

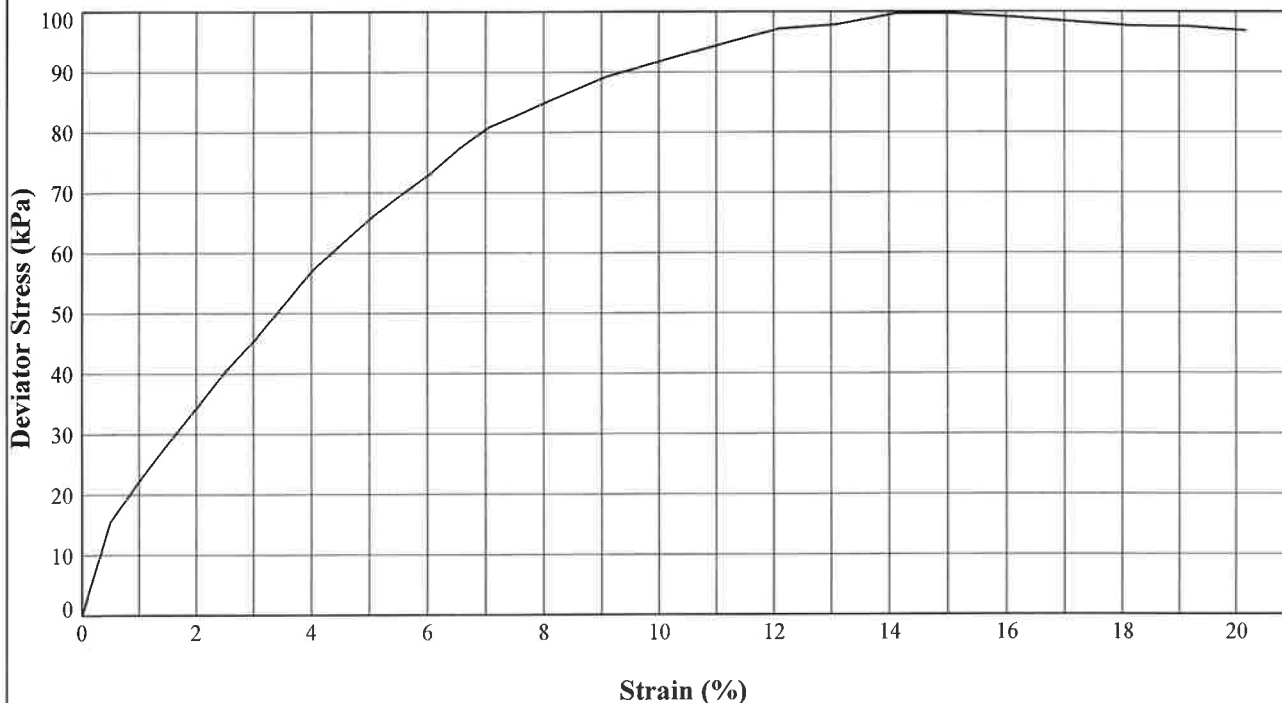
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BH3** Sample Ref: Sample Type: **U** Depth (m): **5.50**

Description : **Grey SILT/CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.07		
	Height (mm)	208.23		
	Moisture Content (%)	28		
	Bulk Density (Mg/m ³)	2.06		
	Dry Density (Mg/m ³)	1.61		
TEST DETAILS	Membrane Thickness (mm)	0.28		
	Rate of Axial Displacement (%/min)	2.02		
	Cell Pressure (kPa)	110		
	Membrane Correction (kPa)	0.80		
	Corrected Deviator Stress (kPa)	100		
	Undrained Shear Strength (kPa)	50		
	Strain at Failure (%)	14.1		
	Mode of Failure	Compound		



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	Hemel Hempstead		Contract		
	Hertfordshire		Contract Ref:		
HP3 9RT		NIAB Phase 1		582260	
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UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

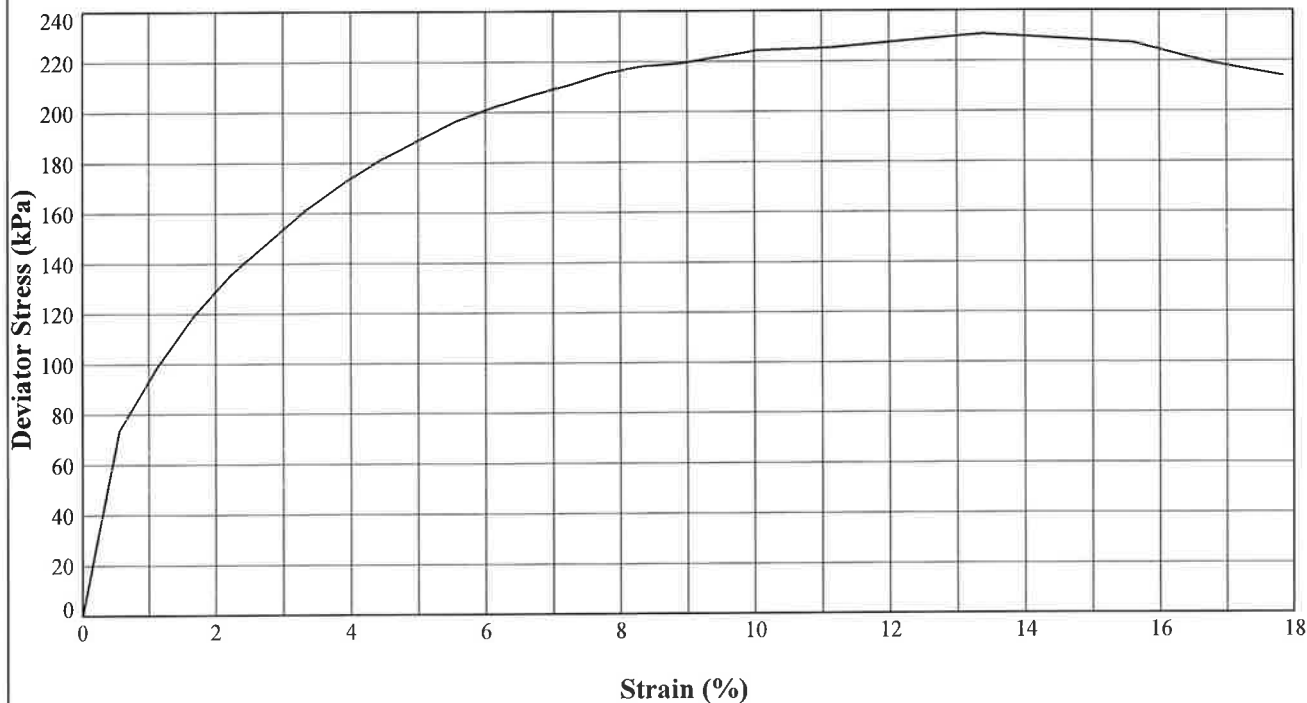
In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BH3** Sample Ref: Sample Type: **U** Depth (m): **11.40**

Description : **Grey CLAY**

Remarks : **Non standard size**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	101.62		
	Height (mm)	188.20		
	Moisture Content (%)	33		
	Bulk Density (Mg/m ³)	1.96		
	Dry Density (Mg/m ³)	1.47		
TEST DETAILS	Membrane Thickness (mm)	0.18		
	Rate of Axial Displacement (%/min)	2.23		
	Cell Pressure (kPa)	220		
	Membrane Correction (kPa)	0.50		
	Corrected Deviator Stress (kPa)	231		
	Undrained Shear Strength (kPa)	115		
	Strain at Failure (%)	13.4		
	Mode of Failure	Compound		



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 STRUCTURAL SOILS 18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT	Compiled By		Date
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	Contract		Contract Ref:
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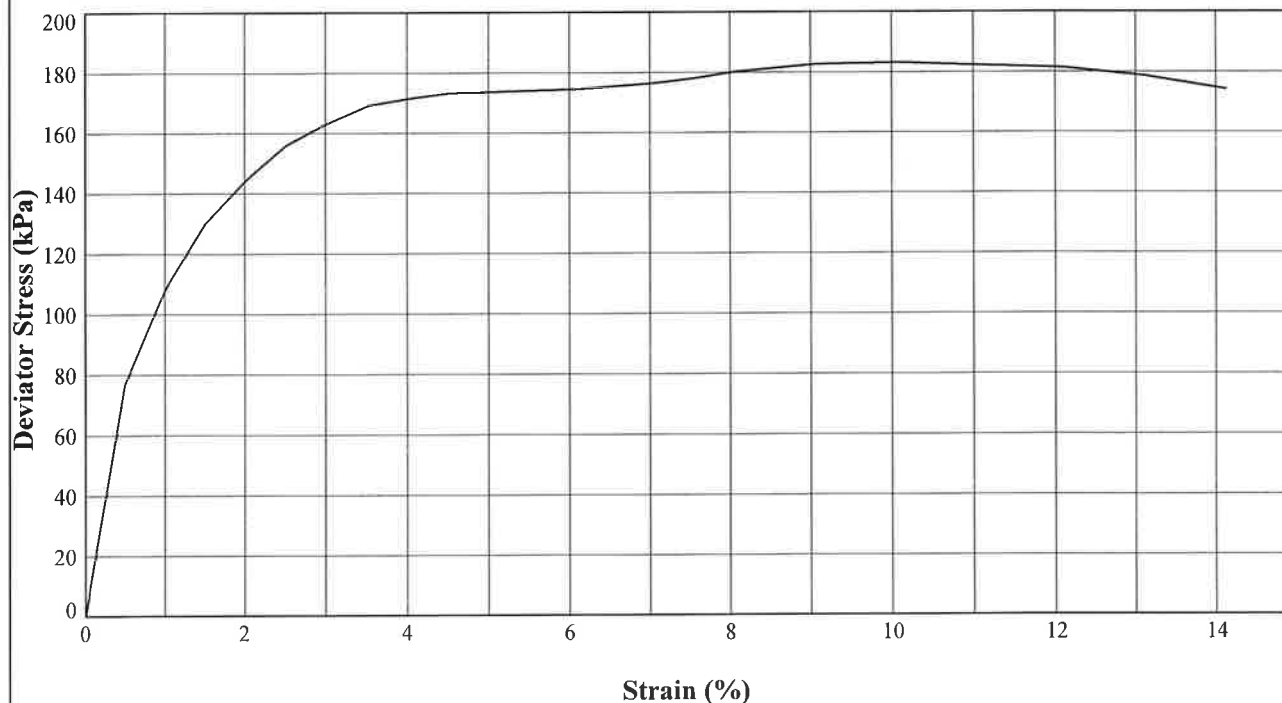
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAxIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BH3** Sample Ref: Sample Type: **U** Depth (m): **14.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.29		
	Height (mm)	208.07		
	Moisture Content (%)	32		
	Bulk Density (Mg/m ³)	1.97		
	Dry Density (Mg/m ³)	1.50		
TEST DETAILS	Membrane Thickness (mm)	0.27		
	Rate of Axial Displacement (%/min)	2.02		
	Cell Pressure (kPa)	290		
	Membrane Correction (kPa)	0.61		
	Corrected Deviator Stress (kPa)	183		
	Undrained Shear Strength (kPa)	92		
	Strain at Failure (%)	10.1		
	Mode of Failure	Brittle		



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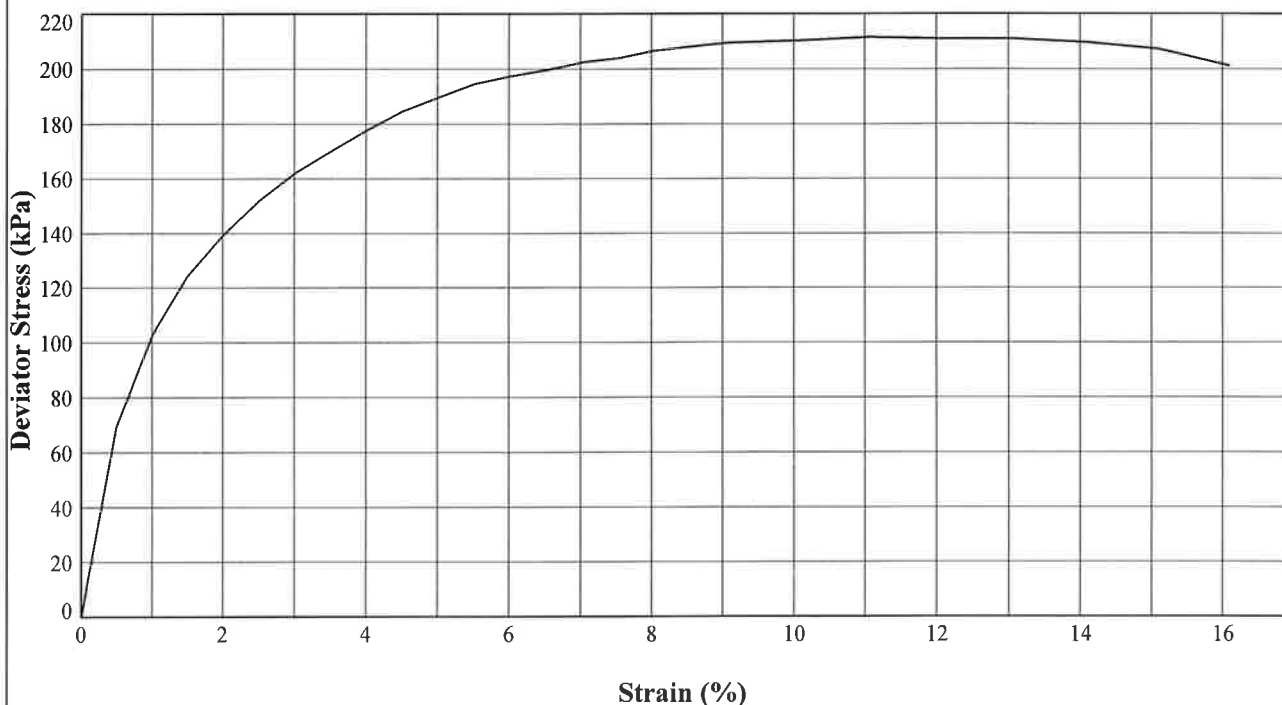
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHG** Sample Ref: Sample Type: **U** Depth (m): **6.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.68		
	Height (mm)	208.68		
	Moisture Content (%)	30		
	Bulk Density (Mg/m ³)	1.91		
	Dry Density (Mg/m ³)	1.47		
TEST DETAILS	Membrane Thickness (mm)	0.18		
	Rate of Axial Displacement (%/min)	2.01		
	Cell Pressure (kPa)	130		
	Membrane Correction (kPa)	0.43		
	Corrected Deviator Stress (kPa)	212		
	Undrained Shear Strength (kPa)	106		
	Strain at Failure (%)	11.1		
	Mode of Failure	Brittle		



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Melanie Brookman

MELANIE BROOKMAN

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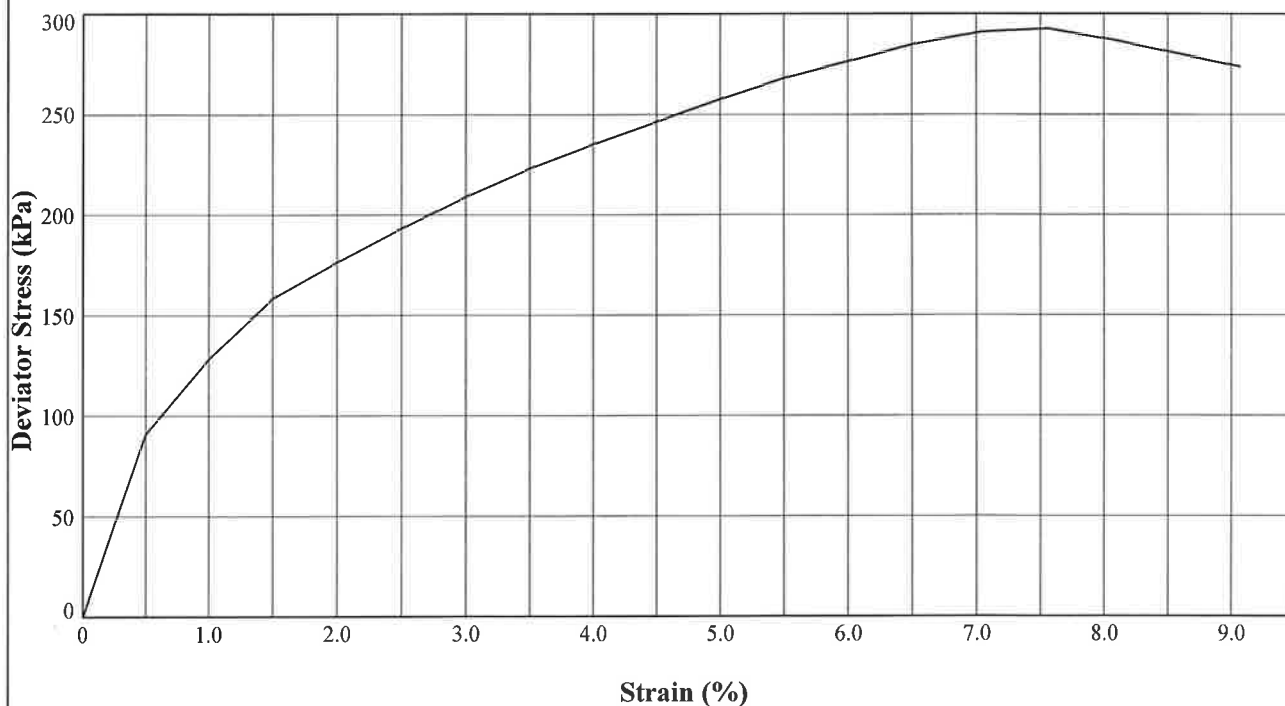
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHG** Sample Ref: Sample Type: **U** Depth (m): **9.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.80		
	Height (mm)	208.37		
	Moisture Content (%)	29		
	Bulk Density (Mg/m ³)	1.95		
	Dry Density (Mg/m ³)	1.51		
TEST DETAILS	Membrane Thickness (mm)	0.26		
	Rate of Axial Displacement (%/min)	2.02		
	Cell Pressure (kPa)	190		
	Membrane Correction (kPa)	0.47		
	Corrected Deviator Stress (kPa)	293		
	Undrained Shear Strength (kPa)	146		
	Strain at Failure (%)	7.6		
	Mode of Failure	Compound		



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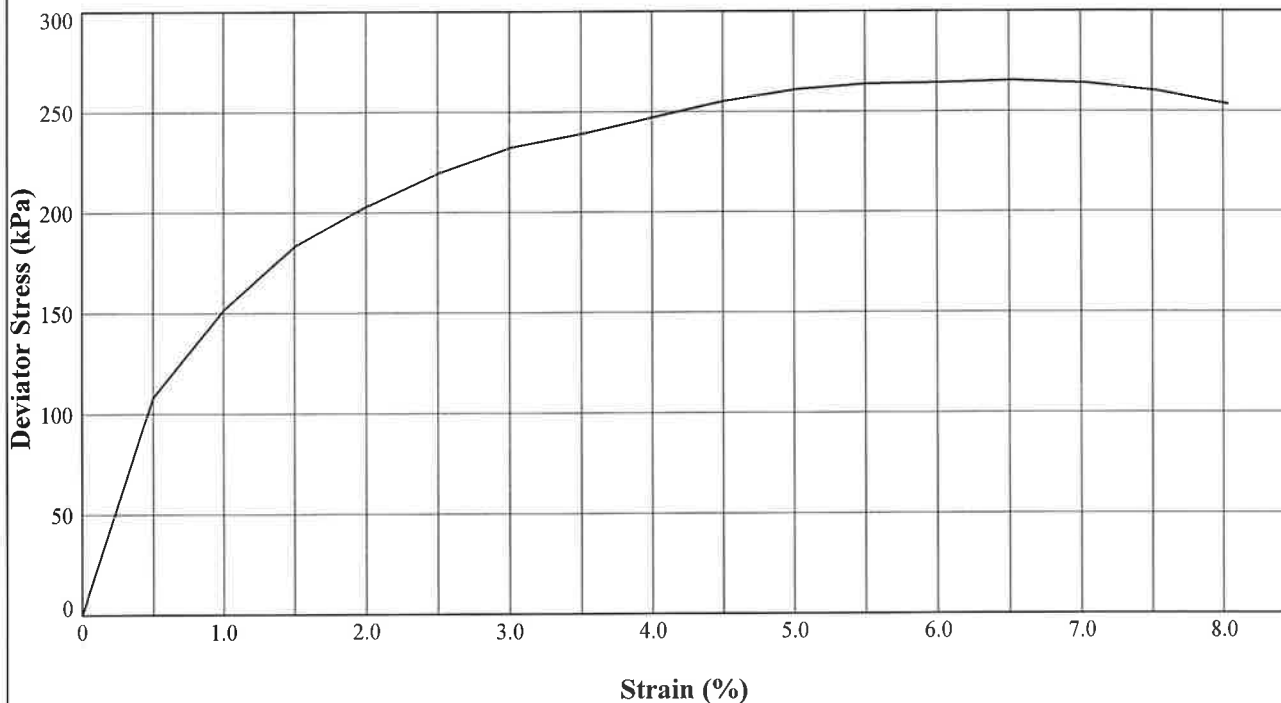
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHG** Sample Ref: Sample Type: **U** Depth (m): **12.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.80		
	Height (mm)	208.95		
	Moisture Content (%)	30		
	Bulk Density (Mg/m ³)	1.93		
	Dry Density (Mg/m ³)	1.49		
TEST DETAILS	Membrane Thickness (mm)	0.26		
	Rate of Axial Displacement (%/min)	2.01		
	Cell Pressure (kPa)	250		
	Membrane Correction (kPa)	0.42		
	Corrected Deviator Stress (kPa)	266		
	Undrained Shear Strength (kPa)	133		
	Strain at Failure (%)	6.5		
	Mode of Failure	Brittle		



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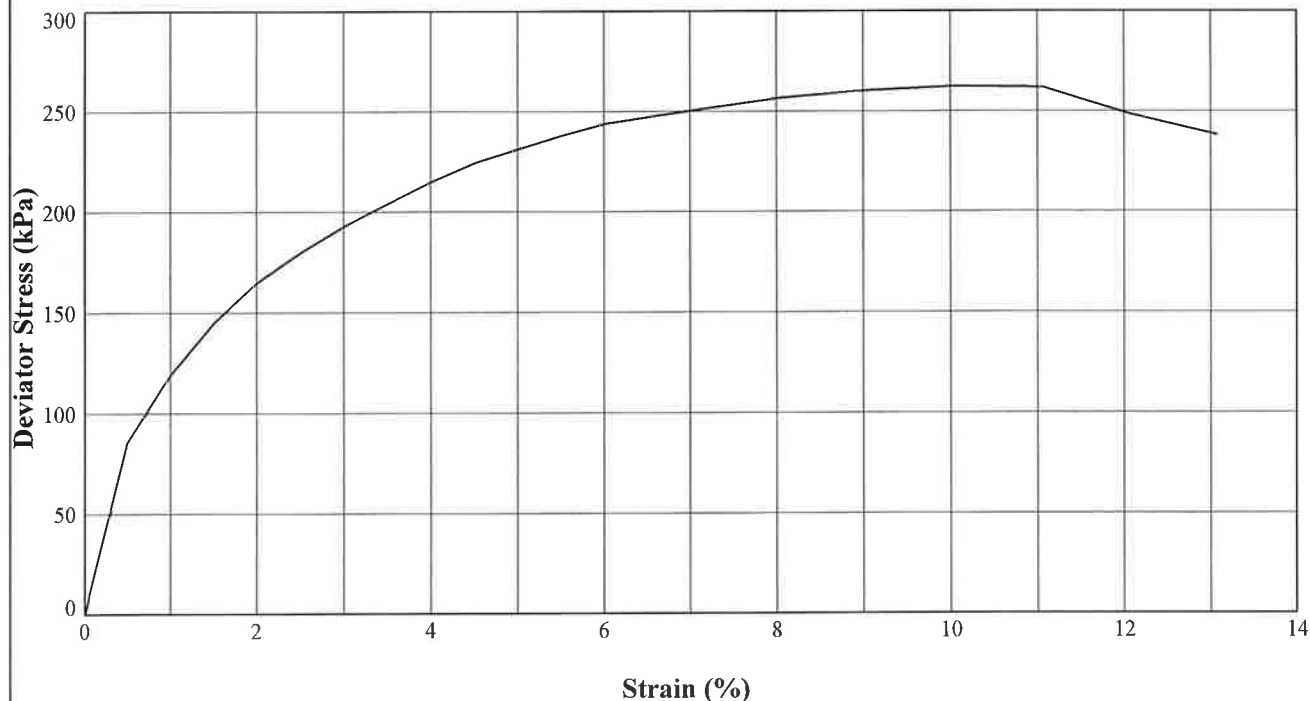
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAxIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHG** Sample Ref: Sample Type: **U** Depth (m): **14.50**

Description : **Grey SILT**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.35		
	Height (mm)	208.83		
	Moisture Content (%)	30		
	Bulk Density (Mg/m ³)	1.92		
	Dry Density (Mg/m ³)	1.47		
TEST DETAILS	Membrane Thickness (mm)	0.32		
	Rate of Axial Displacement (%/min)	2.01		
	Cell Pressure (kPa)	290		
	Membrane Correction (kPa)	0.73		
	Corrected Deviator Stress (kPa)	262		
	Undrained Shear Strength (kPa)	131		
	Strain at Failure (%)	10.1		
	Mode of Failure	Brittle		



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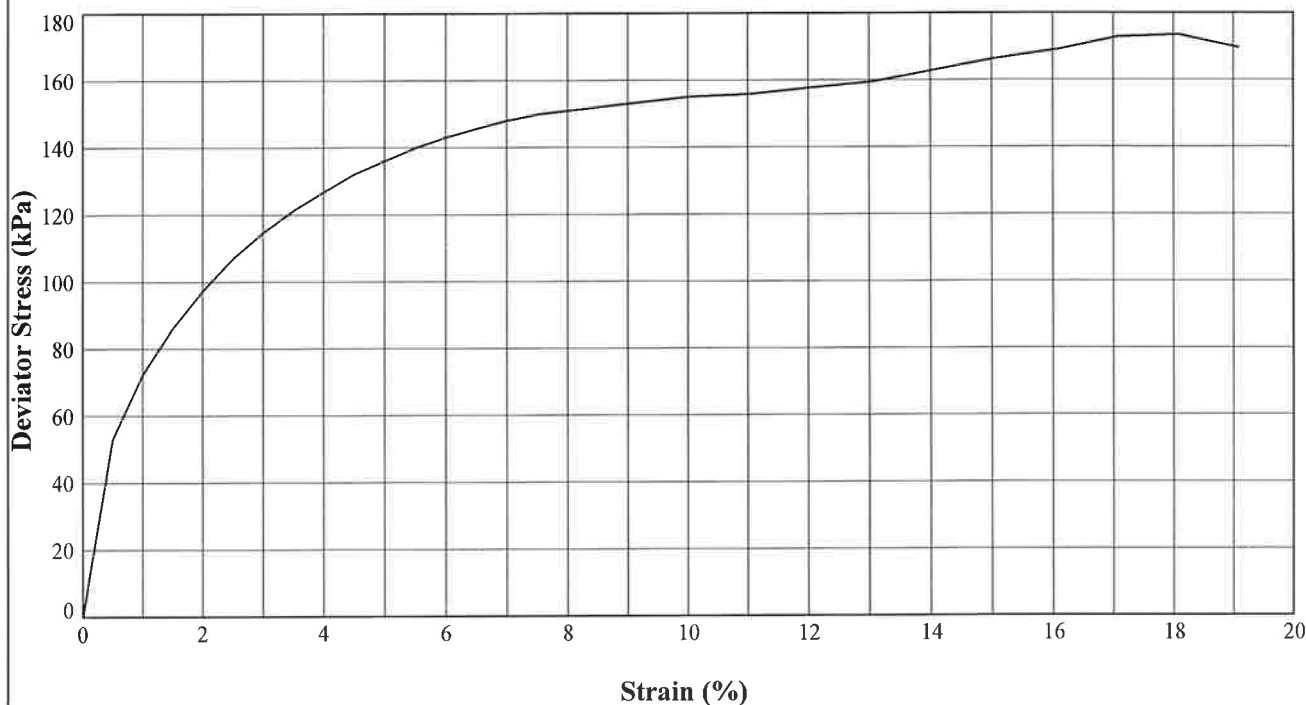
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHK** Sample Ref: Sample Type: **U** Depth (m): **5.50**

Description : **Grey mottled brown CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.40		
	Height (mm)	208.99		
	Moisture Content (%)	32		
	Bulk Density (Mg/m ³)	1.88		
	Dry Density (Mg/m ³)	1.43		
TEST DETAILS	Membrane Thickness (mm)	0.28		
	Rate of Axial Displacement (%/min)	2.01		
	Cell Pressure (kPa)	110		
	Membrane Correction (kPa)	0.97		
	Corrected Deviator Stress (kPa)	174		
	Undrained Shear Strength (kPa)	87		
	Strain at Failure (%)	18.1		
	Mode of Failure	Compound		



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18 Frogmore Road
Hemel Hempstead
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Melanie Brookman

MELANIE BROOKMAN

02/10/12

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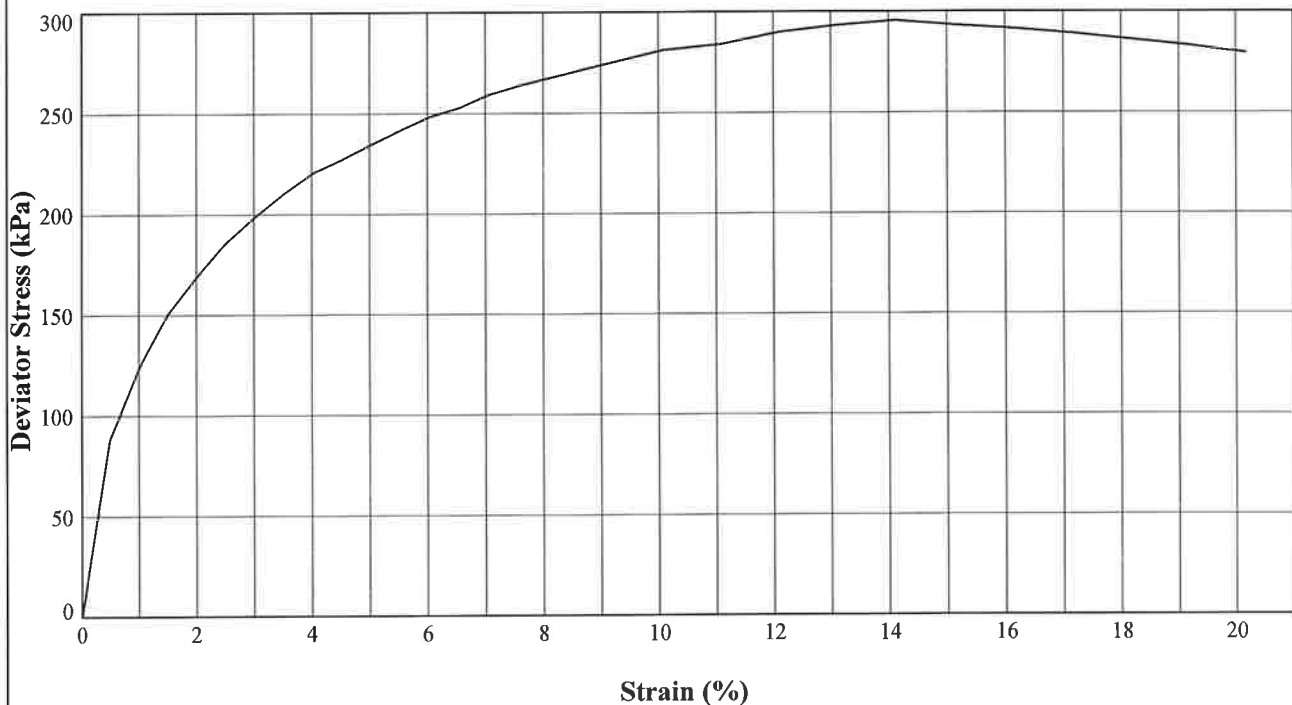
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHK** Sample Ref: Sample Type: **U** Depth (m): **8.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.09		
	Height (mm)	208.16		
	Moisture Content (%)	31		
	Bulk Density (Mg/m ³)	1.97		
	Dry Density (Mg/m ³)	1.50		
TEST DETAILS	Membrane Thickness (mm)	0.27		
	Rate of Axial Displacement (%/min)	2.02		
	Cell Pressure (kPa)	170		
	Membrane Correction (kPa)	0.77		
	Corrected Deviator Stress (kPa)	296		
	Undrained Shear Strength (kPa)	148		
	Strain at Failure (%)	14.1		
	Mode of Failure	Brittle		



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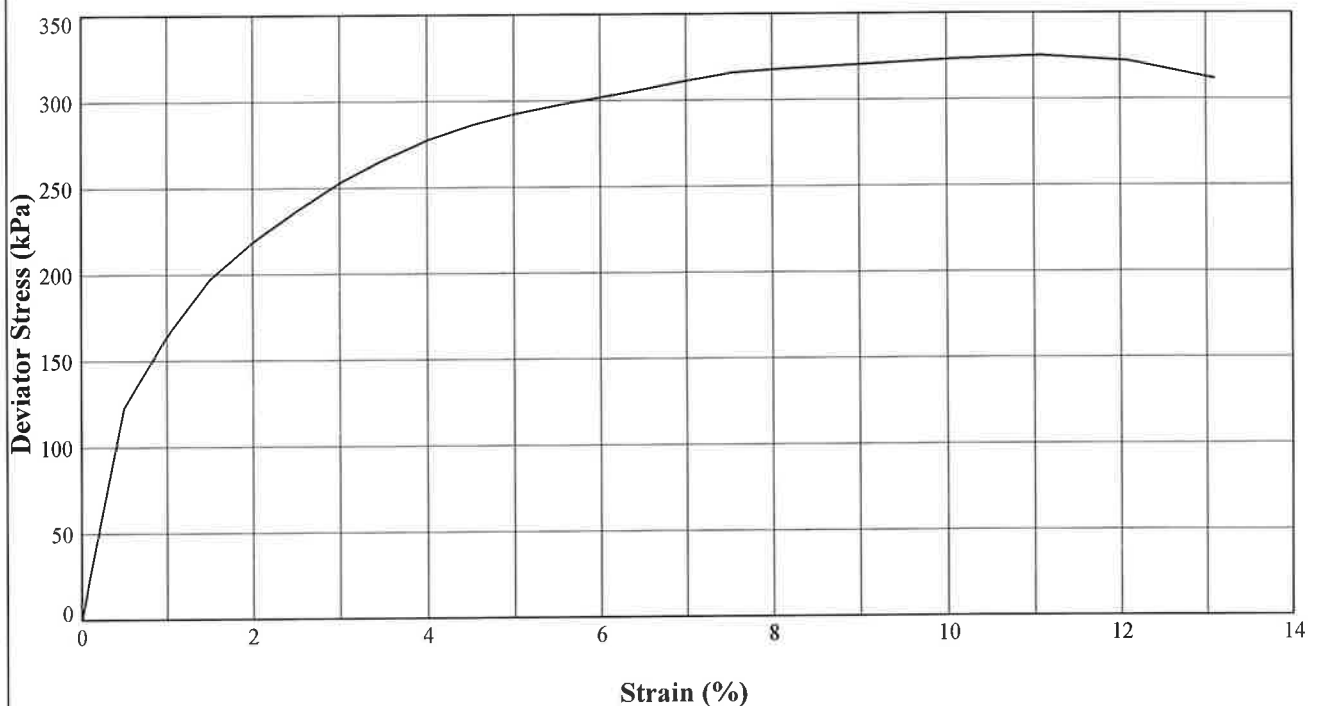
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHK** Sample Ref: Sample Type: **U** Depth (m): **11.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.80		
	Height (mm)	208.37		
	Moisture Content (%)	29		
	Bulk Density (Mg/m ³)	1.99		
	Dry Density (Mg/m ³)	1.54		
TEST DETAILS	Membrane Thickness (mm)	0.28		
	Rate of Axial Displacement (%/min)	2.02		
	Cell Pressure (kPa)	230		
	Membrane Correction (kPa)	0.67		
	Corrected Deviator Stress (kPa)	325		
	Undrained Shear Strength (kPa)	163		
	Strain at Failure (%)	11.1		
	Mode of Failure	Brittle		



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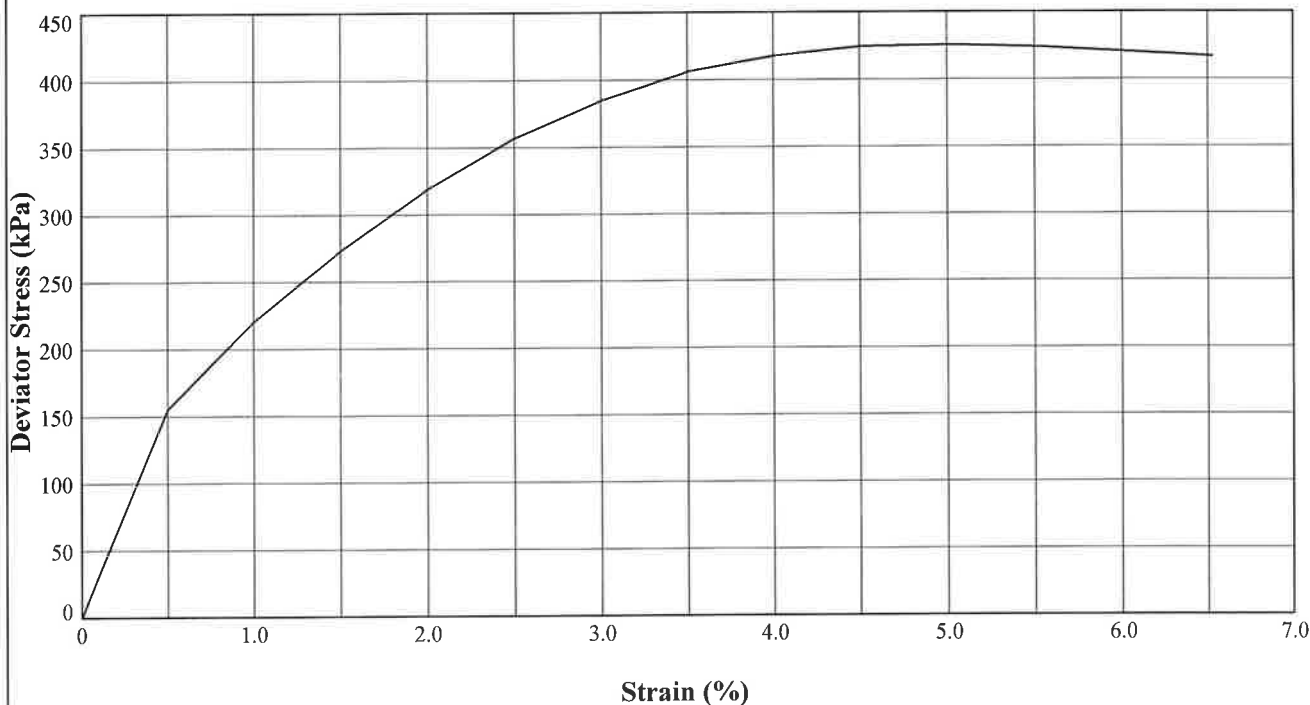
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole : **BHK** Sample Ref: Sample Type: **U** Depth (m): **14.50**

Description : **Grey CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.67		
	Height (mm)	209.04		
	Moisture Content (%)	28		
	Bulk Density (Mg/m ³)	1.98		
	Dry Density (Mg/m ³)	1.54		
TEST DETAILS	Membrane Thickness (mm)	0.27		
	Rate of Axial Displacement (%/min)	2.01		
	Cell Pressure (kPa)	290		
	Membrane Correction (kPa)	0.36		
	Corrected Deviator Stress (kPa)	426		
	Undrained Shear Strength (kPa)	213		
	Strain at Failure (%)	5.0		
	Mode of Failure	Brittle		



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SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Aqueous Extract Sulphate (mg/l SO ₄)	pH	Description
BH1		U	4.60	339	8.42	Grey mottled brown CLAY
BH1		U	13.50	357	8.33	Grey CLAY
BH2		U	3.00	48	8.64	Brownish grey CLAY
BH2		U	8.00	322	8.60	Grey CLAY
BH2		U	11.00	595	8.27	Grey CLAY
BH3		U	5.50	154	8.54	Grey SILT/CLAY
BHG		U	6.50	434	8.17	Grey CLAY
BHG		U	9.50	264	8.39	Grey CLAY

NOTES:- All chemical tests were undertaken by Envirolab.

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NOTES:- All chemical tests were undertaken by Envirolab.

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APPENDIX O

IN-SITU CBR TEST REPORT

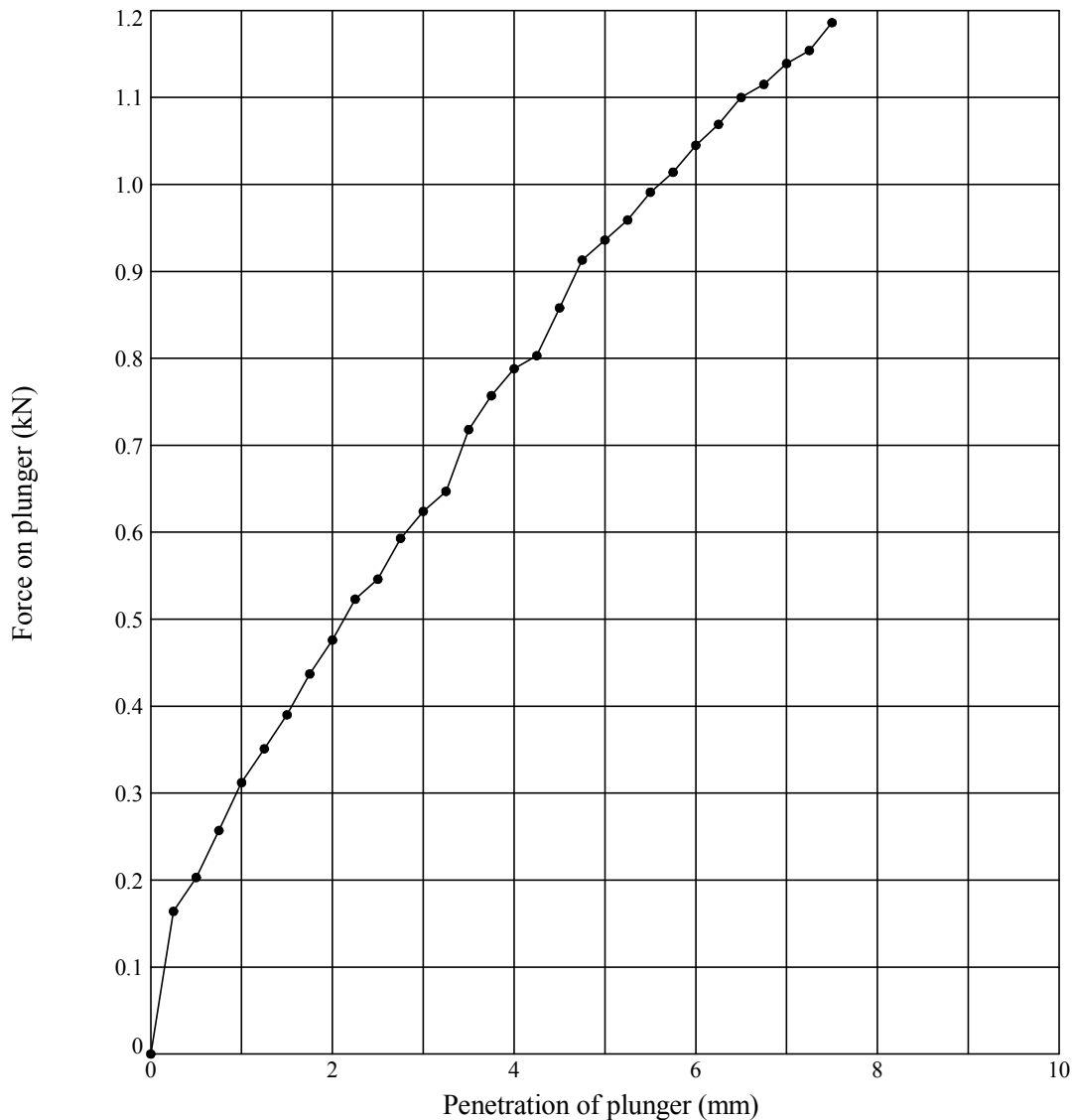
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR1**

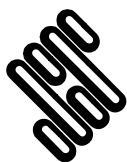
Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 20	CBR Value (%) : 4.7
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

Approved Signatories: D. TROWBRIDGE A. FROST M. STOKES S. HANDCOCK



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
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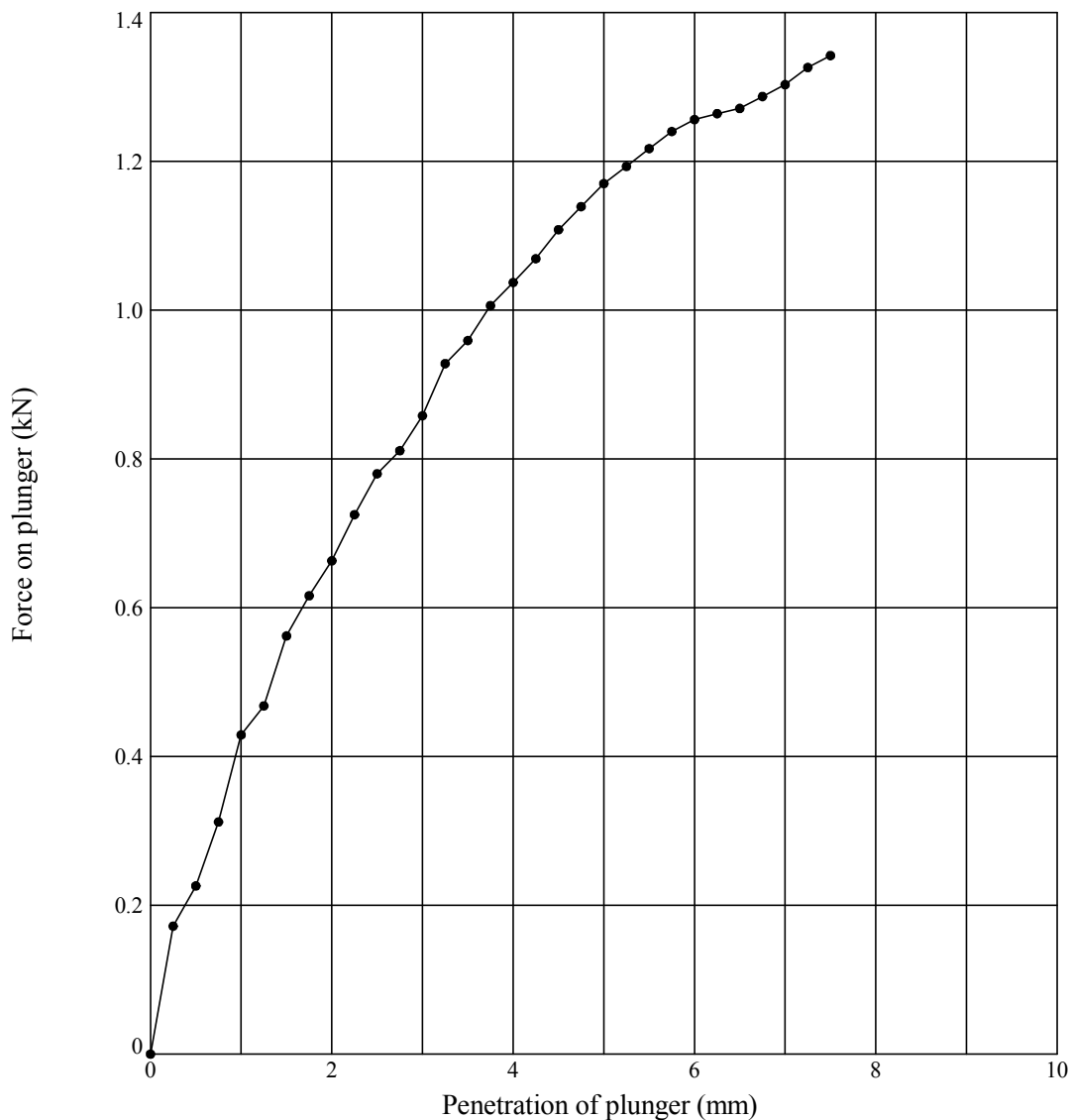
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR2**

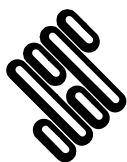
Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 18	CBR Value (%) : 5.9
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly CLAY				

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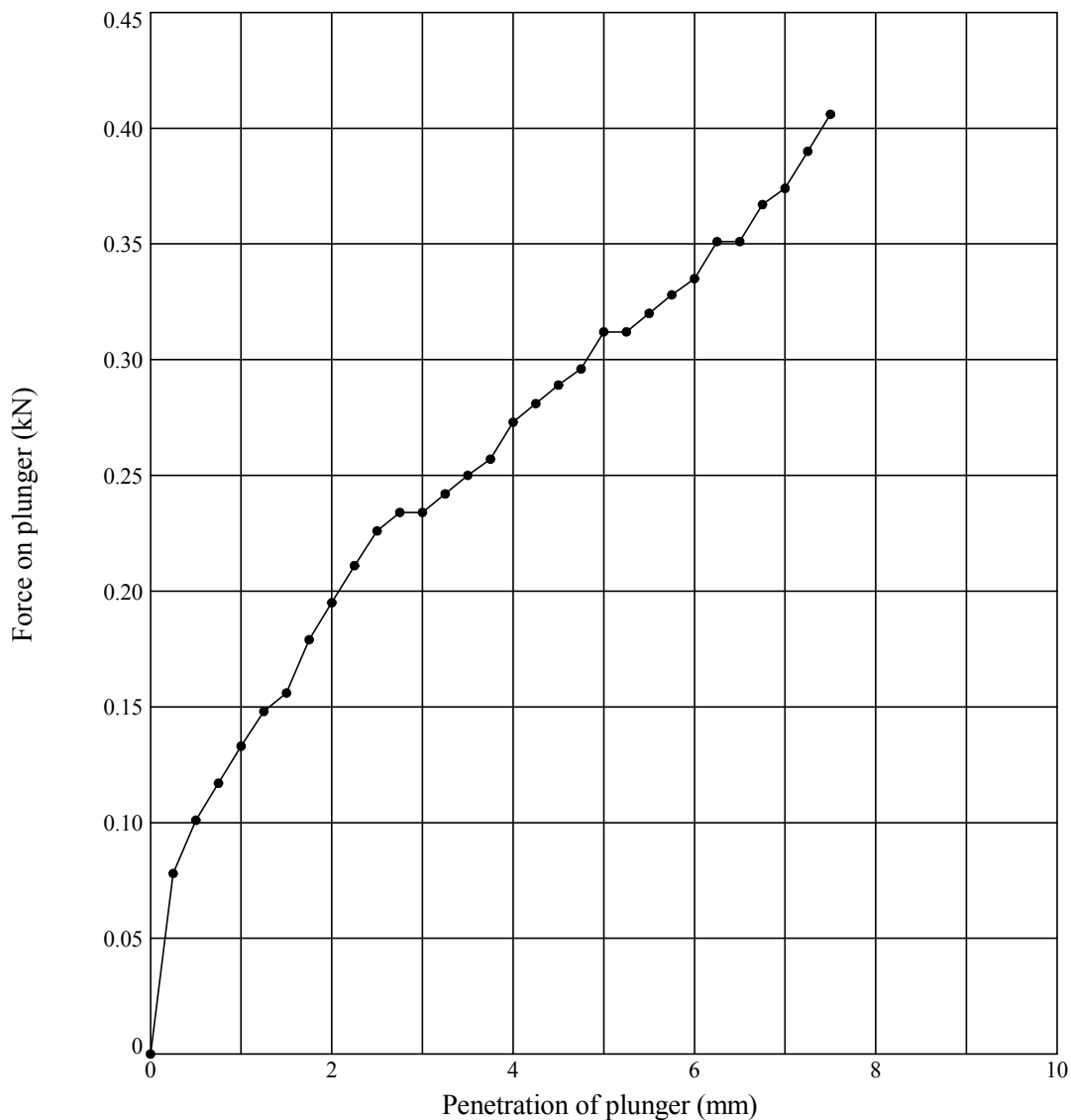
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR3**

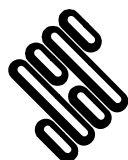
Depth (m) : **0.20**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 20	CBR Value (%) : 1.7
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly CLAY				

Approved Signatories: D. TROWBRIDGE A. FROST M. STOKES S. HANDCOCK



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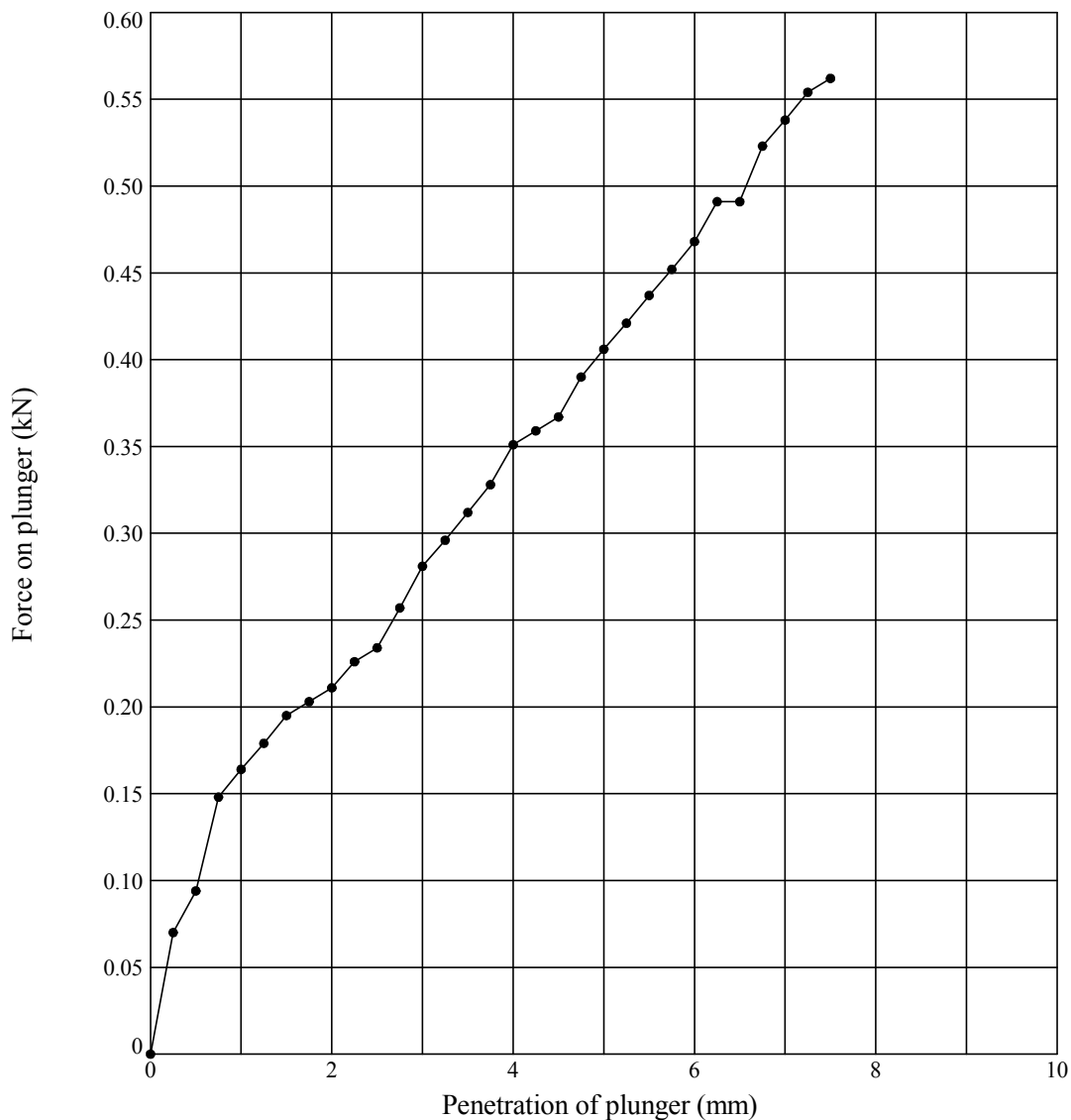
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR4**

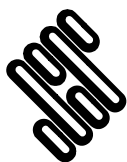
Depth (m) : **0.20**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 38	CBR Value (%) : 2.0
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly CLAY				

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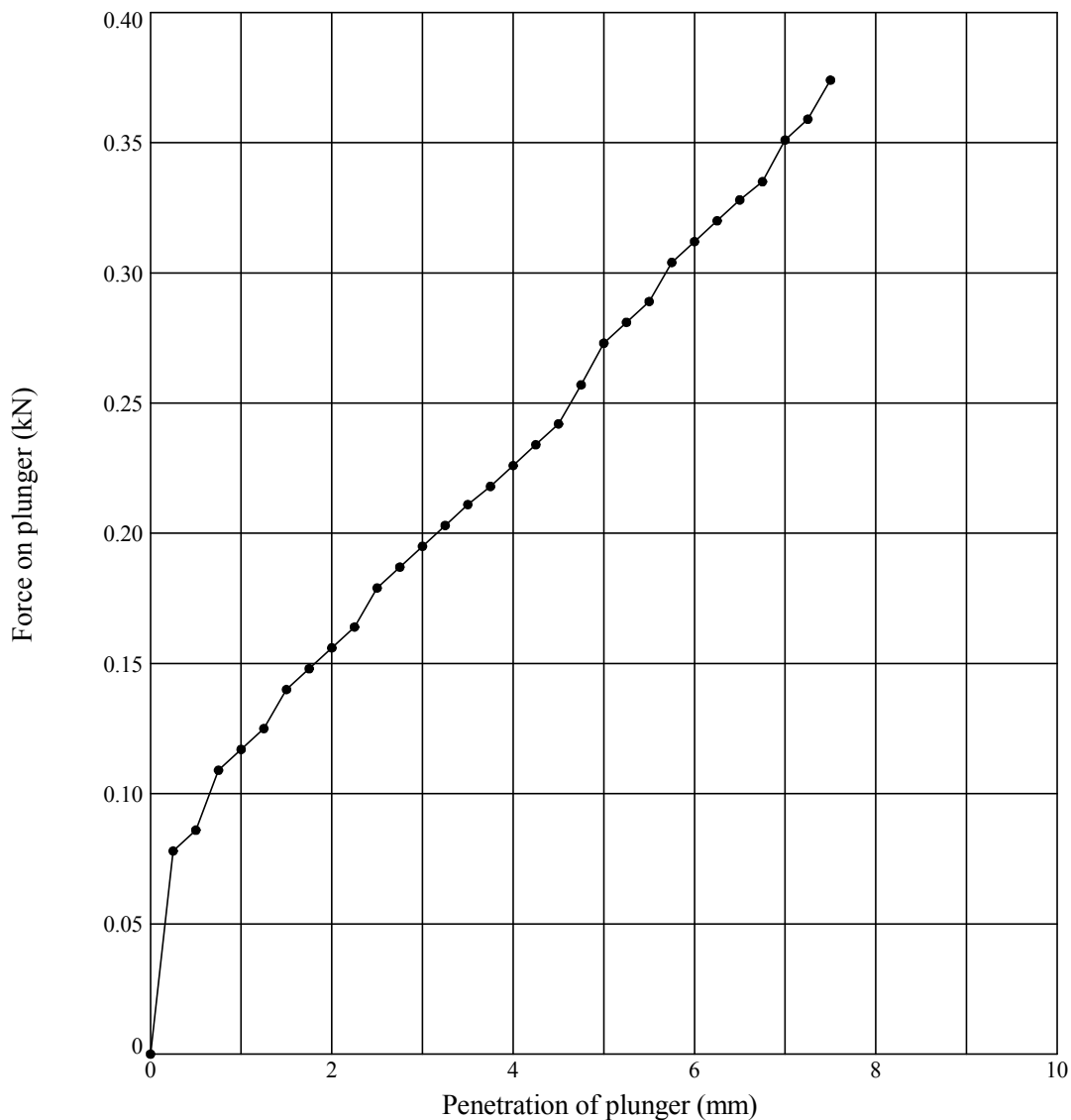
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR5**

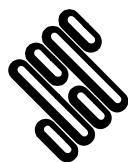
Depth (m) : **0.20**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 19	CBR Value (%) : 1.4
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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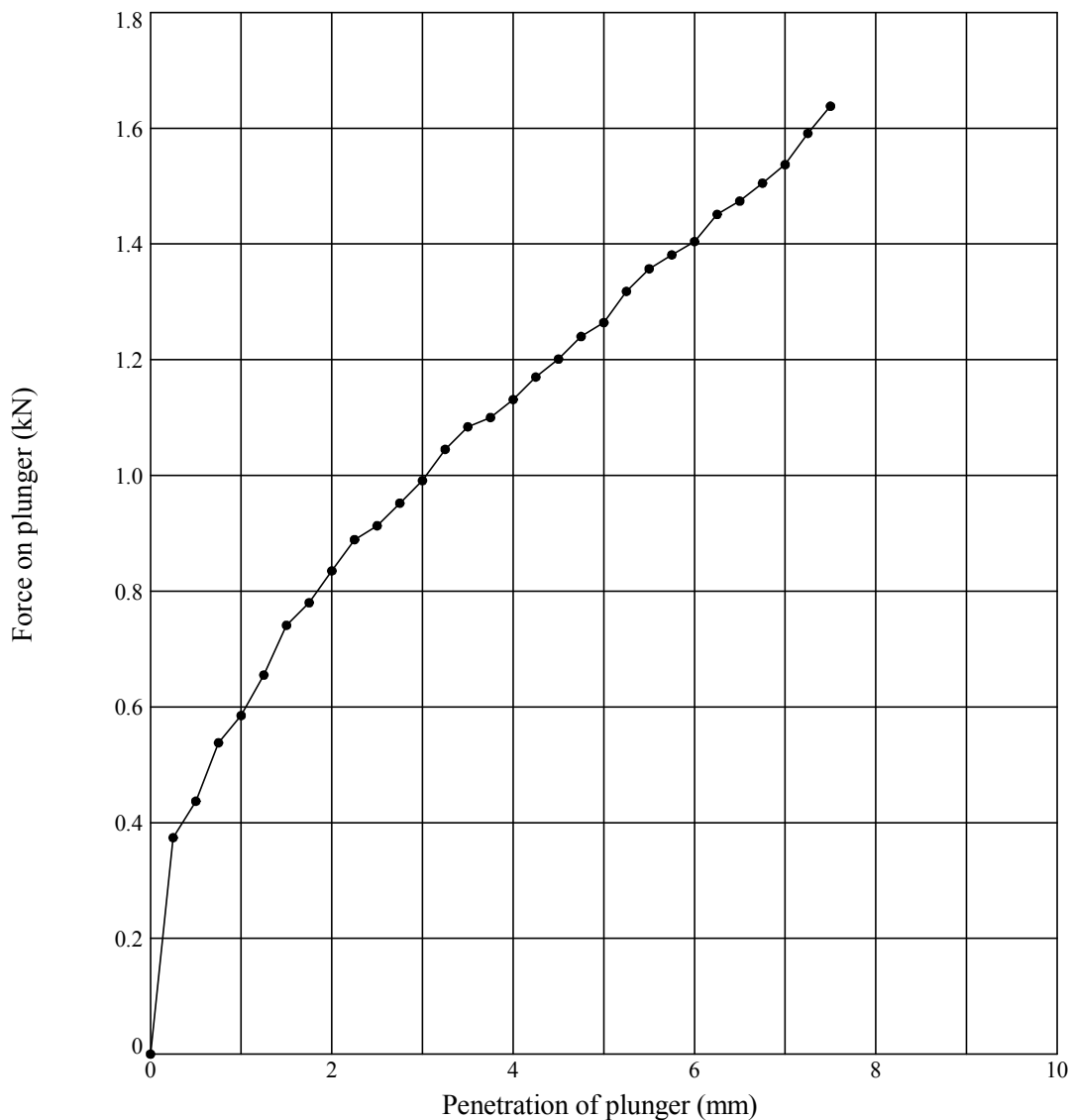
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR6**

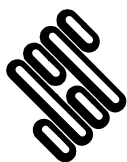
Depth (m) : **0.20**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 20	CBR Value (%) : 6.9
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

Approved Signatories: D. TROWBRIDGE A. FROST M. STOKES S. HANDCOCK



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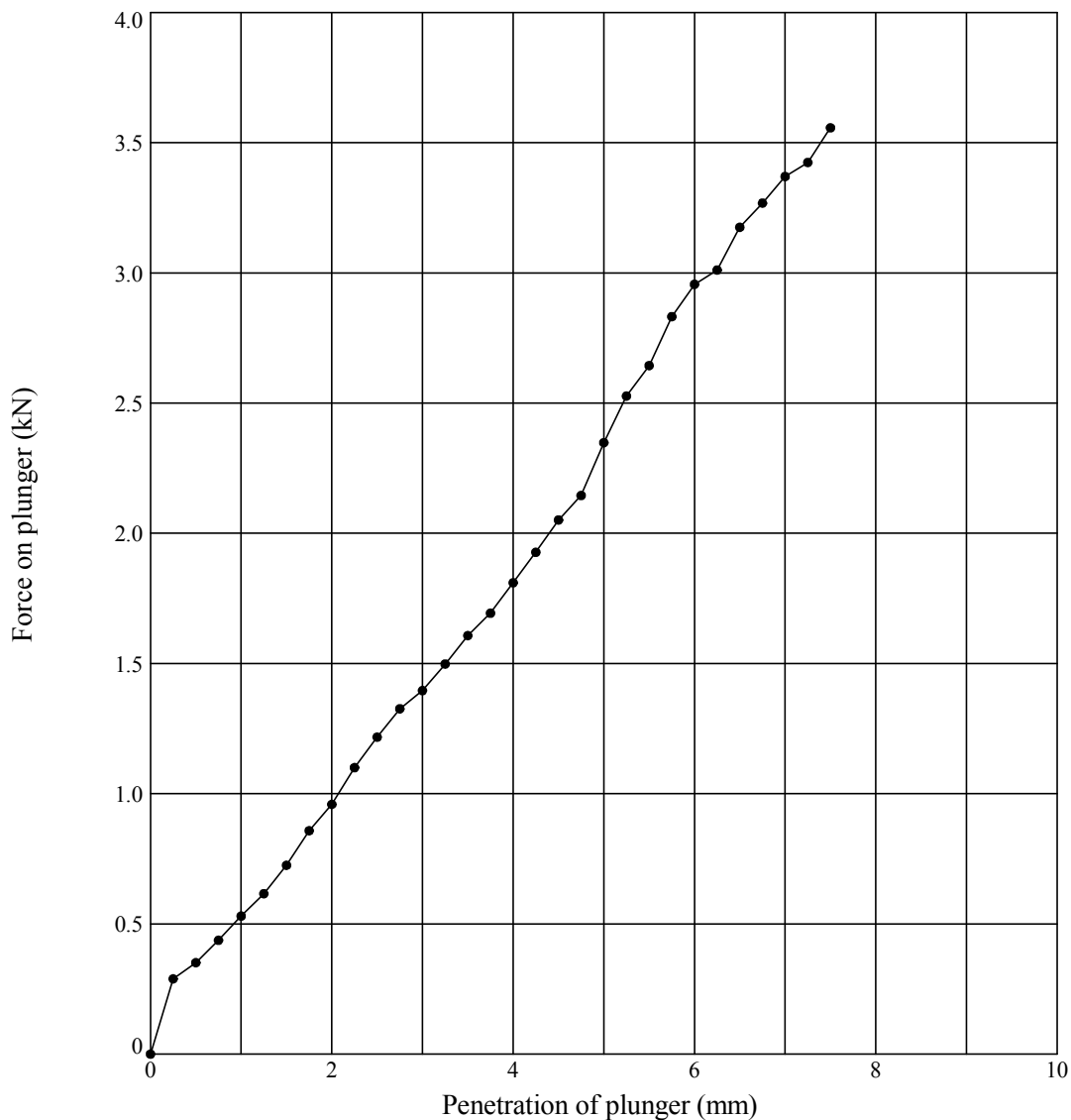
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR7**

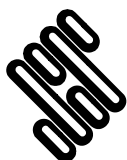
Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 9.7	CBR Value (%) : 12
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 5	
Sample Description			Remarks	
Brown slightly gravelly sandy CLAY				

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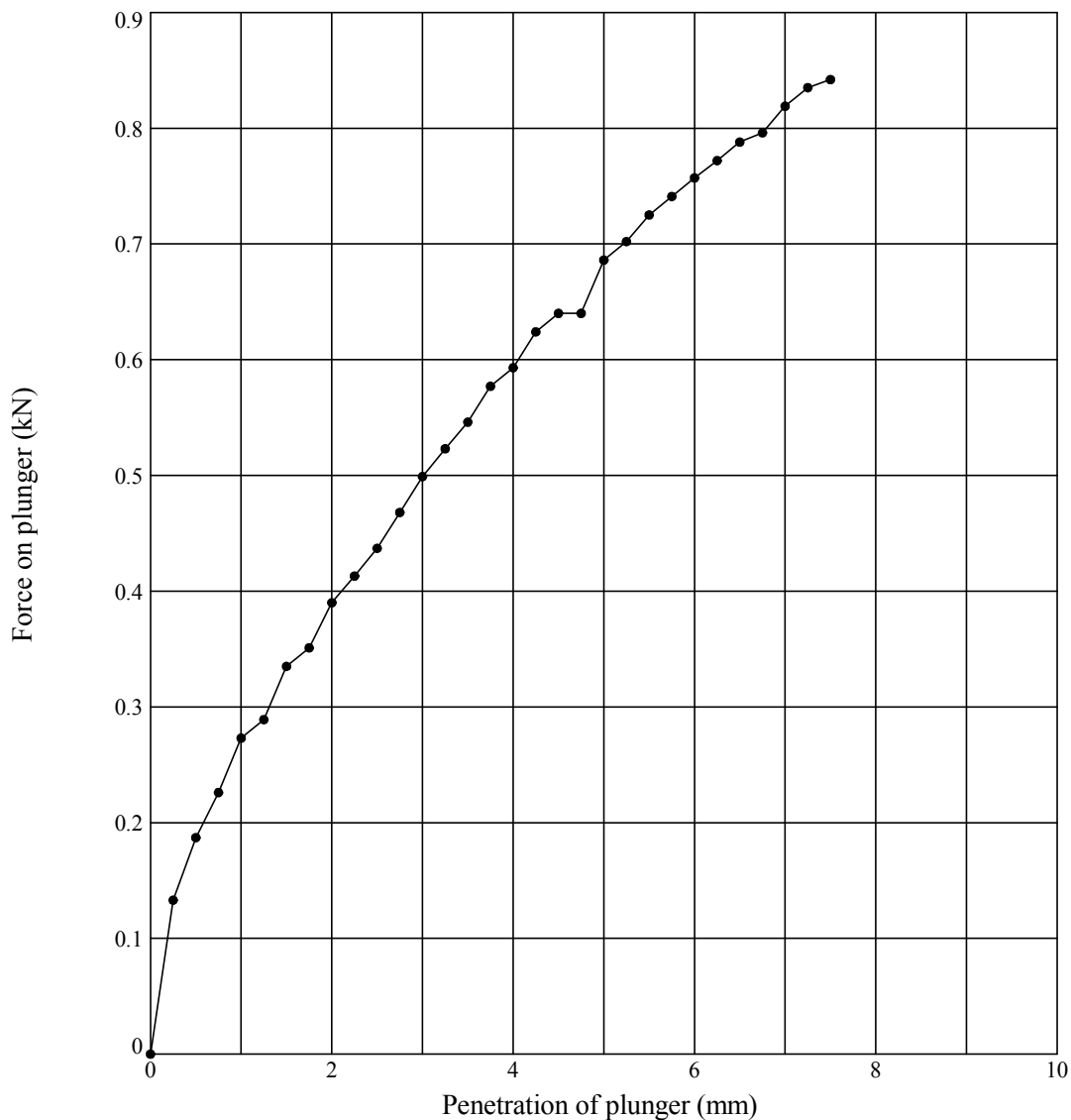
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR8**

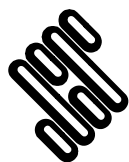
Depth (m) : **0.40**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 8.9	CBR Value (%) : 3.4
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 5	
Sample Description			Remarks	
Brown slightly gravelly sandy CLAY				

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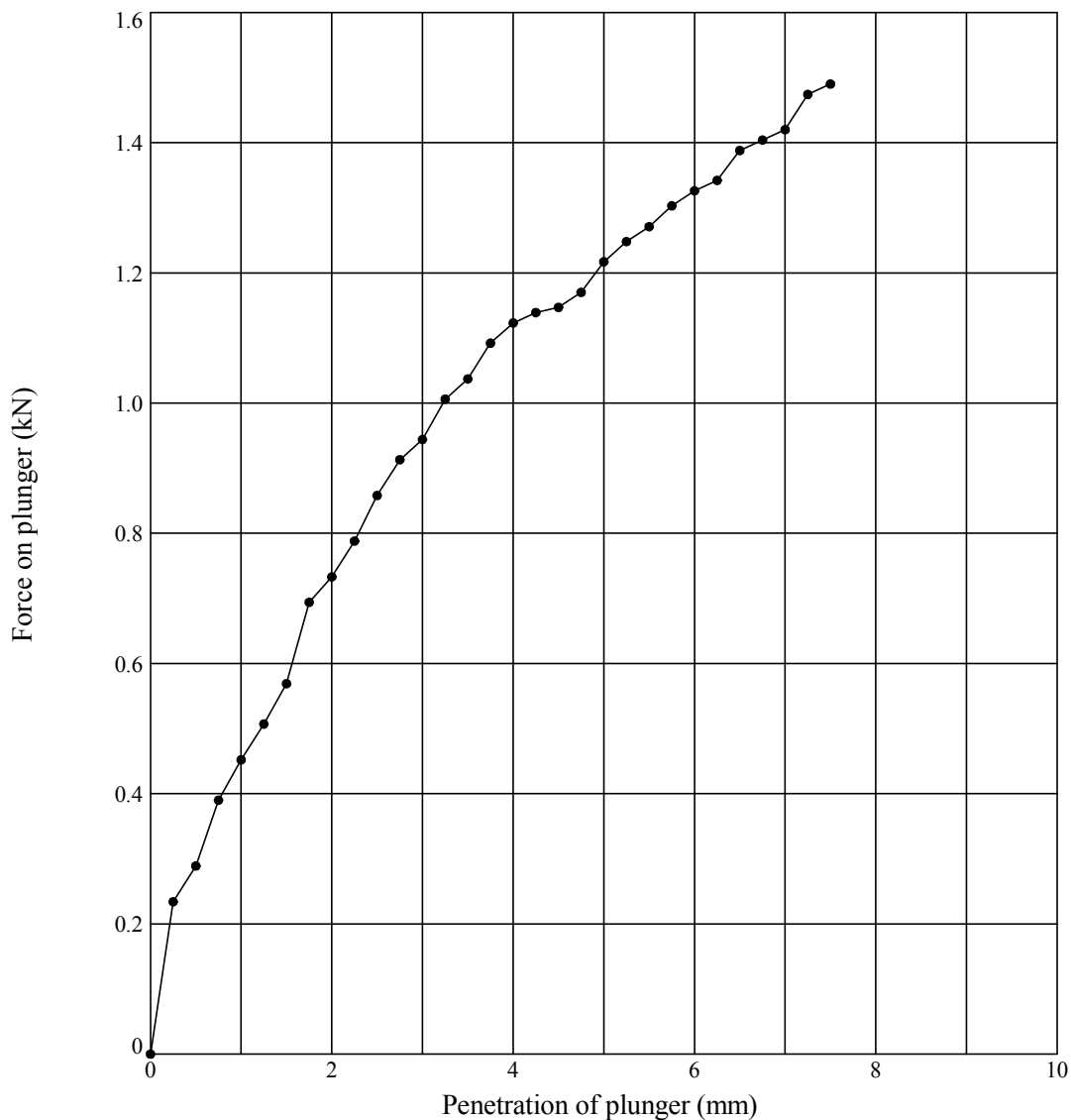
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR9**

Depth (m) : **0.40**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 13	CBR Value (%) : 6.5
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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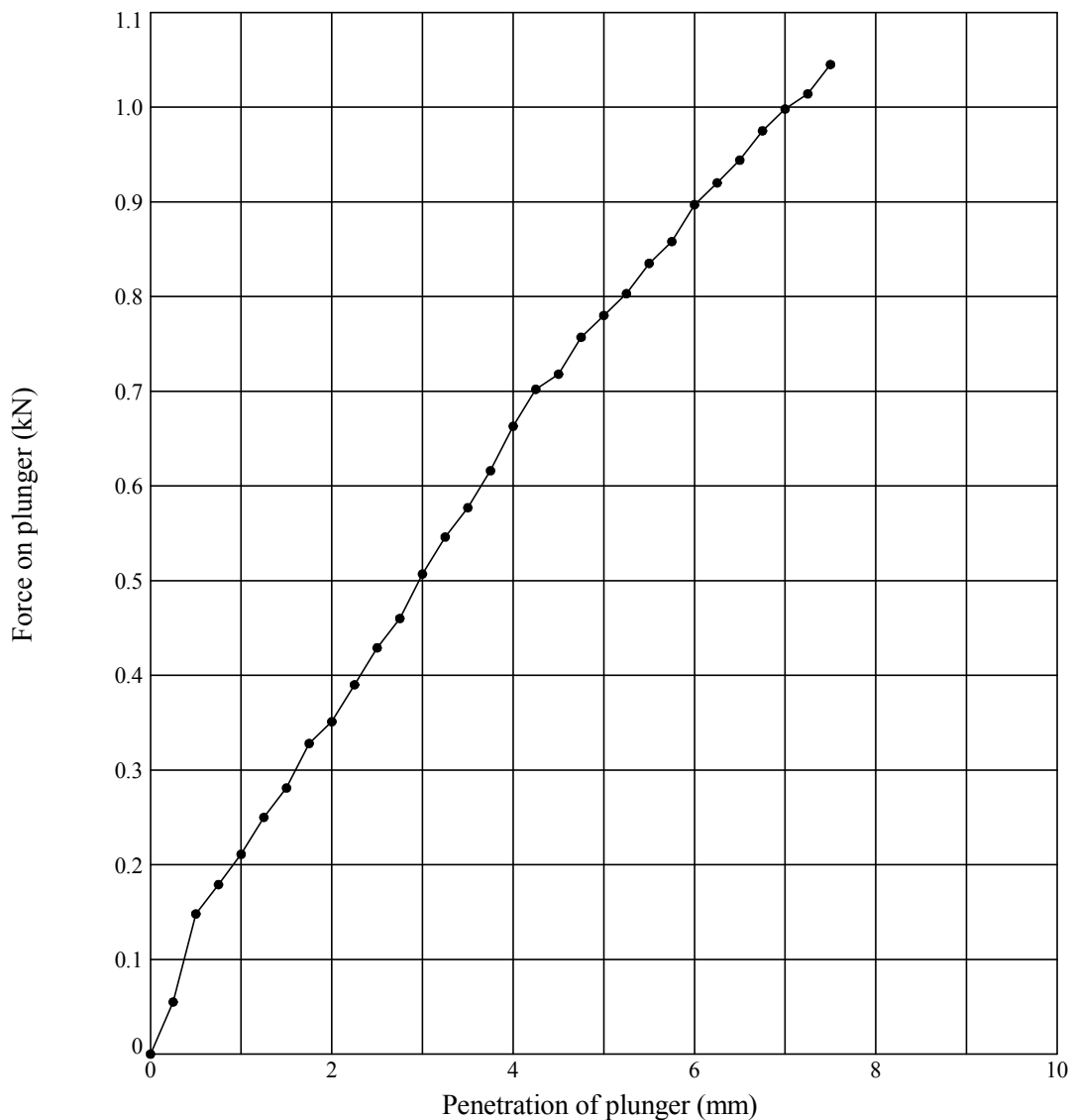
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR10**

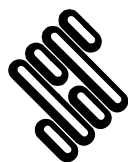
Depth (m) : **0.40**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 11	CBR Value (%) : 3.9
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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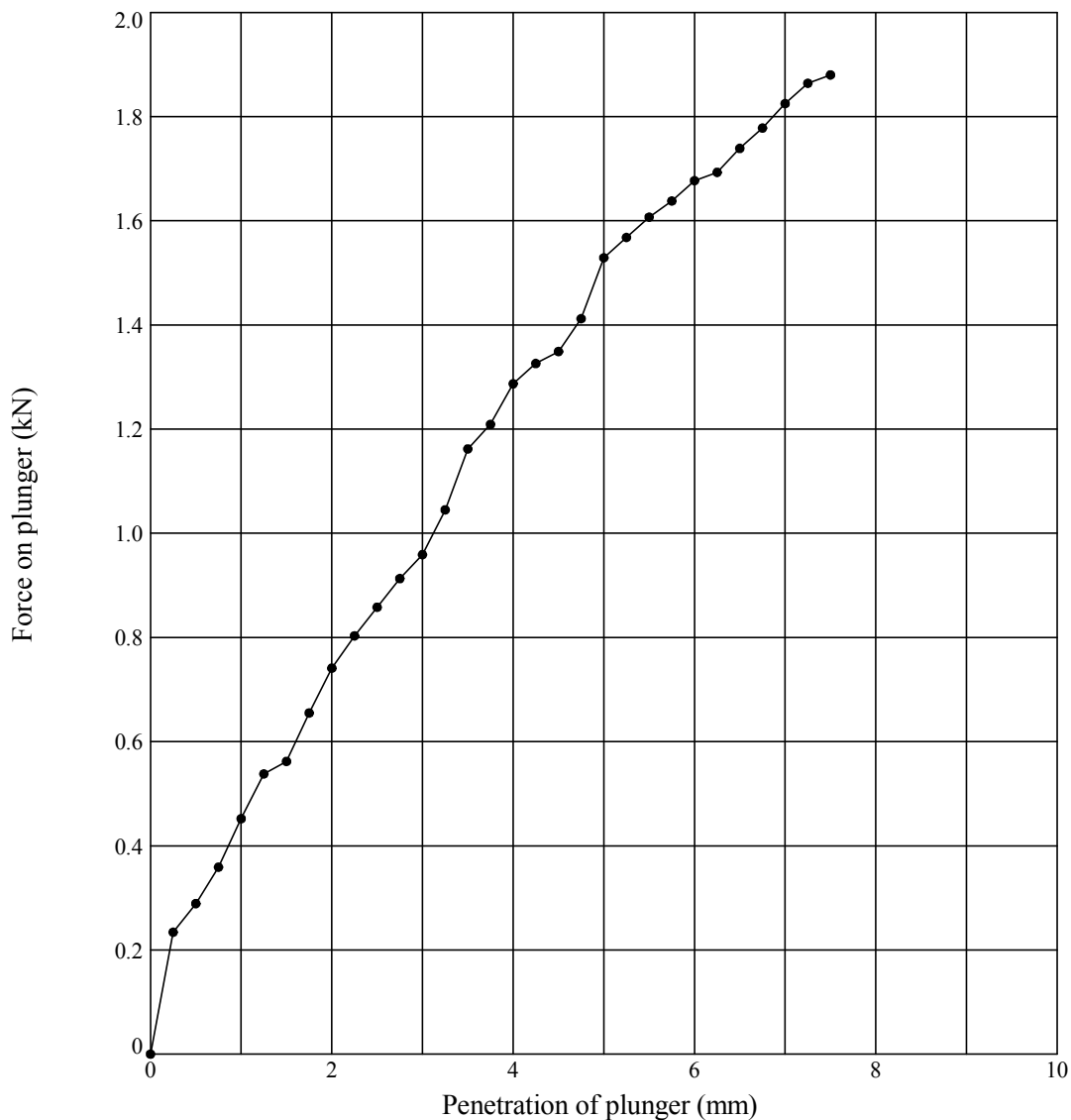
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR11**

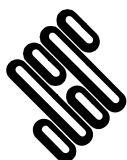
Depth (m) : **0.30**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 13	CBR Value (%) : 7.7
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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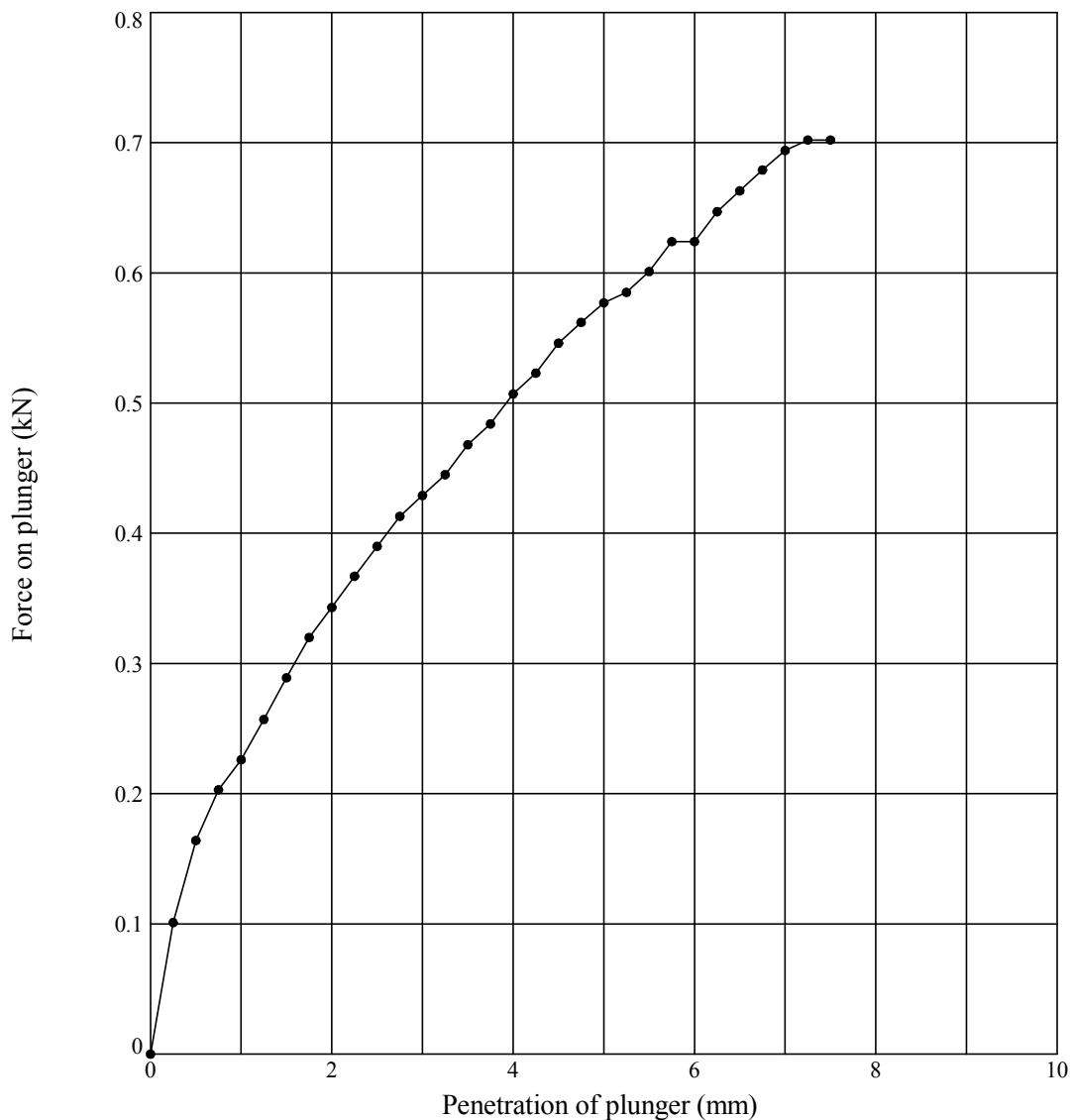
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR12**

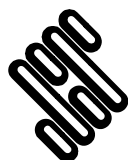
Depth (m) : **0.20**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 2.9
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly CLAY				

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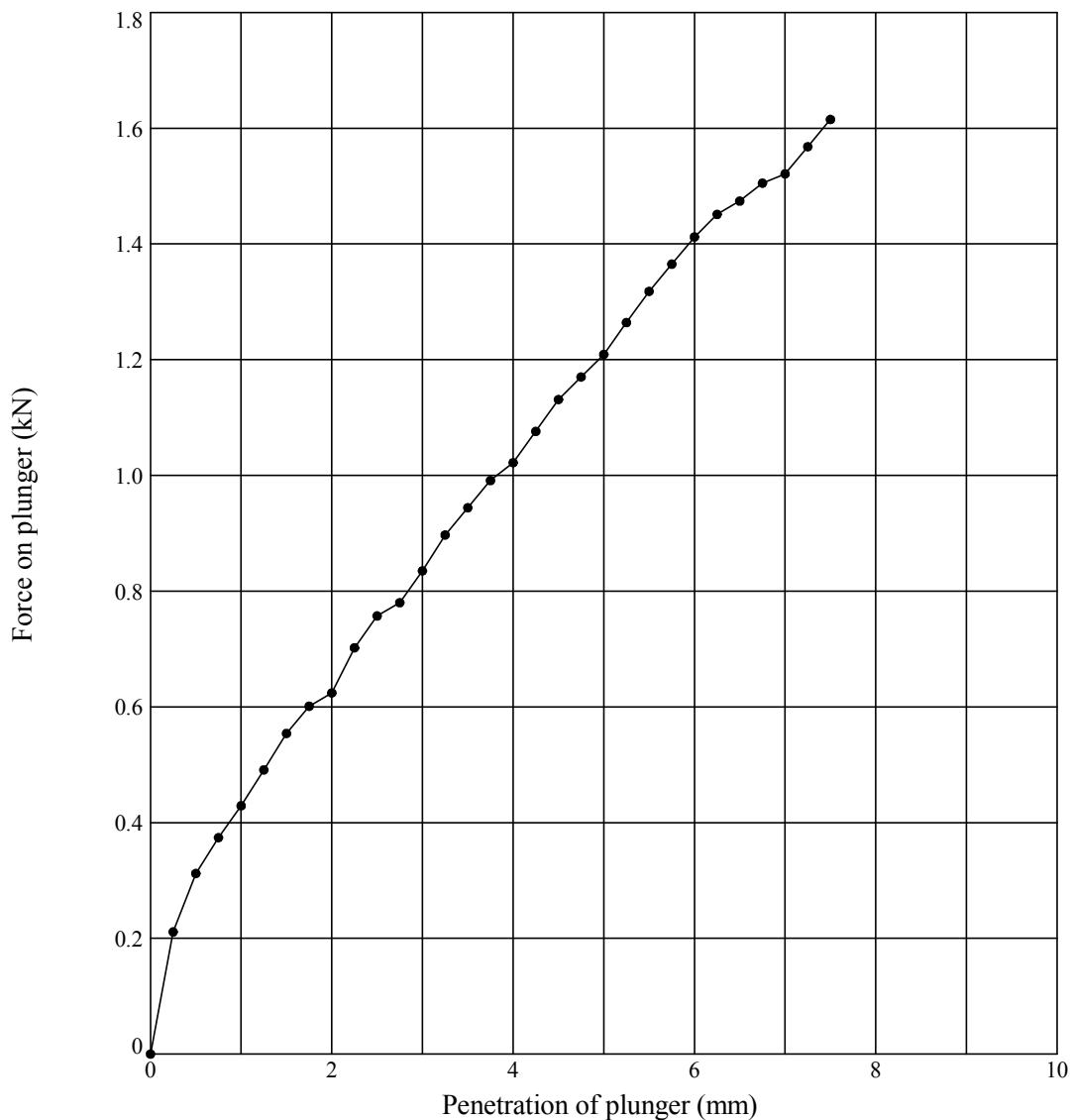
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR13**

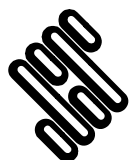
Depth (m) : **0.20**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 19	CBR Value (%) : 6.1
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly sandy CLAY				

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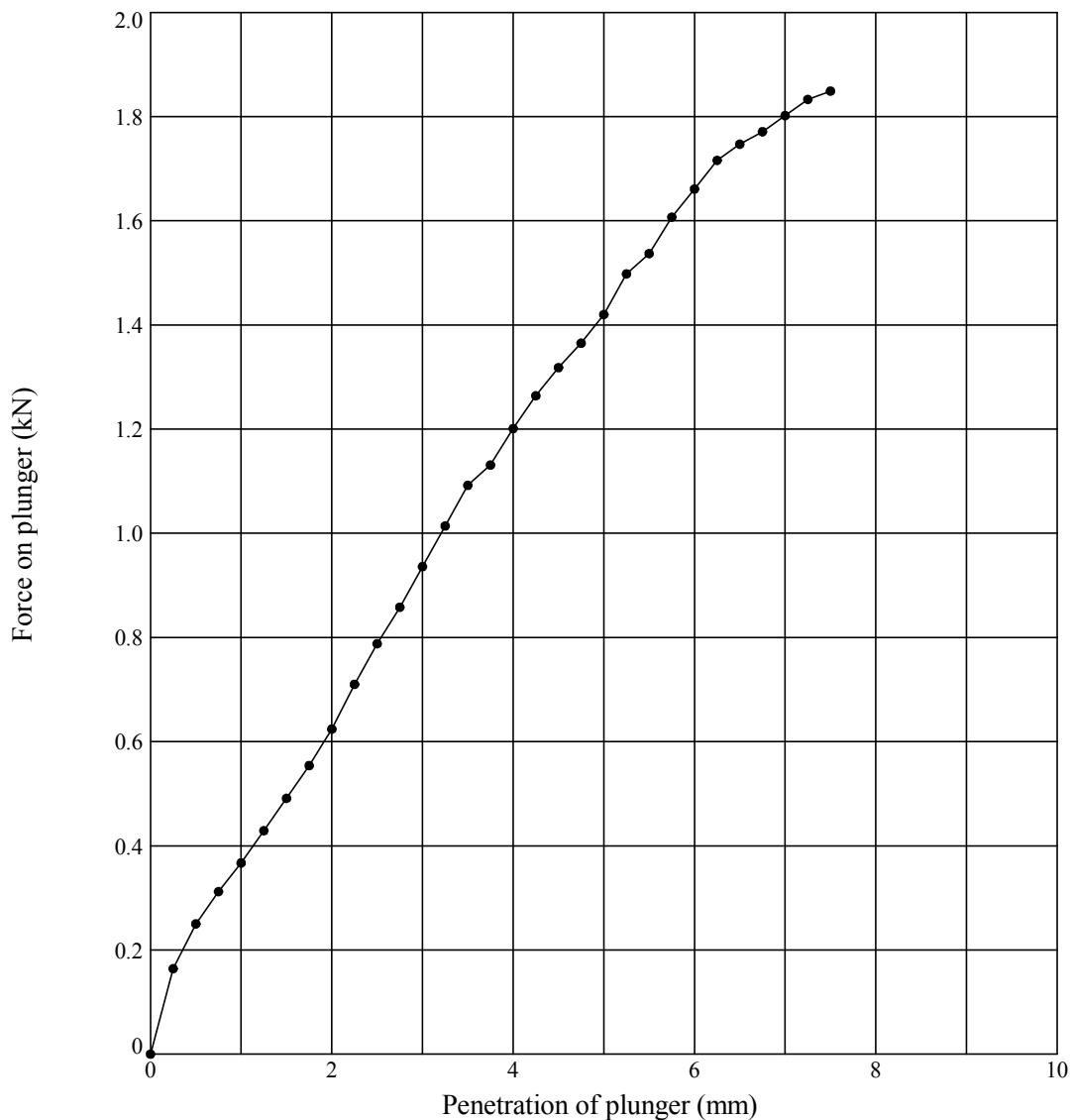
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR14**

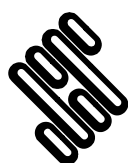
Depth (m) : **0.20**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 7.1
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly CLAY				

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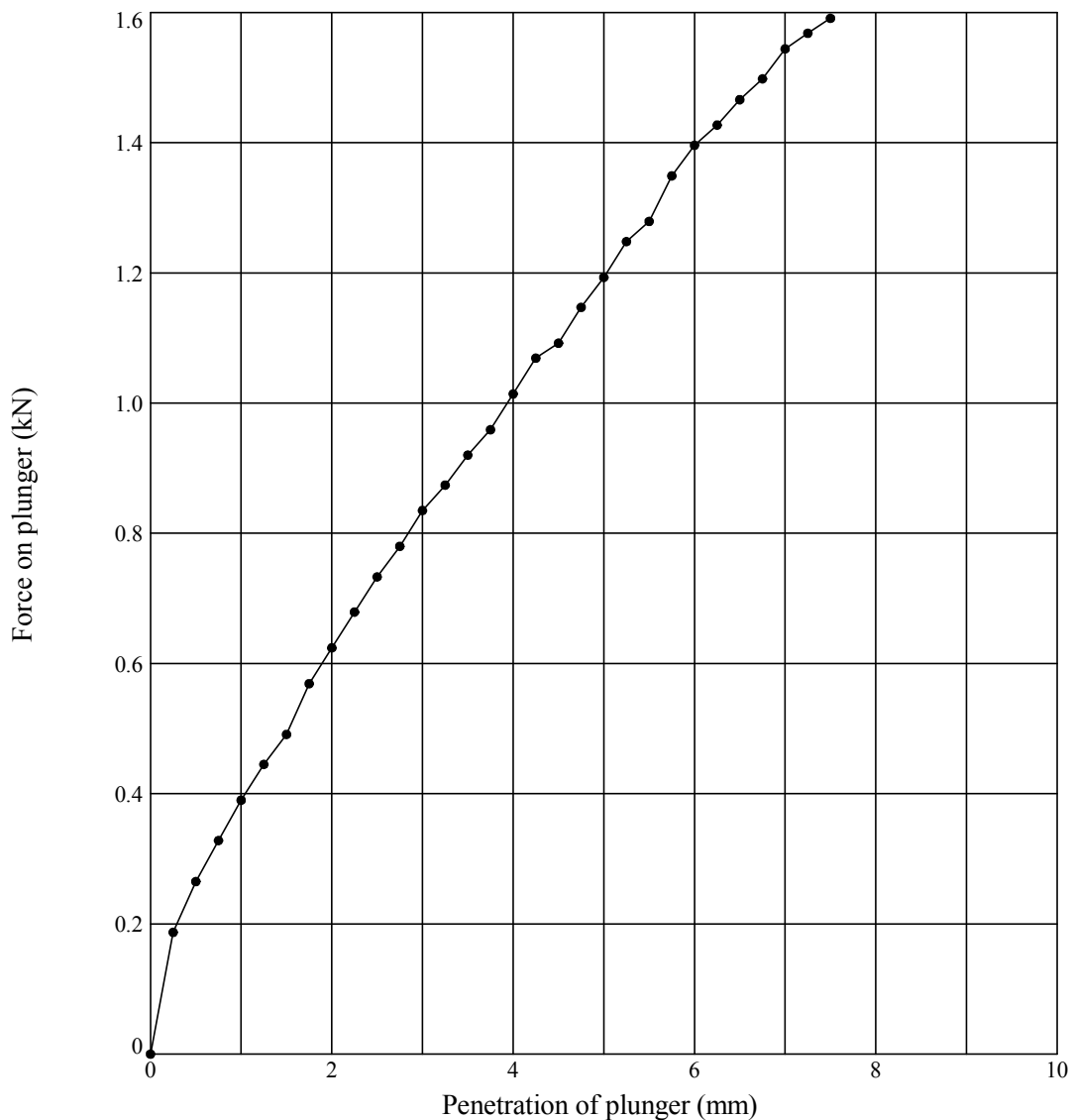
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR15**

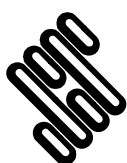
Depth (m) : **0.30**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 15	CBR Value (%) : 6.0
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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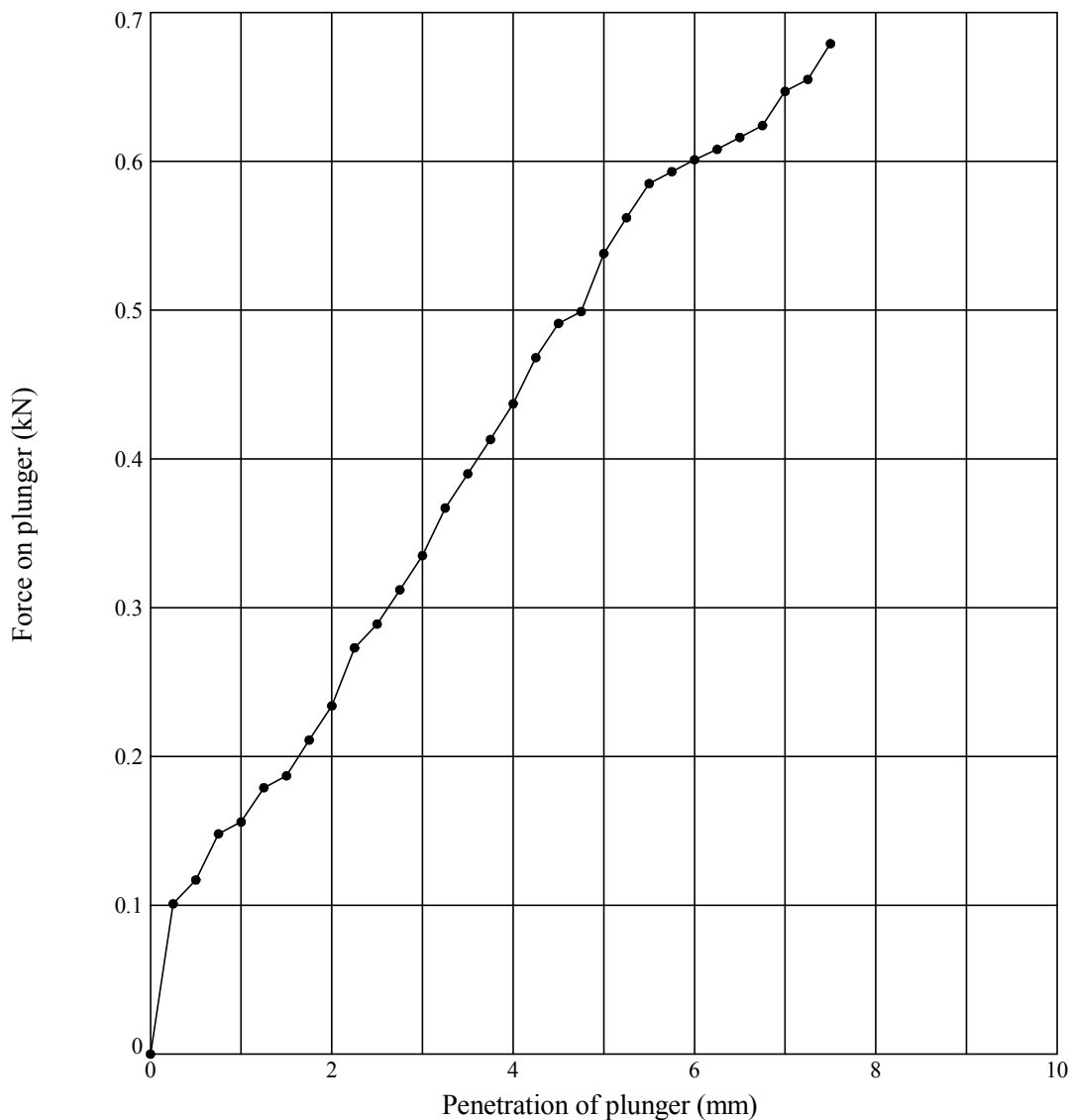
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR16**

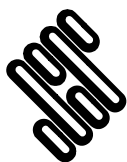
Depth (m) : **0.40**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 2.7
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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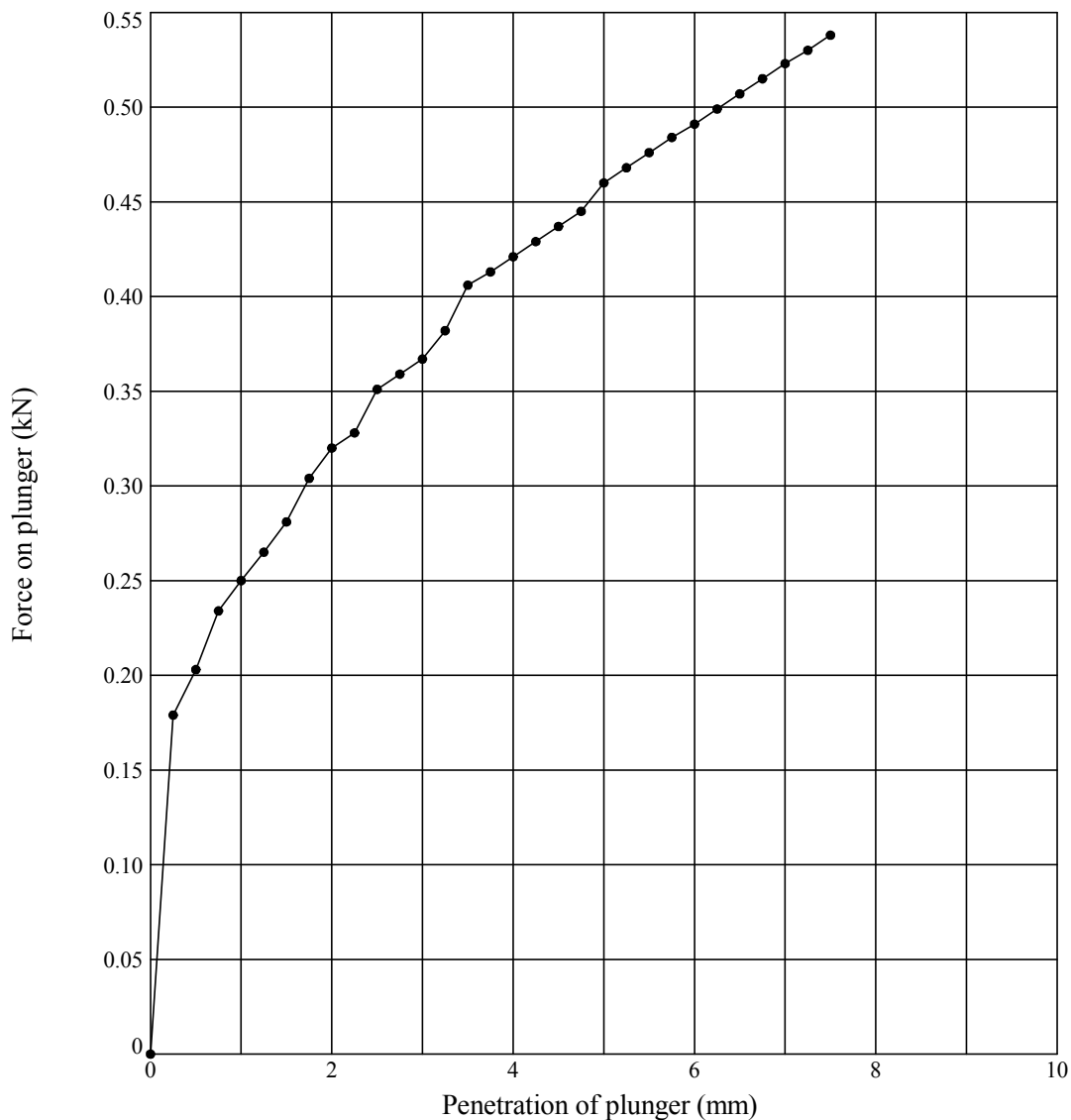
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR17**

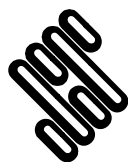
Depth (m) : **0.40**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 13	CBR Value (%) : 2.7
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

Approved Signatories: D. TROWBRIDGE A. FROST M. STOKES S. HANDCOCK



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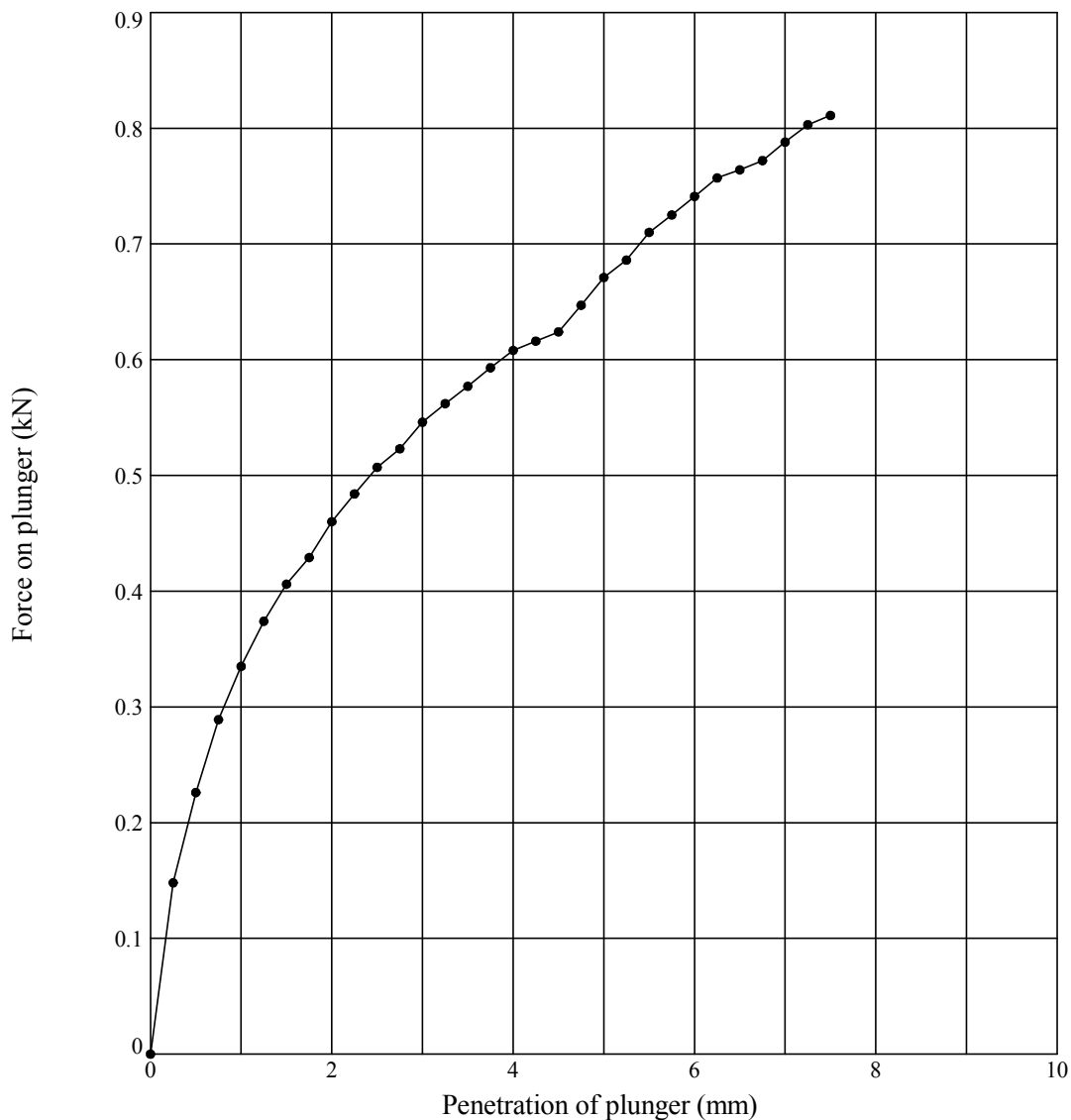
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR18**

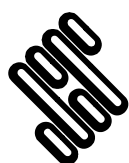
Depth (m) : **0.30**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 3.8
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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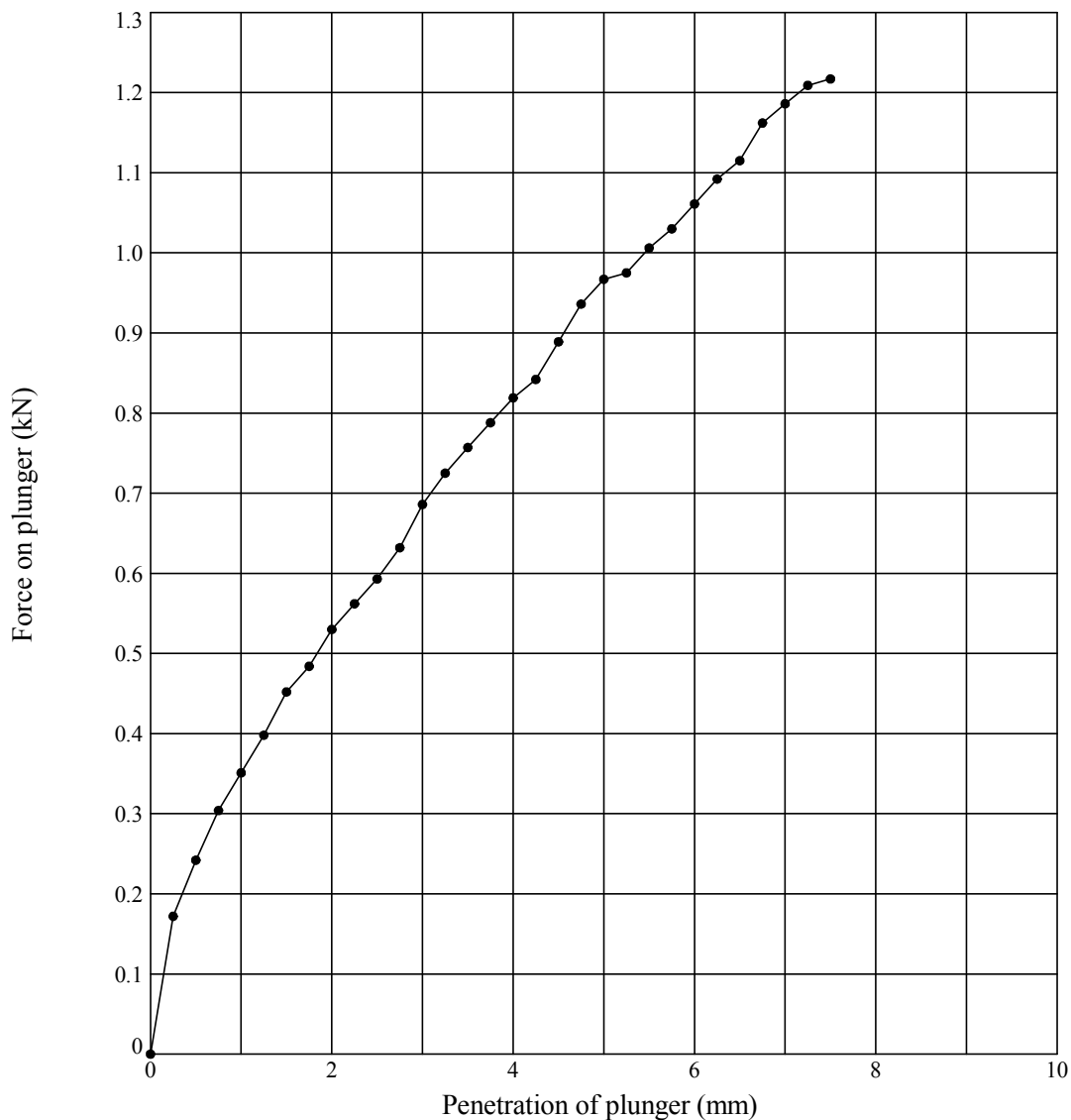
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR19**

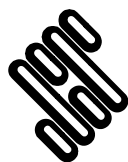
Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 4.8
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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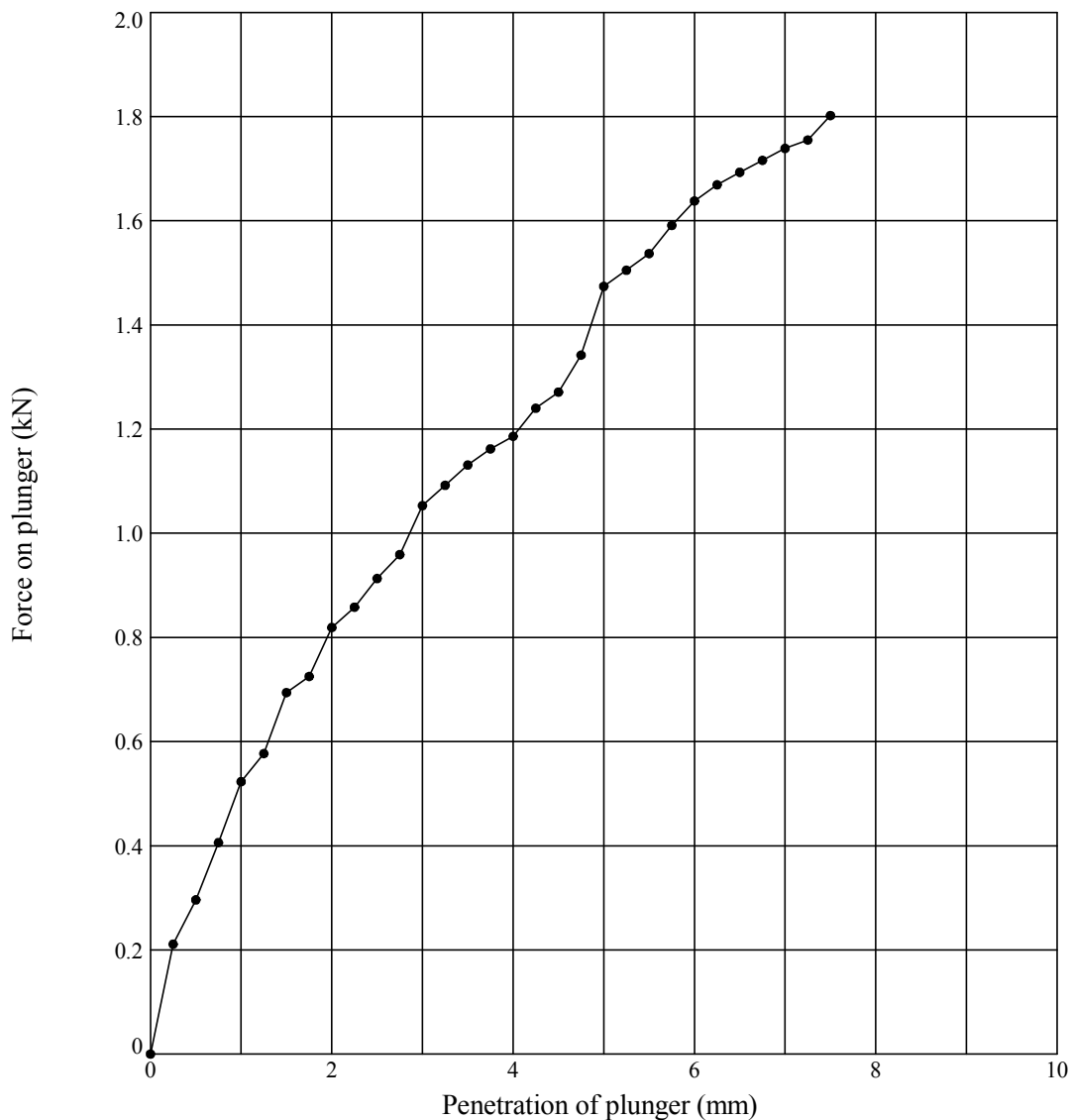
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR20**

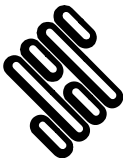
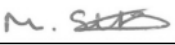
Depth (m) : **0.40**

Date : **06/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 7.4
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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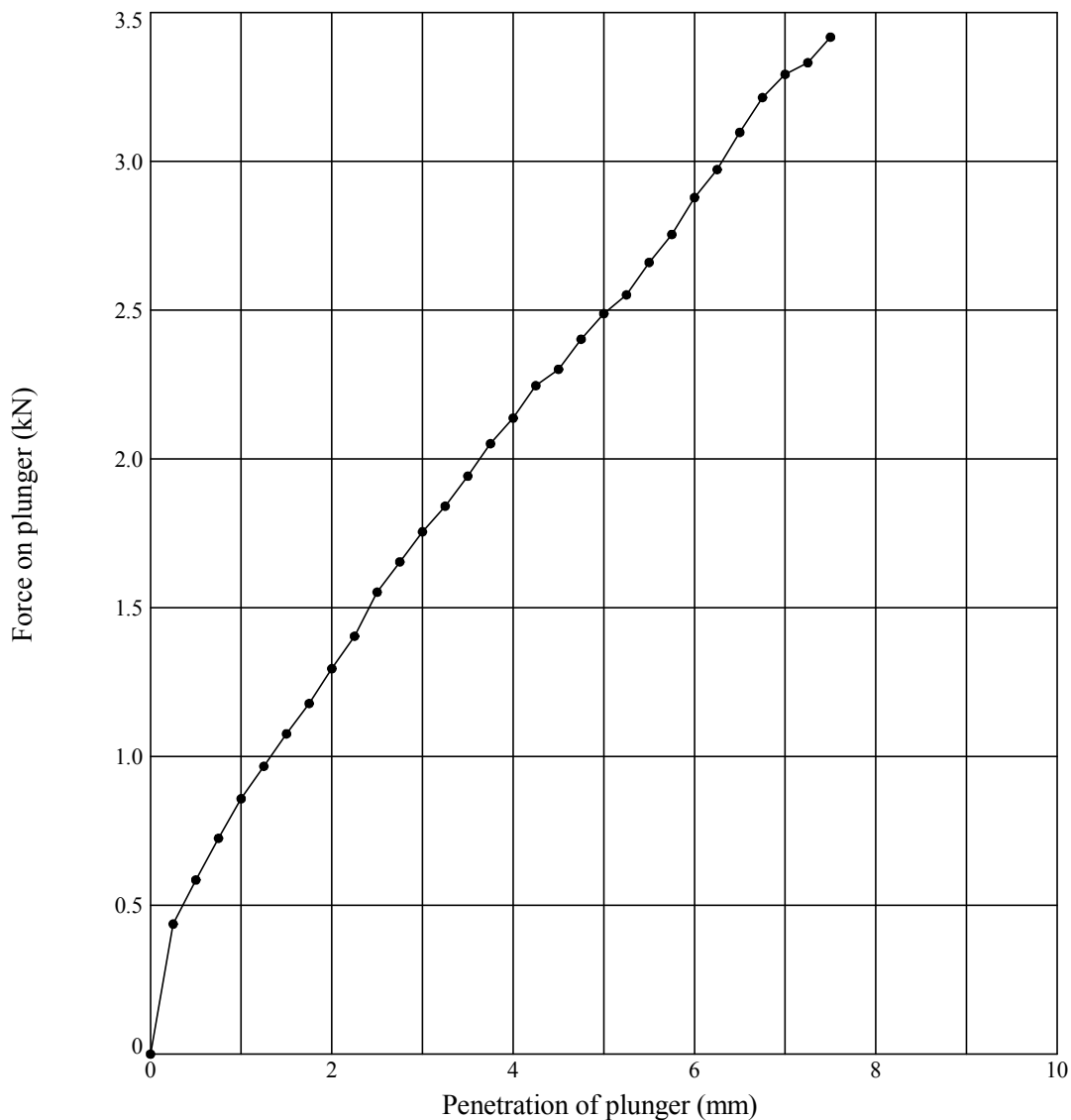
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR A**

Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 21	CBR Value (%) : 12
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly CLAY				

Approved Signatories: D. TROWBRIDGE A. FROST M. STOKES S. HANDCOCK

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	Bristol				
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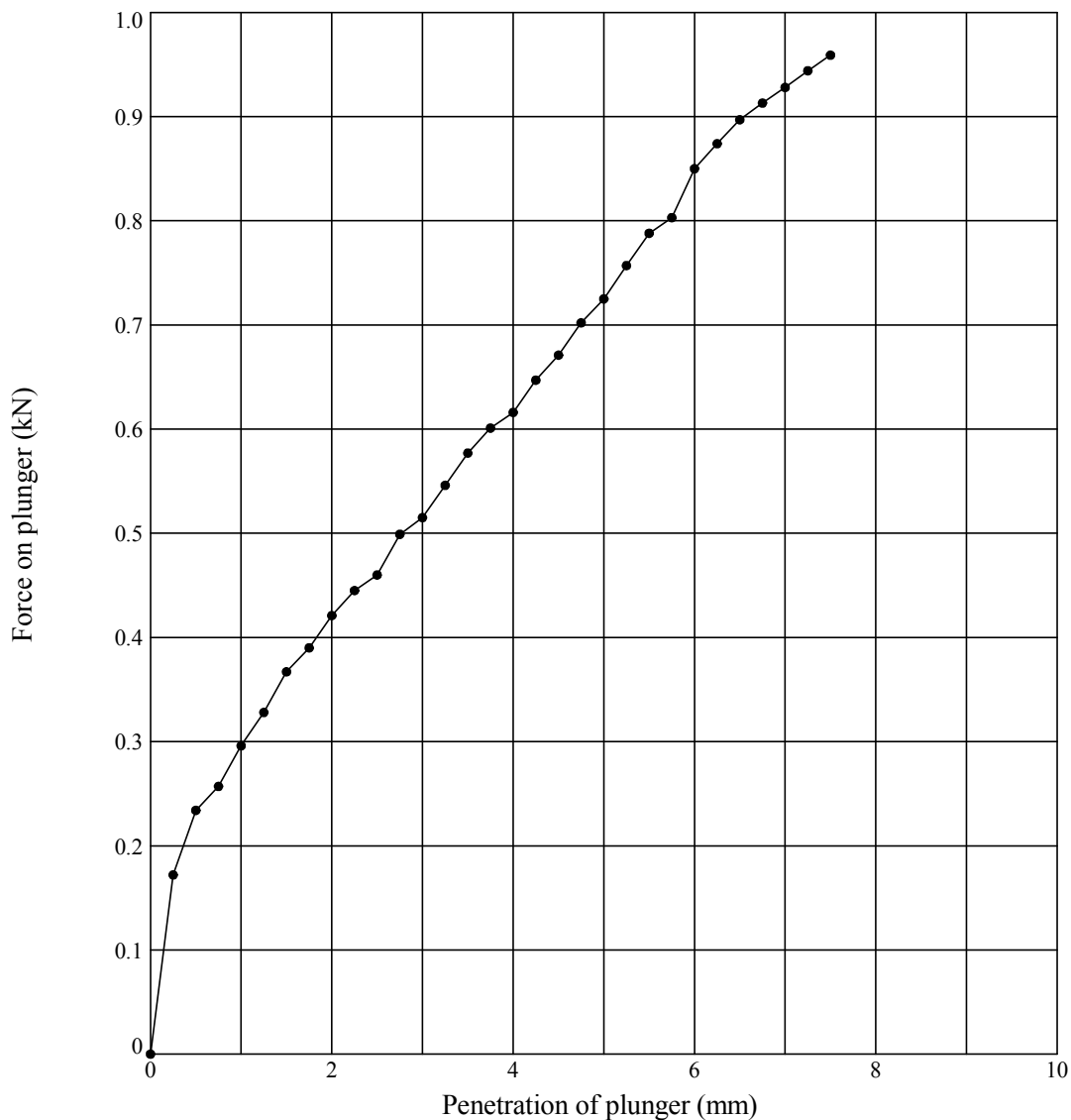
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR F**

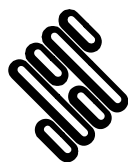
Depth (m) : **0.20**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 17	CBR Value (%) : 3.6
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly slightly sandy CLAY				

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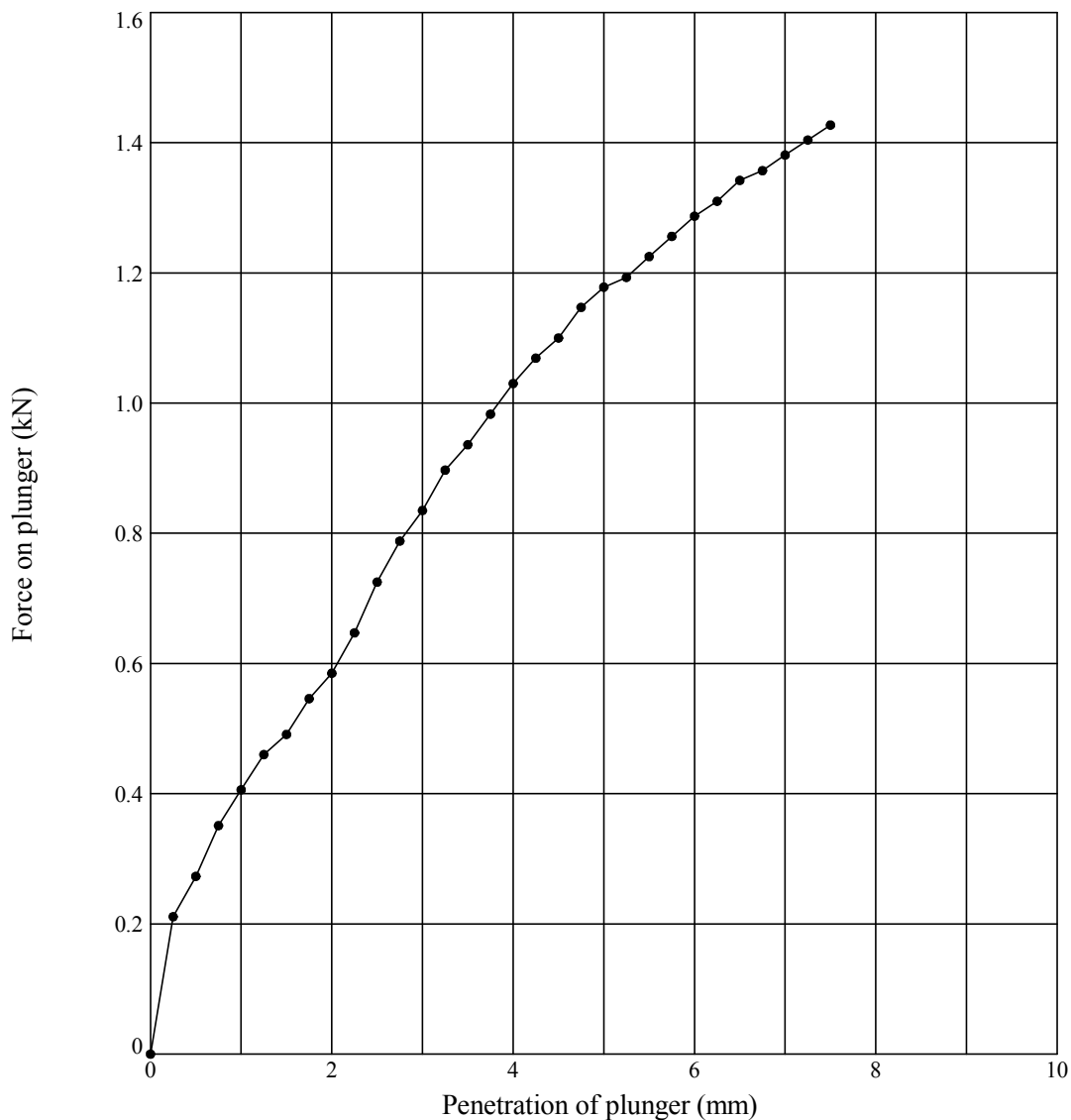
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR J**

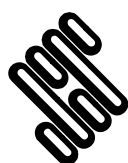
Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 10	CBR Value (%) : 5.9
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 0	
Sample Description			Remarks	
Brown slightly gravelly sandy CLAY				

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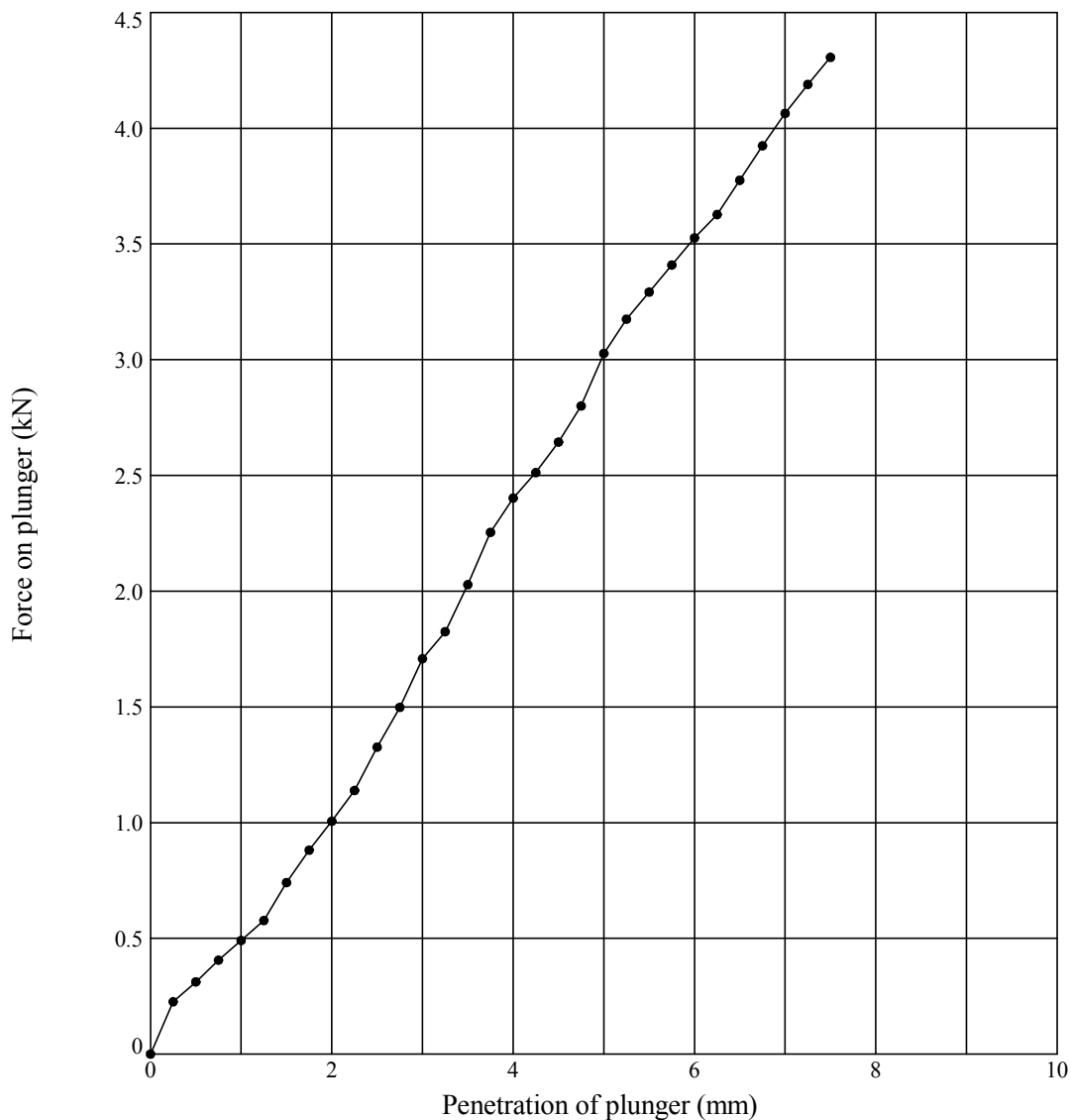
IN SITU CALIFORNIA BEARING RATIO TEST

In accordance with BS1377:Part 9:1990

Position Ref : **CBR N**

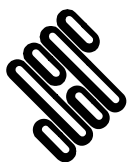
Depth (m) : **0.30**

Date : **05/09/12**



Test Details		Initial Ground Conditions		Test Results
Kentledge	: Landrover	Initial Moisture Content (%)	: 8.9	CBR Value (%) : 15
Surcharge (kg)	: 4.54	Percentage greater than 20 mm	: 5	
Sample Description			Remarks	
Brown slightly gravelly sandy CLAY				

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APPENDIX P

PREVIOUS INVESTIGATION REPORTS



P1 – MILLARD CONSULTING ENGINEERS DESK STUDY REPORT



Millard
Consulting Engineers

**PROPOSED DEVELOPMENT SITE
HUNTINGDON ROAD/HISTON ROAD, CAMBRIDGE
PHASE 1 ENVIRONMENTAL RISK ASSESSMENT**

MARCH 2006

REPORT REF: 5593/04/CM/03-06/1213

**PROPOSED DEVELOPMENT SITE
HUNTINGDON ROAD/HISTON ROAD, CAMBRIDGE
PHASE 1 ENVIRONMENTAL RISK ASSESSMENT**

MARCH 2006

REPORT REF: 5593/04/CM/03-06/1213

CLIENT: David Wilson Estates

ENGINEER: T A Millard Midlands Limited
Heron House
Newdegate Street
Nuneaton
Warwickshire
CV11 4EL

Tel.: 024 7632 8843

Fax: 024 7632 6899

Report Prepared By:

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EXECUTIVE SUMMARY

David Wilson Estates appointed T A Millard Midlands Limited in February 2006 to undertake a Phase 1 Environmental Risk Assessment of the Proposed Development Site which is located between Huntingdon Road/Histon Road, Cambridge, commonly referred to as the NIAB site (due to a proportion of the site being occupied by the National Institute of Agricultural Botany). David Wilson Estates intend to apply for planning approval to redevelop the site for residential use.

The objectives of the assessment were to identify any potential environmental issues as a result of current and historical activities, assess the potential risks from any environmental issues to the current environmental setting and proposed redevelopment and identify any further work actions required to clarify and mitigate any risks. Key factual information relating to the site is summarised below.

Address:	NIAB, Huntingdon Road, Cambridge		
Grid Reference:	543670, 260660	Approx Site:	53 Hectares

Current Status:	Disused		Proposed Use:	Unchanged	
	Operational	✓		Redevelop	✓
	Other			Other	

Reason for Report:	Buying	✓	Site Details:	Freehold	
	Selling			Leasehold	
	Revaluation			Owner/ Occupier	
	Refinance			Investment	✓

Land Use

The site currently comprises mainly the NIAB facility which is currently used for agricultural and food research. The site is widespread and is predominantly occupied with fields and

plots used to grow a wide range of crops. This is supported by a number of buildings used as offices, laboratories, greenhouses and farm yards. Further agricultural land within the proposed redevelopment belongs to other land owners. The site is surrounded by residential developments to the south east and east with open fields to the north, a college and playing fields to the west with residential further over and residential properties, University Farm and fields to the south, the Huntingdon Road runs along the south western boundary of the site and provides the access.

The NIAB facility has been located on the site in various forms since the early 1900s and is first shown in location on 1927 mapping. Prior to this the site was open fields. The site occupies some 53 hectares and is predominantly covered with fields and smaller agricultural plots used to grow a wide range of crops. This use is supported by a number of buildings located predominantly in the south west which are used as offices, laboratories, greenhouses and farm yards.

Anecdotal information from site confirmed that asbestos containing materials are present within a number of buildings across the site area and that an asbestos register is available for the site, however at this time T A Millard Midlands Ltd have not seen this document. Historic information shows that the site has only ever been open fields, playing fields, arable fields or the NIAB facility. An area away from the site boundary has been identified as historically containing a gravel pit which has now been filled in and other minor potential pollutant areas have also been identified including petrol stations, nurseries and a laundry, a further area to the south containing Roman coffins.

The site is underlain by a minor aquifer comprising of Gault Clay. The site is situated within a Nitrate Sensitive Zone. There are seven licensed groundwater abstractions within the site area, these are for spray irrigation although only two of these are currently active. There are no significant surface watercourses within the 700m vicinity of the site and the site is situated close to two sites of high ecological importance (SSSI).

Potential Sources of Contamination

The following potential sources of contamination were identified on-site and off-site:

On Site

- Bulk Storage of hydrocarbons in above ground storage tanks (ASTs).
- Storage and use of agricultural chemicals in the form of pesticides and herbicides including a range of organochloride and organophosphate based pesticides.
- Storage and use of ammonium nitrate "Nitraprill" as a fertiliser.
- Two substations with the potential for PCB containing oils in sub-station transformer.
- Asbestos containing materials in building fabrics.

Off Site

- Bulk Storage of hydrocarbons in above ground storage tanks (ASTs).
- Gas cylinders.
- Storage and use of agricultural chemicals in the form of pesticides and herbicides including a range of organochloride and organophosphate based pesticides.
- Storage and use of ammonium nitrate "Nitraprill" as a fertiliser.
- Mixing of chemicals within the bunded chemical mixing point.
- Asbestos containing materials in building fabric.

Environmental Risk Assessment

The following risks relating to the potential environmental issues considered significant are summarised below:

Residential End-Users

- A moderate risk has been identified from contaminated soils
- A moderate/ low risk has been identified from asbestos containing products within the fabric of existing buildings.

- A low risk has been identified from bulk storage of hydrocarbons and a moderate/ low risk from the presence of a sub-station that may have historically contained (and still contain) PCBs.

Construction Workers

- A moderate risk has been identified from contaminated soils.
- A moderate risk has been identified from asbestos at the site.
- A moderate/ low risk has been identified from bulk storage of hydrocarbons and the sub-station.

Flora and fauna

- A low risk has been identified to flora from Japanese Knotweed.
- A low risk to flora and fauna has been identified at the site from potential contaminated soils.

Groundwater

- A low risk to groundwater has been identified at the site from contaminated land.

Surface Water

- A low risk to surface waters has been assessed from the site.

Building Structures, Services and Drinking Water Pipes

- A low risk to drinking water pipes has been identified at the site.
- A low risk has been identified to future structures from Japanese Knotweed.

- A low risk has been identified from contaminants (such as sulphates, sulphides, pH) to the integrity of any proposed structures although a moderate/ low risk to building foundations and underground services from unstable ground conditions has been identified.

Recommendations

The following actions are recommended to further assess the suitability of the site for the proposed development, reduce, manage or clarify the level of environmental risk associated with the site.

Recommended Work	Reason
According to historic plans, Roman coffins were identified and located on a site to the south, an archaeological desk study should be undertaken to assess the potential for this on the proposed development site	Planning conditions & financial security
Completion of a Preliminary Phase 2 land quality assessment to assess the site conditions and to obtain sufficient data to further refine the conceptual model and environmental risks for submission to the local planning authority. This information would then be used to either formulate a detailed site investigation to further clarify the ground conditions and risks and/or complete a remediation option study for agreement with the appropriate regulatory authority, if required. It is also advised that the environmental site investigation is combined with a geotechnical and soakage investigation to assist in the design of foundations, drainage, underground services, roads etc.	Planning conditions & financial security

1.0 INTRODUCTION

- 1.1 This Phase 1 Environmental Risk Assessment has been prepared by T A Millard Midlands Limited for benefit of David Wilson Estates and their advisors only. The assessment has been undertaken in accordance with our proposal dated December 2005, which was formally approved by David Wilson Estates under the terms and conditions stated within the proposal. No third party liability or duty of care is extended. Third parties using information contained in this report do so at their own risk.
- 1.2 David Wilson Estates intend to apply for planning approval to redevelop the area of land currently owned and occupied by the National Institute of Agricultural Botany (NIAB) and other land owners into mixed residential and commercial use. The facility is currently used for agricultural and food research along with normal agricultural activities. The site is widespread and is predominantly occupied with fields and plots used to grow a wide range of crops. This is supported by a number of buildings used as offices, laboratories, greenhouses and farm yards. The location of the site indicating the site boundary is shown on Figure 1.

Scope of Works

- 1.3 The Phase 1 Environmental Risk Assessment comprises a desk study review of existing information on the site combined with a site walkover and an assessment of potential environmental liabilities. A detailed description of the methodology for undertaking a Phase 1 Environmental Risk Assessment is in Appendix A. The main aspects are summarised below:
- Review of available historical Ordnance Survey maps of the site and surrounding areas;

- Review of available public information from regulatory authorities to identify any potentially significant environmental issues at the site and surrounding areas;
- Review of published geological, hydrogeological and hydrological records to assess the environmental setting of the site and surrounding areas;
- Site walkover to assess the potential for environmental liabilities associated with the site and surround area which may impact on the value, development potential and saleability of the site; and
- Development of a conceptual model and risk assessment to assess potential contaminative sources, pathways and receptors on the site or surrounding properties.

- 1.4 The report has been prepared using published information and information provided by the Client which was made available at the time of writing only. No liability is extended to any information which has become available since this time.

Land Quality Assessment Methodology

- 1.5 Environmental regulators use the "source-pathway-target pollution linkage" concept when assessing the risk posed by a contaminated site and for a liability to arise each stage of the pollution linkage must be present. If there is no pollution linkage, then there is no risk. If a pollution linkage is established, the assessment will then consider the level risk and whether any further works or actions are required to clarify, manage or mitigate the risk. The method of assessment is in accordance with available guidance from the Department of the Environment Transport and the Regions (DETR) Statutory Guidance on Contaminated Land (Ref. 1) and Model Procedures (CLR11) produced by the Department for Environment, Food & Rural Affairs (DEFRA) and the Environment Agency (EA) (Ref. 2).

- 1.6 Reference to the word "contamination" in this report do not relate to the statutory definition of Contaminated Land under the Environmental Protection Act 1990 (as amended) unless otherwise stated. The definition used is: *"Land that contains substances that, when present in sufficient quantities or concentrations, is likely to cause harm, directly or indirectly, to man, to the environment, or on occasion to other targets"* (NATO CCMS, 1985).

Report Structure

- 1.7 Chapter 2 of the report provides information relating to the "source" of potential contamination through a study of current and historical land use, and the environmental setting information in Chapter 3 relates to the "target" and "pathway" stages. Chapter 4 assesses the findings of the conceptual model and risk assessment with conclusions set out in Chapter 5 and recommendations for further actions, if required, in Chapter 6. The report references are listed in Chapter 7.

2.0 LAND USE

Site Location

- 2.1 The site is located along Huntingdon Road (A1307), Cambridgeshire approximately 1.5km south of the A14 and 2km north west from Cambridge city centre. The site comprises of a small area in the south west dominated by office buildings, laboratories, greenhouses and storage buildings, with the rest of the site comprising fields for agricultural use and a sports field. The site covers a total area of some 53ha (131 acres) and is centred within OS grid reference E543670, N260660 at an elevation of approximately 20m above Ordnance Datum (A.O.D.) in the south west of the site and drops down to approximately 15m A.O.D. in the north east of the site (Ref. 3).
- 2.2 The site is surrounded by residential and light commercial developments to the south east and east with open fields to the north, a college and playing fields to the west with residential further over and residential properties, University Farm and fields to the south, the Huntingdon Road runs along the south western boundary of the site and provides the access to the site via Whitehouse lane.

Site Description

- 2.3 The site is dominated by four distinct areas, these comprise of:
- The main site which includes numerous office buildings, research laboratories, greenhouses, storage buildings, hardstanding (car parking and roads), an air raid shelter and a number of small plots;
 - Sports field with associated pavilion, sheds and hardstanding for car parking;
 - NIAB fields and plots for growing crops and use for commercial farming;

- Chivers Hartley fields and plots for growing crops and use for commercial farming;

2.4 The site areas are described in detail below, together with any significant off-site uses. A site layout plan for each site area is shown on Figure 2 (A, B, C and D).

The Main Site

2.4.1 The main site is situated to the south west and is accessed off a private road that leads up from Huntingdon Road along the western perimeter of the site up to the NIAB farm yard (off site) adjacent to the western boundary. The main site covers an area of approximately 13ha and is dominated by several large buildings used as offices, research laboratories, glasshouses and storage buildings. A small field used to grow a range of vegetables in a number of individual plots is situated in the south western corner of the site. To the north of this field are a number of glasshouses with adjoining laboratories which are used as research facilities. Opposite the laboratories on the other side of the access road is a cold store to store potatoes, offices, general storage areas, laboratories (Cereal Cabin) and a sprayer room used to spray crops. Two large water tanks fed by a large reservoir (beyond the A14) is located to the rear of the sprayer room.

2.4.2 Situated in the south eastern corner of the site are the main NIAB office buildings (with reception). The office buildings are made up of the old main building that fronts Huntingdon Road and the newer office building that was constructed in the 1960s/ 1970s which has a basement. The newest building on this part of the site is a library (circa 1990s) and adjoins onto the main office building. An air raid shelter is situated opposite the main office building on the eastern boundary in the small field. The air raid shelter was observed as being flooded during the site visit. A sub station that is believed to supply both the main office buildings and the adjacent residential housing is situated towards the southern corner of the site.

- 2.4.3 A number of buildings are located in the north western part of the main site. These include two large office buildings, one of which is leased by DEFRA and is just offices whilst the building to the north of the DEFRA offices is divided into the Seeds Building (used as seed storage) with a sports hall on the top floor and offices and laboratories. In the far north western corner is the former (Older) Granary currently used for seed treatment and vegetable sorting. Smaller, surrounding buildings include the drying barn (vacant) and onion store. A row of garages that extend from the Old Granary onto Whitehouse Lane are used for general storage (i.e. wooden pallets). These buildings are typical of 1960s brick construction with a corrugated cement sheet roof which appeared to contain suspected asbestos containing materials. Three isolation glasshouses are situated beside the Old Granary. A sub station is situated next to the Seeds Building.
- 2.4.4 Car parking is predominantly situated in the northern part of the main site, with car parking also located next to the main entrance to the site. A visitors parking area is located beside the laboratories in close proximity to the main NIAB office building. The main car park is on gravel hardstanding whilst the visitors parking is on tarmac hardstanding. Access around the majority of the site is over concrete/tarmac hardstanding that is generally in good condition.
- 2.4.5 Overall, approximately 40% of the main site area is covered in hardstanding and buildings, with 60% being landscaped areas and farmed areas of land. Buildings on the site are predominantly heated by gas.

Sports Field

- 2.4.6 The sports field is situated in the south eastern part of the site and is accessed via a concrete track off Huntingdon Road in the far south eastern corner. The concrete track leads to a pavilion which then opens up into the sports field. The sports field covers an area of approximately 8ha. A number of small buildings and sheds are also situated in close proximity to the pavilion. Located beside a brick built shed are two stilts once used to support an above ground storage tank. The tank was used to

store heating oil/ diesel and this is indicated by a notice. There was no indication of oil staining or spillages in the area of the former tank. An area of concrete hardstanding is situated adjacent to the eastern boundary of the sports field along with a small building and stable.

NIAB Fields

2.4.7 The fields situated to the north of the main site and sports fields are owned and managed by NIAB and cover an area of approximately 25 ha. The fields are divided into a number of plots where a range of seasonal crops are grown. At the time of the site visit, the plots were either ploughed or had a crop growing. Concrete tracks traverse the fields through the centre and across from the farmer's office situated on the western boundary of the site. Drainage ditches are situated along the northern perimeter of the fields with a ditch located from the centre line of the field to the eastern site boundary. Irrigation water mains also traverse the site, with a number of inspection chambers noted around the edge of the fields. An overhead high voltage cable runs along the boundary between the sports field and the fields, and then changes course crossing the site from south to north. A borehole is located along the north western site boundary. Two mobile phone masts are situated on the edge of the fields and a weather station is located just off a concrete track in close proximity to the farmer's office. A single greenhouse and shed is located to the south of the fields.

2.4.8 The farmer's office is located off the private road on the western boundary of the site directly opposite the off-site farm yard. The farmer's office is a flat roof single story building constructed in the 1970s. A bunded heating oil tank is situated to the side of the building.

Chivers Hartley Fields

2.4.9 The fields owned by Chivers Hartley College are situated to the north east of the fields owned by NIAB. The fields are divided into a number of plots where a range

of seasonal crops are grown. At the time of the site visit, the fields were ploughed with no notable crop. A drainage ditch dividing the site into two fields was observed during the site visit which contained water. A number of field drains were observed to discharge into the ditch.

NIAB Farm Yard (off-site)

- 2.4.10 The NIAB farm yard is situated adjacent to the north western boundary of the site. The farm yard comprised of a number of steel frame buildings used for the storage of agricultural materials and machinery. The buildings were noted to be partially clad with corrugated cement sheeting containing suspected asbestos materials. The site is covered in concrete hardstanding. A concrete tank wash down and spray area is located in close proximity to the entrance of the site with sludge collection point. A bunded chemical mixing area and fill point is located on site next to a locked pesticide storage unit. Five bunded above ground storage tanks are located on site used for the storage of red diesel and oils.

Site Walkover and Inspection

- 2.5 A walkover of the site was carried out by T A Millard Midlands Ltd on 3rd March 2006. During this walkover, the following key observations were made with regard to the current site activities and anecdotal information provided by site personnel. A selection of photographs taken during the site visit is enclosed in Appendix B.

Bulk Material Storage

- 2.5.1 A single 4000 litre above ground storage tank (No.4) is located next to the farmer's office and is used to store heating oil. The bunding and tank is in good condition with only slight staining around the fill point. There was no indication of any major spillages or contamination. Site personnel confirmed that the bunding has been

checked and approved by the Environment Agency and that the volume of the bunding is 110% capacity of the tank.

- 2.5.2 A bulk storage tank use to store diesel is also situated next to the Spore Proof Block and adjacent glasshouse. The tank was noted as being in good condition with the fill point over an area of partial hardstanding. The bund was solid and in good condition, with standing water noted inside the bund (reducing the bunding capacity). It is understood that the diesel is used to fill a generator that powers a steaming unit used in some of the glasshouses.
- 2.5.3 A total of three above ground storage tanks (Nos. 1, 2 and 3) were noted in the off-site farm yard. The three tanks have a total capacity of approximately 15000 litres, however no more than 6000 litres is stored. Tank No.1 was used to store white diesel (DERV) and is now redundant. Tanks 2 and 3 are used to store red diesel. The tanks and bund were noted to be in good condition with some oil staining noted in the base of the bund. The pump used to supply the red diesel is situated within the bund area and the fill point for agricultural machinery is on concrete hardstanding. The disused white diesel pump was observed outside the bund. A waste oil storage tank is also situated within the bund. It was confirmed during the inspection that the bund has a volume equal to 110% of the total capacity of the tanks and that the bund had been inspected and approved by the Environment Agency.
- 2.5.4 Gas cylinders were observed to be stored outside and on the edge of the field situated in the main site area. The cylinders were stored in a cage, the cylinders appeared to be in good condition. Also ad-hoc drum storage was noted and other lockable storage unit also noted in the cage supported with some hazardous chemical signs.

Agricultural Chemical Storage & Usage

- 2.5.5 Information provided by site personnel confirmed that a large volume of agricultural chemicals have been stored and used on site. Site personnel confirmed that only approved pesticides and herbicides have been used at the site. The types of

pesticides and herbicides used at the site include a range of organochlorine and organophosphate based pesticides, as set out in the Green Book. As a requirement of the recently introduced "Code of Practice for Using Plant Protection Products" (DEFRA), records on the type of pesticides used at the site are kept for a period of 5 years.

- 2.5.6 Site personnel confirmed that approximately 170 tonnes of ammonium nitrate "Nitraprill" is stored in the farm yard and is used as a fertiliser. The material is stored in a dry granular form in 600kg bags. The bags are stored directly on gravel hardstanding.
- 2.5.7 Agricultural chemicals used on the site are mixed at the bunded chemical mixing point situated in the NIAB farm yard. The fill point is a concrete bunded unit with spill catchment and drainage channel to control any chemical spillages. The unit, bunding and spill drainage system was noted to be in good condition. Some spillage was noted during the site visit around the spill catchment.

Waste Management

- 2.5.8 Waste oil is stored in a large capacity bunded tank in the farm yard. It is located in the bunded area where the diesel tanks are located. The contents of the tank is emptied and removed by licensed waste disposal contractors.
- 2.5.9 Site personnel confirmed that there is no history of any significant quantities of bio-waste being produced at the site with any waste crop following a harvest is ploughed back into the ground. Any small quantities of chemical waste or organic waste, such as seed corn is removed and disposed off site by Cleanaway.
- 2.5.10 The sludge collected in the wash down area is removed off site by Aztec (licensed waste disposal contractors). Anecdotal information suggests that the sludge is incinerated.

2.5.11 Any waste chemical drums/cans are incinerated on site in an approved incinerator. Information from site personnel confirmed that an approved emission control is in place for this incinerator.

2.5.12 A small quantity of general office waste is produced and disposed in skips that are regularly emptied by Cleanaway.

Asbestos

2.5.13 Information provided by site personnel confirmed that asbestos containing materials (ACMs) are present on the site, including in the main office building, in cement sheeting and in a service/ utility main.

2.5.14 An asbestos survey has been undertaken at the site and a register prepared as a requirement of the Control of Asbestos at Work Regulations 2002. The register was not available at the time of writing this report but will be commented on separately.

Sub-Stations and Transformers

2.5.15 Two electrical sub-stations are present on site one of which contains a transformer. Information from the site could not confirm whether PCB containing oils are still present or have ever been present in the transformer. No service records are available to check whether PCB containing oils have been used. Information collected from site indicates that the sub-stations are operated by EDF Energy.

Waste Water

2.5.16 Information from the site could not confirm whether a discharge consent is in place for waste water. No oil interceptors are known to be on site. Land drainage in the fields was observed to be present, with discharge into local surface water courses. A

drainage ditch is present close to the sports field and is known to discharge ultimately into the Histon Brook in Histon.

Other Relevant Information

- 2.5.17 Subsidence in part of the main office building was investigated in the past and has now been remediated. The library, which is the most recently built structure at the site, is constructed on piles.
- 2.5.18 A known oil spillage occurred approximately 12 years ago as a result of an attempted theft which polluted a local water course. The Environment Agency was notified at the time of the spillage. As a result NIAB now store a maximum of 6000 litres in a single tank.

Public Record Information

- 2.6 Information on potentially significant environmental issues and controls at the site and surrounding area may be held on public records by regulatory authorities. This information is sourced directly from the regulatory authorities and from the Landmark Envirocheck database (taken within a 2 km radius of the site centre). A copy of the Envirocheck report (Ref. 4) is enclosed in Appendix C. A summary of the significant environmental issues and controls are summarised in the following table:

Public Record	On site or Off site	Features
Registered Landfill Sites	Off site	One landfill site is identified as being present within 700m of the site boundary, this is located 449m to the *SW and is registered to M Dickerson Limited, Cambridge University Farm. This site is authorised to accept excavated natural materials.

Registered Waste Treatment or Disposal Sites	Off site	One Registered Waste Treatment or Disposal site is identified as being present within 700m of the site boundary, this is located 662m to the *SE and is registered to ATA Anglia Limited. The site is authorised to accept tyres.
Contemporary Trade Directory Entries	Off site	Four active trade directory entries are located within 250m of the site boundary, these are: - o MA Mansfield – Service and repair of fridge freezers. - o HF – Telecommunications equipment. - o Cambridge Mobile Communications – Radio communication equipment.
Fuel Station Entries	Off site	There are two petrol stations located within 700m of the site boundary, these are operated by BP (441m *W) and Esso (616m *SE).

* The approximate bearing of identified features is abbreviated with the first letter (e.g. south West = SW)

† Potential impact from significant environmental issues is in bold.

Regulator Consultations

- 2.7 The Environment Agency and local authorities have been contacted in order to establish whether there are any records of any breaches of environmental regulations, pollution incidents, environmental conditions or general environmental concerns associated with the site. The following table summarises the issues which have been identified by the consultee in relation to the site.

Consultee		Comment(s)
Cambridge City Council	Environmental Health Department	The environmental health department have provided a land use report detailing historic uses for the proposed development site.
Cambridgeshire County Council	Environmental Health Department	The environmental health department have provided a map showing environmental constraints for the development site.
	Minerals and Waste Department	The minerals and waste department have identified no mineral or waste sites within 200m of the proposed development site.
	Archaeology Department	The archaeology department have identified that the proposed development site lies within an area of high archaeological potential with remains of Iron Age, Roman and Saxon / Medieval date known to be present in the surrounding area. The density of known and suspected archaeological sites in the area suggests a high potential exists for the discovery of additional remains during development works. They have stated that should they be asked to comment on any planning applications they will be suggesting that the site is subject to an archaeological evaluation which will require to be completed prior to the granting of planning permission.

Environment Agency (EA)		The Environment Agency identified that the majority of the site lies over a minor aquifer with soils of intermediate to high leaching potential and that the site lies outside of any SPZ. They stated that there are a number of "awarded watercourses" in the area which will need to be investigated and assessed with regards to culverting, flood risk and surface water flow balancing.
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Site History

- 2.8 The site history has been assessed by reviewing historical Ordnance Survey maps provided by Landmark (Ref. 4). The following table summaries the history of the site and surrounding area with an indication of the potential contaminants. A copy of the historical maps is enclosed in Appendix E.

Dates	On site or Off site	Features	Potential Contaminants
1889	On Site	Site is shown as open undeveloped land apart from a small building shown on the western boundary	-
	Off Site	New Chester (residential development) is located to the south east, How House is shown on the western boundary of the site, Girton College is located to the west, farms are located <700m from site in various directions, a public drain is located approximately 200m to the east of the site	-
1904	On Site	No significant changes are shown from the previous map, planted trees (orchard) are shown in the northern part of the site	-
	Off Site	A gravel pit is located 600m to the south of the site, planted areas are shown to the north, nurseries are shown to the east and west of the site	-
1927	On Site	No significant changes are shown from the previous map. The small building on the western boundary is noted as White House, a sports ground is shown in the eastern site area and the National Institute of Agricultural Biology is shown in the south	Agricultural chemicals
	Off Site	A large amount of buildings are shown on the southern boundary of the site, the gravel pit to the south has been expanded and a meteorological station is shown to the south and allotments are shown 200m to the east	-
1938	On Site	No significant changes are shown from the previous map	-

Dates	On site or Off site	Features	Potential Contaminants
	Off Site	Residential development has occurred to the east and west of the site, Scotsdale Laundry is shown to the north east and farms are developing to the north	Detergents and cleaning products
1959 / 1960	On Site	No significant changes are shown from the previous map although a seed testing station is shown in the southern site area	-
	Off Site	The gravel pit to the south has further expanded, New Chester is now known as Chesterton and has expanded as has Gorton	-
1972 – 1974	On Site	No significant changes are shown from the previous map although the building on the western boundary is now identified as a granary	-
	Off Site	Chesterton (residential) has expanded to the north. The gravel pit to the south has been infilled and is now identified as a laboratory, an electrical sub station is identified 300m to the north east of the site. Roman coffins are highlighted as being found to the south of the site	Ground gas, PCBs and hydrocarbons
1983 – 1992	On Site	No significant changes are shown from the previous map apart from minor expansion of buildings in the south	-
	Off Site	The A14 has been constructed to the north of the site, a cattle breeding centre is shown to the south and the meteorological station has been replaced with a genetics station	-
2000	On site	No significant changes are shown from the previous map	-
	Off Site	No significant changes are shown from the previous map	-

* The approximate bearing of identified features is abbreviated with the first letter (e.g. south West = SW)

† Potential impact from significant environmental issues is in bold.

3.0 ENVIRONMENTAL SETTING

Geology

- 3.1 The 1:50,000 British Geological Survey (BGS) map (Ref. 5) shows the site is partially underlain by drift deposits in the central area of the site only, these drift deposits (where present) are likely to comprise of 4th Terrace Deposits which are generally sands and gravels and would be expected to be of minimal depth. Any made ground present is also likely to be of minimal depth and likely to comprise of soil/rubble fill material.
- 3.2 The solid geology comprises of Gault Clays with a maximum thickness of 43m, overlying Lower Greensand with a thickness of up to 20m.
- 3.3 The site geology is summarised in the following table:

Sequence	Composition	Approximate Thickness	Aquifer Status
Made Ground	Soil backfill material.	Unknown	-
4 th Terrace Deposits	Sand and gravel.	Unknown	Minor Aquifer
Gault Clays	Grey clays or marls	<43m	Non Aquifer
Lower Greensand	Fossiliferous medium to coarse grained ochreous brown to greenish yellow loosely cemented glauconitic sandstones or unconsolidated pebbly sands	<20m	Minor Aquifer

Hydrogeology

- 3.4 The Groundwater Vulnerability Map of England (Ref. 6) indicates that the solid strata beneath the site are classified as a Non Aquifer due to the presence of the Gault Clays.

- 3.5 There are seven licensed groundwater abstractions identified within the site boundary, these are all for abstraction from the Greensand Aquifer, are for spray irrigation activities and are / were operated by NIAB. Currently only two are active (classified as temporary) with the other five being currently revoked.
- 3.6 Fifteen further groundwater abstraction licenses are identified within 700m of the site boundary. The closest is located 206m to the NE and is operated by Chesterton Allotments Society.
- 3.7 Information provided by the Environment Agency notes that the depth to groundwater in the area of the site is significant due to the presence within the Greensand. It is however possible that localised perched groundwater may be present in any Made Ground. The direction of the groundwater flow is currently uncertain, however based on the topography of the site relative to local surface waters it is likely that it flows in a north easterly direction. Further information from the Environment Agency indicates that the site is within a nitrate vulnerable zone. A detailed description of the aquifer types, soil classification and Source Protection Zones is in Appendix A.

Hydrology

- 3.8 There are a no recorded surface watercourses within the site boundary or even in the immediate vicinity of the site apart from drainage ditches around adjacent fields.

Ecology

- 3.9 According to the Cambridge Local Plan the site is surrounded on its north and south sides by un-adopted green belt, however the site itself is not included in this area. Two sites which are designated Sites of Special Scientific Interest (SSSI) are noted within 700m of the site boundary, these are specifically Histon Road (120m N) and Travellers Rest Pit (338m SW).

Other Issues

- 3.10 The potential for coal mining to potentially impact the site is assessed below:

Coal Mining Affected Areas:

Conclusive	
Inconclusive	
No evidence	✓

- 3.11 According to the Coal Authority database, the site is not located in an area which has been used for mining. Therefore a mining report is not required.

- 3.12 The percentage of potential buildings that could be affected by radon gas above action levels in the area of the site is set out below:

Radon Affected Areas:

<1% above action level	✓
1-3% above action level	
3-10% above action level	
10%> above action level	

Environmental Sensitivity

- 3.13 The sensitivity of each of the identified receptors is rated depending upon the environmental setting of the site, the likelihood for pollution to occur and potential liabilities associated with a pollution incident.

	Very Low	Low	Moderate	High	Very High
Groundwater:			✓		
Surface Water:		✓			
Ecology:			✓		

- 3.15 The sensitivity of the groundwater is considered moderate despite that fact that the site is situated on a non aquifer (Gault Clay). This moderate rating is due to the number of abstractions which are located within and in close proximity to the site from the sandstone aquifer which is underlying the Gault and the fact that the site has been identified as being within a Nitrate Vulnerable Zone.
- 3.16 The sensitivity of the surface water is considered low as the site is not located within reasonable proximity (>1km) of any fair to high quality surface water features where there is the possibility for transmission of pollutants via baseflow or discharge to drainage.
- 3.17 The sensitivity of the ecology is considered moderate as the site is situated fairly close to two sites of high ecological importance (SSSI).

4.0 ENVIRONMENTAL RISK ASSESSMENT

Introduction

- 4.1 This section assesses the significance of the environmental issues that have been identified on the site or in the surrounding area. This is achieved by developing a conceptual model for the site and undertaking a qualitative risk assessment.
- 4.2 The objective of the conceptual model is to identify potential contaminant sources, pathways and receptors relating to the site and surrounding area. Once information on potential sources, pathways and receptors has been collated a qualitative risk assessment (Ref. 7) is used to assess the source-pathway-receptor linkage and evaluate the potential for a pollution event to occur using a risk classification tool (Ref. 8). The level of risk is achieved by comparing the likelihood of a pollution event to occur versus the consequence of a pollution occurrence. The consequence is essentially a measurement of the severity of a hazard (or source) and sensitivity of the receptor (e.g. aquifer type or end user).

Conceptual Model

- 4.3 The potential sources (hazards) identified on site and surrounding the site are summarised below:

On Site

- Bulk storage of heating oil comprising a single 4000 litre above ground storage tanks. The tank and bunding (110%) are in good condition, with appropriate containment, minor oil staining and no evidence of spillages or leakage.

- Storage of diesel in AST in main site. Tank bunding in good condition, no bunded fill point with only partial hardstanding, minor oil staining and no evidence of spillages or leakage.
- Gas cylinders and drum storage across the site area.
- Pesticides and herbicides (organochlorine and organophosphate based) stored and used across the site area since the site was first developed.
- Asbestos containing materials are present within buildings located on site.
- Transformer with potential current or historical use of PCB containing oils. No service records or confirmation of recent oil change. Potential for PCB containing oils to still be present.

Off Site

- Three above ground storage tanks for red diesel (and redundant white diesel) with a total capacity of around 15000 litres and an associated pump within the off site farm yard. The tanks were bunded and in good condition with limited staining.
- Two further small capacity above ground storage tanks and a single lubrication oil storage tank within the farm area in the same bunded area as three previous tanks.
- 170 tonnes of ammonium nitrate "Nitraprill" stored in dry granular 600kg bags in the farm yard and used as a fertiliser.
- Agricultural chemical mixing facility mixed at the bunded chemical mixing point on the farm yard was noted as being in good condition although some minor spillage was noted around the spill catchment.

- 4.4 The receptors and possible pathways in relation to the site and surrounding areas are summarised below:

- Future residential occupiers at the site (end user). Possible direct contact, inhalation of dust /vapours and accidental ingestion.
- Construction workers during site clearance and redevelopment works. Possible direct contact, inhalation of dust / vapours and accidental ingestion.
- Ecological receptors (flora and fauna). Direct contact, root uptake and vegetation die-back.
- Future building structures and services. Attack on building materials / water pipes / services, explosive ground gases (migration into buildings).
- Groundwater – contamination of aquifer.
- Surface water – contamination of local surface water courses by surface run off and / or baseflow of contaminants via groundwater.

Qualitative Risk Assessment

- 4.5 A qualitative risk assessment has been formulated for the potential source-pathway-receptor linkages identified in the conceptual model. The risk assessment is based on the suggested approach set out in the available guidance (Ref. 7, 8). The guidance uses a combination of the likelihood of a pollution event to occur taking account of the presence of a hazard (or source) and integrity of a pathway versus the consequence of a pollution occurrence, which is essentially a measure of the severity of a hazard to an identified receptor (such as a major aquifer or site end-user).
- 4.6 The risk assessment methodology detailing the classes of significance is given in Appendix A. The risk associated with each potential pollution linkage is evaluated in the following table.

Qualitative Risk Assessment

Source	Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk
Current and historical bulk storage of oil (including off-site storage)	Diesel, heating oils, and hydrocarbons	Direct contact and ingestion of contaminated soils, inhalation of vapours	Residential end users	Low likelihood	Mild	Low
		Direct contact with contaminated soil / vegetation die-back	Construction workers	Likely	Mild	Moderate / Low
		Attack on plastic water pipes	Flora and fauna	Unlikely	Mild	Very Low
		Infiltration, through strata	Drinking water pipes	Unlikely	Medium	Low
Bulk storage of approved agricultural chemicals on and off site	Agricultural chemicals	Surface water run off via drains, run off, migration via baseflow	Groundwater	Unlikely	Medium	Low
		Direct contact and ingestion of contaminated soils, inhalation of vapours	Surface waters	Unlikely	Medium	Low
		Direct contact and ingestion of contaminated soils, inhalation of vapours	Residential end users	Low likelihood	Mild	Low
		Direct contact with contaminated soil / vegetation die-back	Construction workers	Low likelihood	Mild	Low
		Attack on plastic water pipes	Flora and fauna	Unlikely	Mild	Very Low
		Infiltration, through permeable strata	Drinking water pipes	Unlikely	Medium	Low
		Surface water run off via drains, run off, migration via baseflow	Groundwater	Unlikely	Medium	Low
		Surface water run off via drains, run off, migration via baseflow	Surface waters	Unlikely	Mild	Very Low

Source	Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk
Usage of approved agricultural chemicals across site area	Agricultural chemicals	Direct contact and ingestion of contaminated soils, inhalation of vapours	Residential end users	Likely	Medium	Moderate
		Direct contact with contaminated soil / vegetation die-back	Construction workers	Likely	Medium	Moderate
		Attack on plastic water pipes	Flora and fauna	Likely	Minor	Low
		Infiltration, through permeable strata	Drinking water pipes	Unlikely	Medium	Low
		Surface water run off via drains, run off, migration via baseflow	Groundwater	Unlikely	Medium	Low
Bulk storage of ammonium nitrate "Nitraprill" on and off site	Ammonium Nitrate	Direct contact and ingestion of contaminated soils, inhalation of vapours	Surface waters	Low likelihood	Mild	Low
		Direct contact and ingestion of contaminated soils, inhalation of vapours	Residential end users	Low likelihood	Mild	Low
		Direct contact with contaminated soil / vegetation die-back	Construction workers	Low likelihood	Mild	Low
		Attack on plastic water pipes	Flora and fauna	Unlikely	Mild	Very Low
		Infiltration, through permeable strata	Drinking water pipes	Unlikely	Medium	Low
		Surface water run off via drains, run off, migration via baseflow	Groundwater	Unlikely	Medium	Low
		Surface water run off via drains, run off, migration via baseflow	Surface waters	Unlikely	Mild	Very Low

Source	Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk
Usage of ammonium nitrate "Nitraprill" across site area	Ammonium Nitrate	Direct contact and ingestion of contaminated soils, inhalation of vapours	Residential end users	Likely	Medium	Moderate
		Direct contact with contaminated soil / vegetation die-back	Construction workers	Likely	Medium	Moderate
		Attack on plastic water pipes	Flora and fauna	Likely	Minor	Low
		Infiltration, through permeable strata	Drinking water pipes	Low likelihood	Mild	Low
		Surface water run off via drains, run off, migration via baseflow	Groundwater	Unlikely	Medium	Low
		Direct contact and ingestion of contaminated soils, inhalation of vapours	Surface waters	Unlikely	Medium	Low
Sub-station (transformer)	PCBs and hydrocarbons	Direct contact and ingestion of contaminated soils, inhalation of vapours	Residential end users	Low likelihood	Medium	Moderate/ low
		Direct contact with contaminated soil / vegetation die-back	Construction workers	Likely	Mild	Moderate/ low
		Attack on plastic water pipes	Flora and fauna	Unlikely	Mild	Very low
		Infiltration, through highly permeable strata	Drinking water pipes	Unlikely	Medium	Low
		Surface water run off via drains, run off, migration via baseflow	Groundwater	Unlikely	Medium	Low
			Surface waters	Unlikely	Medium	Low

Huntingdon Road/Histon Road, Cambridge
Phase 1 Environmental Risk Assessment

Source	Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk
Current and historical buildings	Asbestos	Inhalation of asbestos fibres	Residential end users	Unlikely	Severe	Moderate/ low
Low bearing capacity within ground	Subsidence of buildings on site	Movement of building structures requiring remediation measures	Construction workers	Low likelihood	Severe	Moderate
Invasive Plants	Japanese Knotweed	Spread by human activities, tipping via root fragments and stem fragments. Potential for structural damage and displacement of native flora	Building structures and services	Likely	Mild	Moderate / Low
			Building structures and services	Unlikely	Mild	Very Low
			Flora	Unlikely	Mild	Very Low

5.0 CONCLUSIONS

Summary of Environmental Risks to Identified Receptors

- 5.1 A number of potential risks to identified receptors associated with the current site conditions, the proposed redevelopment and environmental setting have been identified at the site. The potential sources are a result of the historical use of the site and the current use as a factory/ industrial site. A summary of the most significant environmental risks to identified receptors is described below:

Residential End-Users

- 5.1.1 A moderate risk has been identified from contaminated soils (use of approved agrochemicals and ammonium nitrate across the site area). The level of risk is based on either the likely occurrence for residential end-users to come into contact with potentially contaminated soils if gardens are proposed as part of redevelopment or the severity of a source to human health.
- 5.1.2 A moderate/low risk has been identified from asbestos containing products within the fabric of existing buildings however, this level is due to the high severity as oppose to the likelihood of occurrence and will be reduced once the buildings have been removed.
- 5.1.3 A low risk has been identified from bulk storage of hydrocarbons and a moderate/ low risk from the presence of a sub-station that may have historically contained (and still contain) PCBs. These sources are most likely to be localised and therefore less likely to result in widespread contamination.

Construction Workers

- 5.1.4 A moderate risk has been identified from contaminated soils (use of approved agrochemicals and ammonium nitrate across the site area). The level of risk is based on either the likely occurrence for construction workers to come into contact with potentially contaminated soils during the development of the site or the severity of a source to human health.
- 5.1.5 A moderate risk has been identified from asbestos at the site to construction workers. Construction workers at the site may come into contact with asbestos containing materials during demolition of any buildings/ structures.
- 5.1.6 A moderate/low risk has been identified from bulk storage of hydrocarbons and the sub-station. This is reflected in the likely occurrence and direct contact during site clearance/ redevelopment works and the mild, short lived exposure to potential contaminants.

Flora and fauna

- 5.1.7 A low risk has been identified to flora from Japanese Knotweed on the site due to the fact that none was noted during the site walkover.
- 5.1.8 A low risk to flora and fauna has been identified at the site from potential contaminated soils (use of approved agrochemicals and ammonium nitrate across the site area) due to the type of potential contaminants used on the site. All other identified risks from sources are considered very low.

Groundwater

- 5.1.9 A low risk to groundwater has been identified at the site from the bulk storage of hydrocarbons. The risk takes into consideration the good condition of the ASTs and bunding. The severity takes into consideration the vulnerability of the aquifer (low vulnerability due to overlying Gault Clays), location of drinking water abstractions and category of a potential pollution incident based on volumes stored.
- 5.1.10 A low risk to groundwater has been identified at the site from the use of approved agrochemicals and ammonium nitrate across the site area. Again, the severity takes into consideration the vulnerability of the aquifer (low vulnerability due to overlying Gault Clays) and the location of drinking water abstractions.

Surface Water

- 5.1.11 A low risk to surface waters has been assessed from the site due to the lack of surface waters identified in and surrounding the site area. This takes into consideration the sensitivity of the local surface waters and potential for run-off and/ or baseflow from groundwater underlying the site that may feed the local surface waters.

Building Structures, Services and Drinking Water Pipes

- 5.1.12 A low risk to drinking water pipes have been identified at the site from potential contamination in the shallow soils associated with identified sources.
- 5.1.13 A low risk has also been identified to future structures from Japanese Knotweed on the site and potential damage that it can cause to foundations, roads and hardstanding.

- 5.1.14 There is a low risk from contaminants (such as sulphates, sulphides, pH) to the integrity of any proposed structures although a moderate/ low risk to building foundations and underground services from unstable ground conditions has been identified.

Statutory Designation

- 5.2 In our opinion, under current use, the site is unlikely to be designated as statutory contaminated land by the local authority under the provision of Part IIA of the Environmental Protection Act 1990. This is due to the lack of potential pollution linkages associated with the current and historical site uses.
- 5.3 It is considered unlikely that the local authority has identified the site within their borough as a site of potentially contaminative use but will probably be looking for confirmation of site status under planning if proposals to develop the site are accepted at outline planning stage.
- 5.4 Based on development proposals, it would be expected that the planning authorities will insert standard clauses into a planning condition requiring appropriate investigation of the site to further assess the potential risks and explore options for remediation (if needed).

Financial Security

- 5.5 A number of minor potential environmental issues have been identified which would be considered unlikely at this time to affect the saleability and/or value of the site if sold for a redevelopment although further investigation should be completed to confirm this. Considering the level of uncertainty associated with the on site conditions and level of risk, there is currently insufficient information available at this stage to determine whether the site could be considered as acceptable security for funding from an environmental risk standpoint.

Cost Implications

- 5.6 In the event that work is required in order to comply with environmental regulations (i.e. Part IIa), planning condition requirements or recommended to reduce the level of environmental risk an indication of the cost estimate is given below:

Budget Estimate:

No costs identified	☐	Unknown	☒
Not yet determined	☐	Unquantifiable	☐
<£1,000	☐	£50,000 - £100,000	☐
£1,000 - £5,000	☐	£100,000 - £500,000	☐
£5,000 - £10,000	☐	£500,000 - £1m	☐
£10,000 - £50,000	☐	>£1m	☐

6.0 RECOMMENDATIONS

- 6.1 The following actions are recommended to further assess the suitability of the site for the proposed development, reduce, manage or clarify the level of environmental risk associated with the site.

Recommended Work	Reason
According to historic plans, Roman coffins were identified and located on a site to the south, an archaeological desk study should be undertaken to assess the potential for this on the proposed development site	Planning conditions & financial security
Completion of a Preliminary Phase 2 land quality assessment to assess the site conditions and to obtain sufficient data to further refine the conceptual model and environmental risks for submission to the local planning authority. This information would then be used to either formulate a detailed site investigation to further clarify the ground conditions/ risks and/or complete a remediation option study for agreement with the appropriate regulatory authority, if required. It is also advised that the environmental site investigation is combined with a geotechnical and soakage investigation to assist in the design of foundations, drainage, underground services, roads etc.	Planning conditions & financial security

7.0 REFERENCES

1. Department of the Environment, Transport and the Regions. Circular 02/2000, Statutory Guidance on Contaminated Land. March 2000.
2. DEFRA/ Environment Agency, Model Procedures for the Management of Land Contamination, CLR11, September 2004.
3. Information from Ordnance Survey Website: www.ordnancesurvey.co.uk, getamap, 1:50,000. Consulted November 2005.
4. Envirocheck Report (regulatory searches and OS historical maps) prepared by Landmark Information Group dated March 2006.
5. British Geological Survey. 2005. Sheet 188 Cambridge, Solid and Drift Edition. 1:50,000.
6. Information from Environment Agency Website: www.environment-agency.gov.uk consulted March 2006.
7. Department of the Environment, Transport and the Regions, Environment Agency and Institute of Environmental Health. Guidelines for Environmental Risk Assessment and Management. HMSO July 2000.
8. Construction Industry Research and Information Association (CIRIA). Contaminated Land Risk Assessment. A Guide to Good Practice. CIRIA C552 2001.

FIGURES

FIGURE 1
SITE LOCATION PLAN



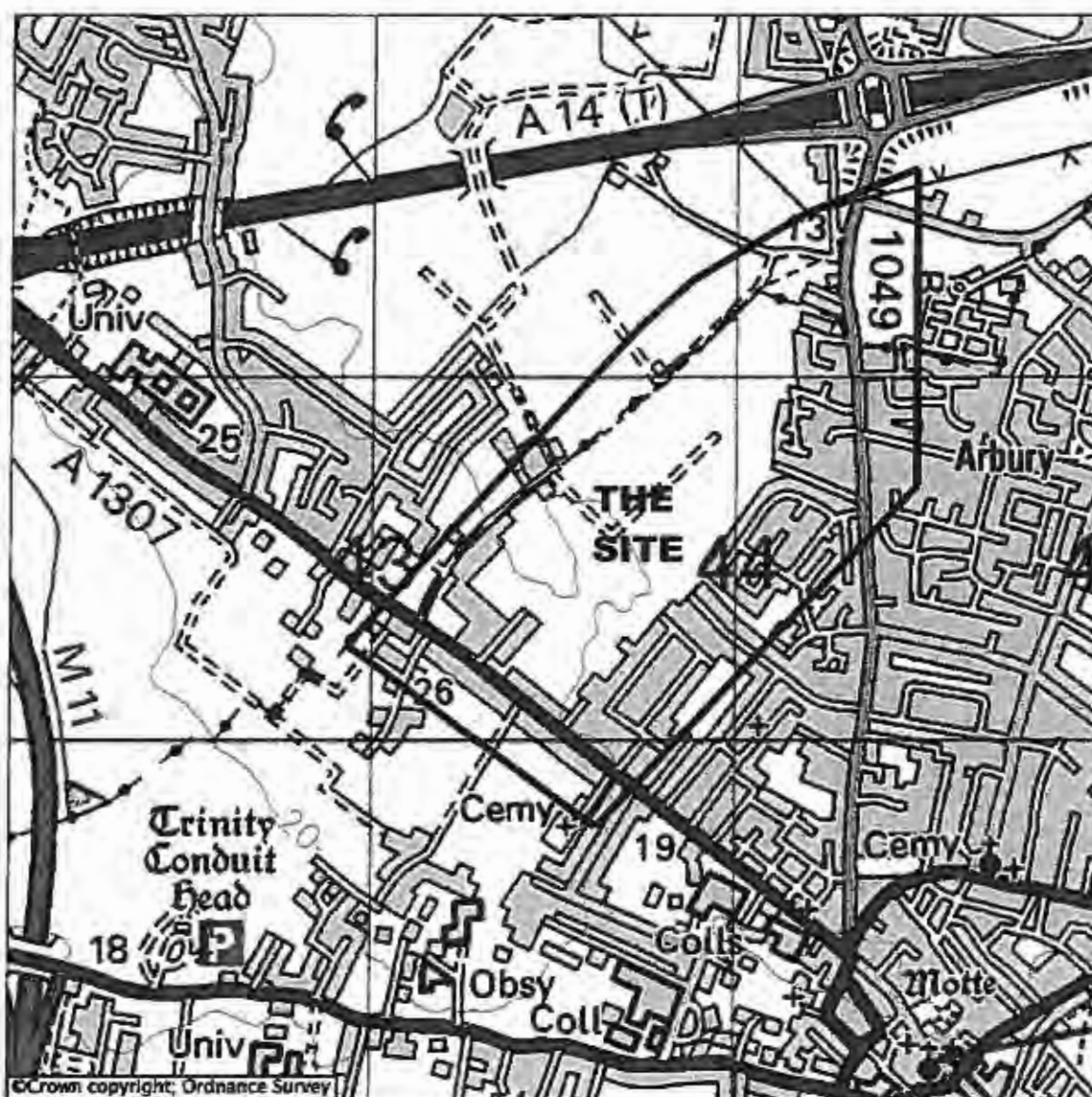
FIGURE 1 – SITE LOCATION PLAN

Project: HUNTINGDON RD/HISTON RD,
CAMBRIDGE

File Ref: 5593

O.S. Grid Ref: 543750, 260750

Postcode: CB4 3TB



SCALE 1:20,000 APPROXIMATE

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FIGURE 2A
SITE LAYOUT PLAN
(MAIN SITE)

FIGURE 2C

SITE LAYOUT PLAN
(NIAB FIELDS)

FIGURE 2D

**SITE LAYOUT PLAN
(CHIVERS HARTLEY
FIELDS)**

APPENDICES

APPENDIX A

**PHASE 1 ENVIRONMENTAL
RISK ASSESSMENT
METHODOLOGY**

LAND USE

This chapter establishes the former and current land uses which may have caused contamination or given rise to environmental concerns on the site. An inspection of the site has been undertaken to provide further details of the site and neighbouring activities and to observe environmental conditions.

Historical Maps

Information about the history of the site has been obtained primarily through an inspection of historical Ordnance Survey maps. These maps provide an excellent record of the historical uses of a site and can be very important in assessing potential liabilities. Historical maps can show past potentially contaminative uses at a site that would not necessarily be obvious during a site inspection, for example storage tanks or previous usage such as a gas works or quarry.

Public Record Information

Information concerning environmental regulations relating to the site has been obtained from a public register which has been accessed from a commercially database operated by the Landmark Information Group. This is the quickest means of gathering publicly available information. The data is supplied from within a 1km radius of a given National Grid Reference of a site. The database contains information from the Environment Agency (EA) and other statutory authorities responsible for monitoring environmental protection measures within the area of a site under existing legislation (see below).

Information has also been obtained directly from the environmental regulators in order to gauge the environmental characteristics of the site in more detail and to establish whether there have been any breaches of environmental regulations or pollution incidents associated with the site. This is used to support the publicly available information gathered from the commercial database. The time in which responses are returned can vary between statutory authorities.

Environmental Legislation

The principal environmental legislation in England consists of the Environmental Protection Act 1990 (EPA 90), the Water Resources Act 1991 and the Environment Act 1995 (EA 95). These Acts prescribe protection measures for all the environmental media (land, water and air) and are regulated by the EA and the Local Authority. Part 1 of the EPA 1990 sets out the statutory framework for Integrated Pollution Control (IPC) and Air Pollution Control (APC).

ENVIRONMENTAL SETTING

This chapter assesses the environmental sensitivity of the site location to contamination/pollution. It is important to establish the environmental setting because, irrespective of the level of contamination on the site, if its location is not 'sensitive' to this contamination/pollution there is a reduced risk of an environmental liability arising.

The sensitivity is assessed using British Geological Survey (BGS) information and data from the EA on groundwater and surface water. Data on abstractions have been obtained from the Landmark Information Group. The vulnerability of surface waters and groundwater is based on sensitivity to pollution, distance from abstractions, type and nature of groundwater and type of overlying strata. The EA have classified aquifers into three types, major aquifers, minor aquifers and non-aquifers depending upon the hydrogeological sensitivity, permeability and whether they support large abstractions for drinking water supplies.

Major Aquifers (Highly permeable)

These are highly permeable formations usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public supply and other purposes.

Minor Aquifers (Variably permeable)

These can be fractured or potentially fractured rocks which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits. Although these aquifers will seldom produce large quantities of water for abstraction, they are important both for local supplies and in supplying base flow to rivers. Major Aquifers may occur beneath Minor Aquifers but on this map extract the underlying Major Aquifer is only shown where the overlying Minor Aquifer is a drift deposit.

Non-Aquifers (Negligibly permeable)

Formations which are generally regarded as containing insignificant quantities of groundwater form a third group. However, groundwater flow through such rocks, although imperceptible, does take place and needs to be considered in assessing the risk associated with persistent pollutants. Some Non-Aquifers can yield water in sufficient quantities for domestic use. Major or Minor Aquifers may occur beneath Non-Aquifers.

Soil Classification

Three sub-classes are recognised:

H1 Soils which readily transmit liquid discharges because they are either shallow or susceptible to rapid by-pass flow directly to rock, gravel or groundwater;

H2 Deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential; and

H3 Coarse textured or moderately shallow soils which readily transmit non-adsorbed pollutants and liquid discharges but which have some ability to attenuate adsorbed pollutants because of their large clay or organic matter contents.

ENVIRONMENTAL RISK ASSESSMENT

This chapter assesses the potential for the site to give rise to environmental risks and whether or not the risks are acceptable or if further assessment or remedial action is required.

The qualitative risk assessment firstly considers the source of contamination and potential contaminants associated with the source(s) (or hazards). As well as the type of source, the extent, concentration and availability of a contaminant is also assessed.

The effect of a hazard on an identified receptor is largely governed by the sensitivity of a receptor. Receptors may typically include people, buildings, animals, plants and local resources (such as groundwater, surface waters, mines e.t.c). A change in the receptor should be considered if the end-use of the site changes, for example, if a commercial site is to be redeveloped into a residential housing estate as a residential occupier is considered more sensitive than a commercial occupier.

The presence of contamination (as a potential hazard) does not necessary mean that there is a risk. It is the exposure pathway and the quantity of contamination that reaches the receptor which may determine the effect on a receptor (such as the integrity of a barrier between a contamination source and receptor).

The risk classification for both likelihood and consequence is based on methodology presented in Contaminated Land Risk Assessment, A Guide to Good Practice (CIRIA C552, 2001) and has been developed from procedures outlined in DETR Circular 02/2000. The DETR, with the EA and Institute of Environment & Health, has also published guidance on risk assessment (Guidelines for Environmental Risk Assessment and Management). The guidance states that the designation of risk is based upon a consideration of both:

- The magnitude of the potential consequence (severity) of risk occurring which takes into account both the potential severity of the hazard and the sensitivity of the receptor; and

- The likelihood of an event occurring (probability) which takes into account the both the presence of the hazard and receptor and the integrity of the pathway.

The magnitude of consequence (severity) and likelihood (probability) is defined in the CIRIA guidance, together with examples. The two classifications are then compared (as shown on Table 1) to obtain an estimation of risk for each pollution linkage, ranging from “very high risk” to “very low risk”. A description of the risks and likely actions required is presented in Table 2. The benefit of estimating the risk in this way is that it can be revised after each investigation phase as the conceptual model and corresponding pollution linkages are refined.

Table 1 Comparison of consequence against probability

		Consequence			
		Severe	Medium	Mild	Minor
Likelihood	High likelihood	Very high risk	High risk	Moderate risk	Moderate/ low risk
	Likely	High risk	Moderate risk	Moderate/ low risk	Low risk
	Low likelihood	Moderate risk	Moderate/ low risk	Low risk	Very low risk
	Unlikely	Moderate/ low risk	Low risk	Very low risk	Very low Risk

Table 2 Description of the classified risks and likely action required

Level of Risk	Description of Classification
Very High Risk	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 currently happening. If this risk is realised, it is likely to result in significant environmental and financial liability to current and/ or future site owners/ occupiers. Urgent investigation (if not already undertaken) and remediation is likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. If risk is realised, it is likely to present a sizeable environmental and financial liability to current and/ or future site owners/ occupiers. Urgent investigation is required and remediation work may be necessary in the short term and likely over the longer term.
Moderate Risk	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 the harm would be relatively mild. Investigation is normally required to clarify the risk and determine the potential environmental liability. Some remedial works may be required over the longer term.
Low Risk	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 may be recommended to clarify the risk, dependant on the sensitivity of the receptor and view point of those of interest. Any remedial works are likely to be fairly limited.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is likely to be mild or minor.

The acceptability of risk will always depend upon the view point of those of interest, whether it is an occupier of a site, a regulator or stakeholder. As a result, it could be that action will be required to deal with a level of risk even if it is classified as very low.

APPENDIX B
PHOTOGRAPHIC
RECORD



AST located beside Spore Proof Building/ glasshouse used to store diesel



Agricultural chemical storage unit in the main site opposite the NIAB offices



Tanks 2 and 3 used to store red diesel, pump and waste oil tank in off-site farm yard.



Redundant Tank 1 formally used to store white diesel and associated pump



View on Borehole (NIAB Field).



4000 litre bunded AST located beside Farmer's Office

APPENDIX C
ENVIROCHECK
REPORT

Envirocheck[®] Report:**Datasheet****Report on:**

Huntingdon Road
Cambridge

National Grid Reference :

543670, 260660

Site Area (Ha) :

53.21

Prepared For :

TA Millard Midlands Ltd
Heron House
Newdegate Street
Nuneaton
Warwickshire
CV11 4EL

Your Reference:

Mr E Mewies, Huntingdon Road,
Cambridge

Summary

Agency & Hydrological

Waste

Hazardous Substances

Geological

Industrial Land Use

Sensitive Land Use

Data Currency

Data Suppliers & Copyright Statements

Useful Contacts

BGS Borehole Order Form

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity Data Sheet places great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from English Nature (and the Scottish and Welsh equivalents), the Environment Agency (and the Scottish equivalent) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the legend database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

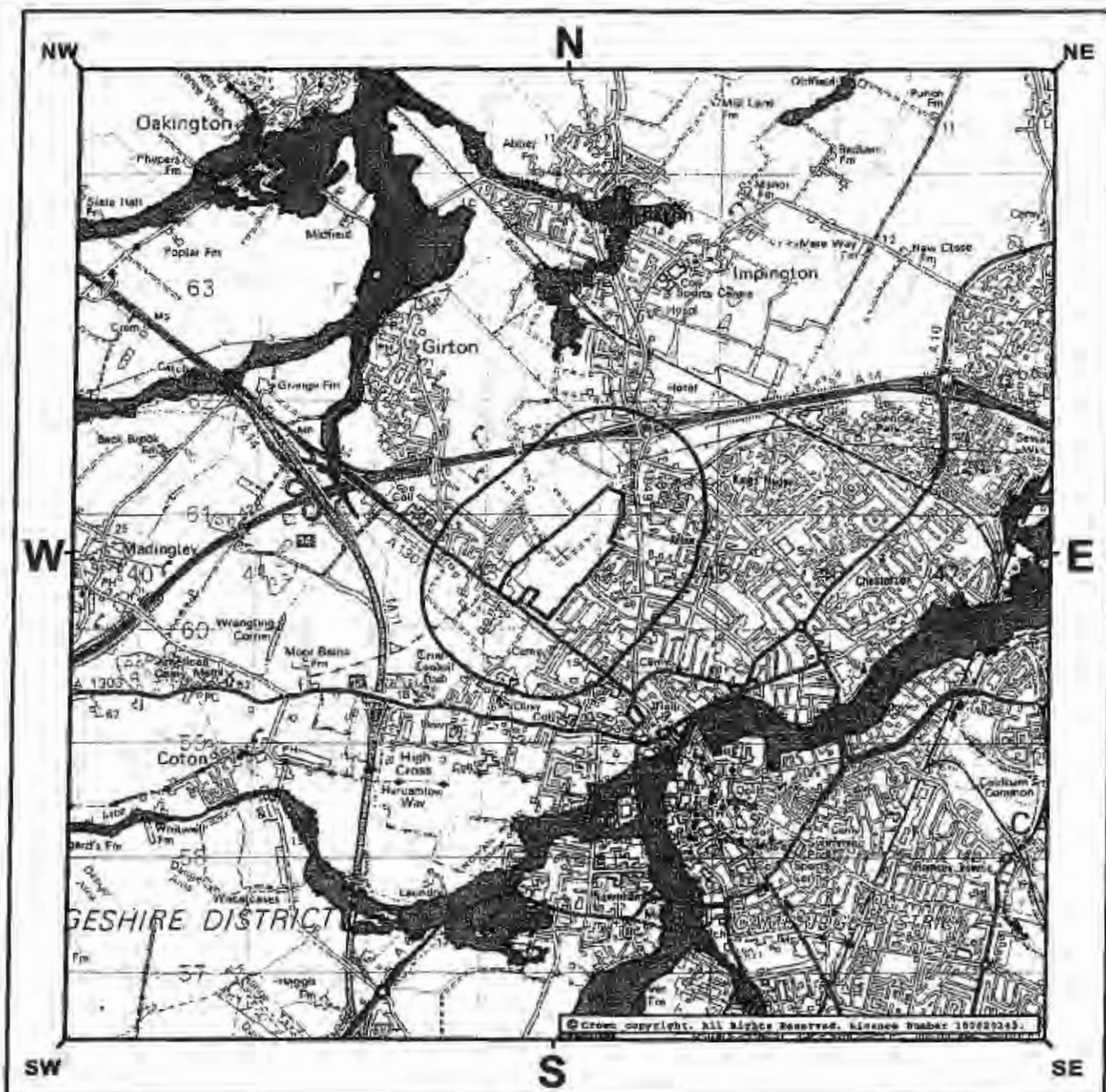
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Data Type	On Site	700m from site
Agency & Hydrological		
Local Authority Pollution Prevention and Controls		2
Local Authority Pollution Prevention and Control Enforcements		
Contaminated Land Register Entries and Notices		
Discharge Consents		2
Enforcement and Prohibition Notices		
Integrated Pollution Controls		
Integrated Pollution Prevention And Control		
Local Authority Integrated Pollution Prevention And Control		
Nearest Surface Water Feature		Yes
Pollution Incidents to Controlled Waters	1	4
Substantiated Pollution Incident Register		
Prosecutions Relating to Authorised Processes		
Prosecutions Relating to Controlled Waters		
Water Industry Act Referrals		
Registered Radioactive Substances	4	
River Quality		
River Quality Biology Sampling Points		
River Quality Chemistry Sampling Points		
Water Abstractions	7	18
Groundwater Vulnerability	Yes	
Source Protection Zones		
Extreme Flooding from Rivers or Sea without Defences		
Flooding from Rivers or Sea without Defences		
Areas Benefiting from Flood Defences		
Flood Water Storage Areas		
Flood Defences		
River Flood Data (Scotland)		
Waste		
BGS Recorded Landfill Sites		
Integrated Pollution Control Registered Waste Sites		
Licensed Waste Management Facilities (Landfill Boundaries)		
Licensed Waste Management Facilities (Locations)		
Local Authority Recorded Landfill Sites		
Registered Landfill Sites		1
Registered Waste Transfer Sites		
Registered Waste Treatment or Disposal Sites		1

Data Type	On Site	700m from site
Hazardous Substances		
Control of Major Accident Hazards Sites (COMAH)		
Explosive Sites		
Notification of Installations Handling Hazardous Substances (NIHHS)		
Planning Hazardous Substance Consents		
Planning Hazardous Substance Enforcements		
Geological		
BGS Boreholes	2	27
BGS Recorded Mineral Sites		1
BGS 1:625,000 Solid Geology	Yes	Yes
Brine Compensation Areas		
Coal Mining Affected Areas		
Shallow Mining Hazards		
Potential for Collapsible Ground Stability Hazards		
Potential for Compressible Ground Stability Hazards		
Potential for Ground Dissolution Stability Hazards		Yes
Potential for Landslide Ground Stability Hazards	Yes	Yes
Potential for Running Sand Ground Stability Hazards	Yes	Yes
Potential for Shrinking or Swelling Clay Ground Stability Hazards	Yes	Yes
Mining Instability		
Natural and Mining Cavities		
Radon Affected Areas		
Radon Protection Measures		
Industrial Land Use		
Contemporary Trade Directory Entries		15
Fuel Station Entries		2

Data Type	On Site	700m from site
Sensitive Land Uses		
Areas of Adopted Green Belt		
Areas of Unadopted Green Belt	1	1
Areas of Outstanding Natural Beauty		
Environmentally Sensitive Areas		
Forest Parks		
Local Nature Reserves		
Marine Nature Reserves		
National Nature Reserves		
National Parks		
National Scenic Areas		
Nitrate Sensitive Areas		
Nitrate Vulnerable Zones	1	
Ramsar Sites		
Sites of Special Scientific Interest		2
Special Areas of Conservation		
Special Protection Areas		



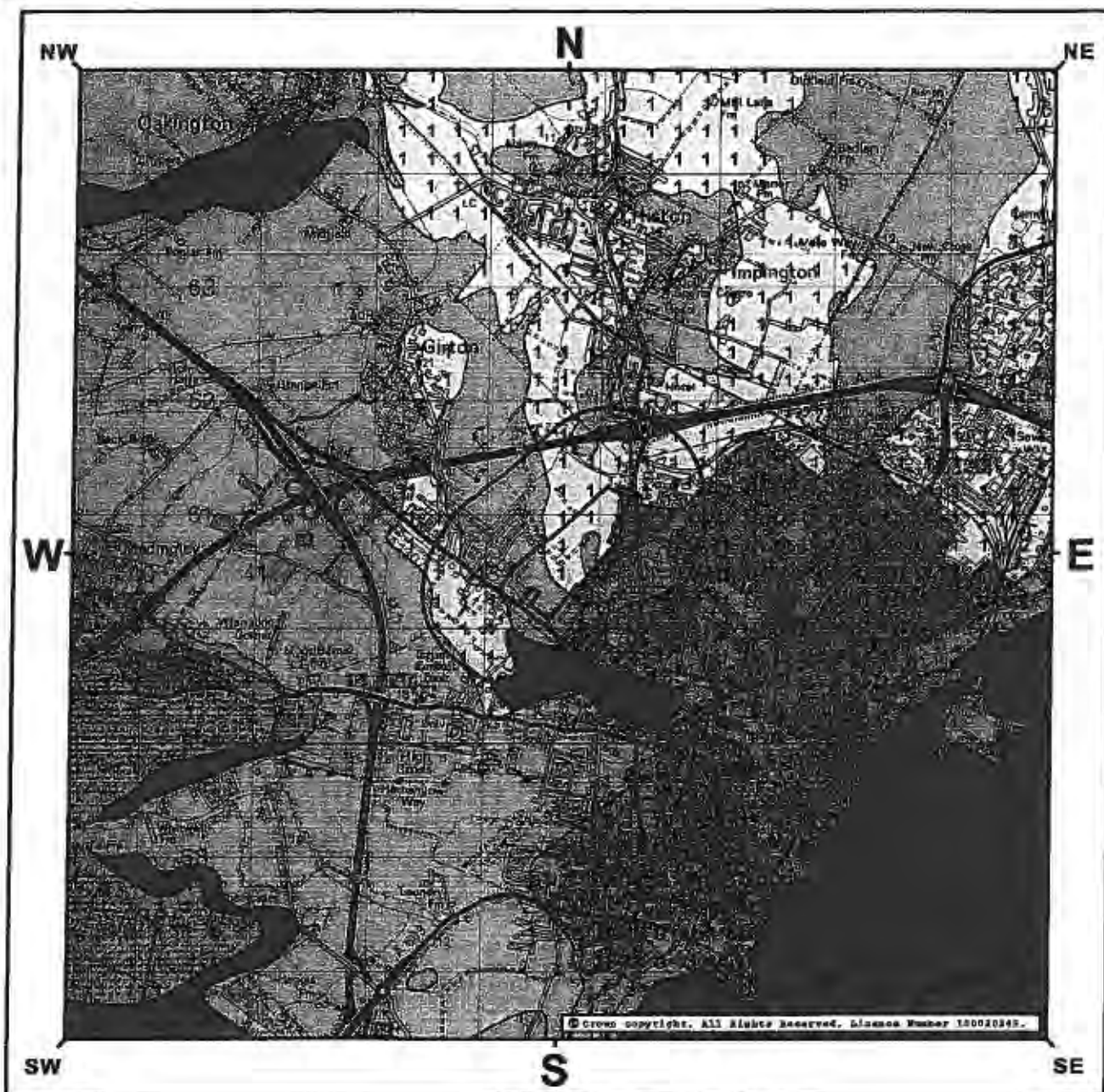
KEY

General

- Specified Site
- ✕ Bearing Reference Point
- Buffer

Agency & Hydrological Environment Agency

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- ▨ Area Benefiting from Flood Defences
- ▨ Flood Water Storage Areas
- Flood Defences



KEY

General

- △ Specified Site
- × Bearing Reference Point
- Buffer

Groundwater Vulnerability

Geological Classes

Major Aquifer
(High Permeable)

Minor Aquifer
(Variable Permeable)

Non Aquifer
(Negligibly Permeable)

Soil Classes

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

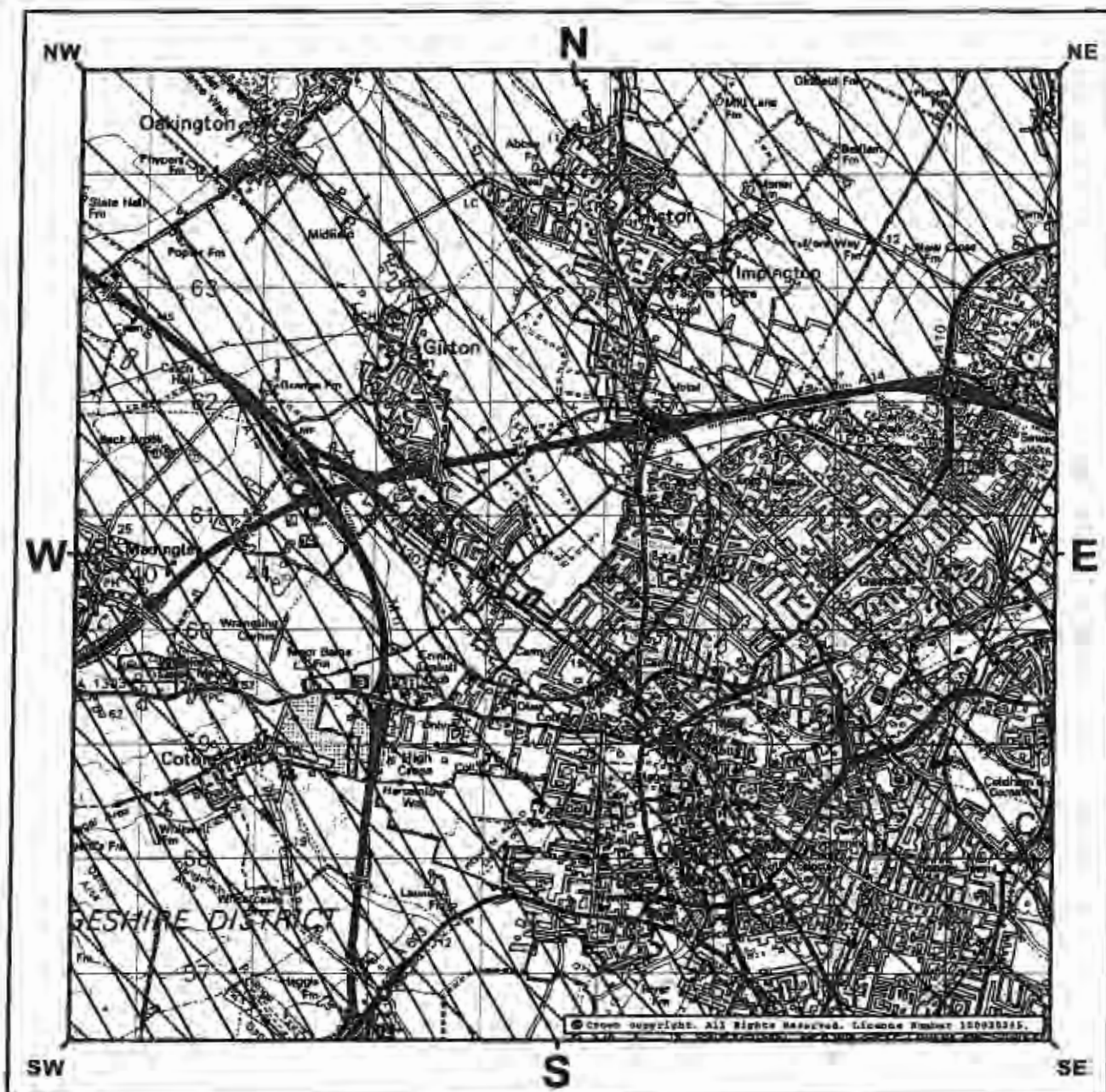
Low

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

Low

Drift Deposit



KEY

General

- Specified Site
- ✕ Bearing Reference Point
- Buffer

Sensitive Land Uses

- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty

- Environmentally Sensitive Area

- Forest Park

- Local Nature Reserve

- Marine Nature Reserve

- National Nature Reserve

- National Park

- National Scenic Area

- Nitrate Sensitive Area

- Nitrate Vulnerable Zone

- Ramsar Site

- Site of Special Scientific Interest

- Special Area of Conservation

- Special Protection Area



Envirocheck®

A Landmark® product

KEY TO THE LEGEND DATABASE

General

- Specified Site
- Bearing Reference Point
- Buffer (1000m)
- Reference Number
- Several of Type at Location

Waste

- Point Location of BGS Recorded Landfill Site
- BGS Recorded Landfill Site
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facilities (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Point Location of Local Authority Recorded Landfill Site
- Local Authority Recorded Landfill Site

Agency and Hydrological

- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Point Location of Contaminated Land Register Entry or Notice
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement Or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Pollution Incident to Controlled Waters
- Substantiated Pollution Incident Register
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Quality Sampling Point
- Water Abstraction
- Water Industry Act Referral

- Registered Landfill Site (Polygon)
- Point Location of Registered Landfill Site
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Point Location of Registered Waste Transfer Site
- Registered Waste Transfer Site
- Point Location of Registered Waste Treatment or Disposal Site
- Registered Waste Treatment or Disposal Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Geological

- BGS Borehole
- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry



Environment
Agency



British
Geological Survey



Ordnance
Survey

Licensed Partner

FIGURE 2B

**SITE LAYOUT PLAN
(SPORTS FIELD)**



Envirocheck
National Index

Order No. QC17837421.1.2 Grid Reference 543670 250660
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APPENDIX D
REPLIES FROM
CONSULTEES

In case of enquiry contact Dr Anita Lewis, Mr Jo Dicks or
Miss Themis Kantara
Tel: 01223 457926
Fax 01223 457909
E-mail: anita.lewis@cambridge.gov.uk
Jo.dicks@cambridge.gov.uk
themis.kantara@cambridge.gov.uk



Environmental
Health & Waste
Strategy

T A Millard Midlands Ltd
Heron House
Newdegate Street
Nuneaton Warwickshire
CV11 4EL

30th March 2006

Our Ref: Huntingdon Road, Cambridge
Your Ref: CM/EM/5593

T. A. Millard Midlands Ltd NUNEATON	
Received:	3/4/06
Project No:	5593
Circulate To:	EM
Copied To:	C. MEEL
Action:	

Dear Mr Meek,

RE: Huntingdon Road, Cambridge

Enclosed is the Land Use Report for Huntingdon Road. I hope you find the information useful. Please do not hesitate to contact me if you have any other queries related to contaminated land in Cambridge City. The invoice for £100 will follow.

Yours Sincerely,

Themis Kantara

Assistant Scientific Officer

enc

Environmental Health Cambridge City Council,
4 Regent Street, Cambridge, Cambridgeshire, CB2 1BY,
Telephone 01223 457926.



2003-2004
Quality of the Built Environment



DYESTON IN PEOPLE

Land Use History Report for Huntingdon Road

Prepared for T A Millard Midlands Ltd, Heron House, Newdegate Street, Nuneaton by Environmental Protection, Cambridge City Council, 4 Regent Street, Cambridge, CB2 1BY

Site Location:

543728 Easting, 260265 Northing



Based upon *Cities Revealed* aerial photography (copyright Cambridge City Council, supplied by The GeoInformation @ Group, 2002) and OS mapping (© Crown copyright. All rights reserved. Cambridge City Council Licence No. 100019730, 2004)

Site History:

1885-1888: First County Series OS mapping shows no evidence of industrial use for the site now occupied by the National Institute of Agricultural Botany (N.I.A.B). Unmarked buildings and vegetation occupy the western corner of the site and there is a series of trees at the northwest border. On the northeast, southeast and southwest the property is bounded by open space.

1888-1891: County Series OS mapping shows no change of use for the site and its immediate surroundings.

1902-1903: County Series OS mapping shows the northwest part of the site being occupied by trees and the western corner being occupied by Close Farm and associated buildings. There is no change of use for the immediate surroundings.

1903-1904: County Series OS mapping shows no change of use for the site and its immediate surroundings.

1926-1927: County Series OS mapping shows Close Farm being renamed in White House. The southwest border along Huntingdon Road is occupied by N.I.A.B and associated buildings. The southern corner is occupied by Christ's and Sidney Sussex College sports ground and two unmarked buildings. There is housing to the southwest of the site along Huntingdon Road.

1927-1928: County Series OS mapping shows no change of use for the site. There are unmarked buildings to the northeast of the site.

1938-1952: County Series OS mapping show no change of use for the site and its immediate surroundings.

1959-1960: County Series OS mapping show no change of use for the site. Mid-terraced housing and allotments occupy the east of the site.

1964-1991: County Series OS mapping shows the structures mentioned above still present. There is a Granary facility with associated buildings, part of the extension of N.I.A.B, on the northwest border along Whitehouse Lane. A building, the Willows, is near to the granaries and the White House. An electricity sub-station is present at the end of Howes Place. Tanks are shown near some unmarked buildings close to the main buildings. There is a meteorological station on the eastern part of the site.

1967-1972: County Series OS mapping shows no change of use for the site and its immediate surroundings.

1972-1974: County Series OS shows no change of use for the site and its immediate surroundings.

1982-1993: County Series OS mapping show no change of use for the site and its immediate surroundings.

Present – Aerial photography (2002) and recent records show N.I.A.B and its associated facilities still present and occupying the southern part of the site. The remaining structures mentioned above are still present. There is an additional meteorological station present on the western corner.

Additional comments

The sites mentioned in this report and all sites that have a previous potential contaminative use will be investigated at some point under Part IIA after this department has carried out its ranking procedure as part of the Council's Contaminated Land Strategy. At present none of the mentioned areas have been identified as contaminated land under Part IIA of the EPA 1990.

NB: It is recommended that you satisfy yourself as to the actual condition of the land in question. This information is given in good faith but without acceptance by the council of any liability arising from any inaccuracy in the information supplied to the council by third parties concerning possible contamination. More information may be available from private sources and also from records kept by the Development Control Section of the Environment and Planning Department.

Main data sources used:

1:1250, 1:2500 & 1:10000 Ordnance Survey maps 1885-2000

Kelly's Directory of Cambridge 1860-1975

Various City Council and County Council records

Your ref: CM/EM/5593

Date: 29th March 2006

Contact: Susan Haylett

Direct Dial: 01223 717374

E Mail: susan.haylett@cambridgeshire.gov.uk

T A Millard Midlands Ltd
Heron House
Newdegate Street
Nuneaton
Warwickshire
CV11 4EL



Cambridgeshire
County Council

Office of Environment & Community Services
Deputy Chief Executive, Brian Smith

Environment Policy and Projects

Box No. ET1001
Castle Court
Castle Hill
Cambridge
CB3 0AP

T A Millard Midlands Ltd	
Received	3/4/06
Project No	5593
Circulate To	Em/Em
Assigned To	

Dear Chris Meek,

In response to your letter dated 10th March 2006, please find enclosed a map showing the environmental constraints to the proposed development site at Huntingdon Road, Cambridge.

If I can be of any further assistance, please do not hesitate to ask either myself or Janet Martin (Environment Quality Officer) on 01223 717831.

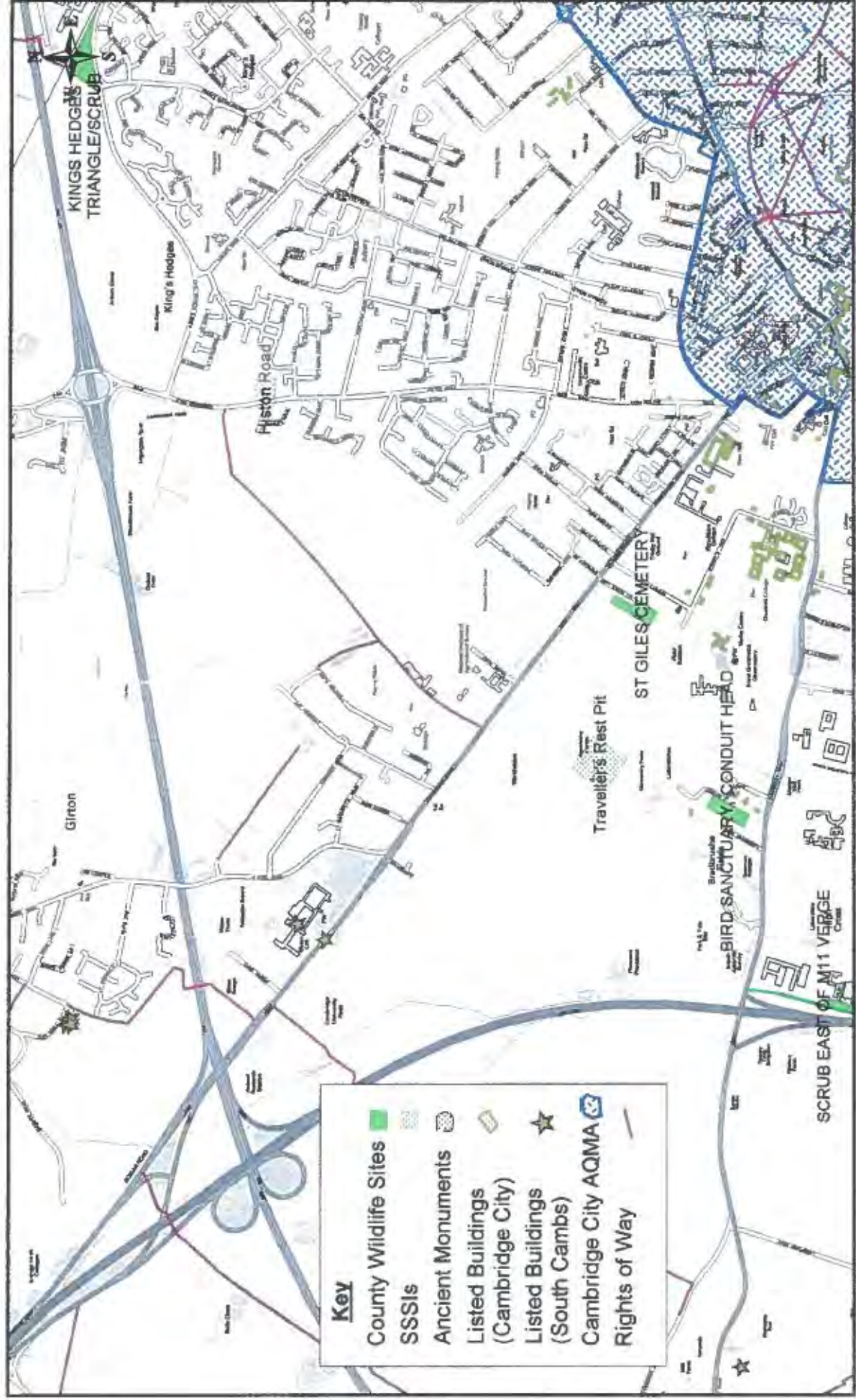
Yours sincerely,

Susan Haylett

Environment Officer (Information)
Environment Policy and Projects

Enc.

Cambridgeshire County Council



Key

- County Wildlife Sites
- SSSIs
- Ancient Monuments
- Listed Buildings (Cambridge City)
- Listed Buildings (South Cambs)
- Cambridge City AQMA
- Rights of Way

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Scale: 1:19001
 Date: 29/03/2008
 By: Susan Haylett

Your ref: CM/SL/5593

My ref:

Date: 10 April 2006

Contact: Ben Bowles

Direct Dial: 01223 718224

Fax: 01223 718537

E Mail: Ben.Bowles@Cambridgeshire.gov.uk

Chris Meek

T A Millards Midlands Ltd

Heron House

Newdegate Street

Nuneaton

Warwickshire

CV11 4EL



Cambridgeshire
County Council

Office of Environment & Community Services

Deputy Chief Executive, Brian Smith

County Development, Minerals & Waste Group

Strategic Planning

Box No. ECS1011

Castle Court

Castle Hill

Cambridge

CB3 0AP

T A Millards Midlands Ltd NUNEATON	
Received	12/4/06
Project No	5593
Circulate To	EPR
By	CM/MD

Proposed Development Site, Huntingdon Road, Cambridge

Dear Mr Meek,

With reference to your letter dated 30th March regarding the above named site, I have searched our database for Minerals and Waste applications. There are no Minerals or Waste sites within 200m of the site in question. Should you require more historic information please contact the Environment Agency (regional office at Brampton) where they have details of historic sites that pre-date the County Council.

If you require further information, such as planning constraints, may I suggest that you contact Cambridge City Council as they will be the determining Authority for residential applications.

Please do not hesitate to contact me if you have any further questions.

Yours Faithfully

Ben Bowles
Planning Support Officer
Minerals & Waste



Your ref: CM/SL/5593
My Ref: CM/SL/5593/AS
Date: 11 April 2006
Please ask for: Andy Thomas
Direct Dial No: (01223) 717436
Fax No: (01223) 362425
E-Mail: Andy.thomas@cambridgeshire.gov.uk

T.A Millard Midlands Ltd
Heron House
Newdegate Street,
Nuneaton
Warks
CV11 4EL

T.A Millard Midlands Ltd NUNEATON	
Received:	13/4/06
Project No:	5593
Circulate To:	EM
Copies To:	
Intention:	

Cambridgeshire Archaeology
Planning and Countryside Advice
Box ELH 1108
Castle Court
Castle Hill
Cambridge
CB3 0AP

Dear Sirs

Re: Proposed Development Site – Huntingdon Road, Cambridge

Thank you for your recent letter regarding the archaeological potential of land in the Huntingdon Road/ Histon Road area. The plot lies in an area of high archaeological potential, with remains of Iron Age, Roman and Saxon/ Medieval date known from the surrounding area. Of particular relevance is the Roman Road from Cambridge to Godmanchester (modern A1307), which appears to have been a focus for a range of activities, including roadside cemeteries (CHER 07902 & 05186) and settlement activity, including outlying farmsteads etc (CHER 09534, 09528, 09529). The area around Girton college, to the northwest of the development site, was a major focus for Saxon activity, including important cremation and inhumation cemeteries, while the lost Medieval hamlet of Howes is also thought to have been situated in the immediate vicinity of the proposed development site. Collectively, the density of known and suspected archaeological sites in the vicinity suggests that considerable potential exists for the discovery of additional as yet unknown archaeological remains during any development works.

Accordingly, while at this stage there are no known archaeological constraints on the plot which would act as an outright bar on development, the presence of archaeological remains may act as a constraint on any development proposals, requiring either full archaeological excavation or an appropriate scheme design to avoid/ leave in-situ any particularly significant remains before development can proceed.

Accordingly, if this Office was asked to comment on any planning application for the site we would strongly recommend that the site is subject to an **archaeological evaluation**, to be commissioned and undertaken at the expense of the developer, and carried out **prior** to the granting of planning permission. The evaluation results will allow for a fuller consideration of the presence or absence, date, character and significance of any archaeological deposits that may be present. As noted above, an informed decision can then be made as to whether archaeological mitigation works will need to include provision for excavation and recording or the preservation *in situ* of important archaeological remains. Any requirement for further work beyond the evaluation stage would obviously be dependant upon the results of the evaluation and the design of any development proposal (i.e. if present, could any archaeological deposits be preserved in situ in areas of landscaping, or through foundation design etc); however, in the event that significant remains are discovered, further work

(excavation) may be required. It is standard practice for this office to provide a design brief for such an evaluation.

I hope the above information of some use to you; however, please do not hesitate to contact me at the above office if you wish to discuss this matter further.

Yours faithfully

A handwritten signature in black ink, appearing to be 'A. Thomas', with a stylized, flowing script.

Andy Thomas
Principal Archaeologist

creating a better place



**Environment
Agency**

Date 10 April 2006

Please quote on all correspondence

Mr Chris Meek
Associate Director
T A Millard Midlands Ltd
Heron House
Newdgate Street
NUNEATON
CV11 4EL

Our ref

Your Ref
NUNEATON

CCC/2006/12213

CM/EM/5593

T A Millard Midlands Ltd	NUNEATON
Received	12/4/06
Project No	5593
Circulate To	Em/cm
Cooled To	
Action	

Dear Mr Meek

Huntingdon Rd, Cambridge

Thank you for your recent enquiry; we are pleased to respond as follows:

Our Environmental Management Team report that they have no records of any significance for the above site.

Most of the site overlies a minor aquifer, with soils of intermediate to high leaching potential. The site lies outside of any Source Protection Zone.

There are a number of "awarded" watercourses in the area that either come under the jurisdiction of South Cambridgeshire District Council or Cambridge City Council. They should be consulted on this matter via Pat Mathews, (SCDC) and Alan Wingfield (CCC).

Any culverting or works affecting the flow of a watercourse requires our prior written Consent under the terms of the Land Drainage Act 1991/Water Resources Act 1991. We seek to avoid culverting, and its Consent for such works will not normally be granted except as a means of access.

We, and the Local Authority, have permissive powers to maintain watercourses depending on the watercourse's definition as "Main River" or "Ordinary Watercourse".

Please find enclosed, for information, a copy of our booklet entitled "Living on the Edge".

Planning Policy Guidance No 25 (PPG 25 Development & Flood Risk, Paragraph 60 Appendix F) states that the applicant should carry out an assessment of flood risk and the run-off implications of their proposals that is appropriate to the scale and nature of the development and the risk involved.

The site is not situated within the floodplain of a main river, as shown on our Indicative Floodplain Maps. However, flood risk can originate from many sources including ordinary watercourses (those that are not designated main river), Internal Drainage Board (IDB's) drains, surface water sewers, overland flow, springs and high groundwater

The Environment Agency

Bromholme Lane, Brompton, Huntingdon, Cambs, PE28 4NE

Tel: 08708 506 506 www.environment-agency.gov.uk



levels. We cannot advise on any of these flood risks, as we do not hold the information. Such information may be available from local authorities, parish council records, IDB's and/or by local enquiry.

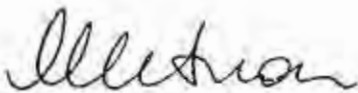
The flood risk assessment should be submitted with any application.

You should note that surface water flow balancing may be necessary for this development. The developer is advised to discuss with us, at their earliest convenience, the drainage strategy for the proposed development.

Sustainable Urban Drainage systems/methods should be considered.

The information is provided subject to the enclosed Notice (12/8/98), which you should please read.

Yours sincerely



PM
ANDREW MOZLEY
Planning & Corporate Services Manager

Encs: As detailed in main text

Please ask for Pam Gibson
Direct line 01480 483982
Direct dial fax 01480 483823



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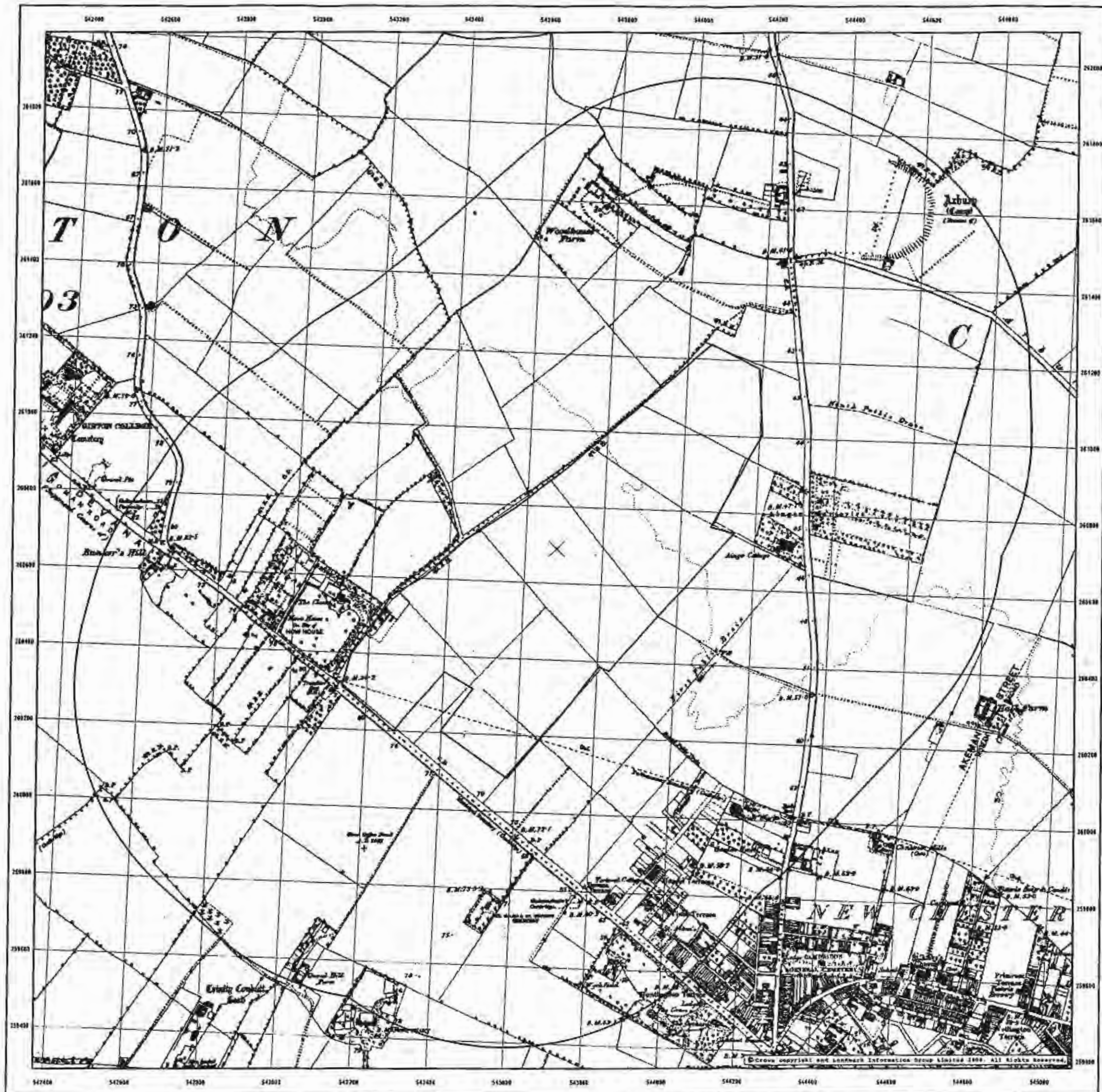
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 - If you are a professional adviser you may give a single unamended and un-adapted copy to your client (or more than one client if they jointly instruct you) provided that you also attach a copy of these notes and conditions. Recipients should also be advised that they must comply with them.
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NB Please also read any additional information or warning we give you about specific Data



APPENDIX E
HISTORICAL
ORDNANCE SURVEY
MAPS



CLIENT DETAILS Envirocheck Order No. QC17837421_2_2

Customer Ref: Mr E. Mewles, Huntingdon Road, Cambridge
TA Miltard Midlands Ltd
Heron House Newdegate Street
Huntingdon
Warwickshire CV11 4EL

SITE DETAILS Grid Reference 543680 260690

Huntingdon Road

Cambridge

Historical Map Legend



Ordnance Survey County Series

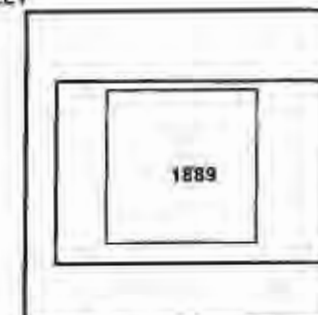
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published data given on this right therefore is often some years later than the surveyed data. Before 1928, 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 1940s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unaltered - with all military camps and other strategic sites removed. These maps were initially reprinted with the National Grid. In 1976, the first 1:10,560 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.

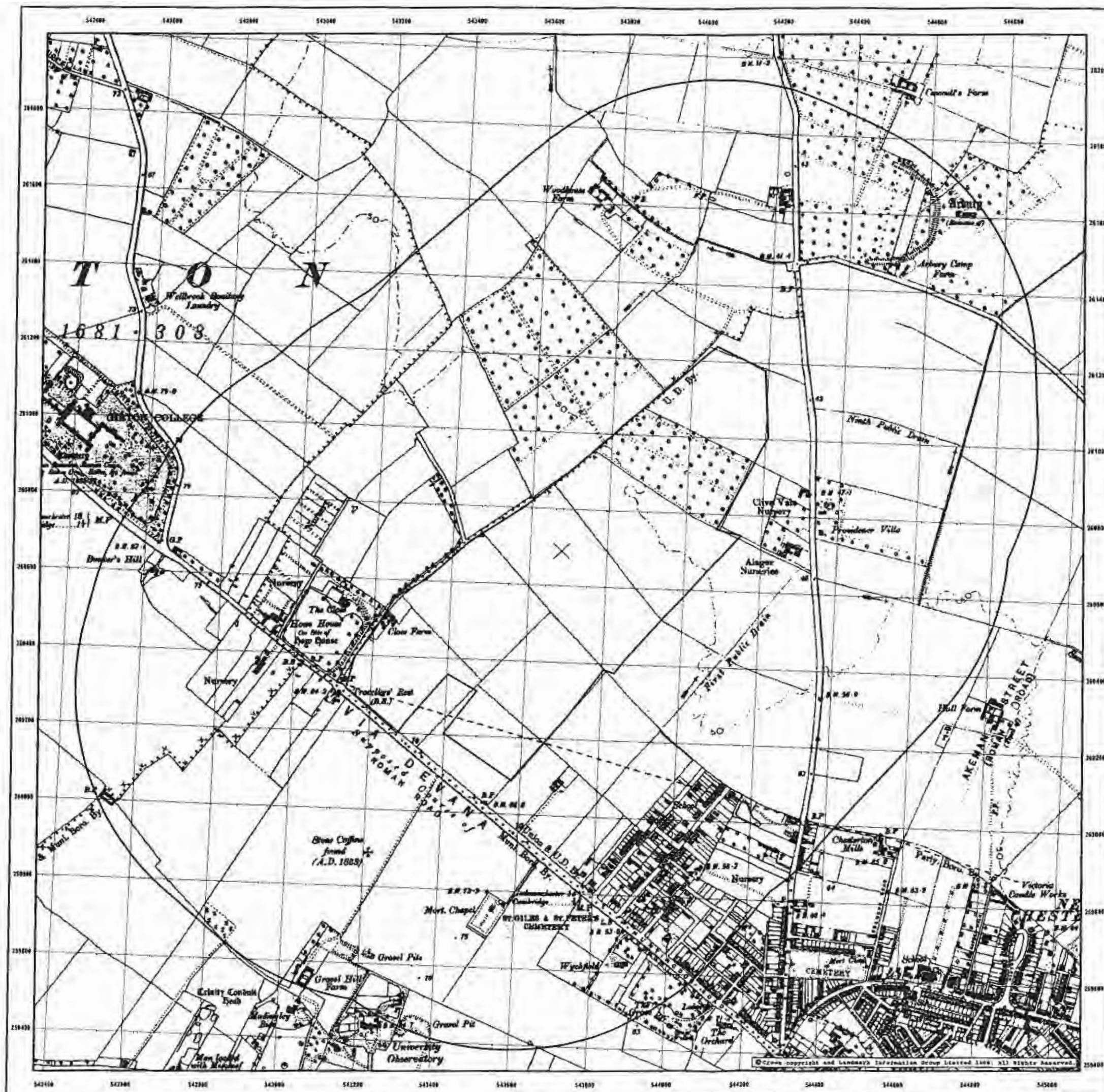
CAMBRIDGESHIRE & ISLE OF ELY

Published 1889

Source map scale - 1:10,560



Date(s) of Publication 1889



CLIENT DETAILS Envirocheck Order No. QC17837421_2_2

Customer Ref: Mr E Mewies, Huntingdon Road, Cambridge
TA Millers Midlands Ltd
Norton House Newgate Street
Nuneaton
Warwickshire CV11 4EL

SITE DETAILS Grid Reference 543680 260690

Huntingdon Road
Cambridge

Historical Map Legend

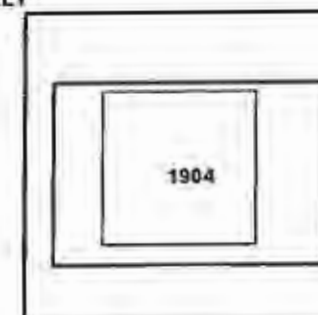


Ordnance Survey County Series

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 data given on the right therefore is often some years later than the surveyed date. Before 1928, 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 surveying 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 were published - with all military camps and other strategic sites removed. These maps were initially unprinted with the National Grid. In 1973, the first 1:10,560 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.

CAMBRIDGESHIRE & ISLE OF ELY
Published 1904
Source map scale - 1:10,560



Date(s) of Publication 1904



CLIENT DETAILS Envirocheck Order No. QC17837421_2_2

Customer Ref: Mr E. Mawles, Huntingdon Road, Cambridge
YA Millard Midlands Ltd
Heron House Newgate Street
Hunstanton
Worwickshire CV11 4EL

SITE DETAILS Grid Reference 543680 260690

Huntingdon Road
Cambridge

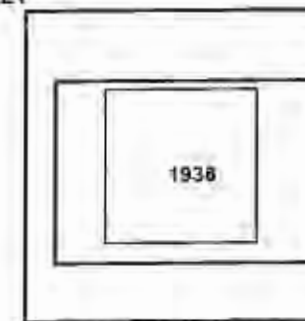
Historical Map Legend



Ordnance Survey County Series

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 1:25,000 scale was adopted for mapping urban areas; these maps were used to update the 1:10,000 maps. The published date given on the right 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 1:10,000 mapping from a number of sources. The maps appear unaltered - with all military camps and other strategic areas removed. These maps were initially overprinted with the National Grid. In 1978, 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.

CAMBRIDGESHIRE & ISLE OF ELY
Published 1938
Source map scale - 1:10,560



Date(s) of Publication 1938

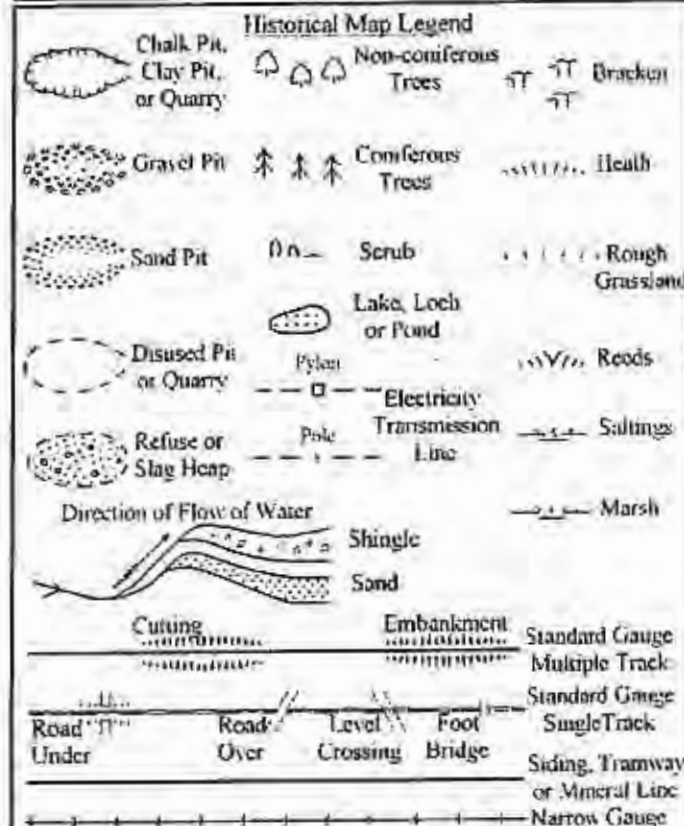
CLIENT DETAILS

Envirocheck Order No. QC17837421_2_2
Customer Ref: Mr E Mewies, Huntingdon Road, Cambridge
TA Millard Midlands Ltd
Heron House Newingate Street
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Warwickshire CV17 4EL

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Cambridge

Grid Reference 543680 250690



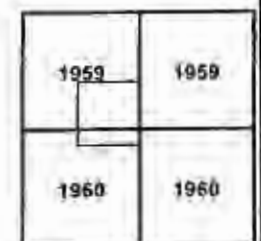
Ordnance Survey Plan

The historical maps shown were reproduced from maps predominantly held at the scale stated for England, Wales and Scotland in the 1940's. In 1954 the 1:10,560 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published data given on the right therefore is after some years (and then the surveyed date). Before 1954, all OS maps were based on the Cassini Projection, with independent surveys of a single survey or group of counties, giving rise to significant inaccuracies in surveying 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 unaltered - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,560 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.

ORDNANCE SURVEY PLAN

Published 1959 to 1960
Source map scale - 1:10,560



Date(s) of Publication 1959

APPENDIX F
NOTES ON
LIMITATIONS

**T A MILLARD LIMITED, ENVIRONMENTAL AND GEOTECHNICAL
CONSULTANCY SERVICES**

NOTES ON LIMITATIONS

General

T A Millard Midlands Limited have completed the attached report for the use of the Client detailed on the front cover and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed.

Third parties should not use or rely upon the contents of the report unless written approval has been gained from T A Millard Midlands Limited; (due to legal requirements, a charge may be levied against such approval).

T A Millard Midlands Limited accepts no responsibility or liability for:

- a) the consequences of this documentation being used for any purpose or project other than that for which it was commissioned, and
- b) this document to any third party with whom approval for use has not been agreed.

Phase I Environmental Risk Assessments, Desk Studies and Site Audits

The work completed and utilised to provide this report comprises a study of available documentation. The opinions and results presented in this report have been arrived at by utilising the finite amount of data available at the time of writing and are relevant only to the purpose for which the report was commissioned. The data which has been reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative information pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, T A Millard Midlands Limited reserves the right to review this information and, if warranted, to modify the opinions presented in the report accordingly.

It should be noted that the risks which are identified in this report are perceived risks based on the available information at the time of writing and that the actual risks associated can only be assessed following a physical investigation of the site.

Phase II Intrusive Environmental Audits

The intrusive investigation has been completed to provide information concerning the type and degree of contamination present along with ground and groundwater conditions which facilitates a reasonable risk assessment to be completed. The stated objectives of the ground investigation have been limited to assessing the proven risks which are associated with potential human targets, building materials, the environment (including adjacent land), and to surface and groundwater.