



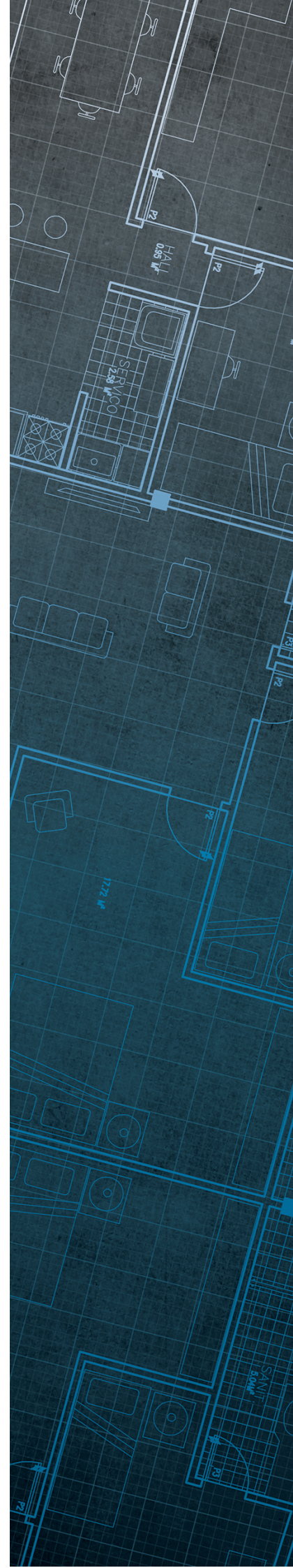
The Coal
Authority

Consultants Coal Mining Report

Land Adjacent To Bealey Industrial
Estate
Radcliffe
Bury
M26 2BD

Date of enquiry:	15 February 2024
Date enquiry received:	15 February 2024
Issue date:	15 February 2024

Our reference:	51003405517001
Your reference:	8353 - PO 9952-BH



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

COOPERS

Enquiry address

Land Adjacent To Bealey Industrial Estate
Radcliffe
Bury
M26 2BD

How to contact us

0345 762 6848 (UK)
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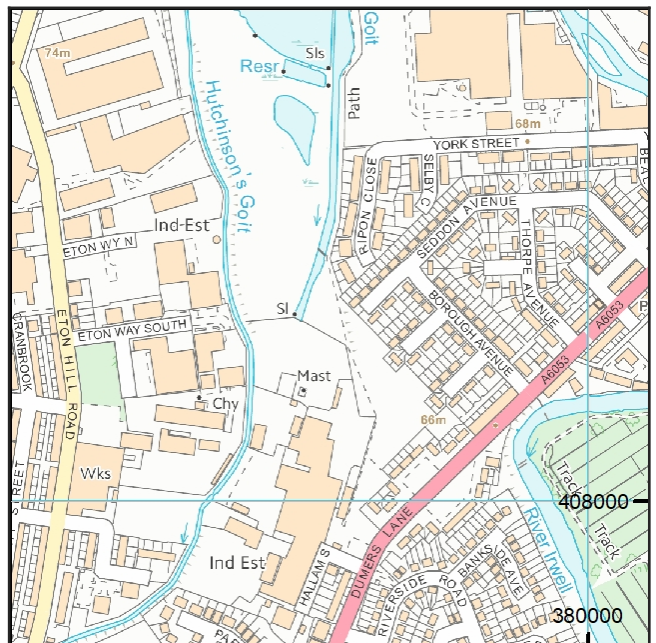
www.groundstability.com

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Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	DOE	Coal	3YN6	195	West	6.3	South-East	100	1887
unnamed	CANNEL	Coal	3XN8	261	Beneath Property	9.5	South	130	1894
unnamed	CANNEL	Coal	3Y5P	267	Beneath Property	9.5	South	130	1894
unnamed	CANNEL	Coal	3YPC	280	West	9.5	South	130	1894
unnamed	WIGAN FIVE FEET	Coal	3Y7S	299	South-West	13.0	East	120	1887
unnamed	CANNEL	Coal	3Y50	332	West	9.5	South-East	130	1893
unnamed	CANNEL	Coal	3YPB	368	South-West	9.5	South-East	130	1893

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW1556	2055	16820
3001A	3001	

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
RAMS	Coal	Yes	Within	N/A	235
WHITE	Coal	Yes	Within	N/A	91
WHITE	Coal	Yes	20.4	North-East	276

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Faults under or close to the property recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

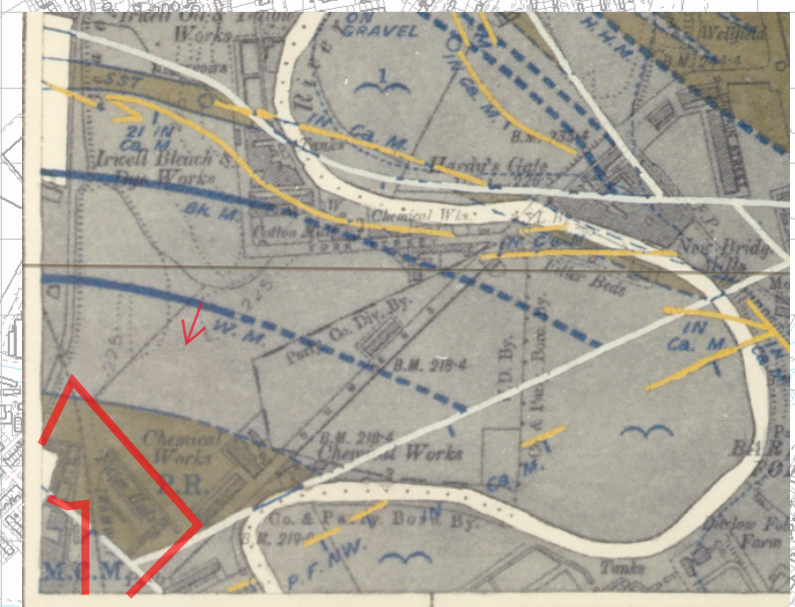
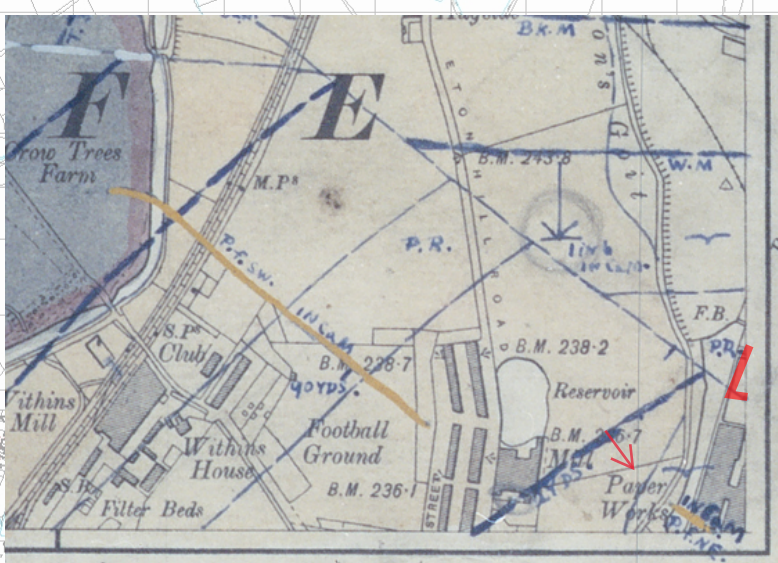
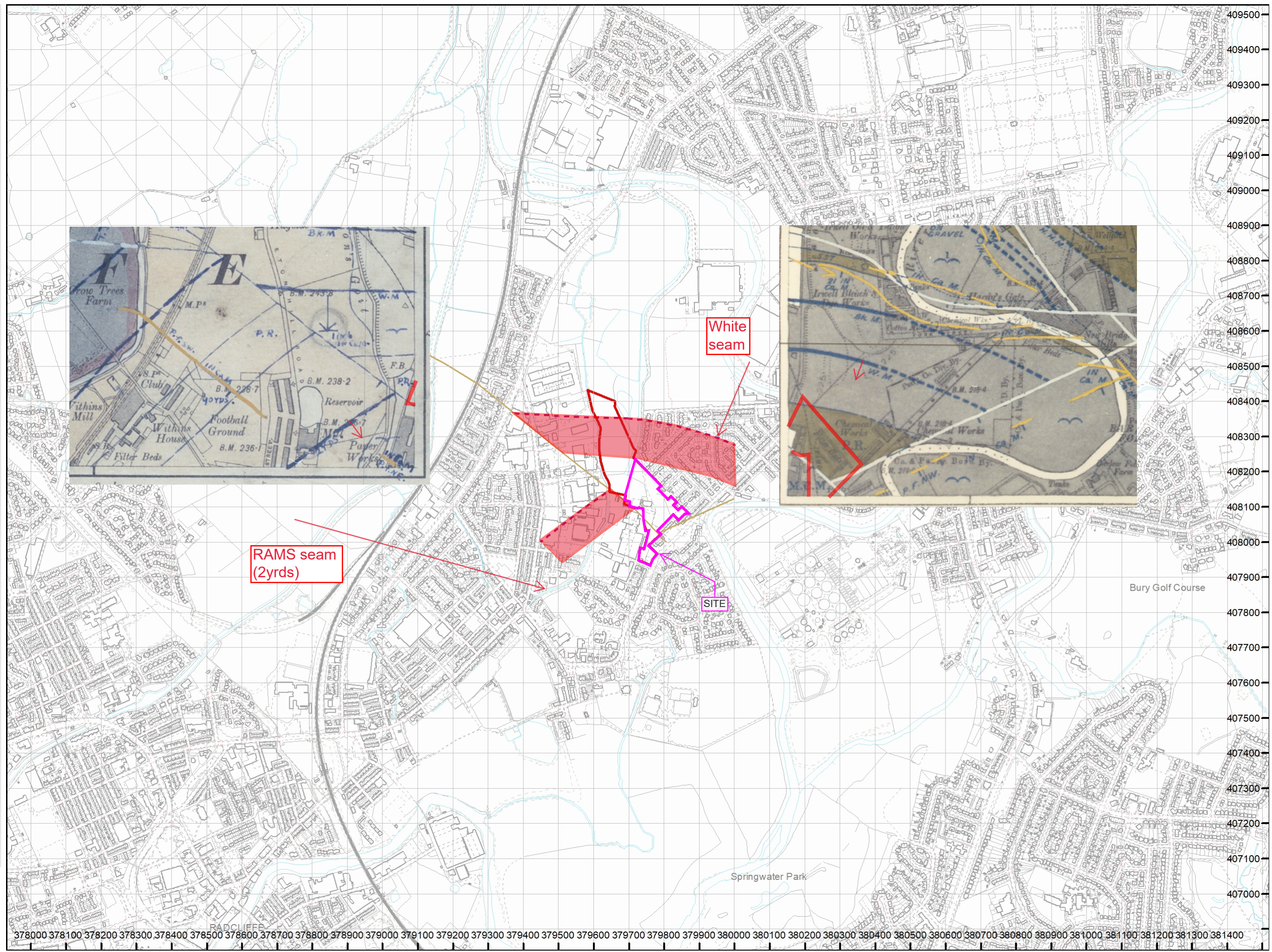
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown 
- Outcrop (Conjectured) 
- Geological faults 

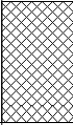
How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com



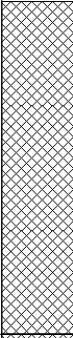
Site Investigation Report for
Land Adjacent to Bealey Industrial Estate, Radcliffe

Appendix 5

Trial Pit Logs

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk		Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Trial Pit Number TP01		
Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation		Dimensions 2.00 x 0.60 x 0.40m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353		
		Location (Observed measurements)		Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
0.10	JV				(0.40)	MADEGROUND (similar to topsoil). Dark brown, slightly silty, gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick, concrete, glass and plastic.				
0.40	B				0.40	At 0.40m: Cobbles of brick. Possible ACM - corrugated sheet				
						Complete at 0.40m				
						Remarks Location CAT scanned prior to excavation. Sides stable during excavation. No groundwater encountered during excavation. Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy. Trial pit terminated due to the presence of possible ACMs. Trial pit location shown on Coopers Drawing No. 8353/01. Backfilled with arisings upon completion.				
North 						Scale (approx) 1:25		Logged By LP		Checked By PRS

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk		Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Trial Pit Number TP02
Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation		Dimensions 2.50 x 0.60 x 3.00m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353
		Location (Observed measurements)		Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	JV				(0.60)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly silty, gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick, concrete and plastic. Contains frequent roots and rootlets. Occasional cobbles of brick. *Assumed as loose.		
0.70	JV				0.60 (1.00)	MADEGROUND. Brown. Slightly silty, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick and concrete. Contains occasional boulders of concrete. *Assumed as loose to medium dense.		
1.40	JV				1.60	At 1.40m: Possible hydrocarbon odour		
1.80	JV				(1.00)	MADEGROUND. Orangish brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies. Contains occasional cobbles of concrete. *Assumed as loose to medium dense.		
						At 2.10m: Cobble of coal tar		
2.70	JV				2.60 (0.40)	MADEGROUND. Firm, dark greyish brown, slightly sandy, slightly gravelly, silty CLAY. Gravel is angular to sub-angular, fine to coarse of various lithologies. Sand is fine to medium. Possible hydrocarbon odour.		
					3.00	Complete at 3.00m		
						Remarks Location CAT scanned prior to excavation. Spalling from 0.00m - 2.60m. No groundwater encountered during excavation. *Based upon trenchside stability characteristics. Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy. Trial pit location shown on Coopers Drawing No. 8353/01. Backfilled with arisings upon completion.		
North 		Scale (approx) 1:25		Logged By LP		Checked By PRS		

 coop ers chartered consulting engineers Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE			Trial Pit Number TP03			
Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation		Dimensions 2.50 x 0.60 x 2.70m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353		
		Location (Observed measurements)		Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
0.20	JV					MADEGROUND. Dark brown, slightly silty, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete and plastic. Contains occasional cobbles and rare boulders of concrete. *Assumed as loose to medium dense. At 0.30m: Becoming clayey				
0.50	JV				(1.10)	At 0.50m: Possible hydrocarbon odour				
1.20	JV				1.10	MADEGROUND. Firm ,orangish brown, slightly gravelly, slightly silty, very sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium. At 1.50m: Sandy				
					(1.60)	At 2.40m: Soft in places				
2.50	B				2.70	Complete at 2.70m				
						Remarks Location CAT scanned prior to excavation. Spalling from 0.00m - 1.10m. No groundwater encountered during excavation. *Based upon trenchside stability characteristics. Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy. Trial pit location shown on Coopers Drawing No. 8353/01. During extension of trial pit - metal pipe uncovered at 0.60m in south of trial pit. Trial pit terminated. Backfilled with arisings upon completion.				
North 						Scale (approx) 1:25	Logged By LP	Checked By PRS		

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Trial Pit Number TP04	
Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation		Dimensions 2.50 x 0.60 x 2.70m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353			
		Location (Observed measurements)		Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water		
0.10	JV				(0.30)	MADEGROUND. Dark brown, sandy, gravelly SILT. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick and concrete. Contains rare cobbles and boulders of concrete.					
					0.30	MADEGROUND. Light brown, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick and concrete. *Assumed as loose to medium dense.					
0.70	JV					At 0.70m: Becoming brown					
					(2.00)						
1.80	B										
2.20	JV					At 2.20m: Pocket of firm, orangish brown CLAY with inclusions of ash and clinker					
2.40	JV					(0.20)	MADEGROUND. Firm, greyish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.				
						2.50					
						(0.20)					
2.60	B				Perched water(1) at 2.60m.	2.70	Greyish brown, slightly silty, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies. Sand is fine to medium.				
						Complete at 2.70m					
						Remarks					
						Location CAT scanned prior to excavation. Spalling from 0.00m - 2.30m. Perched water at 2.60m during excavation. *Based upon trenchside stability characteristics. Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy. Trial pit location shown on Coopers Drawing No. 8353/01. Backfilled with arisings upon completion.					
North 						Scale (approx) 1:25		Logged By LP		Checked By PRS	

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Trial Pit Number TP05	
Machine : 5 Tonne Rubber Tracked Excavator		Dimensions 2.50 x 0.60 x 2.80m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353			
Method : Mechanical Excavation		Location (Observed measurements)		Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water			
0.05	JV				(0.10)	MADEGROUND (similar to topsoil). Dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse of various lithologies.					
0.20	JV				(0.20)						
0.40	JV				0.30						
						MADEGROUND. Brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies.					
						MADEGROUND. Dark reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, ash and clinker. *Assumed as very loose to loose. At 0.60m: Pocket of reddish brown very sandy CLAY					
											
1.40	JV				(1.80)						
											
2.20	JV				2.10	Soft, dark greyish brown, slightly gravelly, slightly silty, sandy CLAY. Possible hydrocarbon odour. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.					
					(0.70)						
											
											
											
					2.80	Complete at 2.80m					

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk		Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Trial Pit Number TP06
Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation		Dimensions 2.50 x 0.60 x 2.70m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353
		Location (Observed measurements)		Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05 0.15	B JV				(0.10) (0.10) (0.10) 0.20	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse, angular to sub-angular of various lithologies.		
0.40	JV				(0.70)	MADEGROUND. Orangish brown, slightly gravelly, slightly silty, very clayey, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies. *Assumed as loose to medium dense.		
1.00	JV				0.90 (0.40)	MADEGROUND. Dark reddish brown, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete, ash and clinker. *Assumed as very loose.		
1.50	JV				1.30 (1.30)	MADEGROUND. Firm, orangish brown, slightly gravelly, slightly silty, very sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
2.65	JV				2.60 (0.10) 2.70	MADEGROUND. Dark reddish brown, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, ash and clinker. *Assumed as very loose.		
						MADEGROUND. Firm, orangish brown, slightly gravelly, slightly silty, very sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		
						Complete at 2.70m		
						Remarks Location CAT scanned prior to excavation. Spalling from 0.00m - to base. No groundwater encountered during excavation. *Based upon trenchside stability characteristics. Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy. Trial pit location shown on Coopers Drawing No. 8353/01. Backfilled with arisings upon completion.		
						Scale (approx) 1:25	Logged By LP	Checked By PRS

Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation	Dimensions 2.50 x 0.60 x 1.70m	Ground Level (mOD) 	Client Westchurch Homes Ltd	Job Number 8353
	Location (Observed measurements)	Dates 26/09/2024	Engineer Coopers (Chester) Ltd	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05 0.15	B JV				(0.10) 0.10 (0.10) 0.20	MADEGROUND (similar to topsoil). Vegetation over dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse of various lithologies.		
						MADEGROUND. Brown, sightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is angular to sub-rounded, fine to coarse of various lithologies. *Assumed as loose to medium dense.		
					(0.80)	MADEGROUND. Reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick and concrete. *Assumed as very loose to medium dense.		
0.90	JV				1.00	At 0.90m: Wooden sleeper, approximately 1.30m x 0.25m x 0.20m		
1.10	JV				(0.70)	Brown, slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded, fine to coarse of various lithologies. Contains occasional cobbles. *Assumed as loose.		
					1.70	Complete at 1.70m		



Location CAT scanned prior to excavation.
Spalling from 0.00m - to base.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.

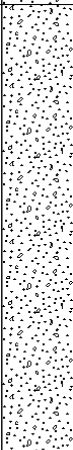
North
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Scale (approx)

1:25

Logged By

Checked By PRS

 coop ers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk		Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Trial Pit Number TP08
Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation		Dimensions 2.50 x 0.60 x 2.70m	Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353	
		Location (Observed measurements)	Dates 26/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	B				(0.10)	MADEGROUND (similar to topsoil). Vegetation over dark brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is fine to coarse of various lithologies.		
0.20	JV				(0.50)			
					0.60	Brown mottled orangish brown, slightly gravelly, slightly silty, very clayey, fine to medium SAND. Gravel is angular to sub-rounded, fine to coarse of various lithologies. *Assumed as very loose to medium dense.		
0.70	JV				(0.60)			
					1.20	Orangish brown, slightly silty SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to sub-rounded, fine to coarse of various lithologies. * Assumed as loose to medium dense.		
1.30	JV				(1.50)			
					2.70			
						Complete at 2.70m		
						Remarks Location CAT scanned prior to excavation. Spalling from 0.00m - 1.20m during excavation. Sides collapsing from 1.20m - 1.70m. No groundwater encountered during excavation. *Based upon trenchside stability characteristics. Please note that discolouration of photographs may occur when viewed on screen as a PDF, or when printed as a hard copy. Trial pit location shown on Coopers Drawing No. 8353/01. Backfilled with arisings upon completion.		
						Scale (approx) 1:25	Logged By LP	Checked By PRS

Machine : 5 Tonne Rubber Tracked Excavator Method : Mechanical Excavation	Dimensions 2.50 x 0.60 x 2.20m	Ground Level (mOD) 	Client Westchurch Homes Ltd	Job Number 8353
	Location (Observed measurements)	Dates 26/09/2024	Engineer Coopers (Chester) Ltd	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	JV				(2.20)	MADEGROUND (similar to topsoil). Vegetation over dark brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick, concrete and car tyre. Contains rare boulders of concrete. * Assumed as loose to medium dense.		
					2.20	Complete at 2.20m		



Remarks

Location CAT scanned prior to excavation.
Spalling from 0.00m - to base.
No groundwater encountered during excavation.
*Based upon trenchside stability characteristics.
Trial pit undertaken into earth bund, 2.20m above existing ground level.
Please note that discolouration of photographs may occur when viewed on
screen as a PDF, or when printed as a hard copy.
Trial pit location shown on Coopers Drawing No. 8353/01.
Backfilled with arisings upon completion.



Scale (approx)

1:25

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Site Investigation Report for
Land Adjacent to Bealey Industrial Estate, Radcliffe

Appendix 6

Borehole Logs

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE			Number WS01	
Machine : Archway Dart		Dimensions 100mm to 5.45m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353		
Method : Drive-in Windowless Sampler		Location (Observed measurements)		Dates 21/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr			
0.00-0.40	B				(0.40)	Grass over dark brown, slightly gravelly, sandy, silty TOPSOIL.						
0.40-1.60	B				0.40	Orangish brown, slightly gravelly, slightly silty, very clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.						
1.00-1.45	SPT N=5		1,1/2,1,1,1		(1.20)	At 1.00m: Loose						
1.60-2.20 1.70	B SV *40kPa		Medium vane		1.60	Firm, medium strength, orangish brown mottled grey, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.						
2.00-2.45 2.20-3.50	SPT N=14 B		5,4/4,3,3,4 Water strike(1) at 2.10m.		(0.60) 2.20	Orangish brown, slightly gravelly, silty, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.		Σ1				
3.00-3.45	SPT N=0		1,2/0,0,0,0			At 3.00m: Very loose						
3.50-5.00	B				(3.25)	At 3.80m: Gravelly At 4.00m: Medium dense						
4.00-4.45	SPT N=12		3,3/2,3,4,3			At 4.90m: Becoming grey						
5.00-5.45	SPT N=21		4,4/4,5,6,6		5.45	Complete at 5.45m						
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.10m From 2.00m - 3.00m: 60% Recovery. From 3.00m - 4.00m: 50% Recovery. SPT at 4.00m: No Recovery. *Spurious shear vane result, sample breaking apart during testing due to sand content. SV No. 6 used. Monitoring well installed from ground level to 1.60m comprising 0.50m plain pipe, 1.10m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01. Logged in accordance BS5930:2015								Scale (approx) 1:40	Logged By LP			
								Checked By PRS				

 chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS02	
Machine : Archway Dart		Dimensions 100mm to 5.45m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353			
Method : Drive-in Windowless Sampler		Location (Observed measurements)		Dates 21/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr				
0.00-0.30	B		0,0/2,1,1,2		(0.30)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, sandy SILT. Inclusions of ash and brick fragments.		V1					
0.20	JV				0.30								
0.30-0.80	B				(0.50)	Firm, brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium. Contains inclusions of rootlets.							
0.80-1.70	B				0.80	Firm, orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.							
1.00-1.45	SPT N=6				(0.90)	At 1.50m: Very sandy							
1.70-3.50	B				1.70	Orangish brown, slightly gravelly, slightly silty, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.							
2.00-2.45	SPT N=12				(1.80)	At 2.00m: Medium dense							
3.00-3.45	SPT N=11				3.50	At 2.20m: Gravelly							
3.50-5.00	B				(1.95)	At 3.00m: Slightly clayey, very gravelly							
4.00-4.45	SPT N=17				5.45	Firm, greyish brown, slightly gravelly, slightly sandy, silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.							
5.00-5.45	SPT N=27		5,4/4,4,4,5										
			7,5/7,7,6,7										
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.00m From 2.00m - 3.00m: 80% Recovery. From 3.00m - 4.00m: 70% Recovery. From 4.00m - 5.00m: 30% Recovery. Monitoring well installed from ground level to 3.00m comprising 1.00m plain pipe, 2.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample locations shown on Coopers Drawing No. 8353/01.								Scale (approx) 1:40	Logged By LP				
								Checked By PRS					
Logged in accordance BS5930:2015													

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS03	
Machine : Archway Dart Method : Drive-in Windowless Sampler		Dimensions 100mm to 4.45m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353			
		Location (Observed measurements)		Dates 21/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr				
0.20 0.30-1.00	JV B				(0.30) 0.30	MADEGROUND (similar to topsoil). Grass over dark brown, sandy SILT.							
0.60	JV				(0.70)	MADEGROUND. Dark greyish brown, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies with inclusions of ash and clinker.							
1.00-1.45 1.00-3.50	SPT N=25 B		3,6/5,6,7,7		1.00	Medium dense, orangish brown, slightly silty, very sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.							
2.00-2.45	SPT N=22		5,6/6,4,6,6 Water strike(1) at 2.10m.		(2.50)			Σ1					
3.00-3.45	SPT N=11		4,4/3,3,2,3										
3.50-4.00	B				3.50	Stiff, brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.							
4.00-4.45	SPT N=40		4,5/10,10,10,10		(0.95)								
					4.45	Complete at 4.45m							
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.10m From 3.00m - 4.00m: 70% Recovery. Monitoring well installed from ground level to 1.00m, comprising 0.50m plain pipe, 0.50m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01.								Scale (approx) 1:40		Logged By LP			
Loaded in accordance BS5930:2015								Checked By PRS					



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chartered consulting engineers

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Site

LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE

Number

WS04

Machine : Archway Dart Method : Drive-in Windowless Sampler		Dimensions 100mm to 5.45m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353	
		Location (Observed measurements)		Dates 21/03/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	JV				(0.40)	MADEGROUND (similar to topsoil). Grass over dark brown, sandy SILT with inclusions of brick and glass fragments.			
0.40-0.80	B				0.40	Orangish brown, slightly silty, clayey, gravelly, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
					(0.40)				
0.80-2.00	B				0.80	Orangish brown, slightly silty, very sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse. At 1.00m: Medium dense			
1.00-1.45	SPT N=13		4,4/3,3,3,4						
2.00-2.45	SPT N=15		5,5/5,4,3,3						
2.00-4.50	B				(3.70)				
3.00-3.45	SPT N=27		Water strike(1) at 3.00m. 10,9/10,8,5,4						
4.00-4.45	SPT N=13		3,2/2,5,4,2						
4.50-5.00	B				4.50	Stiff, brown, slightly gravelly, slightly sandy, slightly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
4.70	SV *42kPa		Medium vane		(0.95)				
5.00-5.45	SPT N=27		4,5/6,7,7,7		5.45	Complete at 5.45m			

Remarks

Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 3.00m.
From 1.00m - 2.00m: 80% Recovery. From 2.00m - 3.00m: 50% Recovery. From 3.00m - 4.00m: 50% Recovery. SPT at 5.00m: No Recovery.
Monitoring well installed from ground level to 2.00m comprising 1.00m plain pipe, 1.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone.
*Spurious shear vane result, sample breaking apart during testing. SV No. 6 used. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334.
Window sample location shown on Coopers Drawing No. 8353/01.
Logged in accordance BS5930:2015

Scale (approx)

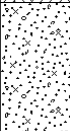
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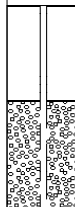
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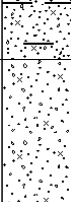
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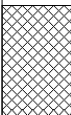
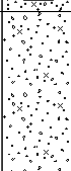
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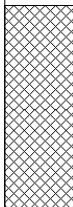
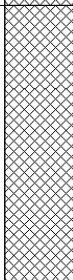
 Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS05		
Machine : Archway Dart Method : Drive-in Windowless Sampler		Dimensions 100mm to 2.25m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353		
		Location (Observed measurements)		Dates 22/03/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr	
0.00-0.30	B				(0.30)	Grass over dark brown, slightly clayey, sandy, silty TOPSOIL.				
0.30-1.00	B				0.30 (0.70)	Orangish brown, slightly gravelly, slightly silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.				
1.00-1.45 1.00-2.00	SPT N=10 B		3,3/3,3,2,2		1.00 (1.25)	Medium dense, orangish brown, slightly silty, sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.				
2.00-2.26	SPT 49/105		Water strike(1) at 2.00m. 8,8/27,22		2.25	Complete at 2.25m		Σ1		
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.00m Monitoring well installed from ground level to 1.50m comprising 0.50m plain pipe, 1.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01. Borehole terminated due to refusal in SPT at 2.25m.							Scale (approx) 1:40		Logged By LP	
Logged in accordance BS5930:2015							Checked By PRS			

 chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS06	
Machine : Archway Dart		Dimensions 100mm to 4.15m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353			
Method : Drive-in Windowless Sampler		Location (Observed measurements)		Dates 22/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr				
0.00-0.30	B		Water strike(1) at 0.60m.		(0.30)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly clayey, sandy SILT.		V1					
0.30-0.60	B				0.30	MADEGROUND. Firm, orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. Sand is fine to medium.							
0.60-1.10	B				0.60	MADEGROUND. Dark greyish brown, slightly silty, very gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies with inclusions of ash and clinker and brick fragments.							
0.80	JV				(0.50)	At 1.00m: Very loose							
1.00-1.45	SPT N=0				1.10	Soft, greyish brown, slightly gravelly, sandy, silty CLAY. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. Sand is fine to medium.							
1.10-1.60	B	0,0/0,0,0,0			(0.50)								
1.60-2.00	B				1.60	Dark brown, silty, sandy, fibrous PEAT. Faint organic odour. Inclusions of plant matter throughout.							
2.00-2.45	SPT N=34				(0.30)	Dark grey brown, slightly gravelly, slightly clayey, sandy SILT. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. At 2.00m: Dense							
2.00-2.30	B				2.30	Dense, greyish brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to medium of various lithologies. At 3.00m: Becoming gravelly							
2.30-3.70	B				(1.85)	Complete at 4.15m							
3.00-3.45	SPT N=32	6,5/8,8,7,9			(1.85)								
3.70-4.15	SPT N=48				4.15								
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 0.60m. From 2.00m - 3.00m: 80% Recovery. Monitoring well installed from ground level to 1.10m, comprising 0.50m plain pipe, 0.60m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01.								Scale (approx) 1:40	Logged By LP				
Checked By PRS													

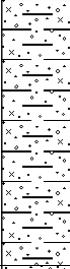
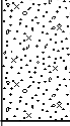
 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS07	
Machine : Archway Dart Method : Drive-in Windowless Sampler		Dimensions 100mm to 4.45m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353			
		Location (Observed measurements)		Dates 22/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description			Legend	Water	Instr		
0.20	JV				(0.40)	MADEGROUND (similar to topsoil). Grass over dark brown, sandy, SILT with inclusions of glass fragment.							
0.40-0.70	B				0.40 (0.30) 0.70	Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.							
0.70-2.00 0.80	B SV *40kPa		Medium vane			Firm, orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. At 0.80m: Low to medium strength							
1.00-1.45	SPT N=2		0,0/0,0,0,2										
			Water strike(1) at 1.40m.										
1.70	SV *38kPa		Medium vane										
2.00-2.45 2.00-3.50	SPT N=10 B		4,3/3,3,2,2		(2.80)	At 2.30m: Gravelly At 2.50m: Stiff, becoming brown. No longer sandy At 2.70m: High strength							
2.70	SV *78kPa		Medium vane										
3.00-3.45	SPT N=19		0,3/4,5,5,5										
3.50-4.00	B				3.50	Brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.							
4.00-4.45	SPT N=50		4,5/12,13,13,12		(0.95) 4.45	At 4.00m: Dense Complete at 4.45m							
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 1.40m. From 1.00m - 2.00m: 50% Recovery. From 2.00m - 3.00m: 80% Recovery. From 3.00m - 4.00m: 90% Recovery. *Spurious shear vane result, sample breaking apart during testing. SV No. 6 used. Monitoring well installed from ground level to 3.00m comprising 1.00m plain pipe, 2.00m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01. Logged in accordance BS5930:2015										Scale (approx) 1:40	Logged By LP	Checked By PRS	

 chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS08	
Machine : Archway Dart		Dimensions 100mm to 3.70m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353			
Method : Drive-in Windowless Sampler		Location (Observed measurements)		Dates 22/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr				
0.00-0.30	B				(0.30)	Grass over dark brown, sandy, silty TOPSOIL.							
0.30-1.00	B				0.30 (0.70)	Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.							
1.00-1.45 1.00-3.70	SPT N=26 B		2,3/6,7,5,8		1.00	Medium dense, orangish brown, slightly silty, sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.							
2.00-2.45	SPT N=37		Water strike(1) at 2.00m. 13,11/11,10,8,8		(2.40)			Σ1					
3.00-3.45	SPT N=14		10,6/5,3,3,3		3.40 (0.30) 3.70	Firm, brown, slightly gravelly, slightly sandy, slightly silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.							
						Complete at 3.70m							
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 2.00m. SPT at 2.00m: No Recovery. From 2.00m - 3.00m: 70% Recovery. Monitoring well installed from ground level to 1.80m comprising 1.00m plain pipe, 0.80m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01. Borehole terminated at 3.70m due to obstruction from large cobble. Logged in accordance BS5930:2015								Scale (approx) 1:40	Logged By LP				
								Checked By PRS					

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE				Number WS09	
Machine : Archway Dart		Dimensions 100mm to 4.45m		Ground Level (mOD)		Client Westchurch Homes Ltd				Job Number 8353			
Method : Drive-in Windowless Sampler		Location (Observed measurements)		Dates 22/03/2024		Engineer Coopers (Chester) Ltd				Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr				
0.20	JV				(0.60)	MADEGROUND (similar to topsoil). Dark brown, sandy, gravelly SILT. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick fragments, plastic and concrete.							
0.60-1.90	B				0.60	Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. At 1.00m: Loose							
1.00-1.45	SPT N=6		1,1/1,2,1,2		(1.50)								
1.90-2.10 2.00-2.45 2.10-4.00	B SPT N=6 B		3,2/2,1,2,1		2.10								
						At 1.90m: No longer clayey							
						Loose, orangish brown, slightly silty, sandy, sub-angular to sub-rounded, fine to coarse GRAVEL of various lithologies. Sand is fine to coarse.							
3.00-3.45	SPT N=9		Water strike(1) at 3.00m. 4,2/3,2,2,2		(2.35)			√1					
4.00-4.45	SPT N=6		2,2/2,2,1,1		4.45	Complete at 4.45m							
Remarks Location CAT scanned prior to drilling. Hand dug service pit to 1.00m for service clearance. Water strike at 3.00m. From 2.00m - 3.00m: 30% Recovery. From 3.00m - 4.00m: 60% Recovery. Monitoring well installed from ground level to 2.50m comprising 1.00m plain pipe, 1.50m slotted pipe with inert free draining gravel surround, bentonite seal above and below response zone. Borehole drilled by G.P. Drilling. SPT Energy Ratio = 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01.								Scale (approx) 1:40	Logged By LP				
Loaded in accordance BS5930:2015								Checked By PRS					

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE			Number WS101	
Machine : Archway Dart 334 Method : Drive-in Windowless Sampler		Dimensions 100mm to 4.45m		Ground Level (mOD)		Client Westchurch Homes Ltd			Job Number 8353			
		Location (Observed measurements)		Dates 30/09/2024		Engineer Coopers (Chester) Ltd			Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description			Legend	Water		
0.40	JV				(1.10)	MADEGROUND. Dark brown, slightly clayey, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies including brick, concrete and plastic.						
1.20-1.65	SPT N=27		1,3/6,8,7,6		1.10	MADEGROUND. Brown, slightly silty, slightly sandy, very clayey, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete and timber. Sand is fine to coarse.						
1.50	JV											
2.00-2.45	SPT N=6		4,3/1,2,1,2		(1.90)							
2.00-3.00	JV											
3.00-3.44	SPT 25*/135		2,23/15,8,3,3		3.00	MADEGROUND. Dark greyish brown, slightly silty, slightly clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick. Sand is fine to coarse.						
3.00-4.00	N=29 JV				(1.45)							
4.00-4.45	SPT N=4		1,1/2,1,0,1		4.45	Complete at 4.45m						
Remarks Location CAT scanned prior to drilling. Hand dug to 1.20m for service clearance. From 2.00m - 3.00m 40% recovery, From 3.00m - 4.00m 30% recovery. Monitoring well installed from ground level to 3.50m, comprising 1.00m pain pipe and 2.50m slotted pipe with inert free draining gravel surround and bentonite seal above and below response zone. Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01.										Scale (approx) 1:40	Logged By LP	
										Checked By PRS		

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk		Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Number WS102	
Machine : Archway Dart 334 Method : Drive-in Windowless Sampler		Dimensions 100mm to 0.90m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353	
		Location (Observed measurements)		Dates 30/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.70	JV				(0.90) 0.90	MADEGROUND. Dark brown, slightly silty, very gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies including brick and concrete.			
						Complete at 0.90m			
Remarks Location CAT scanned prior to drilling. Hand dug to 0.90m for service clearance. Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01. Terminated at 0.90m due to obstruction.							Scale (approx) 1:40	Logged By LP	
							Checked By PRS		

 coopers chartered consulting engineers				Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE		Number WS103	
Machine : Archway Dart 334 Method : Drive-in Windowless Sampler		Dimensions 100mm to 4.45m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353			
		Location (Observed measurements)		Dates 30/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water			
0.05 0.20	JV JV				(0.40) 0.40	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, slightly silty, gravelly, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies.					
0.70	JV				(0.70)	MADEGROUND. Orangish brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is angular to sub-angular, fine to coarse of various lithologies.					
1.20-1.65	SPT N=2		1,0/0,0,1,1		1.10	MADEGROUND. Dark reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, concrete, ash and clinker. Sand is fine to coarse.					
1.50	JV				(1.30)						
2.00-2.45 2.00-3.80	SPT N=0 B		1,1/0,0,0,0		2.40	Soft, dark greyish brown, slightly gravelly, slightly sandy, silty CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium. At 2.70m: Becoming light brown At 2.80m: Low strength					
2.80 2.80 3.00-3.45	SV *20kPa JV SPT N=2		Medium vane 1,1/1,0,1,0		(1.40)						
3.60	SV *30kPa		Medium vane		3.80						
3.80-4.00	B				(0.65)	Greyish brown, slightly gravelly, silty, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. At 4.00m: Medium dense					
4.00-4.45	SPT N=27		3,3/8,8,6,5		4.45	Complete at 4.45m					
Remarks Location CAT scanned prior to drilling. Hand dug to 1.20m for service clearance. From 1.00m - 2.00m 40% recovery, From 2.00m - 3.00m 80% recovery. *Spurious shear vane results; sample breaking apart during testing. SV10 used. Monitoring well installed from ground level to 2.50m, comprising 1.00m pain pipe and 1.50m slotted pipe with inert free draining gravel surround and bentonite seal above and below response zone. Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01.							Scale (approx) 1:40	Logged By LP	Checked By PRS		

 Coopers (Chester) Ltd tel: 01244 684 910 web: www.coopers.co.uk email: admin@coopers.co.uk				Site LAND ADJACENT TO BEALEY INDUSTRIAL ESTATE, RADCLIFFE			Number WS104		
Machine : Archway Dart 334 Method : Drive-in Windowless Sampler		Dimensions 1.00mm to 4.44m		Ground Level (mOD)		Client Westchurch Homes Ltd		Job Number 8353	
		Location (Observed measurements)		Dates 30/09/2024		Engineer Coopers (Chester) Ltd		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.10	B				(0.20)	MADEGROUND (similar to topsoil). Grass over dark brown, slightly gravelly, slightly silty, gravelly, fine to medium SAND. Gravel is angular to sub-rounded, fine to coarse of various lithologies. MADEGROUND. Brown, slightly gravelly, slightly silty, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
0.25	JV				(0.20)				
0.70	JV				(0.30)				
					(1.20)	MADEGROUND. Reddish brown, slightly silty, clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of various lithologies including brick, glass, ash and clinker. Sand is fine to coarse.			
1.20-1.65	SPT N=13		3,2/4,3,3,3						
1.50-2.00	B				1.50				
1.70	JV				(0.90)	Brown, slightly silty, SAND and GRAVEL. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to coarse.			
2.00-2.45	SPT N=5		3,2/2,1,1,1						
2.00-3.50	B				2.40				
2.60	JV				(1.10)	Firm (soft in places), orangish brown, slightly gravelly, slightly silty, sandy CLAY. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. Sand is fine to medium.		V1	
3.00-3.45	SPT N=15		Water strike(1) at 3.00m. 3,4/6,4,3,2		3.50				
3.50-3.70	B				(0.20)				
3.70-4.00	B				3.70	Brown, slightly silty, gravelly, fine to coarse SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies.			
4.00-4.44	SPT 50/290		14,11/15,10,10,15		(0.74)				
					4.44				
						Orangish brown, slightly silty, slightly gravelly, clayey, fine to medium SAND. Gravel is sub-angular to sub-rounded, fine to coarse of various lithologies. At 4.00m: Dense			
						Complete at 4.44m			
Remarks Location CAT scanned prior to drilling. Hand dug to 1.00m for service clearance. Water strike at 3.00m. Monitoring well installed from ground level to 1.50m, comprising 0.50m pain pipe and 1.00m slotted pipe with inert free draining gravel surround and bentonite seal above and below response zone. Borehole drilled by GP Drilling. SPT Energy Ratio: 67%. Rig Ref: Archway Dart 334. Window sample location shown on Coopers Drawing No. 8353/01.							Scale (approx)	Logged By	
							1:40	LP	
							Checked By	PRS	

Site Investigation Report for
Land Adjacent to Bealey Industrial Estate, Radcliffe

Appendix 7

Ground Gas Monitoring Results



Gas Monitoring Calibration Certificate



Gresham Tube Test Certificate

Project Name: Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No. 8353
Prepared by: LP
Checked by: BH

Date of Production:
03/04/2024

GROUND GAS MONITORING RECORD SUMMARY SHEET

Borehole Reference	Response Depth (m-bgl)	Date	Time	Temp (°C)	Gas Analyser	Weather Conditions	CH ₄ (peak) (%)	CH ₄ (steady) (%)	CO ₂ (peak) (%)	CO ₂ (steady) (%)	O ₂ (min.) (%)	O ₂ (steady) (%)	H ₂ S (peak) (ppm)	CO (peak) (ppm)	Flow (initial) (l/hr)	Flow (steady) (l/hr)	TWL (m - bgl)	Atmos. Pressure (mbar)	Remarks
WS01	0.50-16.0m	02/04/2024	15:03:38	13	GA5000	Sunny/Cloudy	0.0	0.0	2.6	2.6	18.1	18.1	0	1	0.1	0.3	Dry	997	Monitored successfully
		05/04/2024	10:24:35	14	GA5000	Overcast/Rain	0.1	0.1	3.3	3.3	17.0	17.0	0	2	0.2	0.3	Dry	991	Monitored successfully
WS02	1.00-3.00m	02/04/2024	14:00:29	13	GA5000	Sunny/Cloudy	0.0	0.0	2.1	2.1	19.5	19.5	0	1	0.1	0.3	2.02	998	Monitored successfully
		05/04/2024	12:13:18	14	GA5000	Overcast/Rain	0.1	0.1	2.6	2.6	19.0	19.0	0	1	0.1	0.3	2.02	992	Monitored successfully
WS03	0.50-1.00m	02/04/2024	13:12:21	13	GA5000	Sunny/Cloudy	0.1	0.1	1.4	1.4	20.5	20.5	0	1	0.1	0.2	Dry	998	Monitored successfully
		05/04/2024	10:37:29	14	GA5000	Overcast/Rain	0.1	0.0	1.7	1.6	19.2	19.3	0	1	0.1	0.3	Dry	991	Monitored successfully
WS04	1.00-2.00m	02/04/2024	14:13:58	13	GA5000	Sunny/Cloudy	0.0	0.0	1.6	1.5	20.0	20.0	0	1	0.0	0.1	Dry	998	Monitored successfully
		05/04/2024	11:42:07	14	GA5000	Overcast/Rain	0.1	0.1	2.1	2.1	19.3	19.4	0	1	0.1	0.4	Dry	992	Monitored successfully
WS05	0.50-1.50m	02/04/2024	12:57:51	13	GA5000	Sunny/Cloudy	0.1	0.1	2.2	2.2	18.8	18.8	0	1	0.0	0.0	Dry	998	Monitored successfully
		05/04/2024	11:02:44	14	GA5000	Overcast/Rain	0.0	0.0	3.0	2.9	17.1	17.2	0	1	0.0	0.0	Dry	992	Monitored successfully
WS06	0.50-1.10m	02/04/2024	12:38:14	13	GA5000	Sunny/Cloudy	0.1	0.1	0.3	0.3	20.9	21.0	0	3	0.1	0.1	0.67	997	Monitored successfully
		05/04/2024	11:56:36	14	GA5000	Overcast/Rain	0.1	0.1	0.4	0.4	21.5	21.5	0	2	0.4	2.1	0.67	991	Monitored successfully
WS07	1.00-3.00m	02/04/2024	12:16:39	13	GA5000	Sunny/Cloudy	0.1	0.1	2.8	2.7	17.3	17.3	0	1	0.0	0.0	1.33	997	Monitored successfully
		05/04/2024	11:24:03	14	GA5000	Overcast/Rain	0.0	0.0	3.0	3.0	16.6	16.6	0	1	0.1	0.3	1.21	992	Monitored successfully
WS08	1.00-1.80m	02/04/2024	13:30:26	13	GA5000	Sunny/Cloudy	0.1	0.1	3.0	2.9	17.9	18.0	0	1	0.0	0.1	Dry	998	Monitored successfully
		05/04/2024	10:49:16	14	GA5000	Overcast/Rain	0.0	0.0	3.1	3.0	16.9	17.1	0	1	0.1	0.2	Dry	991	Monitored successfully
WS09	1.00-2.45m	02/04/2024	14:36:08	13	GA5000	Sunny/Cloudy	0.0	0.0	2.9	2.9	17.2	17.3	0	1	0.1	0.2	Dry	999	Monitored successfully
		05/04/2024	10:09:13	14	GA5000	Overcast/Rain	0.1	0.1	3.0	2.5	17.3	17.9	0	1	0.0	0.0	Dry	990	Monitored successfully

Visit Conditions Summary

Visit Date	Temperature	Atmos Pressure	Pressure Trend	Weather
02/04/2024	13	997	Rising	Sunny/Cloudy
05/04/2024	14	991	Rising	Overcast/Rain

Project Name: Land Adjacent to Bealey Industrial Estate, Radcliffe
Project No. 8353
Prepared by: LP
Checked by: BH

Date of Production:
15/10/2024

GROUND GAS MONITORING RECORD SUMMARY SHEET

Borehole Reference	Response Depth (m-bgl)	Date	Time	Temp (°c)	Gas Analyser	Weather Conditions	CH ₄ (peak) (%)	CH ₄ (steady) (%)	CO ₂ (peak) (%)	CO ₂ (steady) (%)	O ₂ (min.) (%)	O ₂ (steady) (%)	H ₂ S (peak) (ppm)	CO (peak) (ppm)	Flow (initial) (l/hr)	Flow (steady) (l/hr)	TWL (m - bgl)	Atmos. Pressure (mbar)	Remarks
WS101	1.00-3.50m	08/10/2024	15:46:00	15	GA5000	Cloudy/Light Rain	1.4	1.4	4.9	4.8	0.5	0.9	0	4	0.0	0.1	3.2	985	Monitored successfully
		06/11/2024	10:57:00	11	GA5000	Cloudy	0.1	0.1	0.1	0.1	21.3	21.4	0	1	0.0	0.0	3.2	1025	Monitored successfully after replacing gas bung on arrival
					GA5000														
					GA5000														
					GA5000														
WS103	1.00-2.50m	08/10/2024	15:30:00	15	GA5000	Cloudy/Light Rain	0.1	0.1	1.7	1.7	19.1	19.1	0	3	0.1	0.3	Dry	986	Monitored successfully
		06/11/2024	10:17:00	11	GA5000	Cloudy	0.1	0.1	2.8	2.7	16.1	16.2	0	1	0.0	0.2	Dry	1025	Monitored successfully
					GA5000														
					GA5000														
					GA5000														
WS104	0.50-1.50m	08/10/2024	15:06:00	15	GA5000	Cloudy/Light Rain	0.1	0.1	1.4	1.4	19.5	19.5	0	2	0.1	0.2	Dry	986	Monitored successfully
		06/11/2024	10:33:00	11	GA5000	Cloudy	0.1	0.1	2.2	2.2	19.0	19.0	0	1	0.0	0.1	Dry	1026	Monitored successfully
					GA5000														
					GA5000														
					GA5000														

Visit Conditions Summary

Visit Date	Temperature	Atmos Pressure	Pressure Trend	Weather
08/10/2024	15	985	Falling	Cloudy/Light Rain
06/11/2024	11	1025	Rising	Cloudy

CERTIFICATION OF CALIBRATION



Date Of Calibration: 26-Sep-2022

4533

Certificate Number: G501314_2/31282

Issued by: QED Environmental Systems Ltd.

Customer: Coopers
Park House Sandpiper Court Chester Business Park
CHESTER CH4 9QU UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G501314

UKAS Accredited results:

Results after adjustment :

Methane (CH ₄)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	4.9	0.072
15.0	14.9	0.13
60.0	59.7	0.42

Carbon Dioxide (CO ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
5.0	5.0	0.074
15.0	15.0	0.13
40.0	40.0	0.29

Oxygen (O ₂)		
Certified Gas (%)	Instrument Reading (%)	Uncertainty (%)
21.2	21.3	0.25

The inwards assessment was carried out 16-Sep-2022.

The maximum adjustment is larger than the specification limit.

Inwards assessment data is available if requested.

All concentrations are molar.

CH₄, CO₂ readings recorded at : 31.7 °C ± 2.5 °C

O₂ readings recorded at : 22.2 °C ± 2.5 °C

Barometric Pressure : 0991 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

Instrument has passed calibration as the measurement result is within the specification limit. The specification limit takes into account the measurement uncertainty.

The results relate only to the item calibrated

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 114 IGC Instance: 114

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www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION



Date Of Calibration: 26-Sep-2022

Certificate Number: G501314_2/31282

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	Instrument Reading
991	991

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
CO	499	499
H ₂ S	260	260

Internal Flow	
Applied (l/hr)	Instrument Reading (l/hr)
5.0	5.2
10.0	10.2

Date of Issue : 29-Sep-2022

Approved by Signatory

Laura McBride

Laboratory Inspection

End of Certificate

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:114 IGC Instance:114

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

Service Interval Statement

Service scheme for analyser G501314 has been changed from a 12-month service to 24-months.
Next service will be due 26th September 2024.

Signed for and on behalf of:

A handwritten signature in black ink, appearing to read 'LYates', is written over a horizontal line.

Name: Leanne Yates

Position: Customer Service Manager

Date: 29th February 2024

QED Environmental Systems

USA office

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Attention: Cooper Geotech

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 October 2024
Customer:	Cooper Associates
Sample Delivery Group (SDG):	241014-53
Your Reference:	8353
Location:	Land Adjacent to Bealey Industrial Estate, Radelif
Report No:	744244
Order Number:	10221-LP

We received 3 samples on Monday October 14, 2024 and 3 of these samples were scheduled for analysis which was completed on Monday October 21, 2024. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Lauren Ellis

General Manager Western Europe Environmental



CERTIFICATE OF ANALYSIS

Validated

SDG: 241014-53

Report Number: 744244

Superseded Report:

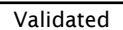
Client Ref.: 8353

Location: Land Adjacent to Bealey Industrial Estate, Radelif

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
30514862	GRESHAM TUBE 01 WS04			08/10/2024
30514863	GRESHAM TUBE 02 WS03			08/10/2024
30514864	GRESHAM TUBE 03 WS01			08/10/2024

Only received samples which have had analysis scheduled will be shown on the following pages.



SDG: 241014-53	Report Number: 744244	Superseded Report:
Client Ref.: 8353	Location: Land Adjacent to Bealey Industrial Estate, Radelif	

12:22:00 21/10/2024



CERTIFICATE OF ANALYSIS

Validated

SDG: 241014-53 Report Number: 744244 Superseded Report:
Client Ref.: 8353 Location: Land Adjacent to Bealey Industrial Estate, Radelif

Table of Results - Appendix

Method No	Description
TM053	Determination of Bulk Gas Composition

NA = not applicable.
Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).



CERTIFICATE OF ANALYSIS

Validated

SDG: 241014-53 Report Number: 744244 Superseded Report:
Client Ref.: 8353 Location: Land Adjacent to Bealey Industrial Estate, Radelif

Test Completion Dates

Lab Sample No(s)	30514862	30514863	30514864
Customer Sample Ref.	GRESHAM TUBE 01 WS04	GRESHAM TUBE 02 WS03	GRESHAM TUBE 03 WS01
AGS Ref.			
Depth			
Type	Gas (G)	Gas (G)	Gas (G)
Bulk Gas	21-Oct-2024	21-Oct-2024	21-Oct-2024



CERTIFICATE OF ANALYSIS

SDG: 241014-53
Client Ref: 8353

Report Number: 744244

Location: Land Adjacent to Bealey Industrial Estate, Radelif

Superseded Report:

Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH₄ by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 15 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of 15 days after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials and soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Site Investigation Report for
Land Adjacent to Bealey Industrial Estate, Radcliffe

Appendix 8

Chemical Test Results