

**GROUND INVESTIGATION REPORT****UPON****EXISTING BELL INN****CHURCH STREET****PINCHBECK, SPALDING, LINCS****PROJECT No: SW 25-229****DOCUMENT REF: SW 25-229-REP-01**

Venture Business Space Ltd.  
Studio 5, Paragon Studios, Chariot House  
Carr Lane  
Hull, HU1 3RF



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## 1. INTRODUCTION

Originally Acting upon the instruction of Remway Design, on behalf of Charlotte Properties Ltd, we attended site on 28<sup>th</sup> September 2021, the purpose being to observe the underlying ground conditions and determine the basic characteristics of the soil strata.

Mechanically excavated trial pits took place, and our comments are based upon a visual inspection of the disturbed samples obtained and the in-situ strata within the trial pits.

We would suggest the groundwater conditions may vary seasonally and that the water levels as recorded at the time of explorations should not necessarily be taken as being constant as they may be subject to fluctuations.

The opinions and comments expressed within this report are based upon ground conditions encountered in the trial pits excavated at the time of our visit.

This report has been prepared for the named client above and should not be relied upon by any other parties, with the exception of the client's professional advisors, for any use without the express written permission of Shields Wilson Limited.

## 2. LOCATION & DESCRIPTION OF SITE

### 2.1. Site Location

The site is situated to the west of Church Street, Pinchbeck, Spalding, Lincolnshire. Appropriate national grid reference TF 241 257.

A Location plan is contained with Appendix A.

### 2.2. Site History Description

Desktop study of publicly available historical maps has been undertaken and found the site has not been previously developed and has stood as garden and parking for the Public House, The Bell Inn.

An extract of OS Lincolnshire map, 1932, is contained within Appendix B.

### 2.3. Site Description

The site currently stands as overgrown grassland with a gravel & road planning's covered parking area closest to the roadside.

The North of the site is bound by a neighbouring property.

The Western Boundary of the site is shared with an agricultural field and riparian drain.

The East of the site is boarded by neighbouring gardens.

The Southern boundary is formed by a fence line between the proposed site and a neighbouring property, Pinchbeck Church.

At the time of our visit the weather was dry and clear, however there had been some precipitation in the days leading up to the visit.

## 2.4. Geological Description

Desktop study of the area has been undertaken using the British Geological Society Maps.

The maps indicate the site to be underlain by superficial tidal flat deposits of Sand and Silt over the Ampthill Clay (Mudstone) formation.

This information is based upon publicly available records. An extract is contained with Appendix C.

### 3. SITE WORK

Six Number trial pits and two number soakaway test pits were excavated with the use of mechanical excavator. The siting of these explorations is shown on the Location plan shown within Appendix A.

A visual inspection of the disturbed samples was undertaken. A description of the strata and test results are shown on sheets SW21-199/TP01 thru TP06. The Trial pit logs are contained within Appendix D along with infiltration test results.

The historical investigation indicates that no previous development has been present, and no olfactory or visual signs of contamination were present. Therefore, no samples were sent to the laboratory contamination testing.

2No. Infiltration test was undertaken, however, after 2 hours the water level had not decreased measurably, meaning that the test was abandoned and provided sufficient evidence that the site would not be suitable for the use of soakaways.

A photographic record of site explorations is contained within Appendix E.

#### 4. GROUND CONDITIONS

The sequence of the strata encountered during the investigation is not what was expected to be found following our desktop research. The strata recovered from the trial pits below an average depth of 1.5m, was a grey, light blue clay.

The trial pits that were undertaken across the whole site, revealed that the ground conditions across the site are very similar.

It should be noted that in Appendix D of the trial pit logs, hand shear vane testing took place in a number of the trial pits, the results of which indicated that the soft sticky and saturated clay will not provide a high allowable bearing pressure.

The majority of the trial holes revealed that at depth the wet silty clays became soft and saturated significantly reducing the stability of the ground.

Trial pit logs can be found in Appendix D of this report.

## 5. CONCLUSIONS & RECCOMENDATIONS

The proposed development is understood to comprise of 9 dwellings, varying in size from executive 4-5 bed houses to 3 bed bungalows, constructed using traditional load bearing masonry walls.

The ground floor should take the form of a suspended precast concrete beam and block system, design by the specialist supplier.

There should be a minimum clear void of 300mm beneath the suspended floor due to the Laboratory results returning results of high-volume change potential. Laboratory results are contained within Appendix F.

Due to the soft underlying wet clays, this site will require a pile and ground beam foundation solution. Careful consideration should be taken with regards to the heave protection required due to the clays and large number of trees on some boundaries of the existing site. Engineer designed foundations in accordance with the NHBC chapter 4.2 guidance should be utilised.

Prior to construction detailed foundation designs should be undertaken by a competent structural engineer.

Furthermore, the results from the infiltration test show that the ground is not suitable for an infiltration surface water drainage system and would therefore require an engineered design to suit the requirement of the development.

For and on behalf of **SHIELDS WILSON LIMITED**

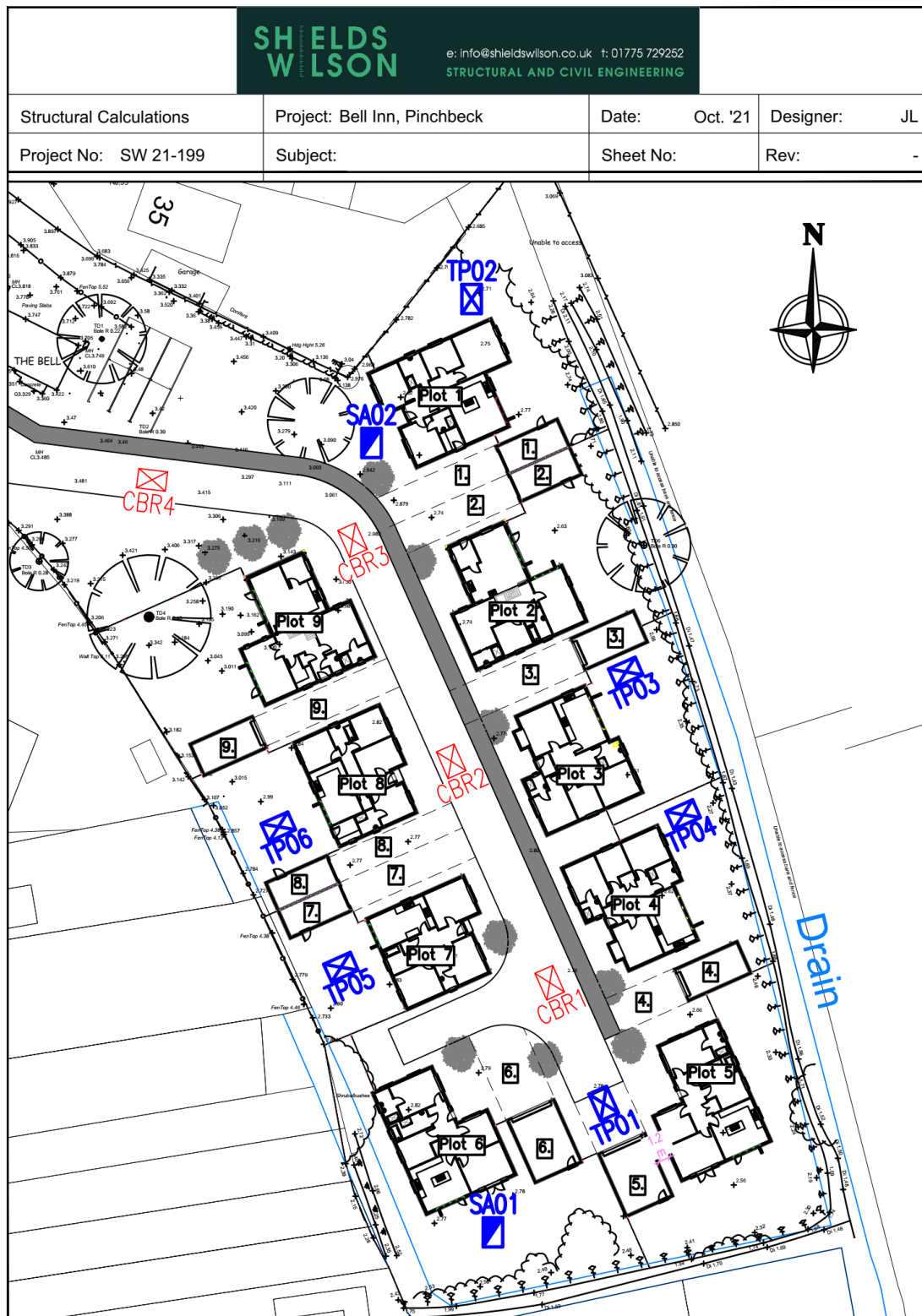
**A.P.Wilson CEng MIStructE**

**18<sup>th</sup> December 2021**



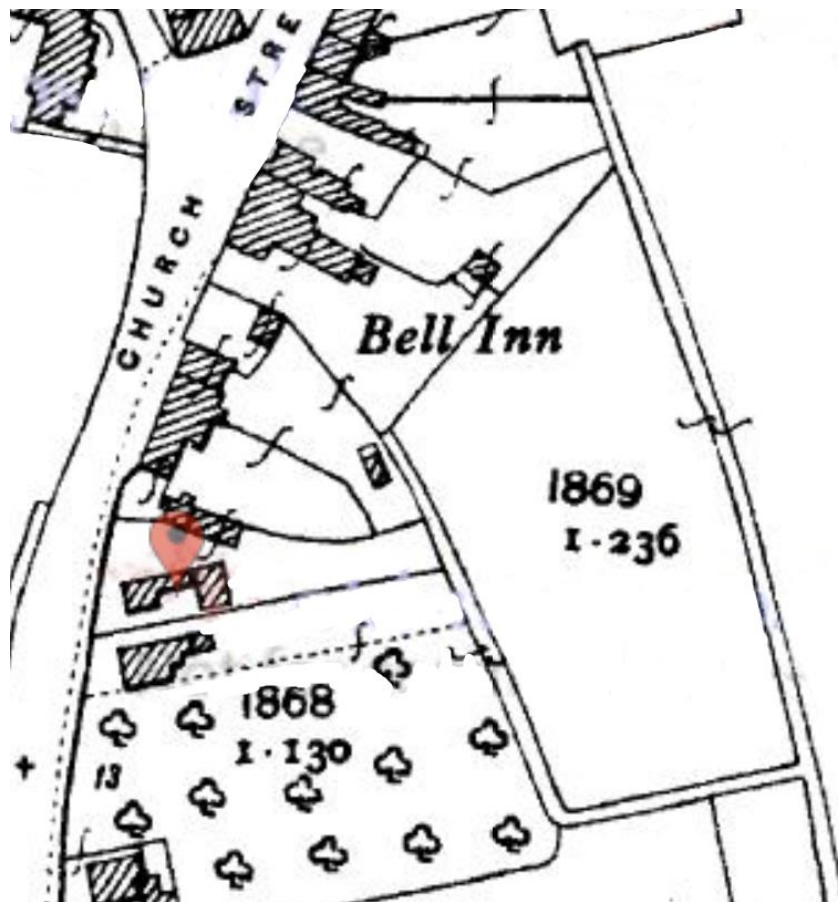
## APPENDIX A





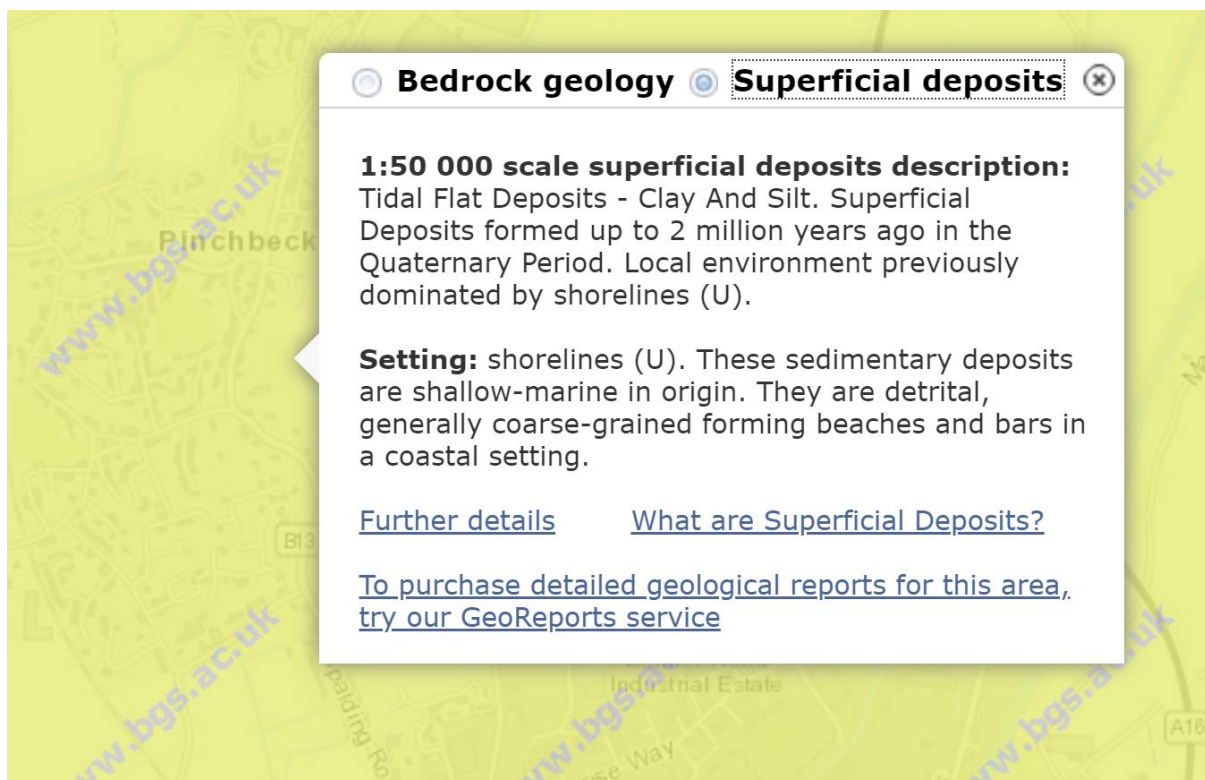
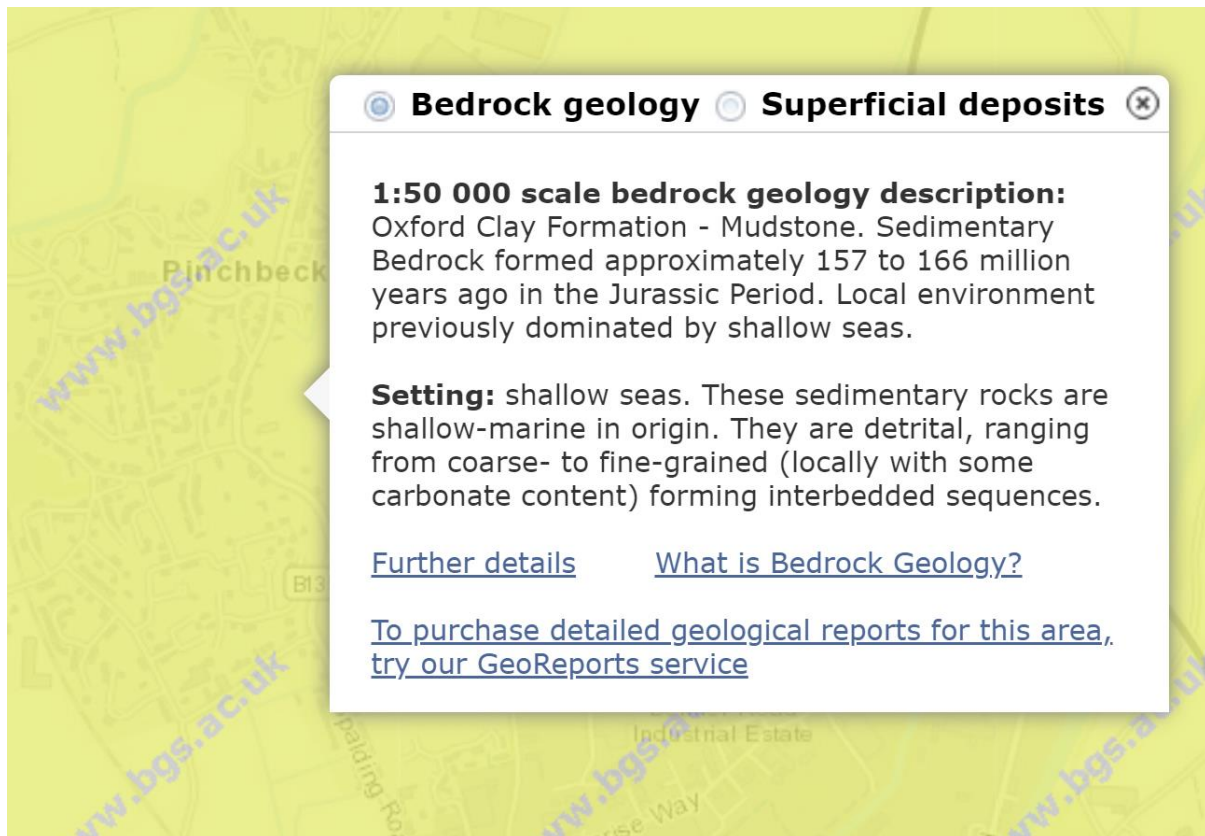
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## APPENDIX B



Extract OS County Series, 1932





## APPENDIX C






Extract British Geological Society Maps

## APPENDIX D


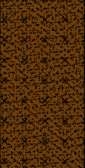

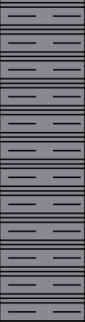


<b>SHIELDS WILSON</b> <small>e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING</small>				Project No. <b>SW21-163</b>		Log Ref <b>TP01</b>		
				Exploration Method <b>Excavator</b>		Site Coordinates <b>TF 241257</b>		
Location <b>Proposed Development, Land West of Bell Inn, Church Street, Pinchbeck Spalding, Lincs</b>				Carried Out For <b>Charlotte Properties Ltd.</b>		Date Undertaken <b>28/09/21</b>		
						Logged By <b>JL</b>		
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	HAND SHEAR VANE 19mm VANE
				Depth	Sample Reference	Sample Type No.		
TOP SOIL.			0.500m					
DARK BROWN SANDY SILT.			(0.400m) 0.900m					
DARK GREY CLAY WITH BLACK INCLUSIONS.			(0.300m) 1.200m					
BLUEY GREY CLAY, BECOMING SOFTER WITH DEPTH.			(1.100m) 2.300m					
<b>Remarks</b> TRIAL PIT TERMINATED @ 2.3m BELOW GROUND LEVEL. WATER LEVEL ROSE TO 1.8M BGL AFTER 2.5 HOURS.								


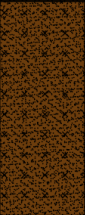
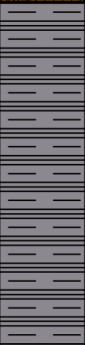
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				Exploration Method <b>Excavator</b>		Site Coordinates <b>TF 241257</b>		
Location <b>Proposed Development, Land West of Bell Inn, Church Street, Pinchbeck Spalding, Lincs</b>				Carried Out For <b>Charlotte Properties Ltd.</b>		Date Undertaken <b>28/09/21</b>		
						Logged By <b>JL</b>		
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	HAND SHEAR VANE 19mm VANE
				Depth	Sample Reference	Sample Type No.		
Top Soil.			0.500m					
DARK BROWN SANDY SILT.			(0.300m) 0.800m					
DARK GREY CLAY WITH BLACK INCLUSIONS.			(1.400m) 2.200m	SAMPLE 1 2.100m				37kPa @ 1.3m BGL
<b>Remarks</b> TRIAL PIT TERMINATED @ 2.2m BELOW GROUND LEVEL.								




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		Exploration Method <b>Excavator</b>						
		Site Coordinates <b>TF 241257</b>						
Location <b>Proposed Development, Land West of Bell Inn, Church Street, Pinchbeck Spalding, Lincs</b>			Carried Out For <b>Charlotte Properties Ltd.</b>		Date Undertaken <b>28/09/21</b>			
					Logged By <b>JL</b>			
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	HAND SHEAR VANE 19mm VANE
				Depth	Sample Reference	Sample Type No.		
TOP SOIL.			0.500m					
DARK BROWN SANDY SILT.			(0.700m) 1.200m					
DARK BROWN SILTY SAND, BECOMING MOIST WITH DEPTH.			(0.300m) 1.500m					42kPa @ 1.2m BGL
LIGHT GREY CLAY WITH BLACK INCLUSIONS.			(1.100m) 2.600m					
<b>Remarks</b> TRIAL PIT TERMINATED @ 2.6m BELOW GROUND LEVEL.								



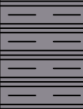
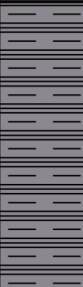
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<b>SHIELDS WILSON</b> e: info@shieldswilson.co.uk t: 01775 729252 STRUCTURAL AND CIVIL ENGINEERING				Project No. <b>SW21-163</b>		Log Ref <b>TP04</b>		
				Exploration Method <b>Excavator</b>		Site Coordinates <b>TF 241257</b>		
Location <b>Proposed Development, Land West of Bell Inn, Church Street, Pinchbeck Spalding, Lincs</b>				Carried Out For <b>Charlotte Properties Ltd.</b>		Date Undertaken <b>28/09/21</b>		
						Logged By <b>JL</b>		
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	HAND SHEAR VANE 19mm VANE
				Depth	Sample Reference	Sample Type No.		
TOP SOIL.			0.600m					
DARK BROWN SANDY SILT.			(0.800m) 1.400m					
LIGHT GREY CLAY, WITH MINOR BLACK INCLUSIONS.			(1.100m) 2.600m	SAMPLE 2 1.400m				26kPa @ 1.4m BGL
<b>Remarks</b> TRIAL PIT TERMINATED @ 2.6m BELOW GROUND LEVEL.								

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				Exploration Method <b>Excavator</b>		Site Coordinates <b>TF 241257</b>		
Location <b>Proposed Development, Land West of Bell Inn, Church Street, Pinchbeck Spalding, Lincs</b>				Carried Out For <b>Charlotte Properties Ltd.</b>		Date Undertaken <b>28/09/21</b>		
						Logged By <b>JL</b>		
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	HAND SHEAR VANE 19mm VANE
				Depth	Sample Reference	Sample Type No.		
TOP SOIL.			0.400m					
DARK BROWN SANDY SILT.			(0.500m) 0.900m					
DARK GREY/BLACK CLAY, BECOMING SOFTER WITH DEPTH.			(1.700m) 2.600m	SAMPLE 3 1.300m				32kPa @ 1.3m BGL
<b>Remarks</b> TRIAL PIT TERMINATED @ 2.6m BELOW GROUND LEVEL.								

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				Exploration Method <b>Excavator</b>		Site Coordinates <b>TF 241257</b>		
Location <b>Proposed Development, Land West of Bell Inn, Church Street, Pinchbeck Spalding, Lincs</b>				Carried Out For <b>Charlotte Properties Ltd.</b>		Date Undertaken <b>28/09/21</b>		
						Logged By <b>JL</b>		
Description	Reduced Level	Legend	Depth (Thick)	Samples			Test Required	HAND SHEAR VANE 19mm VANE
				Depth	Sample Reference	Sample Type No.		
TOP SOIL.			0.600m					
VERY DARK BROWN SANDY SILT.		 	(0.700m) 1.300m					
DARK GREY CLAY, BECOMING SOFTER WITH DEPTH.			(1.700m) 2.600m					18kPa @ 1.3m BGL
<b>Remarks</b> TRIAL PIT TERMINATED @ 2.3m BELOW GROUND LEVEL.								

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## APPENDIX E























## APPENDIX F



8180

## GROUND ENGINEERING

Newark Road Peterborough

t: 01733 566566

e: admin@groundengineering.co.uk

## TEST CERTIFICATE

## Determination of Liquid &amp; Plastic Limits

Tested in accordance with BS 1377-2:1990: Clause 4.4 &amp; 5: One Point Method

Client: Shields Wilson Ltd  
Client Address: Bank House  
Broad Street  
Spalding, Lincs  
PE11 1TB

Certificate Number: PL7619-1/1/704

Client Reference: L10065  
Job Number: PL7619-1

Date Sampled: Unknown  
Date Received: 29.09.2021  
Date Tested: 07.10.2021

Contact: Adam Wilson

Site Name: Bell Inn  
Site Address: Pinchbeck

Certificate of Sampling: N/A  
Sampling Certificate No.: N/A  
Sampled By: Client

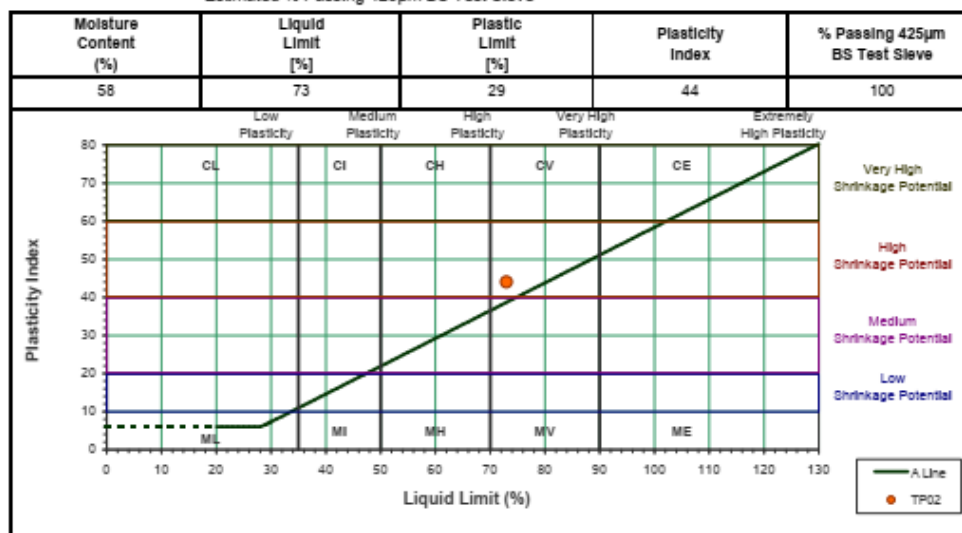
Test Results: Laboratory Reference: PL7619-1/1  
Sample Reference: S01

Sample Description: Very soft to soft dark-grey grey slightly silty slightly organic CLAY with rare roots less than 2mm in diameter.

Location: TP02

Depth: 2.10m

Sample Preparation: As Received  
Estimated % Passing 425µm BS Test Sieve



Comments:

Approved Signatory: M. Hartnup - Laboratory Manager

Signed:

for and on behalf of Ground Engineering Ltd

Date Reported: 13.10.2021 Page 1 of 1  
Form Number: GELab/C/704 Version 46

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Registered in England & Wales  
Registration Number: 6929574  
Reg Office: Ground Engineering Ltd  
Newark Rd, Peterborough PE1 5UA



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**TEST CERTIFICATE****Determination of California Bearing Ratio**

Tested in accordance with BS 1377-4: 1990: Clause 7.4

**GROUND ENGINEERING**

Newark Road Peterborough

t: 01733 566566

e: admin@groundengineering.co.uk

Client: Shields Wilson Ltd  
Client Address: Bank House  
Broad Street  
Spalding, Lincs  
PE11 1TB

Contact: Adam Wilson

Site Name: Bell Inn  
Site Address: Pinchbeck

Certificate Number: PL7619-1/4/736-1

Client Reference: L10065

Job Number: PL7619-1

Date Sampled: Unknown

Date Received: 29.09.2021

Date Tested: 11.10.2021

Certificate of Sampling: N/A

Sampling Certificate No.: N/A

Sampled By: Client

**Test Results:** Laboratory Reference: PL7619-1/4

Sample Reference: S04

**Sample Description:** Firm and stiff brown orange-brown slightly silty CLAY with occasional roots <2mm in diameter and rare shell fragments.

**Sample Location:** CBR1

**Depth:** 0.60m

**Sample Soaked:** No

**Sample Preparation:** Recompacted at 'as received moisture content' using a 2.5kg rammer

Retained on 20mm test sieve:

0 (%)

Applied Seating Load (top): 46 N

Moisture Content (Top): 32 (%)

Applied Seating Load (base): 46 N

Moisture Content (Base): 32 (%)

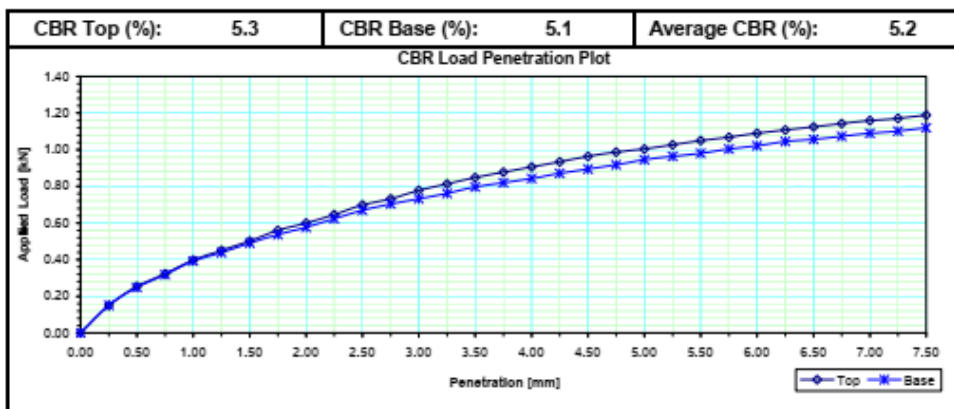
Applied Surcharge: 12.0kg

Moisture Content (Mean): 32 (%)

Initial Bulk Density: 1.87 (Mg/m<sup>3</sup>)

Initial Dry Density: 1.42 (Mg/m<sup>3</sup>)

Initial Moisture Content: 32 (%)



Comments:

Approved Signatory: M. Hartnup - Laboratory Manager

Signed:

for and on behalf of Ground Engineering Ltd

Date Reported: 13.10.2021 Page 1 of 1

Form Number: GELab/C/736-1 Version 32

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Newark Rd, Peterborough PE1 5UA



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## GROUND ENGINEERING

## TEST CERTIFICATE

## Determination of Moisture Content

Tested in Accordance with BS 1377-2: 1990: Clause 3.2

Client: Shields Wilson Ltd  
Client Address: Bank House  
Broad Street  
Spalding, Lincs  
PE11 1TB

Contact: Adam Wilson

Site Name: Bell Inn  
Site Address: Pinchbeck

Certificate Number: PL7619-1/1/705

Client Reference: L10065

Job Number: PL7619-1

Date Sampled: Unknown

Date Received: 29.09.2021

Date Tested: 04.10.2021

Certificate of Sampling: N/A

Sampling Certificate No.: N/A

Sampled By: Client

## TEST RESULTS

Laboratory Reference	Sample Reference	Location	Depth Top	Depth Base	Description	Moisture Content [%]
PL7619-1/1	S01	TP02	2.10m	N/A	Very soft to soft dark-grey grey slightly silty slightly organic CLAY with rare roots less than 2mm in diameter.	58
PL7619-1/2	S02	TP04	1.40m	N/A	Very soft grey-brown dark-grey slightly silty slightly organic CLAY.	54
PL7619-1/3	S03	TP05	1.30m	N/A	Soft grey-brown grey slightly silty CLAY.	35

Comments:

Approved Signatory: M. Hartnup - Laboratory Manager

Signed: 

Date Reported: 13.10.2021  
Form Number: GELab/C/705 Version 19

Page 1 of 1

for and on behalf of Ground Engineering Ltd

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