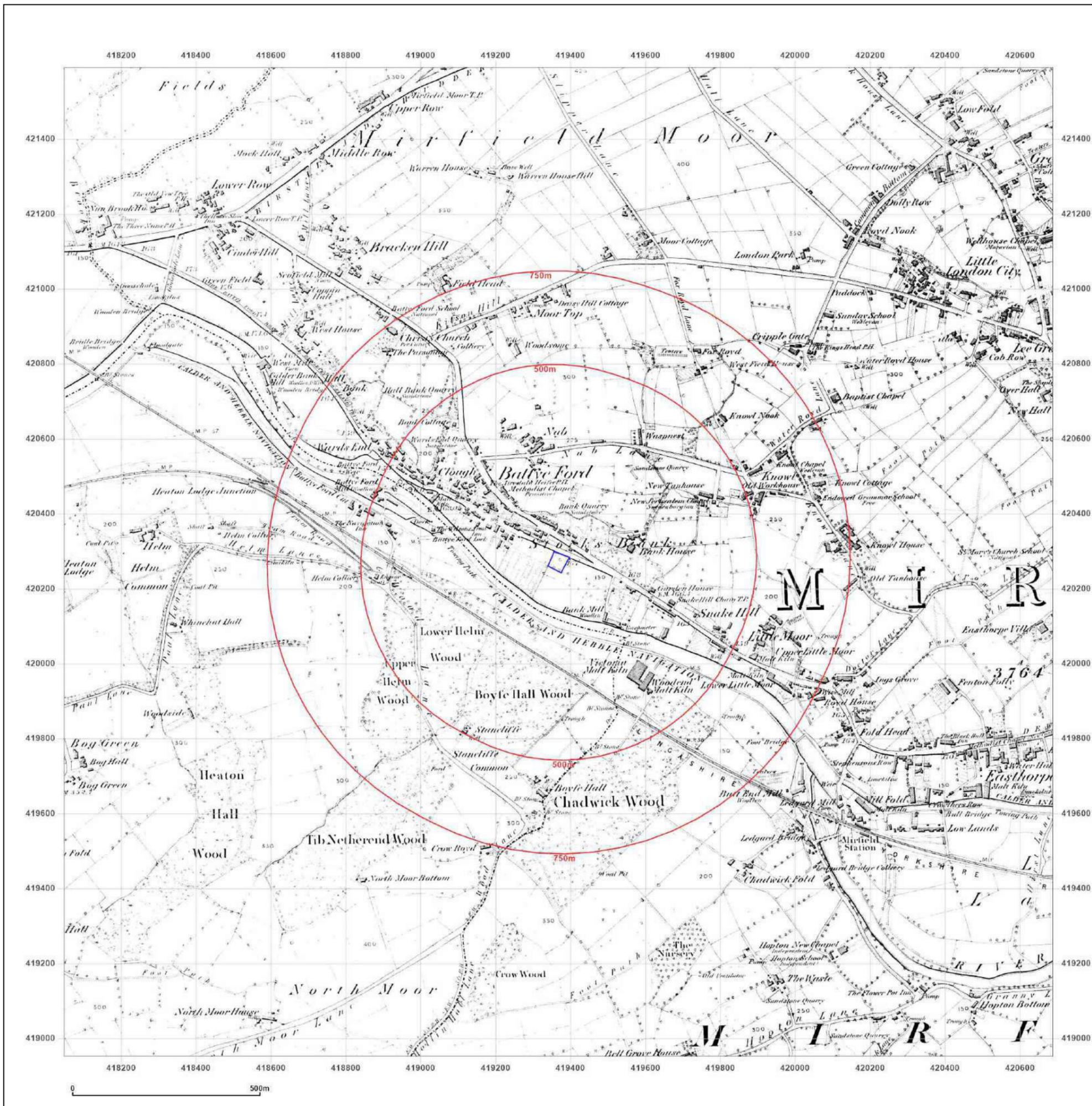


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1892

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1892
Revised 1892
Edition N/A
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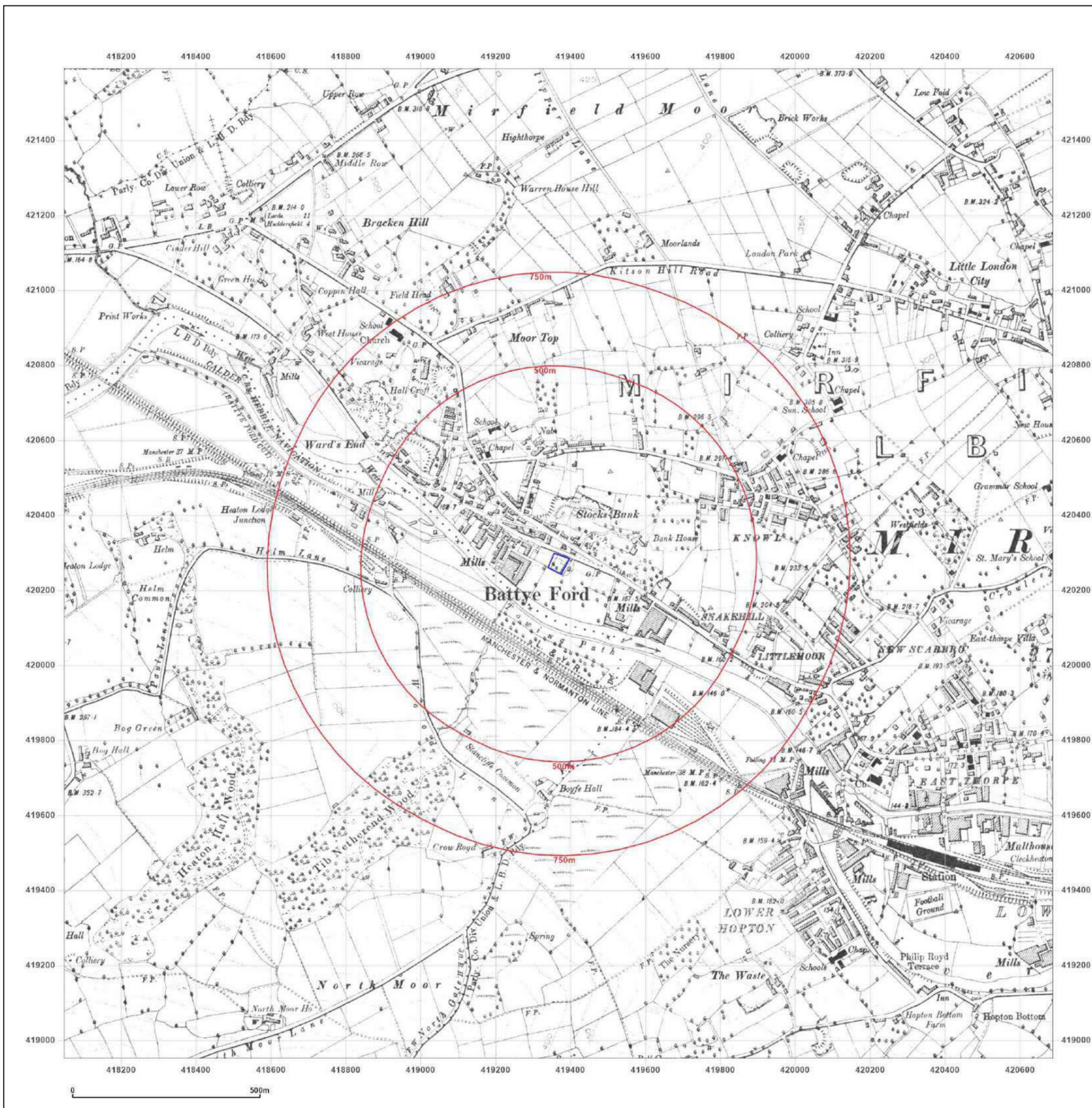


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MIRFIELD, WF14 9DQ

Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1905

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1892
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

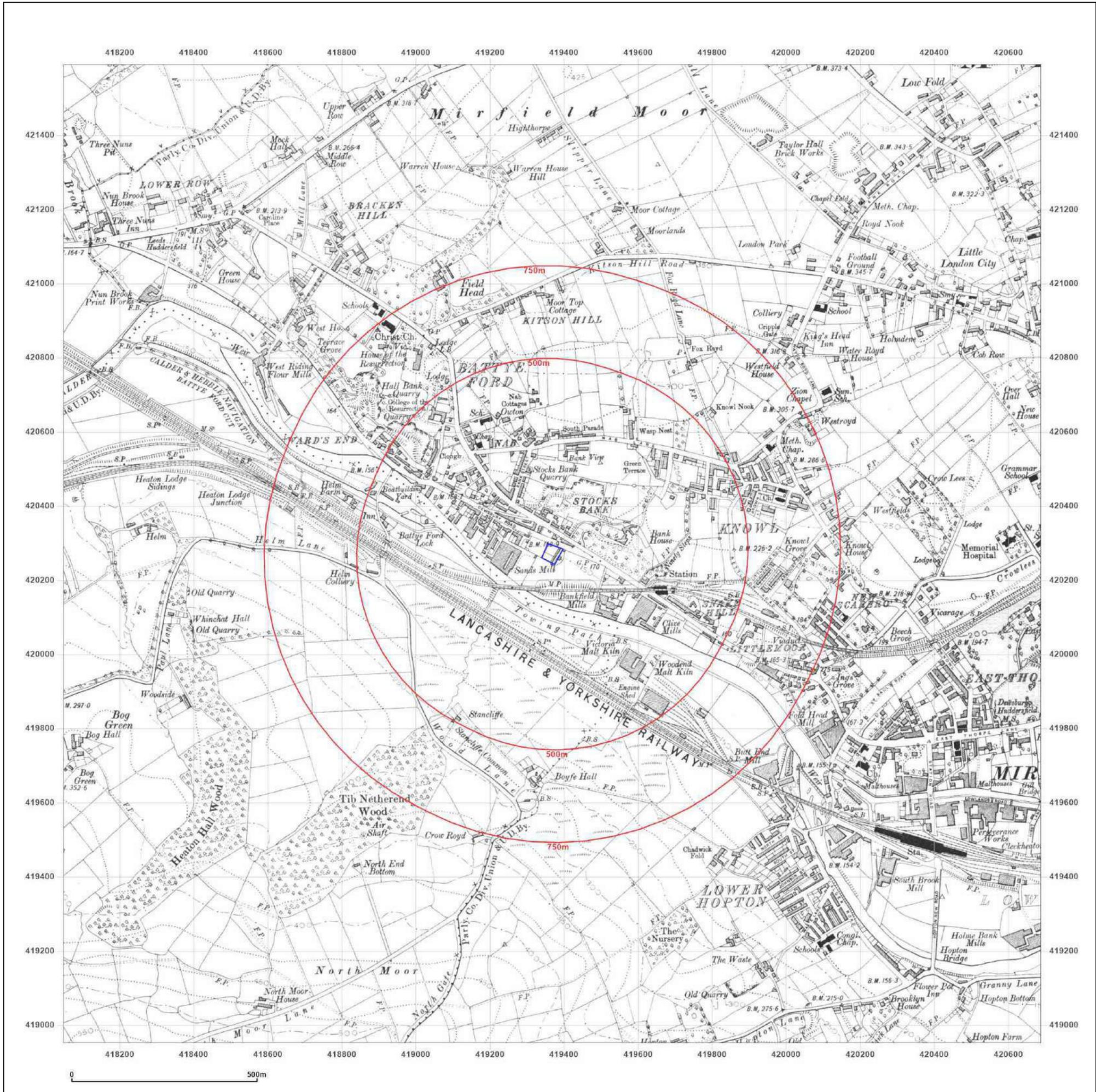


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1931

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1851
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

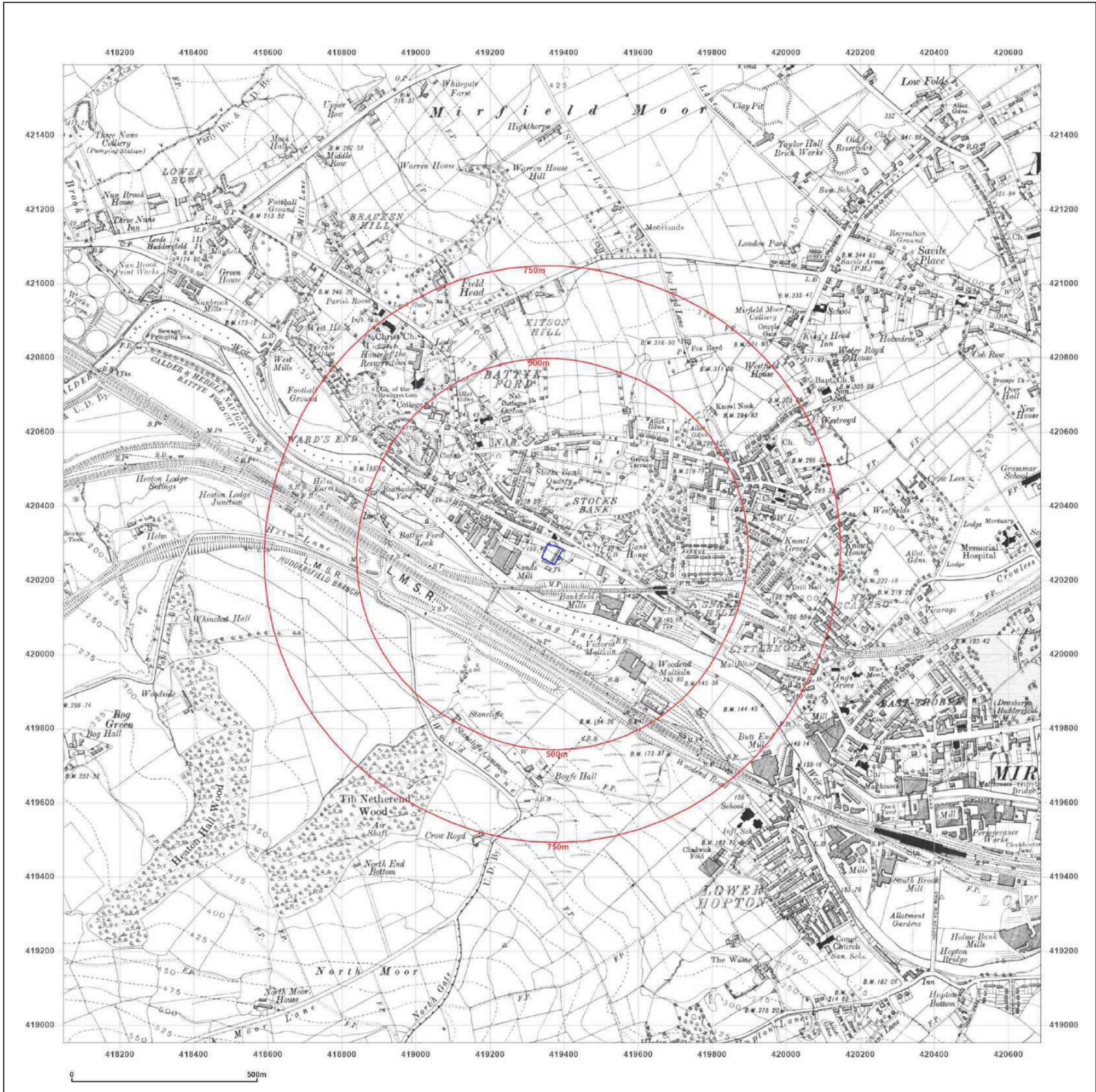


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1851
Revised 1938
Edition 1938
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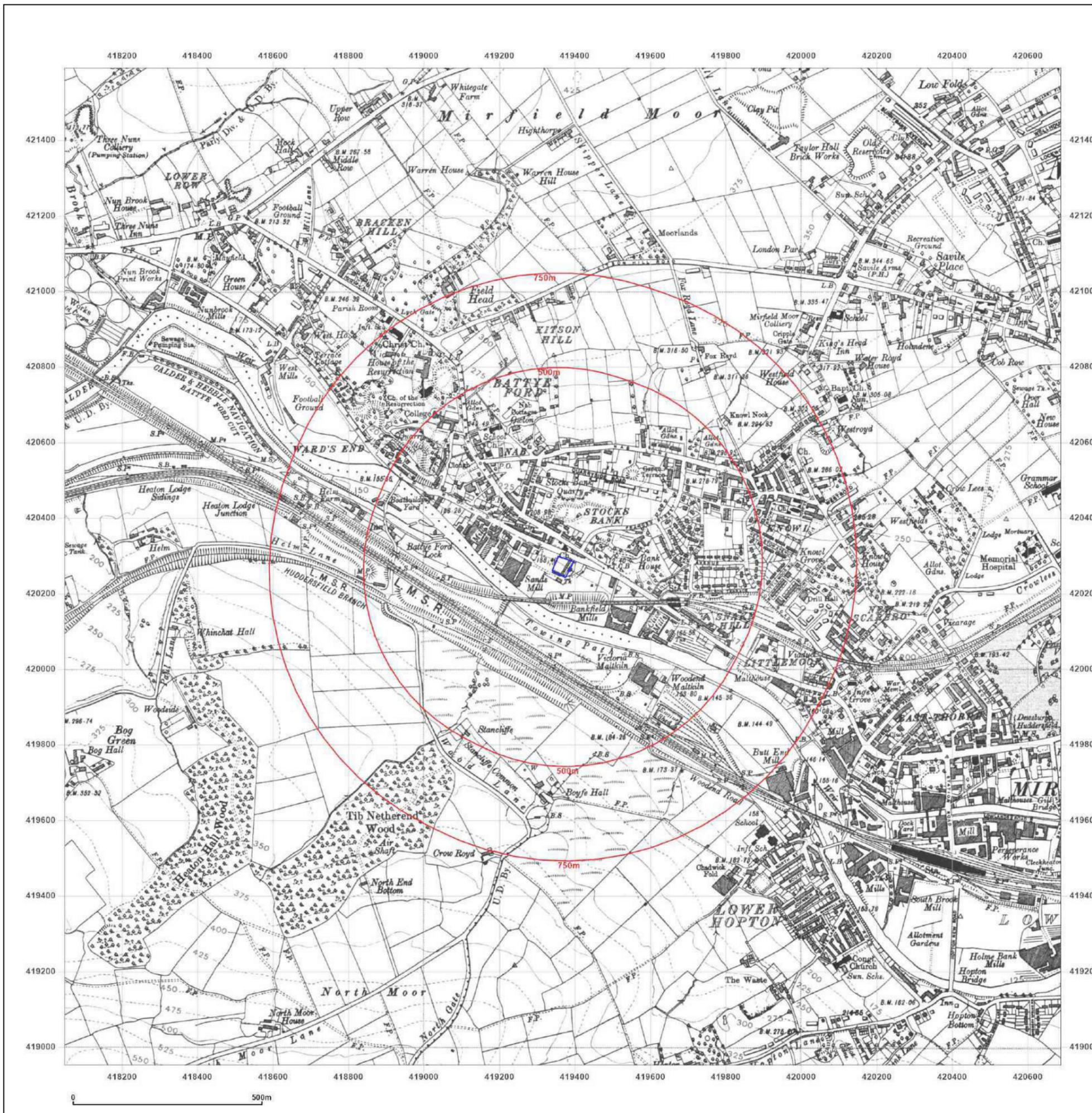


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1948
Edition N/A
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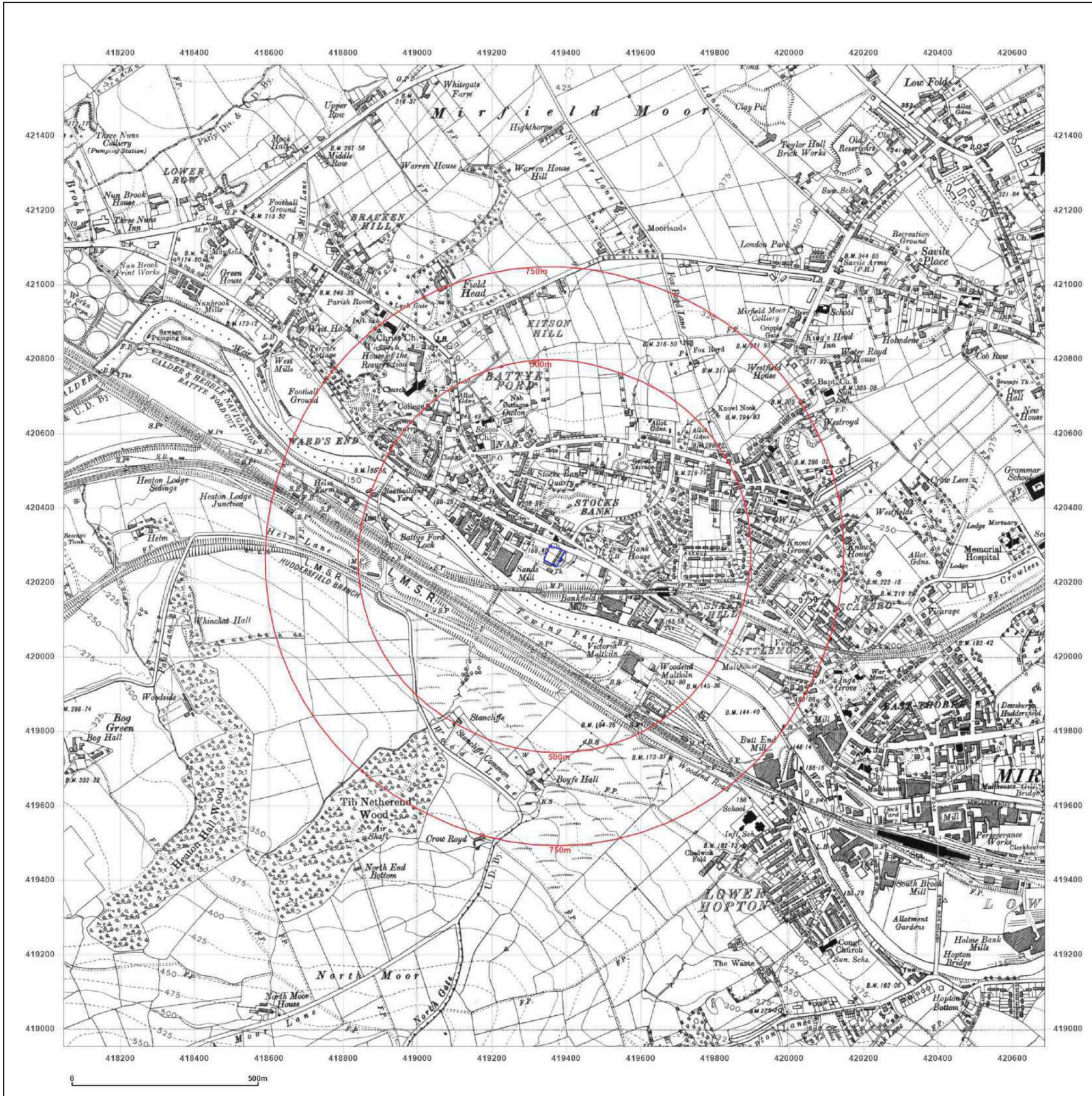


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: County Series

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1851
Revised 1948
Edition N/A
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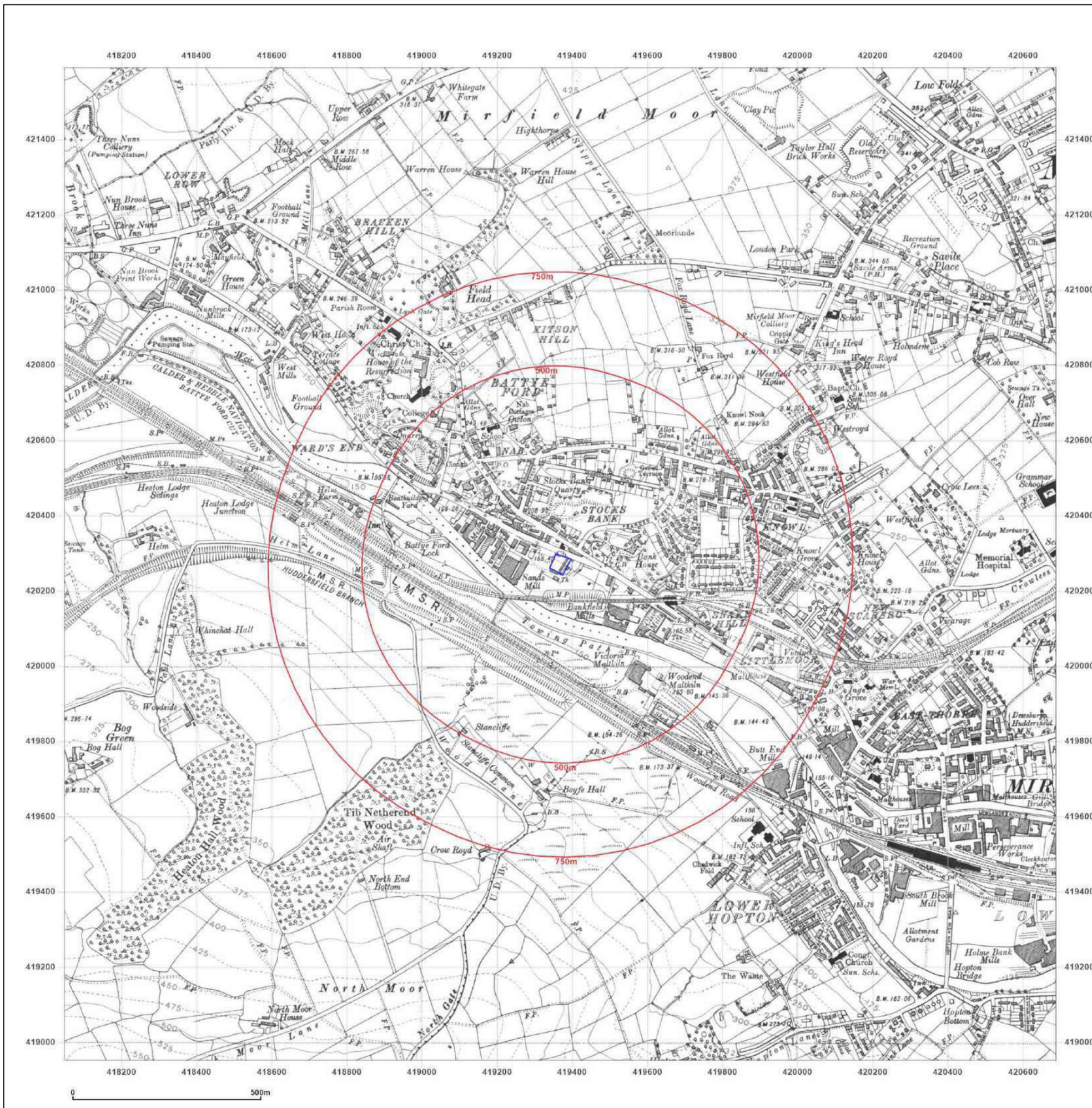


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: Provisional

Map date: 1951-1956

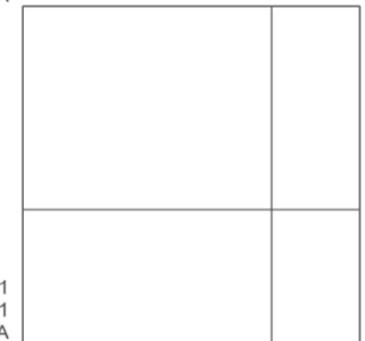
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Revised 1951
Edition N/A
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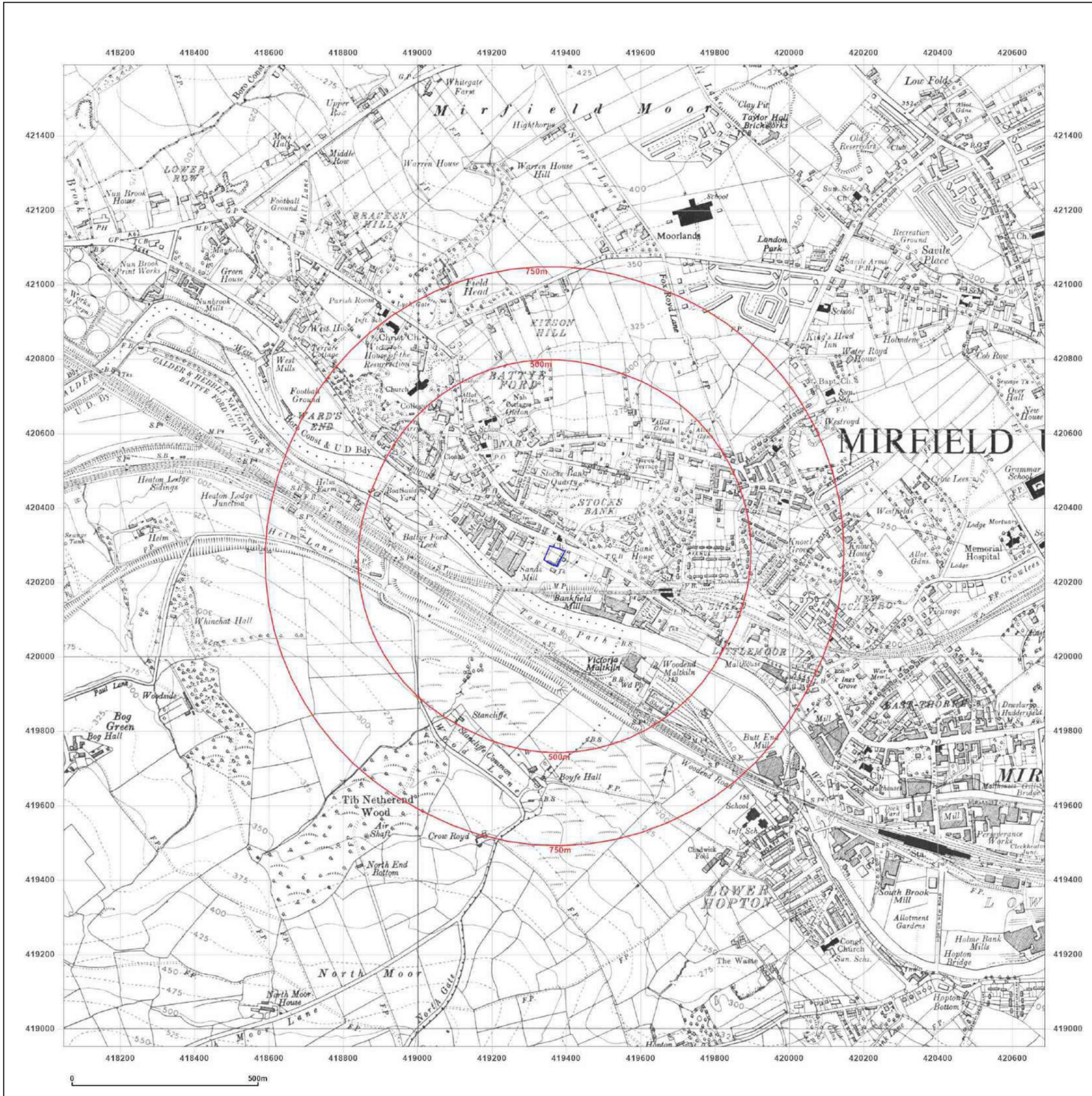


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MIRFIELD, WF14 9DQ

Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: Provisional

Map date: 1965-1967

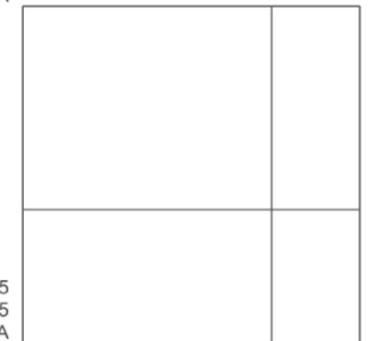
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Revised 1966
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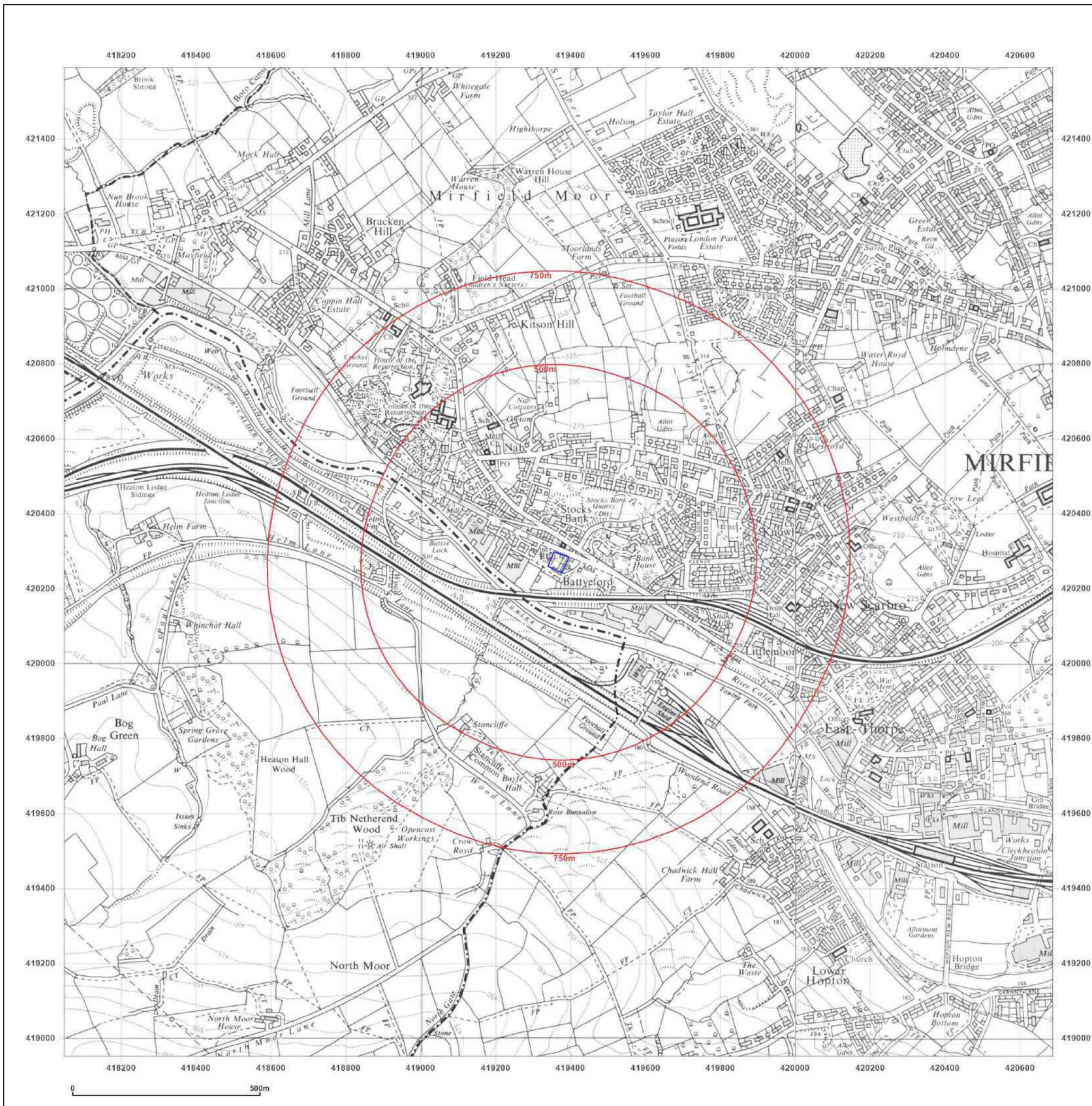


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: National Grid

Map date: 1974-1975

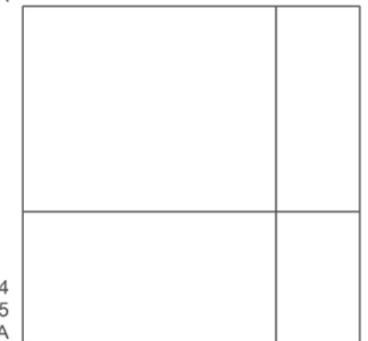
Scale: 1:10,000

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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: National Grid

Map date: 1981-1985

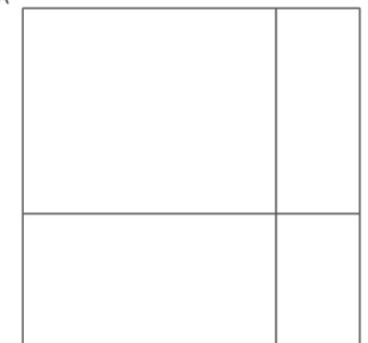
Scale: 1:10,000

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Revised 1982
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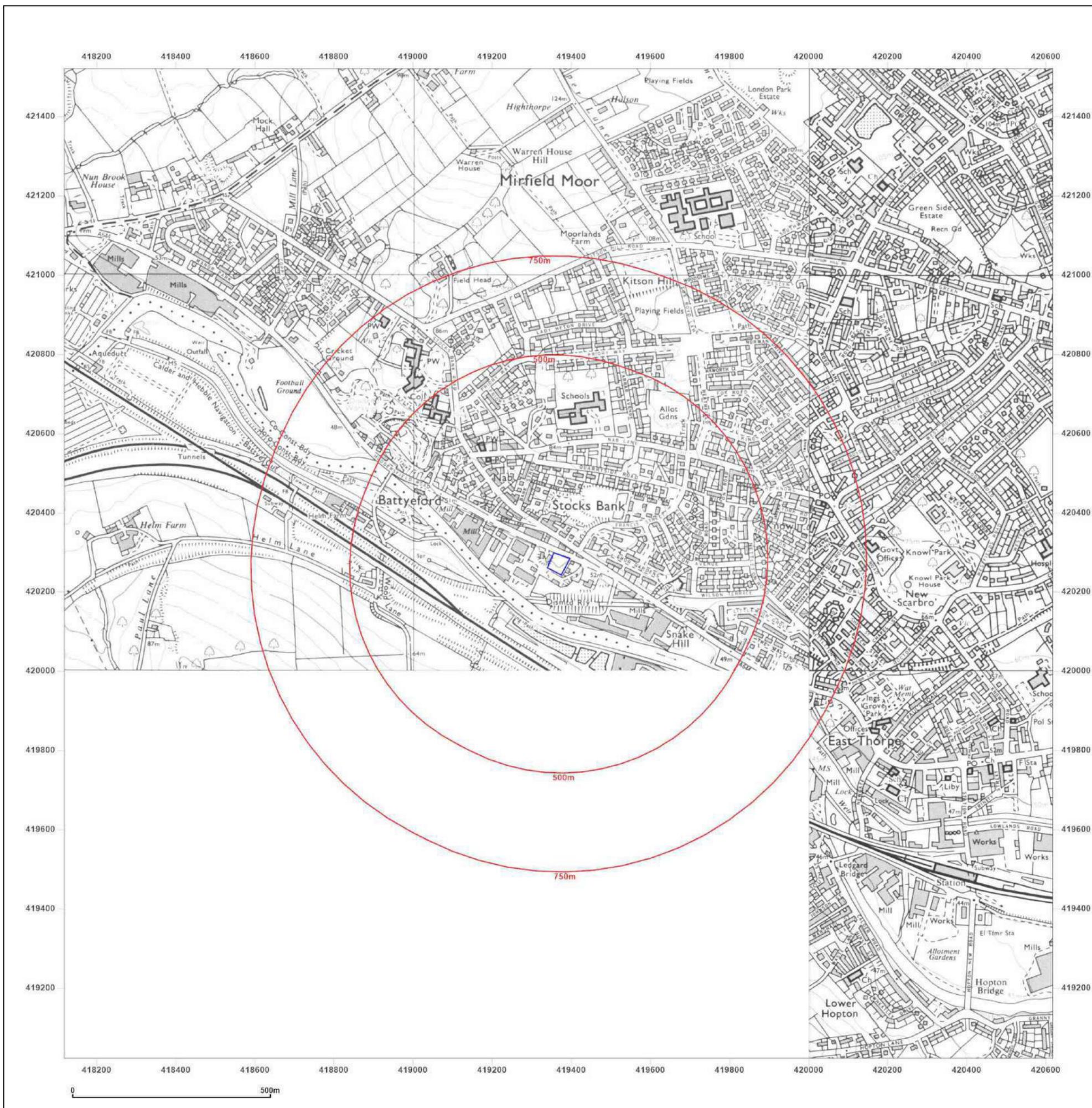


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Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: National Grid

Map date: 1988-1993

Scale: 1:10,000

Printed at: 1:10,000



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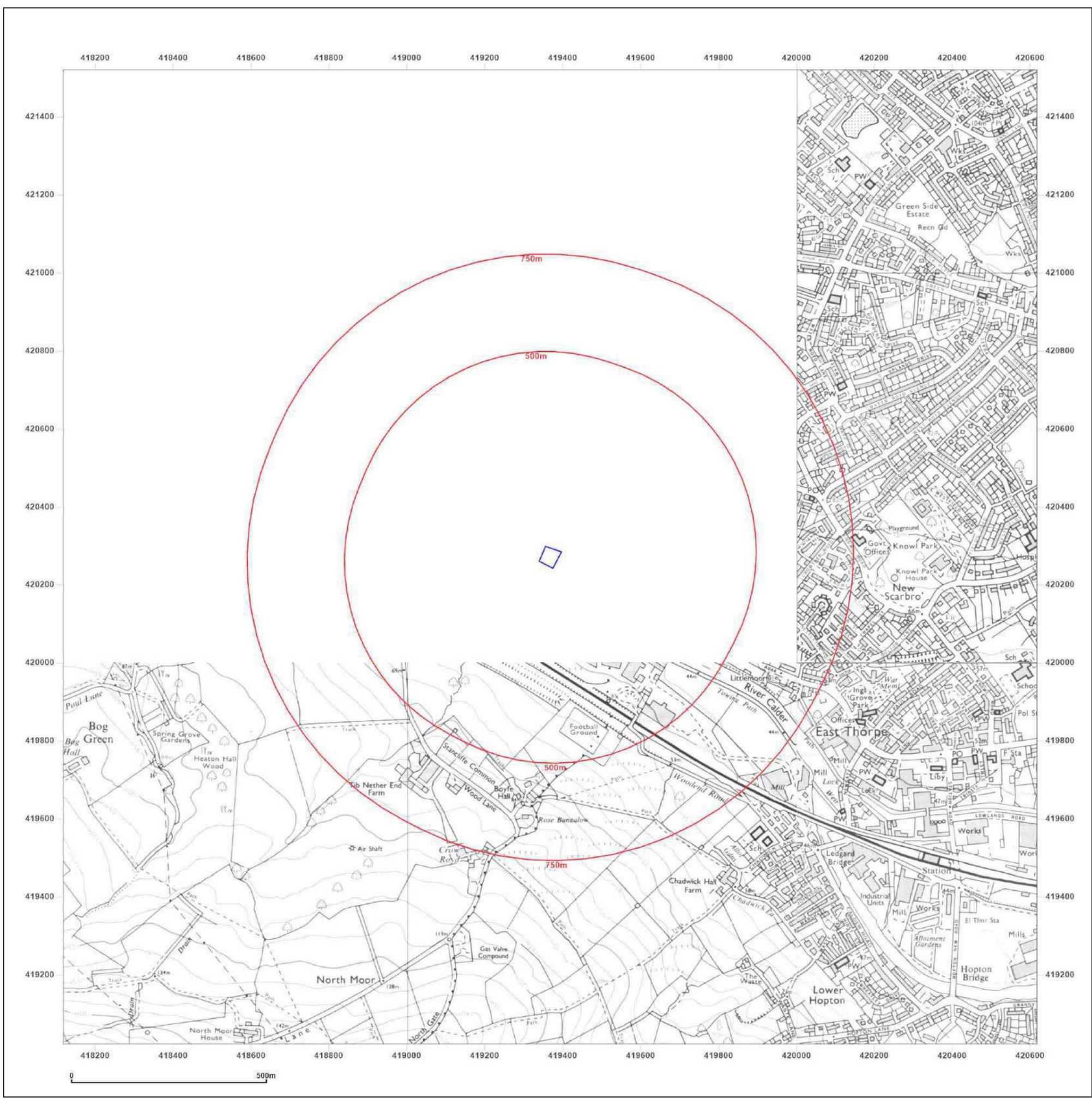


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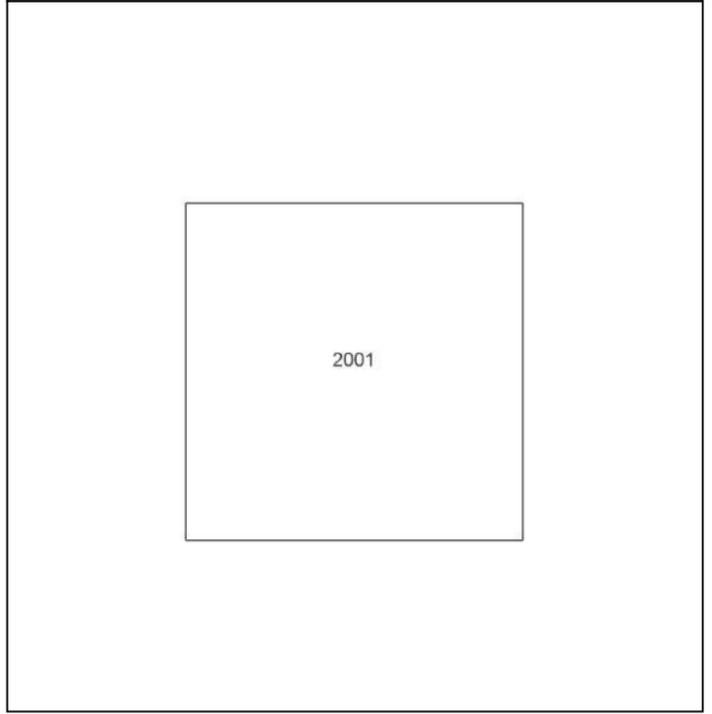
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Site Details:
 MIRFIELD AIR CADET CENTRE,
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 MIRFIELD, WF14 9DQ

Client Ref: C541
Report Ref: GS-9159941
Grid Ref: 419367, 420271

Map Name: National Grid
Map date: 2001
Scale: 1:10,000
Printed at: 1:10,000



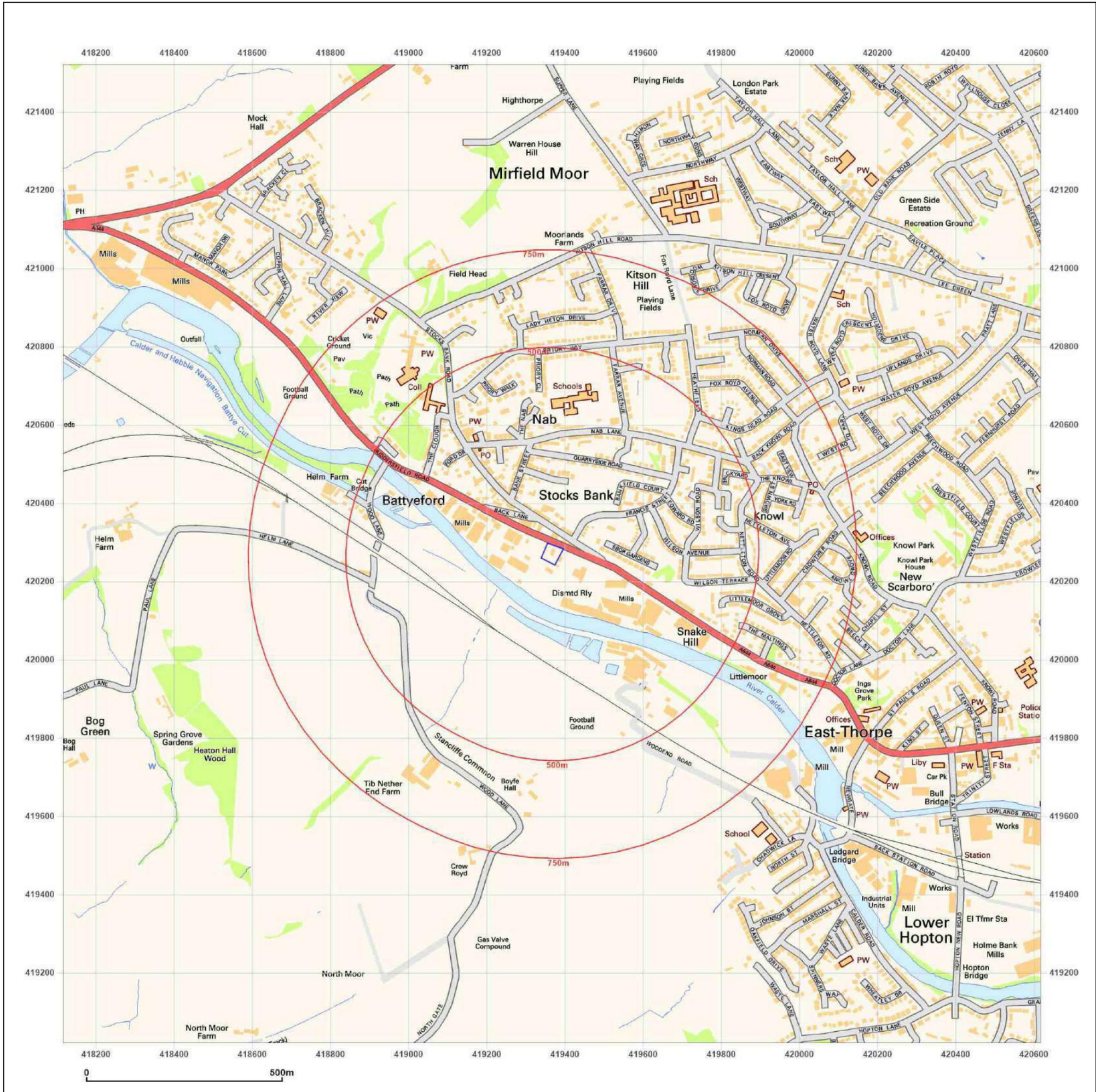
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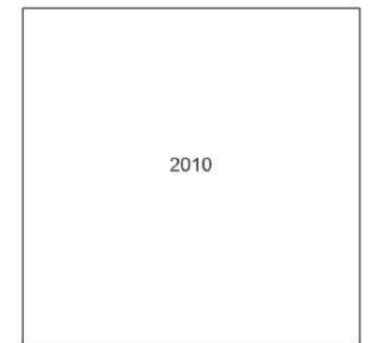
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Grid Ref: 419367, 420271

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

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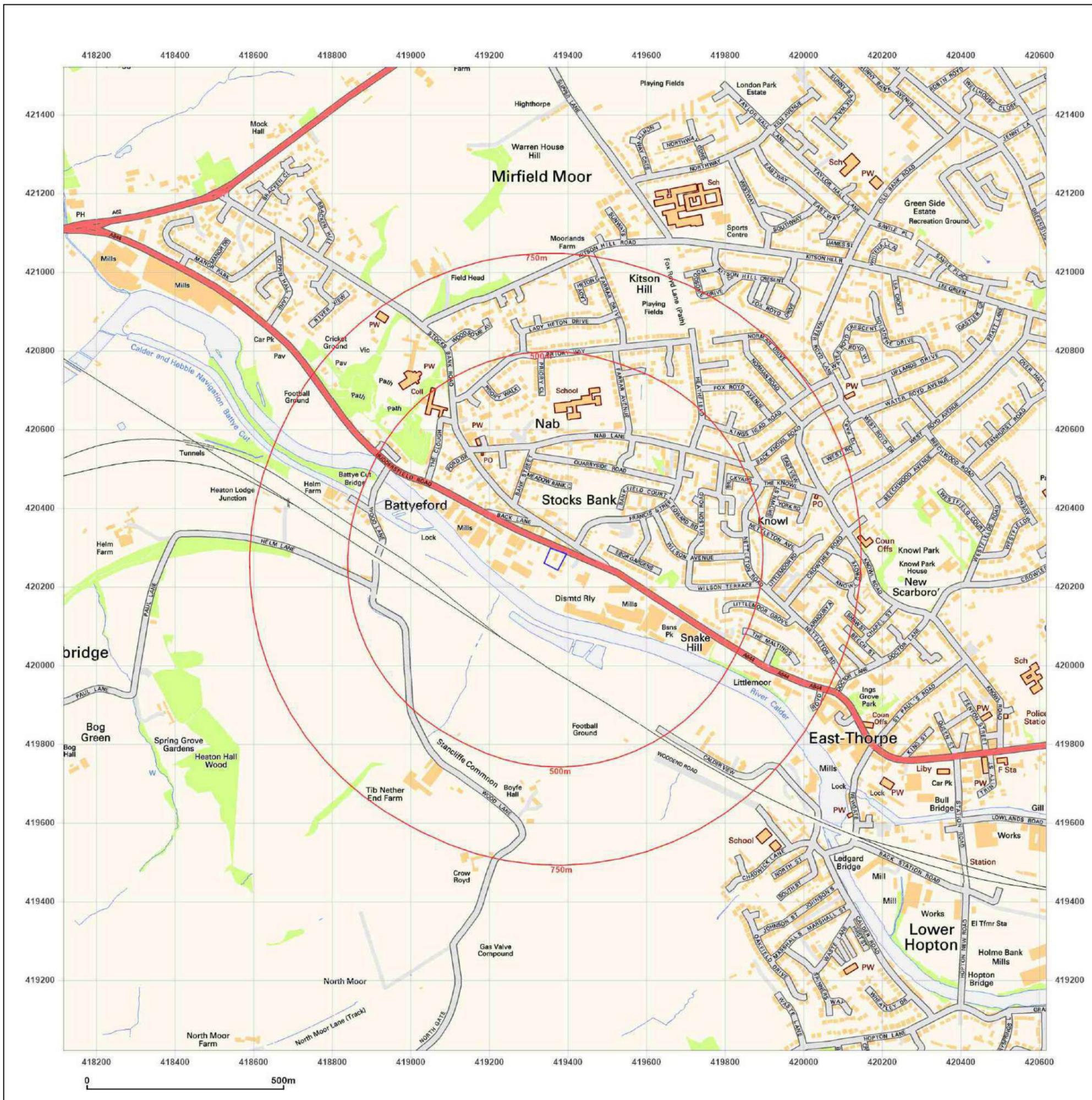


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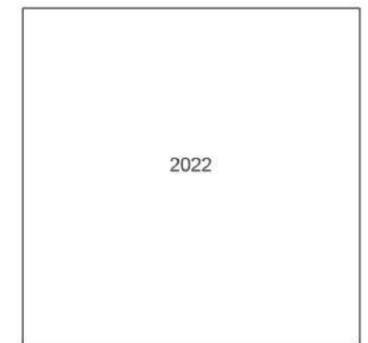
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Grid Ref: 419367, 420271

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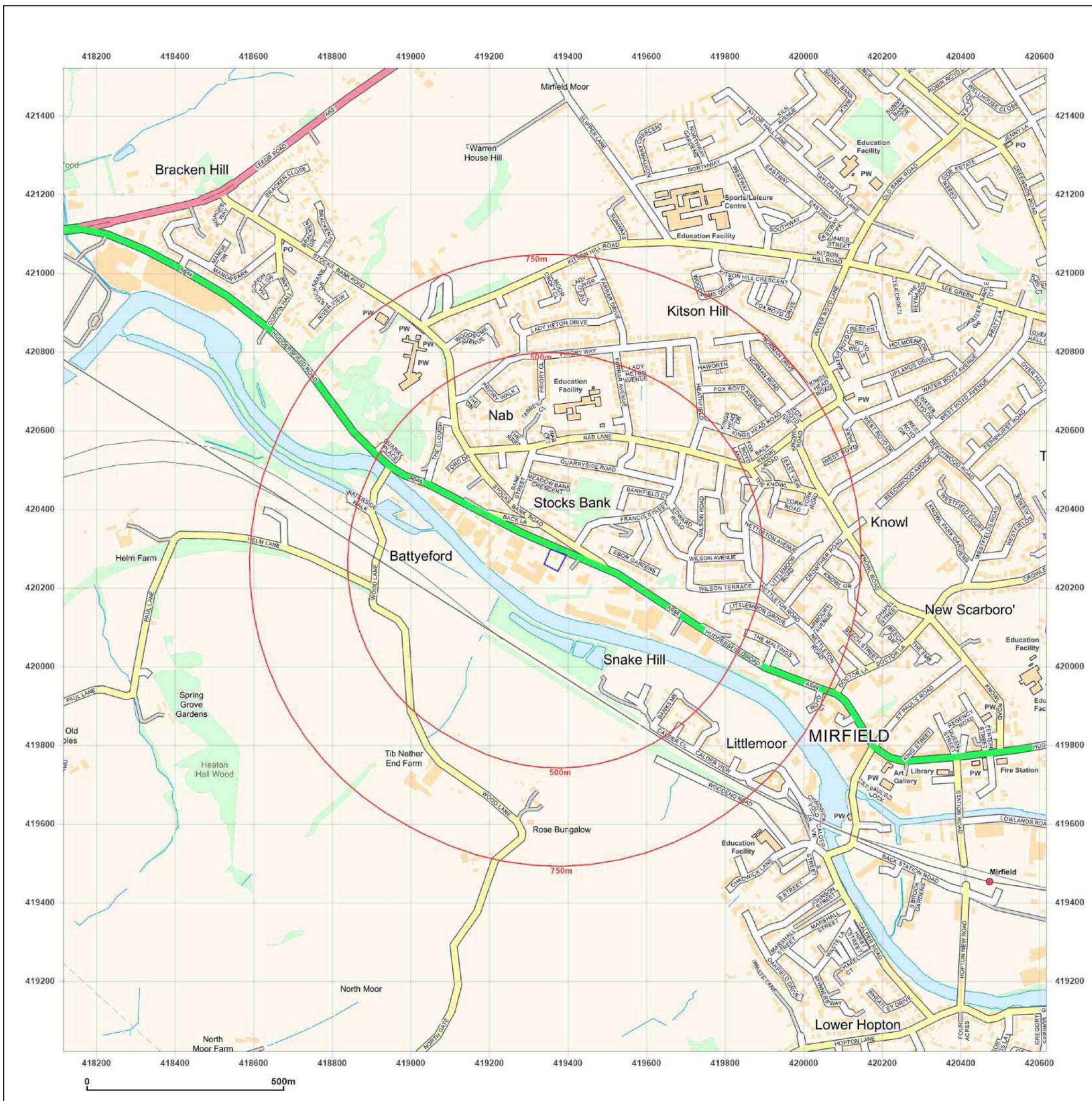


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APPENDIX C

EXPLORATORY HOLE LOGS

Trial Pit Record				TP No	1	
Method: Machine excavated trial pit using a 1.5 tonne rated tracked excavator				Contract No	C541	
				Date	13/10/22	
Sample Details				Scale	1:25	
				Client	John Hill Associates	
Type	Depth To-from (m)	Vane kN/m ²	Description	Depth (m)	Level (mAOD)	Legend
ES1	0.40		MADE GROUND: TARMACADAM	0.05		
			MADE GROUND: Type 1 fill	0.40		
ES2	0.80		MADE GROUND: Dark brown slightly clayey very gravelly fine to coarse SAND. Gravel is subangular fine to coarse of sandstone, mudstone, slate and brick.	0.50		
			MADE GROUND: Pale cream and yellow slightly clayey subangular fine to coarse GRAVEL sized fragments of limestone, concrete and rare sandstone.	1.00		
ES3	1.20		MADE GROUND: Dark brown slightly clayey very gravelly fine to coarse SAND of ash locally a very sandy gravel with a low cobble content. Gravel is subangular fine to coarse of clinker, brick, sandstone and limestone. Cobbles are subangular fine to coarse of brick and sandstone.	1.60		
			Trial pit terminated at 1.60m			
Remarks Faces stable during excavation No groundwater encountered Pit dimension = 0.30x1.20m Trial Pits backfilled upon completion				Sample Types D - Disturbed W - Water B - Bulk ES - Environmental		

Trial Pit Record				TP No	2	
Method: Machine excavated trial pit using a 1.5 tonne rated tracked excavator		Site	Mirfield	Contract No	C541	
				Date	13/10/22	
Sample Details		Client	John Hill Associates	Scale	1:25	
				Logged By	ATS	
Type	Depth To-from (m)	Vane kN/m ²	Description	Depth (m)	Level (mAOD)	Legend
ES1	0.20		MADE GROUND: Grass onto TOPSOIL: Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subangular fine to coarse of sandstone and rare brick.	0.40		
ES2	1.00		MADE GROUND: Soft, dark brown locally speckled cream, yellow and red sandy very clayey GRAVEL, locally very gravelly CLAY with a low cobble content. Gravel is subangular fine to coarse of brick, concrete, ceramic tile, metal, plastic and fibreglass.			
ES3	2.00					
Asbestos Sample	2.20		From 1.60m Occasional 20cm by 20cm pockets of yellowish brown sandy gravelly clay.			
Asbestos Sample ES4	2.80 3.00		2.50m Possible fine to coarse gravel sized fragments of probable asbestos fragments noted.	3.20		
Trial pit terminated at 3.20m						
Remarks Faces stable during excavation No groundwater encountered Pit dimension = 0.45x2.10m Trial Pits backfilled upon completion			Sample Types D - Disturbed W - Water B - Bulk ES - Environmental			

Trial Pit Record				TP No	3	
Method: Machine excavated trial pit using a 1.5 tonne rated tracked excavator				Contract No	C541	
				Date	13/10/22	
Sample Details				Scale	1:25	
				Client	John Hill Associates	
Type				Logged By	ATS	
				Depth To-from (m)	Vane kN/m ²	Description
ES1	0.20		MADE GROUND: Grass onto TOPSOIL: Dark brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subangular fine to coarse of sandstone and rare brick.	0.30		
ES2	0.90		MADE GROUND: Dark brown slightly clayey very gravelly fine to coarse SAND with a low cobble and boulder content. Gravel is subangular fine to coarse of brick, concrete, tile, sandstone and plastic. Cobbles and boulders are subangular of brick and concrete.	1.90		
Trial pit terminated at 1.90m						
Remarks				Sample Types		
Faces stable during excavation No groundwater encountered Pit dimension = 0.45x1.60m Trial Pits backfilled upon completion				D - Disturbed W - Water B - Bulk ES - Environmental		
						

Trial Pit Record					TP No	4			
Method: Machine excavated trial pit using a 1.5 tonne rated tracked excavator					Contract No	C541			
					Site		Mirfield	Date	13/10/22
Sample Details					Client		John Hill Associates	Scale	1:25
					Type	Depth To-from (m)	Vane kN/m ²	Description	Depth (m)
ES1	0.30		MADE GROUND: Dark brown gravelly very clayey fine to coarse SAND with a low cobble and boulder content. Gravel is subangular fine to coarse of brick and concrete. Cobbles and boulders are subangular of sandstone and brick.	1.60					
ES2	1.20								
D	1.60	22, 26		1.60					
HV	1.60								
ES3	1.80								
D	2.20	36, 32, 42	Soft, locally firm light brown slightly sandy locally sandy CLAY. Sand is fine. Rare 2-5mm plant tracks noted.	3.40					
HV	2.20								
ES4	2.50								
D	3.20								
HV	3.50	40, 42	Firm orangish brown mottled pale grey sandy silty CLAY. Frequent 5mm root tracks	3.70					
			Slightly gravelly fine to coarse SAND. Gravel is subangular fine to coarse of weakly cemented sandstone.	3.90					
					Trial pit terminated at 3.90m				

Remarks Faces stable during excavation No groundwater encountered Pit dimension = 0.45x2.10m Trial Pits backfilled upon completion	Sample Types D - Disturbed W - Water B - Bulk ES - Environmental		

Trial Pit Record				TP No	5	
Method: Machine excavated trial pit using a 1.5 tonne rated tracked excavator		Site	Mirfield	Contract No	C541	
				Date	13/10/22	
Sample Details		Client	John Hill Associates	Scale	1:25	
				Logged By	ATS	
Type	Depth To-from (m)	Vane kN/m ²	Description	Depth (m)	Level (mAOD)	Legend
ES	0.50		MADE GROUND: Dark grey locally greyish brown clayey locally very clayey very gravelly fine to coarse SAND with a low cobble and boulder content. Gravel is subangular fine to coarse of brick, concrete, slate, plastic, tile and sandstone. Cobbles are subangular of sandstone and concrete.	1.60		
D	1.80	42, 48	Firm locally soft light brown slightly sandy locally sandy CLAY. Sand is fine.	2.90		
HV ES	2.00 2.00					
D	2.50		Frequent dark brown 10mm by 10mm plant root tracks	2.90		
D HV ES	3.00 3.00 3.00	28, 30	Soft orangish brown mottled light grey sandy locally very sandy CLAY. Sand is fine and medium. Frequent 5cm bands of light grey very clayey fine to medium sand.	3.30		
Trial pit terminated at 3.30m						
Remarks Faces stable during excavation No groundwater encountered Pit dimension = Trial Pits backfilled upon completion				Sample Types D - Disturbed W - Water B - Bulk ES - Environmental		

				Borehole Record		BH No	CP1
Method: Cable percussive drilling using a Dando 150 - 150mm diameter		Site		Mirfield ATC		Contract No	C541
		Client		John Hill Associates		Date	28/10/22
						Scale	1:50
						Logged By	AS
Sample Details				Description		Depth (m)	Level (mAOD)
Type	Depth To-from (m)	Records					Legend
			MADE GROUND: Tarmacadam		0.10		
			MADE GROUND: Yellowish cream clayey sandy subangular fine to coarse GRAVEL sized fragments of limestone and sandstone (Type 1 Fill)		0.60		
SPT D	1.0-1.45	N=1 (1,1/0,0,0,1)					
SPT D	2.0-2.45	N=3 (0,1/2,0,1,0)	MADE GROUND: Dark brown locally black slightly clayey very gravelly fine to coarse SAND of ash locally a very sandy gravel with a low cobble content. Gravel is subangular fine to coarse of clinker, brick, sandstone and limestone. Cobbles are subangular fine to coarse of brick and sandstone.				
			From 1.80m: becoming clayey				
SPT D	3.0-3.45	N=5 (2,2/1,1,1,2)					
SPT D	4.0-4.45	N=6 (16,6/1,2,1,2)			4.30		
SPT D	5.0-5.45	N=23 (2,5/7,6,5,5)					
SPT D	6.0-6.45	N=27 (16,9/8,6,6,7)	Firm, yellowish brown gravelly very sandy CLAY with a low cobble content. Sand is fine to coarse, gravel is subangular to rounded fine to coarse of quartzite and sandstone. Cobbles are subangular of sandstone.				
B	6.0-7.0						
SPT D	7.0-7.45	N=16 (5,4/4,5,4,3)					
SPT D	8.0-8.45	N=21 (5,5/6,5,5,5)			8.30		
SPT D	9.0-9.45	N=16 (6,6/6,4,3,3)	Medium dense, light brown sandy subangular to rounded fine to coarse GRAVEL of quartzite and sandstone with a low cobble content. Sand is fine to coarse. Cobbles are subrounded to rounded of quartzite				
B	9.0-10.0						

Remarks
Monitoring well installed to 4m bgl. Borehole backfilled with arisings and bentonite below well
Failed U100 - 5.00-5.45m - High granular content
No groundwater encountered

Sample Types
D - Disturbed
U - Undisturbed
W - Water



			Borehole Record		BH No	CP1	
Method:	As Sheet 1		Site	Mirfield ATC		Contract No	C541
			Client	John Hill Associates		Date	28/10/22
						Scale	1:50
						Logged By	AS
Sample Details							
Type	Depth To-from (m)	Records	Description	Depth (m)	Level (mAOD)	Legend	
CPT	10.0-10.45	N=14 (2,4/3,3,4,4)	Medium dense, light brown sandy subangular to rounded fine to coarse of quartzite and sandstone with a low cobble content. Sand is fine to coarse, cobbles are subrounded to rounded of quartzite				
B	10.0-11.0						
CPT	11.0-11.45	N=23 (8,11/7,6,5,5)					
Borehole complete at 11.45m							
Remarks			Sample Types D - Disturbed U - Undisturbed		W - Water		





APPENDIX D

LABORATORY TEST RESULTS



Andrew Swinbourne
G & M Consulting Ltd
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i2 Analytical Ltd.
7 Woodshots Meadow,
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Business Park,
Watford,
Herts,
WD18 8YS
t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 22-90884

Project / Site name:	Mirfield ATC	Samples received on:	14/10/2022
Your job number:	C541	Samples instructed on/ Analysis started on:	18/10/2022
Your order number:		Analysis completed by:	02/11/2022
Report Issue Number:	1	Report issued on:	02/11/2022
Samples Analysed:	15 soil samples		

Signed: _____

Dominika Warjan
Junior Reporting Specialist
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.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-90884

Project / Site name: Mirfield ATC

Lab Sample Number				2465971	2465972	2465973	2465974	2465975
Sample Reference				TP1	TP1	TP1	TP2	TP2
Sample Number				None Supplied				
Depth (m)				0.40	0.80	1.20	0.20	1.00
Date Sampled				13/10/2022	13/10/2022	13/10/2022	13/10/2022	13/10/2022
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	33	24	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	17	17	17	17
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile, Amosite, Crocidolite- Loose Fibrous Debris
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	-	Detected
Asbestos Analyst ID	N/A	N/A	N/A	SSZ	SSZ	N/A	N/A	SSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	9.5	-	-	7.8
Water Soluble SO ₄ 10ml extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.06	-	-	1.9

Total Phenols

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

Naphthalene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	< 0.05	0.33
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	0.17	0.23
Acenaphthene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	< 0.05	0.77
Fluorene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	< 0.05	0.53
Phenanthrene	mg/kg	0.05	NONE	0.86	-	1.2	0.87	5
Anthracene	mg/kg	0.05	NONE	0.26	-	0.33	0.29	1.4
Fluoranthene	mg/kg	0.05	NONE	1.5	-	2	2.4	7.5
Pyrene	mg/kg	0.05	NONE	1.4	-	1.9	2.3	6.9
Benzo(a)anthracene	mg/kg	0.05	NONE	0.93	-	1.1	1.6	4.7
Chrysene	mg/kg	0.05	NONE	1.1	-	1.3	1.5	3.9
Benzo(b)fluoranthene	mg/kg	0.05	NONE	1.1	-	1.2	1.8	5.3
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.37	-	0.66	1.5	2
Benzo(a)pyrene	mg/kg	0.05	NONE	1.1	-	1.3	1.6	5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.61	-	0.74	1.1	3.1
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	< 0.05	0.8
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.72	-	0.88	1.3	3.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	9.93	-	12.7	16.3	50.6
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	140	-	88	32	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	3.4	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	U/S*	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	120	-	96	130	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	130	-	200	390	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	0.5	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	100	-	79	27	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	160	-	300	1200	-

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

*Unsuitable for analysis due to high colour intensity.

Analytical Report Number: 22-90884

Project / Site name: Mirfield ATC

Lab Sample Number				2465976	2465977	2465978	2465979	2465980
Sample Reference				TP2	TP2	TP3	TP3	TP4
Sample Number				None Supplied				
Depth (m)				2.00	3.00	0.20	0.90	0.30
Date Sampled				13/10/2022	13/10/2022	13/10/2022	13/10/2022	13/10/2022
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	21	9.6	10	18
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025		Amosite- Loose Fibrous Debris	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Detected	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	SSZ	N/A	SSZ	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	-	8.6	-	-
Water Soluble SO ₄ 10ml extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	0.041	-	-

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	0.53	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	0.39	0.3	-	0.17	< 0.05
Acenaphthene	mg/kg	0.05	NONE	2.8	0.43	-	< 0.05	< 0.05
Fluorene	mg/kg	0.05	NONE	2	0.25	-	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	NONE	20	3.8	-	2	0.45
Anthracene	mg/kg	0.05	NONE	4.7	1.3	-	0.74	< 0.05
Fluoranthene	mg/kg	0.05	NONE	32	8.1	-	5.7	0.7
Pyrene	mg/kg	0.05	NONE	28	7.4	-	5.3	0.7
Benzo(a)anthracene	mg/kg	0.05	NONE	18	4.6	-	2.5	0.52
Chrysene	mg/kg	0.05	NONE	15	3.8	-	2.4	0.43
Benzo(b)fluoranthene	mg/kg	0.05	NONE	17	3.5	-	2.3	0.55
Benzo(k)fluoranthene	mg/kg	0.05	NONE	11	2.8	-	2	0.3
Benzo(a)pyrene	mg/kg	0.05	NONE	20	3.1	-	2.1	0.51
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	8.8	1.6	-	1.1	0.31
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	2.9	0.49	-	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	9.5	1.8	-	1.3	0.36

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	193	43.3	-	27.6	4.83

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	40	64	-	29	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	< 1.8	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	110	140	-	65	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	250	420	-	160	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.9	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	33	-	32	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	250	1100	-	130	-

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

*Unsuitable for analysis due to high colour intensity.

Analytical Report Number: 22-90884

Project / Site name: Mirfield ATC

Lab Sample Number				2465981	2465982	2465983	2465984	2465985
Sample Reference				TP4	TP4	TP5	TP5	TP5
Sample Number				None Supplied				
Depth (m)				1.80	2.50	0.50	2.00	3.00
Date Sampled				13/10/2022	13/10/2022	13/10/2022	13/10/2022	13/10/2022
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	18	14	17	17
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	SSZ	N/A	N/A	N/A	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	7.7	-	-	8
Water Soluble SO ₄ 10ml extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.06	-	-	0.12

Total Phenols

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

Naphthalene	mg/kg	0.05	NONE	< 0.05	-	1	-	-
Acenaphthylene	mg/kg	0.05	NONE	< 0.05	-	0.41	-	-
Acenaphthene	mg/kg	0.05	NONE	< 0.05	-	1.3	-	-
Fluorene	mg/kg	0.05	NONE	< 0.05	-	1.1	-	-
Phenanthrene	mg/kg	0.05	NONE	< 0.05	-	12	-	-
Anthracene	mg/kg	0.05	NONE	< 0.05	-	3.4	-	-
Fluoranthene	mg/kg	0.05	NONE	< 0.05	-	20	-	-
Pyrene	mg/kg	0.05	NONE	< 0.05	-	18	-	-
Benzo(a)anthracene	mg/kg	0.05	NONE	< 0.05	-	10	-	-
Chrysene	mg/kg	0.05	NONE	< 0.05	-	8.7	-	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	< 0.05	-	11	-	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	< 0.05	-	4.7	-	-
Benzo(a)pyrene	mg/kg	0.05	NONE	< 0.05	-	11	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	< 0.05	-	5	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	-	1.4	-	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	< 0.05	-	5.5	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	< 0.80	-	114	-	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.8	-	37	8.4	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	< 1.8	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	-	71	24	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	-	740	26	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	0.6	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	-	28	34	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	-	210	110	-

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

*Unsuitable for analysis due to high colour intensity.

Analytical Report Number : 22-90884

Project / Site name: Mirfield ATC

* 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 *
2465971	TP1	None Supplied	0.4	Brown gravelly clay.
2465972	TP1	None Supplied	0.8	Brown gravelly clay with stones.
2465973	TP1	None Supplied	1.2	Brown gravelly clay with stones.
2465974	TP2	None Supplied	0.2	Brown loam with vegetation and gravel
2465975	TP2	None Supplied	1	Brown clay and gravel.
2465976	TP2	None Supplied	2	Brown clay with gravel.
2465977	TP2	None Supplied	3	Brown clay and sand with gravel and vegetation.
2465978	TP3	None Supplied	0.2	Brown loam and sand with gravel and vegetation.
2465979	TP3	None Supplied	0.9	Brown loam and sand with gravel and vegetation.
2465980	TP4	None Supplied	0.3	Brown loam and clay with gravel.
2465981	TP4	None Supplied	1.8	Brown clay and sand.
2465982	TP4	None Supplied	2.5	Brown clay and sand.
2465983	TP5	None Supplied	0.5	Brown sandy loam with gravel.
2465984	TP5	None Supplied	2	Brown sandy clay.
2465985	TP5	None Supplied	3	Brown clay and sand.

Analytical Report Number : 22-90884

Project / Site name: Mirfield ATC

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	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
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	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



LABORATORY REPORT



4043

Contract Number: PSL22/6710

Report Date: 03 November 2022

Client's Reference: C541

Client Name: G&M Consulting Ltd
Howard House
Lowfields Road
Leeds
West Yorkshire
LS12 6BS

For the attention of: Graeme Swinbourne

Contract Title: Mirfield ATC

Date Received: 18/10/2022

Date Commenced: 18/10/2022

Date Completed: 3/11/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Senior Technician)

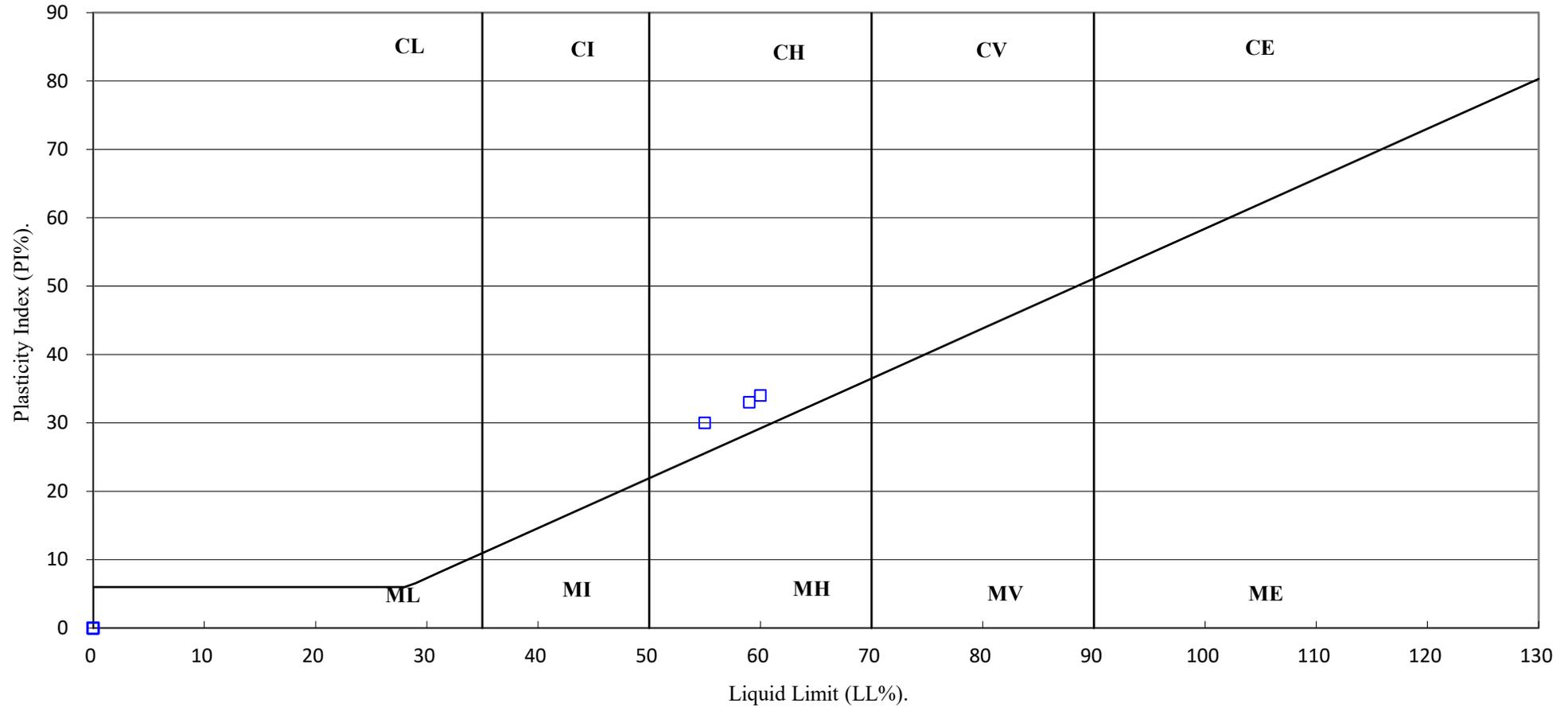
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Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL

Professional Soils Laboratory

Mirfield ATC

Contract No:

PSL22/6710

Client Ref:

C541



LABORATORY REPORT



4043

Contract Number: PSL22/7075

Report Date: 04 November 2022
Client's Reference: C541
Client Name: G&M Consulting Ltd
Howard House
Lowfields Road
Leeds
West Yorkshire
LS12 6BS

For the attention of: Graeme Swinbourne

Contract Title: Mirfield ATC
Date Received: 2/11/2022
Date Commenced: 2/11/2022
Date Completed: 4/11/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

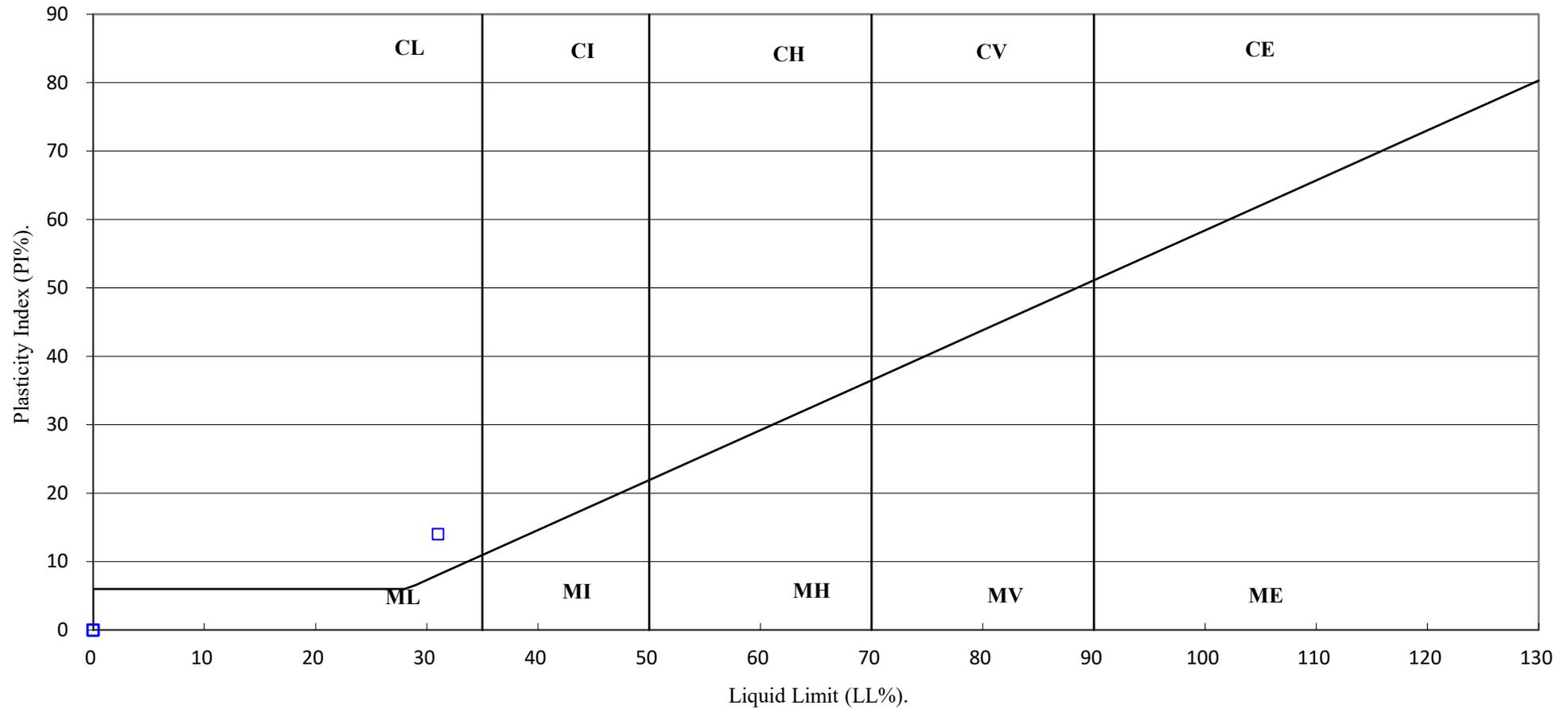
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(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL

Professional Soils Laboratory

Mirfield ATC

Contract No:

PSL22/7075

Client Ref:

C541

PARTICLE SIZE DISTRIBUTION TEST

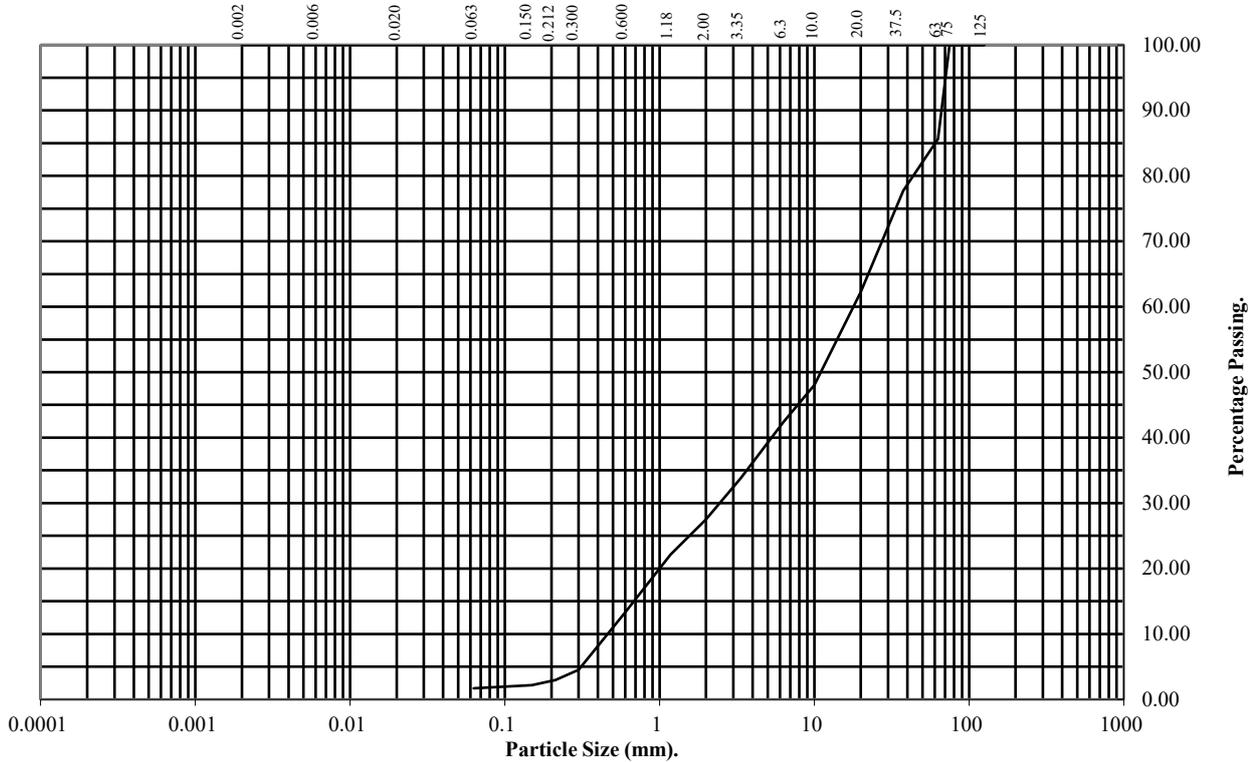
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1** Top Depth (m): **9.00**

Sample Number: Base Depth(m): **10.00**

Sample Type: **D**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	86
37.5	78
20	62
10	48
6.3	42
3.35	34
2	27
1.18	22
0.6	13
0.3	5
0.212	3
0.15	2
0.063	2

Soil Fraction	Total Percentage
Cobbles	14
Gravel	59
Sand	25
Silt/Clay	2

Remarks:
See Summary of Soil Descriptions



Mirfield ATC

Contract No:
PSL22/7075
Client Ref:
C541

PARTICLE SIZE DISTRIBUTION TEST

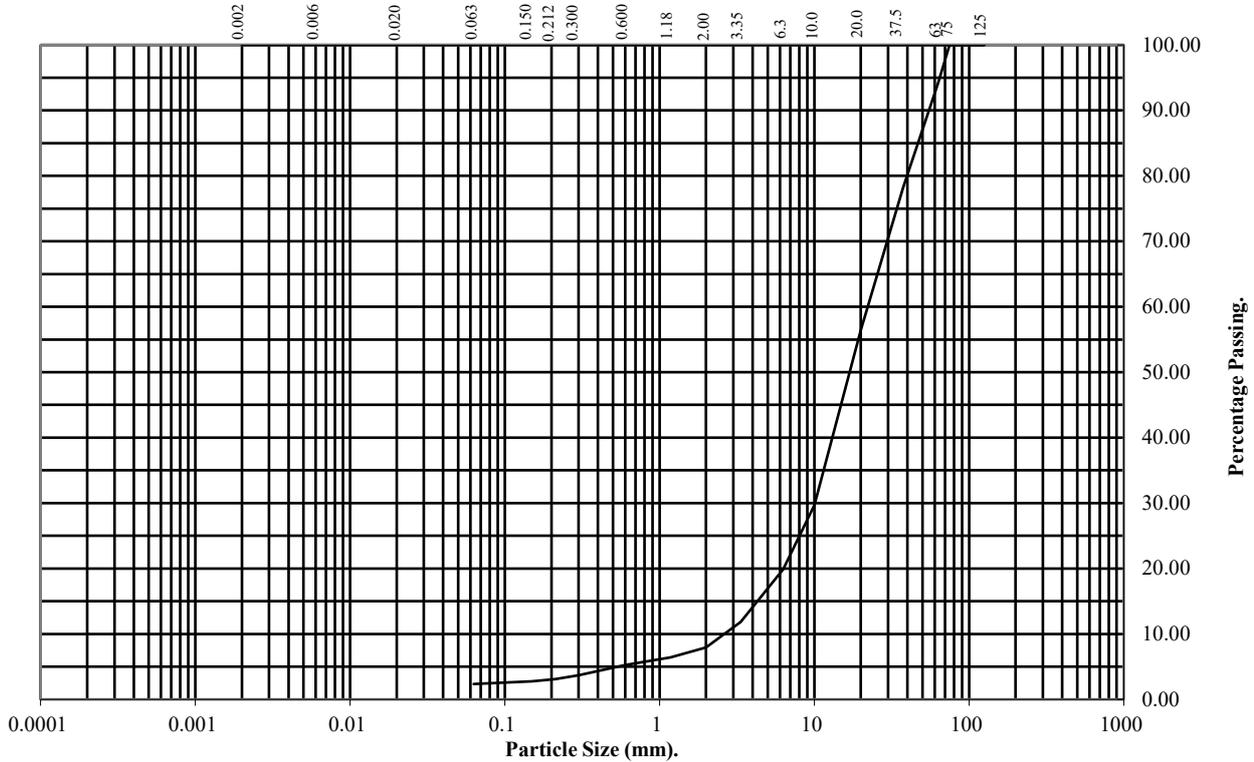
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: **BH1** Top Depth (m): **10.00**

Sample Number: Base Depth(m): **11.00**

Sample Type: **D**



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	94
37.5	78
20	56
10	30
6.3	20
3.35	12
2	8
1.18	6
0.6	5
0.3	4
0.212	3
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	6
Gravel	86
Sand	6
Silt/Clay	2

Remarks:
See Summary of Soil Descriptions



Mirfield ATC

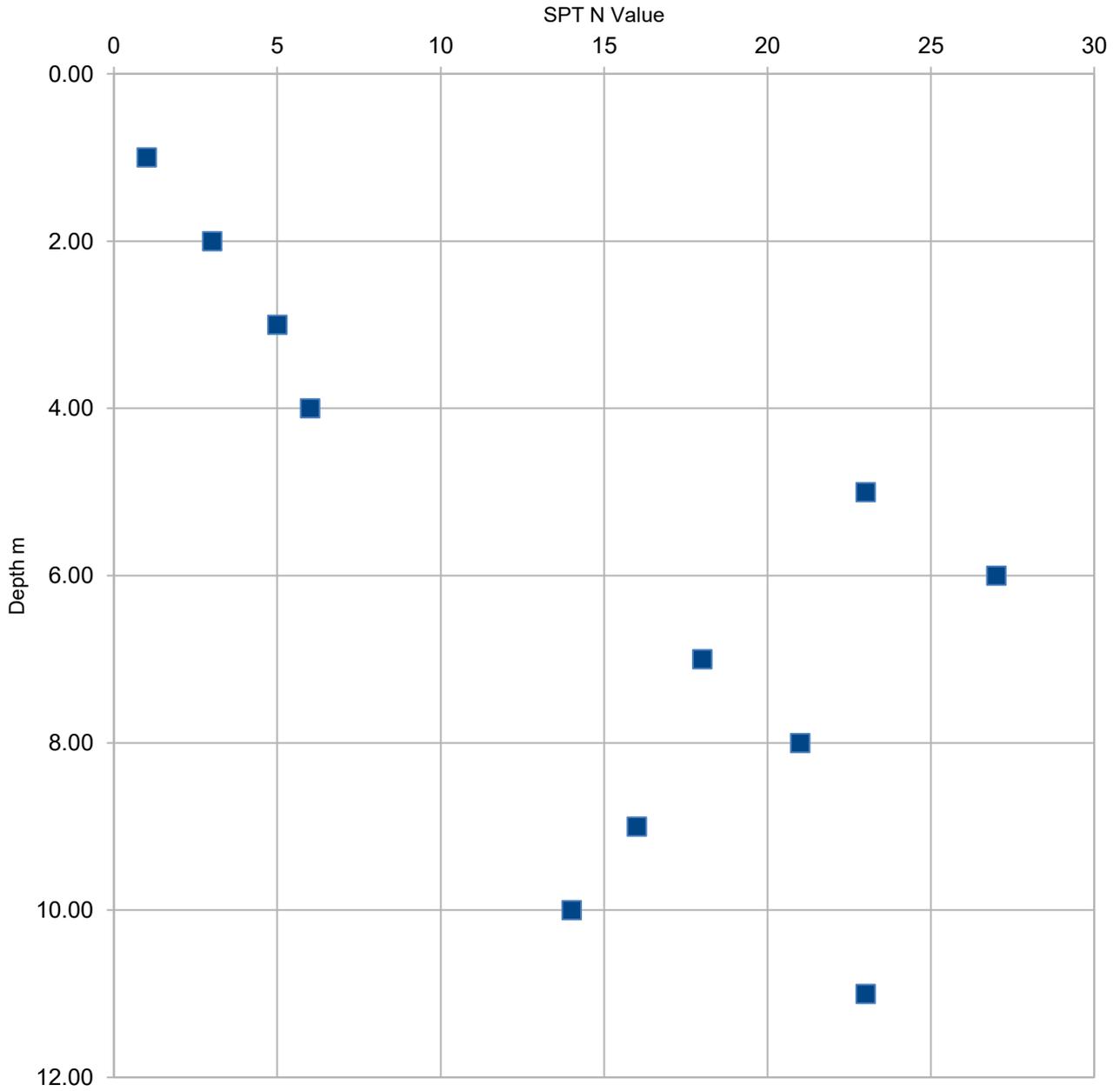
Contract No:
PSL22/7075
Client Ref:
C541



APPENDIX E

FIELD DATA SHEETS/PLOTS

SPT N Value V Depth



Contract Number: C541			
Contract	Mirfield ATC	Plotted by ATS	Approved GS
		Drawing Name: SPT N Value Vs Depth	
Client	John Hill Associates		



SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING UK LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: CP01
Test Date: 06/05/2022
Report Date: 06/05/2022
File Name: CP01.spt
Test Operator: CM

Instrumented Rod Data

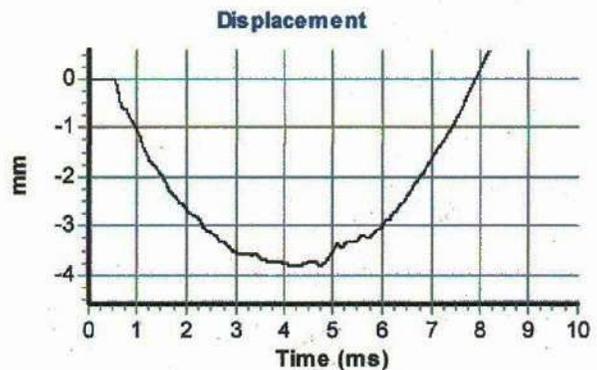
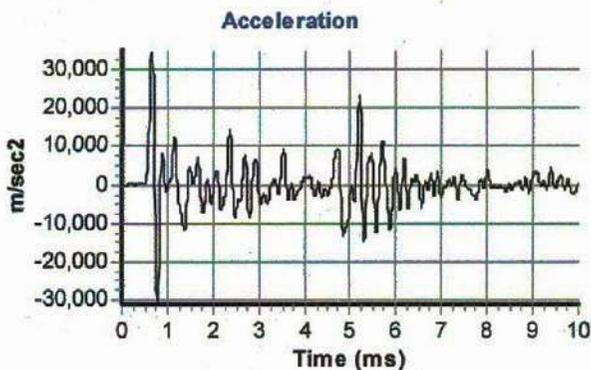
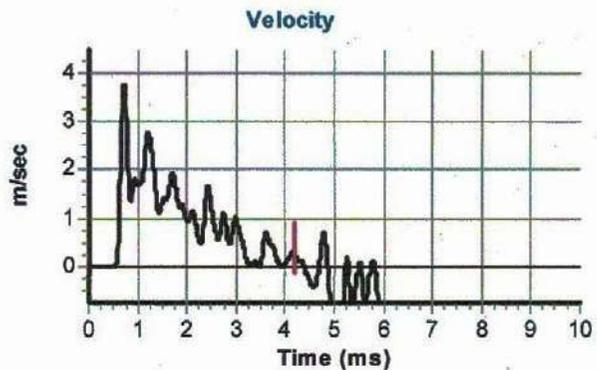
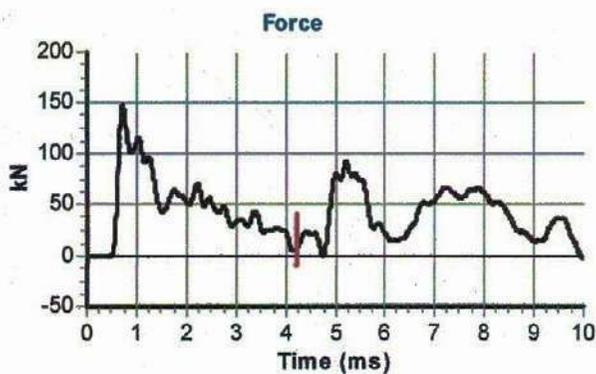
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 72572
Accelerometer No.2: 72757

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

RP DRILLING - 80220



Calculations

Area of Rod A (mm^2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 305

Energy Ratio E_r (%): 65

Signed: C. McCLUSKEY
Title: FITTER



APPENDIX F

GAS MONITORING RESULTS SHEETS

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: John Hill Associates **Job No:** C541
Site: Mirfield **Visit No:** 1 of 6
Date: 03/11/2022 **Operator:** VF **Project Manager:** AS

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA			WELL AND WATER DATA					Comments	
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	Reduced level (mAOD)	Water level (mAOD)		Response Zone
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Minimum	Steady			Peak	Steady								
BH1	0	0	0	0	0.0	0.0	4	1	1	0	17.7	17.9	0	0	0	0	0	0	DRY	4.0				
Max	0	0	0	0	0	0	4	1	1	0	17.7	17.9	0	0	0	0	0	0						
Min	0	0	0	0	0	0	4	1	1	0	17.7	17.9	0	0	0	0	0	0						
GSV (l/hr)	0																							

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground: Dry Moist Wet Snow Frozen **Notes**
 Wind: Calm Light Moderate Strong
 Cloud cover: None Slight Cloudy Overcast
 Precipitation: None Slight Moderate Heavy
 Barometric pressure (mbar): Before Falling Steady Rising
 Pressure trend: Before After
 Air Temperature (Deg. C): Before After
NR- Not recorded

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GFM 430
Gas concentration: CH₄ 0.2%@5%, 1.0@30%, 3.0@100% CO₂ 0.1%@10%, 3.0%@30%,3.0%@100% O₂
Gas Range: CH₄ 0 - 100% CO₂ 0 - 100% O₂ 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 30/09/2022
Date of next calibration: 29/09/2023

PID: MiniRAE 3000
Calibrated range:
Calibration gas:
Response time:
Accuracy:
Date of last calibration: On site calibration using 100ppm Isobutylene
Date of next calibration:



Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: John Hill Associates Job No: C541
 Site: Mirfield Visit No: 2 of 6
 Date: 07/11/2022 Operator: VF Project Manager: AS

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA			WELL AND WATER DATA					Comments	
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	Reduced level (mAOD)	Water level (mAOD)		Response Zone
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Minimum	Steady			Peak	Steady								
BH1	0	0	0	0	0.3	0.3	6	0	1	0	17.4	17.5	0	0	0	0			DRY	4.0				
Max	0	0	0	0	0.3	0.3	6	0	1	0	17.4	17.5	0	0	0	0	0	0						
Min	0	0	0	0	0.3	0.3	6	0	1	0	17.4	17.5	0	0	0	0	0	0						
GSV (l/hr)	0																							

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground: Dry Moist Wet Snow Frozen **Notes**
 Wind: Calm Light Moderate Strong NR- Not recorded
 Cloud cover: None Slight Cloudy Overcast
 Precipitation: None Slight Moderate Heavy
 Barometric pressure (mbar): 991 Before 991 After
 Pressure trend: Falling Steady Rising
 Air Temperature (Deg. C): Before After

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GFM 430
 Gas concentration: CH₄ 0.2%@5%, 1.0@30%, 3.0@100% CO₂ 0.1%@10%, 3.0%@30%,3.0%@100% O₂
 Gas Range: CH₄ 0 - 100% CO₂ 0 - 100% O₂ 0 - 25%
 Gas Flow range: +100/-50 l/hour
 Differential Pressure: (+/-) 1000 Pa
 Date of last calibration: 30/09/2022
 Date of next calibration: 29/09/2023

PID: MiniRAE 3000
 Calibrated range:
 Calibration gas:
 Response time:
 Accuracy:
 Date of last calibration: On site calibration using 100ppm Isobutylene
 Date of next calibration:





APPENDIX G

TRIAL PIT PHOTOS



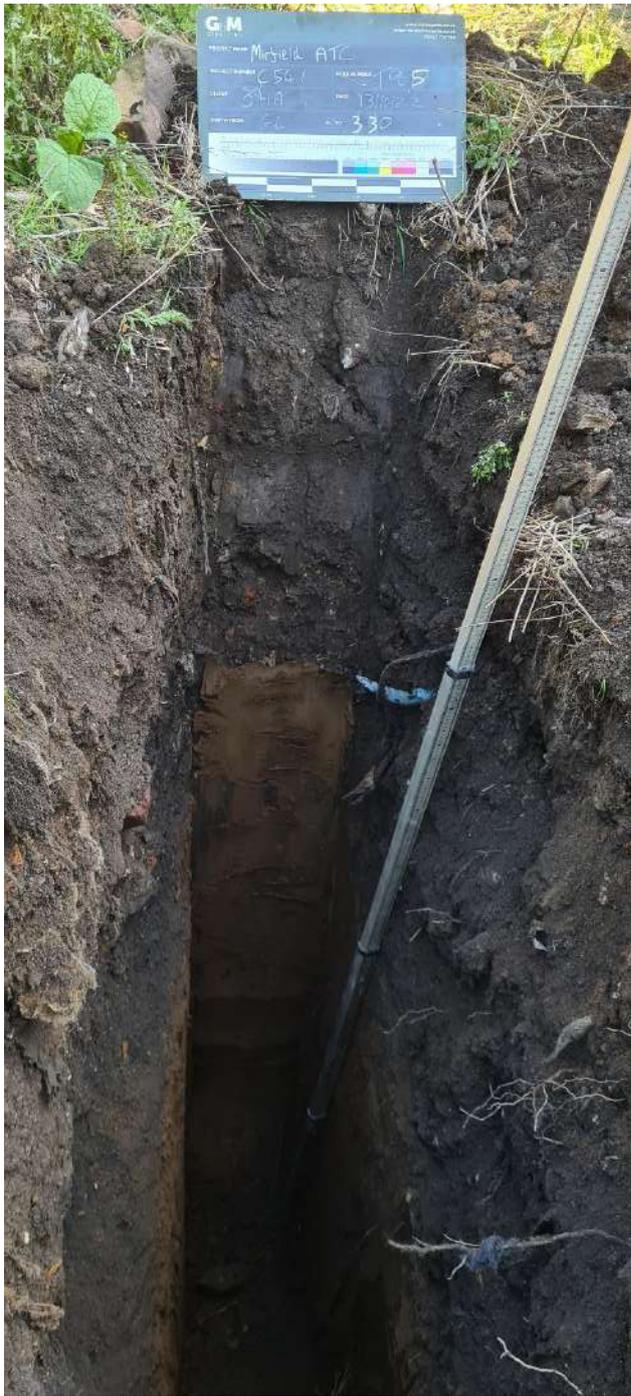
Project Number: C541	Project Name: Mirfield ATC
Client: John Hill Associates	Document Name: Trial Pit Photographs: Photo 1 – TP01 (1.60m), Photo 2 – TP02 (3.20m)





Project Number: C541	Project Name: Mirfield ATC
Client: John Hill Associates	Document Name: Trial Pit Photographs: Photo 3 – TP03 (1.80m), Photo 4 – TP04 (3.90m)





Project Number: C541

Project Name: Mirfield ATC

Client: John Hill Associates

Document Name: Trial Pit Photographs: Photo 5 – TP05 (3.30m)





APPENDIX H

DEFINITIONS AND CLASSIFICATIONS OF RISK ASSESSMENT TERMINOLOGY

Definitions and Classifications of Risk Assessment Terminology.

Probability

Probability can be defined as the chance of a particular event occurring in a given period of time.

Descriptions of each of the four qualitative terms to be used in this report to describe the perceived probability of any identified pollutant linkage becoming realised are shown below in Table W.

Term	Description
High Likelihood	There is pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.
Likely	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low Likelihood	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.
Unlikely	There is pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.

Table W. Description of Probability Classifications

Severity

Severity (consequence) can be defined as the adverse effects (or harm) arising from a defined hazard, which impairs the quality of human health or the environment in the short or longer term.

Descriptions of each of the four qualitative terms to be used in this report to describe the perceived potential severity of any identified pollutant linkage becoming realised are shown below in Table X.

Term	Description
Severe	<p>Highly elevated concentrations likely to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs.</p> <p>Equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce.</p> <p>Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population.</p> <p>Catastrophic damage to crops, buildings or property.</p>
Medium	<p>Elevated concentrations which could result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs.</p> <p>Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce.</p> <p>Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population.</p> <p>Significant damage to crops, buildings or property.</p>
Mild	<p>Exposure to human health unlikely to lead to "significant harm". Equivalent to EA Category 3 pollution incident including minimal or short-lived effect on water quality; marginal effect on amenity value, agriculture or commerce.</p> <p>Minor or short-lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population.</p> <p>Minor damage to crops, buildings or property.</p>
Minor	<p>No measurable effect on humans.</p> <p>Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.</p> <p>Repairable effects of damage to buildings, structures and services.</p>

Table X. Description of Severity Classifications

Once the severity and probability of a pollutant linkage has been determined the risk can be assessed using the risk matrix shown overleaf on Table Y.

Risk Matrix

By cross referencing the derived severity and probability in Table Y, below the perceived potential risk can be determined.

		Severity			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table Y. Risk Assessment Matrix

The risk categories detailed above are defined below in the following Table Z.

Term	Description
Very High Risk	There is a high probability that significant harm could arise to a designated receptor from an identified hazard at the site without appropriate remedial action.
High Risk	Significant harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remedial action.
Moderate Risk	It is possible that without appropriate remedial action, harm could arise to a designated receptor but it is relatively unlikely that any such harm would be severe and if any harm were to occur, it is likely that such harm would be relatively mild.
Low Risk	It is possible that significant harm could arise to a designated receptor from an identified hazard but it is likely that at worst this harm if realised would normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Table Z. Definition of Risk

APPENDIX D
REMEDICATION /
VALIDATION CRITERIA

HUMAN HEALTH REMEDIATION TARGETS – LOW-RISE RESIDENTIAL END USE

DETERMINAND	UNITS	WITHIN 600 mm COVER SYSTEM (GARDEN)	HARD STANDING AND >600 mm OF COVER	PUBLIC OPEN SPACE 300 mm COVER	PUBLIC OPEN SPACE > 300 mm	PATH- WAY
Arsenic	mg/kg	37 ⁽ⁱ⁾	40 ⁽ⁱⁱ⁾	79 ⁽ⁱⁱⁱ⁾	640 ^(iv)	1
Cadmium	mg/kg	11 ⁽ⁱ⁾	85 ⁽ⁱⁱ⁾	120 ⁽ⁱⁱⁱ⁾	532 ^(iv)	1
Chromium (Hexavalent)	mg/kg	6 ⁽ⁱ⁾	6 ⁽ⁱⁱ⁾	7.7 ⁽ⁱⁱⁱ⁾	220 ^(iv)	1
Lead	mg/kg	210 ^(vi)	330 ^(vii)	760 ^(viii)	760 ^(viii)	1
Elemental Mercury	mg/kg	1.2 ⁽ⁱ⁾	1.2 ⁽ⁱⁱ⁾	16 ⁽ⁱⁱⁱ⁾	30 ^(iv)	2
Nickel	mg/kg	180 ⁽ⁱ⁾	180 ⁽ⁱⁱ⁾	230 ⁽ⁱⁱⁱ⁾	3400 ^(iv)	1
Selenium	mg/kg	250 ⁽ⁱ⁾	430 ⁽ⁱⁱ⁾	1100 ⁽ⁱⁱⁱ⁾	1800 ^(iv)	1
Copper	mg/kg	2400 ⁽ⁱ⁾	7100 ⁽ⁱⁱ⁾	12,000 ⁽ⁱⁱⁱ⁾	44,000 ^(iv)	1
Zinc	mg/kg	3700 ⁽ⁱ⁾	40,000 ⁽ⁱⁱ⁾	81,000 ⁽ⁱⁱⁱ⁾	170,000 ^(iv)	1
Phenol	mg/kg	280 ^{(i)(xi)}	280 ^{(xiv)(xi)}	760 ^{(iii)(xi)}	760 ^{(iv)(xi)}	2
Naphthalene	mg/kg	2.3 ^{(i)(xi)}	2.3 ^{(xiv)(xi)}	1200 ^{(iv)(xi)}	1200 ^{(iv)(xi)}	2
Acenaphthylene	mg/kg	170 ^{(i)(xi)}	500 ^(v)	15,000 ^{(iii)(xi)}	29,000 ^{(iv)(xi)}	3
Acenaphthene	mg/kg	210 ^{(i)(xi)}	500 ^(v)	15,000 ^{(iii)(xi)}	29,000 ^{(iv)(xi)}	1
Fluorene	mg/kg	170 ^{(i)(xi)}	500 ^(v)	9900 ^{(iii)(xi)}	20,000 ^{(iv)(xi)}	1
Phenanthrene	mg/kg	95 ^{(i)(xi)}	500 ^(v)	3100 ^{(iii)(xi)}	6200 ^{(iv)(xi)}	3
Anthracene	mg/kg	500 ^{(i)(xi)}	500 ^(v)	74,000 ^{(iii)(xi)}	150,000 ^{(iv)(xi)}	3
Fluoranthene	mg/kg	280 ^{(i)(xi)}	500 ^(v)	3100 ^{(iii)(xi)}	6300 ^{(iv)(xi)}	3
Pyrene	mg/kg	500 ^{(i)(xi)}	500 ^(v)	7400 ^{(iii)(xi)}	15,000 ^{(iv)(xi)}	3
Benzo(a)Anthracene	mg/kg	7.2 ^{(i)(xi)}	11 ^{(ii)(xi)}	29 ^{(iii)(xi)}	49 ^{(iv)(xi)}	3
Chrysene	mg/kg	15 ^{(i)(xi)}	30 ^{(ii)(xi)}	57 ^{(iii)(xi)}	93 ^{(iv)(xi)}	3
Benzo(b)Fluoranthene	mg/kg	2.6 ^{(i)(xi)}	3.9 ^{(ii)(xi)}	7.1 ^{(iii)(xi)}	13 ^{(iv)(xi)}	3
Benzo(k)Fluoranthene	mg/kg	77 ^{(i)(xi)}	110 ^{(ii)(xi)}	190 ^{(iii)(xi)}	370 ^{(iv)(xi)}	3
Benzo(a)Pyrene	mg/kg	2.2 ^{(i)(xi)}	3.2 ^{(ii)(xi)}	5.7 ^{(iii)(xi)}	11 ^{(iv)(xi)}	3
Indeno(123-cd)Pyrene	mg/kg	27 ^{(i)(xi)}	45 ^{(ii)(xi)}	82 ^{(iii)(xi)}	150 ^{(iv)(xi)}	3
Dibenzo(a,h)Anthracene	mg/kg	0.24 ^{(i)(xi)}	0.31 ^{(ii)(xi)}	0.57 ^{(iii)(xi)}	1.1 ^{(iv)(xi)}	3
Benzo(ghi)Perylene	mg/kg	320 ^{(i)(xi)}	360 ^{(ii)(xi)}	640 ^{(iii)(xi)}	1400 ^{(iv)(xi)}	3
TPH C ₅ -C ₆ (aliphatic)	mg/kg	42 ^{(i)(xi)}	42 ^{(ii)(xi)}	42 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₆ -C ₈ (aliphatic)	mg/kg	100 ^{(i)(xi)}	100 ^{(ii)(xi)}	100 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₈ -C ₁₀ (aliphatic)	mg/kg	27 ^{(i)(xi)}	27 ^{(ii)(xi)}	27 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₀ -C ₁₂ (aliphatic)	mg/kg	130 ^{(i)(xi)}	130 ^{(ii)(xi)}	130 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₂ -C ₁₆ (aliphatic)	mg/kg	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	10,000 ^{(xiv)(xi)}	1
TPH C ₁₆ -C ₂₁ (aliphatic)	mg/kg	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	1000 ^{(xiv)(xi)}	10,000 ^{(xiv)(xi)}	1
TPH C ₂₁ -C ₃₅ (aliphatic)	mg/kg					1
TPH C ₅ -C ₇ (aromatic)	mg/kg	70 ^{(i)(xi)}	370 ^{(ii)(xi)}	370 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₇ -C ₈ (aromatic)	mg/kg	130 ^{(i)(xi)}	860 ^{(ii)(xi)}	860 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₈ -C ₁₀ (aromatic)	mg/kg	34 ^{(i)(xi)}	47 ^{(ii)(xi)}	47 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₀ -C ₁₂ (aromatic)	mg/kg	74 ^{(i)(xi)}	250 ^{(ii)(xi)}	250 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	2
TPH C ₁₂ -C ₁₆ (aromatic)	mg/kg	140 ^{(i)(xi)}	1800 ^{(ii)(xi)}	1800 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	1

DETERMINAND	UNITS	WITHIN 600 mm COVER SYSTEM (GARDEN)	HARD STANDING AND >600 mm OF COVER	PUBLIC OPEN SPACE 300 mm COVER	PUBLIC OPEN SPACE > 300 mm	PATHWAY
TPH C ₁₆ -C ₂₁ (aromatic)	mg/kg	260 ^{(i)(xi)}	1900 ^{(ii)(xi)}	1900 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	1
TPH C ₂₁ -C ₃₅ (aromatic)	mg/kg	1000 ^{(xiv)(xi)}	1900 ^{(ii)(xi)}	1900 ^{(ii)(xi)}	10,000 ^{(xiv)(xi)}	1
Asbestos	Fibres Volume Weight (%)	NFD	0.001%	NFD	0.001	4

Notes 1

NFD = No Fibres Detected

Asbestos will be screened visually on site by a qualified environmental consultant and where potential ACM is identified, representative samples will be subject to quantitative analysis of % volume by weight.

Should any ACM be identified within the soil matrices, further detailed % assessment would be required when the reported laboratory result exceeds the limit of detection for the analytical method at 0.01% by volume (weight).

Notes 2

Excludes matrices where free product is observed.

No viable exposure pathway beneath hardstanding and cover system.

Notes 3

Main exposure pathways: 1 = soil ingestion, 2 = vapour inhalation (indoor), 3 = dermal contact and ingestion, 4 = dust inhalation.

Abbreviations: GAC = general assessment criteria, n = number of samples, MC = maximum concentration, N/A = Not Applicable (no exceedance of assessment criteria), Loc of MC = location of exceedances.

- i. Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use with plant uptake.
- ii. Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use without plant uptake – these levels used below 600 mm cover system within residential gardens as soils will be present within a residential setting, yet soils will not be disturbed and garden plants will not reach these soils.
- iii. Value derived from LQM Suitable 4 Use Levels (S4ULs) for public open space (POS) residential.
- iv. Value derived from LQM Suitable 4 Use Levels (S4ULs) for public open space (POS) park – these levels used below 300 mm POS cover system as soils will not be disturbed by any future site users and exposure to these soils will be similar to a park end use.
- v. Value derived from LQM Suitable 4 Use Levels (S4ULs) alongside assessment with WM3 to ensure that materials remaining on site do not exceed the WM3 toxicity criteria for hazardous waste.
- vi. Value derived from Category 4 Screening Levels (C4SL) for residential land use with homegrown produce.
- vii. Value derived from Category 4 Screening Levels (C4SL) for residential land use without homegrown produce.
- viii. Value derived from Category 4 Screening Levels (C4SL) for public open space (POS) residential.
- ix. Value derived from Category 4 Screening Levels (C4SL) for public open space (POS) park.
- x. Mercury – based on elemental mercury.
- xi. PAH and TPH levels used are for 1% SOM.
- xii. Xylenes based on p-xylene (o-xylene 2600 mg/kg, m-xylene 3500 mg/kg) and is capped by its solubility.
- xiii. Value derived from LQM Suitable 4 Use Levels (S4ULs) for residential end use with plant uptake due to the volatilisation risk.
- xiv. BTEX is not SOM-related due to inhalation pathway.

REMEDIATION TARGETS – COMPARISON OF GROUNDWATER / LEACHATE ANALYSIS WITH TIER 1 SCREENING LEVELS

DETERMINAND	UNIT	EQS SCREENING VALUE ^{1, 2, 3}		DWS ^{3,4,5}
		AA	MAC	
Arsenic	µg/l	50	–	10
Cadmium	µg/l	0.08-0.25	0.45-1.5	5
Chromium (VI)	µg/l	3.4	–	–
Chromium (III)	µg/l	4.7	–	50
Copper	µg/l	1	–	2000
Total Cyanide	µg/l	1	–	50
Lead	µg/l	1.2	14	10
Mercury	µg/l	–	0.07	1.0
Nickel	µg/l	4	34	20
Selenium	µg/l	–	–	10
Zinc	µg/l	10.9	–	–
pH		6–9		
Naphthalene	µg/l	2	130	10*
Anthracene	µg/l	0.1	0.1	
Benzo[b]fluoranthene	µg/l	0.00017*	0.017	
Benzo[k]fluoranthene	µg/l	0.00017*	0.017	
Benzo(a)pyrene	µg/l	0.00017*	0.27	
Indeno(123-cd)pyrene	µg/l	0.00017*	5*	
Benzo(ghi)pyrene	µg/l	0.00017*	5*	
Fluoranthene	µg/l	0.0063	0.12	
Benzo(ghi)perylene	µg/l	1.7–4	8.2–3	
TPH C5-C6 (benzene)	µg/l	10	50	
TPH C6-C8 (toluene)	µg/l	74	–	700
TPH C8-C10 (ethyl benzene)	µg/l	20	–	300
TPH C10-C12 (xylene)	µg/l	30	–	500
TPH C12-C16	µg/l	2	130	90 ⁵
TPH C16-C35	µg/l	50#	50#	90 ⁵
TPH C5-C6	µg/l	–	–	15000
TPH C6-C8	µg/l	–	–	15000
TPH C8-C10	µg/l	–	–	300
TPH C10-C12	µg/l	–	–	300
TPH C12-C16	µg/l	–	–	300

DETERMINAND	UNIT	EQS SCREENING VALUE ^{1, 2, 3}		DWS ^{3,4,5}
		AA	MAC	
TPH C16 – C21	µg/l	–	–	300**
TPH C21-C35	µg/l	–	–	300**
Tetrachloroethylene	µg/l	0.4	–	10
Trichloroethylene	µg/l	10	–	10
Trichlorobenzene	µg/l	0.4	–	–
Trichloromethane	µg/l	2.5	–	–
Dichloromethane	µg/l	20	–	200
Carbon Tetrachloride	µg/l	12	–	3
Vinyl Chloride	µg/l	–	–	0.3

Notes

Solubility <0.01µg/l

AA – Annual Average

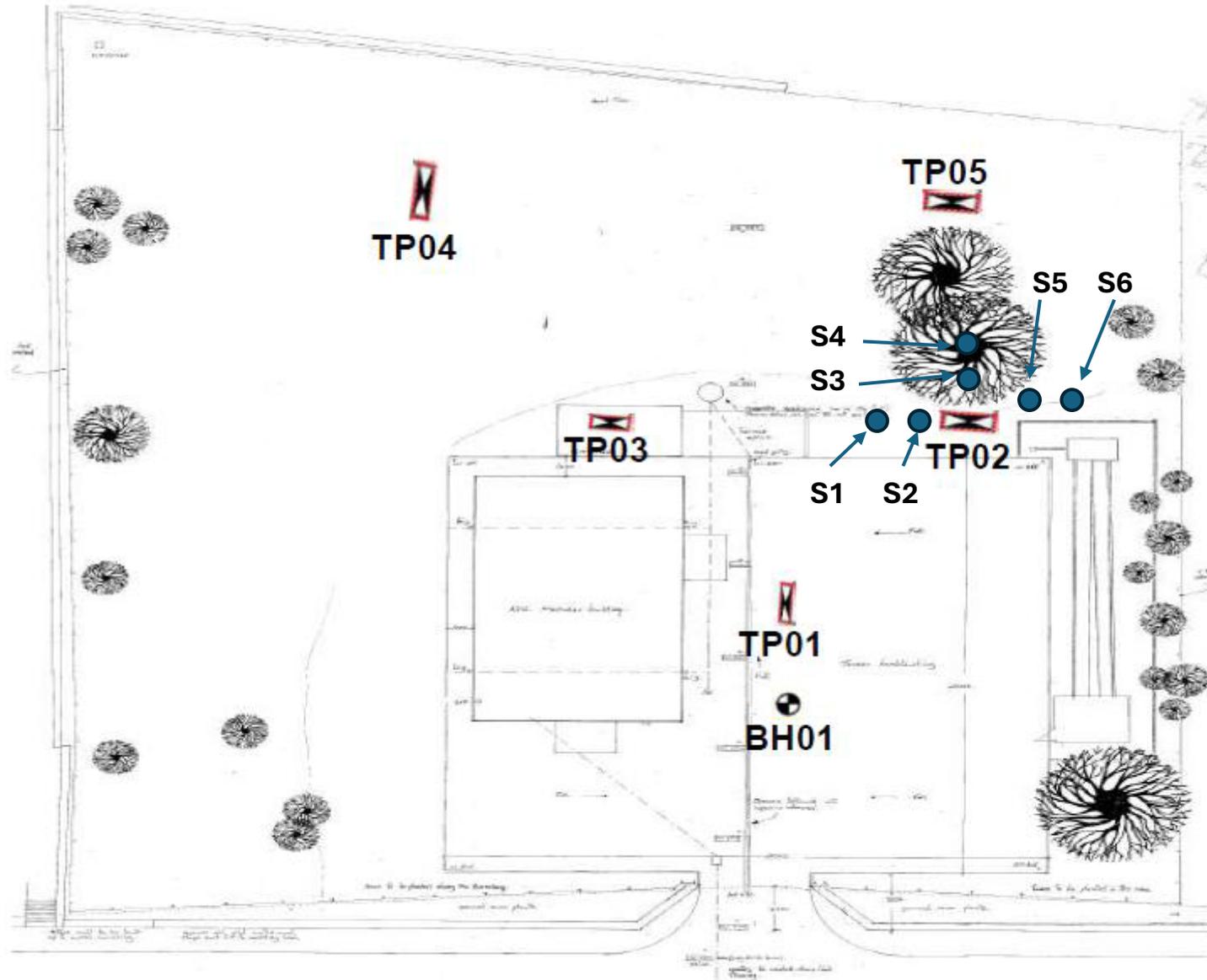
MAC- Maximum Admissible Concentration

* Polyaromatic hydrocarbons (PAH) - Benzo(a)pyrene (BaP), Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)-perylene and Indeno(1,2,3-cd)-pyrene. Benzo(a)pyrene can be considered as a marker for the other PAHs, hence only benzo(a)pyrene needs to be monitored for comparison with the biota EQS or the corresponding AA-EQS in water

** There are no WHO Guideline Values for aliphatic fractions C16-C21 and C21-C35, therefore the guideline value for aliphatic fractions inclusive of C8-C16 (300µg/l) has been applied.

1. The Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations (2015)
2. Directive establishing a framework for Community action in the field of water policy (Water Framework Directive)
3. Council Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (Dangerous Substances Directive) - List II substances
4. Council Directive on the quality of water intended for human consumption (Drinking Water Directive)
5. WHO Guidelines for Drinking Water Quality. Third edition (2004)

APPENDIX E
SAMPLING LOCATIONS



APPENDIX F
CHEMICAL TESTING
RESULTS

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 25/06725/1

Amendments: Request for Additional Analysis

Envirolab Job Number: 25/06725
Issue Number: 2
Date: 09 July, 2025

Client: Murray Rix (Northern) Ltd
Andrew House
Hadfield Street
Dukinfield
SK16 4QX

Project Manager: Enquires/Owain Davies
Project Name: Mirfield
Project Ref: N/A
Order No: 25/262
Date Samples Received: 23/06/25
Date Instructions Received: 24/06/25
Date Analysis Completed: 08/07/25

Approved by:

A handwritten signature in black ink, appearing to read "Gemma Berrisford". The signature is stylized and somewhat cursive.

Gemma Berrisford
Deputy Client Services Supervisor

Envirolab Job Number: 25/06725

Client Project Name: Mirfield

Client Project Ref: N/A

Lab Sample ID	25/06725/1	25/06725/2	25/06725/3	25/06725/4	25/06725/5	25/06725/6		Units	Limit of Detection	Method ref
Client Sample No	5109301	5109302	5109303	5109304	5109305	5109306				
Client Sample ID	S1	S2	S3	S4	S5	S6				
Depth to Top	0.90	1.20	1.00	1.10	0.80	1.20				
Depth To Bottom										
Date Sampled	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25	19-Jun-25				
Sample Type	SOIL - B	SOIL - B	SOIL - B	SOIL - B	SOIL - B	SOIL - B				
Sample Matrix Code	4AE	4ABE	4AE	4AE	4ABE	4ABE				
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	Amosite	NAD	Amosite	Amosite	Crocidolite & Chrysotile	NAD			A-T-045	
Asbestos Matrix (visual) _D	-	-	-	-	-	-				A-T-045
Asbestos Matrix (microscope) _D	Loose Fibres	-	Loose Fibres & Board	Loose Fibres	Loose Fibres	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	No	N/A	N/A	N/A				A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing) _D	<0.001	-	0.003	<0.001	0.001	-		% w/w	0.001	A-T-054

Report Notes

General

- This report shall not be reproduced, except in full, without written approval from Envirolab.
- The client Sample No, Client Sample ID, Depth to top, Depth to Bottom and Date Sampled are all provided by the client and can affect the validity of results.
- The results reported herein relate only to the material supplied to the laboratory.
- The residue of any samples contained within this report, and any received within the same delivery, will be disposed of **four weeks** after the initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of **six months** after the initial Asbestos testing is completed.
- Analytical results reflect the quality of the sample at the time of analysis only.
- Opinions and Interpretations expressed are outside our scope of accreditation.
- A deviating sample report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
- If a sample is outside of the calibration range or affected by interferences then it may need diluting. This will result in the limit of detection (LOD) being raised.
- Subcontracted Analysis: Please see the appended report for any deviations, current LODs and accreditation status of the test.

Key

Superscript “#”	Accredited to ISO 17025
Superscript “M”	Accredited to MCertS
Superscript “U”	Individual result not accredited
None of the above symbols	Analysis unaccredited
Subscript “A”	Analysis performed on as-received Sample
Subscript “D”	Analysis performed on the dried sample, crushed to pass 2mm sieve.
Subscript “D” on Asbestos	Analysis performed on a dried aliquot of sample provided.
Subscript “A”	Analysis has dependant options against results. Details appear in the comments of your Sample receipt
IS	Insufficient Sample for analysis
US	Unsuitable Sample for analysis
NDP	No Determination Possible
NAD	No Asbestos Detected
Trace	Asbestos found not suitable for Gravimetric Quantification – not enough to accurately weigh.
N/A	Not applicable

Asbestos

Identification: Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample. Stones etc. are not removed from the sample prior to analysis “Trace Asbestos Identified” will be reported if there is not enough present to verify the type.

Assigned Matrix Codes

1	SAND	6	CLAY/LOAM	A	Contains Stones
2	LOAM	7	OTHER	B	Contains Construction Rubble
3	CLAY	8	Asbestos Bulk (Only Asbestos ID accredited)	C	Contains visible hydrocarbons
4	LOAM/SAND	9	Incinerator Ash (some Metals accredited)	D	Contains glass / metal
5	SAND/CLAY			E	Contains roots / twigs

Note: 7,8,9 matrices are not covered by our ISO 17025 or MCertS accreditation, unless stated above.

Soil Chemical Analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any “D” subscripts.

TPH by method A-T-007:

For waters, free and visible oils are excluded from the sample used for analysis, so the reported result represents the dissolved phase only. Results “with Clean up” indicates samples cleaned up with Silica during extraction.

EPH CWG (method A-T-055) from TPH CWG:

EPH CWG results have humics mathematically subtracted through instrument calculation.

Where these humic substances have been identified in any IDs from “TPH CWG with clean up” please note that the concentration is **NOT** included in the quantified results but present in the ID for information.

Electrical Conductivity of water by method A-T-037:

Results greater than 12900µS/cm @ 25⁰C / 11550µS/cm @ 20⁰C fall outside the calibration range and as such are unaccredited.

Please contact your client manager if you require any further information.

Envirolab Deviating Samples Report

Hattersley Science & Technology Park, Stockport Road, Hattersley, SK14 3QU
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Murray Rix (Northern) Ltd, Andrew House , Hadfield Street, Dukinfield, SK16 4QX
Project: Mirfield
Clients Project No: N/A
Project No: 25/06725
Date Received: 24/06/2025 (am)
Cool Box Temperatures (°C): 17.0

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples $5 \pm 3^{\circ}\text{C}$), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	25/06725/1	25/06725/2	25/06725/3	25/06725/4	25/06725/5	25/06725/6
Client Sample No	5109301	5109302	5109303	5109304	5109305	5109306
Client Sample ID/Depth	S1 0.90m	S2 1.20m	S3 1.00m	S4 1.10m	S5 0.80m	S6 1.20m
Date Sampled	19/06/25	19/06/25	19/06/25	19/06/25	19/06/25	19/06/25
A-T-045	27/06/2025	27/06/2025	27/06/2025	27/06/2025	27/06/2025	27/06/2025
A-T-054	08/07/2025		08/07/2025	08/07/2025	08/07/2025	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report