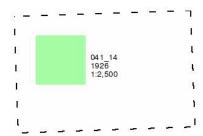


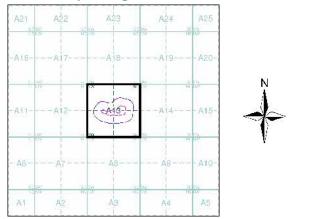
Cambridgeshire & Isle Of Ely Published 1926 Source map scale - 1:2,500

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below 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.

Map Name(s) and Date(s)



Historical Map - Segment A13



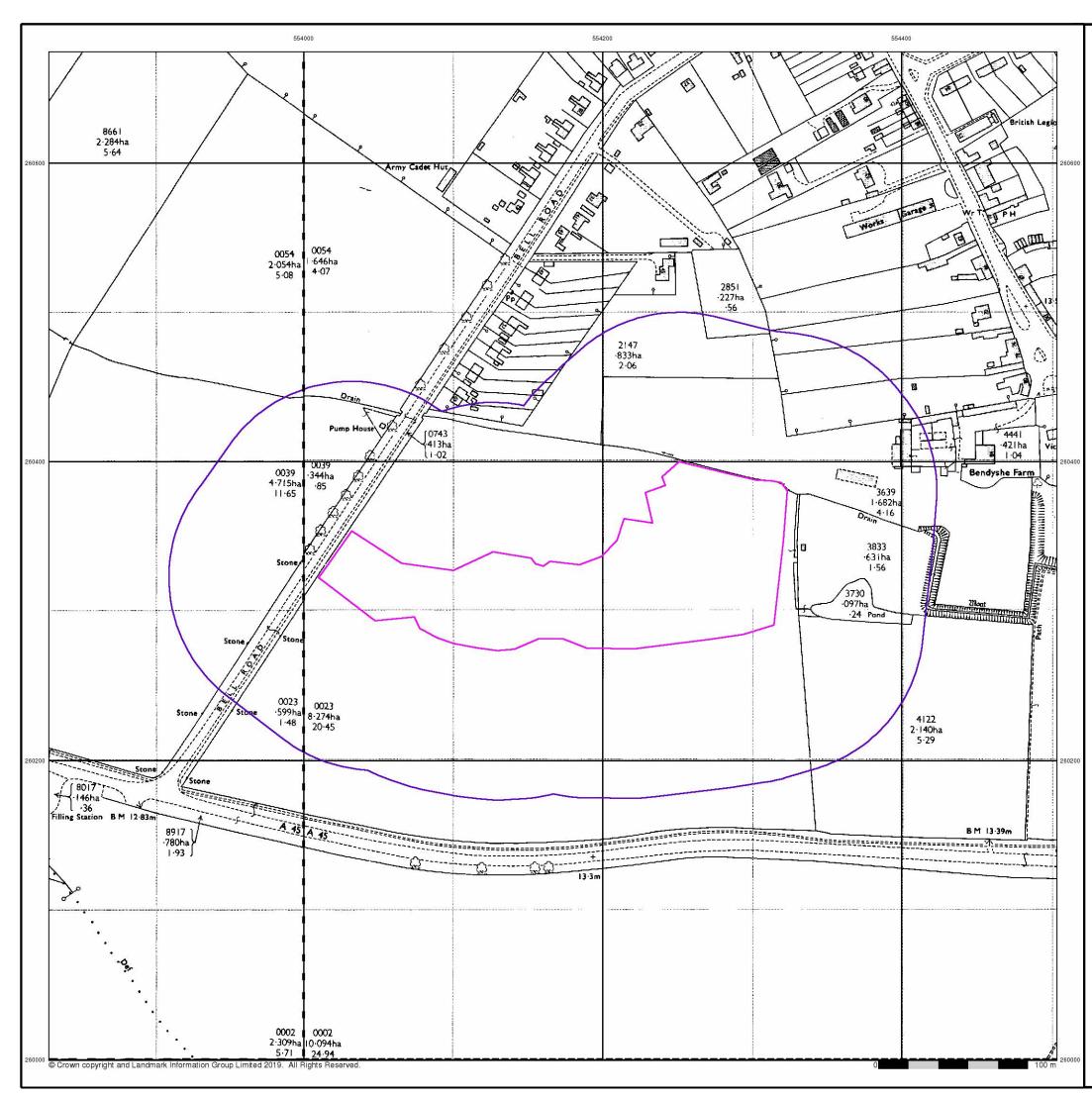
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Customer Ref:	4159,GI
National Grid Reference:	554180, 260330
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Site Area (Ha):	2.14
Search Buffer (m):	100

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL





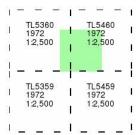
Ordnance Survey Plan

Published 1972

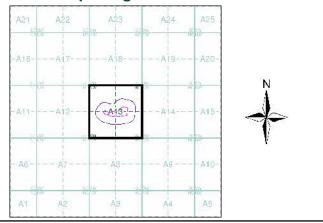
Source map scale - 1:2,500

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 and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below 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.

Map Name(s) and Date(s)



Historical Map - Segment A13



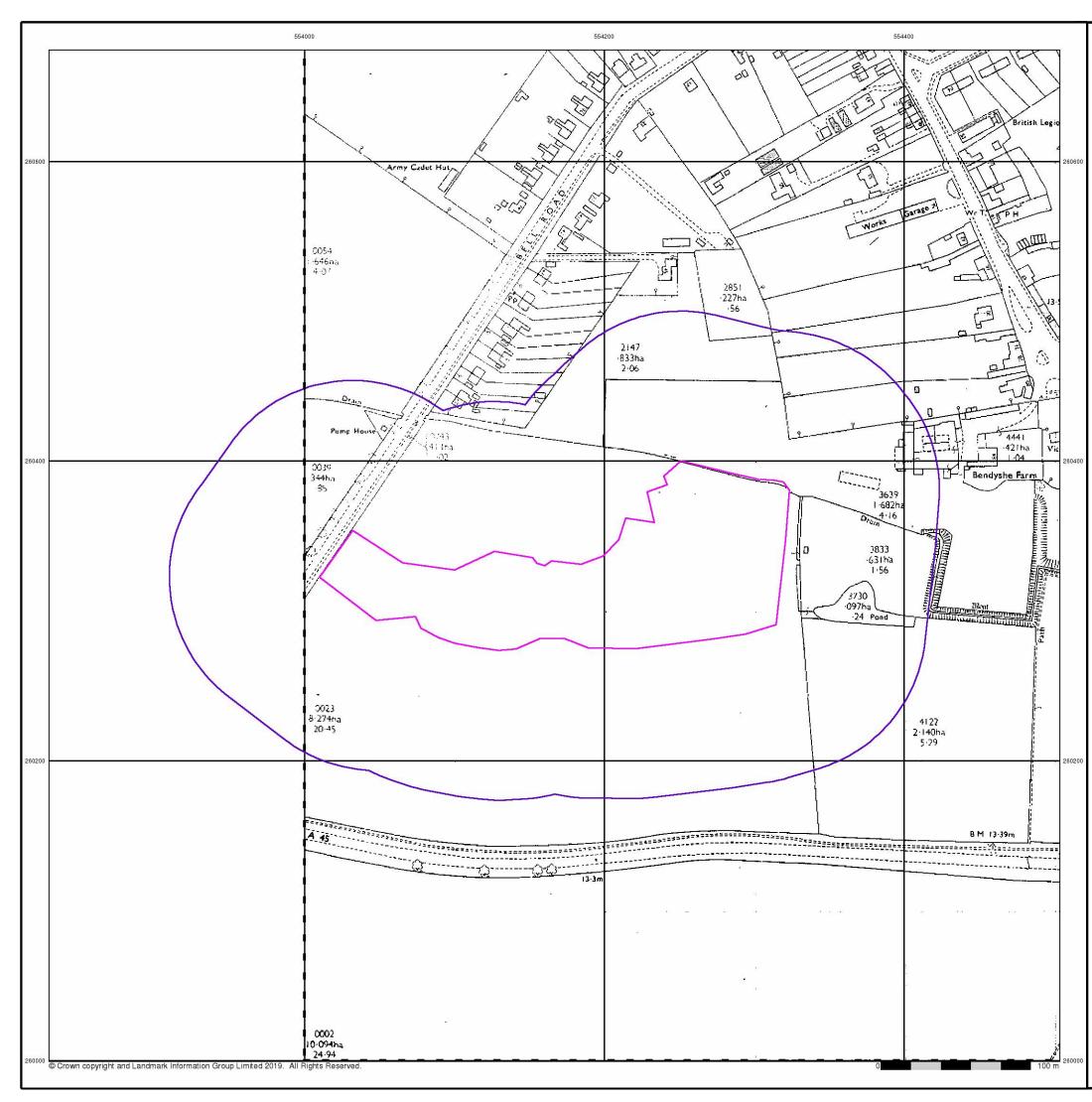
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Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL



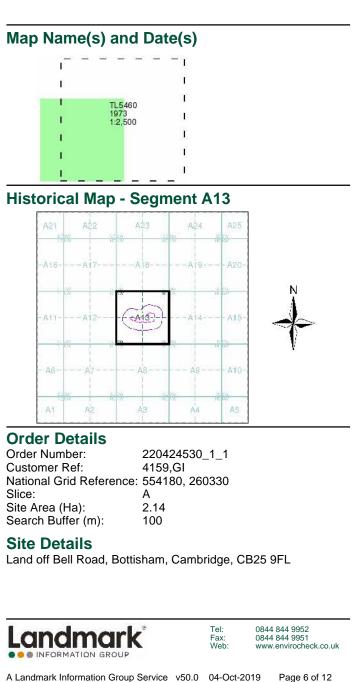


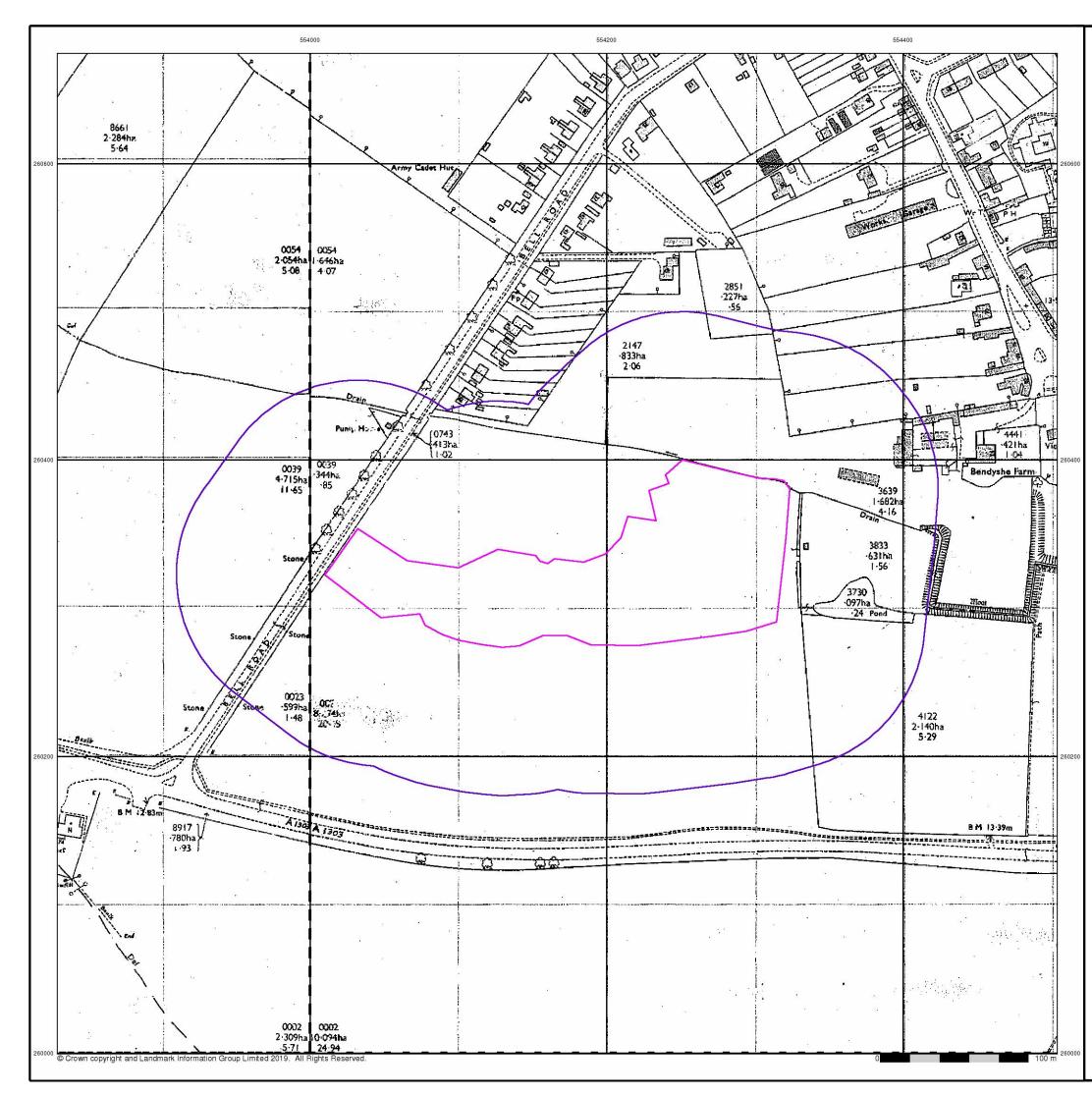
Supply of Unpublished Survey Information

Published 1973

Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.





Additional SIMs

Published 1978

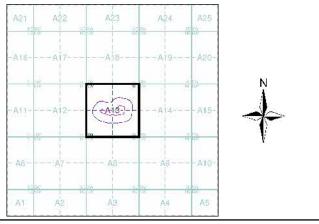
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

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Historical Map - Segment A13



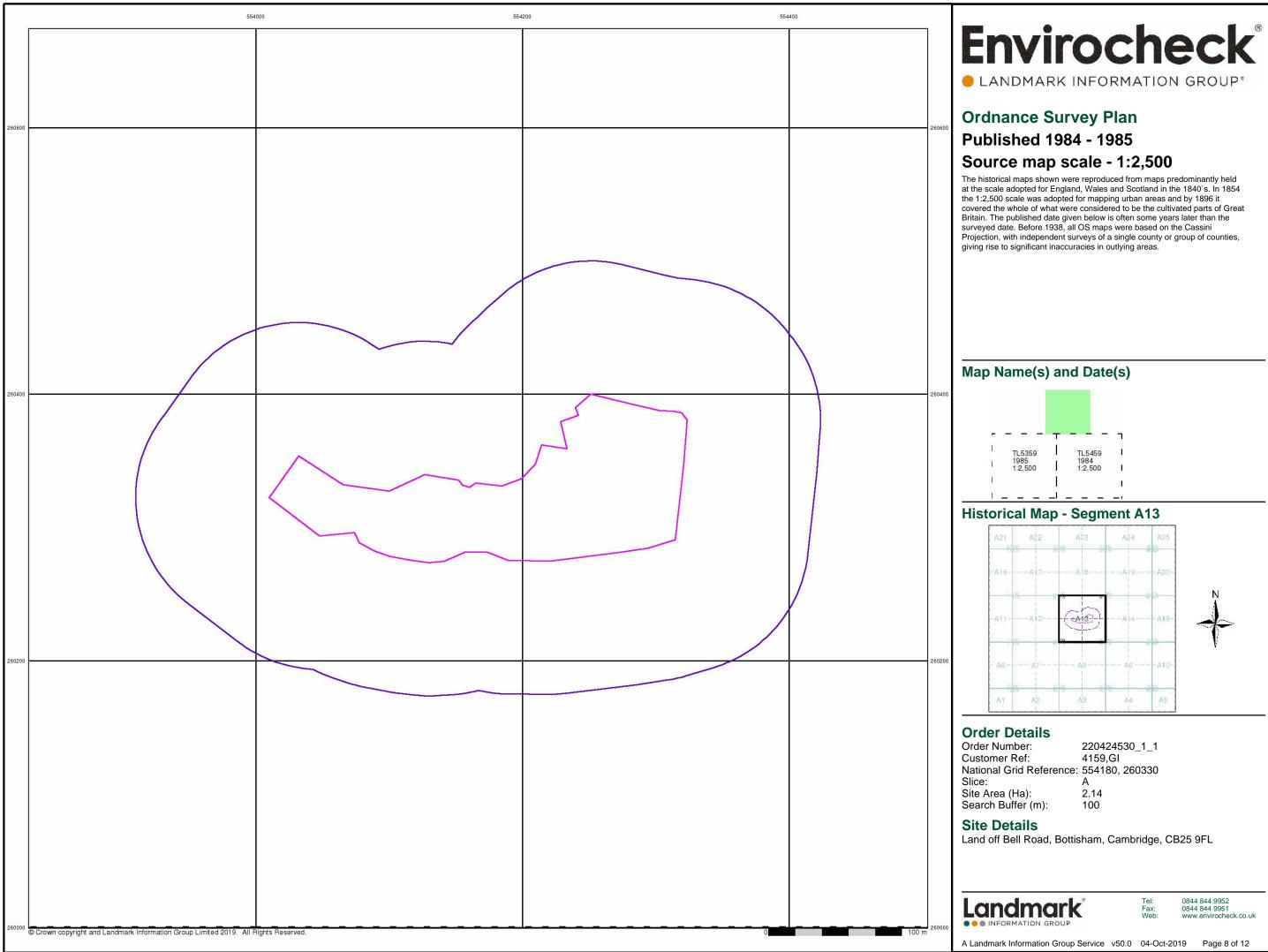
Order Details

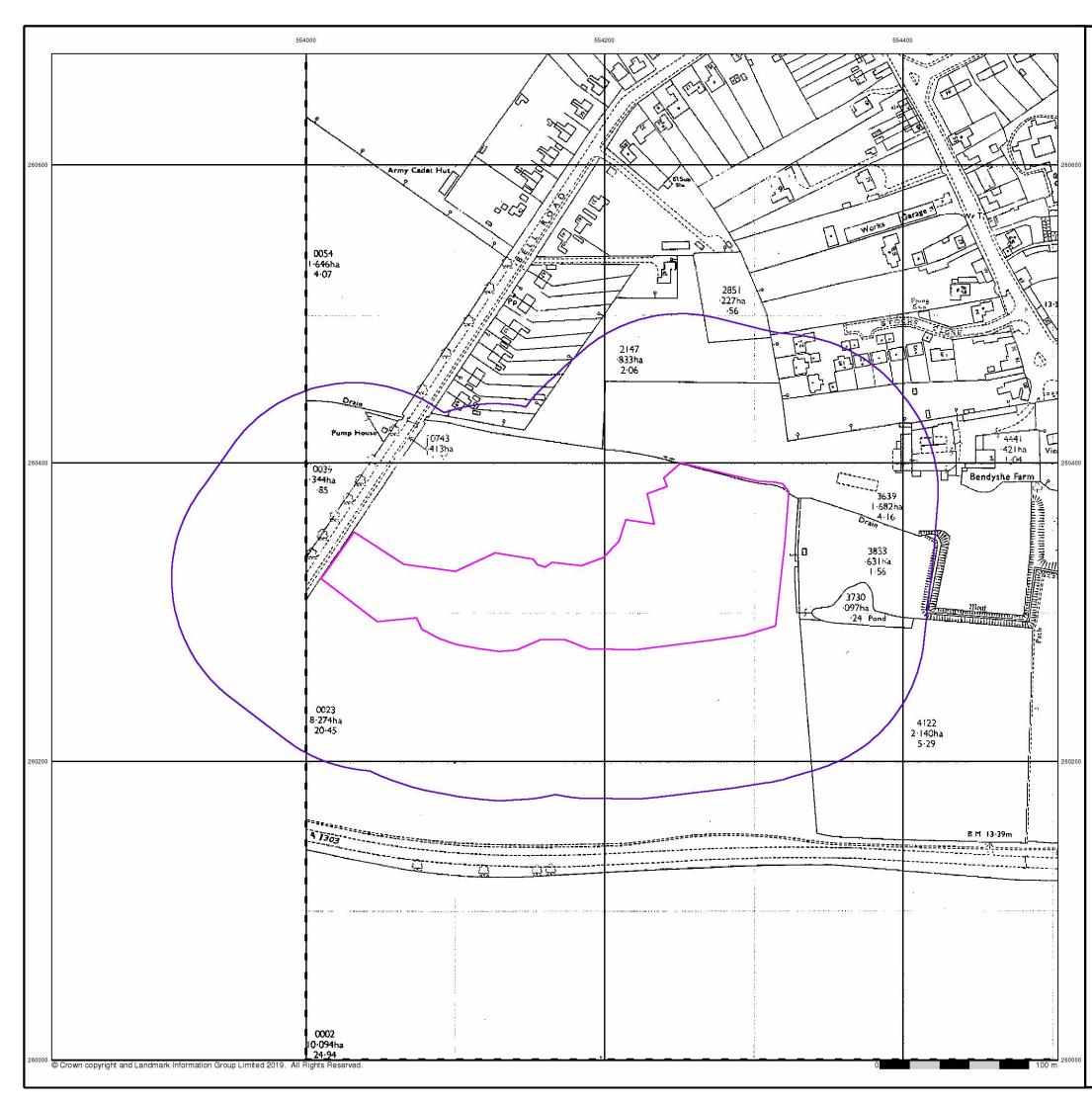
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Order Number:	220424530_1_1
Customer Ref:	4159,GI
National Grid Reference:	554180, 260330
Slice:	A
Site Area (Ha):	2.14
Search Buffer (m):	100

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL







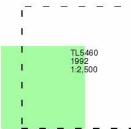
Additional SIMs

Published 1992

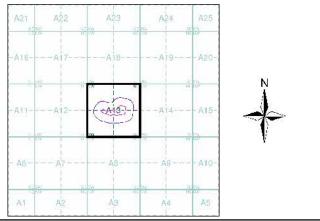
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.





Historical Map - Segment A13



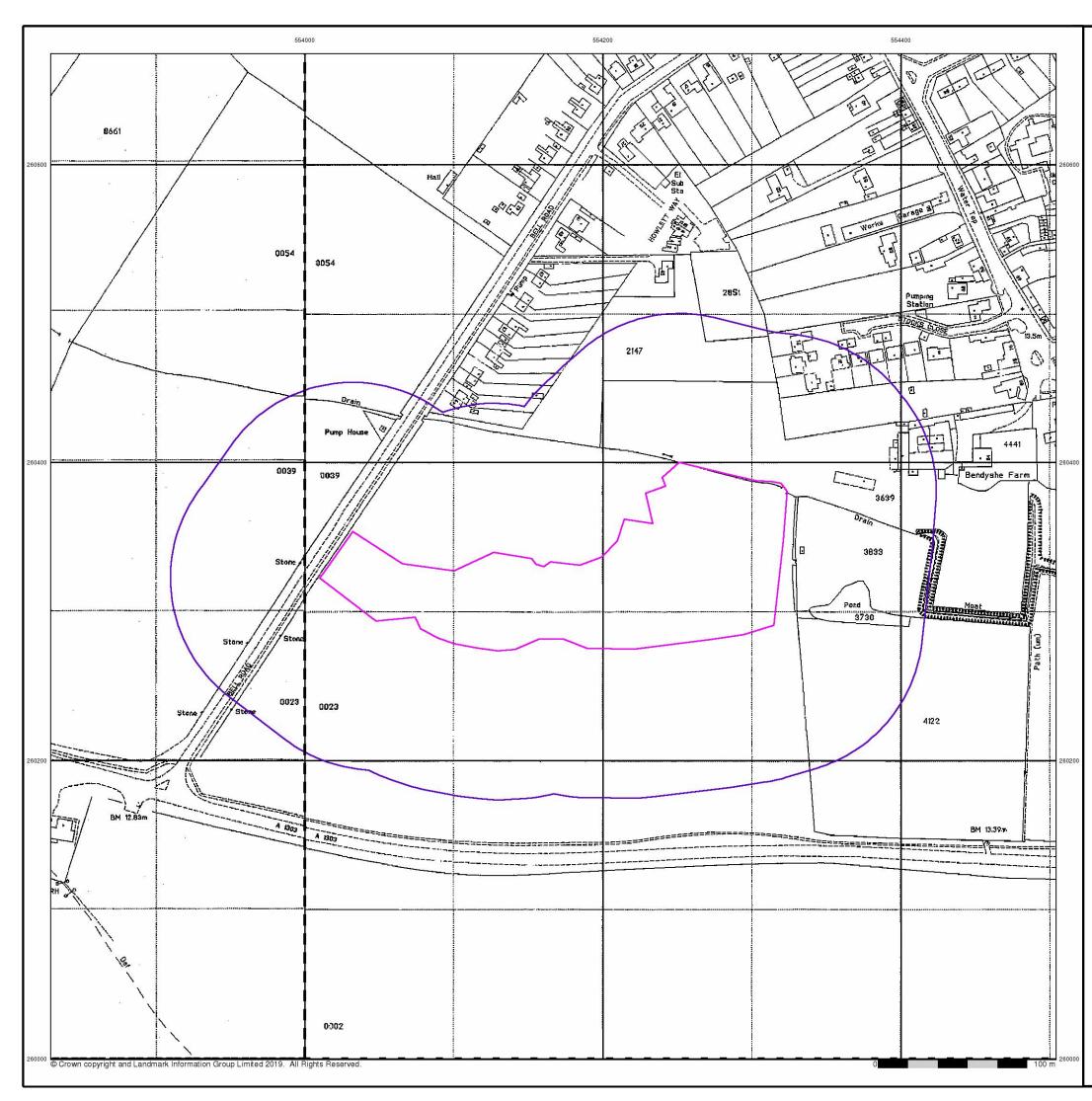
Order Details

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National Grid Reference:	554180, 260330
Slice:	A
Site Area (Ha):	2.14
Search Buffer (m):	100

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL





Large-Scale National Grid Data Published 1994

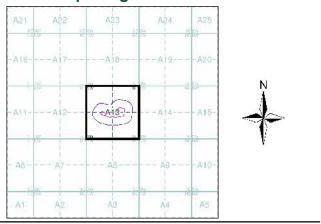
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

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Historical Map - Segment A13



Order Details

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Order Number:	220424530_1_1
Customer Ref:	4159,GI
National Grid Reference:	554180, 260330
Slice:	A
Site Area (Ha):	2.14
Search Buffer (m):	100

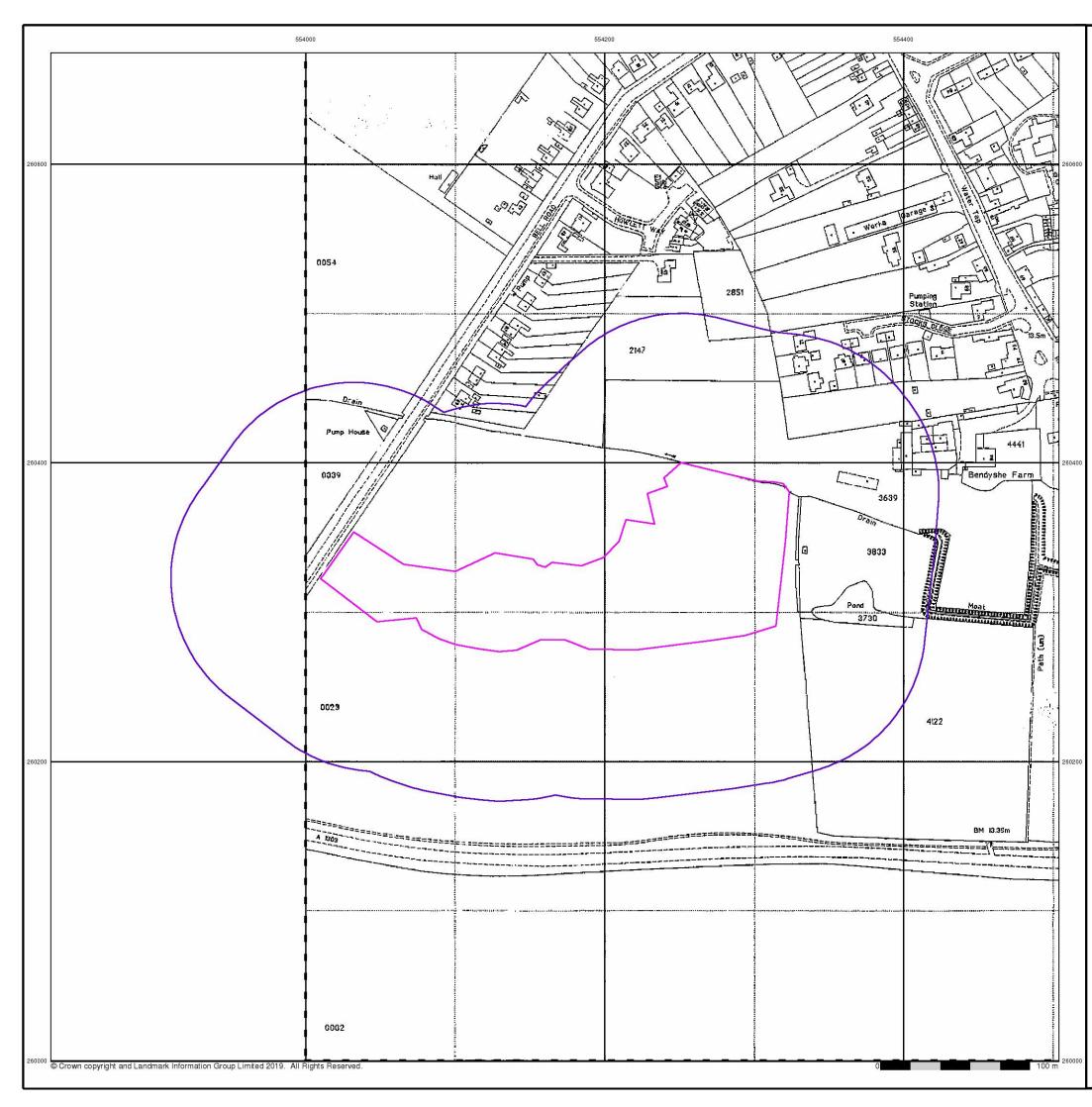
Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL



Tel: Fax: Web:

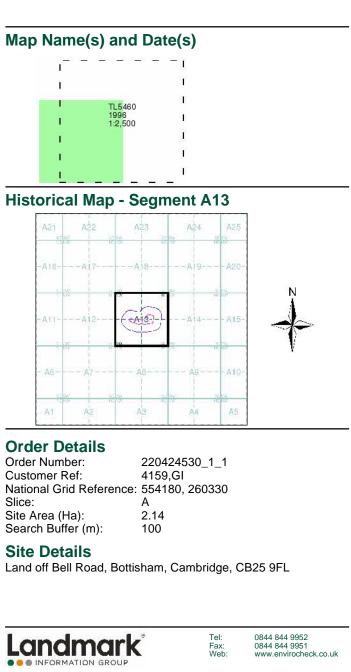
0844 844 9951 www.envirocheck.co.uk



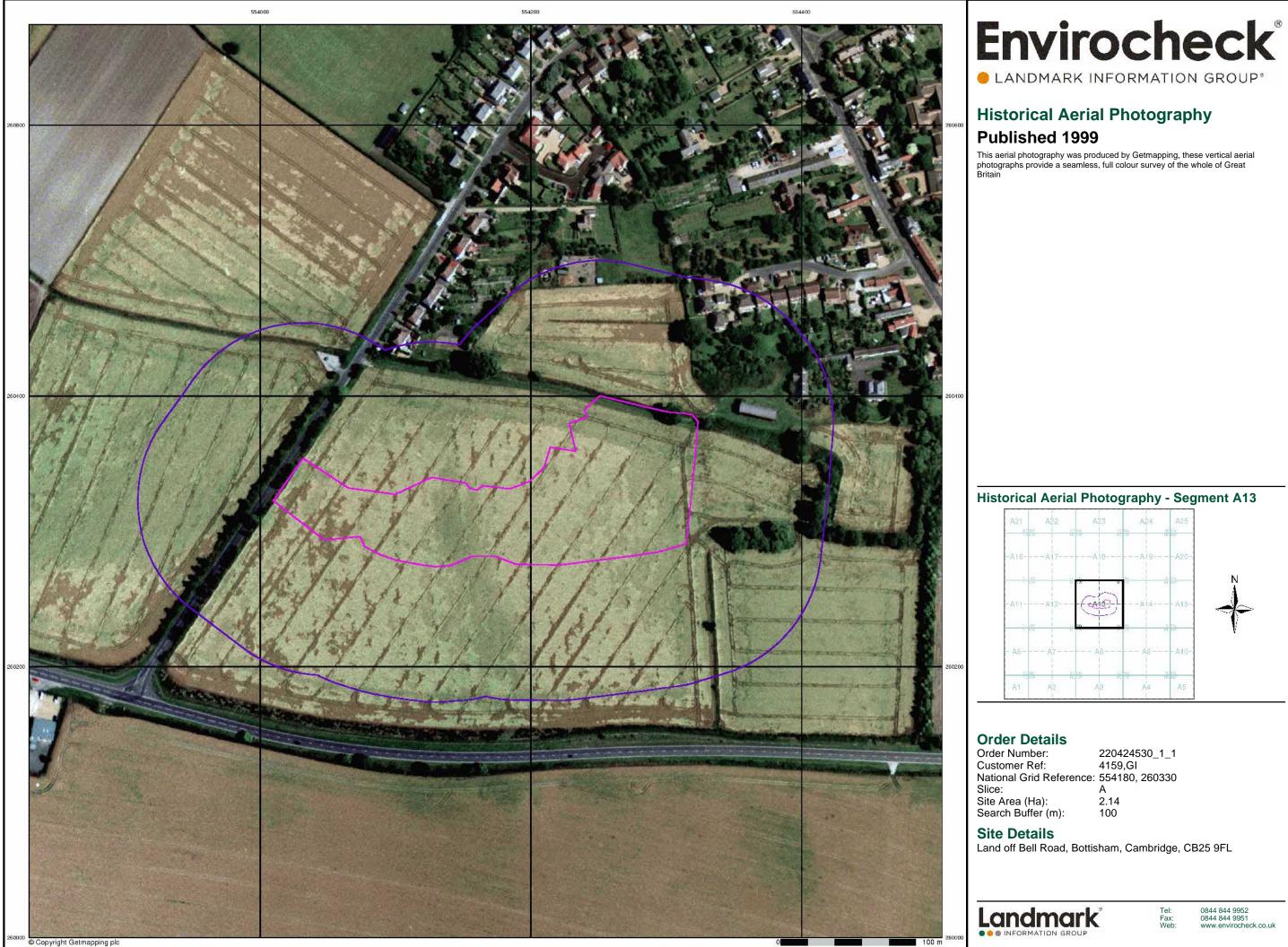
Large-Scale National Grid Data Published 1996

Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.



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-A16	-A17-		-A18-		- A19-	A20-	
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Historical Mapping Legends

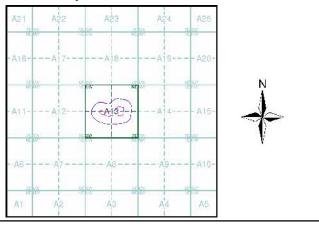
	notoriour mapping Legena.	-
Ordnance Survey County Series 1:10,560	Ordnance Survey Plan 1:10,000	1:10,000 Raster Mapping
Gravel Sand Other Pit Pit Pit Pits	رمیست Chalk Pit, Clay Pit ورونی Gravel Pit تر این or Quarry	Gravel Pit Refuse tip or slag heap
Orchard Quarry	Sand Pit	Rock Rock (scattered)
Reeds Marsh	Refuse or Lake, Loch	ື້ໍ້ຈື່ Boulders ເວັ້າເປັນ Boulders (scattered)
And the second s	Dunes	Shingle Mud Mud
Mixed Wood Deciduous Brushwood	本 A Coniferous	Sand Sand (
	ሩ የ Orchard በስ_ Scrub \ነړ Coppice	Slopes Top of cliff
	ົາີ Bracken ແນນປ// Heath ນັບບ່າ, Rough	General detail Underground detail Narrow gauge
Fir Furze Rough Pasture	مت Grassland Grassland	Multi-track Single track railway
flow of water Station + + + + → Site of Antiquities → Bench Mark	Direction of Flow of Water	County boundary (England only)
Pump, Guide Post, Well, Spring, Signal Post Boundary Post	Building Building Sand Glasshouse	District, Unitary, boundary Metropolitan, London Borough boundary boundary boundary
•285 Surface Level Sketched Contour Instrumental Contour	Pylon Pylon ————————————————————————————————————	Area of wooded vegetation Area of wooded vegetation Area of wooded Area of wooded vegetation Area of wooded vegetation
Main Roads Un-Fenced Un-Fenced Un-Fenced	Cutting Embankment Standard Gauge	
Sunken Road Raised Road	Road '''∏''' Road ∕ Level Foot Under Over Crossing Bridge	や
Road over Railway River	Siding, Tramway or Mineral Line	متاليد Rough Grassland مينانية Heath
Railway over Level Crossing	Geographical County	م السے میں
Road over River or Canal Stream	Administrative County, County Borough or County of City Municipal Borough, Urban or Rural District,	Water feature 🗧 Flow arrows
Road over Stream	Burgh or District Council Borough, Burgh or County Constituency Shown only when not coincident with other boundaries	MHW(S) Mean high Mean low water (springs) Mean low water (springs)
— — — — — County Boundary (Geographical)	Civil Parish Civil Parish Shown alternately when coincidence of boundaries occurs	Telephone line (where shown)
- · - · - · County & Civil Parish Boundary + · + · + · + Administrative County & Civil Parish Boundary	BP, BS Boundary Post or Stone Pol Sta Police Station Ch Church PO Post Office	← Bench mark Criangulation (where shown) Criangulation
Co. Boro. Bdy.	CH Club House PC Public Convenience F E Sta Fire Engine Station PH Public House FB Foot Bridge SB Signal Box	Point feature Pylon, flare stack • (e.g. Guide Post or Mile Stone) or lighting tower
County Burgh Boundary (Scotland)	Fn Fountain Spr Spring GP Guide Post TCB Telephone Call Box	• Site of (antiquity) Glasshouse
RD. Bdy.	MP Mile Post TCP Telephone Call Post	Important

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Cambridgeshire & Isle Of Ely	1:10,560	1886	2
Cambridgeshire & Isle Of Ely	1:10,560	1903	3
Cambridgeshire & Isle Of Ely	1:10,560	1926	4
Historical Aerial Photography	1:10,560	1948	5
Cambridgeshire & Isle Of Ely	1:10,560	1952	6
Ordnance Survey Plan	1:10,000	1958	7
Ordnance Survey Plan	1:10,000	1960 - 1966	8
Ordnance Survey Plan	1:10,000	1970 - 1975	9
Ordnance Survey Plan	1:10,000	1974	10
Ordnance Survey Plan	1:10,000	1981 - 1988	11
Ordnance Survey Plan	1:10,000	1990	12
10K Raster Mapping	1:10,000	2000	13
10K Raster Mapping	1:10,000	2006	14
VectorMap Local	1:10,000	2019	15

Historical Map - Slice A



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 Order Number:
 220424530_1_1

 Customer Ref:
 4159,GI

 National Grid Reference:
 554180, 260330

 Slice:
 A

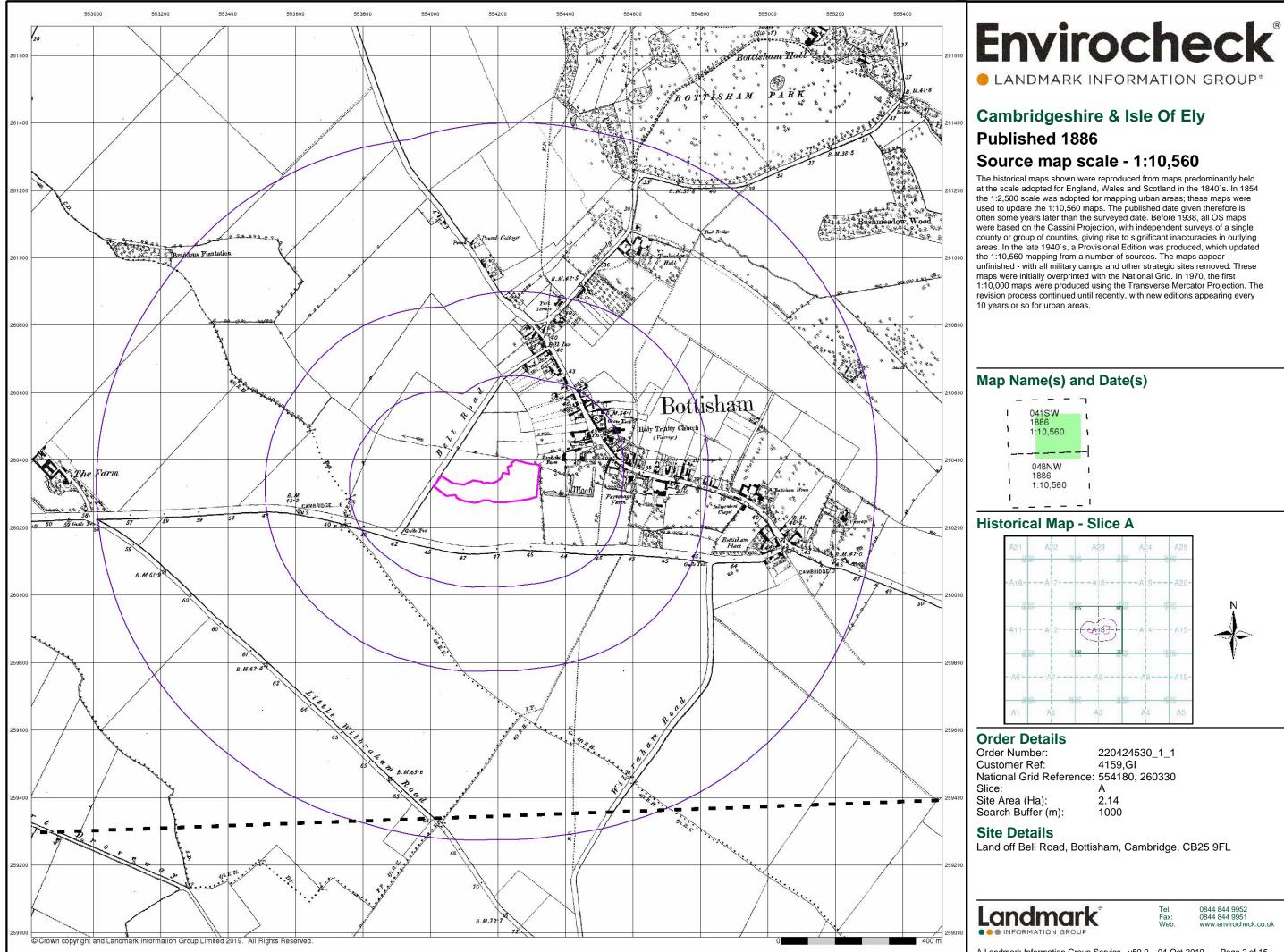
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 Search Buffer (m):
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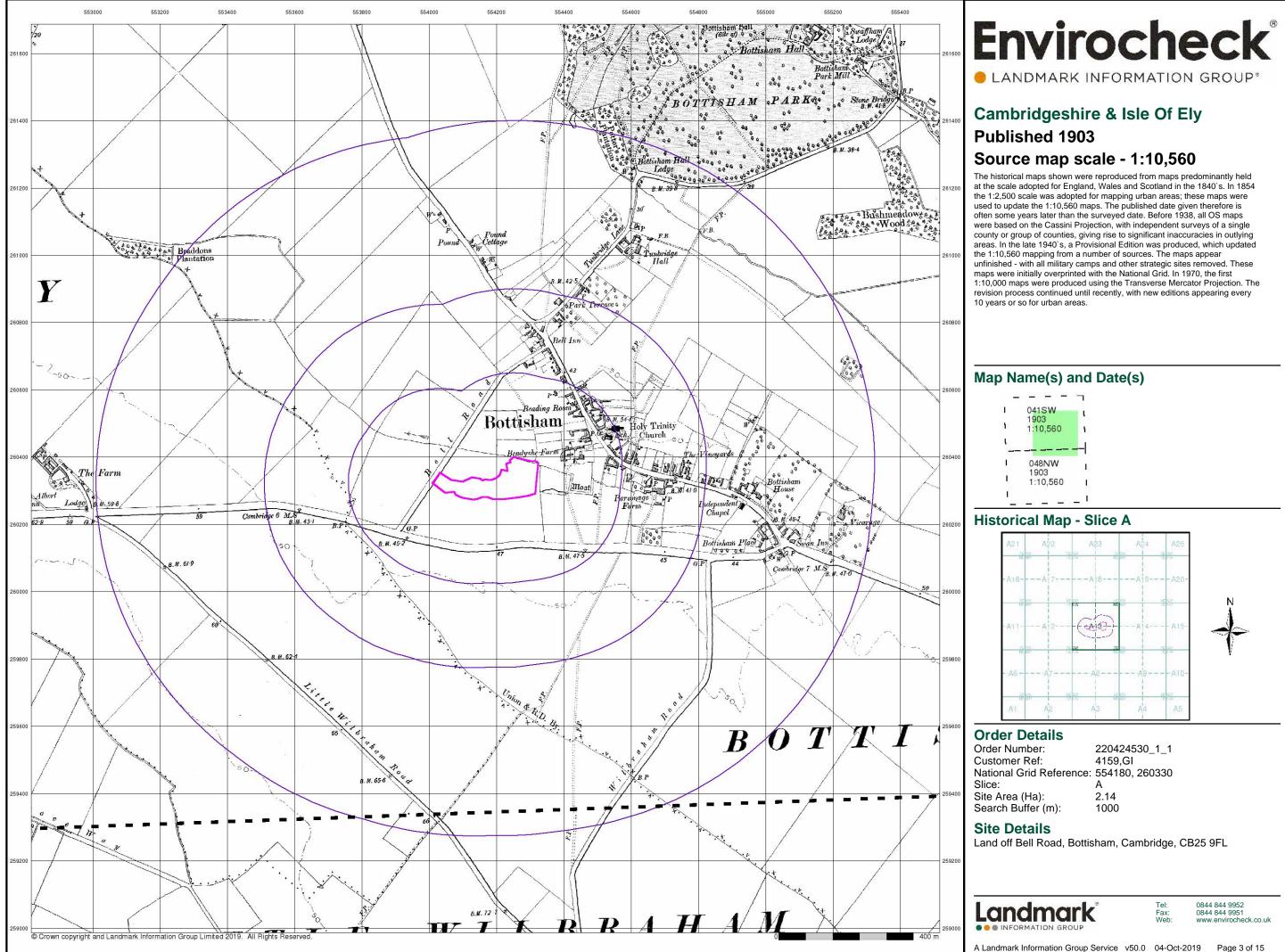
Site Details

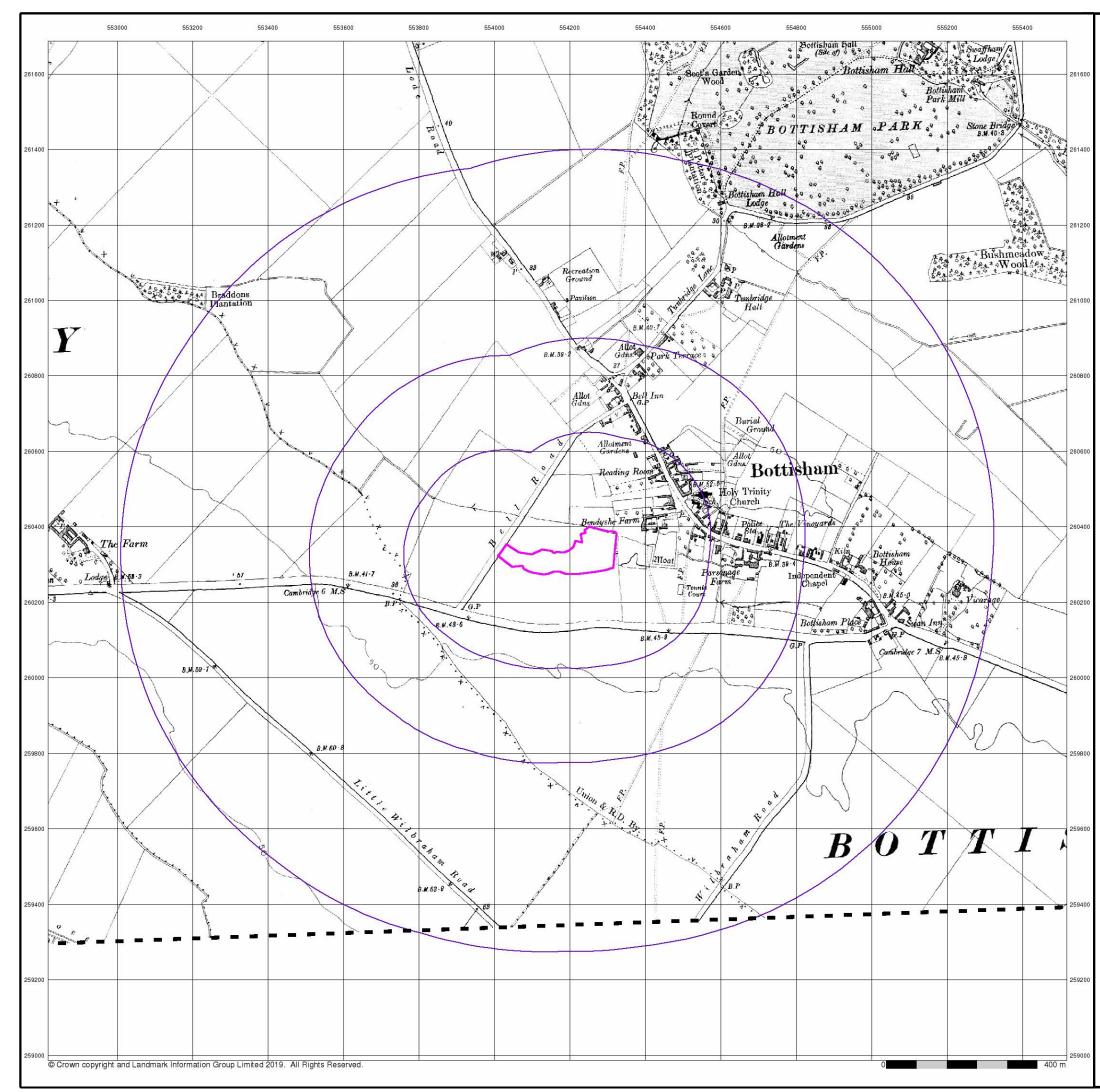
Land off Bell Road, Bottisham, Cambridge, CB25 9FL





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Slice:	Α
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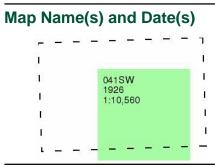


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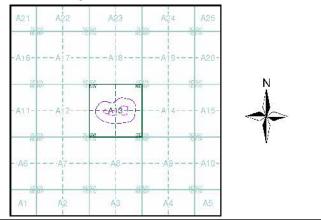
Cambridgeshire & Isle Of Ely Published 1926

Source map scale - 1:10,560

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.



Historical Map - Slice A



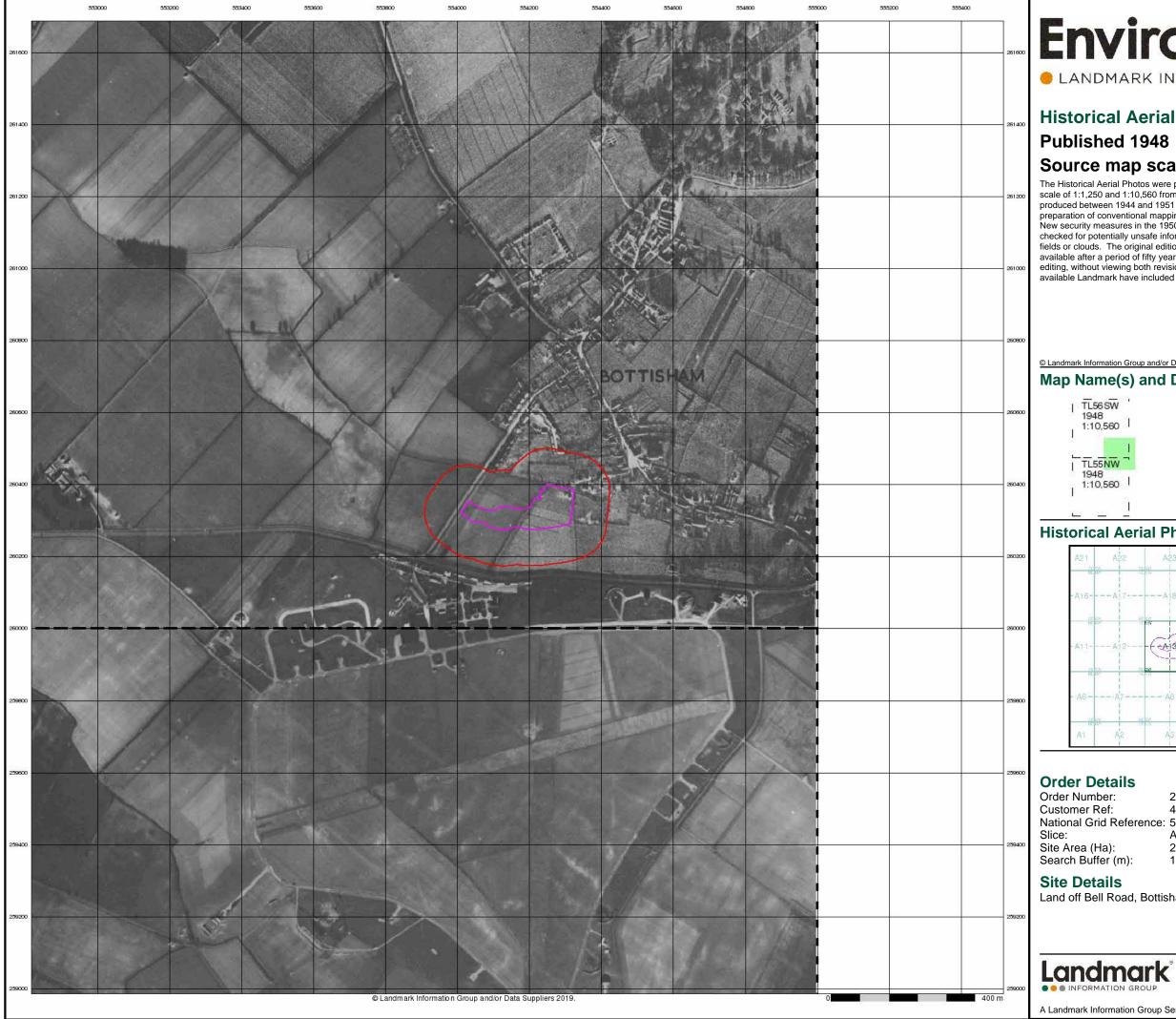
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Order Number:	220424530_1_1
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Slice:	A
Site Area (Ha):	2.14
Search Buffer (m):	1000

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL





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Historical Aerial Photography

Source map scale - 1:10,560

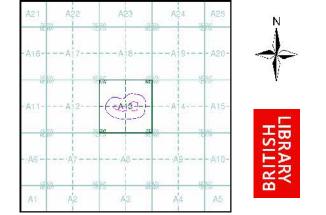
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where weilbel, a edited how included beth springers available Landmark have included both revisions.

© Landmark Information Group and/or Data Suppliers 2010

Map Name(s) and Date(s)

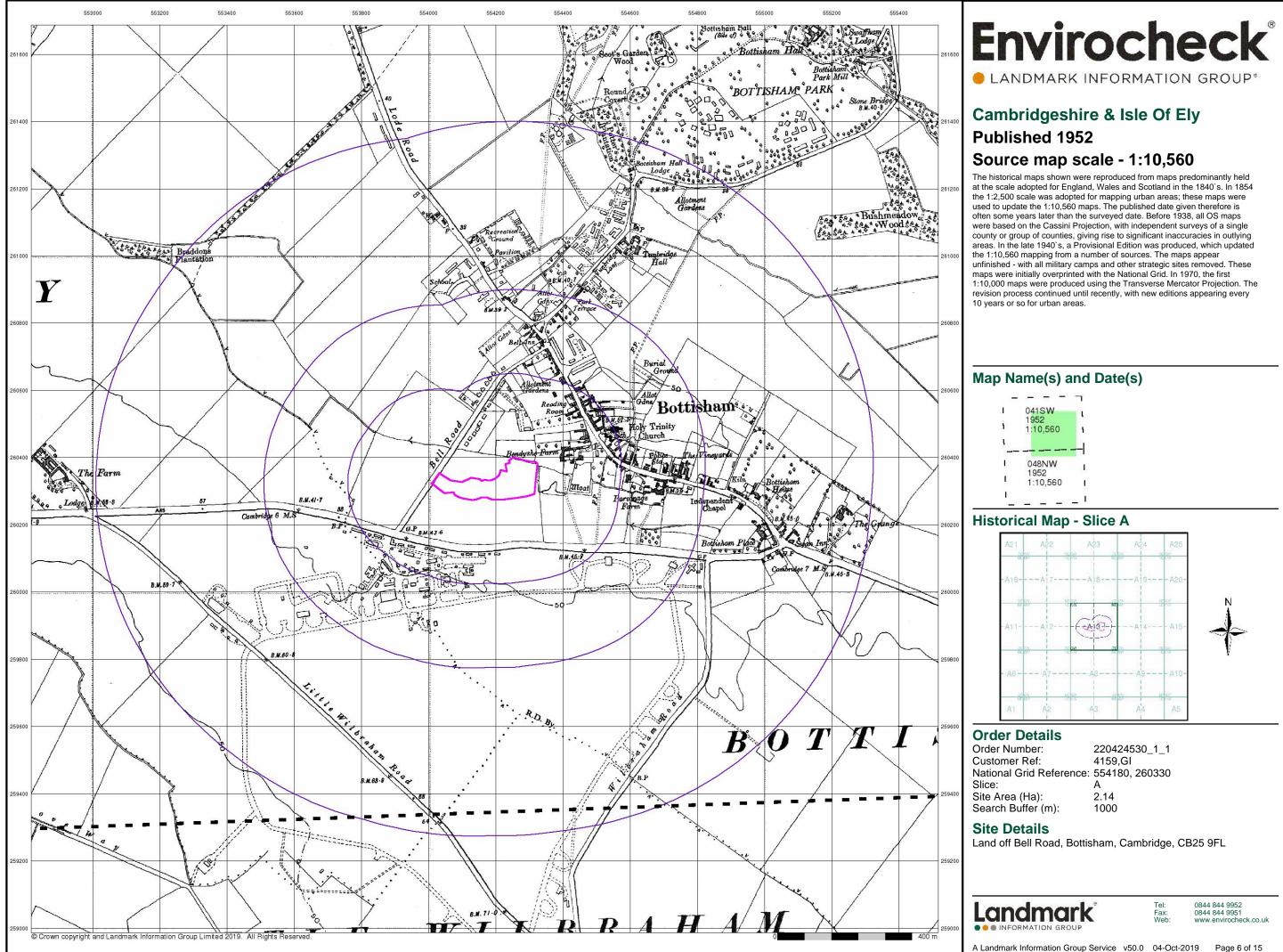


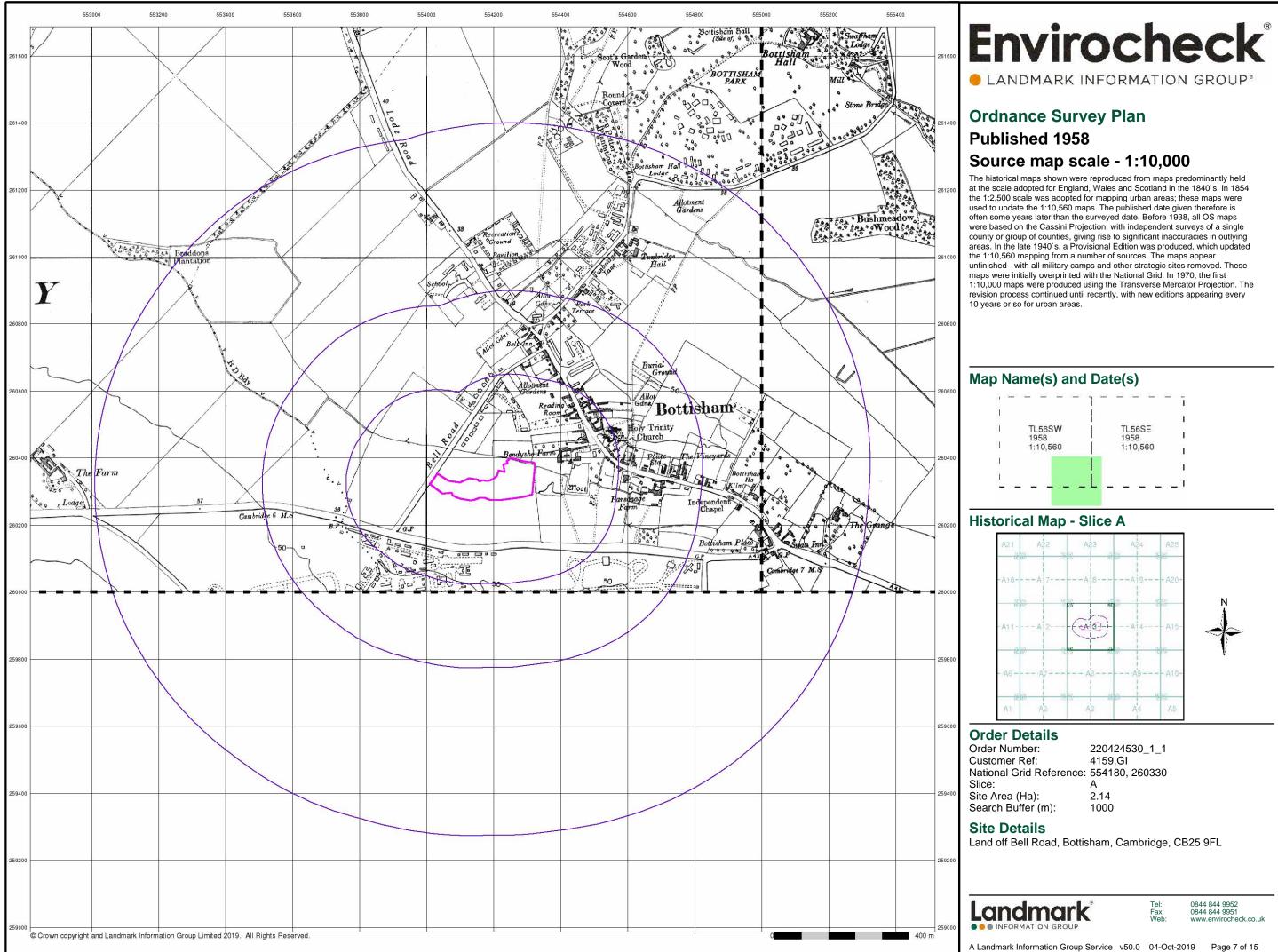
Historical Aerial Photography - Slice A

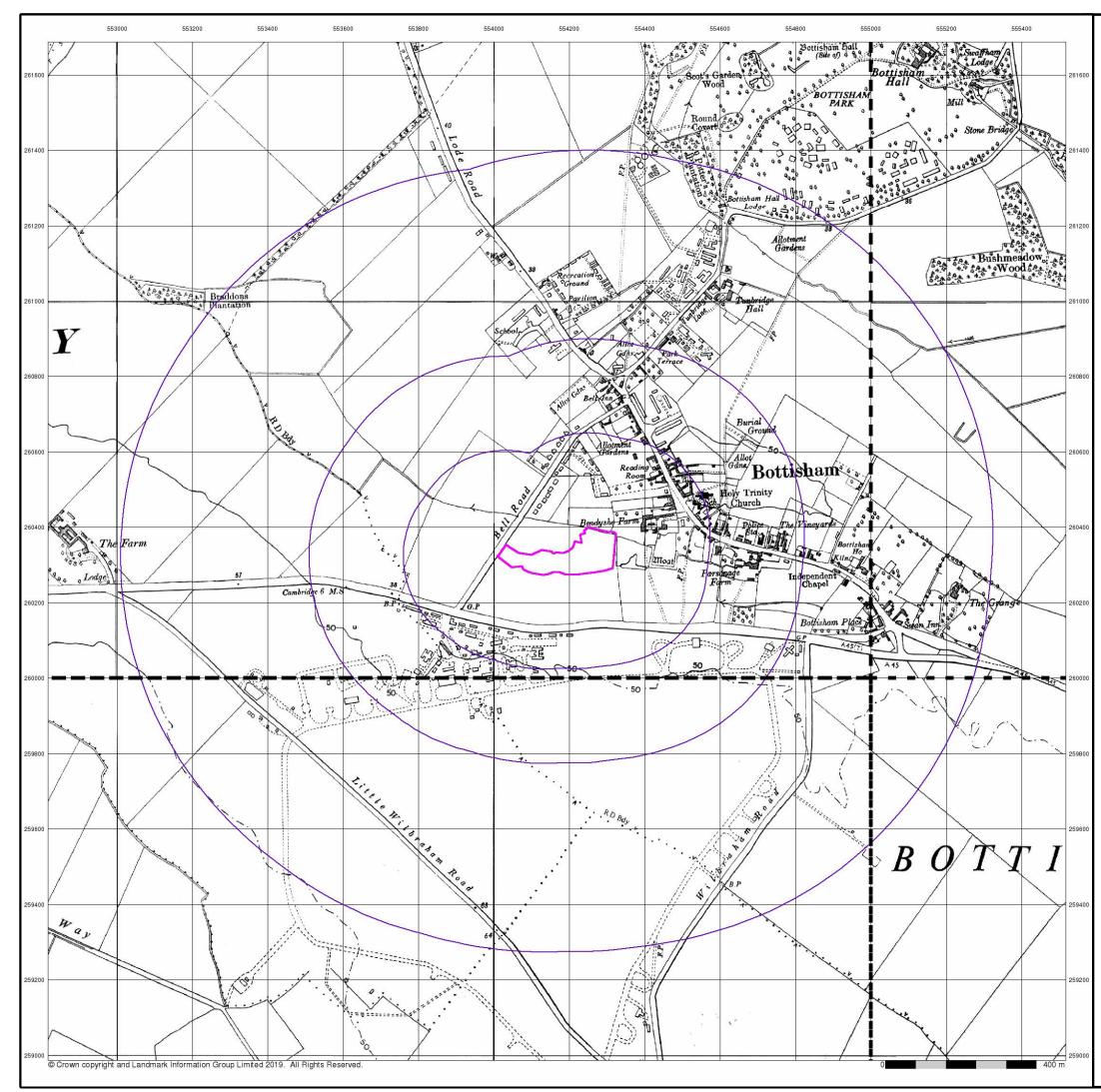


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National Grid Reference:	554180, 260330
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Site Area (Ha):	2.14
Search Buffer (m):	1000

Land off Bell Road, Bottisham, Cambridge, CB25 9FL







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Ordnance Survey Plan Published 1960 - 1966

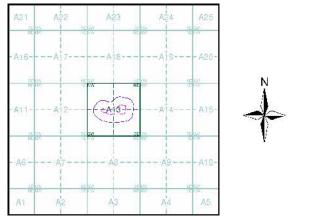
Source map scale - 1:10,000

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 until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

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Historical Map - Slice A



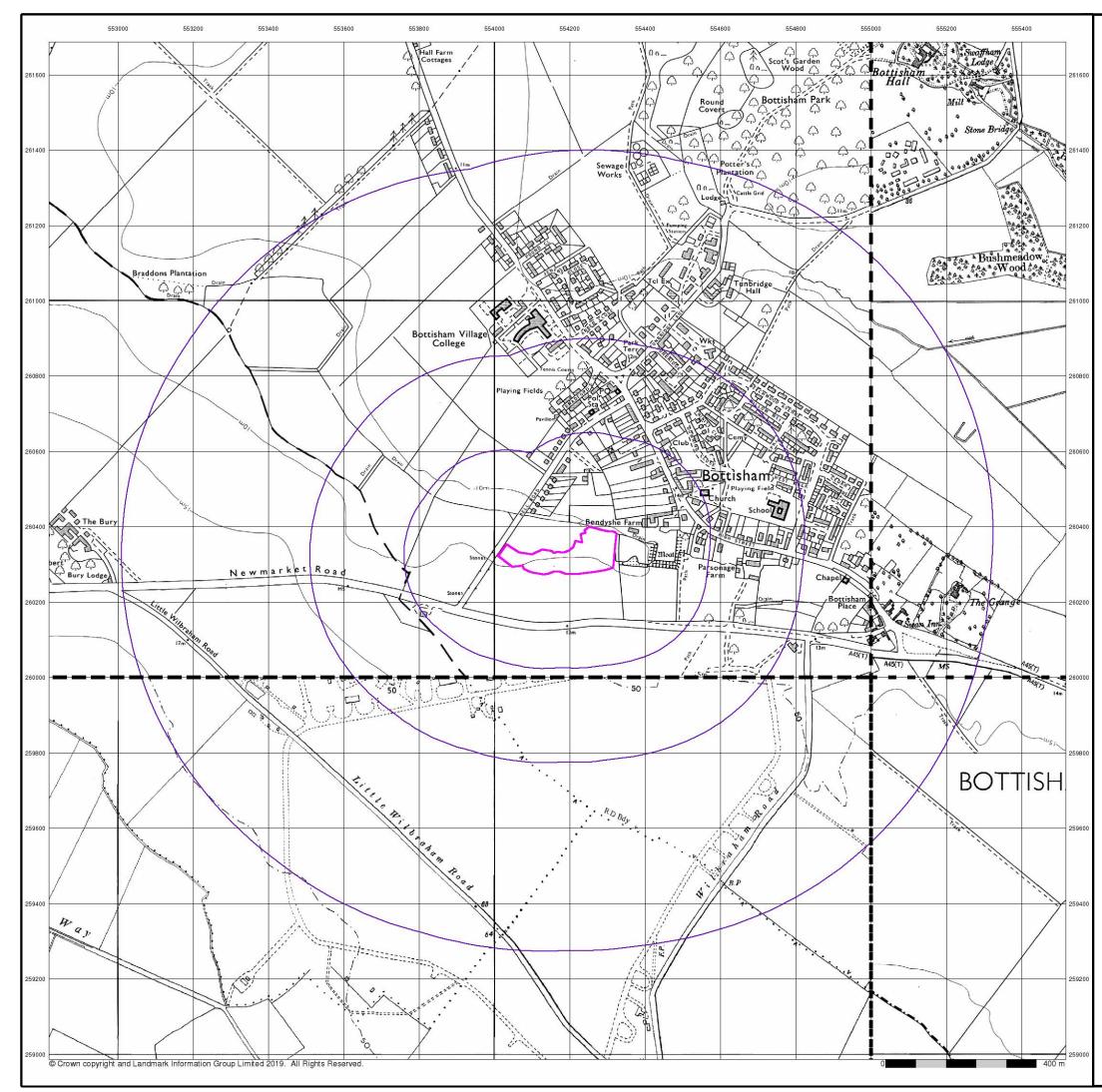
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Order Number:	220424530_1_1
Customer Ref:	4159,GI
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Site Area (Ha):	2.14
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Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL





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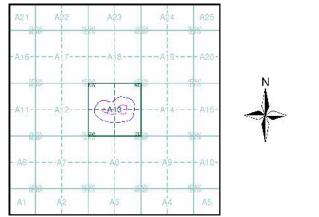
Ordnance Survey Plan Published 1970 - 1975 Source map scale - 1:10,000

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)

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Historical Map - Slice A



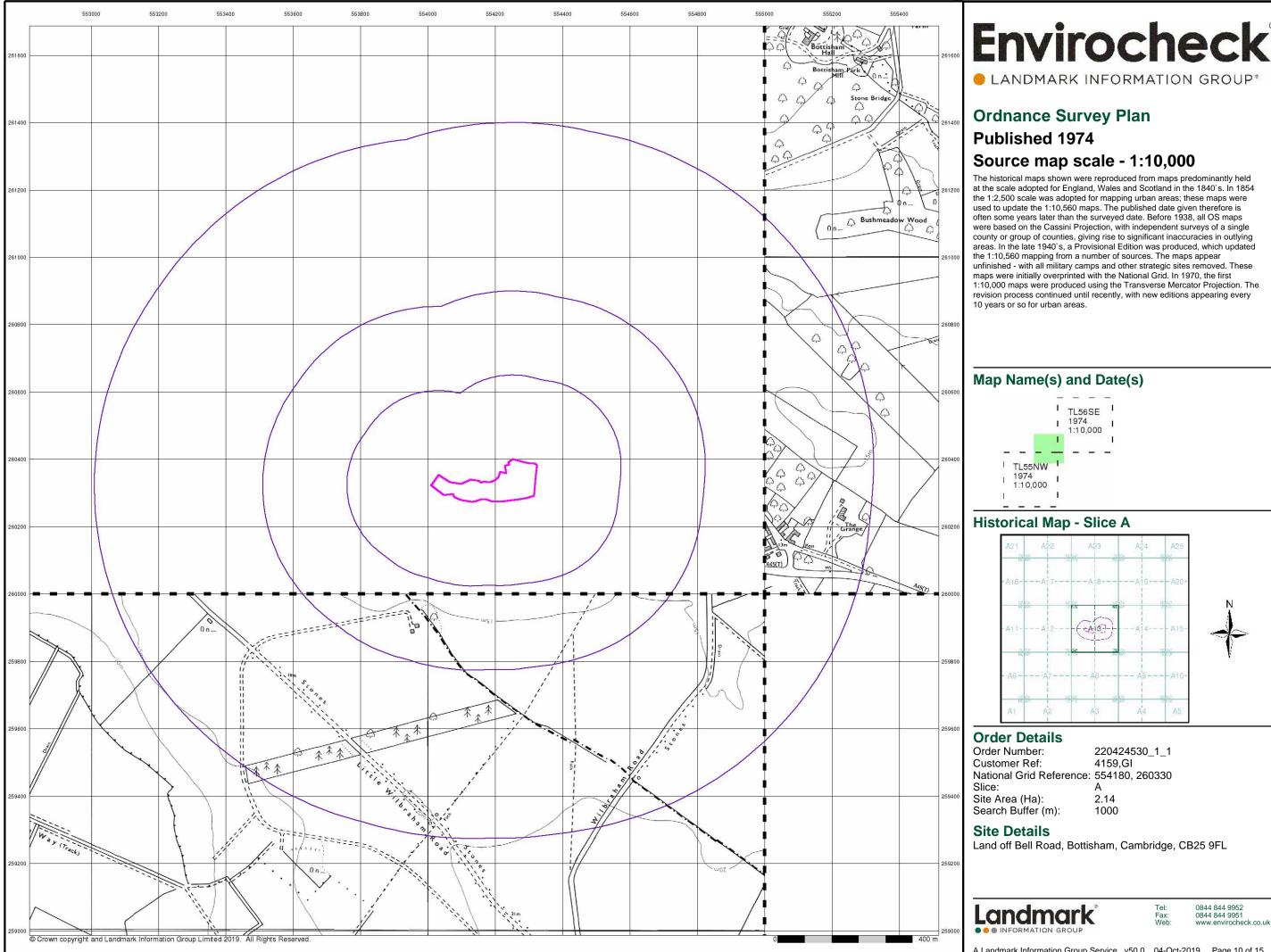
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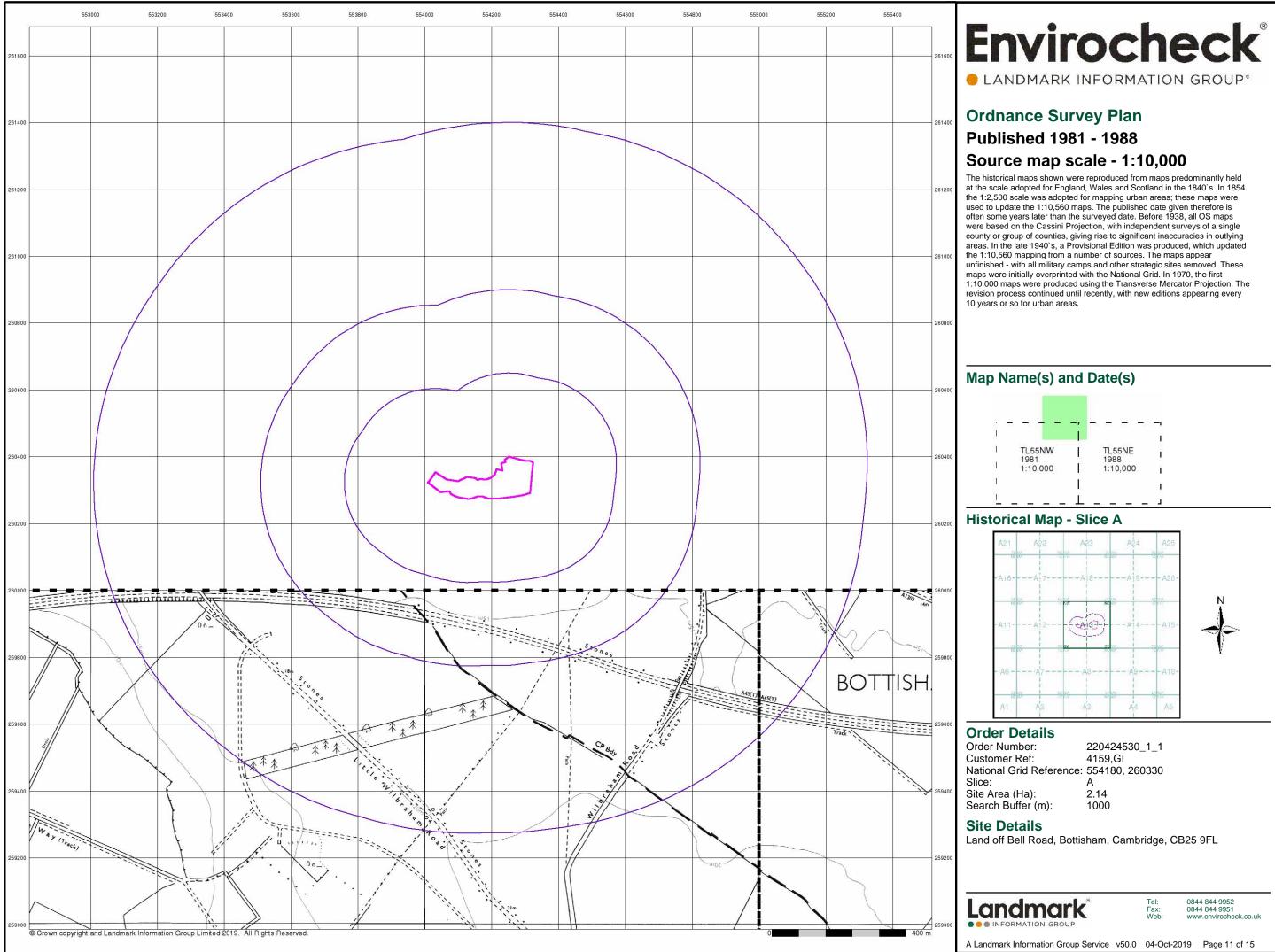
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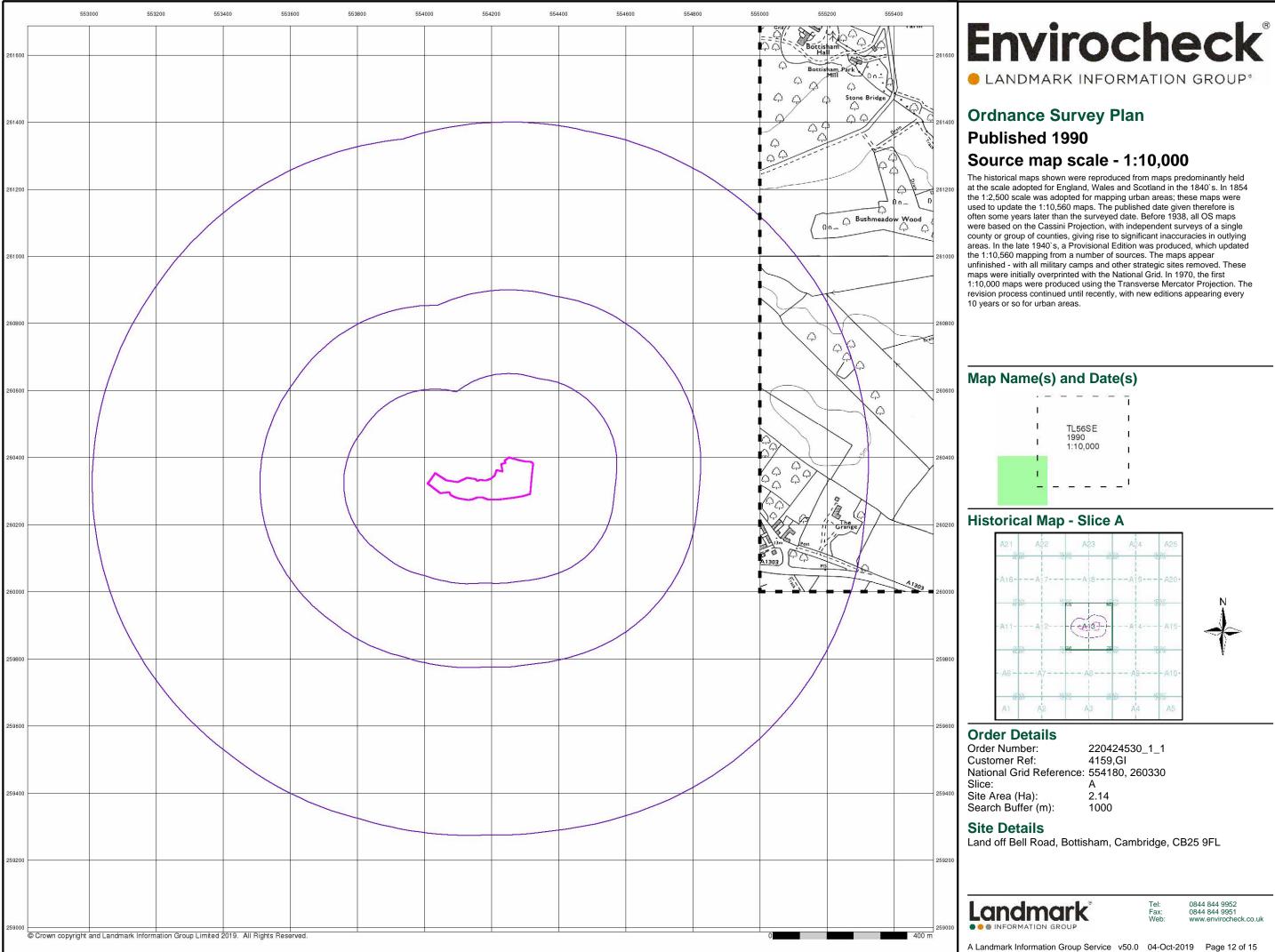
Land off Bell Road, Bottisham, Cambridge, CB25 9FL

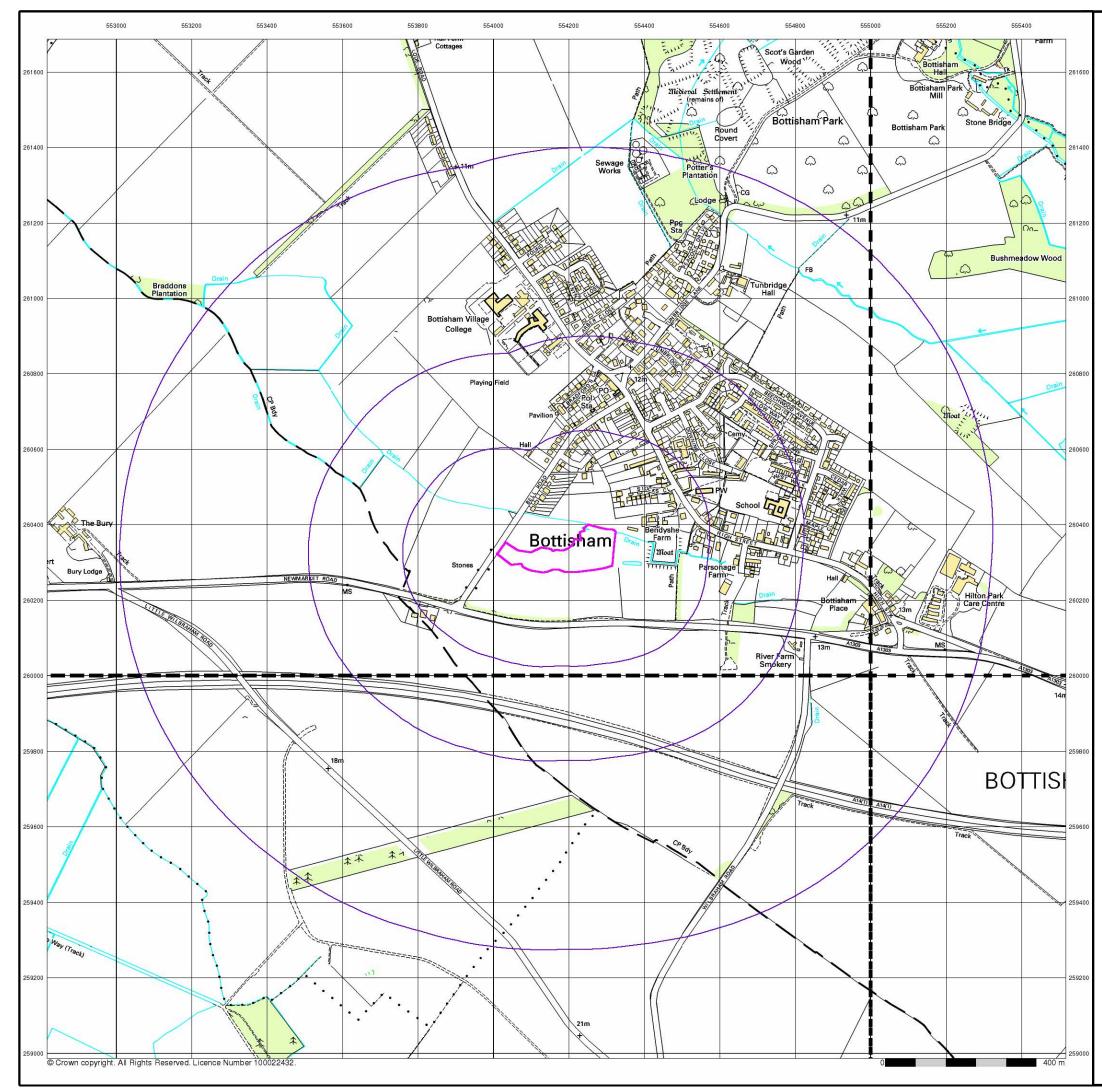




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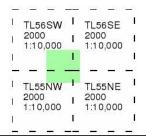
10k Raster Mapping

Published 2000

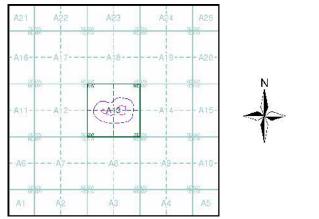
Source map scale - 1:10,000

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



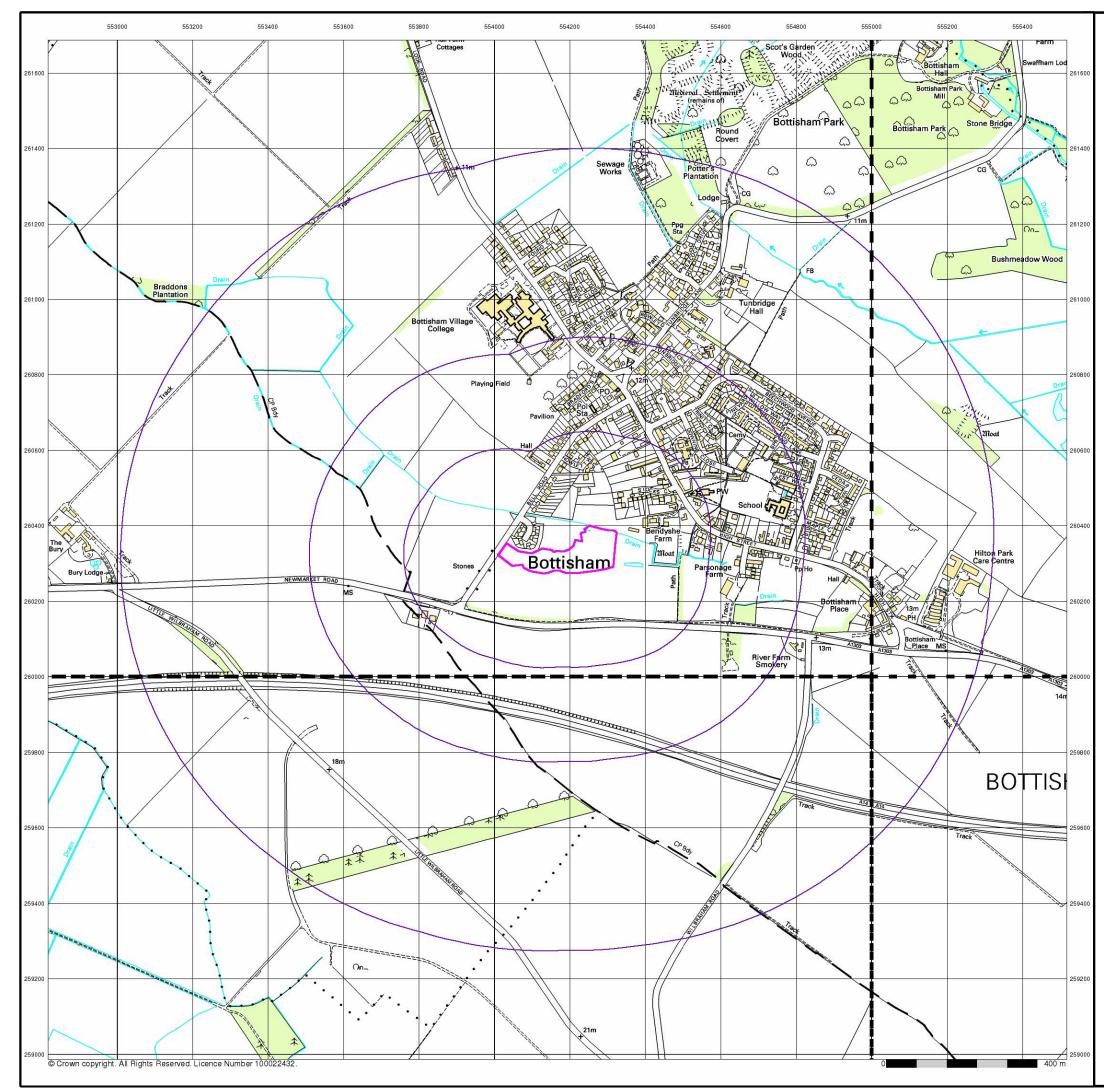
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Search Buffer (m):	1000

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL





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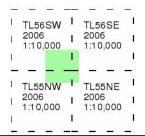
10k Raster Mapping

Published 2006

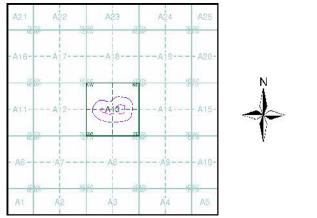
Source map scale - 1:10,000

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

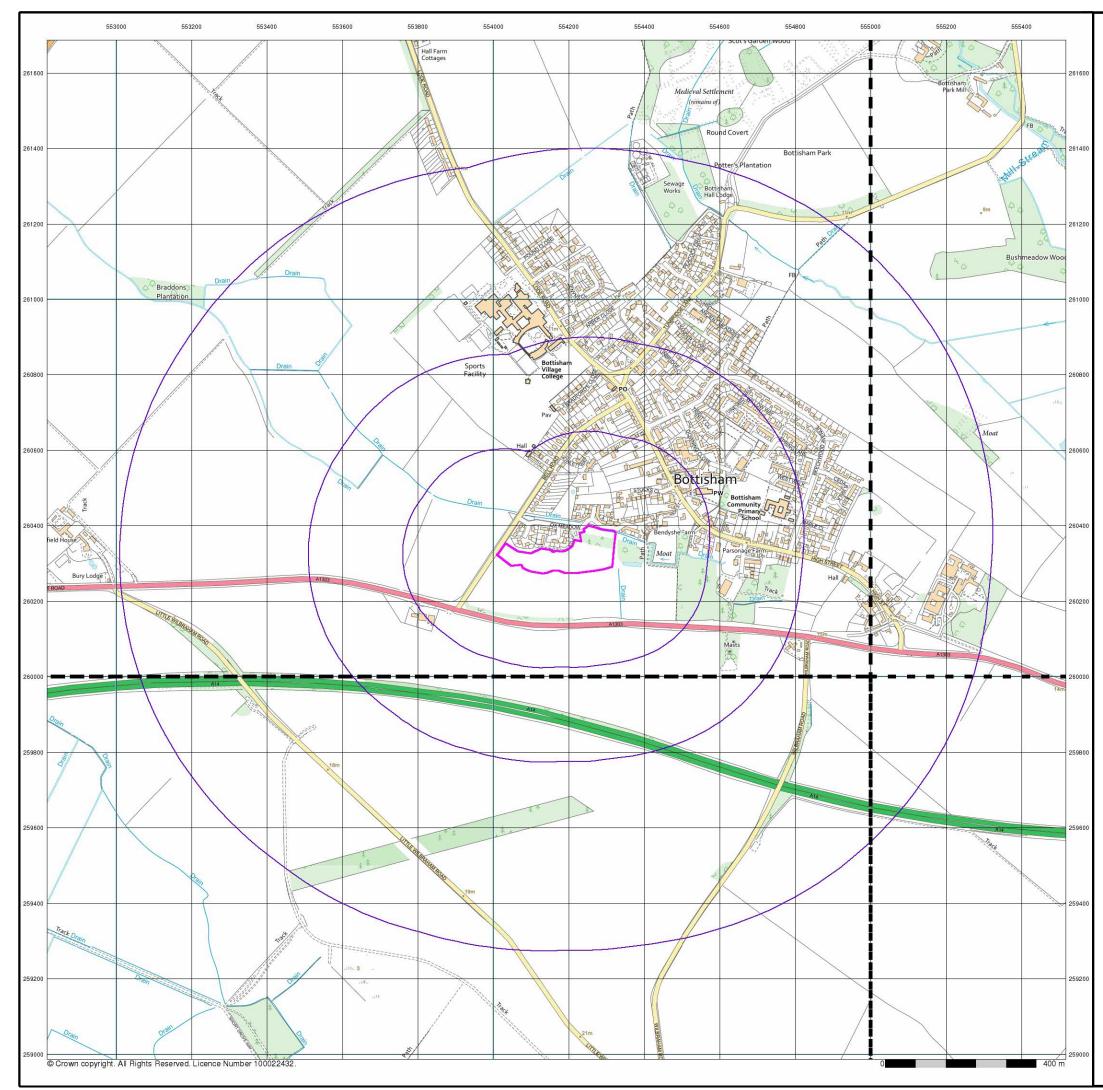
Order Number:	220424530_1_1
Customer Ref:	4159,GI
National Grid Reference:	554180, 260330
Slice:	Α
Site Area (Ha):	2.14
Search Buffer (m):	1000

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL



Tel: Fax: Web:



• LANDMARK INFORMATION GROUP®

VectorMap Local

Published 2019

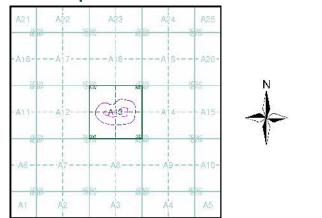
Source map scale - 1:10,000

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)

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Site Area (Ha):	2.14
Search Buffer (m):	1000

Site Details

Land off Bell Road, Bottisham, Cambridge, CB25 9FL





Appendix 6 – Comparison of Consequences Against Probability

		Consequence (Severity of Linkage)											
		Severe (S)	Moderate	Mild	Negligible								
			(Mo)	(Mi)	(N)								
	Highly Likely	Very High Risk	High Risk	Moderate Risk	Moderate/Low								
age	(HL)	(VH)	(HR)	(MR)	Risk								
(Likelihood of linkage from)					(MR-LR)								
d of	Likely	High Risk	Moderate Risk	Moderate/Low Ris	Low Risk								
ihoo n)	(L)	(HR)	(MR)	(MR-LR)	(LR)								
ikelihd from)	Unlikely	Moderate Risk	Moderate/Low Ris	Low Risk	Negligible Risk								
	(U)	(MR)	(MR-LR)	(LR)	(NR)								
Probability	Negligible	Moderate/Low	Low Risk	Negligible Risk	Negligible Risk								
oba	(N)	Risk	(LR)	(NR)	(NR)								
Pre		(MR-LR)											

This table is to provide reference information in conjunction with the GEL Conceptual Model attached within the Hazard Risk Assessment section of this report, Table 4 – Conceptual Model.

Very High Risk (VH)

- There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is happening currently.
- Urgent investigation and remediation are likely to be required and advised.

High Risk (HR)

- Harm is likely to arise to a designated receptor from an identified hazard.
- Urgent investigation is required and remedial works are likely necessary in both the short to long term.

Moderate Risk (MR)

• It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.



• Investigation is required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.

Low Risk (LR)

• It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. Limited investigation recommended.

Negligible Risk (NR)

• There is a minimal possibility that harm could arise to a receptor. In the event of such harm being realised it is high likely to not be severe. Investigation not deemed necessary.



Appendix 7 – Exploratory Hole Logs

Windowless Sample Hole Logs (WS01 to WS10)

> Trial Pit Logs (TP01 to TP03)

		erho	use L	JoC	c/o Bidwells	PROJECT: Land o		<u>II Road,</u> Window	Bottis	ham	n			GRO	DUND	LEVEL	m						HOLE No. WS01	
LOGGED FIELDWO		GEL			CHECKED BY: GF DATE: 07/11/2019	EXCAVATION METHOD	•	Uncased						Grio	d Refer	ference:							SHEET 1 OF 1	
TEMPLAT			GS BH E	BETA			,	Uncased	110 4.0	0 III				DAT	ES 10/	/10/20)19 -	10/	10/2	2019			PROJECT NO. 4159,GI	
ate/Time and Depth	Depth of Casing	n D g V	epth* of Vater	Piez.	Description o	f Strata	Leg	Strata Reduced Level			Graphical Representatio	n Deptl	e		tu Testin Blows	g SPT N	<425 %		PL		esting p Mg/m ³	Cu kN/m ²	Additional Tests and Notes	
					Soft brown slightly sandy slight organic CLAY. Sand is fine to co medium subrounded chert (TOPSOIL) Light brown mottled lighter bro	/		-	0.00 0.20 <u>0.</u> 40	· · · · ·		 0.20	- 0 - - - - J	1									-	
-	-				Light brown mottled lighter bro gravelly CLAY. Gravel is fine anc chalk. [Weathered Chalk] Structureless CHALK recovered gravelly SILT. Gravel is subroun low density light brown chalk. (WEST MELBÜRY CHALK FORM/	I medium subrounded as cream slightly sandy ded extremely weak ATION)			-		• • • • • • • • • • • • • • • • • • •	0.70 0.90	- - - - - - - - - - - - - - - - - - -	2 1.9	57 75 65	23							-	
_									-			1.90 2.00	2 - D - J		46 76 77	27							-	
-	-								-	· · · · · · · · · · · · · · · · · · ·		2.90 3.00	3 - J		68 88 119	36							-	
_	-				BOREHOLE TERMINATED AT 4.0	m BGL. — — — — — — — —			- 4.00			3.90	4 - D	4	67 89 1413	44							-	
*WATER	t v ¥ Sta v ¥ W			- +	PIEZOMETER Upper s Respons Lower s	se zone AND B eal TEST U KEY P J ES	Bulk d Undis Piston Distur Enviro	listurbed s turbed sar sample bed jar sa onmental s	ample nple nple	C C K P	Standard penetration test Cone penetration test Permeability test	(i SPTNN N	85) Un = SPT *120 Icludir	disturbe N value Total b ng seatin	d sample (blows a lows/per g	blow c fter sea netràtio	ount ting) n		0=0	BI	rightwe rightwe	ll Barr II, Suf	vironmental Ltd s, Ipswich Road folk, IP10 0BJ 603 298076	SHEET 1 OF 1 HOLE NO

CLIENT	F: Pet	terh	ouse l	JoC	c/o Bidwells	PROJECT: Land of	ff Be	II Road,	Bottis	ham	(GROUND I	LEVEL	m						HOLE No. WS02
LOGGED FIELDWO					CHECKED BY: GF DATE: 07/11/2019	EXCAVATION METHOD:		Window Uncased	•			Grid Refer	rid Reference:					SHEET 1 OF 1		
TEMPLAT			AGS BH	BETA				Uncased	10 2.0			DATES 10/	10/20	019 -	10/	10/2	019			PROJECT NO. 4159,GI
ate/Time and Depth	Dept of Casir	F	epth* of Water	Piez.	Description o	fStrata	Leg	Strata Reduced Level	Depth		ų –	Vin-Situ Testing No. Blows	SPT N	<425 %	L WC %		LL %	esting Mg/m	Cu 3 kN/m ²	Additional Tests and Notes
-					Soft brown slightly sandy slight organic CLAY. Sand is fine to comedium subrounded chert (TOPSOIL) Friable light yellow brown sligh sandy slity calcareous CLAY witi and white pockets. Gravel is fin subrounded chert. Sand is fine subrounded chert. Sand is fine forwel is subrounded extremel brown chalk. Sand is fine to coa (WEST MELBURY CHALK FORM) BOREHOLE REFUSED AT 2.0m E	ly gravelly slightly n occasional pale yellow e to medium to coarse as cream with tly sandy gravelly SILT. y weak low density light rse (Grade Dc). ATION)			- 0.00 0.30 - 0.85 - 2.00)	1 1 2 2 67 78 10 10 10 10 10 10 10 10 10 10 10 10 10	35							
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					DEPTH All depths, level and	FS	Envir	onmental s	oil sampl	le <425 Sample	e % pa	bassing 425 mi	cron sie	eve		0	Τe	elepho	one: 0	1603 298076

CLIENT	: Pete	rhou	se Uo	C c/	o Bidwells	PROJECT: Land of	ff Be	II Road,	Bottisl	har	m	G	ROUND	LEVE	Lm						HOLE No. WS03
LOGGED I FIELDWO		FI			CHECKED BY: GF DATE: 07/11/2019	EXCAVATION METHOD:		Window Uncased	•			G	rid Refer	rence	:						SHEET 1 OF 1
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ate/Time and Depth	Depth of Casing	Dep G Wa	fl∺		Description of	Strata	Leg	Strata Reduced Level	Depth	h	Graphical Representation Samp SPT 'N' Value Depths		- <u>Situ Testin</u> p. Blows	g SPT N	<425 %	1		LL %	esting Mg/m	³ Cu kN/m	Additional Tests and Notes
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				Г	DEPTH All depths, level and the	ES	Enviro	onmental se		le	<425 Sampl	e % pa	sing 425 m	icron si	eve		0	Τe	elepho	one: 0	1603 298076

CLIENT	: Pete	erho	ouse L	JoC	c/o Bidwells	PROJECT: Land o	ff Be	II Road,	Bottis	ham	n			GRO	DUND	LEVE	m						HOLE No. WS04	
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Date/Time	Depth							Strata			Graphical Representation	Sa	mplin		tu Testin						esting		Additional Tests and Notes	
and Depth	of Casing		of Vater	Piez.	Description of	Strata	Leg	Reduced Level		0	SPT 'N' Value 10 20 30 40	Depths		No.	Blows	SPT N	<425 %	WC %	PL %	LL %	∩ Mg/m³	Cu kN/m²		
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					Light brown and cream mottled gravelly CLAY. Gravel is fine to c	slightly silty slightly oarse angular chert.			<u>0.</u> 35	· · · · ·	····		-											
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-					Structureless CHALK recovered sandy clayey marly SILT. Gravel medium chert and chalk. Sand i: (WEST MELBURY CHALK FORMA	is subrounded fine and s fine to coarse NTION)						1.00	-	2	47 810 1414	46							-	
										····		1.50	D	2										
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and Depth	of Casing	w	pth* of ater		Description of	Strata	Leg	Reduced Level	Depth		SPT 'N' Value 10 20 30 40	Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m ³ k	Cu kN/m²		
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-					MADE GROUND (Brown slightly is fine to coarse). MADE GROUND (Orange brown gravelly slightly clayey fine to co fine to coarse angular to subrou brick and clinker). MADE GROUND (Firm brown sli sandy CLAY. Gravel is fine to co subrounded flint and rare brick Friable brown slightly gravelly s calcareous CLAY with occasiona Gravel is angular to subangular coarse Firm dark grey brown slightly gr silty calcareous CLAY with frequ Gravel is fine angular chert. 1.50 Becoming Grade Dc. Structureless CHALK composed stained yellow brown slightly as SLT. Gravel is subrounded extrr light brown chalk. Sand is fine to (WEST MELBURY CHALK FORM/	and brown slightly ararse SAND. Gravel is inded chert, sandstone, ghtly gravelly slightly arse subangular to i. ightly sandy slity I shell fragments. chert. Sand is fine to avelly slightly sandy ent shell fragments. of cream occasionally ndy slightly gravelly emely weak low density o coarse (Grade Dm)		Level	- 0.00 0.10 0.40 0.70 - 1.25 1.55	0 		0.20 0.60 0.70 1.30 1.40 2.00 2 -		1 2 1 2 3 3	1 2 2 2 3 3 3 3 3 3 4 5	10	<u>%</u>	<u>%</u>	<u>%</u>	%	Mg/m ³ kN/	m ²	
*WATER	- - -	andin	g water		BOREHOLE TERMINATED AT 4.0	<u> </u>		disturbed		s si	Standard penetration test	4 - 5 - lows SPT		for eac									ST IS
	¥W	aters	trikes		DEPTH All depths, level and t	eal TEST U KEY P J ES	Undist Piston Distur Enviro	listurbed s turbed san sample bed jar san onmental s	nple nple	ΚP		PTN N = 1 N*1	SPT N 20 = To uding s	value (b otal blo eating	ws/pen	ter sea etràtio	ting) n		0=0	Br Br	ightwell B	Environmental Ltd arns, Ipswich Road Suffolk, IP10 0BJ 01603 298076	SHEET 1 OF 1 HOLE No. WS06

			ouse U	оС	c/o Bidwells	PROJECT: Land of	1	ll Road, Window	Bottish Sampl	ham ler			GR	DUND	LEVEI	m						HOLE No. WS08	
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	Depth	h [C	epth*	L 167.				Strata		Graphical Representati	on		pling/In-Si	tu Testin	Г			aborat	ory Te	esting	1	Additional Tests and Notes	
and Depth	of Casin	ig \	of Water	-	Description of	fStrata	Leg	Reduced Level	Depth	SPT 'N' Value		Depths	Type No	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg/m	Cu ³ kN/m ²		
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					coarse subrounded chert and o subrounded brick and rare clink	ccasional fine					···+	0.10	J 1										
					Firm brown slightly gravelly slight CLAY. Gravel is fine and medium		F		0.30).40	J 2										
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					Structureless CHALK recovered gravelly SILT. Gravel is subround low density light brown chalk. (0 (WEST MELBURY CHALK FORMA	as cream slightly silty	<u>р</u>		0.60			-											
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						ES	Enviro	bed jar sar onmental s	npie pil sample	e	<4	incluc 25 Samp	ding seatin le % passii	g ng 425 m	icron sie	eve		0	Te	elepho	ne: 01	folk, IP10 0BJ	
					DEPTH All depths, level and t	hicknesses in metres W	Water	Sample			-	· · · · P		5									

		erho	use Uc)C C.	/o Bidwells	PROJECT: Land of		ll <u>Road,</u> Window	Bottis	ham	n		0	GROI	UNDI	LEVEL	. m						HOLE No. WS10		
LOGGED E		CEL			CHECKED BY: GF DATE: 07/11/2019	EXCAVATION METHOD:		Jncased	•				0	Grid I	Refer	ence:							SHEET 1 OF 1		
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and Depth	of Casing	ı v	of ∕ater ater		Description of	Strata	Leg	Reduced Level	Dept	h	SPT 'N' Value	Depths	Type	lo.	Blows	SPT N	<425 %	WC %	PL %	LL %	Mg∕m ³	Cu kN/m²			
-	-	+	-	Sc	oft brown slightly gravelly sligh RGANIC CLAY. Gravel is fine to	tly sandy slightly silty	<u> </u>		0.00)		0 -									0		-		
				O SL	RGANIC CLAY. Gravel is fine to ubrounded chert. Sand is fine t	coarse subangular to o coarse.	<u>-</u>	-				-													
				(T	TOPSOIL)		<u> </u>		0.40			0.30	J	1											
				Fr	riable yellow brown slightly silt lightly sandy calcareous CLAY. (ubrounded chalk and rare cher	y slightly gravelly Gravel is fine to coarse			<u>0.</u> 40			0.50	D	1											
							[0.70			0.60		2											
				St sl	tructureless CHALK recovered lightly sandy gravelly SILT. Grav xtremely weak low density ligh	as cream mottled white rel is subrounded	_ P		0.70	'	•••••••••••••••••••••														
_	_			e) fii	xtremely weak low density ligh ne to coarse (Grade Dm) WEST MELBURY CHALK FORMA	t brown chalk. Sand is	<u> </u>	-	_		······	1 -				22							-		
				(V	WEST MELBURY CHALK FORMA	(TION)	г				•••••••••••••••••••••••••••••••••••••••				57 78 99	33									
								-				-			99										
												-	_												
							- p- p-				••••••••••••••••••••••••	1.50	D	2											
							P					-													
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								-			···	-			611 97	31									
							P					-			87										
							- P			· · · ·	······································	-													
												-													
				2.	.70 Becoming Grade Dc.						···	-													
							T.	-																	
-	-						- p - P		F		······	3 -			32 45	20									
							- p - P	-		····	•••••••••••••••••••••••••••••••••••••••	-			65										
							<u> </u>	-				-													
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							P					-													
							_ P					-		2											
-	-			В	OREHOLE TERMINATED AT 4.0		I		4.00		·· · · · • · · · · · · · · · · ·	3.90 4 -	D	3	75	22							-		
												-			65 56										
												-													
												-													
	L			<u> </u>			<u> </u>		-	Ц.		5 -						<u> </u>					ļ		—
*WATER	¥ Sta ¥ W	andin ater s	g water le strikes	evel	PIEZOMETER Upper se Respons Lower se	e zone AND B	Bulk d	listurbed s	ample	СС	Standard penetration test E Cone penetration test	(35)	Undistu	irbed :	sample	blow co	ount		Q	G	eosphe	ere En	vironmental Ltd	SHEET 1 OF 1 HOLE NC WS1Q	
					Lower se	al IESI U		turbed san sample	nple	ΚF	Permeability test S	PTN N = S N*12			olows af ws/pen				III	B	righṫwe	ell Barr	ns, Ipswich Road	Э́Е́ГРЕ́І	
						J	Distur	bed jar sar onmental s	nple	lo			ding se	ating	•				0	BI	ightwe	ell, Suf ne: 01	folk, IP10 0BJ 1603 298076	No.	1
					DEPTH All depths, level and t	hicknesses in metres W	Water	Sample	on samp	ie	<	420 Squi	Jie % pa	assing	420 III		eve		•	89			200010		



Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 0BJ Telephone: 01603 298076

Client TRIAL PIT No Project Land off Bell Road, Bottisham Peterhouse UoC c/o Bidwells **TP01** Job No Date Ground Level (m) Coordinates () 4159,GI 08-10-19 Fieldwork By Logged By Sheet GEL PC 1 of 1 Remarks/Tests Depth DESCRIPTION Legend Depth No Soft brown slightly gravelly sandy ORGANIC CLAY. Gravel is fine and medium chert. Sand is fine to coarse 0.00-0.25 (TOPSOIL) Structureless CHALK recovered as light grey occasionally brown stained gravelly fine to coarse SAND with moderate cobble content of chalk. Gravel is subrounded fine and medium chert and chalk. (WEST MELBURY CHALK FORMATION) 0.25-1.90 HOLE COMPLETED AT 1.90m BGL. NO GROUNDWATER ENCOUNTERED 8/11/19 AGS TP BETA 4159,GI, BELL ROAD BOTTISHAM, 16-10-2019.GPJ GINT STD AGS 3_1.GDT - 1.3 -Ŧ Shoring/Support: None Stability: Stable 0.4 ¥ Checked By GF All dimensions in metres Method Trial Pit/trench Plant UsedMECHANICAL Scale 1:16.6666666666666666 **EXCAVATOR**

TRIAL PIT LOG



Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 0BJ Telephone: 01603 298076

Client TRIAL PIT No Project Land off Bell Road, Bottisham Peterhouse UoC c/o Bidwells **TP02** Job No Date Ground Level (m) Coordinates () 08-10-19 4159,GI Fieldwork By Logged By Sheet GEL PC 1 of 1 Remarks/Tests Depth DESCRIPTION <u>Legend</u> Depth No Soft brown slightly gravelly sandy ORGANIC CLAY. Gravel is fine and medium chert. Sand is fine to coarse 0.00-0.35 (TOPSOIL) Structureless CHALK recovered as light grey occasionally brown stained gravelly SAND with low cobble content of chalk. Gravel is subrounded fine and medium chert and chalk. (WEST MELBURY CHALK FORMATION) 0.35-1.60 HOLE COMPLETED AT 1.60m BGL. NO GROUNDWATER ENCOUNTERED 5 TP BETA 4159 GI, BELL ROAD BOTTISHAM, 16-10-2019 GPJ GINT STD AGS 3_1.GDT 8/11/19 - 1.2 -**Т** 0.4 Shoring/Support: None Stability: Stable ¥

TRIAL PIT LOG

All dimensions in metres Method Trial Pit/trench Plant Used MECHANICAL Checked By	0)				
\square	All dimensions in metres	Method Trial Pit/trench	Plant UsedMECHANICAL	Checked By	
	щScale 1:16.6666666666666666666666666666666666		EXCAVATOR	ĞF	



Project

Geosphere Environmental Ltd Brightwell Barns, Ipswich Road Brightwell, Suffolk, IP10 0BJ Telephone: 01603 298076

TRIAL PIT No Land off Bell Road, Bottisham Peterhouse UoC c/o Bidwells **TP03** Job No Date Ground Level (m) Coordinates () 4159,GI 08-10-19 Fieldwork By Logged By Sheet GEL PC 1 of 1 Remarks/Tests Depth DESCRIPTION Legend Depth No Soft brown slightly gravelly sandy ORGANIC CLAY. Gravel is fine and medium chert. Sand is fine to coarse 0.00-0.30 (TOPSOIL) Structureless CHALK recovered as light grey occasional brown stained gravelly SAND with low cobble content of chalk. Gravel is subrounded fine and medium chert and chalk. (WEST MELBURY CHALK FORMATION) 0.30-1.75 HOLE COMPLETED AT 1.75m BGL. NO GROUNDWATER ENCOUNTERED AGS TP BETA 4159,GI, BELL ROAD BOTTISHAM, 16-10-2019,GPJ GINT STD AGS 3, 1,GDT 8/11/19 - 1.3 -Ŧ Shoring/Support: None Stability: Stable 0.4 ¥ Checked By GF All dimensions in metres Method Trial Pit/trench Plant UsedMECHANICAL Scale 1:16.6666666666666667 **EXCAVATOR** Ë

TRIAL PIT LOG

Client



Appendix 8 – Infiltration Test Results

GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Time	Depth to
	Water
[min]	[mbgl]
0	1.47
1	1.56
2	1.61
23	1.65
4	1.69
5	1.73
8	1.82

Pit Size [m] Length Width Depth 1.30 0.40 1.90

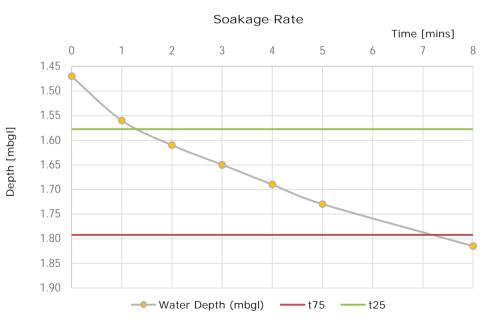
1.30	0.40	1.90				
Infiltration Rate Calculations						
Parameter	Unit	Result				
	height					
h ₇₅	[m]	1.793				
h ₂₅	[m]	1.578				
h ₇₅ -h ₂₅	[m]	0.215				
time						
t ₇₅	[s]	432.00				
t ₂₅	[s]	78.00				
t ₇₅ - t ₂₅	[s]	354.00				
effective volume						
V ₇₅₋₂₅	[m³]	0.034				
effective area						
ap ₅₀	[m ²]	1.251				
soi	l infiltration rat	e				
f	[m/s]	7.57E-05				

Trial PitTP01Run1 of 3Test Date08/10/2019Groundwater Encountered:N/A

05/11/2019

Date:

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume.



GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Depth to
Water
[mbgl]
1.47
1.52
1.57
1.61
1.66
1.70
1.82
1.02

Pit Size [m]LengthWidthDepth1.300.401.90

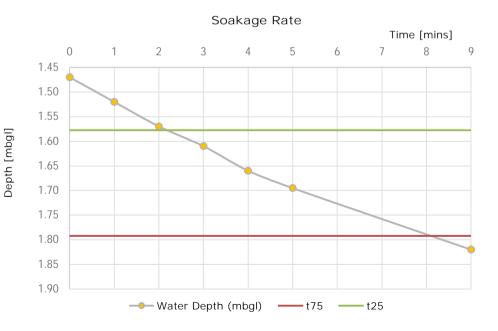
Infiltrati	on Rate Calcu	llations
Parameter	Unit	Result
	height	
h ₇₅	[m]	1.793
h ₂₅	[m]	1.578
h ₇₅ -h ₂₅	[m]	0.215
	time	
t ₇₅	[s]	486.00
t ₂₅	[s]	129.00
t ₇₅ - t ₂₅	[s]	357.00
ef	fective volume	
V ₇₅₋₂₅	[m³]	0.034
(effective area	
ap ₅₀	[m ²]	1.251
soi	infiltration rat	e
f	[m/s]	7.51E-05

Trial PitTP01Run2 of 3Test Date08/10/2019Groundwater Encountered:N/A

05/11/2019

Date:

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume.



GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Pit Size [m]

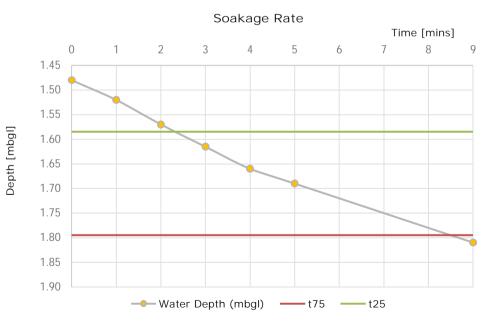
Time	Depth to
	Water
[min]	[mbgl]
0	1.48
1	1.52
	1.57
2 3	1.62
4	1.66
5	1.69
9	1.81
1	

Width	Depth					
0.40	1.90					
Infiltration Rate Calculations						
Unit	Result					
height						
[m]	1.795					
[m]	1.585					
[m]	0.210					
time						
[s]	510.00					
[s]	138.00					
[s]	372.00					
effective volume						
[m³]	0.033					
effective area						
[m ²]	1.234					
l infiltration rat	е					
[m/s]	7.14E-05					
	0.40 on Rate Calcu Unit height [m] [m] [m] time [s] [s] [s] fective volume [m ³] effective area [m ²]					

Date: 05/11/2019

Trial Pit	TP01
Run	3 of 3
Test Date	08/10/2019
Groundwater Encountered:	N/A

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume.



GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Time	Depth to
	Water
[min]	[mbgl]
0	1.12
1	1.19
2	1.23
3	1.28
4	1.31
5	1.34
7	1.41
9	1.48
10	1.51

Pit Size [m]

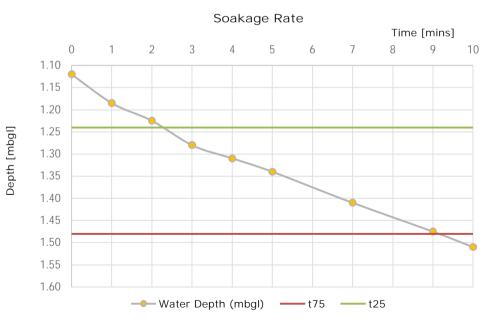
	Pit Size [m]				
Length	Width	Depth			
1.20	0.40	1.60			
Infiltration Rate Calculations					
Parameter	Unit	Result			
	height				
h ₇₅	[m]	1.480			
h ₂₅	[m]	1.240			
h ₇₅ -h ₂₅	[m]	0.240			
	time				
t ₇₅	[s]	546.00			
t ₂₅	[s]	138.00			
t ₇₅ - t ₂₅	[s]	408.00			
ef	fective volume				
V ₇₅₋₂₅	[m³]	0.035			
effective area					
ap ₅₀	[m²]	1.248			
soi	l infiltration rat	е			
f	[m/s]	6.79E-05			

Trial Pit	TP02
Run	1 of 3
Test Date	08/10/2019
Groundwater Encountered:	N/A

05/11/2019

Date:

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume.



GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

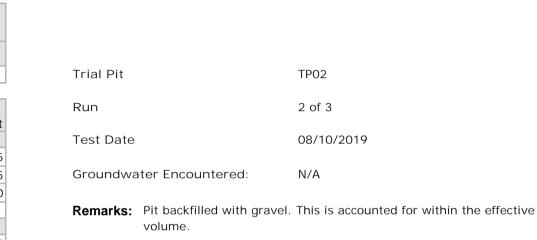
Pit Size [m]

Time	Depth to
	Water
[min]	[mbgl]
0	1.10
1	1.14
2	1.18
3	1.22
4	1.26
5	1.30
7	1.36
9	1.42
11	1.48
12	1.50
1	

Length Width Depth 1.20 0.40 1.60 Infiltration Rate Calculations Parameter Unit Result height [m] h_{75} 1.475 1.225 h_{25} [m] 0.250 h₇₅-h₂₅ [m] time [s] 648.00 t₇₅ 192.00 [s] t₂₅ [s] t₇₅ - t₂₅ 456.00 effective volume [m³] 0.036 V₇₅₋₂₅ effective area [m²] 1.280 ap₅₀ soil infiltration rate

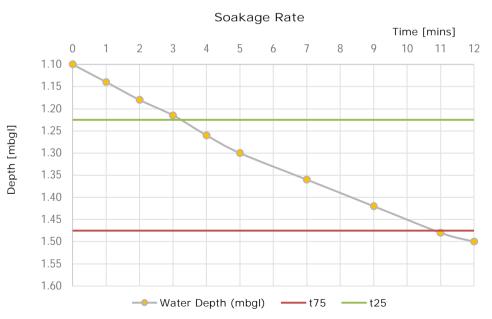
[m/s]

6.17E-05



05/11/2019

Date:



Calculated by: AT

f

GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Pit Size [m]

Time	Depth to
	Water
[min]	[mbgl]
0	1.10
1	1.14
2	1.19
4	1.26
5	1.29
7	1.35
10	1.44
12	1.49
13	1.52

Length	Width	Depth	
1.20	0.40	1.60	
Infiltrati	Infiltration Rate Calculations		
Parameter	Unit	Result	
	height		
h ₇₅	[m]	1.475	
h ₂₅	[m]	1.225	
h ₇₅ -h ₂₅	[m] 0.25		
time			
t ₇₅	[s]	690.00	
t ₂₅	[s]	180.00	
t ₇₅ - t ₂₅	[s]	510.00	

effective volume

effective area

soil infiltration rate

[m/s]

[m²]

[m³]

1.280	

0.036

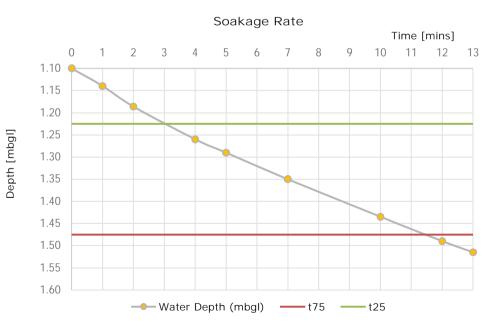
5.51E-05

Trial Pit	TP02
Run	3 of 3
Test Date	08/10/2019
Groundwater Encountered:	N/A

05/11/2019

Date:

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume.



Calculated by: AT

V₇₅₋₂₅

ap₅₀

GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Time	Depth to
	Water
[min]	[mbgl]
0	1.16
1	1.20
2	1.23
3	1.26
4	1.28
5	1.31
7	1.35
9	1.38
12	1.44
15	1.48
20	1.55

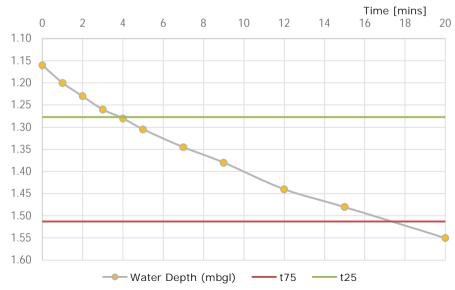
Leng 1.30 Inf Paramete h_{75} h_{25} h₇₅-h₂₅ t₇₅ t₂₅ t₇₅ - t₂₅ V₇₅₋₂₅ ap₅₀ soil infiltration rate

	Pit Size [m]		
th	Width	Depth	
C	0.40	1.63	
filtrati	on Rate Calcu	lations	
er	Unit	Result	
	height		
	[m]	1.513	
	[m]	1.278	
	[m]	0.235	
	time		
	[s]	1038.00	
	[s]	234.00	
	[s]	804.00	
ef	fective volume		
	[m ³]	0.037	
	effective area		Ē
	[m ²]	1.319	nbç
			Depth [mbgl]
soi	l infiltration rat	e	ept
	[m/s]	3.46E-05	Ō

05/11/2019 Date:

Trial Pit	TP03
Run	1 of 3
Test Date	08/10/2019
Groundwater Encountered:	N/A

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume



Soakage Rate

GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Time	Depth to
	Water
[min]	[mbgl]
0	1.16
1	1.18
2	1.20
3	1.23
4	1.25
5	1.27
10	1.35
20	1.48
25	1.55

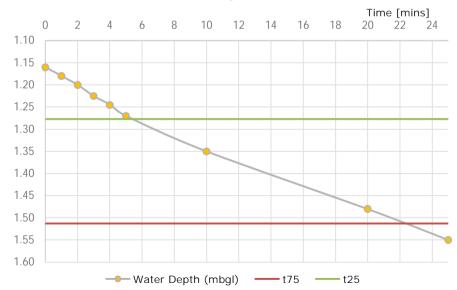
Pit Size [m]		
Length	Width	Depth
1.30	0.40	1.63
Infiltrati	on Rate Calcu	llations
Parameter	Unit	Result
	height	
h ₇₅	[m]	1.513
h ₂₅	[m]	1.278
h ₇₅ -h ₂₅	[m]	0.235
	time	
t ₇₅	[s]	1350.00
t ₂₅	[s]	312.00
t ₇₅ - t ₂₅	[s]	1038.00
ef	fective volume	
V ₇₅₋₂₅	[m ³]	0.037
effective area		
ap ₅₀	[m ²]	1.319
soil infiltration rate		
f	[m/s]	2.68E-05

Depth [mbgl]

05/11/2019 Date:

Trial Pit	TP03
Run	1 of 3
Test Date	08/10/2019
Groundwater Encountered:	N/A

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume



Soakage Rate

GEO

Project Number:

Project Name:

4159,GI

Land off Bell Road, Bottisham, Cambridgeshire

Time	Depth to
	Water
[min]	[mbgl]
0	1.15
1	1.18
2	1.20
3	1.22
4	1.24
5	1.26
10	1.33
15	1.41
20	1.46
25	1.51

Pit Size [m]											
Length	Width	Depth									
1.30	0.40	1.63									
Infiltration Rate Calculations											
Parameter	Unit	Result									
	height										
h ₇₅	[m]	1.510									
h ₂₅	[m]	1.270									
h ₇₅ -h ₂₅	[m]	0.240									
	time										
t ₇₅	[s]	1500.00									
t ₂₅	[s]	354.00									
t ₇₅ - t ₂₅	[s]	1146.00									
ef	fective volume										
V ₇₅₋₂₅	[m ³]	0.037									
	effective area										
ap ₅₀	[m ²]	1.336									
soi	l infiltration rat	е									
f	[m/s]	2.45E-05									

Depth [mbgl]

05/11/2019 Date:

Trial Pit	TPO3
Run	3 of 3
Test Date	08/10/2019
Groundwater Encountered:	N/A

Remarks: Pit backfilled with gravel. This is accounted for within the effective volume



Soakage Rate

Calculated by: AT

Checked by:

GF



Appendix 9 – Gas and Groundwater Monitoring Data

GROUND GAS AND GROUNDWATER MONITORING DATA

Date: 09/01/2020

Project Number: 4159,GI

Project Name: Land off Bell Road, Bottisham, Cambridgeshire

Monitoring Visit

Explorate	ory Hole Loc	ation	WS01										Date of Installation	10/10/2019
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane (% v/v)		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (I/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level (mbgl)	Base of Well (mbgl)	Weather Conditions	Comments / Pressure Rise or Fall
1st visit	14/11/2019	997	<0.1	<2	6.2	8.5	0.0	0	0	0	2.22	2.40	Cold, sunny, wet, calm	Falling pressure during visit
2nd visit	25/11/2019	1003	< 0.1	<2	6.6	8.5	0.0	0	0	0	Dry	2.40	Cool, cloudy, damp, breezy	
3rd visit	04/12/2019	1020	< 0.1	<2	6.4	8.2	0.0	0	0	0	1.55	2.40	Cold, overcast, wet, calm	
4th visit	11/12/2019	1001	< 0.1	<2	5.8	12.4	0.0	0	0	0	1.56	2.40	Cool, sunny, damp, calm	
5th visit	16/12/2019	1000	< 0.1	<2	5.0	12.5	-0.2	0	0	0	1.50	2.40	Cool, overcast, damp, calm	Falling pressure during visit
6th visit	08/01/2020	997	<0.1	<2	7.1	9.0	0.0	0	0	0	1.29	2.40	Cool, overcast, dry, calm	
Instrume	ents Used:	GFM436 gas an	alyser / PI	D MultiRAE	lite				NOTE:	n/a	Not applica	able		
REMARK	S:									nm	Not measu	ired		
												Мо	nitoring Visit	
25.	0						KE	Y:		1	2		-	₆ KEY:
							_		0	.0 +	2		3 4 5	о ————————————————————————————————————
20.	0							lethane						
							- (',	% v/v)						
<u>с</u>							-		1	.0				
Concentration 10.	0						-		0					Groundwater Level (mbgl)
cent								arbon	Depth (m) c					
UO 10.	0						D	ioxide	s pth	.0				
0			-				(,	% v/v)	De					
5.	0					\sim	_		2	.0				
							-		3		here arou	ndwater r	ecorded at 0.0 m - no ground	water
_								xygen % v/v)					ered during monitoring	
0.	0	2	3	4	5		6		4	.0				

GROUND GAS AND GROUNDWATER MONITORING DATA

Date: 09/01/2020

Project Number: 4159,GI

Project Name: Land off Bell Road, Bottisham, Cambridgeshire

xplorat	ory Hole Loc	ation	WS10										Date of Installation	1	11/10/2019
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane		Carbon Dioxide	Oxygen	Flow Rate (I/hr)	H2S (ppm)	CO (ppm)	VOC (ppm)	Water Level	Base of Well	Weather Conditions		Comments / Pressure Rise or Fall
		. ,		(% LEL)	(% v/v)						(mbgl)	(mbgl)		F	alling pressure during
st visit	14/11/2019	999	<0.1	<2	2.4	18.2	0.0	0	0	0	Dry	1.85	Cold, sunny, wet, calm		/isit
nd visit	25/11/2019	1003	< 0.1	<2	2.4	18.7	0.0	0	0	0	Dry	1.85	Cool, cloudy, damp, breezy	,	
d visit	04/12/2019	1020	< 0.1	<2	1.9	18.2	0.0	0	0	0	Dry	1.85	Cold, overcast, wet, calm		
h visit	11/12/2019	1001	< 0.1	<2	2.2	17.5	0.0	0	0	0	Dry	1.85	Cool, sunny, damp, calm		
h visit	16/12/2019	1000	< 0.1	<2	1.7	18.6	0.1	0	0	0	Dry	1.85	Cool, overcast, damp, calm		alling pressure during
th visit	08/01/2020	1023	< 0.1	<2	0.8	19.3	0.1	0	0	0	Dry	1.85	Cool, overcast, dry, calm		
MARK		GFM436 gas an			. inte				NOTE:		Not applica Not measu				
												Мо	nitoring Visit		
25	0						KE	:Y:		1	2		nitoring Visit 3		₆ KEY:
25. 20.							M	Y: lethane % v/v)	0	0	2		5		6 KEY:
20.	0						M	lethane	1	.0	2		5		Groundwate
20. 5	0						M (5	lethane % v/v)		.0	2		5		Groundwate
20.	0						M (5	lethane % v/v) arbon ioxide	1	0			5		Groundwate Level (mbgl



Appendix 10 – Environmental Laboratory Test Results



Ashleigh Thorneycroft Geosphere Environmental Ltd Brightwell Barns Ipswich Road Brightwell Suffolk IP10 0BJ



DETS Ltd Unit 1 Rose Lane Industrial Estate Rose Lane Lenham Heath Kent ME17 2JN t: 01622 850410

DETS Report No: 19-14769

- Site Reference: Land off Bell Road, Bottisham
- Project / Job Ref: 4159,GI
- Order No: 4159,GI
- Sample Receipt Date: 16/10/2019
- Sample Scheduled Date: 16/10/2019
- Report Issue Number: 1
- **Reporting Date:** 25/10/2019

Authorised by:

Dave Ashworth Technical Manager

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.





Soil Analysis Certificate								
DETS Report No: 19-14769			Date Sampled	10/10/19	10/10/19	10/10/19	10/10/19	10/10/19
Geosphere Environmental Ltd			Time Sampled	None Supplied				
Site Reference: Land off Bell Road	l, Bottisham		TP / BH No	WS01	WS01	WS01	WS01	WS04
Project / Job Ref: 4159,GI		Additional Refs		J1	J2	J3	J4	J1
Order No: 4159,GI			Depth (m)	0.20	0.70	2.00	3.00	0.20
Reporting Date: 25/10/2019		D	ETS Sample No	441799	441800	441801	441802	441803
		5.						
Determinand	Unit	RL	Accreditation				r	
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected				Not Detected
рН	pH Units	N/a	MCERTS	7.9	8.4	8.5	8.6	
Total Cyanide	mg/kg	< 2	NONE	< 2				
Total Sulphate as SO ₄	mg/kg	< 200	NONE	775				
Total Sulphate as SO ₄	%	< 0.02	NONE	0.08				
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10		11	17	15	16	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.01	0.02	0.02	0.02	
Organic Matter	%	< 0.1	MCERTS	3				
Arsenic (As)	mg/kg	< 2	MCERTS	8				8
Barium (Ba)	mg/kg	< 5	NONE	67				42
Beryllium (Be)	mg/kg	< 0.5	NONE	0.7				0.5
W/S Boron	mg/kg	< 1	NONE	< 1				< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3				0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	15				13
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	MCERTS	23				13
Lead (Pb)	mg/kg	< 3	MCERTS	41				16
Mercury (Hg)	mg/kg	< 1	NONE	< 1				< 1
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	16				14
Selenium (Se)	mg/kg	< 3	NONE	< 3				< 3
Vanadium (V)	mg/kg	< 2	NONE	22				21
Zinc (Zn)	mg/kg	< 3	MCERTS	59				35

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30° C Subcontracted analysis (S)

(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation





Soil Analysis Certificate								
DETS Report No: 19-14769			Date Sampled	10/10/19	10/10/19	10/10/19	10/10/19	10/10/19
Geosphere Environmental Ltd			Time Sampled	None Supplied				
Site Reference: Land off Bell Road	l, Bottisham		TP / BH No	WS04	WS04	WS04	WS06	WS06
Project / Job Ref: 4159,GI		Additional Refs		J2	J3	J4	J1	J2
Order No: 4159,GI			Depth (m)	1.00	2.00	3.00	0.20	0.60
Reporting Date: 25/10/2019		DI	ETS Sample No	441804	441805	441806	441807	441808
Determinand	Unit	RL						
Asbestos Screen (S)	N/a	N/a	ISO17025				Not Detected	
рН	pH Units	N/a	MCERTS	8.5	8.6	8.5	8.3	8.3
Total Cyanide	mg/kg	< 2	NONE				< 2	
Total Sulphate as SO ₄	mg/kg	< 200	NONE				492	
Total Sulphate as SO ₄	%	< 0.02	NONE				0.05	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	< 10	12	14	< 10	28
W/S Sulphate as SO₄ (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.01	0.01	< 0.01	0.03
Organic Matter	%	< 0.1	MCERTS				1.1	
Arsenic (As)	mg/kg	< 2	MCERTS				11	6
Barium (Ba)	mg/kg	< 5	NONE				26	49
Beryllium (Be)	mg/kg	< 0.5	NONE				< 0.5	0.6
W/S Boron	mg/kg	< 1	NONE				< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS				14	16
Chromium (hexavalent)	mg/kg	< 2	NONE				< 2	
Copper (Cu)	mg/kg	< 4	MCERTS				8	12
Lead (Pb)	mg/kg	< 3	MCERTS				14	9
Mercury (Hg)	mg/kg	< 1	NONE				< 1	< 1
Molybdenum (Mo)	mg/kg	< 1	NONE				< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS				11	16
Selenium (Se)	mg/kg	< 3	NONE				< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE				34	24 35
Zinc (Zn)	mg/kg	< 3	MCERTS				35	35

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30° C Subcontracted analysis (S)





Soil Analysis Certificate								
DETS Report No: 19-14769			Date Sampled	10/10/19	10/10/19	11/10/19	11/10/19	11/10/19
Geosphere Environmental Ltd			Time Sampled	None Supplied				
Site Reference: Land off Bell Road	, Bottisham		TP / BH No	WS06	WS07	WS07	WS07	WS07
Project / Job Ref: 4159,GI		Additional Refs		J3	J1	J2	J3	J4
Order No: 4159,GI			Depth (m)	1.40	0.20	0.40	1.00	2.00
Reporting Date: 25/10/2019		D	ETS Sample No	441809	441810	441811	441812	441813
Determineral	11-14	DI	A				()	()
Determinand	Unit	RL					(n)	(n)
Asbestos Screen (S)	N/a	N/a	ISO17025	7.0	Not Detected	Not Detected	0.4	0.4
pH Tatal Quarita	pH Units	N/a < 2	MCERTS NONE	7.9	8.1	8.5	8.6	8.6
Total Cyanide Total Sulphate as SO₄	mg/kg	< 200	NONE		< 2 807	< 2 783		
Total Sulphate as SO₄ Total Sulphate as SO₄	mg/kg %	< 0.02	NONE		0.08	0.08		
W/S Sulphate as SO ₄ (2:1)		< 0.02 < 10	MCERTS	46	0.08	26	18	17
W/S Sulphate as SO_4 (2.1) W/S Sulphate as SO_4 (2.1)	mg/l a/l	< 0.01	MCERTS	0.05	0.01	0.03	0.02	0.02
Organic Matter	9/1 %	< 0.1	MCERTS	0.03	2.6	0.03	0.02	0.02
Arsenic (As)	mg/kg	< 2	MCERTS		2.0	2		
Barium (Ba)	mg/kg	< 5	NONE		51	17		
Beryllium (Be)	mg/kg	< 0.5	NONE		0.5	< 0.5		
W/S Boron	mg/kg	< 1	NONE		< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS		0.3	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS		15	7		
Chromium (hexavalent)	mg/kg	< 2	NONE		< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS		15	14		
Lead (Pb)	mg/kg	< 3	MCERTS		18	4		
Mercury (Hg)	mg/kg	< 1	NONE		< 1	< 1		
Molybdenum (Mo)	mg/kg	< 1	NONE		< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS		16	10		
Selenium (Se)	mg/kg	< 3	NONE		< 3	< 3		
Vanadium (V)	mg/kg	< 2	NONE		22	7		
Zinc (Zn)	mg/kg	< 3	MCERTS		44	12		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30° C Subcontracted analysis (S)





Soil Analysis Certificate							
DETS Report No: 19-14769			Date Sampled	11/10/19	11/10/19	11/10/19	
Geosphere Environmental Ltd				None Supplied	None Supplied	None Supplied	
Site Reference: Land off Bell Road,	ference: Land off Bell Road, Bottisham			WS09	WS09	WS10	
Project / Job Ref: 4159,GI		A	Additional Refs	J1	J2	J1	
Order No: 4159,GI			Depth (m)	0.20	0.50	0.30	
Reporting Date: 25/10/2019		DI	ETS Sample No	441814	441815	441816	
Determinand	Unit	RL					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected		Not Detected	
рН	pH Units	N/a	MCERTS	8.2		8.1	
Total Cyanide	mg/kg	< 2	NONE	< 2		< 2	
Total Sulphate as SO ₄	mg/kg	< 200	NONE	804		816	
Total Sulphate as SO ₄	%	< 0.02	NONE	0.08		0.08	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	14		14	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.01		0.01	
Organic Matter	%	< 0.1	MCERTS	2.7		2.1	
Arsenic (As)	mg/kg	< 2	MCERTS	8	7	8	
Barium (Ba)	mg/kg	< 5	NONE	55	70	48	
Beryllium (Be)	mg/kg	< 0.5	NONE	0.6	0.6	0.5	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.3	< 0.2	0.3	
Chromium (Cr)	mg/kg	< 2	MCERTS	17	17	13	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2		< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	14	11	14	
Lead (Pb)	mg/kg	< 3	MCERTS	19	7	27	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Molybdenum (Mo)	mg/kg	< 1	NONE	< 1		< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	16	18	15	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	25	26	20	
Zinc (Zn)	mg/kg	< 3	MCERTS	39	34	34	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30° C Subcontracted analysis (S)





Soil Analysis Certificate	- Speciated PAHs							
DETS Report No: 19-1476	69		Date Sampled	10/10/19	10/10/19	10/10/19	11/10/19	11/10/19
Geosphere Environmental	l Ltd	Time Sampled		None Supplied				
Site Reference: Land off I	Bell Road,		TP / BH No	WS01	WS06	WS07	WS07	WS09
Bottisham								
Project / Job Ref: 4159,0	A	dditional Refs	J1	J1	J1	J2	J1	
Order No: 4159,GI		Depth (m)	0.20	0.20	0.20	0.40	0.20	
Reporting Date: 25/10/2	019	DE	TS Sample No	441799	441807	441810	441811	441814
Determinand		RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.25	0.13	0.18	< 0.1	0.19
Pyrene	mg/kg	< 0.1	MCERTS	0.21	0.11	0.15	< 0.1	0.16
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	5 5	< 0.1	MCERTS	0.24	0.18	0.21	< 0.1	0.22
Benzo(k)fluoranthene	5 5	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene		< 0.1	MCERTS	0.20	0.17	0.18	< 0.1	0.19
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.30	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	5 5	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene			MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C





Soil Analysis Certificate	- Speciated PAHs					
DETS Report No: 19-1476	9		Date Sampled	11/10/19		
Geosphere Environmental	Ltd		Time Sampled	None Supplied		
Site Reference: Land off B	sell Road,		TP / BH No	WS10		
Bottisham						
Project / Job Ref: 4159,G	l	A	Additional Refs	J1		
Order No: 4159,GI			Depth (m)	0.30		
Reporting Date: 25/10/20	019	D	ETS Sample No	441816		
Determinand	Unit	RL	Accreditation			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	0.16		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.46		
Pyrene	mg/kg	< 0.1	MCERTS	0.38		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.45		
Chrysene	mg/kg	< 0.1	MCERTS	0.13		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.35		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.27		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.34		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.13		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.7		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C





Soil Analysis Certificate - Sample Descriptions DETS Report No: 19-14769 Geosphere Environmental Ltd Site Reference: Land off Bell Road, Bottisham Project / Job Ref: 4159,GI Order No: 4159,GI Reporting Date: 25/10/2019

Moisture DETS Sample No TP / BH No Additional Refs Depth (m) Sample Matrix Description Content (%) 441799 0.20 Brown loamy sand WS0⁷ 15.9 ŀ 441800 WS0 0.70 17.1 Beige sandy clay 441801 WS0⁷ J3 2.00 15.1 Beige sandy clay 44180 WS0 J4 3.00 13.9 Beige sandy clay 44180 WS04 J1 0.20 14.3 Brown loamy sand with stones and vegetation 441804 WS04 J2 1.00 15.4 Beige sandy clay 44180 WS04 J3 2.00 14.2 Beige sandy clay 441806 WS04 J4 3.00 12.4 Beige sandy clay Brown loamy sand with vegetation 441807 WS06 J1 0.20 12.2 441808 WS06 .12 0.60 12.4 Brown sandy clay 441809 WS06 J3 1.40 18.4 Brown sandy clay 441810 WS07 J1 0.20 15.4 Brown loamy sand with vegetation 17.2 Light grey sandy clay 441811 WS0 12 0.40 441812 1.00 16.6 White chalk WS0 J3 441813 2.00 14.8 White chalk J4 WS0 441814 0.20 14.8 Brown loamy sand WS09 J1 13.3 Brown sandy clay with stones 441815 WS09 J2 0.50 441816 13.6 Brown loamy sand with vegetation J1 WS10 0.30

Moisture content is part of procedure E003 & is not an accredited test Insufficient Sample $^{\rm US}_{\rm usc}$

Unsuitable Sample U/S





Soil Analysis Certificate - Methodology & Miscellaneous Infor	rmation	
DETS Report No: 19-14769		
Geosphere Environmental Ltd		
Site Reference: Land off Bell Road, Bottisham		
Project / Job Ref: 4159,GI		
Order No: 4159,GI		
Reporting Date: 25/10/2019		
Matrix Analysed Determinand	Brief Method Description	Method

Matrix	Analysed	Determinand	Brief Method Description	Method
Call	On	Denon Weter Colubia		No Follo
Soil	D		Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR		Determination of BTEX by headspace GC-MS	E001
Soil	D		Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D		Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	· · · · · · · · · · · · · · · · · · ·	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR		Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by	E004
Soil	D		Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle	E019
			furnace	-
Soil	D		Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with	E010
3011	D	Organic Matter	iron (II) sulphate	EUTU
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D		Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR		Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR		Determination of phenols by distillation followed by colorimetry	E021
Soil	D		Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D		Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D		Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR		Determination of sulphide by distillation followed by colorimetry	E014
Soil	D		Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
			Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by	
Soil	AR	SVOC	GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (11) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried



Appendix 11 – Geotechnical Laboratory Test Results



TEST REPORT



Contract		Land off Bell Road,	Bottisha	m		
Serial No	•	36013				
Client:	Geosphei	re Environmental Lto	Ł	Soil Pro	perty Testing L	td
	Head Offic Brightwell Ipswich Ro Brightwell Suffolk IP10 OBJ	Barns bad		Stukeley Mead Cambridgeshire Tel: 01480 4 Email: <u>enquiries</u> Website: <u>www.soi</u>	155579 s@soilpropertytesting.com ilpropertytesting.com	,
Samples	Submitted			Approved Signator		
Samples	Labelled:	re Environmental Lto Bell Road, Bottisham		□ s □ v	 A.C. Garner B.Eng (Hons) FGS Technical Director & Quality Ma S.P. Townend FGS Chairman N. Johnstone Materials Lab Manager D. Sabnis Operations Manager 	nager
Date R	eceived:	18/10/2019	Sample	s Tested Between:	18/10/2019 and 31/10/2	2019
Remarks	For the a	ttention of Ashleigh erence No: 4159,GI	Thorneyc	roft		
Notes:	1	All remaining samples c unless we are notified t			e disposed of after 21 days from too	day,
	2		-	editation Service. s expressed herein are ou	utside the scope of UKAS accreditati	on.
	3	Tests marked "NOT UKA Schedule for this testing			re not included in the UKAS Accredit	tation
	4	This test report may no issuing laboratory.	t be reprod	uced other than in full ex	xcept with the prior written approva	al of the





Contra	act		Land of	ff Be	ell F	Roa	d, E	Bott	ish	am													
Serial	No.		36013															Т	arg	jet I	Dat	е	31/10/2019
Sched	uled I	Ву	Geosph	nere	e En	virc	onn	nen	tal I	_td													
								SC	HE	DU	LE	OF	LA	BOI	RA	TO	RY	TES	STS				
Sched	ule Re	emarks																					
Bore Hole No.	Туре	Sample Ref.	Top Depth	/2	ointig	and constructions	a onter	1051 1051 Net Se	al inits	Parail	\$												Sample Remarks
TP01	В	1	0.25	1	Í																		
TP02	В	1	0.33	1																			
TP03	В	1	0.00	1																			
WS02	D	1	0.50		1	1	1																
WS03	D	1	0.90		1	1	1																
WS04	D	1	0.70		1	1	1																
WS06	D	1	0.70		1	1	1																
WS06	D	2	1.30		1	1	1																
WS08	D	1	0.50		1	1	1																
WS10	D	1	0.50		1	1	1																
			3	7	7	7																End of Schedule	

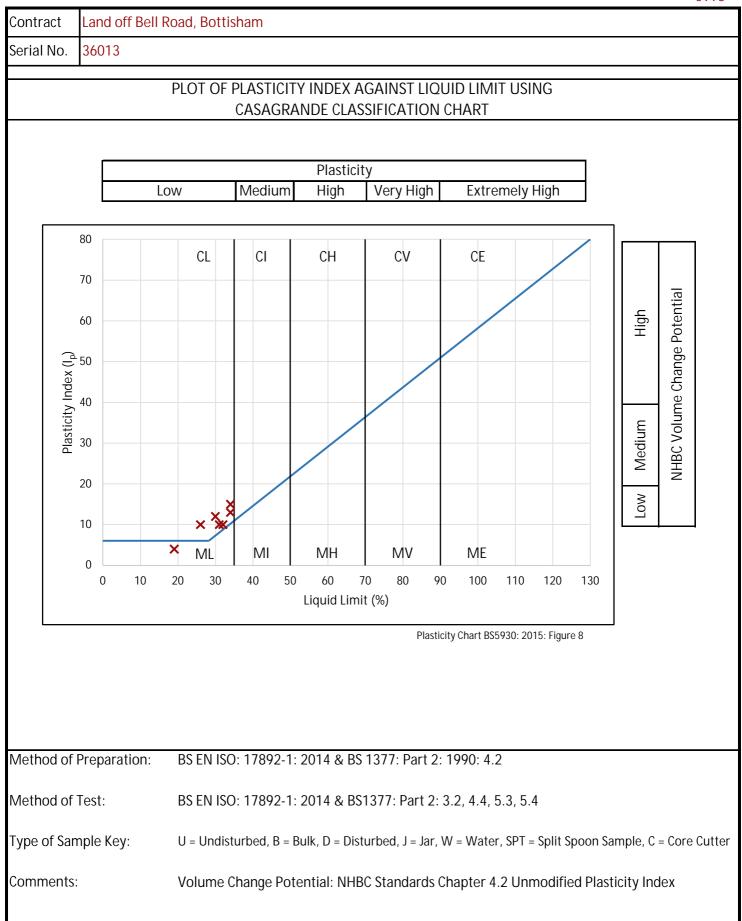




Contract		Land	l off Bel	I Road,	Bottisl	nam								
erial No).	3601	3											
	SUMM	ARY C)F WATE	ER CON	TENT,	LIQUID	LIMIT	, PLAS	TIC LIN	1IT, PL	ASTICI	FY IN[DEX AND LIQUIDITY INDEX	
Borehole /Pit No.	Depth (m)	Туре	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti- city Index (%)	Liquid- ity Index	SA Method	MPLE PRE Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	ON Curing Time (hrs)	Description	CLASS
WS02	0.50	D	1	19.5	30	18	12	0.13	Wet Sieved	11 (M)	21.9*		Friable light yellowish brown slightly gravelly slightly sandy silty calcareous CLAY with occasional pale yellow and white pockets, and recently active roots. Gravel is fine to medium chert.	CL
WS03	0.90	D	1	4.7	19	15	4	-2.59	Wet Sieved	16 (M)	5.5*	9	Brownish yellow gravelly slightly silty slightly clayey fine to medium SAND with occasional friable sandy clay lumps. Gravel is fine to medium chert and chalk.	ML
WS04	0.70	D	1	13.8	26	16	10	-0.22	Wet Sieved	22 (M)	17.6*	28	Very stiff friable light grey slightly gravelly slightly sandy clayey marly CHALK with rare recently active roots. Gravel is fine to medium chert and chalk.	CL
WS06	0.70	D	1	19.4	31	21	10	-0.16	Wet Sieved	6 (M)	20.7*	28	Friable brown slightly gravelly slightly sandy silty calcareous CLAY with occasional shell debris. Gravel is fine chert.	CL
WS06	1.30	D	2	25.8	34	21	13	0.37	Wet Sieved	6 (M)	27.5*	24	Firm dark greyish brown slightly gravelly slightly sandy silty calcareous CLAY with frequent shell debris. Gravel is fine chert.	CL
WS08	0.50	D	1	19.3	34	19	15	0.02	Wet Sieved	9 (M)	21.2*	27	Firm brown slightly gravelly slightly sandy silty chalky CLAY with occasional recently active roots. Gravel is fine to medium chert and chalk.	CL
WS10	0.50	D	1	20.5	32	22	10	-0.15	Wet Sieved	21 (M)	26.0*	27	Friable yellowish brown slightly gravelly slightly sandy silty calcareous CLAY with occasional recently active roots. Gravel is fine to coarse chalk, and rare chert.	CL
Method Of F Method of T Type of Sam Comments: Table Notati	est: ple Key:		BS EN ISO: U = Undist *Corrected		2014 & B Bulk, D = ntent ass	S 1377: P Disturbe ume mat	art 2:199 ed, J = Jar, erial grea	0:3.2, 4.4 , W = Wat ter than (ter, SPT =	Split Spo			Core Cutter 17: Part 2: 1990 Clause 3 Note 1.	











Serial No.		36013)						
		DET						AND PLASTIC LIMI	T AND
Borehole / Pit No.	epth m		D Sample Reference	Water Content		STICITY IN	Description		Remarks
WS02 (0.50	D	1	19.5	calcareous	CLAY with occas	n slightly gravelly sional pale yellow a el is fine to mediun	and white pockets, and	
				PREPARATI	ON			Liquid Limit	30 %
Method of p	orepa	ration			Wet s	sieved over	0.425mm siev	/e Plastic Limit	18 %
Sample reta	ined	0.425	mm sieve	(Meas	ured)		11 %	Plasticity Index	12 %
Corrected w	ater	conte	nt for ma	terial passin	g 0.425m	ım	21.9 %	Liquidity Index	0.13
Sample reta	ined	2mm :	sieve	(Meas	ured)		5 %	NHBC Modified (I'	'p) 11 %
Curing time			2	28 hrs	Clay (Content r	Not analysed	Derived Activity	Not analysed
C=CLAY Plasticity In % (Ip) M=SILT	dex	70 60 50 40 30 20 10 0 0	10	CL	CI MI 40	CH	CV CV MV 70 80 Plas	CE ME 90 100 110 icity Chart BS5930: 2015: Fig	120 Interview of the second s
Method of Pr Method of Te Type of Samp Comments:	st:		BS EN ISC U=Undisto Corrected Volume Ch	D: 17892-1: urbed, B=Bulk water content ange Potential	2014 & B k, D=Distur assume ma : NHBC Star	S 1377: Par bed, J=Jar, W terial greater t ndards Chapte	han 0.425mm n	Split Spoon Sample, C=(on-porous. See BS1377: P I Plasticity Index	Core Cutter Part2: 1990 Clause 3 Note 1





		DET	ERMINA	TION OF W	/ATER CC	NTENT, L	QUID	LIMIT A	ND PLASTIC LIN	IIT AND		
		T	DI	-	I OF PLAS	TICITY IN	DEX AN	ND LIQU	JIDITY INDEX			
Borehole / Pit No.	Depth m		Sample Reference	Water Content e (W) %			Descri	ption			Remark	S
WS03	0.90	D	1	4.7	SAND with o				yey fine to medium Gravel is fine to			
				PREPARATI	ON				Liquid Limit			19 %
Method of	prepa	ration	l		Wet si	eved over	0.425m	ım sieve	Plastic Limit			15 %
Sample ret	ained	0.425	mm sieve	(Meas	ured)			16 %	Plasticity Index			4 %
Corrected \	water	conte	nt for mat	erial passin	g 0.425mr	n	5	5.5 %	Liquidity Index			-2.59
Sample ret	ained	2mm :	sieve	(Meas	ured)			<mark>9</mark> %	NHBC Modified (l'p)		3 %
Curing time	9			9 hrs	Clay C	ontent	Not analys	sed	Derived Activity		Not an	alysed
C=CLAY Plasticity II % (Ip) M=SILT		70 60 50 40 30 20 10 0 0	10	CL	CI MI 40	CH 60 60	70		CE ME 90 100 110 ty Chart BS5930: 2015: F	120	Low Medium High	NHBC Volume Change Potential %
Method of F Method of T Type of Sam Comments:	est:	y:	BS EN ISC U=Undistu Corrected v Volume Cha		2014 & BS c, D=Disturk assume mat : NHBC Stan	5 1377: Par bed, J=Jar, W erial greater t dards Chapte	t 2: 199 /=Water han 0.42 r 4.2 Unn	0: 3.2, 4 , SPT=Spl 5mm non- nodified Pl	lit Spoon Sample, Ca porous. See BS1377: lasticity Index			Note 1





		DET	ERMIN	ATION OF	WATER	CONT	ENT, L	IQUID) LIMIT A	ND PI	LASTI	C LIM	IT ANI	D		
				DERIVATI												
Borehole / Pit No.	epth m		Sample Referen	Wate Conte	ent			Desc	ription					Rem	nark	S
WS04 ().70	D	1	13.8	Very sti	with rare			pravelly slightl ots. Gravel is f							
				PREPAR	ATION					Liqui	d Limi	t				26 %
Vethod of p	repa	ration			We	et sieve	ed over	0.425	mm sieve	Plasti	ic Lim	t				<mark>16</mark> %
Sample retai	ined ().425i	mm siev	e (Me	easured)				22 %	Plasti	icity Ir	ndex				10 %
Corrected w	ater	conte	nt for ma	aterial pas	sing 0.42	ōmm		1	17.6 %	Liquio	dity In	dex				0.22
Sample retai	ined 2	2mm :	sieve	(Me	easured)				17 %	NHBC	C Mod	ified (l	'p)			<mark>8</mark> %
Curing time				28 hrs	Cla	y Cont	ent r	Not anal	lysed	Deriv	ed Ac	tivity		N	ot an	alysed
C=CLAY Plasticity Inc % (Ip) M=SILT	dex	70 60 50 40 30 20 10 0 0	10	CL × ML 20 3	CI	50	CH MH 60	70	CV 	90	CE ME 100	110	120		T High	NHBC Volume Change Potential %
Method of Pro Method of Te Type of Samp Comments:	st:		BS EN IS U=Undis Corrected Volume C	50: 17892- 50: 17892- turbed, B=E I water conte hange Poter dified Plastic	1: 2014 8 Bulk, D=Dis ent assume stial: NHBC S	BS 13 turbed, material	77: Pari , J=Jar, W greater t Is Chapte	t 2: 19 /=Wate han 0.4 r 4.2 Ur	290: 4.2 290: 3.2, 4 er, SPT=Spl 425mm non- nmodified Pl	.4, 5.3 lit Spoc porous lasticity	8, 5.4 on Sam 5. See B	•	Core Ci		use 3	Note 1





		DET							ND PLASTIC LIMI JIDITY INDEX	T AND		
Borehole / Pit No.	L		ample Referen	Water Content			Description				Remark	S
WS06 0. ⁻	70	D	1	19.4		vn slightly grave shell debris. Gra			y calcareous CLAY with			
				PREPARAT	ION				Liquid Limit			31 %
Method of pre	epar	ation			Wet s	ieved over	0.425mm	sieve	Plastic Limit			21 %
Sample retain	ed 0	.4251	mm sieve	e (Meas	ured)		6	%	Plasticity Index			10 %
Corrected wat	er c	ontei	nt for ma	iterial passir	ig 0.425m	m	20.7	%	Liquidity Index			-0.16
Sample retain	ed 2	mm	sieve	(Meas	ured)		1	%	NHBC Modified (I	p)		<mark>9</mark> %
Curing time				28 hrs	Clay C	Content	lot analysed		Derived Activity		Not an	alysed
C=CLAY Plasticity Inde % (Ip) M=SILT	6 5 × 4 3 2 1		10	CL	CI	CH		V 0	CE CE ME 90 100 110 ty Chart BS5930: 2015: Fig	120	Low Medium High	NHBC Volume Change Potential %
Method of Prep Method of Test Type of Sample Comments:			BS EN IS U=Undist Corrected Volume Cl		2014 & BS k, D=Distur assume mat I: NHBC Stan	S 1377: Par bed, J=Jar, W rerial greater t dards Chapte	2: 1990: 2: 1990: /=Water, SF han 0.425m 4.2 Unmod	4.2 3.2, 4 PT=Spl m non- ified Pl	4, 5.3, 5.4 lit Spoon Sample, C= -porous. See BS1377: P lasticity Index	Core Cut		Note 1





		DET	ERMINA	TION OF V	/ATER C	ONTENT, L	IQUID LIMIT	AND PLASTIC LIM	IT AND		
		1		ERIVATION				DUIDITY INDEX			
/ PIT NO.	epth m		ample Referenc	Water Content e (W) %			Description		F	Remark	(S
WS06 1	.30	D	2	25.8			ightly gravelly sligh ebris. Gravel is fine	tly sandy silty calcareous chert.			
				PREPARAT	ON			Liquid Limit			<mark>34</mark> %
Method of p	repa	ration			Wet	sieved over	0.425mm siev	<mark>/e</mark> Plastic Limit			21 %
Sample retai	ned	0.425ı	mm sieve	(Meas	ured)		<mark>6</mark> %	Plasticity Index			13 %
Corrected wa	ater	conte	nt for ma	terial passin	g 0.425n	nm	27.5 %	Liquidity Index			0.37
Sample retai	ned	2mm :	sieve	(Meas	ured)		1 %	NHBC Modified (l'p)		12 %
Curing time			2	24 hrs	Clay	Content	Not analysed	Derived Activity		Not ar	nalysed
C=CLAY Plasticity Inc % (Ip) M=SILT	lex	70 60 50 40 30 20 10 0 0	10	CL	CI MI 40	CH	CV CV MV 70 80 Plas	CE ME 90 100 110 ticity Chart BS5930: 2015: F	120	Low Medium High	NHBC Volume Change Potential %
Method of Pre Method of Tes Type of Sampl Comments:	st:	/:	BS EN ISC U=Undistr Corrected Volume Ch	D: 17892-1: urbed, B=Bull water content ange Potential	2014 & E <, D=Distu assume ma : NHBC Sta	8S 1377: Par rbed, J=Jar, V aterial greater ndards Chapte	t 2: 1990: 4.2 t 2: 1990: 3.2 V=Water, SPT=:	, 4.4, 5.3, 5.4 Split Spoon Sample, C= on-porous. See BS1377: I I Plasticity Index	Core Cutte		Note 1





		DET							ND PLASTIC LIMIT JIDITY INDEX	AND		
Borehole / Pit No.	Depth m		Sample Reference	Water Content			Descriptio			F	Remark	S
WS08	0.50	D	1	19.3					halky CLAY with medium chert and			
				PREPARATI	ON				Liquid Limit			34 %
Method of	prepa	ration			Wet s	ieved over	0.425mm s	ieve	Plastic Limit			19 %
Sample ret	ained	0.425	mm sieve	(Measu	ured)		9 9	%	Plasticity Index			15 %
Corrected	water	conte	nt for ma	terial passing	g 0.425m	m	21.2 9	%	Liquidity Index			0.02
Sample ret	ained	2mm :	sieve	(Measu	ured)		6 9	%	NHBC Modified (I'p)		14 %
Curing time	е		4	27 hrs	Clay C	Content 1	Not analysed		Derived Activity		Not ar	alysed
C=CLAY Plasticity I % (Ip) M=SILT	ndex	70 60 50 40 30 20 10 0 0	10	CL	CI MI 40	CH	CV		CE ME 90 100 110		Low Medium High	
Method of F Method of T Type of Sam Comments:	Fest: nple Key	/ :	BS EN IS U=Undist Corrected Volume Ch		2014 & B , D=Distur assume mat NHBC Star	S 1377: Par bed, J=Jar, W terial greater t idards Chapte	t 2: 1990: 4 t 2: 1990: 3 /=Water, SP han 0.425mm r 4.2 Unmodif	.2 .2, 4 Γ=Spl non- ied Pl	.4, 5.3, 5.4 lit Spoon Sample, C=Cc -porous. See BS1377: Par lasticity Index	ore Cutte		Note 1





erial No.	36013	5									
	DET							ND PLASTIC LIMI JIDITY INDEX	TAND		
Borehole / Pit No.	n S	Sample	Water Content	-		Descrip			R	emark	S
m	Туре	Referen	ce (W) %								
WS10 0.50	D	1	20.5	-	occasional recer			sandy silty calcareous el is fine to coarse			
			PREPARAT	ION				Liquid Limit			<mark>32</mark> %
lethod of prep	aratior	n		Wet s	ieved over	0.425mi	m sieve	Plastic Limit			22 %
ample retained	0.425	mm siev	e (Meas	ured)		2	21 %	Plasticity Index			10 %
orrected water	conte	nt for ma	aterial passir	ıg 0.425m	m	26	. <mark>0</mark> %	Liquidity Index			-0.15
ample retained	2mm	sieve	(Meas	ured)		1	7 %	NHBC Modified (I'	p)		<mark>8</mark> %
uring time			27 hrs	Clay (Content	Not analyse	ed	Derived Activity		Not ar	alysed
C=CLAY	70		CL	СІ	СН		с٧	CE			
	60										ial
	50									High	Change Potential
lasticity Index	50										inge F
lasticity Index %	40										ne Cha
(Ip)	30									Medium	
										ž	NHBC Volur
	20									Low	2
	10		×								
M=SILT	0		ML	MI	MH		MV	ME			
	0	10	20 30	40	50 60	70		90 100 110	120	iquid L	imit %.
			O: 17892-1:	2014 0 0	C 1077, Dam	1000		ty Chart BS5930: 2015: Fig	ure 8		
1ethod of Prepar 1ethod of Test:	ation.		O: 17892-1.					.4, 5.3, 5.4			
ype of Sample Ke	ey:							it Spoon Sample, C=0	Core Cutte	r	
omments:			l water content hange Potentia		•			porous. See BS1377: Pa	art2: 1990 (Clause 3	Note 1



Contrac	t	Land	off Bell R	oad, Bottisham						
Serial No	0.	3601	3							
				FRANKLIN POINT LOAD	TESTS	,)				
Borehole /Pit No.	Depth (m)	Туре	Reference	Description	Test Config	Core Dia (mm)	Distance between Points* D (mm)	Load at Failure, P (kN)	Uncorrected Point Load Intact, Is (MN/m²)	Corrected Point Load Intact, Is50 (MN/m²)
TP01	0.25 - 1.90	В	1	Very weak mottled pale yellow and white CHALK fragments of coarse gravel and cobble size.	Irreg- ular	59.05 60.94	54 44	0.50 0.50	0.17 0.25	0.18 0.24
	1.90				Lump	75.58	45	0.20	0.10	0.10
					Irreg-	51.89	37	<0.2	N/A	N/A
TP02	0.33 - 1.60	В	1	Very weak mottled pale yellow and white CHALK of coarse gravel and cobble size.	ular	64.68	43	<0.2	N/A	N/A
					Lump	46.38	47	<0.2	N/A	N/A
	0.00				Irreg-	71.72	57	<0.2	N/A	N/A
TP03	0.00 - 1.75	В	1	Very weak mottled pale yellow and white CHALK of cobble size.	ular Lump	75.77	50	1.20	0.48	0.48
					Lamp	67.61	56	<0.2	N/A	N/A
Method of Remarks	Test:	* Equiv	valent Core Di		ics. Vol. 2	2 No. 2 19	985			
			ot UKAS accre							



Appendix 12 – Photographs

Photograph 1

Photograph 3



Photograph 2



Photograph 4







GEOSPHERE ENVIRONMENTAL

DESCRIPTION Photograph 1 General Site View

Photograph 2 General Site View

Photograph 3 General Site View

Photograph 4 General Site View

PROJECT

Land off Bell Road, Bottisham, Cambridgeshire

PROJECT NUMBER

4159,GI

TITLE

Selected photographs relatering to site walkover and ground investigation

DATE

17/12/2019

PAGE NO. 1 of 3

Photograph 5

Photograph 7



Photograph 6



Photograph 8







GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 5 Recovered material, WS1

Photograph 6 Recovered material, WS2

Photograph 7 Recovered material, WS3

Photograph 8 Recovered material, WS4

PROJECT

Land off Bell Road, Bottisham, Cambridgeshire

PROJECT NUMBER

4159,GI

TITLE

Selected photographs relatering to site walkover and ground investigation

DATE

17/12/2019 PAGE NO. 2 of 3

PT01 / 30.10.18 / V2

Photograph 9

Photograph 11



Photograph 10



Photograph 12







GEOSPHERE ENVIRONMENTAL

DESCRIPTION

Photograph 9 Recovered material, WS5

Photograph 10 Recovered material, WS6

Photograph 11 Recovered material, WS7

Photograph 12 Installed Gas Monitoring Well

PROJECT

Land off Bell Road, Bottisham, Cambridgeshire

PROJECT NUMBER

4159,GI

TITLE

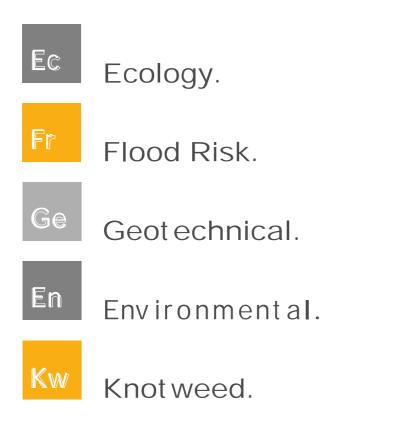
Selected photographs relatering to site walkover and ground investigation

DATE

17/12/2019PAGE NO.3 of 3



GEOSPHERE ENVIRONMENTAL



GEOSPHERE ENVIRONMENTAL LTD

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