ALBURY S.I. LTD
Geotechnical & Environmental

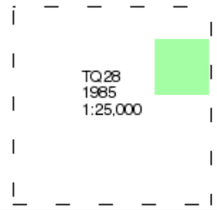
London

Published 1985

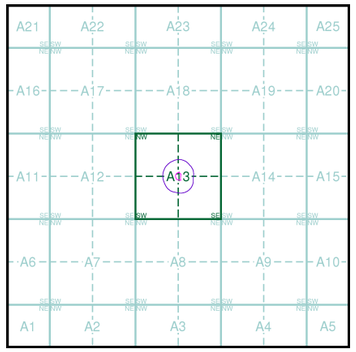
Source map scale - 1:25,000

These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.
They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

Map Name(s) and Date(s)



Russian Map - Slice A



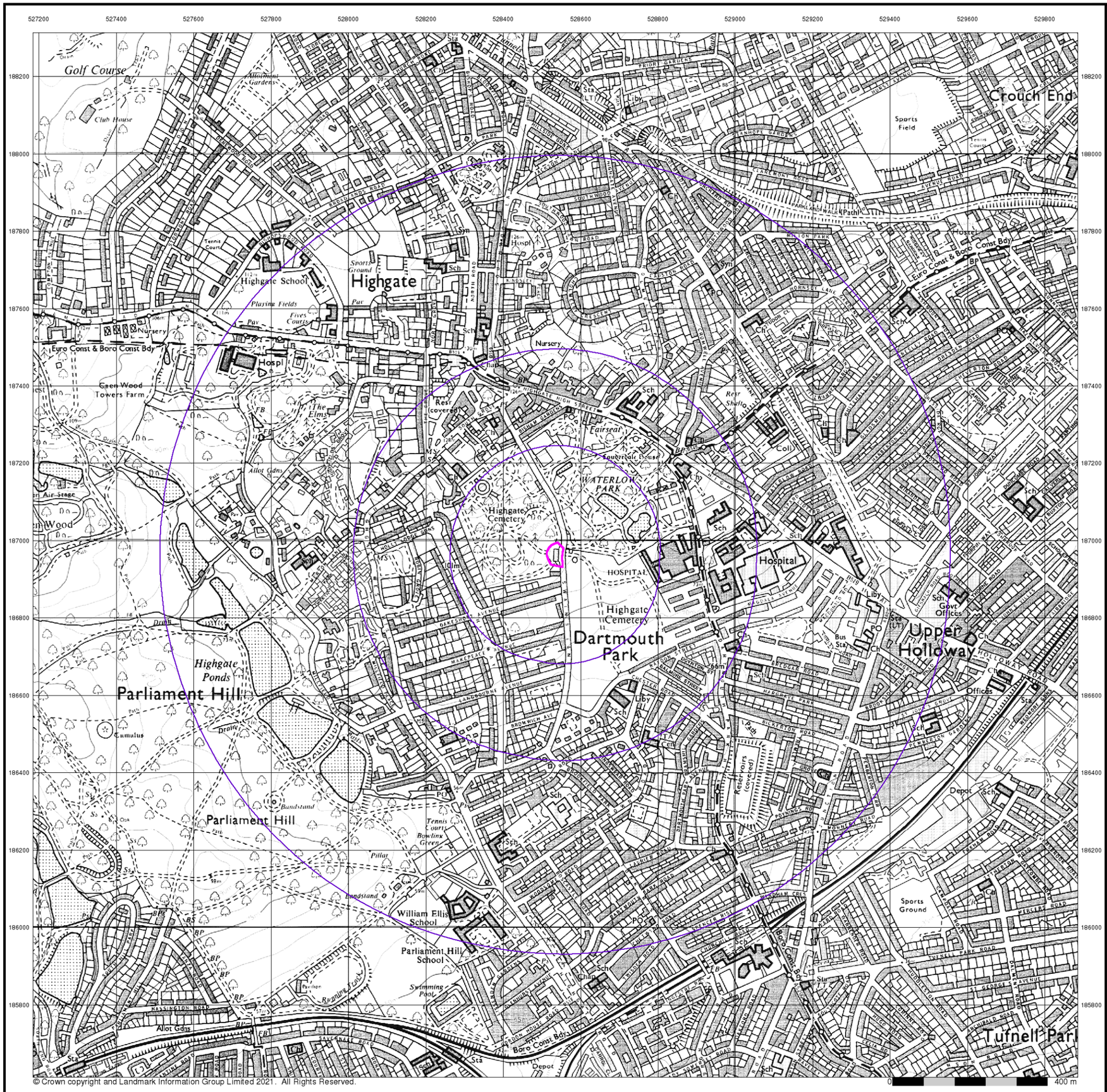
Order Details

Order Number:	279460146_1_1
Customer Ref:	21/12141/GO
National Grid Reference:	528540, 186960
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

Highgate Cemetery, Swains Lane, LONDON, N6 6PJ

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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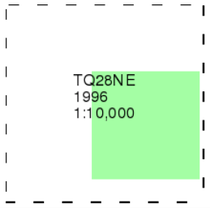
Ordnance Survey Plan

Published 1996

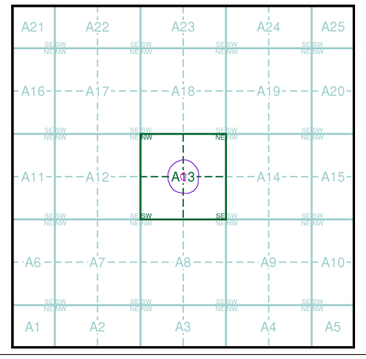
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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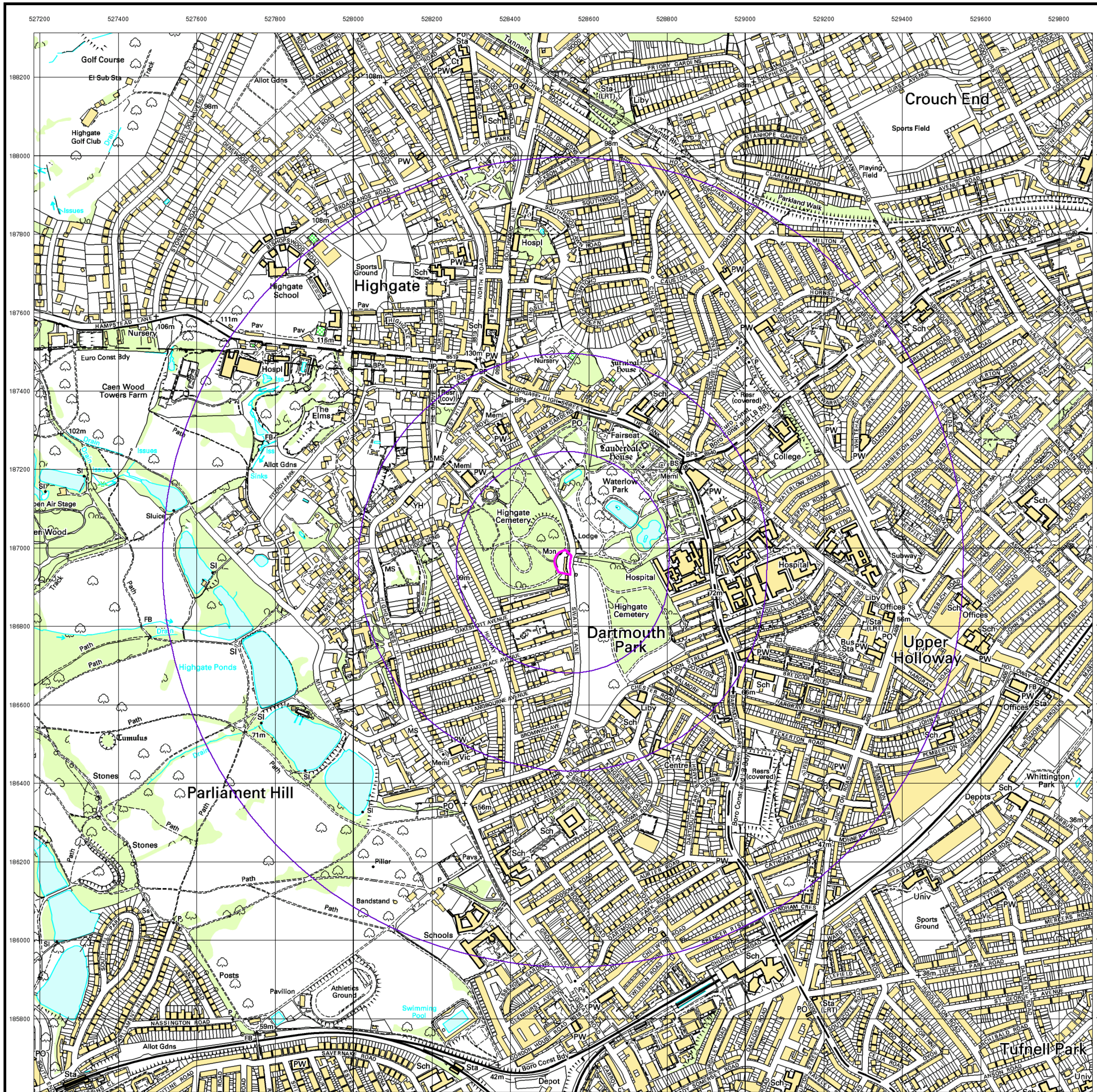

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ALBURY S.I. LTD
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10k Raster Mapping

Published 1999

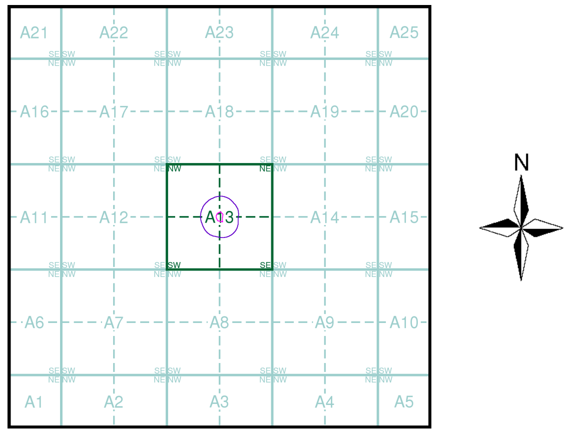
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

TQ28NE
1999
1:10,000

Historical Map - Slice A



Order Details

Order Number:	279460146_1_1
Customer Ref:	21/12141/GO
National Grid Reference:	528540, 186960
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

Highgate Cemetery, Swains Lane, LONDON, N6 6PJ

Landmark INFORMATION GROUP

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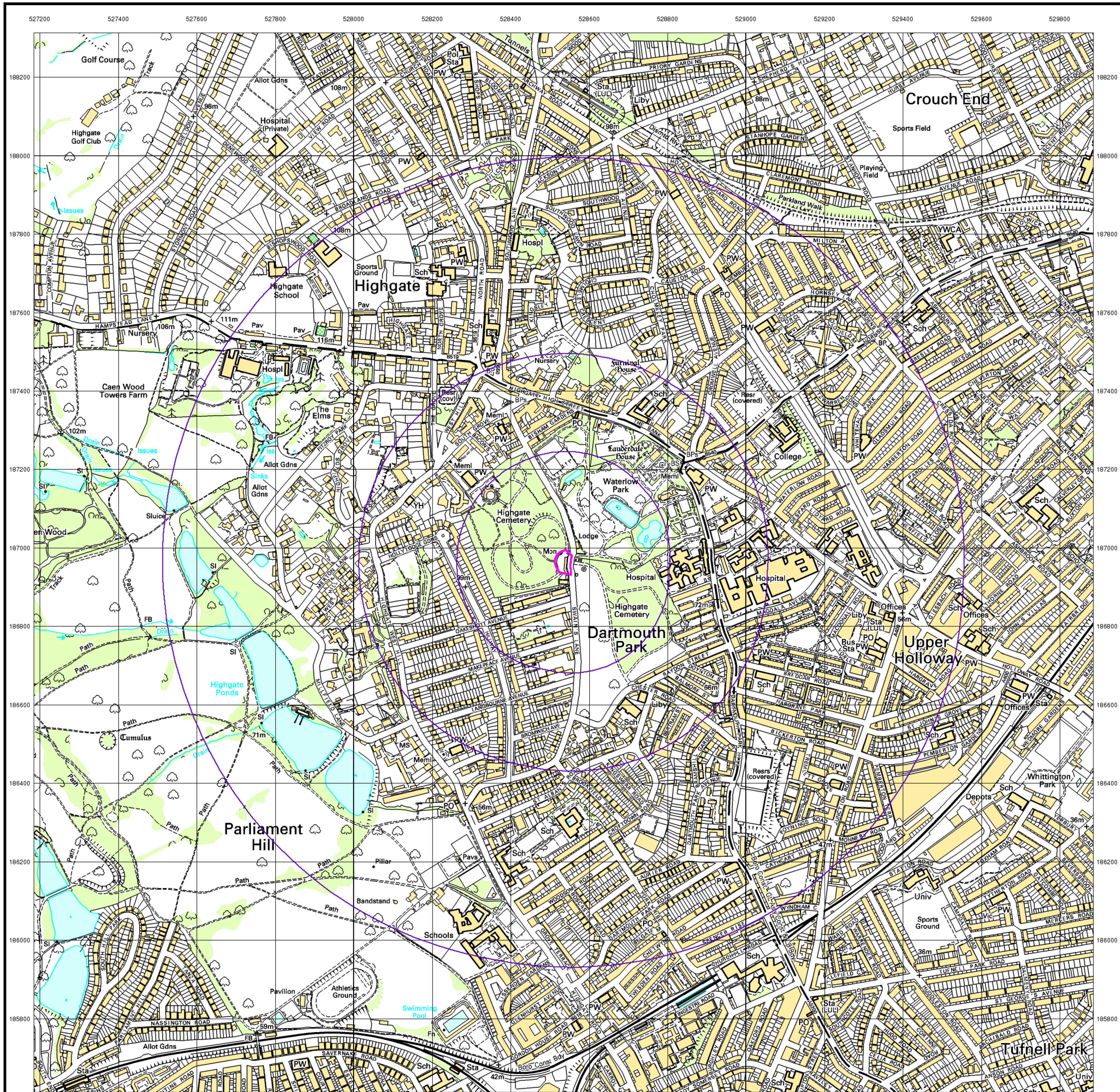


ALBURY S.I. LTD
Geotechnical & Environmental

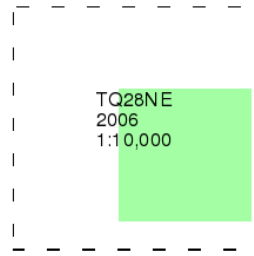
10k Raster Mapping

Published 2006

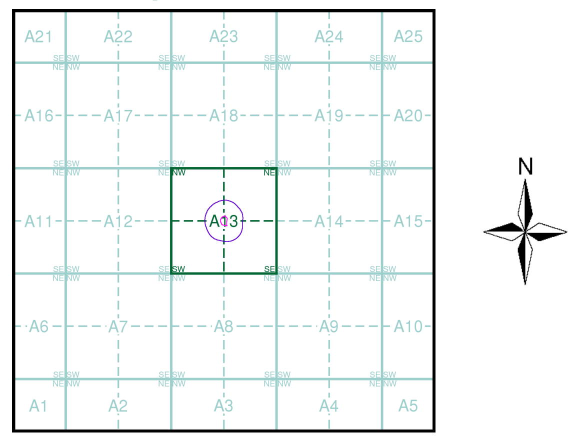
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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Site Area (Ha): 0.21
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Web: www.envirocheck.co.uk

0 400 m

ALBURY S.I. LTD
Geotechnical & Environmental

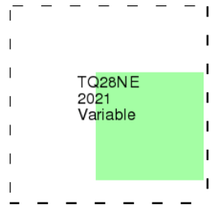
VectorMap Local

Published 2021

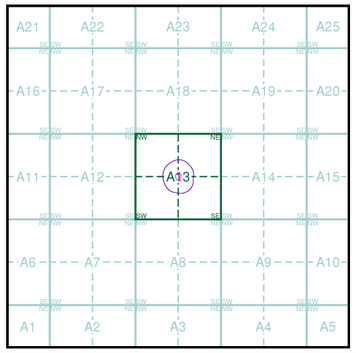
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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APPENDIX 2

EXPLORATORY RECORDS

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		BOREHOLE	1
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Ground Level**	+88.72mOD
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Date Commenced** **Date Completed**	21/06/2021 22/06/2021
Type & Diameter of Boring	Light Cable Percussion: 150mm diameter	**Sheet No**	1 of 3

Water Strikes, m		Water levels recorded during boring, m						
1	none	Date	22/06/2021 AM	24/06/2021	21/07/2021			
2		Hole Depth	12.00	Standpipe	Standpipe			
3		Casing Depth	8.00	5.00	5.00			
4		Water Level	none	none	2.47			

Remarks

Excavation of hand dug starter pit to clear buried services. Standpipe installed to 5m upon completion.
1 hour standing time to stop drilling to allow tours to proceed. 0.5 hour chiselling through hard strata between 4.00-4.10m.

Samples or Tests		Standard Penetration Tests			Depth m	Legend	Strata Description
Type	Depth, m	Seat	Test Drive	*N*			
					0.20		MADE GROUND (macadam over dark brown sand and gravel of flint and brick)
B	0.50						Soft brown/grey sandy CLAY with traces of root remains [CLAYGATE MEMBER]
D	1.00						
D	1.20-1.65	1, 1	1, 2, 2, 3	8			
D	1.75						
U	2.00-2.45						
D	2.75						
D	3.00-3.45	1, 1	1, 2, 3, 3	9			
D	4.00				4.00		
					4.10		CLAYSTONE
U	4.50-4.95						Firm to stiff brownish grey to grey silty CLAY with rare shell remains [LONDON CLAY FORMATION]
D	5.50						
D	6.00-6.45	3, 3	4, 4, 5, 5	18			
D	7.00						
U	7.50-7.95						
D	8.50						

(Continued on next sheet)

BOREHOLE	**1**
Report Ref	21/12141/GO

Contract	Highgate Cemetery

Samples or Tests		**Standard Penetration Tests**			**Depth m**		**Legend**	**Strata Description**
Type	**Depth, m**	**Seat**	**Test Drive**	***N***				
D	9.00-9.45	2, 4	4, 5, 6, 6	21				Firm to stiff grey silty CLAY [LONDON CLAY FORMATION]
D	10.00							
U	10.50-10.95							
D	11.50							
D	12.00-12.45	3, 4	5, 7, 7, 8	27				
D	13.00							
U	13.50-13.95							
D	14.50							
D	15.00-15.50	3, 4	5, 6, 8, 8	27				
D	16.00							
U	16.50-16.95							
D	17.50							
D	18.00-18.45	4, 5	7, 7, 8, 7	29				
D	19.00							
U	19.50-19.95							

(Continued on next sheet)

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**BOREHOLE**	**1**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO

Samples or Tests		Standard Penetration Tests			Depth m		Legend	Strata Description
Type	**Depth, m**	**Seat**	**Test Drive**	***N***				
D	20.50							Stiff to very stiff grey silty CLAY [LONDON CLAY FORMATION]
D	21.00-21.45	4, 6	7, 7, 8, 9	31				
D	22.00							
U	22.50-22.95							
D	23.50							
D	24.00-24.45	3, 5	7, 9, 9, 10	35				
U	25.00-25.45							
					25.45			END OF BOREHOLE

Sample Code: U - Intact 100mm Ø B - Large Disturbed D - Small Disturbed W - Water Sample (U) - Non-recovery of Intact 100mm Ø sample [+] - extrapolated SPT N value*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		BOREHOLE	2
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Ground Level**	+88.17mOD
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Date Commenced** **Date Completed**	21/06/2021 22/06/2021
Type & Diameter of Boring	Light Cable Percussion: 150mm diameter	**Sheet No**	1 of 3

Water Strikes, m		Water levels recorded during boring, m						
1	5.00 (seepage)	Date	22/06/2021 AM	24/06/2021	21/07/2021			
2		Hole Depth	13.00	Standpipe	Standpipe			
3		Casing Depth	6.00	6.00	6.00			
4		Water Level	none	1.55	1.19			

Remarks

Excavation of hand dug starter pit to clear buried services. Standpipe installed to 6m upon completion.
1 hour standing time to stop drilling to allow tours to proceed.

Samples or Tests		Standard Penetration Tests			Depth m	Legend	Strata Description
Type	Depth, m	Seat	Test Drive	*N*			
D	0.30				0.20		MADE GROUND (macadam over crushed stone)
B	0.50				0.50		MADE GROUND (brick rubble)
							MADE GROUND (brown mottled grey sandy CLAY with brick and occasional pockets of sand)
D	1.00				1.00		
D	1.20-1.65	1, 1	2, 2, 2, 3	9			Soft brown sandy CLAY with occasional partings of pale brown silt and fine sand [CLAYGATE MEMBER]
D	1.75						
U	2.00-2.45						
					2.50		
D	2.75						Firm brownish grey silty CLAY with rare shell remains [LONDON CLAY FORMATION]
D	3.00-3.45	1, 2	2, 3, 3, 3	11			
D	3.75						
U	4.00-4.45						
D	4.75						
D	5.00-5.45	2, 2	3, 3, 3, 4	13	5.00		Firm to stiff grey silty CLAY [LONDON CLAY FORMATION]
D	6.00						
U	6.50-6.95						
D	7.50						
D	8.00-8.45	2, 3	4, 5, 4, 5	18			

(Continued on next sheet)

Sample Code: U - Intact 100mm Ø B - Large Disturbed D - Small Disturbed W - Water Sample (U) - Non-recovery of Intact 100mm Ø sample [+] - extrapolated SPT N value*

BOREHOLE	**2**
Report Ref	21/12141/GO

Contract	Highgate Cemetery

Samples or Tests		**Standard Penetration Tests**			**Depth m**		**Legend**	**Strata Description**
Type	**Depth, m**	**Seat**	**Test Drive**	***N***				
D	9.00							Firm to stiff grey silty CLAY
U	9.50-9.95							[LONDON CLAY FORMATION]
D	10.50							
D	11.00-11.45	3, 4	4, 5, 5, 6	20				
D	12.00							
U	12.50-12.95							
D	13.50							
D	14.00-14.45	3, 4	5, 7, 7, 7	26				
D	15.00							
U	15.50-15.95							
D	16.50							
D	17.00-17.45	3, 4	5, 7, 6, 7	25				
D	18.00							
U	18.50-18.95							
D	19.50							

Sample Code: U - Intact 100mm Ø B - Large Disturbed D - Small Disturbed W - Water Sample (U) - Non-recovery of Intact 100mm Ø sample [+] - extrapolated SPT N value*

ALBURY S.I. LTD
Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH

BOREHOLE	**2**
Report Ref	21/12141/GO

Contract: Highgate Cemetery

Samples or Tests		Standard Penetration Tests			Depth m	Legend	Strata Description
Type	Depth, m	Seat	Test Drive	*N*			
D	20.00-2.45	4, 6	7, 7, 8, 8	30			Stiff to very stiff grey silty CLAY [LONDON CLAY FORMATION]
D	21.00						
U	21.50-21.95						
D	22.50						
D	23.00-23.45	4, 6	8, 7, 8, 8	31			
D	24.00						
U	24.55-25.00						
					25.00		END OF BOREHOLE

Sample Code: U - Intact 100mm Ø B - Large Disturbed D - Small Disturbed W - Water Sample (U) - Non-recovery of Intact 100mm Ø sample [+] - extrapolated SPT N value*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	1
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	23/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**		
1	none	Length	0.40	Very easy	Difficult	GL-1.10
2		Breadth	0.30	Moderate	Very hard	

Remarks

Samples or tests		**Shear Strength kPa**	**Depth**		**Legend**	**Strata Description**
Type	**Depth, m**					
D	0.20					MADE GROUND (dark brown silty SAND with brick fragments and roots)
D	0.50					
			0.60			
D	0.70					MADE GROUND (brown sandy CLAY with occasional brick fragments and roots)
			0.90			
D	1.00					Brown clayey SAND and rounded flint GRAVEL (possible MADE GROUND)
			1.10			END OF TRIAL PIT

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	**2**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	23/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**		
1	none	Length	0.50	Very easy		Difficult
2		Breadth	0.25	Moderate	GL-2.10	Very hard

Remarks
Trial pit extended using window sampling techniques.

Samples or tests		**Shear Strength kPa**	**Depth**		**Legend**	**Strata Description**
Type	**Depth, m**					
						MADE GROUND (cobbles over concrete over brown sand)
D	0.30		0.25			MADE GROUND (dark brown clayey SAND with brick fragments and occasional roots)
D	0.50					
			0.90			
D	1.00					MADE GROUND (brown very silty CLAY with occasional gravel)
			1.20			
D	1.30					Brown/grey sandy (fine) CLAY with some rounded flint gravel [CLAYGATE MEMBER]
D	1.50					
D	2.00	140				
			2.10			END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	**3**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	23/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**		
1	none	Length	0.50	Very easy	Difficult	GL-1.80
2		Breadth	0.40	Moderate	Very hard	

Remarks

c.5m deep spiral staircase on the inside of this wall.
Trial pit extended using window sampling techniques.

Samples or tests		**Shear Strength kPa**	**Depth**		**Legend**	**Strata Description**
Type	**Depth, m**					
						MADE GROUND (cobbles over concrete)
D	0.30		0.25			MADE GROUND (brown silty SAND with gravel and brick fragments)
			0.40			
D	0.50					MADE GROUND (brown silty CLAY with gravel)
D	0.70					
			0.80			MADE GROUND (brown silty CLAY with occasional gravel)
D	1.00					
			1.40			
D	1.50					MADE GROUND (brown mottled grey slightly sandy silty CLAY with very occasional gravel)
D	1.75		1.80			BRICK OBSTRUCTION - END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	**4**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	23/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**			
1	none	Length	0.50	Very easy		Difficult	1.90-2.10
2		Breadth	0.40	Moderate	GL-1.90	Very hard	

Remarks
Trial pit extended using window sampling techniques.

Samples or tests		**Shear Strength kPa**	**Depth**		**Legend**	**Strata Description**
Type	**Depth, m**					
						MADE GROUND (cobbles over concrete over crushed limestone)
D	0.30		0.25			MADE GROUND (brown silty SAND with gravel and brick fragments)
			0.35			
D	0.50					MADE GROUND (brown silty CLAY with gravel, brick fragments and fine gravel/shingle)
			0.70			
D	0.75					MADE GROUND (orangish brown silty SAND with gravel and brick fragments)
D	1.00					
			1.20			
						MADE GROUND (orangish brown mottled grey silty CLAY with occasional brick fragments)
D	1.50					
			1.90			
D	2.00	220				Brown silty CLAY with grey veining [LONDON CLAY FORMATION]
			2.10			
						END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	**5**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	23/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	1.50

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**		
1	1.80	Length	0.45	Very easy	Difficult	GL-2.10
2		Breadth	0.45	Moderate	Very hard	

Remarks
Trial pit extended using window sampling techniques.

Samples or tests		**Shear Strength kPa**	**Depth**	**Legend**	**Strata Description**
Type	**Depth, m**				
D	0.20		0.30		MADE GROUND (cobbles over brown sand, brick and gravel)
D	0.40				MADE GROUND (brown mottled sandy CLAY with occasional flint gravel, red brick fragments and large pieces of masonry)
D	0.50				
D	1.00	80	1.20		
D	1.50	100	1.70		MADE GROUND (brown and grey silty CLAY with brick fragments)
D	2.00	160	2.10		Very stiff brown/grey silty CLAY with laminae of fine sand [CLAYGATE MEMBER]
					END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	6
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	24/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry		
Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**	
1	none	Length	0.50	Very easy	Difficult GL-2.10
2		Breadth	0.45	Moderate	Very hard

Remarks
Trial pit extended by window sampling techniques.
Trace odour pocket of hydrocarbons at 1.50m.

Samples or tests		Shear Strength kPa	Depth	Legend	Strata Description
Type	Depth, m				
D	0.20		0.25		MADE GROUND (cobbles over grey-brown sand, brick and gravel)
D	0.50				MADE GROUND (brown clayey SAND with gravel, sandstone fragments and pockets of brown sandy clay)
D	1.00		1.10		
					Brown and grey CLAY (very soft) [CLAYGATE MEMBER]
			1.40		
D	1.50				Brown mottled grey friable very sandy (fine) CLAY with some rounded flint gravel [CLAYGATE MEMBER]
D	2.00		2.10		
					END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH				TRIAL PIT	7
Contract	Highgate Cemetery			**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd			**Date**	24/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ			**Ground Level**	
Type of excavator	Manual/WS		**Water level after completion, m**	1.20	

Water strikes, m		Pit Dimensions, m		Ease of excavation, m		
1	1.10	Length	0.50	Very easy	Difficult	GL-2.10
2		Breadth	0.45	Moderate	Very hard	

Remarks
Trial pit extended by window sampling techniques.

Samples or tests		Shear Strength kPa	Depth		Legend	Strata Description
Type	Depth, m					
D	0.20		0.30			MADE GROUND (cobbles over brown sand, brick and gravel)
D	0.50					MADE GROUND (brown sandy CLAY with brick fragments)
D	1.00		1.40			Grey SAND and GRAVEL
			1.70			END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	**8**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	24/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**			
1	none	Length	0.50	Very easy		Difficult	1.20-2.10
2		Breadth	0.45	Moderate	GL-1.20	Very hard	

Remarks
Trial pit extended by window sampling techniques.
c.0.50m of made up ground before reaching GL - see section.

Samples or tests		**Shear Strength kPa**	**Depth**	**Legend**	**Strata Description**
Type	**Depth, m**				
D	0.10				MADE GROUND (orange-brown silty SAND with bricks and large sandstone fragments)
D	0.30				
D	0.50				
			0.90		
D	1.00	120			Brown silty CLAY with traces of root hairs [CLAYGATE MEMBER]
			1.20		
D	1.50	>240			Very stiff brown slightly sandy silty CLAY with rare gravel [CLAYGATE MEMBER]
D	2.00	>240			
			2.10		END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	9
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	24/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	dry		
Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**	
1	none	Length	0.45	Very easy	Difficult GL-2.25
2		Breadth	0.25	Moderate	Very hard

Remarks
Trial pit extended by window sampling techniques.
Basement c.1.50m back from this wall.

Samples or tests		Shear Strength kPa	Depth		Legend	Strata Description
Type	**Depth, m**					
						MADE GROUND (granite cobbles over sand over concrete)
			0.35			
D	0.50					MADE GROUND (dark brown clayey SAND with gravel and brick particles)
			0.60			
D	0.75					MADE GROUND (brown sandy (fine) CLAY with gravel and brick fragments)
D	1.00					
			1.20			
D	1.30					MADE GROUND (dark brown clayey SAND with brick and clinker fragments)
			1.40			
D	1.50					MADE GROUND (brown sandy CLAY with brick fragments and occasional charcoal)
			1.70			
						MADE GROUND (brown silty CLAY with ash/brick at depth and occasional roots)
D	2.00					
D	2.25		2.25			END OF BOREHOLE - obstruction

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

ALBURY S.I. LTD Miltons Yard, Petworth Road, Witley, Surrey GU8 5LH		**TRIAL PIT**	**10**
Contract	Highgate Cemetery	**Report Ref**	21/12141/GO
Client	Highgate Cemetery Ltd	**Date**	24/06/2021
Site Address	Highgate Cemetery, Swain's Lane, London N6 6PJ	**Ground Level**	

Type of excavator	Manual/WS	**Water level after completion, m**	3.30

Water strikes, m		**Pit Dimensions, m**		**Ease of excavation, m**		
1	2.80	Length	0.45	Very easy		Difficult
2		Breadth	0.25	Moderate	GL-4.10	Very hard

Remarks
No retaining wall was present at this location

Samples or tests		**Shear Strength kPa**	**Depth**	**Legend**	**Strata Description**
Type	**Depth, m**				
D	0.10				MADE GROUND (dark brown silty SAND with occasional gravel and roots)
D	0.30		0.40		
D	0.50				Stiff orangish brown friable very sandy CLAY with occasional roots in the upper margins [CLAYGATE MEMBER]
D	1.00	140			
D	1.50	140			
			1.80		
D	2.00	160			Very stiff brown mottled sandy CLAY [CLAYGATE MEMBER]
D	2.50				
			2.80		
D	3.00				Brown/grey sandy CLAY [CLAYGATE MEMBER]
D	3.50				
D	4.00				
			4.10		END OF BOREHOLE

Sample Code: *B - Large Disturbed* *D - Small Disturbed* *W - Water Sample* *R - Root Sample*

APPENDIX 3

LABORATORY TEST RESULTS

INDEX PROPERTIES & TRIAXIAL COMPRESSION TESTS

BS 1377 : Parts 2 & 7 : 1990

Report Ref	21/12141/GO	**Contract**	Highgate Cemetery

BH/TP No.	Sample		INDEX PROPERTIES						TRIAXIAL COMPRESSION							Soil Suction, kPa [RANGE]
	Depth m	Description	Liquid Limit %	Plastic Limit %	Plasticity Index %	% Passing 425micron Sieve	Corrected Plasticity Index IP %	Soil Plasticity	Code	Lateral Pressure kPa	Compressive Strength kPa	Cohesion kPa	Angle of Friction °	Bulk Density kg/cu.m	Water Content % dry wt	
BH1	1.20-1.65	Brown/grey sandy CLAY													28.3	
	2.00-2.45	Brown/grey sandy CLAY with traces of root remains	53	23	30	100	30	CH	U100	50	100	50	0	2165	27.5	20.2 [LOW]
	3.00-3.45	Brown/grey sandy CLAY													34.6	
	4.50-4.95	Brownish grey silty CLAY	74	26	48	100	48	CV	U100	100	150	75	0	2120	29.2	
	7.50-7.95	Grey silty CLAY							U100	160	180	90	0	2100	28.4	
	10.50-10.95	Grey silty CLAY							U100	220	160	80	0	2085	31.7	
	13.50-13.95	Grey silty CLAY							U100	280	150	75	0	2060	31.3	
	16.50-16.95	Grey silty CLAY							U100	340	250	125	0	2170	28.3	
	19.50-19.95	Grey silty CLAY							U100	400	150	75	0	2080	30.0	
	22.50-22.95	Grey silty CLAY							U100	460	275	140	0	2045	28.1	

KEY:

Code: **38** - 38mm nominal diameter specimen; **100** - 100mm nominal diameter specimen; **R** - Remoulded; **F** - Functional; **LV** - Laboratory Vane

U - Undrained; **CD** - Consolidated Drained; **CU** - Consolidated Undrained; **M** - Multi Stage; **S** - Single Stage

Soil Type: **C** - Clay; **M** - Silt; **O** - Organic; **NP** - Non Plastic

Plasticity: **L** - Low; **I** - Intermediate; **H** - High; **V** - Very High; **E** - Extremely High

INDEX PROPERTIES & TRIAXIAL COMPRESSION TESTS

BS 1377 : Parts 2 & 7 : 1990

Report Ref	21/12141/GO	Contract	Highgate Cemetery	*Continuation Sheet*	*1*

BH/TP No.	Sample		INDEX PROPERTIES						TRIAXIAL COMPRESSION							Soil Suction, kPa [RANGE]
	Depth m	Description	Liquid Limit %	Plastic Limit %	Plasticity Index %	% Passing 425micron Sieve	Corrected Plasticity Index IP %	Soil Plasticity	Code	Lateral Pressure kPa	Compression Strength kPa	Cohesion kPa	Angle of Friction °	Bulk Density kg/cu.m	Water Content % dry wt	
BH1	25.00-15.50	Grey silty CLAY							U100	510	200	100	0	2040	33.0	
BH2	1.20-1.65	Brown sandy CLAY with partings of pale brown silt and fine sand													27.7	
	2.00-2.45	Brown sandy CLAY with partings of pale brown silt and fine sand	50	24	26	100	26	CI/CH	U100	50	120	60	0	2120	26.3	11.4 [LOW]
	3.00-3.45	Brownish grey silty CLAY with rare shell remains													27.7	
	4.00-4.45	Brownish grey silty CLAY with rare shell remains	72	27	45	100	45	CV	U100	90	140	70	0	2120	29.3	34.7 [LOW]
	6.50-6.95	Grey silty CLAY							U100	140	160	80	0	2110	27.7	
	9.50-9.95	Grey silty CLAY							U100	200	230	115	0	2105	27.9	
	12.50-12.95	Grey silty CLAY							U100	260	150	75	0	2045	30.0	
	15.50-15.95	Grey silty CLAY							U100	320	130	65	0	2090	29.2	
	18.50-18.95	Grey silty CLAY							U100	380	200	100	0	2090	28.3	

KEY:

Code: **38** - 38mm nominal diameter specimen; **100** - 100mm nominal diameter specimen; **R** - Remoulded; **F** - Functional; **LV** - Laboratory Vane

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INDEX PROPERTIES & TRIAXIAL COMPRESSION TESTS

BS 1377 : Parts 2 & 7 : 1990

Report Ref	21/12141/GO	Contract	Highgate Cemetery	*Continuation Sheet*	*2*

BH/TP No.	Sample		INDEX PROPERTIES						TRIAXIAL COMPRESSION							Remarks
	Depth m	Description	Liquid Limit %	Plastic Limit %	Plasticity Index %	% Passing 425micron Sieve	Corrected Plasticity Index IP %	Soil Plasticity	Code	Lateral Pressure kPa	Compression Strength kPa	Cohesion kPa	Angle of Friction °	Bulk Density kg/cu.m	Water Content % dry wt	
BH2	21.50-21.95	Grey silty CLAY							U100	440	290	145	0	2080	29.6	
	24.55-25.00	Grey silty CLAY							U100	500	250	125	0	2140	28.3	
TP2	1.30	Brown/grey sandy (fine) CLAY with some rounded flint gravel	34	18	16	95	15	CL							22.6	
	1.50	Brown/grey sandy (fine) CLAY with some rounded flint gravel													24.7	
	2.00	Brown/grey sandy (fine) CLAY with some rounded flint gravel													26.7	
TP4	2.00	Brown silty CLAY with grey veining	62	27	35	100	35	CH							34.1	
TP5	2.00	Brown/grey silty CLAY with laminae of fine sand	63	28	35	100	35	CH							33.4	
TP6	1.50	Brown mottled grey friable very sandy (fine) CLAY with some rounded flint gravel	37	19	18	67	12	CI							20.2	
TP8	1.50	Brown slightly sandy silty CLAY with rare gravel	62	23	39	100	39	CH							22.9	
	2.00	Brown slightly sandy silty CLAY with rare gravel													25.7	

KEY:

Code: **38** - 38mm nominal diameter specimen; **100** - 100mm nominal diameter specimen; **R** - Remoulded; **F** - Functional; **LV** - Laboratory Vane

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Soil Type: **C** - Clay; **M** - Silt; **O** - Organic; **NP** - Non Plastic

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INDEX PROPERTIES & TRIAXIAL COMPRESSION TESTS

BS 1377 : Parts 2 & 7 : 1990

Report Ref	21/12141/GO	Contract	Highgate Cemetery	*Continuation Sheet*	*3*

BH/TP No.	Sample		INDEX PROPERTIES						TRIAXIAL COMPRESSION							Remarks
	Depth m	Description	Liquid Limit %	Plastic Limit %	Plasticity Index %	% Passing 425micron Sieve	Corrected Plasticity Index IP %	Soil Plasticity	Code	Lateral Pressure kPa	Compression Strength kPa	Cohesion kPa	Angle of Friction °	Bulk Density kg/cu.m	Water Content % dry wt	
TP10	1.00	Orangish brown friable very sandy CLAY with occasional roots	44	22	22	100	22	CI							22.7	
	1.50	Orangish brown friable very sandy CLAY													27.8	
	2.00	Brown mottled sandy CLAY													28.0	

KEY: *Code:* **38** - 38mm nominal diameter specimen; **100** - 100mm nominal diameter specimen; **R** - Remoulded; **F** - Functional; **LV** - Laboratory Vane

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DETERMINATION OF ONE DIMENSIONAL CONSOLIDATION PROPERTIES

In accordance with BS1377:1990 Part 5 Clause 3

Report Ref	21/12141/GO	**Contract**	Highgate Cemetery

BH/TP No.	Sample		Specimen Dimensions mm		Initial moisture content %	Initial bulk density mg/m³	Initial dry density mg/m³	Particle density mg/m³ *Assumed* ~~*Measured*~~	Initial voids ratio e_o	% Sat S_o	Load increment kPa		Void ratio at end of increment e	Coefficient of volume compressability m_v m²/MN	Coefficent of consolidation c_v m²/year	Comments
	Depth m	Description	Height	Diameter							From	To				
BH1	4.50-4.95	Brownish grey silty clay	19.6	79.68	28.8	1.968	1.528	2.70	0.77	101.3	0	125	0.752	0.069	26.057	
											125	250	0.729	0.107	0.452	
											250	500	0.681	0.111	0.327	
											500	250	0.697	-0.039	-0.475	Negative values indicate swelling
											250	125	0.722	-0.118	-0.218	Negative values indicate swelling

DETERMINATION OF ONE DIMENSIONAL CONSOLIDATION PROPERTIES

In accordance with BS1377:1990 Part 5 Clause 3

Report Ref	21/12141/GO	**Contract**	Highgate Cemetery

BH/TP No.	Sample		Specimen Dimensions mm		Initial moisture content %	Initial bulk density mg/m³	Initial dry density mg/m³	Particle density mg/m³ *Assumed* ~~*Measured*~~	Initial voids ratio e_o	% Sat S_o	Load increment kPa		Void ratio at end of increment e	Coefficient of volume compressability m_v m²/MN	Coefficent of consolidation c_v m²/year	Comments
	Depth m	Description	Height	Diameter							From	To				
BH2	4.00-4.45	Brownish grey silty clay	19.13	79.51	29.1	1.997	1.547	2.70	0.75	105.5	0	90	0.720	0.161	10.656	
											90	180	0.690	0.194	0.448	
											180	360	0.646	0.146	0.461	
											360	180	0.660	-0.048	-0.841	Negative values indicate swelling
											180	90	0.682	-0.143	-0.291	Negative values indicate swelling

SUMMARY OF CHEMICAL ANALYSES

Determination of Soluble Sulphate Contents of Soil and Groundwater, Organic Matter Content and pH Value

Report Ref	21/12141/GO	**Contract**	Highgate Cemetery

BH/TP No.	**Sample**			**Concentration of Sulphates expressed as SO_4**		**pH Value**	**Organic Content %**
	Depth m	Soil Type	% passing 2mm sieve	2:1 Water:Soil Extract mg/l	Groundwater mg/l		
BH1	0.50	Clay	100	<250		6.8	
	2.00-2.45	Clay	100	<250		6.8	
	4.50-4.95	Clay	100	1086		7.1	
	10.50-10.95	Clay	100	<250		7.3	
	16.50-16.95	Clay	100	<250		7.4	
	19.50-19.95	Clay	100	<250		7.9	
BH2	1.20-1.65	Clay	100	<250		8.0	
	2.00-2.45	Clay	100	<250		7.3	
	4.00-4.45	Clay	100	551		7.7	
	6.50-6.95	Clay	100	<250		7.5	
	9.50-9.95	Clay	100	<250		7.5	
	12.50-12.95	Clay	100	<250		8.4	
	(1.55)	Water			173	7.7	
TP2	1.50	Clay with some gravel	97	<250		7.6	

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Analytical Report Number : 21-83540

Project / Site name:	Highgate Cementery	**Samples received on:**	25/06/2021
Your job number:	21-12141-GO	**Samples instructed on/ Analysis started on:**	25/06/2021
Your order number:	14098	**Analysis completed by:**	02/07/2021
Report Issue Number:	1	**Report issued on:**	02/07/2021
Samples Analysed:	5 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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

Analytical Report Number: 21-83540
Project / Site name: Highgate Cementery
Your Order No: 14098

Lab Sample Number				1918161	1918162	1918163	1918164	1918165
Sample Reference				TP2	TP4	TP6	TP7	TP8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	0.50	0.50
Date Sampled				23/06/2021	23/06/2021	24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	16	6.7	16	7.4
Total mass of sample received	kg	0.001	NONE	0.80	0.80	1.0	1.0	0.80
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.4	8.9	8.3	10.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	980	550	350	370	4600
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	32	48	58	17	490
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.024	0.029	0.0084	0.25
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.1	24.1	28.8	8.4	247
Sulphide	mg/kg	1	MCERTS	1.2	2.7	13	< 1.0	6.9
Elemental Sulphur	mg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.5	0.6	0.3	0.4	0.4

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.44	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	1.5	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	1.3	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	15	0.54	0.35	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	3.2	0.12	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	26	1.6	0.98	< 0.05	0.23
Pyrene	mg/kg	0.05	MCERTS	22	1.4	0.91	< 0.05	0.21
Benzo(a)anthracene	mg/kg	0.05	MCERTS	13	0.84	0.49	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	9.4	0.74	0.43	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	14	1.4	0.66	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	5.5	0.34	0.23	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	12	1.0	0.49	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5.5	0.70	0.30	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.6	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	6.2	0.81	0.39	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	136	9.45	5.23	< 0.80	< 0.80

Analytical Report Number: 21-83540
Project / Site name: Highgate Cementery
Your Order No: 14098

Lab Sample Number				1918161	1918162	1918163	1918164	1918165
Sample Reference				TP2	TP4	TP6	TP7	TP8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	0.50	0.50
Date Sampled				23/06/2021	23/06/2021	24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	150	40	37	13	41
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.90	0.89	0.46	0.66	0.57
Boron (water soluble)	mg/kg	0.2	MCERTS	2.1	1.5	1.5	1.9	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	29	38	18	28	83
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	38	19	28	83
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	26	12	13	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	650	390	170	110	33
Manganese (aqua regia extractable)	mg/kg	1	MCERTS	250	300	190	170	110
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	28	12	15	31
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	47	56	26	47	57
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	210	460	50	41	42
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 21-83540
Project / Site name: Highgate Cementery
Your Order No: 14098

Lab Sample Number				1918161	1918162	1918163	1918164	1918165
Sample Reference				TP2	TP4	TP6	TP7	TP8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.50	0.50	0.50
Date Sampled				23/06/2021	23/06/2021	24/06/2021	24/06/2021	24/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH C6 - C40	mg/kg	10	NONE	410	65	34	< 10	< 10
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	33	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC40	mg/kg	10	NONE	47	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	13	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	37	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	50	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	14	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	130	20	12	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	210	45	22	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC40	mg/kg	10	NONE	220	45	22	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	9.0	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	360	65	34	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	370	65	34	< 10	< 10

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

Analytical Report Number : 21-83540
Project / Site name: Highgate Cementery

* 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 *
1918161	TP2	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
1918162	TP4	None Supplied	0.5	Brown clay and loam with gravel.
1918163	TP6	None Supplied	0.5	Brown clay and sand with gravel.
1918164	TP7	None Supplied	0.5	Brown clay and sand with gravel.
1918165	TP8	None Supplied	0.5	Brown loam with gravel and vegetation.

Analytical Report Number : 21-83540
Project / Site name: Highgate Cementery

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Elemental sulphur in soil	Determination of elemental sulphur in soil by extraction in acetonitrile followed by HPLC.	In-house method based on Secondsite Property Holdings Guidance for Assessing and Managing Potential	L021-PL	D	MCERTS
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	MCERTS
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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	In-house method	L064-PL	D	NONE

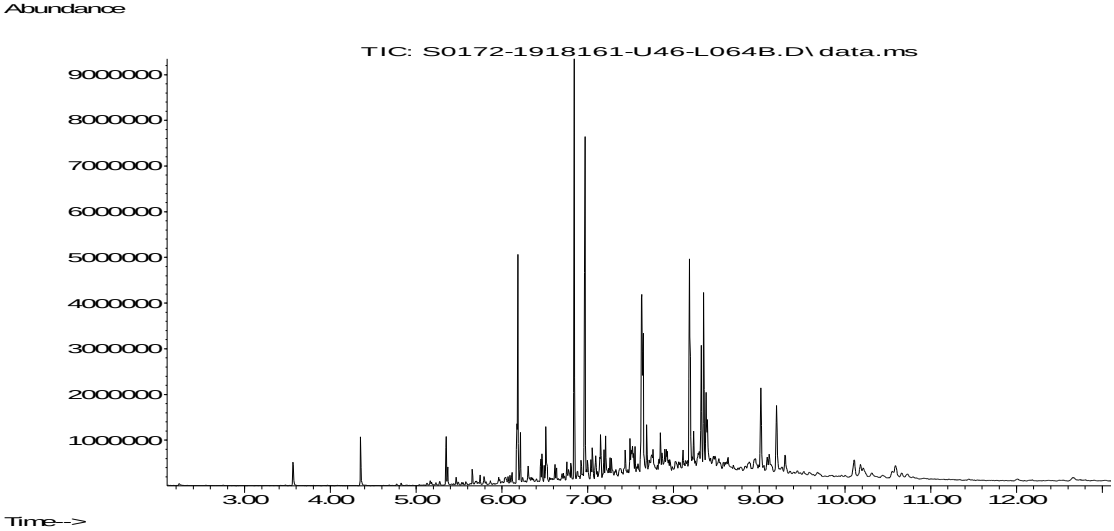
Analytical Report Number : 21-83540
Project / Site name: Highgate Cementery

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Sulphate, water soluble, in soil	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

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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.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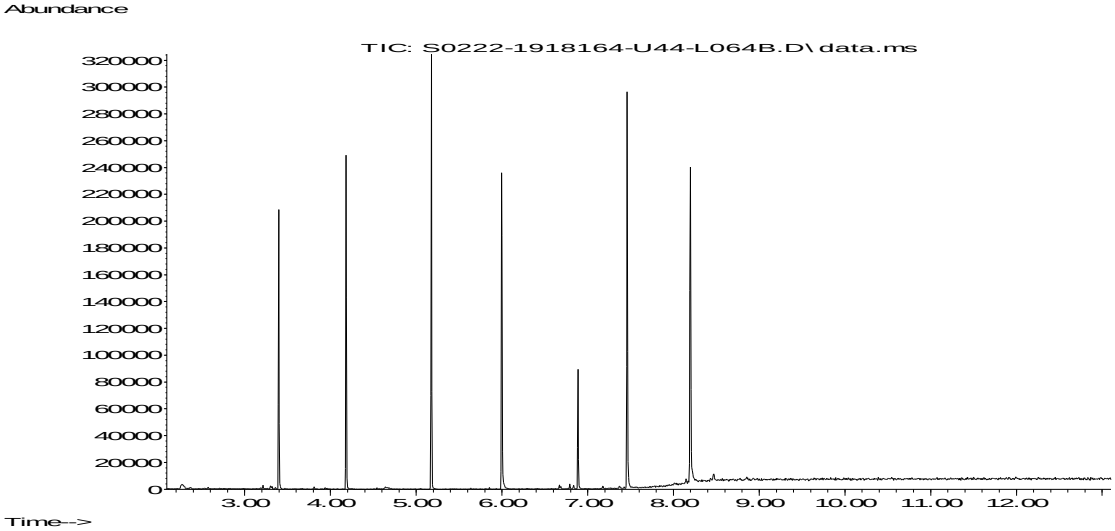
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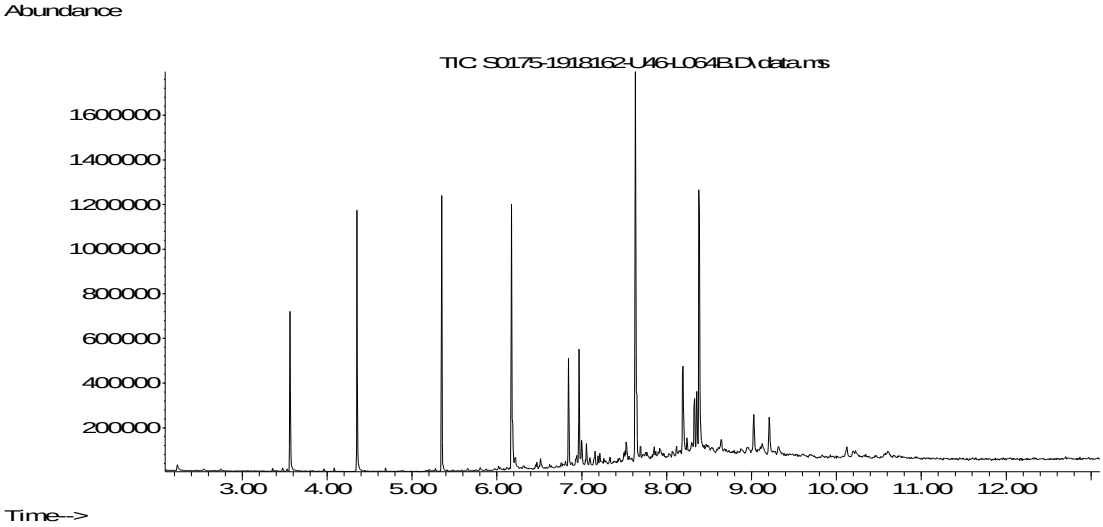
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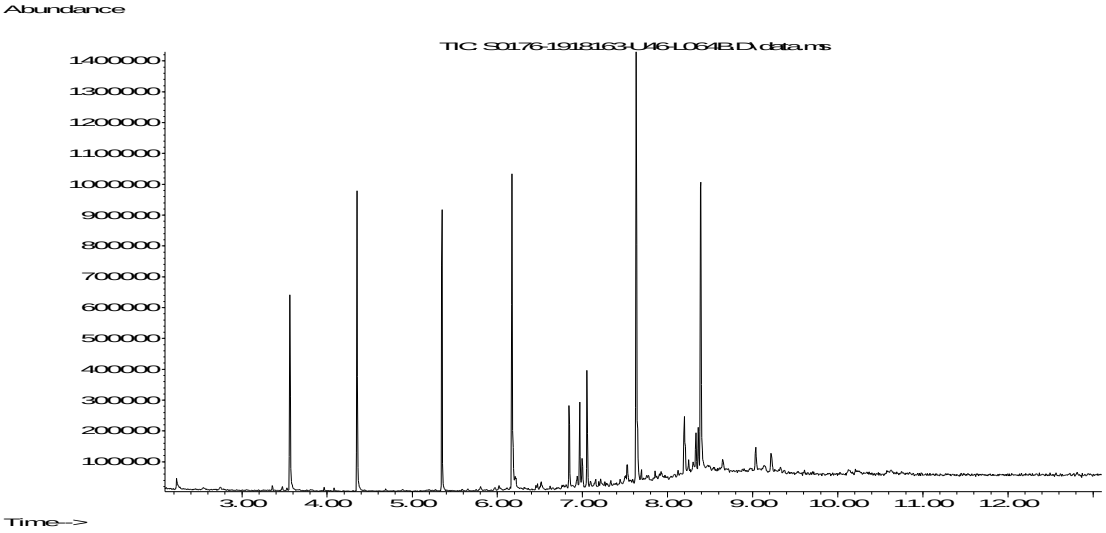
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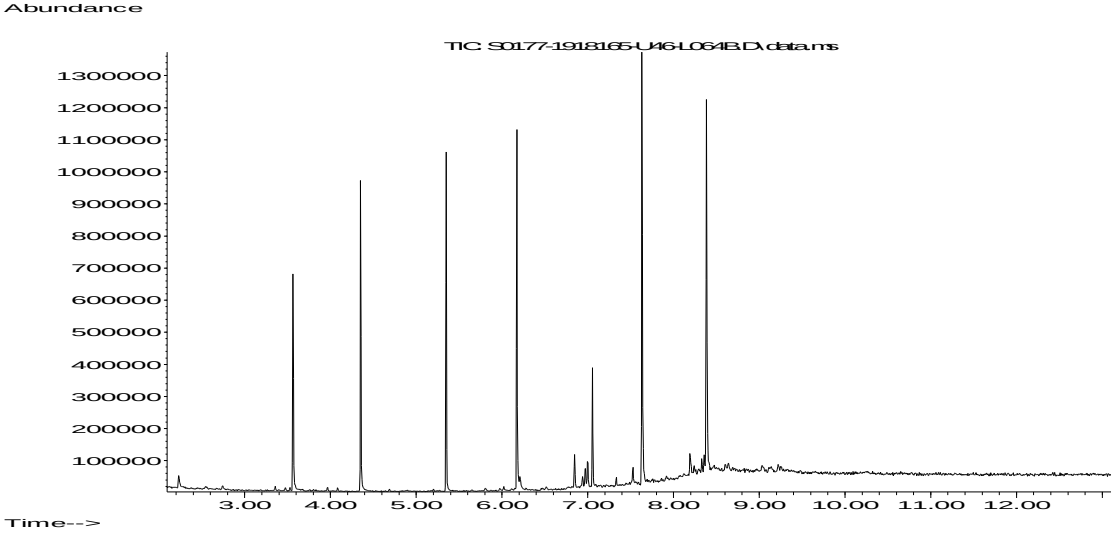
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Analytical Report Number : 21-85070

Project / Site name:	Highgate Cemetery	**Samples received on:**	05/07/2021
Your job number:	21 12141 GO	**Samples instructed on/ Analysis started on:**	05/07/2021
Your order number:	14098	**Analysis completed by:**	12/07/2021
Report Issue Number:	1	**Report issued on:**	12/07/2021
Samples Analysed:	4 soil samples		

Signed: Izabela Wójcik

Izabela Wójcik
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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

Analytical Report Number: 21-85070
Project / Site name: Highgate Cemetery
Your Order No: 14098

Lab Sample Number				1927253	1927254	1927255	1927256
Sample Reference				TP2	TP3	TP5	BH02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.30	0.40	0.50
Date Sampled				23/06/2021	23/06/2021	23/06/2021	21/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	7.3	11	12
Total mass of sample received	kg	0.001	NONE	0.80	1.4	0.90	0.90
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	-	-	-
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	30	92	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	45	640	300	26

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

Analytical Report Number : 21-85070
Project / Site name: Highgate Cemetery

* 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 *
1927253	TP2	None Supplied	0.5	Light brown clay with gravel.
1927254	TP3	None Supplied	0.3	Brown loam and sand with gravel and fibrous material.
1927255	TP5	None Supplied	0.4	Brown clay with gravel.
1927256	BH02	None Supplied	0.5	Brown clay with gravel.

Analytical Report Number : 21-85070
Project / Site name: Highgate Cemetery

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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.

APPENDIX 4

DESICCATION

DESICCATION

Classification

The removal of moisture from a soil as a result of external influences with a constant stress regime, results in shrinkage or settlement of the soil. The magnitude of shrinkage is dependent upon the geological stress history of the soil, its clay content and the composition of the clay minerals. Under normal climatic conditions, there is a seasonal cyclic variation in soil moisture and, hence, volume change, which extends to depths of approximately 1m. When the soil moisture deficit attains a critical value, the shrinkage of the soil can become significant. In these circumstances, the soil can be regarded as being present in a desiccated state.

Causes

A common cause of desiccation consists of the reduction in soil moisture by tree root action. In the absence of a water table at shallow depth, root action of trees will reduce the soil moisture level in order to maintain growth. In general terms, the increase in rainfall which occurs during winter periods will allow for some replacement of the moisture content of the soil, particularly where isolated or immature trees are concerned.

However, when drought summer conditions or limited winter rainfall occurs, desiccated zones will develop within the zone of influence of tree roots. In woodland, desiccation develops as it is not possible for rainfall to overcome the soil moisture deficit. Other causes of desiccation, which have created problems to structures, include incorrectly installed and insulated heating pipes or ducts and industrial processes, ie furnaces or brick kilns.

Effects

The development of desiccation in clay soils will result in an increase in strength of the material. In addition, negative pore water pressure or soil suction will develop. Any foundation system located within soil which is subject to a reduction in soil moisture can experience structural distress, which results from the loss in volume or shrinkage of the ground. Also, if the source of the desiccation is removed, there will be heave of the soils as a result of an increase in equilibrium water content

It is evident, therefore, that foundation systems founded in soils which are actively experiencing an increase or decrease in soil moisture, will be subject to either heave or settlement, which can induce stresses within the structure. It should also be appreciated that a desiccated soil, which is experiencing an increase in equilibrium water content, will attempt to increase its volume in a horizontal as well as vertical plane. It is important, therefore, to ensure that horizontal movements do not apply differential stresses to structural elements, by incorporating collapsible membranes within remedial works.

Identification

A soil in a state of equilibrium is present in a semi-solid state. At the onset of desiccation, the condition of the soil moves towards the boundary between a solid and semi-solid state, this boundary being defined as the plastic limit of the soil. It follows, therefore, that when the natural water content of a soil lies close to, or falls below, the value of the plastic limit, the soil can be considered to be desiccated.

An alternative proposal was made by Driscoll (1983), who related the soil suction induced by desiccation to a function of the liquid limit of the soil. In general terms, desiccation is assumed to be present when the moisture content falls below a level of 40% liquid limit. The arbitrary factor of 0.4 relates to a soil suction value proposed by Croney (1977) and may vary with the composition and mineralogy of different soil types. This approach is only considered to be valid over a limited depth range as the overburden effect will result in a natural reduction in soil moisture and result in the development of negative pore pressures.

A further approach, which considers the shear strength of the clay, Pugh et al (1995), recognises the fact that a reduction in soil moisture will result in an increase in undrained shear strength as well as the development of negative pore pressures. Whilst this approach has a considerable amount of merit, care is required in establishing the value of the soil's in situ shear strength, particularly if it is not possible to obtain representative "undisturbed" samples from cable percussion boreholes. The proposal made in the Pugh paper that the simple pocket penetrometer will provide accurate consistent results should be treated with care, as the pocket penetrometer can take no account of the effects of disturbance and remoulding that are inevitable when completing a trial pit with a mechanical excavator. It is for this reason that this Company attempts to establish the shear strength of clay soils by using the Geonor Field Vane. With this test equipment the appropriate-sized vane is pushed into the side of the pit, through the thin disturbed zone which is caused by the teeth of the bucket during excavation. Furthermore, by use of the 'blank' probe, it is possible to take account of any skin friction which builds up on the shaft of the vane and thus provide a more accurate assessment of the shear strength of the soils.

Hence, a combination of the methods discussed above should be considered in order to confirm whether the development of soil moisture reduction to achieve a desiccated state has occurred within a particular site. The data for affected areas should, where possible, be compared with soils which lie outside the influence of tree root bulbs and may, therefore, be considered to be present in a stable and equilibrium state.

References

Croney D (1977)	The Design and Performance of Road Pavements London HMSO pp 674
Driscoll R (1983)	The Influence of Vegetation on the Swelling and Shrinking of Clay Soils in Britain Geotechnique 33.4 pp 93-105
Pugh RS, Parnell PG and Parks RD (1995)	A rapid and reliable on site method of assessing desiccation in clay soils Geotechnical Engineering 13 Jan 1995 pp 25—30

APPENDIX 5

WASTE

WASTE CLASSIFICATION

The European Waste Framework Directive is implemented in the UK by the 2002 Landfill Regulations, together with a number of other acts and regulations. A key part of this process is to establish the hazardous properties of potential waste. The classification and definition of hazardous waste is interpreted within the Environment Agency guidance WM3 and all wastes require classifying in accordance with the European Waste Catalogue [EWC]. The EWC is a detailed list of typical industry waste types and each has a 6 digit code. Typically the appropriate EWC codes for excavated soil being disposed off site are:

17 05 03* soil and stones containing dangerous substances, or
17 05 04 soil and stones other than those mentioned in 17 05 03

If excavated soils are to be discarded or exported from site then they would be considered controlled waste and require classification. However, if soils can be re-used on site then they are not considered to be controlled waste. A Desk Study, soil descriptions, laboratory chemical analysis and risk assessment can all contribute to basic waste characterisation. Depending upon the chemical composition or levels of contaminants in the waste (e.g. metals, TPH, asbestos), soil and stones can either be hazardous or non-hazardous. Waste Acceptance Criteria [WAC] test results are used to determine the suitability of the waste intended for disposal against the acceptance criteria for a particular class of landfill site. WAC tests are not used for the classification of waste soils and are only required for inert or hazardous excavated material which is destined for landfill.

Wastes containing asbestos with a concentration of >0.10% weight/weight (w/w) are generally considered to be hazardous. While waste with <0.10% w/w of asbestos are considered non-hazardous. Where free fibres or fibrous asbestos is present at concentrations of >0.001% then these are considered to pose a risk to human health and are deemed hazardous waste. These waste materials also require a suitably licensed company to handle them.

Waste Treatment

It is a requirement of the 2002 Landfill Regulations that all wastes must undergo some form of pre-treatment prior to disposal at an appropriately licensed landfill. Treatment is defined using a 'three-point test' and can include physical, chemical, biological or thermal processes, which must change the characteristics of the waste in order to:

- reduce its volume, or
- reduce its hazardous nature, or
- facilitate its handling, or
- enhance its recovery.

The exceptions to this are:

- inert waste for which treatment is not technically feasible.
- it is waste other than inert waste and treatment would not reduce its quantity or its hazards to human health or the environment.

The waste producer should either treat their own waste or ensure that the waste will be treated by a subsequent handler. The waste producer should record the type and amount of pre-treatment undertaken prior to disposal.

Examples of treatment include mechanical segregation or sorting, compositing, soil treatment hubs and incineration. This can include physical sorting of waste soil types into separate stockpiles at the producer site, e.g. topsoil, made ground and natural clay, sand or gravels.

ATKINS CatWasteSoil

Classification Assessment Tool of Soil Wastes - Hazard Summary Sheet

Site Name	Highgate Cemetery
Location	N6
Site ID	
Job Number	21/12141/GO
Date	21/07/2021
User Name	
Company Name	Albury S.I Ltd

Hole ID	Sample Depth	Hazardous Waste Y/N	HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16
TP2	0.30	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP4	0.50	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP6	0.50	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP7	0.50	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TP8	0.50	N	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

ATKINS CatWasteSoil

Classification Assessment Tool of Soil Wastes - Individual Compound Information

Site Name	Highgate Cemetery
Location	N6
Site ID	
Job Number	21/12141/GO
Date	21/07/2021
User Name	
Company Name	Albury S.I Ltd

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP2	0.30	pH	0.00000	N				
TP2	0.30	Benzene	0.00010	N				H225 test
TP2	0.30	Toluene	0.00010	N				H225 test
TP2	0.30	Ethylbenzene	0.00010	N				H225 test
TP2	0.30	m,p-xylene	0.00010	N				H226 test
TP2	0.30	o-xylene	0.00000	N				H226 test
TP2	0.30	Naphthalenene	0.00001	N				H228 test
TP2	0.30	Acenaphthylene	0.00004	N				
TP2	0.30	Acenaphthene	0.00015	N				
TP2	0.30	Fluorene	0.00013	N				
TP2	0.30	Phenanthrene	0.00150	N				
TP2	0.30	Anthracene	0.00032	N				
TP2	0.30	Fluoranthene	0.00260	N				
TP2	0.30	Pyrene	0.00220	N				
TP2	0.30	Benzo(a)anthracene	0.00130	N				
TP2	0.30	Chrysene	0.00094	N				
TP2	0.30	Benzo(b)fluoranthene	0.00140	N				
TP2	0.30	Benzo(k)fluoranthene	0.00055	N				
TP2	0.30	Benzo(a)pyrene	0.00120	N				
TP2	0.30	Indeno(1,2,3-cd)pyrene	0.00055	N				
TP2	0.30	Di-benz(a,h,)anthracene	0.00016	N				
TP2	0.30	Benzo(g,h,i)perylene	0.00062	N				
TP2	0.30	hydrocarbon/oil with marker	0.04100	N				H225 test
TP2	0.30	Arsenic	0.02301	N				
TP2	0.30	Boron	0.00486	N				
TP2	0.30	Cadmium	0.00004	N				
TP2	0.30	Hexavalent Chromium	0.00012	N				
TP2	0.30	Chromium (Total)	0.00406	N				
TP2	0.30	Copper	0.01030	N				
TP2	0.30	Lead	0.06500	N				
TP2	0.30	Manganese	0.06872	N				
TP2	0.30	Mercury	0.00003	N				
TP2	0.30	Nickel	0.00554	N				
TP2	0.30	Selenuim	0.00038	N				
TP2	0.30	Zinc	0.00000	N				
TP2	0.30	Zincx	0.05185	N				
TP2	0.30	Vanadium	0.00839	N				
TP4	0.50	pH	0.00000	N				
TP4	0.50	Benzene	0.00010	N				H225 test
TP4	0.50	Toluene	0.00010	N				H225 test
TP4	0.50	Ethylbenzene	0.00010	N				H225 test
TP4	0.50	m,p-xylene	0.00010	N				H226 test
TP4	0.50	o-xylene	0.00000	N				H226 test
TP4	0.50	Naphthalenene	0.00001	N				H228 test
TP4	0.50	Acenaphthylene	0.00001	N				
TP4	0.50	Acenaphthene	0.00001	N				
TP4	0.50	Fluorene	0.00001	N				

ATKINS CatWasteSoil

Classification Assessment Tool of Soil Wastes - Individual Compound Information

Site Name	Highgate Cemetery
Location	N6
Site ID	
Job Number	21/12141/GO
Date	21/07/2021
User Name	
Company Name	Albury S.I Ltd

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP4	0.50	Phenanthrene	0.00005	N				
TP4	0.50	Anthracene	0.00001	N				
TP4	0.50	Fluoranthene	0.00016	N				
TP4	0.50	Pyrene	0.00014	N				
TP4	0.50	Benzo(a)anthracene	0.00008	N				
TP4	0.50	Chrysene	0.00007	N				
TP4	0.50	Benzo(b)fluoranthene	0.00014	N				
TP4	0.50	Benzo(k)fluoranthene	0.00003	N				
TP4	0.50	Benzo(a)pyrene	0.00010	N				
TP4	0.50	Indeno(1,2,3-cd)pyrene	0.00007	N				
TP4	0.50	Di-benz(a,h,)anthracene	0.00001	N				
TP4	0.50	Benzo(g,h,i)perylene	0.00008	N				
TP4	0.50	hydrocarbon/oil with marker	0.00650	N				H225 test
TP4	0.50	Arsenic	0.00614	N				
TP4	0.50	Boron	0.00347	N				
TP4	0.50	Cadmium	0.00004	N				
TP4	0.50	Hexavalent Chromium	0.00012	N				
TP4	0.50	Chromium (Total)	0.00538	N				
TP4	0.50	Copper	0.00653	N				
TP4	0.50	Lead	0.00000	N				
TP4	0.50	Leadx	0.03900	N				
TP4	0.50	Manganese	0.08246	N				
TP4	0.50	Mercury	0.00003	N				
TP4	0.50	Nickel	0.00738	N				
TP4	0.50	Selenuim	0.00038	N				
TP4	0.50	Zinc	0.00000	N				
TP4	0.50	Zincx	0.11358	N				
TP4	0.50	Vanadium	0.01000	N				
TP6	0.50	pH	0.00000	N				
TP6	0.50	Benzene	0.00000	N				H225 test
TP6	0.50	Toluene	0.00000	N				H225 test
TP6	0.50	Ethylbenzene	0.00000	N				H225 test
TP6	0.50	m,p-xylene	0.00000	N				H226 test
TP6	0.50	o-xylene	0.00000	N				H226 test
TP6	0.50	Naphthalenene	0.00001	N				H228 test
TP6	0.50	Acenaphthylene	0.00001	N				
TP6	0.50	Acenaphthene	0.00001	N				
TP6	0.50	Fluorene	0.00001	N				
TP6	0.50	Phenanthrene	0.00004	N				
TP6	0.50	Anthracene	0.00001	N				
TP6	0.50	Fluoranthene	0.00010	N				
TP6	0.50	Pyrene	0.00009	N				
TP6	0.50	Benzo(a)anthracene	0.00005	N				
TP6	0.50	Chrysene	0.00004	N				
TP6	0.50	Benzo(b)fluoranthene	0.00007	N				
TP6	0.50	Benzo(k)fluoranthene	0.00002	N				
TP6	0.50	Benzo(a)pyrene	0.00005	N				

ATKINS CatWasteSoil

Classification Assessment Tool of Soil Wastes - Individual Compound Information

Site Name	Highgate Cemetery
Location	N6
Site ID	
Job Number	21/12141/GO
Date	21/07/2021
User Name	
Company Name	Albury S.I Ltd

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP6	0.50	Indeno(1,2,3-cd)pyrene	0.00003	N				
TP6	0.50	Di-benz(a,h,)anthracene	0.00001	N				
TP6	0.50	Benzo(g,h,i)perylene	0.00004	N				
TP6	0.50	hydrocarbon/oil with marker	0.00340	N				H225 test
TP6	0.50	Arsenic	0.00568	N				
TP6	0.50	Boron	0.00347	N				
TP6	0.50	Cadmium	0.00004	N				
TP6	0.50	Hexavalent Chromium	0.00012	N				
TP6	0.50	Chromium (Total)	0.00260	N				
TP6	0.50	Copper	0.00301	N				
TP6	0.50	Lead	0.01700	N				
TP6	0.50	Manganese	0.05223	N				
TP6	0.50	Mercury	0.00003	N				
TP6	0.50	Nickel	0.00316	N				
TP6	0.50	Selenuim	0.00038	N				
TP6	0.50	Zinc	0.00000	N				
TP6	0.50	Zincx	0.01235	N				
TP6	0.50	Vanadium	0.00464	N				
TP7	0.50	pH	0.00000	N				
TP7	0.50	Benzene	0.00000	N				H225 test
TP7	0.50	Toluene	0.00000	N				H225 test
TP7	0.50	Ethylbenzene	0.00000	N				H225 test
TP7	0.50	m,p-xylene	0.00000	N				H226 test
TP7	0.50	o-xylene	0.00000	N				H226 test
TP7	0.50	Naphthalenene	0.00001	N				H228 test
TP7	0.50	Acenaphthylene	0.00001	N				
TP7	0.50	Acenaphthene	0.00001	N				
TP7	0.50	Fluorene	0.00001	N				
TP7	0.50	Phenanthrene	0.00001	N				
TP7	0.50	Anthracene	0.00001	N				
TP7	0.50	Fluoranthene	0.00001	N				
TP7	0.50	Pyrene	0.00001	N				
TP7	0.50	Benzo(a)anthracene	0.00001	N				
TP7	0.50	Chrysene	0.00001	N				
TP7	0.50	Benzo(b)fluoranthene	0.00001	N				
TP7	0.50	Benzo(k)fluoranthene	0.00001	N				
TP7	0.50	Benzo(a)pyrene	0.00001	N				
TP7	0.50	Indeno(1,2,3-cd)pyrene	0.00001	N				
TP7	0.50	Di-benz(a,h,)anthracene	0.00001	N				
TP7	0.50	Benzo(g,h,i)perylene	0.00001	N				
TP7	0.50	hydrocarbon/oil with marker	0.00100	N				H225 test
TP7	0.50	Arsenic	0.00199	N				
TP7	0.50	Boron	0.00440	N				
TP7	0.50	Cadmium	0.00004	N				
TP7	0.50	Hexavalent Chromium	0.00012	N				
TP7	0.50	Chromium (Total)	0.00392	N				
TP7	0.50	Copper	0.00327	N				

ATKINS CatWasteSoil

Classification Assessment Tool of Soil Wastes - Individual Compound Information

Site Name	Highgate Cemetery
Location	N6
Site ID	
Job Number	21/12141/GO
Date	21/07/2021
User Name	
Company Name	Albury S.I Ltd

Hole ID	Sample Depth	Contaminant	Contaminant Concentration (%)	Hazardous Waste Y/N	Hazard Property	Individual Hazard Statements Exceeded	Cumulative Hazard Statements Exceeded	Additional Hazard Statements (see notes section)
TP7	0.50	Lead	0.00000	N				
TP7	0.50	Leadx	0.01100	N				
TP7	0.50	Manganese	0.04673	N				
TP7	0.50	Mercury	0.00003	N				
TP7	0.50	Nickel	0.00395	N				
TP7	0.50	Selenuim	0.00038	N				
TP7	0.50	Zinc	0.00000	N				
TP7	0.50	Zincx	0.01012	N				
TP7	0.50	Vanadium	0.00839	N				
TP8	0.50	pH	0.00000	N				
TP8	0.50	Benzene	0.00010	N				H225 test
TP8	0.50	Toluene	0.00010	N				H225 test
TP8	0.50	Ethylbenzene	0.00010	N				H225 test
TP8	0.50	m,p-xylene	0.00010	N				H226 test
TP8	0.50	o-xylene	0.00010	N				H226 test
TP8	0.50	Naphthalenene	0.00001	N				H228 test
TP8	0.50	Acenaphthylene	0.00001	N				
TP8	0.50	Acenaphthene	0.00001	N				
TP8	0.50	Fluorene	0.00001	N				
TP8	0.50	Phenanthrene	0.00001	N				
TP8	0.50	Anthracene	0.00001	N				
TP8	0.50	Fluoranthene	0.00002	N				
TP8	0.50	Pyrene	0.00002	N				
TP8	0.50	Benzo(a)anthracene	0.00001	N				
TP8	0.50	Chrysene	0.00001	N				
TP8	0.50	Benzo(b)fluoranthene	0.00001	N				
TP8	0.50	Benzo(k)fluoranthene	0.00001	N				
TP8	0.50	Benzo(a)pyrene	0.00001	N				
TP8	0.50	Indeno(1,2,3-cd)pyrene	0.00001	N				
TP8	0.50	Di-benz(a,h,)anthracene	0.00001	N				
TP8	0.50	Benzo(g,h,i)perylene	0.00001	N				
TP8	0.50	hydrocarbon/oil with marker	0.00100	N				H225 test
TP8	0.50	Arsenic	0.00629	N				
TP8	0.50	Boron	0.00394	N				
TP8	0.50	Cadmium	0.00004	N				
TP8	0.50	Hexavalent Chromium	0.00012	N				
TP8	0.50	Chromium (Total)	0.01196	N				
TP8	0.50	Copper	0.00603	N				
TP8	0.50	Lead	0.00330	N				
TP8	0.50	Manganese	0.03024	N				
TP8	0.50	Mercury	0.00003	N				
TP8	0.50	Nickel	0.00817	N				
TP8	0.50	Selenuim	0.00038	N				
TP8	0.50	Zinc	0.00000	N				
TP8	0.50	Zincx	0.01037	N				
TP8	0.50	Vanadium	0.01018	N				

Notes - Additional Information on Hazard Properties

Hazardous Property	Description	Hazard Statement	Note
HP1	Explosive	H200, H201, H202, H203, H204, H240 and H241	A waste is assessed for HP1 via test methods, rather than a concentration limit. If you have substances or a mixture containing explosive properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP2	Oxidising	H270, H271, H272	A waste is assessed for HP2 via test methods, rather than a concentration limit. If you have substances or a mixture containing oxidising properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP3	Flammable	H220 to H226, H228, H242, H250, H251m H252, H260, H261	A waste is assessed for HP3 via test methods, rather than a concentration limit. If you have substances or a mixture containing flammable properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria. If a waste contains either H220, H221, H260 or H261 a calculation can be performed to identify the minimum amount of that substance that will trigger HP3.
HP5	Specific Target Organ Toxicity (STOT)	H304	Should a waste contain two or more compounds displaying H304 (Asp. Tox 1) and equal or exceed its specific concentration limit of 10%, then a waste will be hazardous by HP5 if its kinematic viscosity exceeds 20.5 mm^2/s. Guidance should be sought from the CLP Criteria.
HP9	Infectious	N/A	A waste is assessed for HP9 via further testing, rather than a concentration limit. In cases where there is the potential for toxins to be present, further testing will be required. For healthcare waste reference should be made to the Department of health guidance: Safe management of healthcare waste.
HP12	Release of acute toxic gas	EUH029, EUH031, EUH032, H260 or H261	A waste is assessed for HP12 via test methods, rather than a concentration limit. If you have substances or a mixture that may release acute toxic gas the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP15	Explosive or explosive properties	H205, EUH001, EUH019 or EUH044	A waste is assessed for HP15 via test methods, rather than a concentration limit. If you have substances or a mixture that may exhibit explosive or explosive properties the waste should be tested in accordance with the European Chemical Agency's guidance on the application of the CLP Criteria.
HP16	Persistent organic pollutants	N/A	A waste is considered hazardous if the concentration of one or more compound (persistent organic pollutant) as listed in Appendix C of Environment Agency guidance WM3 is above its assigned concentration limit. For reference for dioxins and furans, this assessment incorporates the use of specific toxicity equivalent factors.

Appendix C: Ground Movement Assessment Report

A-squared Studio

Highgate Cemetery

Building Damage Ground Movement Assessment

November 2024

3500-A2S-XX-XX-RP-Y-0001-01

Project Name	Highgate Cemetery
Project Number	3500
Client	Webb Yates Engineers Limited
Document Name	Building Damage Ground Movement Assessment

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3500-A2S-XX-XX-RP-Y-0001-01	Second Issue	-	01	PS	05/11/2024