REPORT C2761 MARCH 2008

GEOENVIRONMENTAL APPRAISAL

for land at HEIGHINGTON LANE WEST, NEWTON AYCLIFFE

prepared for

ANGLO IRISH BANK CORPORATION PLC, ANGLO IRISH PROPERTY INVESTORS LTD, MERCHANT DEVELOPMENT 1 LTD, MERCHANT DEVELOPMENT 2 LTD, AND MERCHANT ANGLO (AMAZON PARK) LIMITED PARTNERSHIP



REPORT NUMBER:	C2761	REPORT STATUS:	FINAL
REPORT TYPE:	GEOENVIRONMENTAL APPRAISAL		
REPORT DATE:	MARCH 2008		
SITE:	HEIGHINGTON LANE WEST, NEWTON AYCLIFFE		
PREPARED FOR:	ANGLO IRISH BANK CORPORATION LTD, ANGLO IRISH PROPERTY INVESTORS LTD, MERCHANT DEVELOPMENT 1 LTD, MERCHANT DEVELOPMENT 2 LTD AND MERCHANT ANGLO (AMAZON PARK) LIMITED PARTNERSHIP		
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Contract Name:	Heighington Lane West, Newton Aycliffe
Contract No.:	C2761
Client:	Merchant Developments and Anglo Irish Bank
Consultant:	Sirius Geotechnical and Environmental Ltd
Title:	Non-Technical Executive Summary
Date of Issue:	27 <sup>th</sup> March 2008 (rev. A)

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Introduction:	Sirius Geotechnical and Environmental Ltd (Sirius) were commissioned by Merchant Developments Ltd to undertake a Phase II Geoenvironmental Appraisal for a site off Heighington Lane West, Newton Aycliffe.		
	The site is occupied by a series of agricultural open grassed fields, with localised wooded areas.		
	It is understood that Merchant Developments Ltd are considering developing the site with three commercial and industrial units, with associated service yards and roadways.		
Previous Reports:	As part of the Sirius investigation, previous reports relating to the site produced by Wardeli Armstrong, Fellows International Ltd and Exploration Associates have been reviewed.		
Fieldwork:	Intrusive fieldworks were undertaken by Sirius between 18 <sup>th</sup> and 28 <sup>th</sup> February 2008, and comprised the following elements:		
	<ul> <li>Clearance of locations by an Explosives Ordnance Detection Engineer;</li> </ul>		
	<ul> <li>Drilling of twelve cable percussion boreholes;</li> </ul>		
	<ul> <li>Excavation of eighty trial pits; and,</li> </ul>		
	<ul> <li>Installation of groundwater monitoring wells into Glacial Till.</li> </ul>		
	On completion of the fieldworks, selected soil samples were scheduled for a range of geotechnical and contamination testing, including pesticides and explosive residue.		
	Groundwater monitoring was undertaken on three occasions.		
Ground Conditions:	Made ground (non-natural soils placed by anthropogenic means) was encounte in only three of the ninety-two exploratory holes excavated/drilled, in two areas the site: i) former farmstead in the centre of the site; and, ii) disturbed topsoil in borehole in the northern area of the site. Made ground may potentially contain contamination which can present a significant risk to identified receptors.		
	Elsewhere, topsoil was encountered at ground level across the site.		
	Glacial Till (Boulder Clay) was found to underlie the topsoil and made ground to depths of between 1.75m and >10.0m bgl, beneath which was limestone, locally completely or highly weathered.		
	No visual or olfactory evidence of hydrocarbon contamination was noted within the ninety-two exploratory holes excavated/drilled. However, an isolated area of thin made ground in the central area of the site was identified to contain fragments of asbestos roof tiles, considered to originate from the former farmstead that was historically present in this area.		



Contamination Testing:	Contamination testing undertaken on selected samples of made ground, topsoil and Glacial Till did not identify any contamination risks to receptors apart from the localised fragments of asbestos roof tiles within the shallow made ground in the location of the former farmstead. Testing of the soil horizon has proven the fibres are not dispersed throughout the fill matrix. The roof tiles are considered to have originated from demolition of the former farmstead.
Geotechnical Testing:	Geotechnical testing was undertaken on selected samples of the Glacial Till, and is discussed within the final report.
Conclusions and	The site is considered to lie within a <b>high</b> environmental sensitivity setting.
Recommendations:	The proposed end-use of the site with three industrial and commercial units is considered to be a <b>low</b> sensitivity end-use.
	With regard to the site investigation and risk assessment, there is no evidence of any significant contamination present on the site, except an isolated area of asbestos roof tiles which are considered to present a <b>low</b> risk to identified receptors. (Sirius define a low risk as "it is possible that harm could arise to a designated receptor from an identified hazard - it is likely that, at worst if any harm was realised any effects would be mild").
	It is therefore recommended that the extent of the asbestos roof tiles be determined by further investigation, and the fragments hand-picked and sealed in double bags prior to removal off-site to an appropriately licensed landfill site.
	Validation works, including a letter report, should be undertaken on completion of the removal of the asbestos roof tiles, including a visual assessment, and validation sampling and testing of the residual soils for dispersed asbestos fibres.

This Non-Technical Executive Summary should be read in conjunction with Sirius's "Geoenvironmental Appraisal of Land at Heighington Lane West, Newton Aycliffe" dated March 2008, ref. C2761.

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(For and on behalf of Sirius Geotechnical and Environmental Ltd.)



# **GEOENVIRONMENTAL APPRAISAL**

# of land at

# **HEIGHINGTON LANE WEST, NEWTON AYCLIFFE**

# prepared for

# ANGLO IRISH BANK CORPORATION PLC, ANGLO IRISH PROPERTY INVESTORS LTD,

# MERCHANT DEVELOPMENT 1 LTD, MERCHANT DEVELOPMENT 2 LTD,

# and MERCHANT ANGLO (AMAZON PARK) LIMITED PARTNERSHIP

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#### APPENDIX A - DRAWINGS

Drawing Number	Title	Scale
C2761/1	Site Location Plan	1:25,000
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C2761/3	Inferred Rockhead Contour Plan	1:1000
C2761/4	Revised Conceptual Site Model	NTS
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APPENDIX B - METHOD STATEMENT (WA) AND APPROVAL

APPENDIX C - MUNITIONS CONTAMINATION SURVEY REPORT (FIL)

APPENDIX D - EXPLORATORY HOLE RECORDS

APPENDIX E - LABORATORY TEST RESULTS

APPENDIX F - GROUNDWATER MONITORING CERTIFICATES



### 1.0 INTRODUCTION.

Sirius Geotechnical and Environmental Ltd (Sirius) were commissioned by Merchant Developments Ltd (Merchant) to undertake a Phase II Geoenvironmental Appraisal of land off Heighington Lane West in Newton Aycliffe.

This report has been produced by Sirius on behalf of the following parties: Anglo Irish Bank Corporation Ltd; Anglo Irish Property Investors Ltd; Merchant Development 1 Ltd; Merchant Development 2 Ltd; and, Merchant Anglo (Amazon Park) Limited Partnership.

It is understood that Merchant are considering developing the site with 3No. industrial and commercial units with associated service yards and roadways. The proposed development layout is detailed in a drawing produced by Jeffery Associates on behalf of Merchant Place entitled 'Masterplan Planning Parameter (Preliminary)' and referenced as Drawing No. 1106/Pr/002-G. A copy of this drawing is presented in Appendix A to this report.

The objectives of this investigation were as follows:

- To determine the near surface ground and groundwater conditions;
- To investigate and determine the extent and nature of near surface ground and groundwater contamination, including pesticides and explosive residue;
- Survey locations and elevation of the exploratory holes;
- Monitor groundwater levels within installations;
- To provide foundation and carriageway design recommendations; and,
- To provide advice on measures to deal with proven contamination.

As part of this investigation, the following reports, as supplied by Merchant to Sirius, have been reviewed:

- Preliminary Environmental Risk Assessment for Heighington Lane. Prepared by Wardell Armstrong LLP on behalf of Merchant Developments. Job No. NT03815, Report No. 001, dated January 2007;
- Desk Study (Issue 2) for Newton Aycliffe, County Durham. Prepared by Fellows International Ltd on behalf of Wardell Armstrong LLP. Ref. FIL-1.5/566-07, dated January 2008; and,
- Heighington Lane WEST Extension Report on Ground Investigation. Prepared by Exploration Associates Ltd on behalf of Sedgefield Borough Council. Ref. 136174, dated May 1997.

No Phase I desk-top study was required by Sirius under the terms of this investigation.

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Fieldwork was undertaken between 18<sup>th</sup> and 28<sup>th</sup> February 2008 and comprised the excavation of trial pits, drilling of cable percussion boreholes, and installation of groundwater monitoring wells. Groundwater monitoring has subsequently been undertaken on three occasions. The locations and elevations of all the exploratory holes were surveyed in by Sirius on 29<sup>th</sup> February 2008.

This report presents the factual information derived during this investigation and subsequent recommendations relating to the proposed development.

Development of the site will require earthworks comprising cut and fill. A copy of an earthworks isopachyte plan entitled 'Isopachyte Earthworks Against Existing Ground Level' and produced by Wardell Armstrong on behalf of Anthony Davies Associates has been provided to Sirius, referenced as Drawing No. NT03815/306, dated January 2007. If the proposed earthworks have changed since the issue of this plan, then the conclusions and recommendations presented in this report may need to be revised.

Where the report refers to the potential presence of invasive plants such as Japanese Knotweed, or asbestos containing materials, it should be noted that such observations made in this report are for information only and should be verified by a suitably qualified expert.

The comments and opinions presented in this report are based on a review of information provided to Sirius, ground conditions encountered during the intrusive investigation work and on the results of tests carried out within the laboratory. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation. Any diagram or opinion of the possible configuration of the findings is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

This report has been prepared for the sole use of: Anglo Irish Bank Corporation Ltd; Anglo Irish Property Investors Ltd; Merchant Development 1 Ltd; Merchant Development 2 Ltd; and, Merchant Anglo (Amazon Park) Limited Partnership. No other third party may rely upon or reproduce the contents of this report without the written permission of Sirius. If any unauthorised third party comes into possession of this report, they rely upon it entirely at their own risk and the authors do not owe them any Duty of Care or Skill.

#### 2.0 SITE DESCRIPTION.

The current site layout is shown on Drawing No. C2761/2 within Appendix A. Details of the site are summarised in Table 2.1 overleaf:

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Table 2.1: Existing Site Features.

Table 2.1. Existin	
Ordnance Survey	426770 522140
National Grid Ref:	
Site Location:	The site lies immediately to the south of Heighington Lane and to the west of a railway line, 1.5km to the southwest of Newton Aycliffe.
	A site location plan is included as Drawing No. C2761/1 within Appendix A.
Approximate Site Area:	40 hectares.
Site Description:	The site is occupied by a series of agricultural open grassed fields, with localised wooded areas.
	The site is relatively flat-lying although ridges and furrows are present in some fields.
	A public footpath runs west-east through the northern area of the site, to the south of Demon Beck. The Beck itself flows eastwards across the site.
Access:	There is vehicular access to the site from: the north off Heighington Lane; the west off a tarmacadam track; and, the southeast across a road bridge (currently closed to traffic).
Buildings:	None present on the site.
Fuel Storage Tanks:	None present on the site.
Vegetation:	Numerous hedgerows and drainage ditches cross the site.
	No evidence of distressed vegetation was noted during the site walkover.
Services:	A number of services are present on the site.
	Water mains run north-south along the western and eastern boundaries, and east-west along the northern area of the site. In addition, a private water main runs northwest from the former Whitworth Farm in the centre of the site.
	Three sets of overhead electricity lines are present on the site, as follows:
	<ol> <li>Northeast-southwest in eastern area of the site;</li> <li>West-east from the former Whitworth Farm in the centre of the site; and,</li> <li>Northeast-southwest across the northwest corner of the site.</li> </ol>
	An unidentified buried cable is present along the eastern boundary of the site, running north-south.
Adjacent Land Uses:	North – Heighington Lane, beyond which lies fields and industrial/commercial units.  East – Railway line, beyond which lies industrial/commercial units.  South – Fields  West – Track, beyond which lies fields.

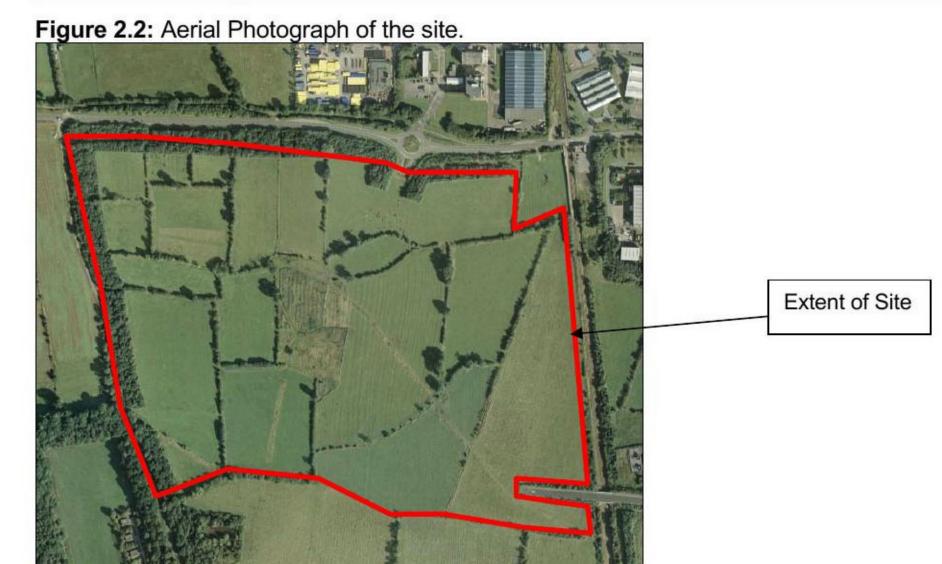
An aerial photograph of the site (undated) is presented overleaf as Figure 2.2.

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Prepared For: Anglo Irish Bank Corporation Ltd, Anglo Irish Property Investors Ltd, Merchant Development 1 Ltd, Merchant Development 2 Ltd and

Merchant Anglo (Amazon Park) Limited Partnership.





Source: Google Earth.

#### 3.0 REVIEW OF PREVIOUS INVESTIGATIVE REPORTS.

### 3.1 Preliminary Environmental Risk Assessment report by Wardell Armstrong.

As part of this investigation, the text of a Phase I desktop study report produced by Wardell Armstrong, and supplied by Merchant to Sirius, has been reviewed. No appendices or plans were included with the report. The reference for this document is:

 Preliminary Environmental Risk Assessment for Heighington Lane. Prepared by Wardell Armstrong LLP on behalf of Merchant Developments. Job No. NT03815, Report No. 001, dated January 2007.

The report included a site description and environmental setting including landfills and Controlled Waters, review of site history, geological and mining review, radon, ecology and MOD consultation.

A review of the historical plans indicated that the site has been occupied by agricultural fields, used for farming purposes, including two former farmsteads (Whitworth Farm in the centre of the site, and Springwell Farm in the northwest corner). Whitworth Farm was potentially used as a Waste Transfer Station.

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A series of brick bunkers have been located on the adjacent land to the southwest of the site from 1954 onwards. Anecdotal and local history evidence suggests that the bunker system was used for the storage of munitions during World War II, produced from the nearby Royal Ordnance Factory (ROF 59).

An Envirocheck report for the site, obtained from the Landmark Information Group by Wardell Armstrong, and including information obtained from local authorities and the Environment Agency, stated the following:

#### Surface Waters.

- The nearest surface water feature to the site is Demons Beck, which flows eastwards through the northern area of the site confluencing with the River Skerne approximately 1.8km to the east. The Beck is not classified by the EA under its GQA scheme;
- There are no licensed surface water abstractions within 1km of the site;
- There are twelve discharge consents within 1km of the site, although none relate to the site itself; and,
- The northern area of the site is located within a Fluvial Indicative Floodplain (Zone 3) and a Nitrate Vulnerable Zone.

#### Groundwater.

- The Magnesian Limestone strata underlying the site is classified as a Major Aquifer.
   The overlying soils are considered to have low leaching potential;
- The site is located within Zone III of a Source Protection Zone for Great Statinton No. 1
  public water supply. The site lies 800m south of a Zone II of a Source Protection Zone
  for Aycliffe works;
- Two wells historically existed on the site; and,
- There are two abstraction licences within 2km of the site, located 1.4km to the north, to abstract groundwater from the Magnesian Limestone aquifer for general use (chemicals);

#### Landfills.

 There are no recorded landfill sites, historical or current, within 1km of the site, although there is a waste transfer station present 50m to the east.

#### Radon.

Radon protective measures are not required within any future development.

#### Ecology.

There are no sensitive end uses within 1km of the site.



#### Miscellaneous.

- There are no current Radioactive Substance Licenses issued to premises within 1km of the site;
- Information from the HSE indicates that there is a single COMAH installation located within 1km of the site;
- There has been one enforcement notice issued by the EA under the EPA 1990 within 1km of the site, dated 1994; and,
- The site is not considered to be affected by potential instability from shallow or deep coal mining.

#### Geology.

Wardell Armstrong's report included a review of the geological conditions for the site, and concluded that the site is underlain by Glacial Till (Boulder Clay) deposits, over Permian Middle and Lower Magnesian Limestone strata. There are no faults indicated in the vicinity of the site.

#### Contamination.

Wardell Armstrong identified the following potential sources of contamination on the site:

- Organic Contaminants, including fuels, lubricating oils, PAH's and pesticides associated with both past farming activities and the adjacent railway line;
- Inorganic Contaminants, primarily sulphates from adjacent railway activities;
- Metals, including lead, copper, chromium, zinc etc. from possible waste transfer activities;
- Asbestos from demolition of the two former farmsteads; and,
- Munitions from war-time activities or from firing and testing ranges.

Wardell Armstrong developed a Preliminary Conceptual Site Model, the details of which are summarised in Table 3.1 below.

Table 3.1: Summary of Preliminary Conceptual Site Model.

Risk	Risk Ranking	
Land Contamination	LOW to MODERATE	
Risk to Human Health	LOW as current use	
RISK to Human Health	LOW to MODERATE if redeveloped	
Risk to Controlled Waters	LOW to MODERATE	
Risk to Building Materials	LOW to MODERATE	
Ecology	LOW	
Overall Risk Ranking	LOW to MODERATE if redeveloped for Commercial Lies	
	LOW to MODERATE if redeveloped for Commercial Use	

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The Wardell Armstrong report concludes that, based upon the information available to date, a **low** contamination risk currently exists at the site. The risks associated with potential contamination will increase to **low to moderate** in the event that the site is redeveloped for a commercial end use. The report recommends that a ground investigation be undertaken to enable a detailed risk assessment of the site to be made, particularly in identifying the risks to construction worker and future site users, and Controlled Waters.

### 3.2 Desk Study by Fellows International Ltd.

As part of this investigation, a Desk Study report produced by Fellows International Ltd on behalf of Wardell Armstrong, and supplied by Merchant to Sirius, has been reviewed. The reference for this document is:

 Desk Study (Issue 2) for Newton Aycliffe, County Durham. Prepared by Fellows International Ltd on behalf of Wardell Armstrong LLP. Ref. FIL-1.5/566-07, dated January 2008.

The report included a desk-top study of possible environmental unexploded munitions contamination to determine if unexploded ordnance (UXO) contamination poses a threat to personnel, equipment and materials at the site. This included a review and assessment of information from the following sources:

- Fellows International Ltd records;
- Ministry of Defence records;
- Central and Government Records;
- Durham Archives
- National Records at Kew;
- Aerial Photographs and Drawings; and,
- Internet Research.

The report concluded that the risks associated with German World War II air-dropped and British anti-aircraft defensive weapons was assessed as **very low**.

The risks of encountering other explosive materials or residues was assessed as **low**.

However, Fellows International Ltd recommended that non-intrusive investigative works be undertaken prior to any intrusive ground investigation or soil sampling, and that any such sampling allows for testing for explosive residues.



#### 3.3 Report on Ground Investigation by Exploration Associates Ltd.

As part of this investigation, a Ground Investigation report produced by Exploration Associates Ltd on behalf of Sedgefield Borough Council, and supplied by Merchant to Sirius, has been reviewed. The reference for this document is:

 Heighington Lane WEST Extension – Report on Ground Investigation. Prepared by Exploration Associates Ltd on behalf of Sedgefield Borough Council. Ref. 136174, dated May 1997.

The report included the findings of the drilling of four cable percussion boreholes to a depth of 10.0m below ground level (bgl) between 26<sup>th</sup> March and 1<sup>st</sup> April 1997. The boreholes proved ground conditions to comprise topsoil underlain by a slightly sandy clay with gravel and grey silt veins (Glacial Till). Rockhead was not proven in any of the four boreholes. Standpipe piezometers installed in two boreholes recorded a groundwater level of 6.90m bgl.

A location plan of the four boreholes drilled was not provided with the report.

Geotechnical laboratory testing on samples from the Glacial Till reported the following range of results.

**Table 3.3:** Summary of Geotechnical Laboratory Testing by Exploration Associates Ltd.

Parameter	Range	
Undrained Shear Strength	63kN/m <sup>2</sup> to 185kN/m <sup>2</sup>	
Bulk Density	2.10Mg/m <sup>3</sup> to 2.21Mg/m <sup>3</sup>	
Moisture Content	16% to 23%	
Liquid Limit	32% to 56%	
Plastic Limit	15% to 28%	
Plasticity Index	16% to 28%	
Coefficient of Volume Change m <sub>v</sub> ) for 100kN/m <sup>2</sup> Loading above Existing Overburden Pressure	0.112m <sup>2</sup> /MN to 0.132m <sup>2</sup> /MN	
Coefficient of Consolidation (c <sub>v</sub> ) for 100kN/m <sup>2</sup> Loading above Existing Overburden Pressure	1.80m <sup>2</sup> /yr to 8.47m <sup>2</sup> /yr	

Standard Penetration Testing carried out in the Glacial Till gave 'N' values between 13 and 22, although the 'N' values were noted to reduce with depth.



#### 4.0 FIELDWORK.

#### 4.1 Introduction.

The intrusive Sirius investigation was undertaken between 18<sup>th</sup> and 28<sup>th</sup> February 2008. The fieldwork was supervised by Sirius Geoenvironmental Engineers and comprised the following:

- Clearance of exploratory hole locations by an Explosives Ordnance Detection Engineer;
- Excavation of eighty trial pits (TPs 1 to 80) to a maximum depth of 4.4m bgl;
- Drilling of twelve cable percussion boreholes (BHs 1 to 12) to a maximum depth of 10.5m bgl; and,
- Installation of six Groundwater Monitoring Wells in selected boreholes, and monitoring over three visits.

The gas/groundwater monitoring wells consisted of a lower slotted section of 50mm diameter HDPE casing surrounded by a single size, non-calcareous gravel and sealed at the top with bentonite. The slotted section of the installations were screened into the natural cohesive strata. The upper section of each well was constructed of plain HDPE casing surrounded by arisings and sealed at the top with bentonite.

Specific details regarding the installation of each well can be seen on the respective Sirius exploratory hole record sheets presented within Appendix D to this report.

Wardell Armstrong had previously produced a Method Statement for the intrusive investigative works which had been agreed with Sedgefield Borough Council. The principal details of this method statement were followed by Sirius. A copy of the Method Statement and written approval is presented in Appendix B to this report.

#### 4.2 Strata Description.

Depths and descriptions of strata and groundwater encountered together with details of the samples recovered are presented on the exploratory hole logs in Appendix D to this report.

Strata descriptions are based on an examination of the strata encountered together with consideration of the in-situ test data. Procedures and principals contained in BS 5930 (1999), BS 10175 (2001) and BS 1377 (1990) together with BS EN ISO 14688-1 (2003), BS EN ISO 14688-2 (2004) and BS EN ISO 14689-1 (2003) have been followed.

The depths of strata on the record sheets are recorded from current ground levels at each location as surveyed by Sirius on 29<sup>th</sup> February 2008.

The information contained in this report is limited to the site boundary, as indicated on Drawing No. C2761/2, within Appendix A of this report.

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## 4.3 Sampling and In situ Testing.

Small and bulk disturbed samples were selected by the Sirius Geoenvironmental Engineers during the site investigation works. Samples of soil for hydrocarbon analysis were placed into one litre glass amber jars and 50ml amber glass vials where considered appropriate. Samples for geotechnical analysis were placed into one litre plastic containers and large robust polythene bags. Samples were stored at a low temperature until delivery to UKAS and MCERTS accredited laboratories.

In situ Standard Penetration Tests (SPTs) were also carried out throughout the full depth of the boreholes using a 60° solid cone in order to assess the relative density of granular soils encountered or to give an indication of undrained shear strengths of cohesive soils. The results of these tests are shown as 'N' values and can be found adjacent to the appropriate sample level on the exploratory hole records in Appendix D of this report.

Undisturbed samples were collected as U100's from cohesive strata within the boreholes.

Undrained shear strength values were measured using a Pilcon hand vane within cohesive strata excavated from within the trial pits.

## 4.4 Exploratory Hole Locations.

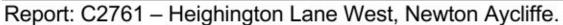
Exploratory hole locations were selected by Sirius to produce a representative overview of ground conditions across the site, and to investigate specific ground conditions identified by Wardell Armstrong's desk study as potentially presenting risks or redevelopment constraints. In general, the exploratory holes beneath the proposed buildings were located on a 50m grid, increasing outwith the proposed building footprints to between 100m and 150m.

Localised areas of the site could not be investigated by intrusive means due to ecological or archaeological constraints, however, adequate coverage was achieved across the site.

In addition, Sirius were instructed by Merchant not to take any investigative works in two specific areas of the site, as follows:

- 100m stand-off zone above a service corridor along the eastern boundary of the site, adjacent to the railway line; and,
- 40m 'no work' zone along the public footpath trending west-east along the centre of the site.

Procedures recommended in CLR4 and BS 10175:2001 were followed when determining exploratory hole locations.





#### 4.5 Munitions Contamination Survey.

Prior to any intrusive investigative works being undertaken on the site, the location of each proposed exploratory hole was cleared by an Explosives Ordnance Detection Engineer from Fellows International Ltd using a geophysical magnetometer and pulse locater.

No evidence of unexploded ordnance was found in the surveyed areas.

Fellows International Ltd subsequently produced a Munitions Contamination Survey report for the works, as referenced below and included within Appendix C to this report.

 A Report of Proceedings On The Munitions Contamination Survey of Intrusive Ground Works Locations – Heighington Lane, Newton Aycliffe. Prepared by Fellows International Ltd on behalf of The Sirius Group. Ref. FIL 1.5/566-07, dated March 2008.

An Explosives Free Certificate for the locations of the exploratory holes is enclosed within Annex A of the above report. However, the report states that "if it is intended to conduct intrusive ground engineering operations outside of these surveyed locations, a danger from unexploded ordnance still exists and the site should be surveyed for any munitions contamination before any future ground work starts". This would include any earthworks or subsurface engineering works undertaken as part of the proposed development.

#### 5.0 LABORATORY TESTING.

#### 5.1 Chemical Testing.

Selected samples of the made ground, topsoil and natural soils were tested for a range of potential contaminants under subcontract with Derwentside Environmental Testing Services (DETS), an UKAS and MCERTS accredited laboratory.

The potential contaminants of concern identified by the Wardell Armstrong desk study were selected as the analytes for the soil samples retrieved from this site. As part of the Sirius investigation a total of eighteen soil samples and four soil leachate samples were selectively analysed for a range of determinands, as shown in Table 5.1 overleaf.



**Table 5.1:** Schedule of Chemical Testing.

Laboratory analysis	No of Soil Samples	Leachate Samples
Total concentrations of: metals (arsenic, cadmium, chromium, copper, lead, mercury, selenium, nickel and zinc), pH, total and water soluble sulphate, speciated polyaromatic hydrocarbons (PAHs), total organic carbon (TOC), and monohydric phenols.	12	-
Banded TPH (PRO, DRO, MRO)	2	~
Asbestos fibres	4	
Pesticide Suite*	6	
Explosive Residue Tests*	4	
Leachable concentrations of: metals (arsenic, cadmium, chromium, copper, lead, mercury, selenium, nickel, and zinc), total phenols, speciated PAHs, and pH.	-	4

NOTE: \* Analysis undertaken by specialist subcontract laboratory.

The results of the soil and leachate analysis as received from the laboratory are presented in Appendix E of this report.

#### 5.2 Geotechnical Testing.

Geotechnical laboratory testing, as scheduled by Sirius, was carried out under sub contract with Professional Soils Laboratory (PSL) an UKAS accredited laboratory, on selected soil samples in accordance with techniques outlined in BS 1377:1990. Consideration was given to the location and depth of the proposed cut and fill areas across the site.

The following soil classification testing was undertaken:

- 18No. Atterberg Limit tests including Moisture Content; and,
- 4No. Particle Size Distributions (wet and sedimentation).

With regard to the proposed earthworks, and re-useability of the natural soils, the following soil parameter tests were undertaken:

- 9No. single stage quick undrained triaxial tests;
- 5No. Oedometer consolidation tests; and,
- 4No. compaction tests using a 2.5kg rammer.

The following electrochemical analysis was performed:

18No. pH and water soluble sulphate (SO<sub>4</sub> 2:1 extract) determinations.

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In addition, to determine pavement design parameters for preliminary road design the following tests on selected samples, were undertaken:

6No. remoulded California Bearing Ratio (CBR) tests.

The geotechnical test results as received from the laboratory are included in Appendix E of this report.

#### **6.0 GROUND CONDITIONS AND MATERIAL PROPERTIES.**

### 6.1 Introduction.

A complete record of all the strata encountered in each exploratory hole is provided on the exploratory hole logs presented within Appendix D. The following is intended to provide a summary of the soils present within the site.

#### 6.2 Made Ground.

Made ground (non-natural soils placed by anthropogenic means) was encountered in three of ninety-two exploratory holes excavated/drilled: TPs 50 and 52, and BH 9 (made ground may potentially contain contamination which can present a significant risk to identified receptors).

Made ground was proven in TPs 50 and 52, located in the area of the former Whitworth Farm, to depths of 0.5 and 0.9m bgl respectively.

Within TP 50, the made ground comprised a sandy clay with some ash and brick, overlying set cobbles of limestone, considered to represent the former hard cover farmyard.

Within TP 52, the made ground comprised sandy clay with ash, brick and clinker overlying a loose gravel of brick, slate and limestone (0.2m thickness, considered to be a thin horizon of demolition materials) and a sandy gravely clay with brick and charcoal (0.6m thickness, considered to be a horizon of reworked clay). Abundant fragments of suspected asbestos roof tiles were noted in the granular fill horizon.

Disturbed topsoil was encountered in BH 9 to 1.1m bgl, located in the northern set of fields, comprising a brown slightly sandy slightly gravely clay with gravel of sandstone, mudstone and brick.

Topsoil was encountered within the remaining eighty-nine exploratory holes excavated/drilled to depths of between 0.05m and 0.9m bgl, comprising typically a dark brown and brown, locally slightly gravely, slightly sandy or sandy clay.

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### 6.3 Superficial Deposits.

Glacial Till (Boulder Clay) was found to underlie the topsoil and localised made ground across the site to depths of between 1.75m and >10m bgl. Visual examination typically indicates these deposits to comprise firm and stiff sandy gravely clays with occasional soft horizons.

The Glacial Till also comprised localised layers of fine to medium sands and sand and gravels.

The results of eighteen Atterberg Limit determinations undertaken on the Glacial Till clays recorded Liquid Limits between 29% and 54% (mean 35%), Plastic Limits between 14% and 24% (mean 17%), with resulting Plasticity Indices between 14% and 30% (mean 18%). These indicate the cohesive Glacial Till to comprise clay with generally low to intermediate plasticity.

Natural moisture content determination recorded values between 13% and 33%, and generally with ±2% of the plastic limit confirming the firm to stiff consistencies identified.

The results of four particle size distribution tests undertaken on the cohesive Glacial Till indicate fines contents to vary between 38% and 54%, sand contents to vary between 24% and 29% and gravel contents to vary between 15% and 38%.

The results of in situ hand shear vane tests (HSV's) undertaken within the cohesive strata in the trial pits gave highly variable undrained shear strength values between 10kN/m<sup>2</sup> and 120kN/m<sup>2</sup>, but generally between 40kN/m<sup>2</sup> and 100kN/m<sup>2</sup> indicating firm to stiff medium to high strength, occasionally soft low strength, conditions.

The results of five unconsolidated undrained triaxial tests gave undrained shear strengths of between 49kN/m<sup>2</sup> and 97kN/m<sup>2</sup>, generally increasing in depth between 49kN/m<sup>2</sup> at 1m bgl to 97kN/m<sup>2</sup> at 3m bgl.

The results of Standard Penetration Tests (SPT) carried out in the cohesive Glacial Till gave SPT N values of between 7 and 57. Based on correlation between SPT N value, Plastic Index and undrained shear strength (CIRIA 143) the recorded SPT N values and a mean Plastic Index of 18% correlate to shear strengths of between 35kN/m² and >250kN/m² and indicate soft to very stiff, low to high strength conditions generally increasing in strength with depth.

Based on the above, preliminary design undrained shear strengths of 40kN/m<sup>2</sup> up to 3.0m depth, 75kN/m<sup>2</sup> from 3 to 4m depth and 100kN/m<sup>2</sup> at depths greater than 4m may be assumed.

The results of five Oedometer consolidation tests gave coefficient of volume compressibility  $(m_v)$  values of between  $0.15m^2/MN$  and  $0.25m^2/MN$  decreasing with depth, for loads of effective overburden pressure plus 100kN. The tests also gave coefficients of consolidation  $(c_v)$  of generally between 5 and  $30m^2/year$ .

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In view of the proposals to undertake cut and fill reprofiling of site levels, four dry density/moisture content relationship test were undertaken on samples of the cohesive Glacial Till to provide preliminary information on the compaction properties of these materials. A compactive effort of 2.5kg was used for all the tests. The results of the tests indicate the maximum dry density of these materials to vary between 1.54 and 1.74Mg/m<sup>3</sup> at optimum moisture contents of between 18% and 22%.

Recompacted laboratory CBR tests carried out on six samples of the Glacial Till obtained from depths of between 0.6m and 2m below existing ground level recorded CBR values ranging between 1.2% and 5.3%.

## 6.4 Solid Geology.

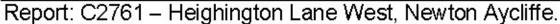
Rockhead was proven in twenty-nine of the ninety-two exploratory holes excavated/drilled, initially encountered at depths between 1.75 and 9.95m bgl. The rock was typically described as a very weak to moderately weak light brown and orange brown limestone. The inferred depth to rockhead across the site is shown as a rockhead contour plan shown on Drawing No. C2761/3, presented in Appendix A to this report.

A thin horizon of limestone cobbles up to 1.55m thickness, considered to be the highly weathered bedrock, was proven in TPs 30 and 32 at 2.3 and 1.75m bgl respectively overlying competent bedrock.

A completely weathered very weak thinly laminated mudstone was encountered in TP 39 between 3.6 and 3.9m bgl underlying limestone encountered at 1.8m bgl.

# 6.5 Groundwater.

Groundwater was encountered within twenty-five of the ninety-two exploratory holes excavated/drilled, as summarised in Table 6.5 overleaf.



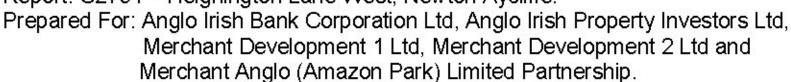




Table 6.5: Summary of Groundwater encountered.

<b>Exploratory Hole</b>	Depth Encountered (m bgl)	Stratum	Notes
BH 1	4.3, rising to 3.9	Clay	
BH 3	5.3, rising to 4.0	Top of residual bedrock	
BH 5	5.8, rising to 3.2	Top of limestone	
BH 7	7.0, rising to ground level	Top of limestone	Rapid rise over 10 minutes
BH 10	2.0, rising to 1.2	Clay	***
BH 10	5.0, rising to 4.3	Clay	
BH 11	5.7, rising to 0.7	Top of residual limestone	
BH 12	6.2, rising to 5.6	Clay	
TP 4	3.6	Clay	Slight seepage
TP 6	3.2	Sand / Clay interface	Slight seepage
TP 10	3.2	Clay	Moderate seepage
TP 21	3.6	Limestone	Strong seepage
TP 25	1.9	Gravel	Moderate seepage
TP 27	1.1 to 1.7	Clay	Slight seepage
TP 30	2.35	Limestone cobbles	Slight seepage
TP 33	2.0	Sand and Gravel / Clay interface	Seepage
TP 35	2.45	Sand and Gravel / Clay interface	Seepage
TP 48	2.25	Top of limestone	Moderate seepage
TP 64	2.30	Limestone gravel	Strong seepage
TP 68	1.90	Clay/Gravel interface	Strong seepage
TP 70	1.90	Clay/Gravel interface	Strong seepage
TP 73	1.7 to 2.1	Clay/Gravel interface	Strong seepage
TP 74	1.3 to 2.4	Clay	Slight seepage
TP 75	2.4 to 2.6	Clay/Gravel interface	Moderate seepage
TP 76	1.9	Clay/Gravel interface	Moderate seepage
TP 78	1.3	Clay/Gravel interface	Moderate seepage

In addition, arisings were noted to be damp or wet in the following ten exploratory holes:

- BH 9 below 8.5m bgl within cohesive soils;
- TP 5 below 3.8m bgl within a band of sand;
- TP 13 below 3.4m bgl at the interface of clay and gravel;
- TP 30 below 2.0m bgl within a gravely clay;
- TP 43 between 1.6 and 1.8m bgl within cohesive soils;
- TP 51 between 1.7 and 2.6m bgl within sandy very clayey gravel;
- TP 67 wet below 1.4m bgl at the interface of clay and gravel;
- TP 74 wet below 3.3m bgl at the top of limestone;
- TP 77 wet below 2.6m bgl at the interface of clay and gravel; and,
- TP 80 between 0.9 and 1.7m bgl within cohesive soils.



During subsequent monitoring of standpipes installed in six boreholes, groundwater levels were recorded as summarised in Table 6.6 below.

**Table 6.6:** Summary of Groundwater Monitoring Data.

Exploratory	Response Zone	Depth of Well	Ground Water Level (m bgl)		
Hole	Stratum	(m bgl)	26/02/08	04/03/08	18/03/08
BH 2	Clay and Limestone	5.40	5.16	5.26	Dry
BH 4	Clay and Limestone	3.00	Dry	Dry	Dry
BH 5	Sand and Clay	5.68	0.48	0.65	0.60
BH 6	Clay	5.42	NR	2.77	3.07
BH 10	Clay	6.02	0.97	1.19	1.31
BH 11	Clay and Limestone	5.46	NR	0.36	0.55

On the basis of the above the groundwater regime at this site is considered to include the following:

- Isolated perched groundwaters within granular horizons in the Glacial Till.
- A main groundwater table within the Glacial Till/Bedrock at a depth of approximately 5m bgl.

Record sheets for the groundwater monitoring visits undertaken are presented in Appendix F of this report.

### 6.6 Visual / Olfactory Evidence of Hydrocarbon Contamination.

No visual or olfactory evidence of hydrocarbon contamination was noted within the ninety-two exploratory holes excavated/drilled.

Abundant fragments of suspected asbestos roof tiles were noted between 0.1 and 0.3m bgl within a thin horizon of made ground in TP 52. These fragments are considered to originate from the former farm buildings that were historically present in this area of the site. Separate samples were collected by the Sirius Geoenvironmental Engineer of the individual fragments of roof tile and the surrounding soil matrix.

#### 6.7 Obstructions.

No buried obstructions were encountered in any of the exploratory holes. However, the presence of foundations and other substructures should be expected associated with the former farmsteads in the northwestern and central areas of the site.

## 6.8 Excavation Stability.

Excavations through the made ground, superficial soils and weathered rockhead were generally found to remain stable for the short period during which they were open, although some instability was noted locally within the cohesive soils.

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#### 7.0 CHEMICAL CONTAMINATION.

#### 7.1 General.

The potential contaminants of concern identified by the Wardell Armstrong desk study were selected as the analytes for the soil samples retrieved from this site. To ascertain the nature and degree of contamination in the shallow soils below the site (and any implications it may have on development), selected soil samples were chosen for chemical analysis. The analysis undertaken is described in Section 5 of this report.

#### 7.2 Current Guidance and the Interpretation of Analytical Data.

Contaminated land is defined under law through Part IIA of the Environmental Protection Act 1990, implemented through Section 57 of the Environment Act 1995. This supports a 'suitable for use' based approach to the risk assessment of contaminated land. The site specific risk assessment is based upon an assessment of plausible pollutant linkages, referred to as the contaminant  $\rightarrow$  pathway  $\rightarrow$  receptor model, based upon the current or proposed use of the site.

The first stage usually comprises the development of a preliminary conceptual site model (CSM), usually based on desk top study data. This is undertaken in order to identify potential contaminants, pathways and targets. This initial model can then be used to scope an effective/ targeted intrusive ground investigation.

Following completion of the investigation, the findings are used to refine the preliminary CSM, in order that a suitable cost effective remediation strategy can be devised or further investigation and risk assessment undertaken.

The process of refining the CSM from the preliminary model, involves semi quantitative risk assessment, which is split into two parts:

- a) The comparison of the soil analysis results against generic soil screening values, to establish sources of contamination (Generic Quantitative Risk Assessment); and,
- A qualitative risk assessment to identify any plausible pathways from contaminant to receptor.

If the screening levels are exceeded and the qualitative risk assessment identifies a plausible pollutant linkage, then assessment could move onto another stage, which includes more sophisticated Detailed Quantitative Risk Assessment (DQRA), or remedial action taken to break the pollutant linkages. The benefits of undertaking a DQRA must be weighed against the likelihood that it will bring about cost savings in the proposed remediation.

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The initial screening levels currently used by Sirius are as follows:

### CLEA (2002).

The current best practice soil screening values for use in UK are derived using CLEA (2002) published by DEFRA. A number of standard land uses are defined within CLEA (2002) for which generic soil guideline values (SGVs) can be derived. Currently, published SGVs are only available for a limited number of parameters. SGVs for other determinands are currently awaited.

## LQM/CIEH (2007) Generic Assessment Criteria for Human Health Risk Assessment.

In the absence of published SGVs, reference is made to the Tier 1 generic assessment criteria published by LQM. This data was derived using the CLEA UK software and is fully compliant with UK contaminated land policy.

## Sirius' In House SSVs (Soil Screening Values).

In the absence of published SGVs, Tier 1 generic Soil Screening Values (SSVs) have been derived by Sirius for selected contaminants of concern. SSVs have been calculated for standard land uses in accordance with the current UK best practice guidelines set out within DEFRA 'CLEA' publication CLR10 and the subsequent supporting briefing notes using an appropriate risk assessment model.

#### Soil Leachability Results.

For the purposes of this report, a screening assessment has been carried out using leachability data obtained from tests performed on soils for this site, to asses the potential risks to controlled waters. The results of the analysis have been compared against a variety of generic criteria from various guidance sources as detailed below:

- Surface Waters (Abstraction for Drinking Water) (Classification) Regulations 1996;
- Environment Agency (2002) Technical advice to third parties on Pollution of controlled waters for Part IIA, EPA1990;
- BRE (2005) Special Digest No. 1; 3<sup>rd</sup> Edition, Concrete in Aggressive Ground; and,
- Dutch Ministry of Housing, Spatial Planning and Environment (2000) Intervention Values and Target Values – soil quality standards and groundwater standards.

The decision to carry out a DQRA will be dependent on the extent and implications of the initial generic quantitative risk assessment.

The semi-quantitative risk assessment carried out as part of this report assumes a 'commercial and industrial' end use.

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# 7.3 Soils Testing.

The results of the soils tested are summarised in Table 7.3 below. Copies of the analytical certificates are presented within Appendix E of this report.

Parameter	Screening value (mg/kg, unless otherwise stated)	No. of samples above screening value	No. of samples tested	Maximum concentration (mg/kg, unless otherwise stated)
Metals				
Arsenic	500 <sup>(a)</sup>	0	12	
Cadmium	1400 <sup>(a)</sup>	0	12	
Chromium (Total)	5000 <sup>(a)</sup>	0	12	
Lead	750 <sup>(a)</sup>	0	12	
Mercury	480 <sup>(a)</sup>	0	12	
Selenium	8000 <sup>(a)</sup>	0	12	
Copper	45,700 <sup>(b)</sup>	0	12	
Nickel	5000 <sup>(a)</sup>	0	12	
Zinc	188,000 <sup>(b)</sup>	0	12	1 E
Inorganics				
pH	<5	0	12	
Total Sulphate	2,400 <sup>(c)</sup>	0	12	
Water Sol. Sulphate	0.5 g/l <sup>(c)</sup>	0	12	
Organics				
Monohydric Phenol	21,900 (1% SOM) <sup>(a)</sup> 43,000 (2.5% SOM) 78,100 (5% SOM)	0	12	
*Benzo(a)pyrene	29.7 (1% & 2.5% SOM) (b) 29.9 (5% SOM)	0	12	
**Naphthalene	290 (1% SOM) <sup>(b)</sup> 720 (2.5% SOM) 1440 (5% SOM)	0	12	
TOC	3 w/w% <sup>(a)</sup>	2	12	4.7%, TP 34, 0-0.25m
PRO (C <sub>6-9</sub> )	26.9 (1% SOM) (b)	0	2	
DRO (C <sub>10-24</sub> )	625 (1% SOM) <sup>(b)</sup>	0	2	
MRO (C <sub>24-40</sub> )	9250 (1% SOM) (b)	0	2	
Banded TPH (C <sub>6-40</sub> )	9901.9 (1% SOM) (b)	0	2	
Miscellaneous	5			s Ø
Explosive Residue Tests	various	0	4	All less than detection limits
Pesticides	∨arious	0	6	All less than detection limits
Asbestos	present	1	4	Chrysotile, TP 52, 0.1- 0.3m

<sup>(</sup>a) DEFRA soil guideline values for 'residential with plant uptake' end-use;

SOM Soil Organic Matter.

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<sup>(</sup>b) LQM/CIEH (2007) Generic Assessment Criteria for Human Health Risk Assessment (for a sandy soil with 1% SOM and pH 7.0);

<sup>(</sup>c) BRE (2005) Special Digest 1, 3rd Edition, Concrete in aggressive ground. Upper limits for DS-1 Design Sulphate Class concrete;

<sup>(</sup>d) The Hazardous Waste (England and Wales) Regulations 2005. 'Inert' waste threshold;

Risk Driver for toxic effects (non threshold);

Risk Driver for volatility (threshold); and,

#### Metals.

None of the twelve samples analysed for metals recorded elevated concentrations. Therefore, these results are not considered further.

#### Inorganics.

None of the twelve samples analysed for inorganic determinands recorded elevated concentrations. Therefore, these results are not considered further.

### Organics.

Two soil samples (one of topsoil and one of made ground) from TPs 32 and 50 in the area of the two former farms were tested for banded TPH ( $C_{6-40}$ ), however the laboratory results proved concentrations of PRO, DRO and MRO to be below their respective Tier 1 guidance values.

None of the twelve samples analysed for phenols recorded elevated concentrations.

Of the twelve samples analysed, two samples of topsoil recorded a TOC concentration above 3%, considered to be due to the natural humic content within the topsoil tested. TOC is a general quality parameter as a measure of organic carbon, and is not considered to be a 'contaminant' which poses a risk to human health when considered in isolation, and is therefore not considered further as part of this assessment. However, the values recorded may influence the waste classification and in turn the assignment of an appropriate landfill if these materials are removed from site.

#### Miscellaneous.

None of the four samples analysed for explosive residue recorded elevated concentrations, all of which were below the laboratory's limit of detection.

None of the six samples analysed for pesticides recorded elevated concentrations, all of which were below the laboratory's limit of detection.

Of the four samples tested for asbestos fibres, one sample of the fragmented roof tiles identified within the made ground in TP 52, between 0.1 and 0.3mm, contained chrysotile fibres. However, the tile has been identified to comprise almost entirely asbestos cement with between 10% and 15% asbestos. The asbestos in these materials will only be released should the tiles be abraded, sawn or worked on by hand tools. Testing of the soil horizon has proven the fibres are not dispersed throughout the fill matrix. As such, it is recommended that this area of the site should be investigated during the initial proposed earthworks and any further roof tiles identified should be hand-picked and removed for disposal off-site to a licensed disposal site.

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## 7.4 Soil Leachate Testing.

Four soil samples (two of made ground, one of topsoil, and one of natural clay) were selected for leachability testing, the results which are summarised in Table 7.4 overleaf. Copies of the analytical certificates are presented within Appendix E of this report.

With respect to the environmental setting of the site, underlain in placed by a thin layer of low permeability drift deposits overlying the Magensian Limestone strata (Major Aquifer), Demons Beck flowing eastwards through the site, at least one recorded active groundwater abstraction within 1.5km of the site, and that the site lies within Zone III of a Source Protection Zone, the results of soil leachate analysis have been compared to the Environment Agency Technical Advice to Third Parties (Freshwater EQS), wherever possible. Where no guidance values are given by the EA, results have been compared to the Water Supply (Water Quality) (Amendment) Regulations 2001, in the absence of any available more appropriate guidance.

Where a range of EQS freshwater values are provided dependant upon the hardness of the receiving water, the most appropriate screening criteria has been based on the hardness of waters analysed during the investigation.

According to the EA's website, the nearby River Skerne (Demons Beck to Aycliffe village stretch), into which Demon Beck flows, recorded an average hardness value of 375mg/l CaCO<sub>3</sub> between 2004 and 2006 (the most recent set of results available), therefore, a hardness in excess of 250mg/l CaCO<sub>3</sub> has been assumed for the purposes of this risk assessment.

In addition, the most sensitive (salmonid) aquatic environment has been assumed for this assessment.

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**Table 7.4**: Summary of Soil Leachate Concentrations and Generic Quantitative Risk Assessment.

Parameter	Screening value (units µg/l unless otherwise stated)	No. of samples above screening value	No. of samples tested	Maximum concentration above screening value (units µg/l unless otherwise stated)
Metals/Metalloids		Value	1	- Stated)
Arsenic	50 <sup>(a)</sup>	0	4	
Cadmium	5 <sup>(a)</sup>	0	4	
Chromium	50 <sup>(a)</sup>	0	4	
Lead	20 <sup>(a)</sup>	0	4	
Mercury	1 <sup>(a)</sup>	0	4	
Selenium	10 <sup>(b)</sup>	0	4	
Copper	28 <sup>(a)</sup>	0	4	
Nickel	200 <sup>(a)</sup>	0	4	
Zinc	125 <sup>(a)</sup>	0	4	
Organics	32.	2000	J. 2	
Naphthalene	10 <sup>(a)</sup>	0	4	
Benzo(a)pyrene	0.01 <sup>(b)</sup>	0	4	
Benzo(b)fluoranthene*	0.1 <sup>(b)</sup>	0	4	
Benzo(k)fluoranthene*	0.1 <sup>(b)</sup>	0	4	
Benzo(ghi)perylene*	0.1 <sup>(b)</sup>	0	4	
Indeno(1,2,3-	0.1 <sup>(b)</sup>	0	4	
cd)pyrene*				
Sum PAH-4*	0.1 <sup>(b)</sup>	0	4	
Phenol	0.5 <sup>(b)</sup>	0	4	
Others				
рН	6-9 pH units <sup>(g)</sup>	0	4	

- (a) Environment Agency (2002) Environment Agency technical advice to third parties on pollution of controlled waters for Part IIA of the EPA 1990. Freshwater Environmental Quality Standards (EQS).
- (b) The Water Supply (Water Quality) (Amendment) Regulations 2001.
- (c) SEPA (2004) Environmental Quality Standards, Issue No 1, October 2004
- (d) World Health Organisation (WHO) Guidelines for Drinking Water Quality, 1984. Health value.
- (e) Based on a 5-fold dilution of the USEPA (1997) Drinking Water Advisory on MTBE value for taint, EPA-822-F-97-009. Full justification can be provided on request.
- (f) EU Risk Assessment Report (2002) MTBE, 3<sup>rd</sup> Priority List, Volume 19. PNEC value for fresh and sea water life.
- (g) The Surface Waters (Fishlife) (Classification) Regulations 1997.
- The sum of all 4 individual PAHs marked with an asterisk (\*)

#### Metals.

None of the samples analysed for metals recorded elevated concentrations. Therefore, these results are not considered further.

# Organics.

None of the samples analysed for organic compounds recorded elevated concentrations. Therefore, these results are not considered further.

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#### 8.0 QUALITATIVE RISK ASSESSMENT & REVISED CONCEPTUAL SITE MODEL.

As discussed in Section 7, the risk assessment is based on a contaminant source  $\rightarrow$  pathway  $\rightarrow$  receptor model.

Following laboratory testing, and Generic Quantitative Risk Assessment, as detailed above, the preliminary conceptual site model produced by Wardell Armstrong has been revised. A summary of the revised CSM is given on Drawing No. C2761/4, presented within Appendix A of this report.

In assessing risk, the following categorisation has been developed:

Term	Description
Very High Risk	There is a <b>high probability</b> that <b>severe harm</b> could arise to a designated receptor from an identified hazard at the site without appropriate remedial action.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remedial action.
Moderate Risk	It is possible that without appropriate remedial action harm could arise to a designated receptor. It is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard. It is likely that, at worst if any harm was realised any effects would be mild.
Negligible Risk	The presence of an identified hazard does not give rise to the potential to cause harm to a designated receptor.

The above is intended to be an aid in assessing the degree of risk. It should be noted that in terms of the Environmental Protection Act 1990, there is no differing degree of risk, i.e. it is either significant or not.

The site is considered to lie within a **high** environmental sensitivity setting, taking account of the underlying thin horizon of low permeability drift deposits over a Major Aquifer, local hydrology, nearby abstractions and source protection zones, and the surrounding land uses.

Consideration is being given to the development of the site with 3No. industrial and commercial units with associated service yards and roadways. This is considered a **low sensitivity** end use.

Following the site investigation, and the generic quantitative risk assessment, above, the remaining risks posed by the areas of the site investigated are considered to present a **low** risk to the identified receptors if the site was to be developed without any further investigation or remedial actions.

The only identified risk present to receptors relates to fragments of asbestos roof tiles within a near-surface horizon of granular made ground in the area of the former Whitworth Farm,

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however, testing has proven the fibres are not dispersed throughout the fill matrix. The roof tiles are considered to have originated from demolition of the former farm buildings.

There is not considered to be a risk to Controlled Waters due to the ground conditions proven and the absence of any identified leachable contamination.

### 9.0 CONCLUSIONS AND RECOMMENDATIONS.

## 9.1 General.

Sirius was commissioned by Merchant Developments Ltd undertake a Phase II Geoenvironmental Appraisal of land off Heighington Lane West in Newton Aycliffe.

It is understood that consideration is being given to development of the site with 3No. industrial and commercial units with associated service yards and roadways. A proposed site layout, supplied by Merchant, is enclosed within Appendix A of this report.

It is understood that in order to facilitate redevelopment, the site is likely to require some reprofiling comprising cut and fill. A copy of an earthworks isopachyte plan is enclosed within Appendix A of this report. If this, or any of the assumptions pertaining to the nature of the development discussed above are changed, then the conclusions and recommendations presented in this report may need to be revised.

### 9.2 Earthworks and Foundations.

#### Proposed Development.

The following preliminary recommendations are given based on the proposed development of the site with 3No. industrial and commercial units as defined on the masterplan referenced as Drawing No. 1106/Pr/002-G, presented in Appendix A to this report. It is recognised that there will be some revision of ground levels, involving a cut and fill earthworks operations to create development platforms for the three proposed units. Detailed design will be required following completion of additional ground investigation works.

Sirius understand that the buildings on the site will be large span single-storey portal framed warehouses. The spans will typically be around 30m, and portal centres around 6.0m, containing some areas of two-storey offices.

The perimeter columns will carry loads of up to 200kN. Internal columns may have loads up to 600kN.

Floor slab loads within the warehouses will carry 50kN/m<sup>2</sup>. Differential foundation settlements of around 25mm should be acceptable.

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The warehouses will contain areas of high storage racking (possibly up to 12m high), and the floor slabs will therefore be constructed to tight level tolerances. In areas where racking is to be installed, the slab is likely to be constructed to classification FM2 (special), permitting a maximum elevational difference of 6.5mm between fixed points 3.0m apart. Elsewhere, where the classification is likely to be FM2, this permits a maximum elevational difference of 8.0mm between fixed points 3.0m apart. Differential settlement of the soils below the slab could therefore result in the slab moving outside these limits, particularly where some areas of the floor of a buildings will be close to bedrock and other areas will be on clay fill (most significant on the larger Unit 3 building).

A summary of the proposed earthworks details is presented in Table 9.2 below.

Table 9.2: Summary of Proposed Earthworks.

Unit	Location	Size	Maximum Proposed Cut (m)	Maximum Proposed Fill (m)
Unit 1	Northwest corner	320,700 square feet	-2.5	+1.5
Unit 2	Northeast corner	54,000 square feet	None	+1.0
Unit 3	Southern area	980,000 square feet	-7.0	+3.5

Note: Proposed maximum cut and fill levels are approximate.

# <u>Unit 1.</u>

Anticipated Ground Conditions/Earthworks.

The results of the ground investigation indicate the ground conditions beneath the proposed footprint of Unit 1 to comprise firm medium strength Glacial Till generally increasing to stiff high strength clays 3m below existing ground level. Rockhead underlies the Glacial Till at depths of between 10m below the northern wall of the Unit and 6m below the southern wall.

It is understood that it is proposed to cut the northwestern and northern areas of the building to a maximum of -2.5m bgl, and fill beneath the remainder of the footprint up to approximately +1.5m.

Settlements/Heave Due to Cut and Fill Earthworks.

Based on the proposed level changes, preliminary calculations indicate the area of upfilling could induce up to 35mm of total consolidation settlement in the underlying Glacial Till. The rate of this consolidation settlement is calculated to require approximately 1 year to consolidate by 90%. In the area of cut, heave of up to 20mm is calculated.

Foundations.

#### Column Foundations.

Based on the ground conditions identified, and the proposed cut and fill levels, it is anticipated that the shallow foundations are likely to encounter either firm Glacial Till or isolated thin fill materials overlying firm Glacial Till. Based on a design shear strength of  $40kN/m^2$  for the firm Glacial Till, preliminary calculations indicate that the maximum column loads of 600kN could be placed on pad foundations designed to an allowable bearing

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pressure of 80kN/m<sup>2</sup>. This would restrict settlements to less than 25mm and require 2.75m square pads placed at a minimum depth of 0.9m below proposed levels. Where fill materials are placed below spread foundations, the fill should be designed and compacted as structural grade materials.

The settlements due to the structural loadings would be in addition to the consolidation settlements induced by the proposed upfilling to the southeast half of the Unit. As such, consideration should be given to surcharging the upfill materials in order that the settlements due to upfilling would have ceased prior to the construction of the structural frame. The use and degree of surcharging adopted would depend on the construction programme.

Alternatively, consideration could be given to piled foundations extending through the upfill material and Glacial Till end-bearing within the bedrock. Pile design should allow for the negative skin friction generated by the upfill materials. A Specialist Contractor should be contracted with regard to detailed pile design.

#### Floor Slabs.

Based on the ground conditions identified and the proposed floor slab loads of up to 50kN/m<sup>2</sup>, preliminary calculations indicate that total settlements due to the floor slab will vary between 45mm and 60mm. These settlements would be in addition to the settlements generated by the proposed site upfilling. On this basis, a piled floor slab foundation solution may be required with piles end-bearing on the underlying bedrock. However, it is possible that a surcharging solution could be adopted to allow the use of a ground-bearing floor slab. This would depend on the construction programme and the amount of surcharge material available.

#### <u>Unit 2.</u>

Anticipated Ground Conditions/Earthworks.

The results of the ground investigation indicate the ground conditions beneath the proposed footprint of Unit 2 to comprise variable interlayered soft to very stiff Glacial Till clays and sand and gravel within the upper 2.0 to 2.5m bgl. Below 2.5m depth the ground conditions generally comprise stiff to very stiff high strength Glacial Till clay. Rockhead underlies the Glacial Till at depths of between 5.8m and 7.8m below existing ground level.

It is understood that it is proposed to raise existing levels by between 0.5m and 1.0m.

Settlements due to Upfilling.

Based on the proposed level changes, preliminary calculations indicate the area of upfilling could induce up to 20mm of total consolidation settlement in the underlying Glacial deposits. The rate of this consolidation settlement is calculated to require approximately 6 to 12 months to consolidate by 90%.

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Foundations.

#### Column Foundations.

Based on the ground conditions identified, it is considered that spread foundations placed within the upper variable soft to stiff Glacial Till clay, and sand and gravel layers, are likely to be subject to unacceptable total and differential settlements. As such it is considered that the column loads founded on spread foundations should be founded at a depth of between 2.0 to 2.5m depth within the stiff to very stiff Glacial Till. Based on a design shear strength of 75kN/m², an allowable bearing capacity of 150kN/m² is considered appropriate for the strata at these depths. This would restrict total settlements to less than 25mm.

The settlements due to the structural loadings would be in addition to the consolidation settlements induced by the proposed upfilling. As such, consideration should be given to surcharging the upfill materials in order that the settlements due to upfilling would have ceased prior to the construction of the structural frame. The use and degree of surcharging adopted would depend on the construction programme.

Alternatively consideration could be given to piled foundations extending through the upfill material and Glacial Till end-bearing within the bedrock. Pile design should allow for the negative skin friction generated by the upfill materials. A Specialist Contractor should be contracted with regard to detailed pile design.

### Floor Slabs.

Based on the ground conditions identified and the proposed floor slab loads of up 50kN/m<sup>2</sup>, preliminary calculations indicate total settlements due to the floor slab loads of approximately 40mm. These settlements would be in addition to the settlements generated by the proposed site upfilling. On this basis, a piled floor slab foundation solution may be required with piles end-bearing on the underlying bedrock. However, it is possible that a surcharging solution could be adopted to allow the use of a ground-bearing floor slab. This would depend on the construction programme and the amount of surcharge material available.

## Unit 3.

Anticipated Ground Conditions/Earthworks.

The results of the ground investigation indicate the ground conditions beneath the proposed footprint of Unit 3 to comprise firm medium strength Glacial Till, generally increasing to stiff high strength clays 3m below existing ground level. Rockhead underlies the Glacial Till at depths of between 1.7m below the northwest corner increasing to 5.9m depth below the southeast corner of the unit.

It is understood that it is proposed to cut the western area of the building, increasing from grade in the middle of the building to a maximum of -5m bgl at the western wall, and fill beneath the eastern half of the building up to approximately +3.5m below the eastern wall.

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Settlements due to Upfilling.

Based on the proposed level changes, preliminary calculations indicate the area of upfilling could induce upto 50mm of total consolidation settlement in the underlying Glacial Till. The rate of this consolidation settlement is calculated to require approximately 1 year to consolidate by 90%.

The area of cut is likely to require the excavation of bedrock with rockhead occurring approximately up to 3m above proposed finish levels.

Foundations.

# Column Foundations.

Based on the ground conditions identified, and the proposed cut and fill levels, it is anticipated that the shallow foundations will encounter either bedrock below the western area, firm Glacial Till within the central area, or the engineered upfill materials overlying firm Glacial Till in the eastern area.

Spread foundations founded within the bedrock should be designed to an allowable bearing capacity of 250kN/m<sup>2</sup>.

Based on a design shear strength of 40kN/m<sup>2</sup> for the firm Glacial Till, preliminary calculations indicate that the maximum column loads of 600kN could be placed on pad foundations designed to an allowable bearing pressure of 80kN/m<sup>2</sup>. This would restrict settlements to less than 25mm and require 2.75m square pads placed at a minimum depth of 0.9m below proposed levels.

Where upfill materials are placed below proposed column foundations the fill should be designed and compacted as structural grade materials.

The settlements due to the structural loadings would be in addition to the consolidation settlements induced by the proposed upfilling, especially below the eastern half of the building. As such, consideration should be given to surcharging the upfill materials in order that the settlements due to upfilling would have ceased prior to the construction of the structural frame. The use, extent and degree of surcharging adopted would depend on the construction programme and require detailed design.

#### Floor Slabs.

Based on the ground conditions identified, and the proposed floor slab loads of up to 50kN/m<sup>2</sup>, preliminary calculations indicate that total settlements due to the floor slab will vary between >25mm below the western area of the building and 60mm below the eastern area. These settlements would be in addition to the settlements generated by the proposed site upfilling. On this basis a piled floor slab foundation solution may be required with piles end-bearing on the underlying bedrock. However, it is possible that a surcharging solution could be adopted to allow the use of a ground-bearing floor slab. This would depend on the

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construction programme, the amount of surcharge material available, and a detailed assessment.

#### General.

It is considered that a ground-bearing floor slab would be suitable in the construction of the proposed development. Areas of made ground, soft clays, topsoil or organic material should be removed prior to construction of the slab.

Foundation precautions should be taken near trees in accordance with BS5837:1991, "Trees in Relation to Construction". In order to prevent the foundation from being influenced by volumetric changes in the clay owing to seasonal variations in moisture content, it is recommended that the minimum foundation depth in natural clays is 900mm below final site level.

The clays are expected to deteriorate on exposure, particularly to rain or groundwater. Consequently, in the event that foundation concrete is not poured immediately upon excavation, the formation should be protected by a layer of blinding concrete.

Spread foundations should be taken below a line drawn up at 45° from the base of any existing or proposed services or foundations.

Should buried structures be encountered i.e. floor slabs or foundations, these will require breaking out and removing to avoid the presence of hard spots beneath foundations or floor slabs.

In accordance with BRE Special Digest 1 and the results of the water-soluble sulphate testing, a Design Sulphate Class of DS-1 and an ACEC Class of AC-1 should be adopted for the site, assuming mobile groundwater conditions.

#### 9.3 Excavations and Dewatering.

Based on the nature of the ground encountered, it is considered that excavations into the shallow soils should generally be within the capacity of normal earthworks plant. However, for the proposed cut at the western end of Unit 3, this will be taken down into competent limestone and therefore specialist heavy-duty plant will be required, including the use of hydraulic breakers.

Based on the evidence of the trial pit investigation, excavations within the topsoil, localised made ground and natural strata should remain generally stable.

Notwithstanding the above, reference should be made to CIRIA Report 97 'Trenching Practice' to establish suitable methods of ground support or battle angles when excavated through these materials.

Based upon the results of the ground investigation, significant ingress of groundwater at shallow depths is considered unlikely, although localised pockets of perched groundwater

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within the natural soils and rock. Any groundwater ingress should be successfully controlled by traditional pumping methods.

It is recommended that an adequate drainage system for surface water be installed by a competent contractor in order to prevent surface water ponding or collecting during and post construction, which may in turn lead to deterioration of the founding stratum.

Fellows International Ltd state that a danger from unexploded ordnance still exists outside of the surveyed locations, and the entire site should be surveyed for any munitions contamination before any future groundworks commence. This would include any earthworks or subsurface engineering works undertaken as part of the proposed development

# 9.4 Pavements and Highways.

The results of laboratory CBR testing within the cohesive Glacial Till deposits across much of the site indicate CBR values of between 1.2% and 5.3%. Atterberg Limit testing undertaken on the natural clays gave Plasticity Indices of between 14% and 30%. Based upon the guidance contained within the Highways Agency publication "Interim Advice Note 73/06, Design Guidance For Road Pavement Foundations", these results correspond to CBR design values of between 2.5% and 4% assuming poor construction conditions.

In view of the above, it is recommended that a CBR value of 2.5% is adopted for the natural materials present across the majority of the site. Any soft spots should be excavated and replaced with engineered fill materials.

# 9.5 Contamination Constraints to Development.

The site is considered to have a **high** sensitivity environmental setting as discussed in Section 8.

The results of the chemical analysis and generic quantitative risk assessment are provided in Section 7 of this report. A summary of the risks posed by the site, and based on the findings of this investigation, is given below:

 Fragments of asbestos roof tiles within a near-surface horizon of granular made ground in the area of the former Whitworth Farm (TP 52, 0.1-0.3m bgl), considered to have originated from demolition of the former farm buildings. Additional testing has, however, proven the fibres are not dispersed throughout the fill matrix.

### **Current and Future Site Users.**

Based on the generic quantitative risk assessment, using the contaminant source  $\rightarrow$  pathway  $\rightarrow$  receptor philosophy, the identified risks to end users is a localised area of asbestos roof tiles around TP 52 within the shallow made ground. Additional testing has, however, proven the fibres are not dispersed throughout the fill matrix.

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Prepared For: Anglo Irish Bank Corporation Ltd, Anglo Irish Property Investors Ltd, Merchant Development 1 Ltd, Merchant Development 2 Ltd and Merchant Anglo (Amazon Park) Limited Partnership.



It is therefore recommended that the extent of the asbestos roof tiles be determined by further investigation, and the fragments hand-picked and sealed in double bags prior to removal off-site to an appropriately licensed landfill site. Such materials will be classified as Hazardous Waste, however, the volume is likely to be small.

Validation works should be undertaken on completion of removal of the asbestos roof tiles, including a visual assessment, and validation sampling and testing of the residual soils for dispersed asbestos fibres. A validation letter report should then be produced detailing the methodology of the remediation works and the results of the validation testing.

### Construction and Maintenance Workers.

The asbestos materials identified in TP 52 are considered to present a **low** short-term risk to construction and maintenance workers.

It is recommended that normal health and safety procedures should be adopted by groundworkers including no eating, drinking or smoking on-site, designated clean and wash areas and protective clothing.

It is also recommended that procedures outlined in the HSE document "Protection of Workers and the General Public during Redevelopment of Contaminated Land" be followed. There will be a requirement to comply with the COSHH (Control of Substances Hazardous to Health 1994) Regulations and the CDM (Construction Design and Management 1995) Regulations during any proposed development works.

This report should be forwarded to the construction company undertaking the groundworks in order for them to assess the risk to their personnel.

### Controlled Waters.

The results of leachate testing of soils has indicated the site generally presents a **negligible** risk to controlled waters. In addition, only an isolated area of inert made ground has been identified during this investigation associated with the former Whitworth Farm.

# **Built Development.**

The results of soil testing should be provided to service suppliers to determine the requirements for any protection of buried services, although no upgraded service protection is envisaged at this stage.

Based on the results of soluble sulphate testing, and in accordance with BRE Special Digest 1, a concrete Design Sulphate Class of DS-1 and an ACEC Class of AC-1 may be used for buried concrete products, assuming a mobile groundwater regime.

# Adjacent Land Users.

On the basis of the findings of the current investigation, the site is considered to present a **negligible** risk to off-site users.

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Merchant Anglo (Amazon Park) Limited Partnership.



## 9.6 Hazardous Gas.

A preliminary conceptual site model derived by Wardell Armstrong during their Phase I desk study, and revised accordingly by Sirius following the intrusive investigation, has identified no potential ground gas sources, as defined in Table 2.1 of the CIRIA C665 document "Assessing Risk Posed by Hazardous Ground Gases to Buildings", within influencing distance of the site. It is therefore considered that no further action is required in respect of hazardous gas.

### Radon.

The geological assessment included within the Wardell Armstrong Phase I desk study report indicates that **basic radon protection measures are not required** for the protection of proposed dwellings at this location.

# 9.7 Recommendations for Further Works.

### Contamination.

The only identified risk present to receptors relates to fragments of asbestos roof tiles within a near-surface horizon of granular made ground in the area of the former Whitworth Farm, however, testing has proven the fibres are not dispersed throughout the fill matrix. The roof tiles are considered to have originated from demolition of the former farm buildings.

It is therefore recommended that the extent of the asbestos roof tiles be determined by further investigation, and the fragments hand-picked and sealed in double bags prior to removal off-site to an appropriately licensed landfill site. Such materials will be classified as Hazardous Waste, however, the volume is likely to be small.

Validation works should be undertaken on completion of the asbestos roof tiles, including a visual assessment, and validation sampling and testing of the residual soils for dispersed asbestos fibres. A validation letter report should then be produced detailing the methodology of the remediation works and the results of the validation testing.

Fellows International Ltd state that a danger from unexploded ordnance still exists outside of the surveyed locations, and the entire site should be surveyed for any munitions contamination before any future groundworks commence. This would include any earthworks or subsurface engineering works undertaken as part of the proposed development.

### Geotechnical.

Additional geotechnical investigation is recommended to allow a detailed earthworks assessment for re-use of the site-won Glacial Till, and to enable a detailed foundation assessment, including consolidation properties of the Glacial Till and assessment of surcharges, to be made.

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# 9.8 Regulatory Approval.

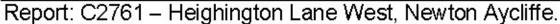
The conclusions and recommendations presented above are considered practical based on the findings of the site investigation. The conclusions and recommendations (particularly regarding contamination) cannot however be guaranteed to gain regulatory approval, and therefore, the report should be passed to the regulators (local authority and Environment Agency) for their comment/approval prior to commencement of development works.

It is recommended that any conditions placed on any planning permission are discharged prior to commencement of site works.

A validation report, detailing the extent of remedial works to remove the fragments of asbestos roof tiles, and confirming the risks to identified receptors have been removed will be necessary to gain local authority approval.

# 9.9 Disposal of Soils.

Any materials removed from site should be undertaken in accordance with the Duty of Care Regulations 1991. There will also be a requirement to classify the waste in accordance with the European Waste Catalogue. The waste should also be subject to Waste Acceptance Criteria (WAC) testing. In light of the new regulations it is recommended that discussion with landfill operators takes place at an early stage. On the basis of laboratory test result, natural waste soils arising from the development are likely to be classified predominantly as inert or non hazardous.



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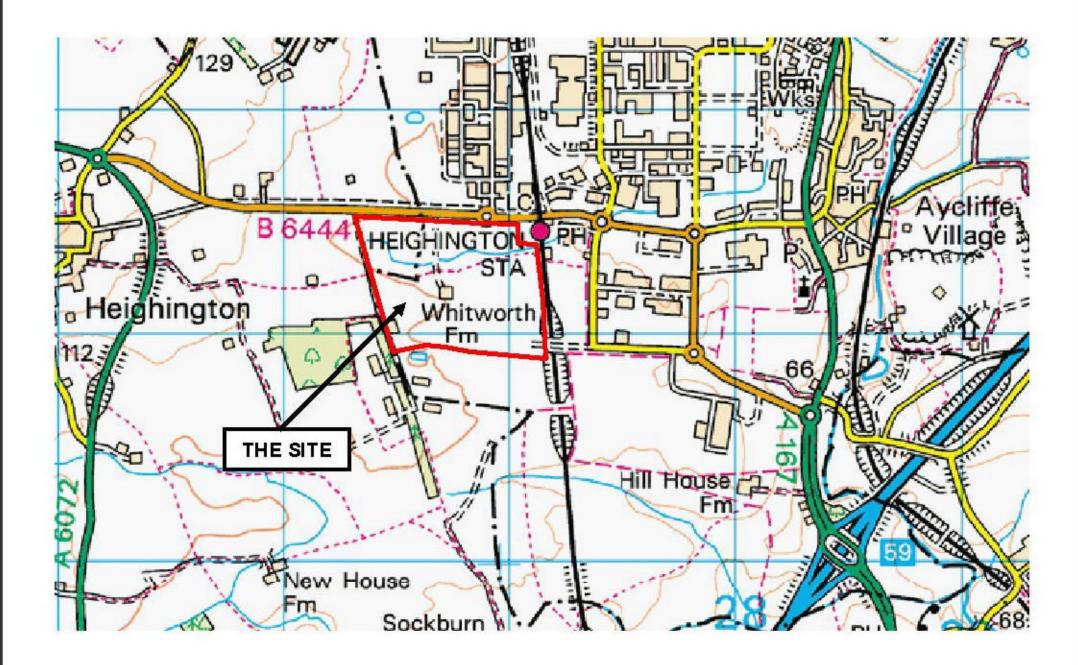


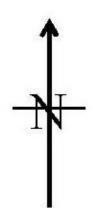
# APPENDIX A DRAWINGS



# **Site Location Plan**

Contract Number	C2761
Contract	Heighington Lane West Newton Aycliffe
<sup>Client</sup> Merchan	t Developments & Anglo Irish Bank





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Scale	1:25,000	
Drawn by	RS	Approved DW
Drawing Num	ber	C2761/1

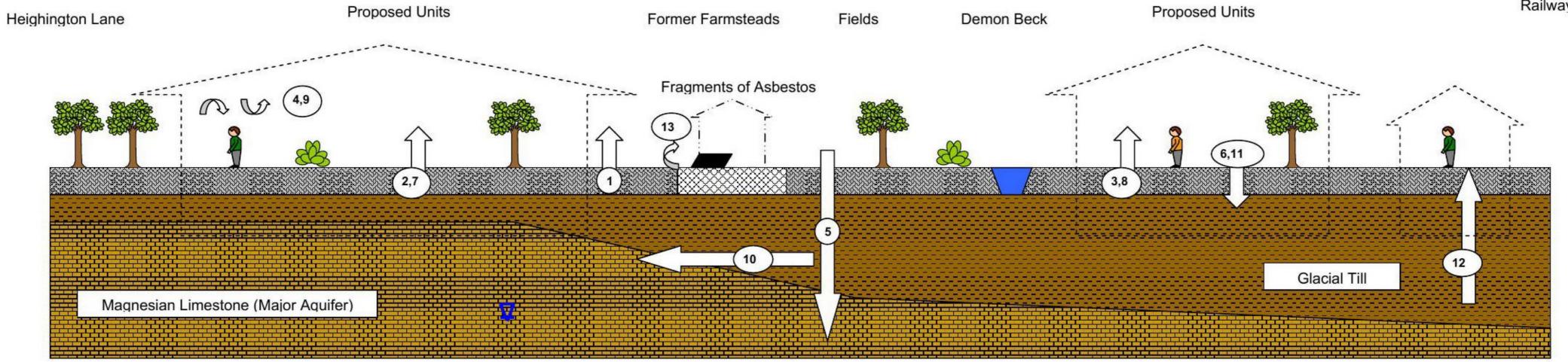




# Graphical representation of Revised Conceptual Site Model

Adjacent Commercial Units

Railway Line



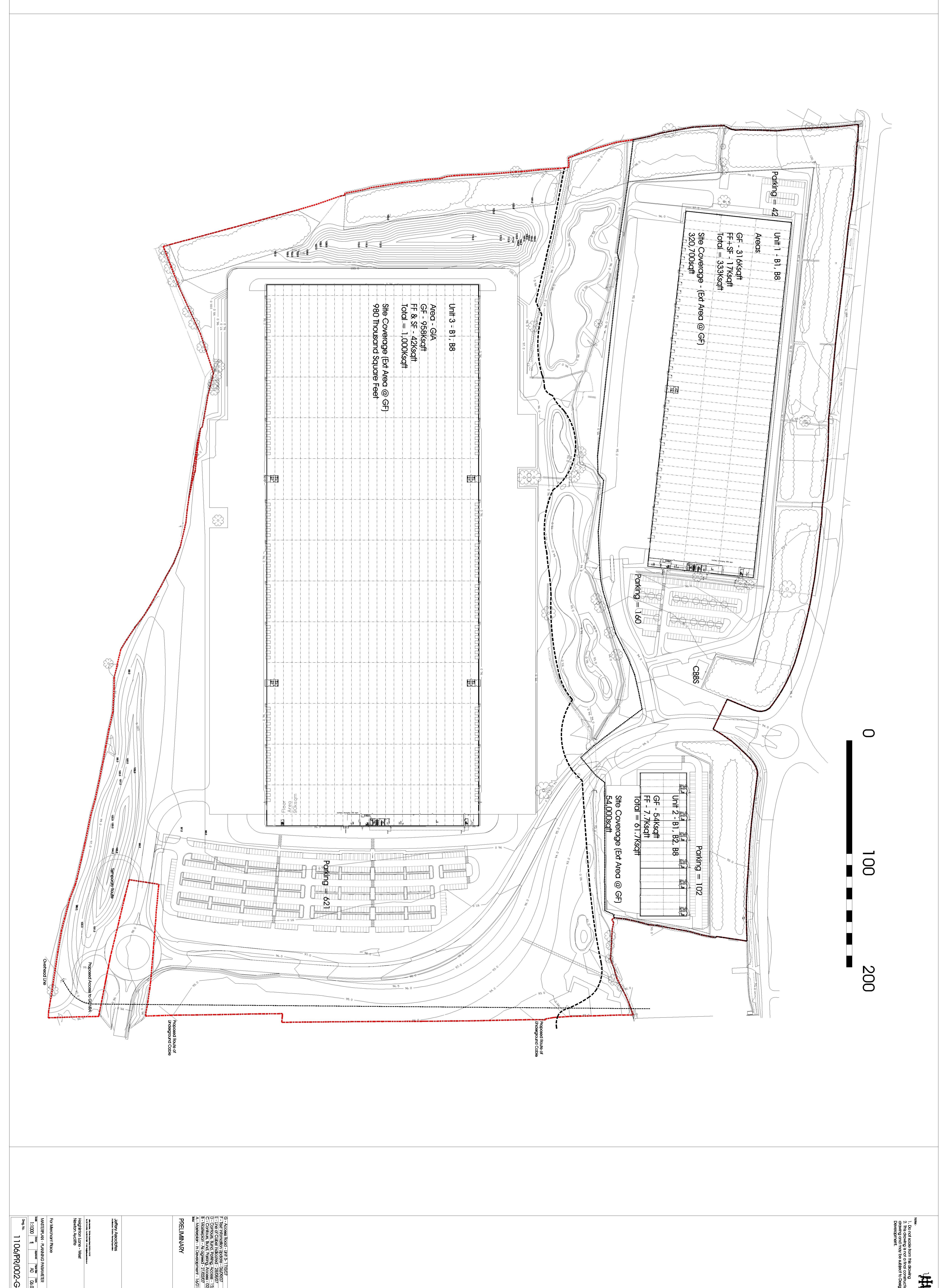
# **Summary of Revised Conceptual Site Model**

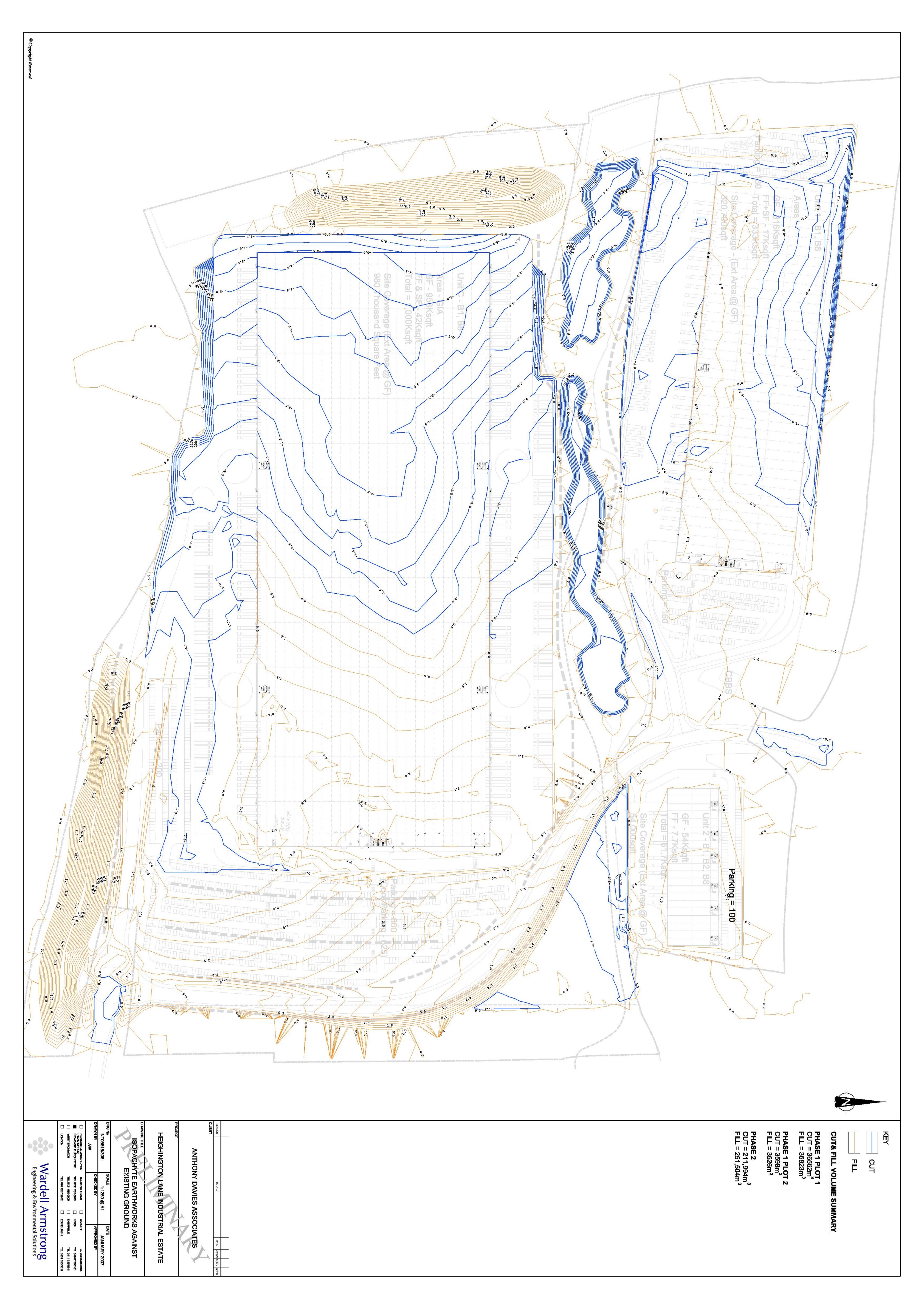
Contamination Source	Contaminant Pathways	Potential Receptors	Assessment of risk
Made Ground or Topsoil resulting from	Uptake by plants/consumption of site grown vegetables	Site end users	Negligible
former uses and buildings	2. Direct ingestion, inhalation or dermal contact with contaminated soils	Adjacent receptors	
	3. Inhalation of soil dust/hazardous vapours in outdoor air	Controlled Waters	
	4. Inhalation of soil dust/hazardous vapours in indoor air	Built Development	
	5. Migration of contamination into minor aquifer or Controlled Waters		
	Attack of buried structures		
Made Ground or Topsoil impacted by	7. Direct ingestion, inhalation or dermal contact with contaminated soils	Site end users	Negligible
hydrocarbons	8. Inhalation of soil dust/hazardous vapours in outdoor air	Adjacent receptors	
	9. Inhalation of soil dust/hazardous vapours in indoor air	Controlled Waters	
	10. Migration of contamination into minor aquifer or Controlled Waters	Built Development	
	11. Attack of buried structures	•	
Potentially putrecsible/organic materials	12. Migration of hazardous ground gas and accumulation within enclosed spaces	Site end users	Negligible to Low
within made ground or natural soils		Built development	- 55 AT
Asbestos fragments within Made Ground	13. Inhalation of fibres	Site end users	Low

1 Pathway number refers to potential pathway listed in table above.

Contract Number	C2761	Scale NTS	
Contract	Heighington Lane West	Drawn by RS	Approved DW
	Newton Aycliffe	Drawing Number	C2761/4
Client	Merchant Developments and A	d Anglo Irish Bank	









# APPENDIX B

# METHOD STATEMENT (WA) & APPROVAL



### MERCHANT DEVELOPMENTS

### PROPOSED DEVELOPMENT AT HEIGHINGTON LANE, NEWTON AYCLIFFE

### SITE INVESTIGATION METHOD STATEMENT

### Introduction

A Preliminary Environmental Risk Assessment regarding the proposed development of a site at Heighington Lane was prepared by Wardell Armstrong on behalf of Merchant Developments and submitted to local planning authorities. An Environmental Statement regarding the proposed development has also been prepared by Cushman Wakefield on behalf of Merchant Developments.

This Method Statement details the proposed scope of works for investigating the site to address planning conditions requiring a second phase of risk assessment.

The site is situated at National Grid Reference 426770, 522140, adjacent to Heighington Lane, Newton Ayoliffe, approximately 1.5km to the west of the junction with the A167 (T), as shown on Drawing No. NT03815/0003 attached. It covers an area of approximately 42 hectares and is broadly rectangular in shape. The site is bordered to the north by Heighington Lane, and to the east by the Darlington to Bishop Auckland railway line. A Junction currently exists on Heighington Lane to allow access to the site. To the south and west of the site is agricultural land. To the immediate north of the site is the large Ayoliffe Industrial Estate, and to the immediate east of the site is the Heighington Lane Business Park. The residential properties of Ayoliffe Village are located beyond the business park to the east, and the town of Newton Ayoliffe is located to the north west.

A surface water course, the Demons Beck, flows east through the site where it then joins the River Skerne approximately 1.8km to the east of the site. The site is relatively flat, although several open ditches cross the site.

The Site will be redeveloped for commercial use comprising of warehouses with on site office space and car parking provisions.

### Site investigation

The proposed site investigation (SI) has been designed to investigate the presence of contamination within the superficial and made ground deposits at the site. The SI will be undertaken using a combination of targeted and non-targeted sampling. Prior to the commencement of intrusive investigation, it is proposed that a non-intrusive geophysical electromagnetic survey be carried out to locate any unexploded ordnance present on site as a consequence of the nearby wartime activities.



The study of available historical maps and plans demonstrates that the site is essentially agricultural land and has not been subject to previous development. Nevertheless, non-targeted investigation will be undertaken across the site area, to investigate possible contamination impacting on the site from farm or munitions factory wastes that may have been buried on site. The investigation will comprise of trial pitting using a mechanical excavator (JCB 3CX or similar), undertaken on a herringbone grid pattern with 100 metre spacing.

The SI will also feature areas of targeted investigation, focused on the limited areas of development at the site. The targeted investigation will also comprise of trial pitting using a mechanical excavator (JCB 3CX or similar).

The former locations of the Whitworth and Springwell farms will be investigated for potential contamination arising from the storage of materials including fuels and pesticides, as well as contamination arising from their demolition. Two areas of old foundations observed during a site walkover will also be subject to targeted investigation, as well as a rubble mound noted in the north west corner of the site. The targeted investigation at all of the above locations will be conducted by the trial pits being positioned using a grid system with a 25 metre spacing.

A 10 metre wide strip of land on the eastern site boundary adjacent to the railway lines will be investigated for potential contamination arising from the railway land by a linear array of trial pits positioned with a 50 metre spacing.

The location of proposed non-targeted trial pits, as well as the various features identified for targeted trial pitting, are shown on the attached plan.

### Contamination Testing

The scope of soils contamination sampling and testing will be sufficient to comply with the needs of the CLEA methodology and will include for a standard suite for each sample taken as follows:

Arsenic, cadmium, chromium, copper, mercury, nickel, lead, selenium, zinc, water soluble boron, total sulphate, free sulphur, pH, total and free cyanide, thiocyanate, sulphide, phenol (monohydric), total PAH, water soluble sulphate, moisture content.

The non-targeted trial pitting investigation across the site area will comprise of approximately 43 investigation locations. Given the historic use of the site it is considered unlikely that contamination from past activities has impacted on the site. It is proposed that a topsoil sample be taken from every other investigation location should no visual or olfactory indication of contamination be observed. It is also proposed that 10 No. samples of the underlying boulder day be taken from the non-targeted trial pits, collected with an even distribution from across the proposed locations.



In addition to the above, selected samples from the targeted investigation in the strip of land adjacent to the railway lines will be subjected to the following analysis:

### PAH (speciated)

A minimum of one sample will be taken from each trial pitting location in the areas of targeted investigation at the site.

A visual and offectory assessment will be undertaken on all materials exposed during the course of the SI, should any materials be encountered that are suspected as potentially causing contamination, additional samples will be taken and submitted for testing. In addition to the analyses detailed above, selected testing including the following may be undertaken based on the type of potential contamination:

PAH (speciated), TPH (speciated), BTEX, aliphatic and aromatic hydrocarbon fractionated analysis, organic matter content, total nitrogen, available phosphorus and potassium, and asbestos screening.

Samples taken from the trial pitting investigation shall therefore be dependent on ground conditions encountered, but if made ground is encountered within a trial pit it is anticipated that multiple samples will be taken at those locations. Each horizon of made ground shall be sampled and underlying natural ground will also be sampled to determine potential vertical migration of contaminants.

At least one sample will be taken from the top 0.5m soil profile at each sampling location to establish risk to human health, the deeper samples will aim to establish risks to construction workers.

Samples will be selected for organic matter content once the investigation has been completed if significant concentrations of any particular contaminant are identified, to allow detailed quantitative risk assessment to be undertaken. NRA leaching tests will also be undertaken on selected elevated samples to assess their potential for leaching to controlled waters.

All samples will be taken on site in accordance with good practice and guidance issued in BS10175 Code of Practice for investigation of Potentially Contaminated Sites (BSI 2001), and Technical Aspects of Site Investigation, Research and Development Technical Report P5-065/TR (EA 2000), as well as standard Wardell Armstrong site investigation procedure notes.

Soil samples will be stored in suitable amber jars and placed directly into a cool box for transport to the nominated laboratory. A duplicate sample will also be taken in a glass vial for volatiles analysis whenever hydrocarbon testing is scheduled. Each jar will have a sample number allocated to it that includes the sampling location reference and the sampling



date. Samples will be accompanied in the cool box with completed Chain of Custody documentation for the nominated analysis laboratory.

No sampling will be undertaken on a Friday to prevent samples sitting in courier distribution centres all weekend.

All contamination testing will be undertaken to MCERTS and UKAS requirements wherever possible.

The testing will be undertaken in accordance with the requirements of the Conceptual Site Model (CSM) developed for the site. Analysis results will allow the CSM to be further refined and provide information to demonstrate significant pollutant linkages at the site in accordance with the Source-Pathway-Receptor principle.



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INVESTOR IN PROPUE

Dur Ref:

57552

Your Ref:

This matter is being dealt with by:

Simon Wilson - Ext. 4276 swilson@sedgefield.gov:uk

07 February 2008

Dear Barry,

NE1 1JF

Mr Barry Whitelaw

Collingwood Street Newcastle-upon-Tyne

Wardell Armstrong LLP Collingwood Buildings

### ENVIRONMENTAL PROTECTION ACT (1990), AS AMENDED HEIGHINGTON LANE - METHOD STATEMENT FOR SITE INVESTIGATION

1 1 FFA 2

I am in receipt of the method statement for the proposed Site Investigation (S.I.) of land adjacent to Heighington Lane, Newton Aycliffe. I have noted some salient points below and provided comments where relevant.

Following the recommendations of a Preliminary Environmental Risk Assessment, an intrusive site investigation is to be undertaken; this will be carried out utilising both a 'Targeted' and 'Non-targeted' sampling strategy.

As a precaution, an initial non-intrusive geophysical electromagnetic survey is proposed; this will locate any unexploded ordnance which may be present on site. While the presence of unexploded ordnance may be unlikely, its identification would confirm that the land may have historically been utilised as part of the Newton Aycliffe Ordnance Works. In the event of the discovery of ordnance, contact should be made with this department to discuss the survey results.

Targeted sampling is to take place in areas where the preliminary site investigation has identified former land use which may have introduced potential contaminants to the site. Targeted sampling will comprise trial pitting as follows:

- Trial Pits in a grid system with 25 metre spacing for the former Whitworth and Springwell farms, two areas of old foundations and a mound of rubble.
- Trial pits with a 50 metre spacing for a 10 metre wide strip of land on the eastern site boundary.

Non-targeted sampling will comprise trial pitting undertaken in a herringbone pattern of 100m spacing, as recommended in CLR4. The sampling strategy indicates that the presence of contamination across the site is unlikely; it is therefore proposed to take one topsoil sample for every other location across the site (between 21 to 22 samples) unless visual and olfactory assessments indicate the likelihood of contamination.

I would suggest that, bearing in mind the proposed end use, the proposed method statement would be appropriate for the site in question. I believe that targeted sampling will provide suitable confidence regarding the level of potential risk in areas where previous assessments have indicated the likelihood of contaminants. I also believe the Non-targeted sampling will allow enough information for an appropriate decision to be made about the level of risk from contaminants on site.

I would however suggest, that should elevated levels of contaminants be found in areas where non-targeted sampling has taken place and where contaminants are not anticipated, further sampling may be required to ensure that the lateral and vertical extent of contamination is suitably identified.

I trust this is satisfactory; however should you require further information or advice, please do not hesitate to contact myself or Leah Beaumont using the contact details above.

Yours sincerely

Ulman integen

Simon Wilson MSc Environmental Control Assistant

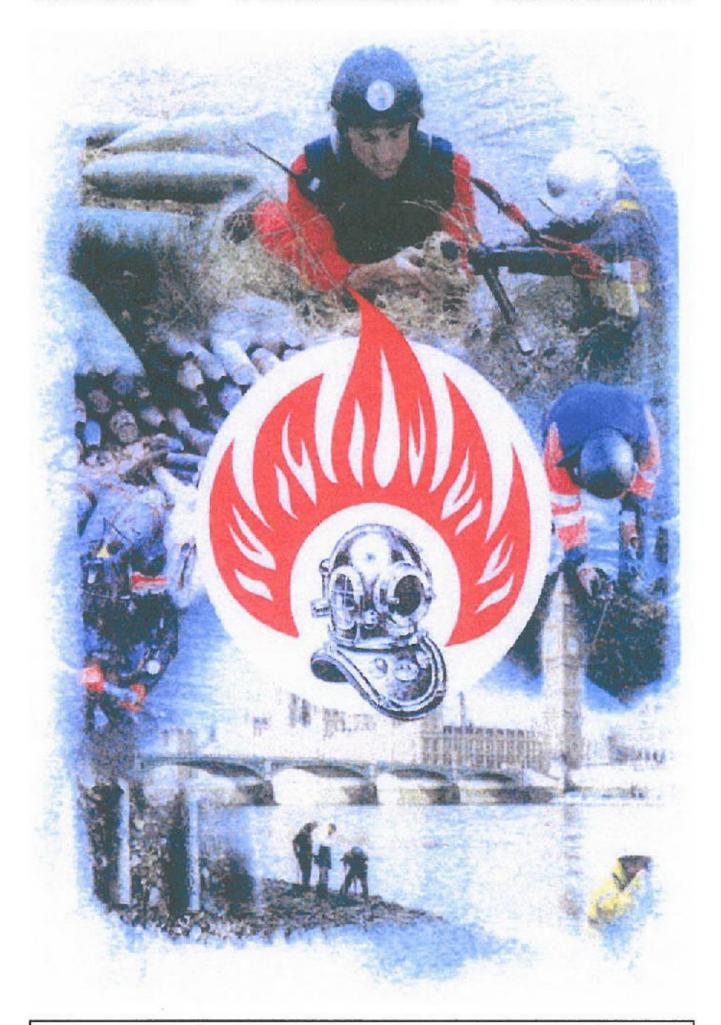


# APPENDIX C

# MUNITIONS CONTAMINATION SURVEY REPORT (FIL)

# **Fellows International Limited**

# Munitions - Contamination - Remediation



A Report of Proceedings On The Munitions Contamination Survey of Intrusive Ground Works Locations

Heighton Lane - Newton Aycliffe

The Sirius Group

"Commercial in Confidence"

FIL 1.5/566-07

March 2008

# **Munitions Contamination Survey Report**

# Contents

1 Introduction Client

Survey Objectives Location and Timing

Background

2 Equipment Specifications Positioning Equipment

Metal Location Equipment

3 Method

4 Results

5 Daily Work Sheets

# Annex

A Explosives Free Certificate

B Daily Work Sheets

# 1. Introduction

Client:

The Sirius Group.

Survey Objectives:

- 1. To give a "Munitions Awareness" briefing to all site Ground Investigation staff.
- 2 To locate, using electromagnetic means, any munitions contamination that could endanger intrusive engineering ground works.

Location & Timing:

Heighton Lane, Newton Aycliffe.

18th- 22nd February 2008.

(See Daily Work Sheets for details).

Background:

The area came under German bombing attack during WWII.

No Military record or explosives clearance certificate is

available for the site.

Assuming the worst-case scenario it was decided to conduct a munitions contamination survey around the location of the ground investigation works.

# 2. Equipment Specification

Positioning Equipment:

Locations identified and pegged out by Sirius.

Metal Locators:

Magnex 120LW Metal Detector with down-hole cable

capable of detecting iron bombs.

Ebinger 725B Pulse Locator capable of detecting non-

ferrous targets.

CAT and Generator. To assist with the lactation of

buried services

### 3. Method

A Munitions Awareness briefing was given to all of the site staff and a tour of the site undertaken to identify emergency evacuation and mustering points to be identified for use in the event of a live weapon find.

A single EOD Engineer using an Ebinger Magnex 120LW Magnetometer and Ebinger 725 Pulse locator to identify possible targets surveyed the ground investigation works locations. A CAT and generator were also employed to assist with the location of services.

See the Daily Work Sheets at Annex B for details.

# 4. Results.

See Daily Work Sheets at Annex B for details.

No evidence of unexploded ordnance was found in the surveyed areas. An Explosives Free Certificate is enclosed at Annex A.

### NOTE:

Only the locations of the ground investigation shown on the Work Sheets at Annex B were certified free from explosive hazard. If it is intended to conduct intrusive ground engineering operations outside of these surveyed locations a danger from unexploded ordnance still exists and the site should be surveyed for any munitions contamination before any future ground work starts.

# 5 Daily Work Sheets.

At Annex B.

# Munitions Contamination Survey Report

# Annex A

# **Explosives Free Certificate**



# Fellows International Limited

Unit 4, Ford Lane Business Park, Ford Lane, Arundel, West Sussex BN 18 OUZ Phone: 01243 551025 Fax: 01243 555740 Email: info@fellowsint.com Web: www.fellowsint.com

### EXPLOSIVES FREE CERTIFICATE (LAND).

Site name, location: Heighton Lane, Newton Aycliffe. FIL File No. 1.5/566-07

This is to certify that the area, given below, is 99.5% free from all munitions to a depth of 7 metres or the impenetrable depth of an air dropped weapon within the geophysical layers.

The intrusive ground investigation areas on the site identified by Sirius Group.

Ground sampling positions on the attached Daily Work Sheet.

and/or the GPS co-ordinates

The locations were marked out by the Sirius group staff.

The locations cleared has been identified to the Project Engineer and confirmed to be the same.

Project Engineer Name: W Brown MIExpE.

Signature:

### Comments relevant to the clearance.

Comments must be signed, and a line ruled beneath the last written line, by the Project Engineer. Use separate sheets of paper if necessary but sign each sheet.

Areas outside of the immediate zone of the ground investigation locations have not been surveyed for munitions contamination and remain a potential hazard from unexploded ordnance. Future intrusive engineering projects should keep this in mind.

Fellows International Limited Authorised Signature and Company Stamp.

Name:

Michael G Fellows. MBE. DSC. BEM® ,MSM.

Signature

Date:

10" March 2008

Copy 1 To Client

Copy 2 To FIL Site Log

Copy 3 To Fil. Head Office





# Munitions Contamination Survey Report

# Annex B

**Daily Work Sheets** 



Date: 18/02/08

**Sheet Number: 01** 

Project & Location	Munitions Contamination Survey Heighton Lane, Newton Aycliffe	
Client	Sirius Group	
Weather	Good	
Temperature in Centigrade	Maximum C 8	Minimum C -5
Time Lost	Nil	
Consultants	William Brown	

Time	Details Of Work In Progress
0800	On site. Met with Sirius personnel.
0815	Site Recce.
0900	EOD Briefing.
0920	Checking Bore Hole (BH) # 2 and cleared targets
0945	Checking Bore Hole (BH) # 4 and cleared targets
1015	Returned to main area checked BH # 01 and cleared targets
1030	Scanning Trial pits, checked TP # 1-2-3 & 4 and cleared targets
1120	Witnessed digging TP# 1& 2. and cleared targets
1200	Witnessed digging of TP# 3 & 4 and cleared targets
1215	Scanned TP# 5 & 6 and cleared targets
1250	Lunch
1330	Scanned TP# 7 & 8 and cleared targets
1350	Scanned TP# 9-10 & 12 and cleared targets
1430	Scanned TP# 13 & 14 and cleared targets
1510	Scanned BH# 3 and cleared targets
1535	Checked Digging on TP 10 & 14
1600	Scanned TP# A16 A18 A20 A22 & A24 and cleared targets
1705	Cleared of site

Plant, MT and Boats Used etc Land Rover 110, Magnex 120 Ebinger 725	Materials Used Fuel and batteries
Site Instructions Issued, & By Whom Nil	Visitors to Site Chris Brady - Sirius Kris Inkster - Sirius
Equipment Defects, Damage or Loss (Be Sure To Fill In Form FIL S126) Nil	Accident / Incidents (Be Sure To Fill In Form FIL S333's) Nil

Team Leader's Name: Brown



William Brown

Nil

Sheet Number: 02

Temperature in Centigrade

**Project & Location** 

Client

Weather

Time Lost

Consultants

Munitions Contamin	nation Survey	
Heighton Lane, Nev	vton Aycliffe	
Sirius Group		
Variable		
Maximum C-1	Minimum C-5	

Date: 19/02/08

Time	Details Of Work In Progress
0800	On site. Conducted locator calibration checks.
0815	Commenced locator survey operations.
0830	Conducted locator survey of TP25-27-29 & 31 positions.
1000	Returned to site office to arrange the marking of the next set of trial pits.
1040	Locating TP 26 & 28.
1050	Scanning TP 26 & 28 plus investigating targets.
1100	TP 28 moved 4m south to avoid a number of anomalies.
1135	Lunch.
1205	Commenced scanning and investigating targets on TP 15-17 & 23.
1250	Moved to area of BH5, BH7, TP33, TP35 and TP37.
1410	Task completed moved to TP 30.
1430	Completed moved round Dill site BH 4 to clear an additional TP to check bedrock levels.
1455	At BH4
1510	Additional TP, TP39 marked and started clearing area.
1530	Moved to area BH8, BH6, TP40, TP48 and started Clearing areas.
1600	Completed clearance drove back to site office.
1615	Striped and stowed equipment and attended planning meeting for tomorrow.
1655	Departed site.

Plant, MT and Boats Used etc Land Rover 110, Magnex 120 Ebinger 725	Materials Used Fuel and batteries
Site Instructions Issued, & By Whom Nil	Visitors to Site Chris Brady - Sirius Kris Inkster - Sirius
Equipment Defects, Damage or Loss (Be Sure To Fill In Form FIL S126) Nil	Accident / Incidents (Be Sure To Fill In Form FIL S333's) Nil

Team Leader's Name: Brown



**Sheet Number: 03** 

tion Survey	
on Aycliffe	

Date: 20/02/08

Project & Location	Munitions Contamination Survey Heighton Lane, Newton Aycliffe	
Client	Sirius Group	
Weather	Cold	
Temperature in Centigrade	Maximum C6	Minimum C-3
Time Lost	Nil	-1
Consultants	William Brown	

Time	Details Of Work In Progress
0750	On site. Conducted locator calibration checks.
0805	Commenced locator survey operations at TP 19 and 21.
0820	Scanning and clearing TP19 & 21.
0905	Scanning and TP4I, TP42, TP44, TP45 & TP46. Moved TP 46 4m north to avoid interference from power cables.
1050	Moved to clear BH 10 and BH 12 and cleared the areas for drilling operations.
1140	Moved to TP 38 to start clearing TP 38, TP 36, TP45, TP 47, TP 51 and TP53.
1320	Completed scanning and clearing the above trial pits.
1330	Lunch break.
1410	Locating and clearing TP32, TP50 and TP52. TP 32 cleared. The remaining two trial pits in the area had heavy metallic contamination.
1445	Moved to TP55, commenced survey of the positions of: TP, 55 TP 57, TP 59, TP 61 and TP63.
1550	Returned to site offices.
1615	Stripped and stored equipment.
1635	Planning meeting for the next day.
1650	Departed site.

Plant, MT and Boats Used etc Land Rover 110, Magnex 120 Ebinger 725	Materials Used Fuel and batteries
Site Instructions Issued, & By Whom Nil	Visitors to Site Chris Brady - Sirius Kris Inkster - Sirius
Equipment Defects, Damage or Loss (Be Sure To Fill In Form FIL S126) Nil	Accident / Incidents (Be Sure To Fill In Form FIL S333's) Nil

Team Leader's Name: Brown



**Sheet Number: 04** 

Date:	21/02/08
n Survey	

Project & Location	Munitions Contamination Survey Heighton Lane, Newton Aycliffe			
Client	Sirius Group			
Weather	Overcast			
Temperature in Centigrade	Maximum C 8 Minimum C 5			
Time Lost	Nil			
Consultants	William Brown			

Time	Details Of Work In Progress
0745	On site. Conducted locator calibration checks.
0755	Commenced locator survey operations at position of TP 11.
0820	After briefing moved to TP 65.
0840	Clearing TP65, TP67 & TP 69.
0925	Moved to TP 71.
0930	Scanning TP 71, TP 73, TP 77 TP79 & TP85.
1020	Monitored excavations on TP 50 & TP 52.
1135	Moved to revised position of BH 06.
1155	Completed survey of BH 06 position and moved to TP 75.
1205	Started clearing TP 75, TP 81, TP 83, TP 86 & BH 11.
1335	Lunch.
1405	Returned to TP 87
1420	Cleared TP 87 then moved to newly marked TP 54.
1430	Clearing TP 54, TP 56, TP 58 & TP 60.
1515	Completed clearance and moved over to TP 82
1520	Clearing TP 82 & TP84
1545	Completed task returned to the site offices.
1555	Briefing for tomorrow work.
1615	Striped and stowed equipment.
1620	Departed site

Plant, MT and Boats Used etc Land Rover 110, Magnex 120 Ebinger 725	Materials Used Fuel and batteries
Site Instructions Issued, & By Whom Nil	Visitors to Site Chris Brady - Sirius Kris Inkster - Sirius
Equipment Defects, Damage or Loss (Be Sure To Fill In Form FIL S126) Nil	Accident / Incidents (Be Sure To Fill In Form FIL S333's) Nil

Team Leader's Name: Brown



Date: 22/02/08

Sheet Number: 05

Project & Location	Munitions Contamination Survey Heighton Lane, Newton Aycliffe		
Client	Sirius Group		
Weather	Good		
Temperature in Centigrade	Maximum C 5 Minimum C 9		
Time Lost	Nil		
Consultants	William Brown		

Time	Details Of Work In Progress
0750	On site. Conducted locator calibration checks.
0800	Briefing from the client.
0820	Departed for TP 72
0825	Started clearance of TP72.
0840	Completed and moved to BH 9
0845	Started clearance
0900	Completed and moved to TP 78
0905	Started clearance TP78.
0920	Completed and moved to TP74 and TP76
1000	Completed locator survey operations. Monitored site investigation works
1230	Returned to site offices.
1245	Discussed results of survey operations with both engineers.
1330	Conducted site safety checks and departed site.

Plant, MT and Boats Used etc Land Rover 110, Magnex 120 Ebinger 725	Materials Used Fuel and batteries
Site Instructions Issued, & By Whom Nil	Visitors to Site Chris Brady - Sirius Kris Inkster - Sirius
Equipment Defects, Damage or Loss (Be Sure To Fill In Form FIL S126) Nil	Accident / Incidents (Be Sure To Fill In Form FIL S333's) Nil

Team Leader's Name: Brown



# APPENDIX D

# EXPLORATORY TEST RESULTS



Groundwater endountered at 4 30m nsing to 3 90m after 20 minutes.
 Chaseling from 5 70m to 6 00m (11m)
 Borehole abandoned at 6 45m on competent bedrock.

### **BOREHOLE RECORD**

BH No.

**BH1** 

Sheet 1 of 1

Contract No:

Site: Heighington Lane West, Newton Aycliffe

C2761

Client: Merchant Developments & Anglo Irish Bank Dates:

18/02/2008

Method: Light cable percussive drilling with 150mm diameter tools.

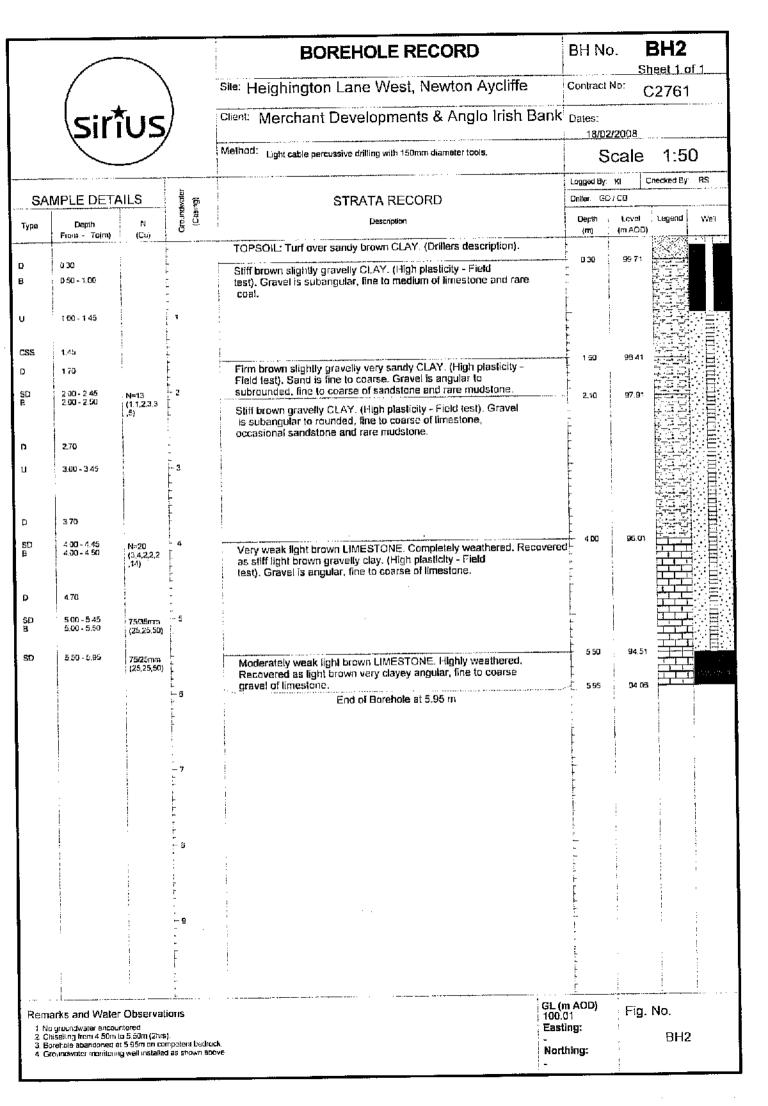
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BH1

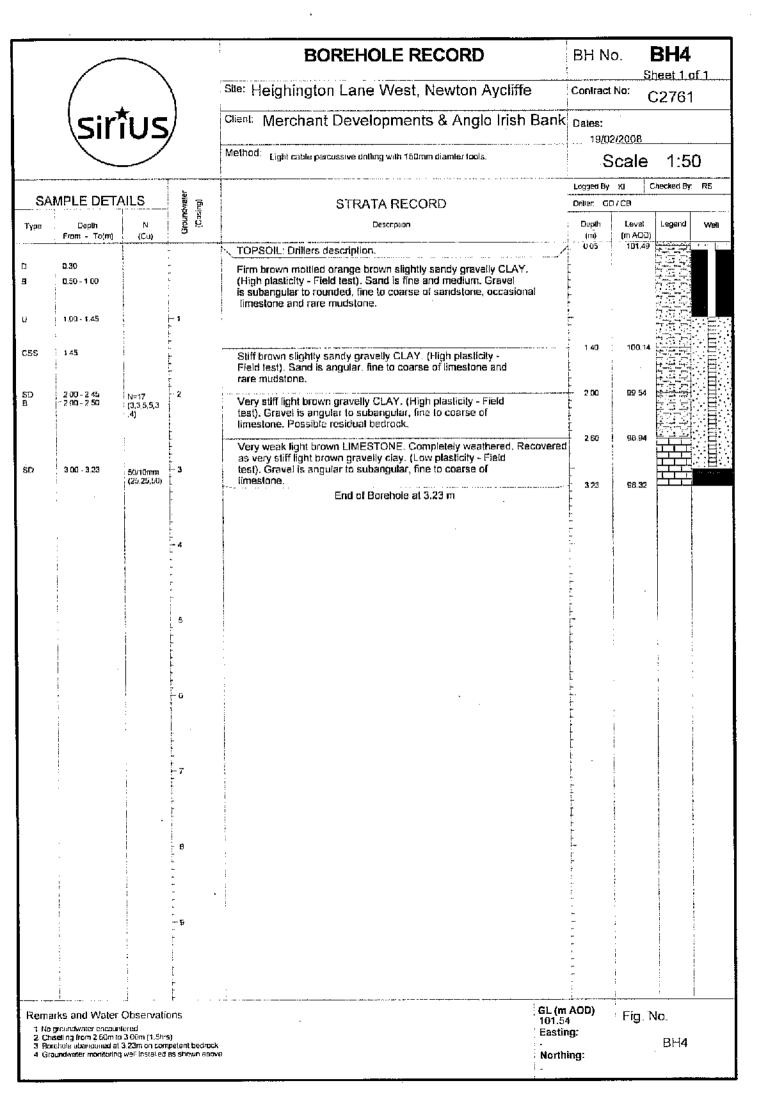
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Түре	D∉pth From - To(m)	N (Cu)	Grcundwaler (Cesing)	Description		Depth (m)	Level (m ACD)	Legend	Wei
	0.20	i	_	TOPSOIL: Drillers description.		<u>0</u> 10	94 71		
	0.50 - 0.65		• - -	Firm brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of limestone and occasional sandstone.					
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	1.30	:	! :		į				
Ò		N=7 (1,2,9 1,2 .Z)							
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	2 30	! !	-		Ė				
	2.50 - 2.95				į.				
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	3 30		<u>-</u>		-				3 % S
)	. 3.50 - 3.95	   N=9	<b>.</b> [	 	-		:		
	3.50 - 4.00	[1,2,3,2,1 [3]	<b>.</b> [		[		i		
	:				-				
		1	ENZ			4 20	00.61		\$
	4 30 4 50 - 4 95		μ_ <u>Υ</u> _ L	Initially soft brown sandy gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is subangular, fine	<u> </u>		i		
מ		N=14 - (1,1 1,3,5	ŀ	to coarse of limestone.	Ę				1
	:	; <b>.</b> 5}		From 4.50m: Becoming stiff.	-		!		1
	:		<b>⊢</b> 5	•	-				
			Ļ	:	-		İ		
D	570 - 590 570 - 690 600 - 645	75/200mm 	- - 5 -	Firm brown gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of limestone. Possible residual bedrock.	<del> </del>	5 70 5 90	. 89 t1 . 86 91		
	· .	Abandoned	F	Moderately weak light brown LIMESTONE Highly weathered. Recovered as light brown very clayey angular to subangular, fine to coarse gravel of limestone.		G.45	B6.36		
			· ! <b>-</b>	End of Borehole at 6.45 m			İ		
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	ks and Water (			g	SL (m AC 34.81	DD)	Fig. N	O.	
1 Grau	ndwater encounterer	d at 4 30m nsi	ng to 3 90m ette		Pastina :		-		

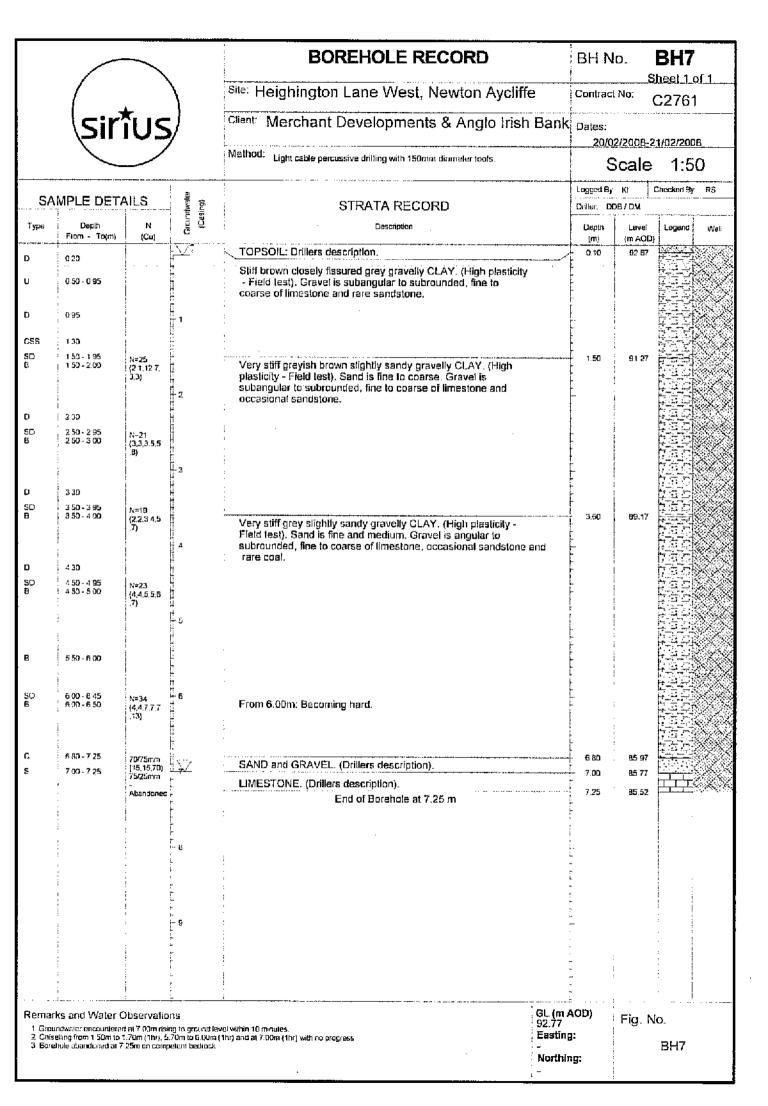


				BOREHOLE RECORD	BH N		BH3	
	1.	`	\	Site: Heighington Lane West, Newton Aycliffe	Contrac	t No: (	C276	1
	∖Sir'i	<b>i</b> US,	)	Client: Merchant Developments & Anglo Irish B	:	2/2008		
		_/		Method: 'Light பிச் percussive drilling with 150mm diameter tools.	8	Scale	1:5	0
SAN	IPLE DETA	AILS .	Waler ng)	STRATA RECORD	Logged By Daller D		Checked By	, RS
ире .	Depth From → To(m)	N . (Cu)	Grasindwales (Casing)	Description	Depth (m)	Lavel (m AOD)	Legend	Weil
		100)		TOPSOIL: Drillers description.	i i	1		
:	0 50 · 0 95	, p	٦	Firm slightly friable slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subangular to subrounded, fine and medium of sandstone and rare quartz.	- 0.20	. 96 45		
	1 30 1 50 - 1 95 1 50 - 2 00	N=11 (2.2,2;3.3 ,3)		Stiff brown slightly sandy gravelly CLAY. (Fligh plasticity - Field test). Sand is fine and medium. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	130	05.35		
; ; ; ;	2.50 - 2.95 2.50 - 2.95 3.30 3.50 - 3.95 3.50 - 4.90	N=39 (32,4,4,6		From 3.50m; Becoming very stiff.	it ili annum mandad di dandi da tiribed			
	4 10 4 20 - 4 55 4 20 - 4 70	,15) N=43 (3.5,10.12 ,11.10)	5	From 4.00m to 4.50m: Limestone cobble/boulder recovered as angular, medium to coarse gravel.  Stiff brown very gravelly CLAY. (High plasticity - Field lest). Gravel is angular, fine to coarse of limestone.	450	92.15		
	530 550-595 570-615	50/40mm (25,50) (50/0mm		Light brown clayey gravelly fine to coarse SAND. Gravel is angular to subangular, fine to coarse of limestone. Possible residual bedrock.	5 30	91.35 90.95		
	:	Abandonec	-6	LIMESTONE boulder. (Drillers Description). Possible competent bedrock.  End of Borehole at 6.15 m	615	90.50		
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			: - - - - -		ا بنا شامسا			
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	:		- 5 <b>9</b> - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -					1
,		\   			GI (= 102)	<u> </u>	ļ 	
1. Grav 2. Chise	ks and Water ndwater encounters alling from 3.80m to hole abandoned at	ed at 6 30m risa 4 00m (1hr), 4	ing to 4 00m a 110m to 4.50m	after 20 minutes n (1ar) and 5 50m to 5 70m (1hr)	GL (m AOD) 96.65 Easting: -	Fig. I	No. BH3	
					Northing: -			



				BOREHOLE RECORD	BH N		BH5	
		`	\ ·	Sile: Heighington Lane West, Newton Aycliffe	Contract	. N. I	C2761	
	\cir	iUS	)	Client: Merchant Developments & Anglo Irish Bank	Dates:			-
	211	دی	/	W. W.	1	2/2008-2	2/02/200	<u>B</u>
				Method: Light cable percussive drilling with 150mm diameter tools	5	Scale	1:5	0
SA	MPLE DETA	AII S	6 ≘.	CTRATA RECORD	Logged By	<u></u>	Checked By:	RS
Туре	Depin	N	Groundwater (Casing)	STRATA RECORD  Description	Daller, Di Gepth	Level	Legend	VVrall
	From - To(m)	(Cu)	-	TOPSOIL: Drillers description.	(m) 0 10	(m AOD) 93.27	N2300	
) 3	0 50 - 0 95 0 50 - 1.00	N=6 (3.2.3,2.2 .1)	· · · · · · · · · · · · · · · · · · ·	Firm yellow brown motified grey sandy gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse, rarely of muscovite. Gravel is subangular, fine to coarse of sandstone and occasional mudstone.				
}	1 30	i	- -		-			
SD R	1.50 - 1.95 1.50 - 2.00	N=29 (1,9,5,7,6	- :	SAND. (Dritters description).	1.40	91.97		
D	2.30	in		Very stiff grey mottled brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	1.70 E 1. E	91.67		
SD B	2.50 - 2.95 2.50 - 3.00	:   N=23   (5.3.5.5.6   .7)	F. F. F. F. F. F. F. F. F. F. F. F. F. F		7, f. d. A. J			
o Sido B	3 30 3 50 - 3 95 3 50 - 4,00	N=26 (5,8,6,8,7 ,7)	3					
) 5D 3	4.30 4.50 - 4.95 4.50 - 5.00	N=25 (4.3,4,5,8	4 4		L. L. L. L. L. L. L. L. L. L. L. L. L. L			
		:	<del> </del> 5		-			
ם	5 30		<del> </del> 		-  -  -			
0 SD 8	5.60 6.00 - 6.45 6.00 - 6.50	(18) (열합변환)   대=3년	\	Very weak light brown LIMESTONE. Completely weathered. Recovered as very still light brown gravelly clay. (Low plasticity - Field test). Gravel is angular to subangular, fine to coarse of limestone.	5.0D	87.57		
STD B	6 70 - 7 15 6 70 - 7 10	N=40	- -					
o GD	7.10	(20,15,5,7 ,8,20) 70/50nes Abandoned	7	End of Borehole at 7.10 m	7.10	96.27		
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	ks and Water (			GL (m 93.37	•	Fig. N	lo.	
2 Chis	indwater encounterer iciling from 6 50m to t shole abandoned at 7	6 70m (11hr) ar	id 7 00m ta 7.:	tter 20 minutes 10 m (1hr) Eastly		:	BH5	

				BOREHOLE RECORD	BH N		вн6
		`		Site: Heighington Lane West, Newton Aycliffe	Contrac	L KI	heet 1 of 1 C2761
	\sir	<b>î</b> US	;)	Client: Merchant Developments & Anglo Irish Ban	à	12/2008	
		/	′	Method: Light cable percussive drilling with 150mm diameter tools.	i	Scale	1:50
	MOLE DET	A.I. C	<u></u>	]	Loggec B	<i>r</i> : ка	Checked By RS
	MPLE DET	1	Groundweter (Casing)	STRATA RECORD	Driller: G	<del>'                                    </del>	
Тура	Depth From - To(m)	(Cu)	. 5	Description	Depth (m)	Level (m AOD	Legenda   Well
Đ	0.30		:	TOPSOIL: Turf onto firm brown sandy CLAY. (High plasticity – Field test). Sand is fine and medium.	- 050	97.86	
В	<b>d</b> 50 - 1,00		:  -  -	Firm brown mottled brange brown and grey slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	050	40,00	
U	1,00 - 145		- 1 -		ŀ		
		•	r -	•	+		
ō	1.70				ŀ	i	
SD B	2 00 - 2.45 2.00 - 2.50	N=19 {2,3,3,5,5	! ! " 2 !	Stiff grey gravelly CLAY. (High plasticity - Field test). Gravet	- 2 cm	95 06	
		5)	<u>.</u>	is subangular to subrounded, fine to coarse of limestone, rare sandstone and rare coal.	<u> </u>		
۵	2.70		-		<u> </u>		
U	3.00 - 3 45		ļ-1		Ξ		
					- -		
D	370			From 3.60m: Becoming cobbly, (Drillers description).	!		
D	370		E	From 3.00m. Becoming costily. (Differs description).	1		
		:	-		. [		
SD R	4.50 - 4.95 4.50 - 5.00	N≂56	+			!	
	430.300	(4,5,5,8,1 5,27)			-	1	
		:	- 5	·	<u> </u>		
В	5.50 - 5.00		<u> </u>		).  -  -	<u> </u> 	
			<u>+</u> <u>+</u> <u>+</u>		ļ ļ	-	
		1	6		<u> -</u>  -		
			- L		ŀ		
sn	650-695	N=56 (3,10,12.1 (7,15,12)	1	Stiff brown very gravelly CLAY. (High plasticity - Field test). Gravel is subangular, fine to coarse of limestone. Possible	6.50 	91.55	
		1,13,14	7	rockhead.	_{	91.11	
	!			End of Borehole at 6.95 m	1 -	İ	
	 				†		
	: !	1	- - A		+		
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	i i		1		<u>:</u>		:
	1	<u> </u>	<u></u>	'aı i	m AOD)		<u> </u>
1 No	orks and Water groundwater encoun	terad.		98.0	ing:	Fig. I	No.
3. <b>G</b> or	iselling from 6 00m ta rahele abanconed at oundwater monitoring	G.Stim on com	petent becrock	(	hing:		BH6
l i				11011	-····g•		





BH No.

**BH8** 

Sheet 1 of 1

Site: Heighington Lane West, Newton Aycliffe

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates:

21/02/2008

Method: Light cable percussive drilling with 150mm diameter tools.

				Metnoo: Light cable percussive drilling with 150mm diameter tools.	S	cale	1:5	0
SA	MPLE DET	AILS	reter 3)	STRATA RECORD	Legged fly	<u>-</u>	Checked By:	RS
Турв	Depth From - To(m)	N (Cu)	Groundvaler (Casing)	Description	Driller. GC Depth	Level (m ADD)	Legend	Vyeli
• • • • •			<u> </u>	TOPSOIL: Drillers description.	(m) 0.05	98 87		
D	6.30		-	Brown sandy CLAY, (Drillers description).	0.25	98 67		
В	0.50 - 1.00			Firm brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine and medium.	-			
Л	1 00 - 1.45			Brown gravelly CLAY, Gravel includes limestone, (Drillers description).	1.00	97.92		
CSS D	1.70	:	·	Stiff brown sandy gravelly CLAY. (High plasticity - Field test). Sand is fine. Gravet is angular to subangular, fine to coarse of timestone.	.140	97.52		
SD B	2.00 - 2 45 2.00 - 2.53	N=14	-2	witestone.	1 i † i † I			
3	2.00 - 2.53	(5,6 3,3,4 4)	Į.					
	: 	!	i. I					
Ð	2.70		[		<u> </u>			
3O	3 00 - 3 09	75/10mm	<u>-</u> -3	Moderately weak light brown LIMESTONE. Highly weathered.	3.00	95 92 95.84		7.7
	:	(25,25,56)	į į	End of Borehole at 3.09 m	309	95.04		1221172117
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Remarks and Water Observations

No groundwater encountered
 Chiseting from 2.70m to 3.00m (0.5hr) and at 3.00m (1hr) with no progress
 Boretore abanconed at 3.09m on competent bedrock.

GL (m AOD) 98.92 Easting:

Northing:

Fig. No.



BH No.

**BH9** Sheet 1 of 1

Site: Heighington Lane West, Newton Aycliffe

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates:

28/02/2008

	ζ		7	Mathod	28/0	02/2008	******	
<del></del>			<del>-</del>	Method: Light cable percursive drilling with 150mm diameter tools.		Scale	1:5	0
SA	MPLE DET	ΔILS	ater -		Logged B	у. Кі С	Thecked By	R\$
			Greundwaler (Cesing)	STRATA RECORD	Online C	BD/VL	· ·	
Туре	Depth From - To(m)	N (Cu)	ê â	: Description	Depth (m)	Level (m AOD)	Legend	Well
Ü A	0.20 0.30 - 1.03			MADE GROUND: Turf onto stiff brown slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subangular, fine and medium of sandstone, rare mudstone and rare brick. Disturbed topsoil.		:		
SD B	1.00 - 1.45 1.00 - 1.50	N=12 [1.3,4.3,2 3)	- 1	Stiff brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of limestone.	1 13	95 33		
D	1.70	-		occasional sandstone and occasional mudstone.	- -			
υ	200-245		2		  -  -			
D	2.70		: · :					
SD B	300-345 300-356	N≖1a (2.2.4,4.5 ,5)	3 	Very stiff grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular, fine to coarse of limestone and occasional sandstone.	3.00	93.43		
D	a 70		<u> </u>  -  -					
IJ	4 00 - 445		4		<u> -</u>  -			
CSS	4 45	!	-		-			
D	470	:	ţ		ļ. [			
50 B	5.00 - 5.45 5.00 - 5.50	N÷30 (11,7,6,6, 7,11)	- <u>6</u>	: :	eleriko kuskusa uku			
Ð	5 70		<u>.</u>					
3	600-650		- <b>6</b>		÷	:		
Li	650-695		+ !		at at which a city			
			- <b>7</b>					
D .	7.76	! !	-  -  -  -  -  -  -  -	From 7.70m to 8.50m: Becoming firm and sandy, firm and medium.		:		
50 8	:   8.50 - 8.95   8.50 - 9.00	: : : : : : :	: : :		-	: : : :		
•	3.30 - 2.00	(55979 (11)	- - - - 9		: :			
B SD	9.30 9.50 - 9.80	N=57 (7,11,30,1	- - - :	· · · · · · · · · · · · · · · · · · ·	1 1 2 . 6 . 4 . 2			
_		D,15.19)	Ī	Continued next sheet		85 53 86 48		

Remarks and Water Observations

1 . Ansings noted as damp below 8.50m 2 . Chiseling from 7.50m to 8.00m (13r) and 9.50m to 9.80m (1.25hr), 3. Borehole abandoned at 9.95m on suspected bedrock

**GL (m AOD)** 96.43

Easting:

Northing:

BH9

Fig. No.



BH No.

BH9

Sheet 1+ of 1

Site: Heighington Lane West, Newton Aycliffe

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates:

28/02/200B

Method: Light cable parcussive drilling with 150

		Method: Light cable percussive drilling with 150mm diameter tools.	: s	cale	le 1:50	
SAMPLE DETA	ILS 🧃 😥	STRATA RECORD	. Logged By Driller. GD	·	Thecked By:	RS
Type Depth From - To(m)	Graindwater (Casing)	Description	Depun	Lavel (m AQD)	Legend	Wall
		Very weak light brown LIMESTONE. Completely weathered. Recovered as very stiff light brown gravelly clay. (High plasticity - Field test). Gravel is angular to subangular, fine and medium of limestone.  End of Borehole at 9.95 m	-	(III AOL)		
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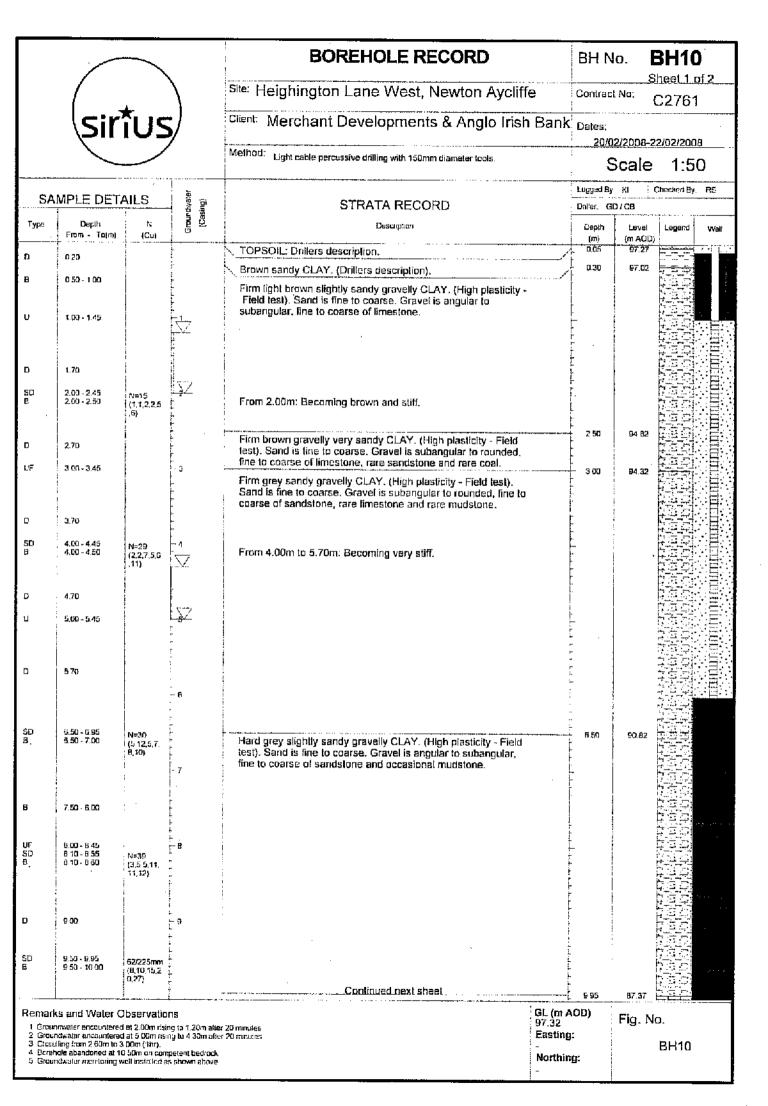
Remarks and Water Observations

1 Ansings noted as damp below & 50m 2 Chiselling from 7.50m to 8.00s (thi) and 9.50m to 9.80m (1.25m) 3. Borehalg abandaned at 9.85m on suspected bedrock

GL (m AOD) 96.43 Easting:

Northing:

Fig. No.





BH No.

**BH10** 

Sheet 2 of 2

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates:

Method: Light cable percussive drilling with 150mm diameter tools.

20/02/2008-22/02/2008 Scale 1:50

				Tight about paradosate drawing with roomin drawing a tools.	,	scale	1:5	0
ÇΛ	MOLEDET	A II C	<u> </u>		Logged Dy	r KO C	hecked By	: RS
3A	MPLE DETA	AILO	Greundwaler (Cesing)	STRATA RECORD	Dalier. G	D/CO	<del>,</del>	
Typ <del>a</del>	Depth From - To(sn)	N (Cu)	1 E G	Description	Deptn text	Loyel (m ADD)	Legend	Well
SD	10 50 - 10 95	75/55mm (25,25,50)		Very weak light brown LIMESTONE, Completely weathered. Recovered as very stiff light brown gravelly clay. (High plasticity - Field test). Gravel is angular, fine and medium of limestone.  End of Borehole at 10.50 m	(m) - - - - 10.56	85.62		
		(25,25,50)	[ [ [	End of Editential at 10.50 m	[. }		 	
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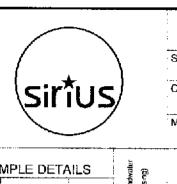
Remarks and Water Observations

Groundwater encountered at 2.03th riging to 1.20m after 20 minutes.
 Groundwater encountered at 5.00m asing to 4.00m after 20 minutes.
 Chaeting time 2.00m to 3.00m (1hr).
 Boxchofe abandoned at 10.50m on competent bedrock
 Groundwater manifoling well installed as shown above.

GL (m AOD) 97.32 Easting:

Northing:

Fig. No.



Site: Heighington Lane West, Newton Aycliffe

Client: Merchant Developments & Anglo Irish Bank Dates:

Method: Light cable percussive dell

BH No.

**BH11** 

Sheet 1 of 1

Contract No: C2761

26/02/2008

SAMPLE DETAILS Type Pown Depth (100 ) Four Toylor (	· · · · · · · · · · · · · · · · · · ·		<del></del>			cale		
TOPSOIL Drillers description.  TOPSOIL Drillers description.  TOPSOIL Drillers description.  TOPSOIL Drillers description.  Firm brown motited orange brown and grey alightly sandy slightly gravely CLAY. (High plasticity - Field test). Sand is fine and sandstone.  TOPSOIL Drillers description).  TOPSOIL Drillers description.  TOPSOIL Drille	SAMPLE DE	TAHS	흠 (	OTDATA DESCRIP	ļ		Checked By	R5
TOPSOIL Drillers description.  TOPSOIL Drillers description.  TOPSOIL Drillers description.  TOPSOIL Drillers description.  Firm brown motited orange brown and grey alightly sandy slightly gravely CLAY. (High plasticity - Field test). Sand is fine and sandstone.  TOPSOIL Drillers description).  TOPSOIL Drillers description.  TOPSOIL Drille	Ortivii CL DZ	inico	Apr S	STRATA RECORD	Driller: Gl	D 		
TOPSOIL Drillers description.  Firm brown mottled orage brown and grey slightly sandy slightly gravelly CLAY. (High plasticity - Fried test). Sand is fine and medium. Gravel is subengular to subrounded, fine to coarse of sandstone.  Orange brown sandy gravelly CLAY. (Drillers description).  170  Stiff orange brown sandy gravelly CLAY. (Drillers description).  171  Stiff orange brown mottled grey slightly sandy slightly gravelly CLAY. (High plasticity - Fried test). Sand is fine and medium. Gravel is subengular to subrounded, line to coarse of sandstone.  270  270  309-145  Stiff forange brown mottled grey slightly sandy slightly gravelly CLAY. (High plasticity - Fried test). Gravel is subangular to subrounded, fine to coarse of sandstone and limestone.  Stiff brown gravelly CLAY. (High plasticity - Frield test). Gravel is subangular to subrounded, fine to coarse of sandstone and limestone.  Stiff grey slightly sandy gravelly CLAY. (High plasticity - Frield test). Gravel is subangular to rounded, fine to coarse of sandstone and limestone.  Fine to coarse of sandstone and occasional limestone.  580  Light brown slightly dayey slightly sandy GRAVEL. Sand is fine and coarse. Gravel is subangular to rounded, fine to coarse of limestone.  Fine to coarse of sandstone and occasional limestone.  580  Security of the fine of the sands of the san		1	<b>9</b> 0	Description				VVe
0.55-1.00    Firm brown motited regis brown and gray stigntly sand is fine and medium. Gravel is subcongular to subrounded, line to coarse of sandstone.    170				TOPSOIL: Drillers description.		95 78		. T. M
Orange brown sandy gravelly CLAY. (Drillers description).  170  170  Stiff crange brown mottled grey slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel Is subangular to subrounded, fine to coarse of sandstone.  270  309-345  370  409-445  409-450  409-450  470  470  470  470  470  470  470	0.50 - 1.00	1 		gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subangular to subrounded, fine to coarse of				
Suff orange brown mottled grey slightly sandy slightly cavelly cravelly cavell				Orange brown sandy gravelly CLAY. (Drillers description).	1.10	9573		
Suff orange brown mottled grey slightly sandy alghylly cavelly cravelly c.C.A.Y. (High plasticity Field test). Sand is fine and medium.  Gravel is subangular to subrounded, line to coarse of sandstone.  Siff brown gravelly C.L.A.Y. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of sandstone and limestone.  Siff brown gravelly C.L.A.Y. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of sandstone and limestone.  Siff grey slightly sandy gravelly C.L.A.Y. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.  Siff grey slightly sandy gravelly C.L.A.Y. (High plasticity - Field test). Sand is fine to coarse of sandstone and occasional limestone.  Siff grey slightly sandy gravelly C.L.A.Y. (High plasticity - Field test). Sand is fine to coarse of sandstone and occasional limestone.  Siff grey slightly sandy gravelly C.L.A.Y. (High plasticity - Field test). Sand is fine and coarse. Gravel is subangular, fine to coarse of limestone.  Siff gravel is subangular, fine to coarse of limestone.  Siff gravel is subangular, fine and medium of limestone.  Find of Borehole at 6.65 m.  Siff gravel is angular, fine and medium of limestone.  Find of Borehole at 6.65 m.	170		ы		<u>.</u>			
Stiff brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of sandstone and limestone.  Stiff grey slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is fine locoarse. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.  Stiff grey slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is fine locoarse. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.  Light brown slightly clayey slightly sandy GRAVEL. Sand is fine and coarse. Gravel is subangular, fine to coarse of limestone.  Possible residual bedrock.  Very weak light brown LIMESTONE. Completely weathered. Recovered as very stiff light brown gravely clay. (Low plasticity - Field test). Gravel is angular, fine and medium of limestone.  500  End of Borehole at 6.55 m	200-245	(1,0,1,3,2	2	<ul> <li>CLAY. (High plasticity - Field test). Sand is fine and medium.</li> </ul>	1.70 F	95.13    -		
Importance.    Silf grey slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.    Silf grey slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.    Silf grey slightly sandy gravelly clay. (High plasticity - Field test). Sand is fine and occasional limestone.   Silf grey slightly sandy gravelly subangular to rounded, fine to coarse of sandstone and occasional limestone.   Silf grey slightly sandy gravelly subangular to rounded, fine to coarse of sandstone and occasional limestone.   Silf grey slightly sandy gravelly sandy grave	2.70	.4)		Stiff brown gravelly CLAY. (High plasticity - Field test). Gravel	2.50	94.33		
370 403-455 403-455 403-455 403-455 403-455 403-455 403-455 470 470 503-545 570 Light brown slightly clayey slightly sandy GRAVEL. Sand is fine and coarse. Gravel is subangular, fine to coarse of limestone.  570 Light brown slightly clayey slightly sandy GRAVEL. Sand is fine and coarse. Gravel is subangular, fine to coarse of limestone.  6 Possible residual bedrock. Very weak light brown LIMESTONE. Completely weathered. Recovered as very sliff light brown gravelly clay. (Low plasticity - Field test). Gravel is angular, fine and medium of limestone.  500 5028 Find of Borehole at 6.55 m	3,09 - 3.45		3		- - - -			
Stiff grey slightly sandy gravelly CLAY. (High plasticity - Field Lest). Sand is fine to coarse. Gravel is subangular to rounded, fine to coarse of sandstone and occasional ilmestone.    470								
Light brown slightly clayey slightly sandy GRAVEL. Sand is fine and coarse. Gravel is subangular, fine to coarse of limestone.  Possible residual bedrock.  Very weak light brown LIMESTONE. Completely weathered. Recovered as very sliff light brown gravelly clay. (Low plasticity - Field test). Gravel is angular, fine and medium of limestone.  End of Borehole at 6.55 m		(2,2,3,2,2,	4	test). Sand is fine to coarse. Gravel is subangular to rounded,	350	<b>92.9</b> 3		
Light brown slightly clayey slightly sandy GRAVEL. Sand is fine and coarse. Gravel is subangular, fine to coarse of limestone.  Possible residuat bedrock.  Very weak light brown LIMESTONE. Completely weathered. Recovered as very sliff light brown gravelly clay. (Low plasticity - Field test). Gravel is angular, fine and medium of fimestone.  End of Borehole at 6.55 m	4.70							<u>.</u>
and coarse. Gravel is subangular, fine to coarse of limestone.  Possible residual bedrock.  Very weak light brown LIMESTONE. Completely weathered. Recovered as very stiff light brown gravely clay. (Low plasticity - Field test). Gravel is angular, fine and medium of limestone.  End of Borehole at 6.55 m	5 00 - 5 45		<u>.</u>					
Very weak light brown LIMESTONE. Completely weathered. Recovered as very stiff light brown gravelly clay. (Low plasticity - Field test). Gravel is angular, fine and medium of limestone.  End of Borehole at 6.55 m	570		-	and coarse. Gravel is subangular, fine to coarse of timestone.	i. <del>-</del>			
End of Borehole at 6.55 m	630-655	69/22547m (25,0,21.2		Very weak light brown LIMESTONE. Completely weathered. Recovered as very stiff light brown gravelly clay. (Low plasticity - Field				
6	:	3,25)			_ 5.55	90 28		
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Remarks and Water Observations

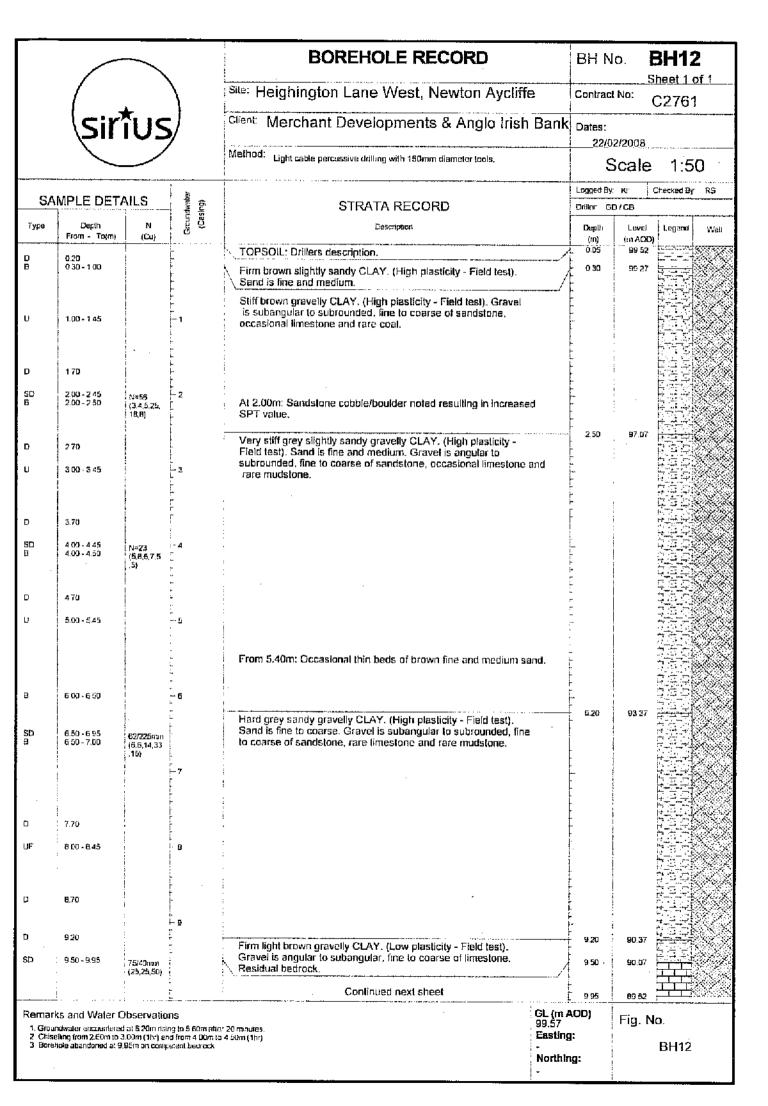
Groundwater encountered at 5.70m nsing to 0.70m after 20 minutes
 Chiselling from 3.60m to 3.90m (thr) and from 6.00m to 5.30m (thr).
 Borehole abandaned at 5.550m on competent bedrock.
 Groundwater mobilizing well installed as shown above.

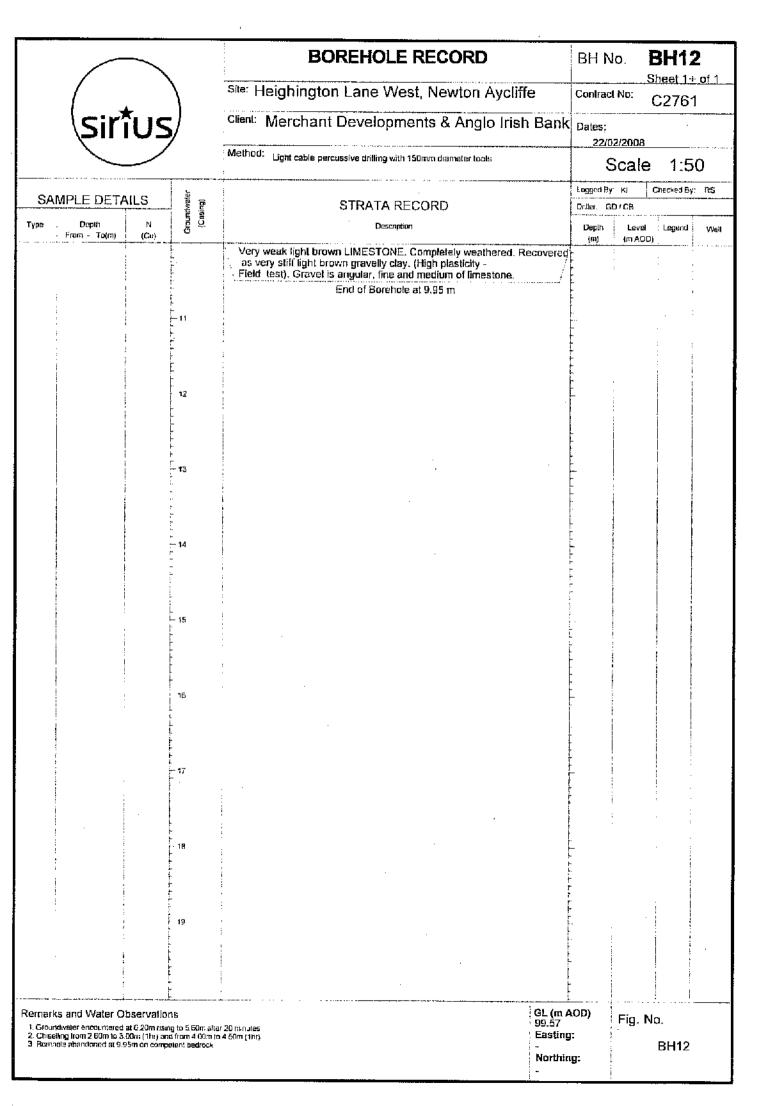
**GL (m AOD)** 96.83

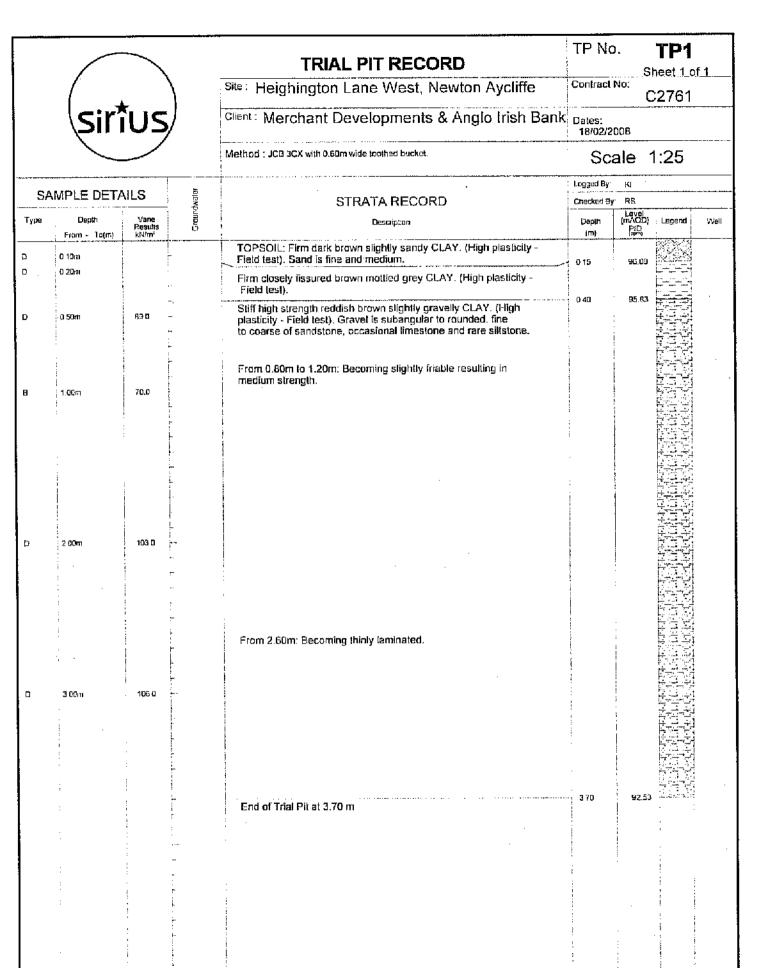
Easting:

Northing:

Fig. No.







Remarks and Water Observations

No groundwater encountained
 Side walls remained stable during excavation

GL (m AOD) 96.23 Easting:

Northing:

TP1

Fig. No.

				TRIAL PIT RECORD	TP No	D. <b>TP2</b> Sheel 1 of 1
		. \	١	Site: Heighington Lane West, Newton Aycliffe	Contract	No: C2761
	\sir	<b>TUS</b>	}	Client : Merchant Developments & Anglo Irish Bank	Dates:	· · · · · · · · · · · · · · · · · · ·
				Method : JCB 3CX with 0 50m wide toothed becket.	Sc	ale 1:25
ŞA	MPLE DETA	AILS	yalgr	STRATA RECORD	Logged By	CR } RS
Туре	Depth	Vane Results	Grouncwale	Description	Depart	Level (mAOD) Lenend Well
B D	Drom = To(m) 0.10m = 0.20m	kNJm²	· · · · · · · · · · · · · · · · · · ·	TOPSOIL: Firm dark brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine and medium.	[m}	RD.
B D	- 0.20m - 0.45m			Firm closely fissured brown mottled grey CLAY. (High plasticity - Field test).	0.20	96 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
R D	0.45m - 1.45m			Firm red brown mottled grey sandy slightly friable CLAY, (High plasticity - Field test).	0.45	95 92
<b>a</b> 0	1.45m - <b>2.30</b> m	90.0		From 1.40m: Becoming stiff, high strength and slightly sandy.		
	2,30a - 3,00m		-		230	54 07
3		97.0		Stiff high strength reddish brown slightly laminated sandy CLAY. (Fligh plasticity - Field test).		
<b>?:</b> 3	3 30m - 4 00m	740		From 3.50m: Becoming medium strength.		
		de considerant de con		End of Trial Pit at 4.00 m	: 4 OC	92.37
1. No g	rks and Water C groundwater encounte walls remained stabili	ned		GL (m 96.37 Eastir		Fig. No.
				- North	ing:	



No groundwater encountered
 Side walls remained stable during excavation.

# **TRIAL PIT RECORD** Site: Heighington Lane West, Newton Aycliffe

TP No.

TP3

C2761

96.21 Easting:

Northing:

TP3

Sheet 1 of 1

Contract No:

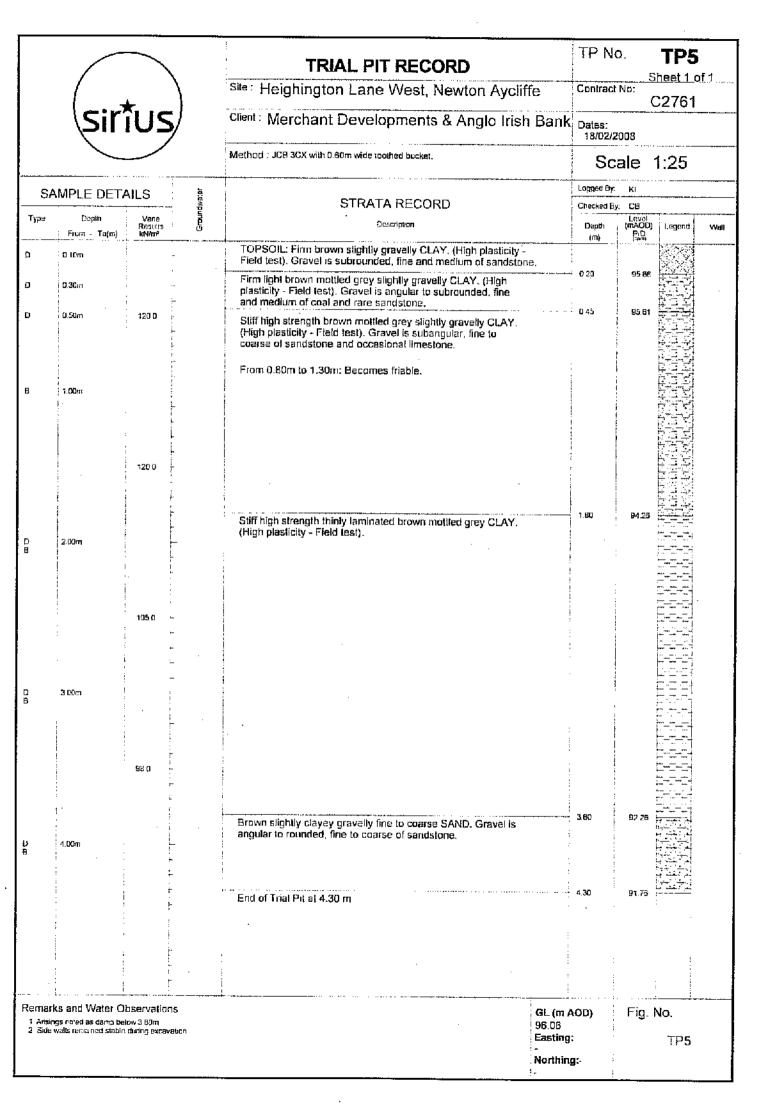
Client: Merchant Developments & Anglo Irish Bank Dates: 18/02/2008

Method: JC8 3CX with 0,60m wide toothed bucket.

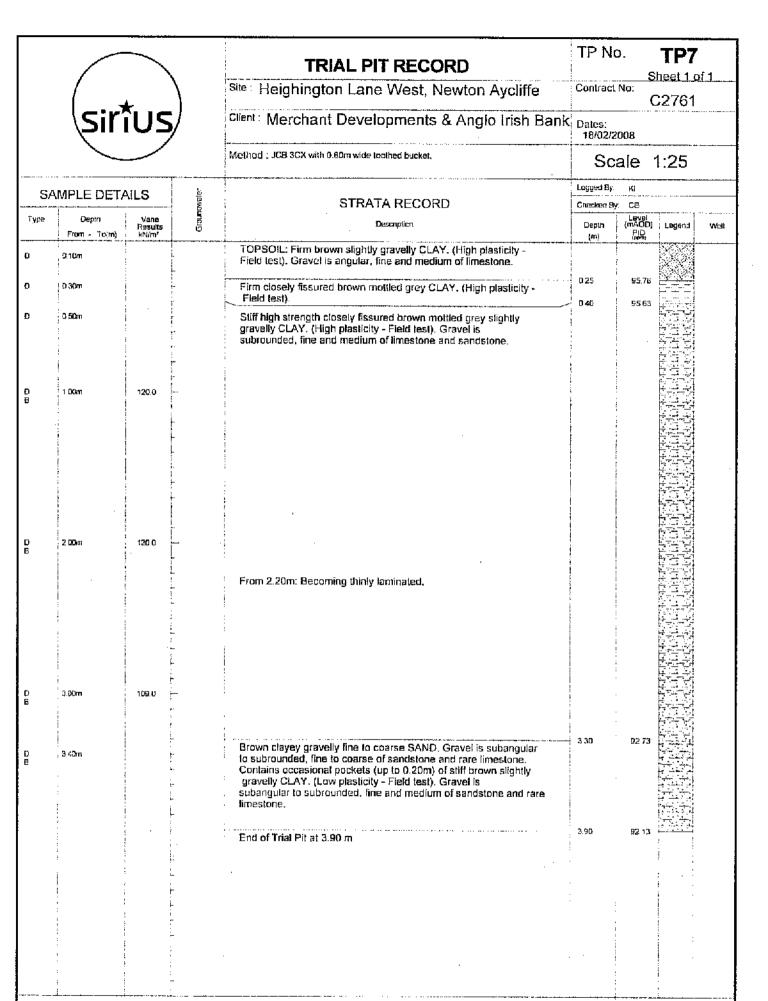
Scale 1:25

·····		<del></del>				 Ю		
SA	MPLE DETA	AILS	alar	STRATA RECORD	Logged By			
Туре	Depth	Vane Results NVm²	Groundwaler	Description	Checked By Depun	Level (mAOD)	Legeno	VVe
	řrom - lo(m)	khl/m²		TOPSOIL: Firm dark brown CLAY. (High plasticity - Field test).	(m)	PID	Sessi	
)	D 10m	•		! 		DE 03		
)	0.30m		-	Firm brown motited grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine and medium of limestone.	0.20	96 01		
9	: 0€0π			Stiff high strength slightly friable brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone, occasional limestone and rare siltstone.  From 0.80m: No longer friable.	0.55	95 65		
0	100տ	120.0	-	From Clasm, No longer mable.				
			- · 、 ·					
ם	2 00m	1160		Stiff high strength thinly laminated brown slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of limestone and rare sandstone.	, 1.80	94 41		
3	. 2 (13)	!	-	Subtractions, into the business of intrestitite and rate participite.	:			
	:	<u> </u>	•	:				
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	3.00m	1200		1 · ·				
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			_	<u>:</u> -	:			
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	!	!						
		:		:	······ 4 10	92 11		
				End of Trial Pft at 4.10 m		,,	 ! :	
				i I			1	
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			_		;			
			-		-			
	:		-	: -			: ;	
				•	i		. !	
 Distance	rks and Waler C			i	(m AOD)	Fig.		

				TRIAL PIT RECORD	TP N		TP4	
				Site: Heighington Lane West, Newton Aycliffe	Contract	No.	<u>heet 1 o</u> 2761	of 1
	ˈ\sirʾ	ľUS		Client: Merchant Developments & Anglo Irish Ban	k <sub>Dates:</sub>	••		
		_/		Method : JCB 3CX with 0.60m wide toothed bucket	<del>                                     </del>	ale	1:25	
SA	MPLE DETA	AJLS ,	Talla		Logged By	CB		
Туре	Depth	Vane Results	Groundwaler	STRATA RECORD  Description	Checked 8	Lave! (m/OD)	Legend	Well
	Frant - Tc(m)	kN/m²		Firm brown sandy TOPSOIL. Roots noted. (High plasticity - Field test). Sand is fine and medium.	(m)			
A D	0 15m + 0 50m			Firm yellowish brown with grey fissures slightly gravelly sandy CLAY. Gravel includes some angular fine coal. (High plasticity - Field test).	D.15	96 10		
B D	0.50m ~1.65m	52.0		Firm medium strength reddish brown fissure grey sandy slightly gravelly CLAY. (High plasticity - Field test). Gravel includes fine to medium, sub-rounded to rounded sandstone quartilite and mudstone.	0.50	95 75		
<b>B</b> D	185m - 285m	70.0		Stiff high strength red brown locally grey slightly laminated	165	94.60		
O to	2 65т - 3 б5кп	79.0	-	sandy CLAY. (High plasticity - Field lest).				
		C7 29	- - - - - - - - -	Becomes plastic.				
B	a 65m - 4 00m		-	End of Trial Pit at 4.00 m	4.00	92.25		
1 ֆեցի	ks and Water O groundwater seepag walls remained stable	e noted at 3.5	(Jan	GL (m 96.25 Eastir		Fig.	No.	



		$\overline{}$		TRIAL PIT RECORD	TP N		TP6				
	(	,	)	Site: Heighington Lane West, Newton Aycliffe	Contrac	t No:	2761	¥ . 1			
	\sir	ÎUS		Client: Merchant Developments & Anglo Irish Ba	ınk <sub>Dates:</sub>						
		_/		Method : JCB 3CX with 0.60m wide toothed bucket.	Scale 1:25						
SA	MPLE DETA	All S	jī.		Logged By	Logged By. CB					
уре	Depth	Vane	Groundwa:ar	STRATA RECORD	Checked E	Level (mAOD)	Legend	Wall			
··	From + To(m) 0.00m -0.20m	Results kN/m²	<u> </u>	TOPSOIL: Firm brown sandy CLAY (High plasticity - Field test).	(m)	PD	5/3/3	***************************************			
	0.20m - 0.50m	ļ		Sand is fine and medium.  Firm fissured yellow brown slightly gravelly sandy CLAY. (High plasticity - Field test). Gravel includes some angular fine coal.	<b>0 2</b> 0	96 02					
	0 50m - 1 50m	•	<del>:</del> <del> </del>  -  -  -	Firm high strength friable reddish brown mottled grey sandy gravelty CLAY. (High plasticity - Field test). Gravel includes sandstone, mudstone and some coal.	045	95 77					
	and the same of th		 								
	1										
	1.50m 1.50m - 7.00m	95.D		From 1.50m: Becoming sliff.							
	2 00m + 2 60m;			From 2.00m; Becoming laminated.							
	2.50т 2.60т - 3.20т	89 a		Light brown fine and medium SAND.	2.50	93 62					
	:										
	3.20m -4 1Cm		N N	Firm gravelly very sandy CLAY. (High plasticity - Field test), Gravel includes angular to subrounded sandstone and mudstone. From 3.20m: Becoming gravelly.	3 20	; 93 02 ;					
				Carl of Trip Dit at A 40	4 10	<u>B</u> 2 12					
	:			End of Trial Pit at 4.10 m	1 ( 4 : :	:					
			: : : : : : :								
	rks and Water (				L (m AOD)	Fig.	No.				
. 50g	hi groundwaler seeps e walls remained stab	age nated at 3 de duting exca	zuen Väljon.	Ea	sting:		TP6				
				No	erthing:	!					



Remarks and Water Observations

No prountwater encountered

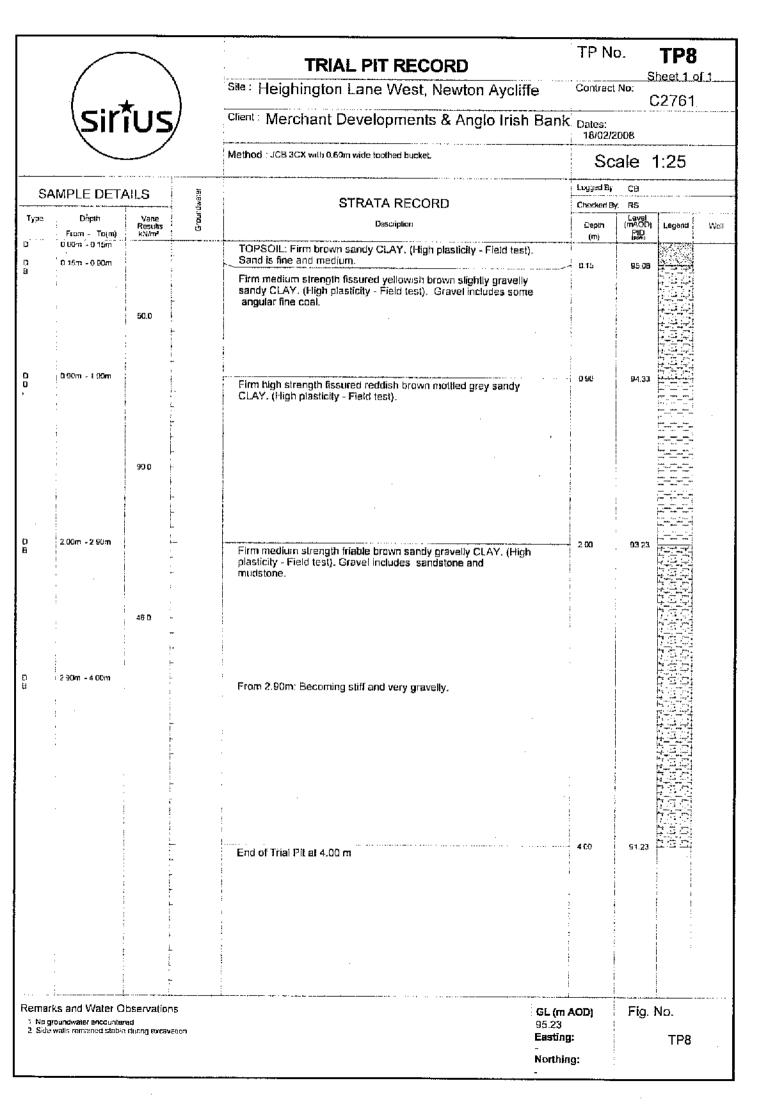
Side walls remained stable during excavation final pil abandoned at 3 90m due to samustone boulder

GL (m AOD) 96.03

Easting:

Northing:

Fig. No.





TP No.

TP9 Sheet 1 of 1

Site: Heighington Lane West, Newton Aycliffe

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 18/02/2008

Method ; JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

SA	MPLE DETAILS		<u>ā</u>		Loggad By	КТ		
			e Ave	STRATA RECORD	Checked B	y. RS		
Туре	Depts From - To(m)	Vane Results kN/m*	Groundwaler	Description	Ω <b>ε</b> ριπ (m)	Level (mAOD) P(D	Legend	Well
	1	:		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field		1	<b>XXX</b>	
ם	i 0 10m		-	test). Sand is fine to coarse.		]		
	:		•			1		
	j	!	-	Stiff high strength closely fissured brown motited gray slightly	— 0.30	95.55		
		! !		Stiff high strength closely fissured brown motited grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is		]		
ij.	0.50m	i :		subrounded to rounded, fine to coarse of sandstone.		1		
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	1.00m	T17 D	··-					
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	i i		_	ı		!		
	1		-	!	:	į		
	!			From 1.90m; Becoming thinly laminated.		ŀ		
	2 00m	320 D	_	i i i i i i i i i i i i i i i i i i i	:			
	1		-		:			
	į		-	Firm friable brown slinbtly gravelly CLAY (Low plasticity - Field	2 20	93 65		
l	<b>2.30</b> m		•	Firm friable brown slightly gravelly CLAY (Low plasticity - Field test) with occasional cobbles. Gravel is angular to subrounded,				
			-	fine to coarse of sandstone and occasional limestone. Cobbles are		ł F		
	:			subrounded of sandstone and rare limestone.	:			
				•	:	[	<b>[</b> = 7]	
	ļ		-	At 2.70m: Subrounded, tabular sandstone boulder 0.55m across.		ļ		
	1	!	-		i .			
	•		-	:		ļ		
			-		•			
	:	:	-	End of Trial Pit at 3.10 m	3 10	92.75		
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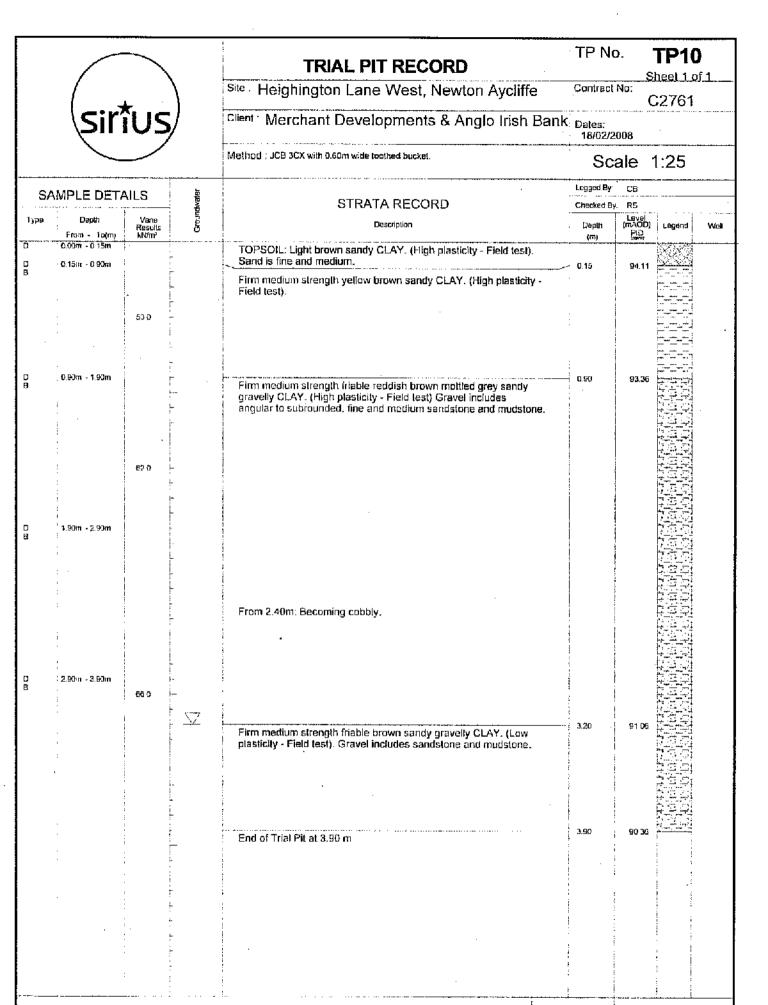
Remarks and Water Observations

- No groundwater encountered
   Side walls unstable from 2 20m
   Triat pit abandoned at 3 10m due to instability

GL (m AQD) 95.85 Easting:

Fig. No.

TP9



Remarks and Water Observations

1. Moderate groundwater seepage noted at 3.20m. 2. Side walls unstable from 2.40m to 3.50m.

GL (m AOD) 94.26

Easting:

Northing:

Fig. No.

				TRIAL PIT RECORD	TP No		P11	 I
		, \	١	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761	
	\Sir	îus/		Client: Merchant Developments & Anglo Irish Bank	Dates: 22/02/2	•		,
		_/		Method : JCB 3CX with 0.60m wide toothed bucket.	Sca	ale 1:	25	
	AMPLE DET	AILS	Grauntwaler	STRATA RECORD	Logged By: Checked By			
Type	Depth From - To(m)	Vane Results kN/m²	GOU	Description	Depth (m)	Leval (mAQD) : ( PID (spin	Legend (	Wei
	0.10m	1 a a a a a a a a a a a a a a a a a a a	, .	TOPSOIL: Firm greyish brown motiled brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.		1. 1. 1. 1. 1.		
	O 50m	. 6. 2.34.3.4.4.		Firm light brown mottled grey slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	030	95.64 (S)		
					070			
) 	1.60m	1966	-	Stiff high strength slightly friable reddish brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of limestone, rare siltstone and rare sandstone.		95.44 東京 東京 東京 東京 東京 東京 東京 東京 東京 東京		
				From 1.60m: Becoming brown mottled grey.				
1	<b>2 0</b> 0m	1200	•					
	3 09m	129.0			-			
				-				
	3 90m				400	92 14		
		-		End of Trial Pit at 4.00 m				
		-						
						- !	:	
	rks and Water C		5	GL (m	AOD)	Fig. N	<u>i</u> O.	
2. Sidi	good navale encounte e walls remained stabi	le daring excavar	lion	96.14 Easting - Northin	_		TP11	



TP No.

**TP12** 

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dales; 19/02/2008

				Method : JCB 3CX with 0.60m wide toothed bucket.		. 1		
				Madrids . 300 Jos. Mari 5.00 Mario Edition Blaket.	Sc	ale 1	1:25	
S	AMPLE DETA	AILS :	ij		Coggod Ry	ΚI		
Туре	Depth	Vane Results KN/m²	Groundwaler	STRATA RECORD Description	Checked By Depth		Legend	 <b>₩</b> ₪
מ	. 0 10m	ENGLE		TOPSOIL: Firm brown slightly gravelly CLAY. (High plasticity - Field test). Gravel is angular, fine and medium of coal.	· (m)	(politi)		
D	0 35m 0.50m	<b>6</b> 50 -		Firm light brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular, fine and medium of sittstone.	030 / 040	93.58 93.48		
E				Initially firm becoming stiff medium strength brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and rare limestone.	, 1 :			
В	1.00m	109 Q		From 1.00m: Becoming high strength.				
D 3	1.99m		• •	Stiff friable brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone. Cobbles are subrounded of sandstone and rare limestone.	1,8Q	92.08		
מ	2 80m	the militaristance was supported by coldinary for the coldinary fo		From 2.80m: Abundant subrounded cobbles of limestone and occasional sandstone.				
	3.90m		- - - -	End of Trial Pit at 4.10 m	4.16	BS.78		
	:			·				

Remarks and Water Observations

No groundwater encountered
 Side walls slightly unstable below 1 80m

GL (m AOD) 93.88

Easting:

Fig. No.

Northing:



TP No.

**TP13** 

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 18/02/2008

Method: JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

0115		£		Loggeri Ry:	кі	
SAMPLE DETA	AILS	twale	STRATA RECORD	Checked By		
Type Depth From - To(m)	Vane Results kN/m²	Groundwater	Description	Depth (m)	Level (mAOD)	Legand
0 18m	-		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.			
D 50m			Firm slightly friable brown and orange brown slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is subrounded, fine and medium of sandstone.	0.30	94.01	
1 00m	300	<del>-</del>	tnitially soft becoming firm low strength slightly friable brown very gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is angular to rounded, fine to coarse of sandstone and limestone. Cobbles are subrounded to rounded of sandstone and occasional limestone.	0 85	93.45	
2 00m	610	-	At 1.80m: Subrounded, tabular sandstone boulder, 0.45m across.  From 2.00m: Becoming medium strength.  From 2.20m: Becoming stiff and slightly friable.			
3 00m	-					
3 09m 3 50m	540		Brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of sandstone.	340	90 <b>9</b> 1	
				430	90,01	

Remarks and Water Observations

1. Ansings noted as damp below 3.40m 2. Side wateral entry unstable between 0.65m and 1.70m

GL (m AOD) 94.31

Fig. No.

Easting:

TP13



TP No.

**TP14** Sheet 1 of 1

Site . Heighington Lane West, Newton Aycliffe

Contract No:

C2761

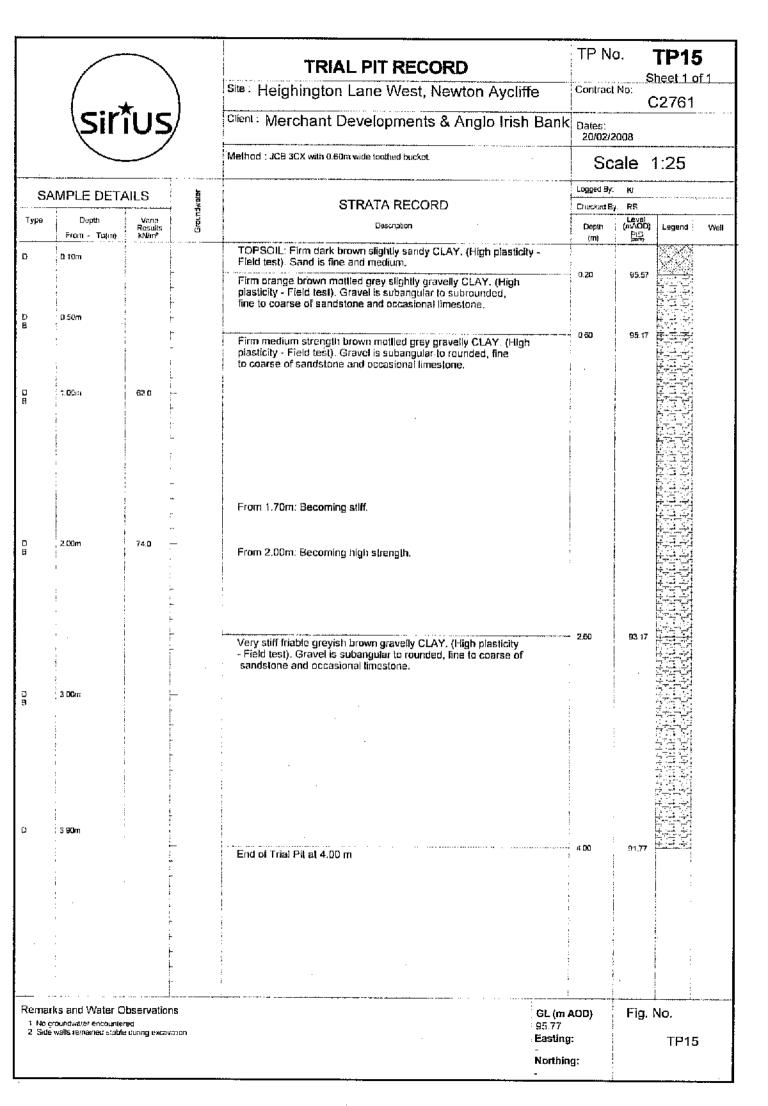
Client: Merchant Developments & Anglo Irish Bank Dates: 19/02/2008

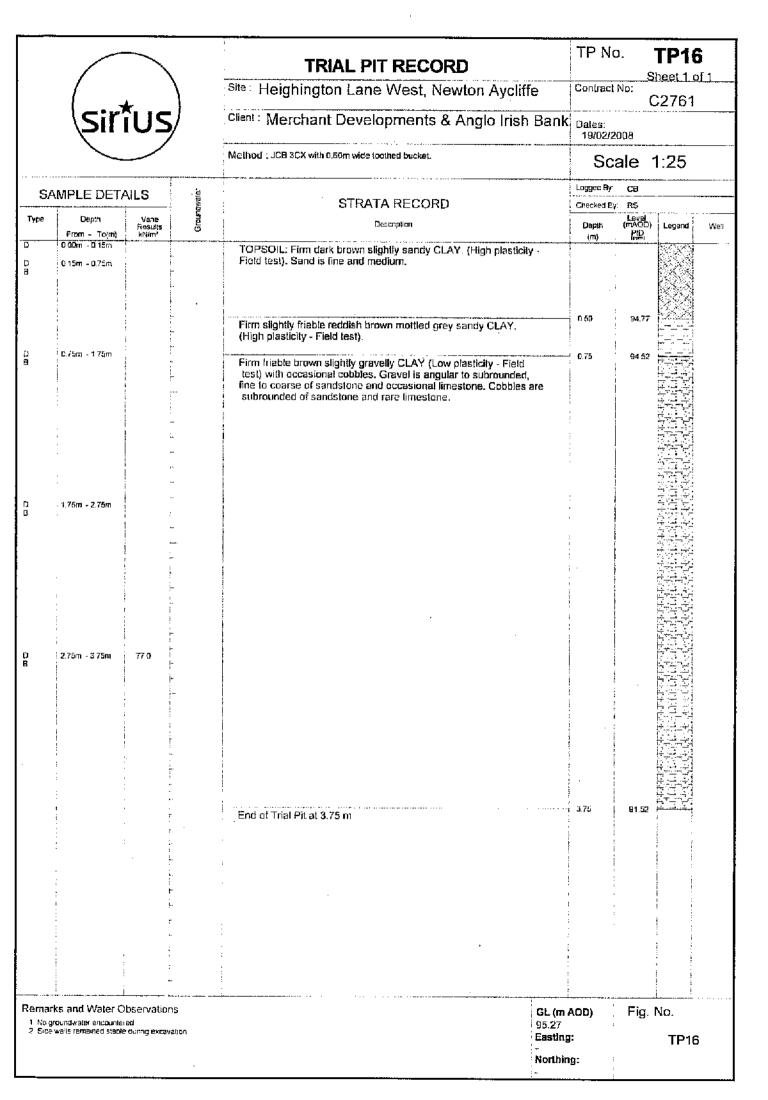
Northing:

Method: JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

-					Logged By:	KI	· · · · · · · · · · · · · · · · · · ·	
SA	MPLE DETA	AILS	water	STRATA RECORD	Checked By			
Туре	Depth From - Te(m)	Vane Results	Groundwater	Descriptori	Depth	Level (#AQD)	Legend	V
3	C.10m	kN/m²	-	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.	(121)	[akm)		
)	: 0.40m	:	• •	Firm light brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone and rare limestone.	0.30	94.12 93.92		
•	₿ 60m			Firm friable brown mottled grey very gravelly CLAY (High plasticity - Fleid test) with occasional cobbles. Gravel is subangular to rounded, fine to coarse of sandstone and rare limestone. Cobbles are subrounded of sandstone.				
) 	1 00m							
			-					
+	2 00 т		  -  -  -		17 Marie 18			
	, 2 2 3							
			<del>-</del> - -					
	: :		  -	From 2.70m: Becoming stiff.				
i i	3.00m		 . <del>-</del>	•				
			<del>-</del> · .					
1	3 90m		- -					
	:	:		End of Trial Pit at 4.00 m	4.03 ·	90 42		
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,	· · · · · · · · · · · · · · · · · · ·		 		· · · · · · · · · · · · · · · · · · ·			
1 Nag	ks and Water O reundwaler encountri wals stightly enstable	red		GL (n 94.42 Easti		Fig. I	No. TP14	







# TRIAL PIT RECORD Site: Heighington Lane West, Newton Aycliffe

TP No.

**TP17** 

Sheet 1 of 1

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates:

19/02/2008

Method : JCB 3CX with 0.60m wide toolhed bucket.

				Method : JCB 3CX with 0.60m wide toolhed bucket	Sc	ale 1	1:25	
SA	MPLE DETA	AILS	twater	STRATA RECORD	Lagged By Checked B			• • • • • • • • • • • • • • • • • • •
Тура	Depth From - To(m)	Vane Results kN/m²	Graundwater	Description	Depth (m)	Level (mAOD) (UP)	Legenu	W
ā	0.10m			TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	- 1007	(przm)		
] <b>9</b>	0.50m	570	- -	Firm medium strength slightly friable brown mottled grey gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone and occasional limestone.	0 40	9477		
D J	7 (X0m	· · · · · · · · · · · · · · · · · · ·	- · 	From 1.00m: Becoming friable.				
			-					
) !	2 09m	10 <b>0</b> 0	- - -	Stiff high strength slightly friable greyish brown gravetly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone and occasional timestone.	:.80	93.37		
			- -					
ı	3 GCm		- - 					
	· · · · · · · · · · · · · · · · · · ·		- -					
	3 90m		•		4.00	01.47		
	!	·		End of Trial Pit at 4.00 m	4 000	91.17		
		<u>-</u>			: ! :	! ! !		
O 1550 6-1	s and Water O	ht operation			: 		<u> </u>	

Remarks and Water Observations

No groundwater encountered
 Side walls remained stable during excavation

GL (m AOD) 95,17

Easting:

Northing:

Fig. No.



TP No.

**TP18** 

site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 19/02/2008

Method: JCB 3CX with 0.60m wide toothed bucket,

Scale 1:25

					20	ale	1.25	
SA	AMPLE DETA	AILS .	ji Ji		Lugged By	CE		
		<del></del>	Grcundwaler	STRATA RECORD	Checked B	<del>-</del>		
Type	Depth From - To(m)	Vane Results kM/m²	פֿנה	: Description	Depth (m)	Lavei (mAOD) FID	Legend	Well
בו	C 00m - D 25m			TOPSOIL: Firm brown sandy CLAY. (High plasticity - Field test).		1		
D B	0.25m ± 0.60m				0.25	9G,27		
В		: [		Firm medium strength yellowish brown sandy CLAY. (High plasticity - Field lest).				
C)	0 60m - 1 05m	50.0					EEI	
Ö	2 1,027	860 -		Stiff high strength reddish brown mottled grey CLAY. (High- plasticity - Field test).	0.60	56 92		
		<u>}</u>				<u> </u>	<u> </u>	
D 6	1 05m - 2.05m	İ			···· 1.05	95 47		
В				Firm friable brown slightly gravelly CLAY (Low plasticity - Field test) with occasional cobbles. Gravel is angular to subrounded,	1.03	3341		
				fine to coarse of sandstone and occasional limestone. Cobbles are subrounded of sandstone and rare limestone.		1		
	:					1		
	ŧ	1						
D E	2 05m + 3 05m					!		
		-	!	·				
				From 2.55m: Becoming cobbly.				
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D B	: : 3.05m - 3.25m	·						
н		-						
	!	-		End of Trial Pit at 3.25 m	3 25	<b>93.27</b>		
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Remarks and Water Observations

No groundwater encountered.
 Side walls ramained stable during excavation.

GL (m AOD) 96.52 Easting:

Northing:

Fig. No.

				TRIAL PIT RECORD	TP N	o. <b>TP</b> <u>Sheet</u>	_	
	( .	· ,	١	Site: Heighington Lane West, Newton Aycliffe	Contract	No: C27		
	\Sir	ŤUS/	)	Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/2			
		_/		Method : JCB 3CX with 0.60m wide toolhed bucket.	So	ale 1:2	5	
SA	MPLE DETA	AILS			Logged By	: KI		
Туре	Depth	Vane Results	Groundwaler	STRATA RECORD  Description	Checked B	By: RS Level (mADD) Lege		
	From - To(m) 0.10m	kN/m²		TOPSOIL: Firm brown slightly sandy CLAY. (High glasticity -	(m)	PID	ad We	
D	0,29m	-		Field test). Sand is fine and medium.	0.15			
				Firm orange brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	0.40		Ē	
B	0.50m	  -  -  -  -  -		Firm medium strength slightly friable brown mottled grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of sandstone and occasional limestone.  From 0.70m: Occasional subrounded sandstone and limestone cobbles.				
D B	1.00m	81.0	-					
D B	2.00m	- - - - - -	,		· · · · · · · · · · · · · · · · · · ·			
D B	2.50m	*		Stiff high strength brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravet is subrounded, fine to coarse of sandstone and occasional limestone. Cobbles are subrounded of sandstone and rare limestone.	- 2,40			
	97	120,D	-		7117			
D	2.50m	•						
P B	4.20m	•		Orange brown very clayey GRAVEL with occasional cobbles. Gravel Is subangular to rounded, fine to coarse of limestone, rare sandstone and rare siltstone. Cobbles are subangular of limestone, rare sandstone and rare siltstone. Possible residual bedrock.  End of Trial Pit at 4.40 m	4.10		· 1911年	
1. No gr	ks and Water Countle and water encounts walls remained stable	red,				Fig. No.	219	

				TRIAL PIT RECORD	TP N		TP2	
		<u>.</u> \	1	Sile: Heighington Lane West, Newton Aycliffe	Contrac	t Na:	C2761	
	\Sir	îUS	)	Client: Merchant Developments & Anglo Irish Bank	Dates; 19/02/		<i>32101</i>	
				Method ; JCE 3CX with 0.60m wide toothed bucket.	Sc	ale	1:25	
Ş,	AMPLE DET	AILS	·		Loggod By	r CB		
Тура	Depth	Vane Results kN/m²	Groundwater	STRATA RECORD  Description	Chacked ( Dapin	Lavel (mAOD)	Legand	Well
ā	From = To(m) 0.00m = 0.20m	kN/m²		TOPSOIL: Firm brown sandy CLAY,	(m)		<b>X</b>	
D B	0.20m - 0.64m	-		Firm medium strength yellow brown CLAY. (High plasticity - Field test).	0,20			
D B	0.50m - t.80m	50.0		Firm medium etconolly reddiely begins France Law Webst	0.60			
		-		Firm medium strength reddish brown fissured gray slightly sandy gravelly CLAY. (High plasticity - Field test).				
			•					
		-						
Ð	1.60m - 2.60m	<b>6</b> 3.0 <b>-</b>		Firm grey brown sandy very gravelly CLAY with cobbles. (High plasticity - Field test). Cobbles are of sandstone.	1.60			
		<u> </u>						
D	357 P. P. P. P. P. P. P. P. P. P. P. P. P.	  -  -						
D B	2.60m - 3.60m	- -		End of Trial Pit at 2.60 m	260			
		-  -  -					100	
		-						
		-						
		-					51.00	
		<u> </u>						
		-						
	rks and Water O roundwaler encounter walls remained stable					Fig.	No.	
2. Side	wal's remained stable	during excavati	еп.		-		TP <b>2</b> 0	}

				TRIAL PIT RECORD	TP No		TP21	
	1		)	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	C2761	1
	\sir	<b>î</b> UŞ		Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/2		JE101	
		/		Method ; JCB 3CX with 0 60m wide toothed bucket	<del>                                     </del>		1:25	
SA	MPLE DET	AILS	Taller.	STRATA RECORD	Logged By	RU .		
ype	Depth	Vane Results	Groundwales	Description	Chacked Dy  Depth	RS Level (mAOD)	Legend	
• • • • • • • • • • • • • • • • • • • •	From - To(m)	kN/m²		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field lest). Sand is fine and medium.	(m)	P.D.	2000 N	
	7 1		! !	Firm friable orange brown mottled grey slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	0.20	95.22		
	0 50m		- -					
	1.00m	43.0		Firm medium strength slightly friable brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	0.73	54.72		
		    - 						
		1	1.					
	: :		<u></u>		ſ			
			-					
	2 00m	44.0						
	! ! !		-					
			<del> -</del>		:			
			-					
	3 DOm :	: :	<del>.</del>		:			
	3 30m			Very weak light brown LIMESTONE. Completely weathered,	3.20	92.22		
	3 70m		. V -	Moderately weak light brown LIMESTONE. Moderately weathered.	3.60	91 82		
			-	End of Trial Pit at 3.90 m	3.90	91.52		
		 	<u>.</u>	· · · · · · · · · · · · · · · · · · ·	:			
					:		:	
			-				:	
					:			
	s and Water O			GL (m /	AOD)	 Fig.	No.	
Stron Side	g groundwaler seeps walls unstable from 3	ige noted at 3.1 . <b>60</b> m.	60m	95.42 Easting	:	-	TP21	
				Northin	g:			



TP No.

**TP22** 

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 19/02/2008

Method: JCB 3CX with 0.50m wide toothed bucket.

Scale 1:25

SA	MPLE DETA	AILS 📱	턞	DTDATA BEGGES	Logged By	CB		
Туре	Оврт	·	Grcundweler	STRATA RECORD	Checked By		; ;	
	: : : From - To(m)	Vane Results kN/m²	Ğ	Description	Dep:n (m)	Level (mAOD) PID	Legend	Ų
	0.00m - 0.20m 0.20m - 1.05m			TOPSOIL: Firm brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine and medium.	0.20	85 63		
		! +		Firm medium strength yellowish brown locally grey sandy CLAY. (High plasticity - Field test).	יאבט -	85 63		
		42 0						
	•	÷			:			
			1	•	: 			
	7.05m - 2.00m					<b></b>		
	- Automi			Firm medium strength brown mottled orange brown gravetly very sandy CLAY with occasional cobbles. (High plasticity - Field test). Gravel includes fine to coarse of sandstone, mudstone and timestone. Cobbles are of timestone and sandstone.	1.05	94.78		
		55 C		TOTAL OF THE STREET STREET				
		L	1					
	<b>2 00</b> m	:	ļ	F 0.00 D / //				
	f ;			From 2.00m: Becoming staff.				
	: : :	-	İ	•				
			:	·				
	:	<u>.</u> :	:			-		
		ļ.	:					
	:	+ · · · · · · · · · · · · · · · · · · ·						
	: !	Ļ	:		: :			
			ļ		1			
					: :	! !		
		<u>.</u>	İ		İ	ļ	7.5.0 7.5.0	
	: : :	ļ. -	!					
			. :	End of Trial Pit at 4,00 m	4 00	91 63		
		. <del>.</del> .	:				İ	
	: ! ;	[				į		
			;			:	;	
	:		· · · · · · · · · · · · · · · · · · ·		!		•	
	·	· :-	!	·	1	] ; 1		
<b></b> .	! !	·				:	:	

- No groundwater encountered
   Side walls remained stable during excavation.

GL (m AOD) 95.83 Easting:

TP22



# TRIAL PIT RECORD

TP No.

**TP23** 

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

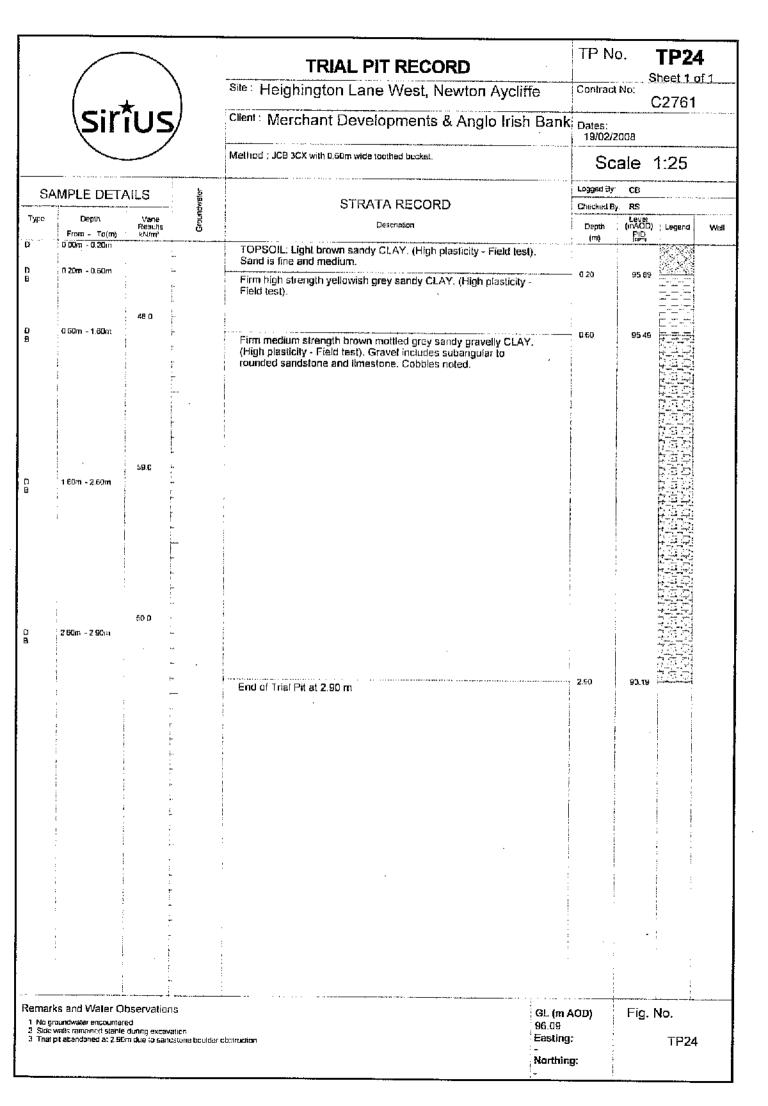
Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 19/02/2008

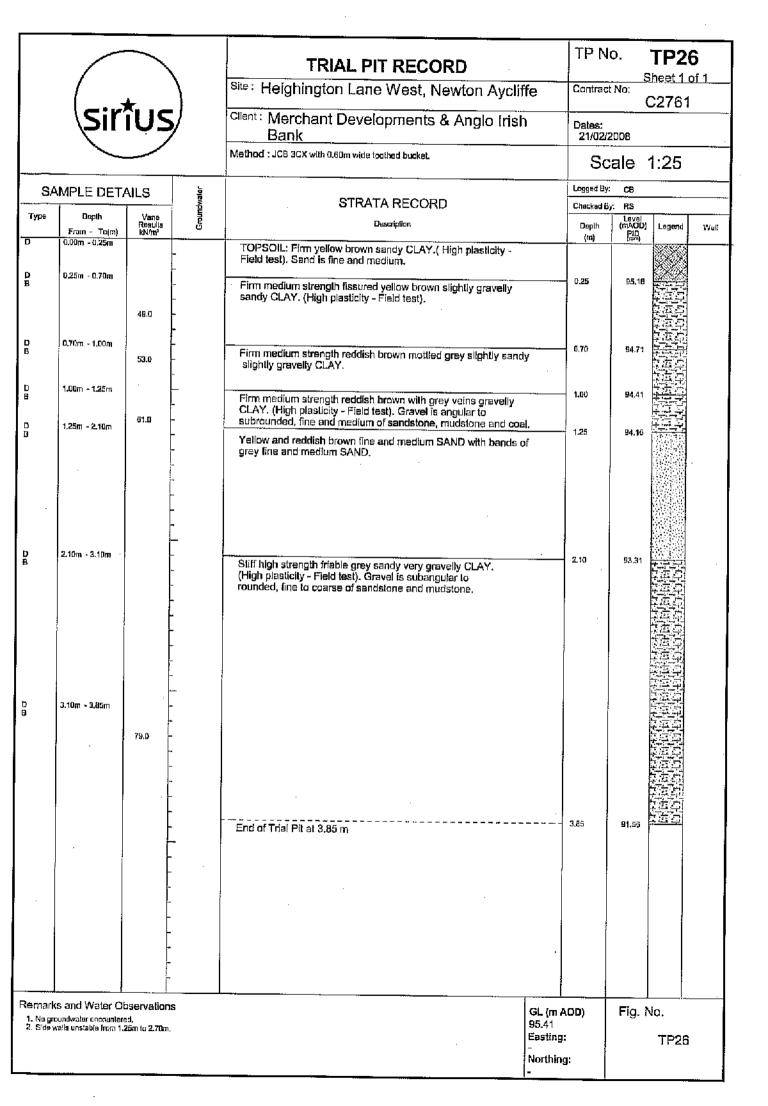
Easting:

Northing:

					10/02/1			
				Method: JC8 3CX with 0.60m wide toolfied bucket.	So	ale 1	1:25	
Ç,	AMPLE DETA	All C	- ·····		Logged By	кі		
	AMPLE DE D	AILO	Groundwater	STRATA RECORD	Christian B	ly: RS		
Туре	Depth From - To(m)	Vane Results kN/m²	Groun	Description	Depth (m)	Level (mADD) PID	Legand	Well
D	0.10m			TOPSOIL: Firm brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine and medium.		 		
D	0 50m		- -	Firm medium strength slightly friable brown mottled grey gravelly CLAY. (High plasticity - Field lest). Gravel is subangular to rounded, line to coarse of sandstone and limestone.	025	g4 1 <u>2</u>		
Đ H	1 00m	58D -	- - -			:		
			-		:	;           		
D B	2.60т	HOO		At 1.90m: Subrounded, tabular sandstone boulder 0.40m across. From 2.00m: Becoming high strength.	:	Total Community of the		
				At 2.40m: Subrounded, tabular sandstone boulder 0.35m across.		1 · · · · · · · · · · · · · · · · · · ·		
		-						•
D 6	3 00m		-	From 3.00m: Becoming friable.				
			•					
	: :							
מ	3 90m		-	End of Trial Pit at 4.00 m	400	50:37		
	: :	: : : : : : : : : : : : : : : : : : :					:	
	:						1	
	<u>:</u>		•			•		
1. No g	ks and Water O roundwater encountal walls remained stable	ed	•	94.37	n AOD)	Fig. N	NO.	
i. Giue	CARRIED INTO STREET	cocord extrave	110-1	Easti	ng:		TP23	!



			\	TRIAL PIT RECORD	TP N		TP2	
		_	)	Site: Heighington Lane West, Newton Aycliffe	Contrac	it No:	heet 1 o	
	\Sir	<b>Ť</b> US	)	Client: Merchant Developments & Anglo Irish Ba	nk <sub>  Dates:</sub>		JE101	
		_/	•	Method: JCB 3CX with 0.60m wide toothed bucket.	19/02/ S (	2008 Cale '	1-25	
SA	MPLE DET	All S	 B		Logged 8			
Туре	Gepth Gepth	Vane	f Groundwater	STRATA RECORD	Checked I	·		
······································	From - To(m) 0.10m	Results kN/m²		TOPSOIL: Firm brown slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is	Depth (m)	Level (mAOD) PID Intern	Legend	W:
	!	i	<u></u>	subangular, fine to coarse of sandstone and rare limestone.	0.20	93 50		
1	0.50m	•		Firm friable orange brown slightly gravelly CLAY, (I-tigh plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of sandstone and rare limestone.	:			
		:	[ !			:		
}	1 00m			Greyish brown sandy very clayey GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of sandstone and rare limestone.	a so	92.68		
	· · · · · · · · · · · · · · · · · · ·		<u>-</u>		,			
			}- -			:		
			<del>.</del>			 		
			· ·					
	2 00m		_     .					
	!	! ! !	  -  -					
			<u>.</u>		: :			
		i	<b>⊢</b> : <b>⊢</b>					
	!	·				:		
	3 09m	:	<del>-</del>	Stiff high strength grey gravally CLAY (High aboutable, Class)	3 10	90.68		
	3.20m			Stiff high strength grey gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone and occasional firnestone.	1			
		1140	•					
	;							
	; ; 3.90m					  -  -		
			 -	End of Trial Pit at 4.00 m	- 4 60	8 <u>5</u> 78	<u> </u>	
			-			· :		
	:		-			: :		
			-			.		
	:	; ;	-					
	ks and Water O				n AOD)	Fig. N	No.	/ <b>-</b>
2. Side i	asse groundwater see walls unstable from D	50m to 3.10m		93.76 Easti			TP25	
				North	ing:			





1. Slight groundwaler seepage noted between 1.10m and 1.70m 2. Side walls slightly unstable between 1.30m and 1.70m.

### TRIAL PIT RECORD

TP No.

**TP27** 

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank; Dates: 19/02/2008

93.36 Easting:

Northing:

, TP27

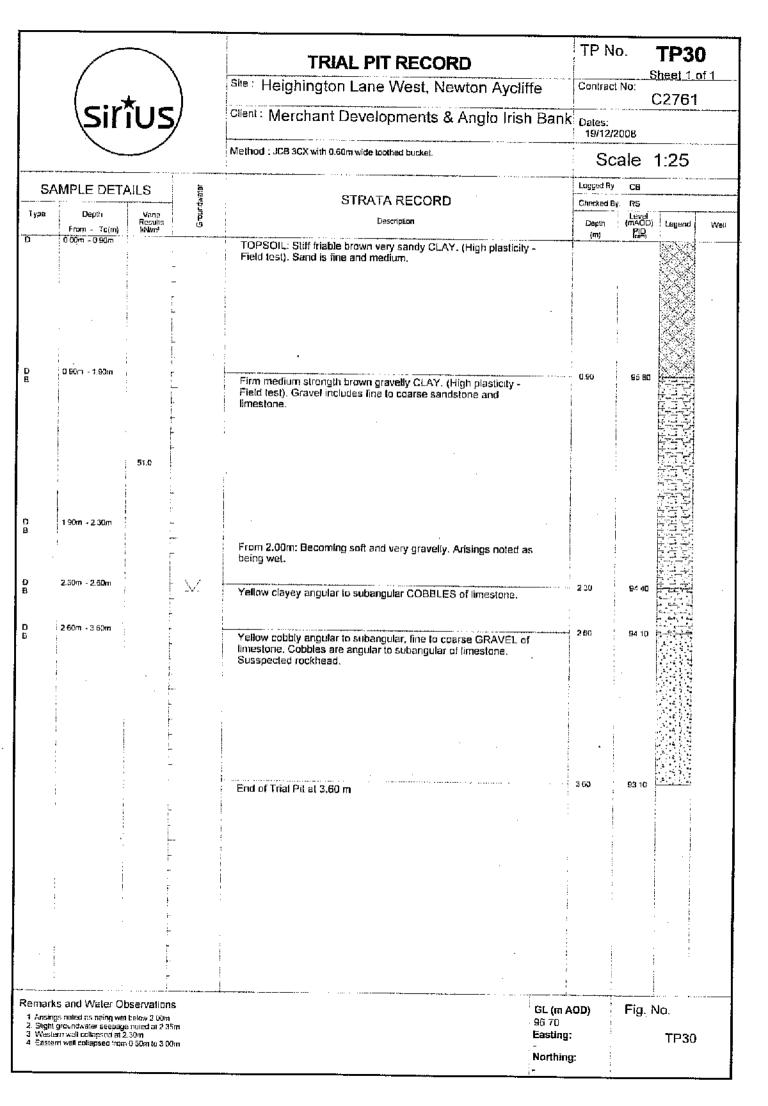
Method: JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

5/	MPLE DETA	AILS	iverte .	STRATA RECORD	Logged By Checked By	KI K. RS	
ite	Depth From - To(m)	Vane Results kW/m²	Groundwater	Description	Depth (m)	Level (mAOD)	Legend
	Q 10m	:	-	TOPSOIL; Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.		1,39-73	
	0 50m			Firm friable orange brown mottled grey slightly gravelty CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sendstone and occasional limestone.	0.30	93.65	
	1 20m			Soft low strength grange brown mottled grey silty sandy gravelly CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of sandstone.	1 70	92.25	
	. 1.80m	21.0	- - -	Stiff high strength slightly friable brown mottled grey gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone and occasional limestone.	T.70	91.65	
	2 50m	78 a	-	Stiff friable grey gravelly CLAY (High plasticity - Field test) with accesional cobbles. Gravel is subrounded, fine to coarse of sandstone and rare limestone. Cobbles are subrounded of sandstone and rare limestone.	2.40	93.65	
	3 50m					,	
		. L. i. l. t. l		End of Trial Pit at 4.00 m	400	86 35	
emarl	ks and Water O	bservation		GL (m	AODI	Fig. N	

				TRIAL PIT RECORD	TP N	11 20	
	(,	۱ ـ	ŀ	Sile: Heighington Lane West, Newton Aycliffe	Contract	No: C2761	<u> </u>
	\sir	îus/		Client: Merchant Developments & Anglo Irish Bank	Dales: 19/02/2	2008	
	_		Site: Heighington Lane West, Newton Aycliffe  Cilent: Merchant Developments & Anglo Irish Bank  Method: JCB 3CX with 0.60m wide toolhed bucket.  Strata Record  Sheet 1 of 1  Cantract No: C2761  Dales: 19/02/2008  Scale 1:25  Loggad By: CB Checked By: RS				
SA	MPLE DET	AILS	water	STRATA RECORD	1	···-	
Туре	Depth From - To(m)	Vans Results kN/m²	Ground		Dopih		Well
<u></u>	0.00m - 0.55m	-		TOPSOIL: Firm light brown sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	(m)	(1426)	
B	D.55m ~1.55m			Firm medium strength mottled friable brown fissured grange/grey sandy gravelly CLAY. (High plasticity - Field	D.56		
D B	1.55m - 2.55m	- - - - - - - - - - - - -		From 1.40: Baulders noted.			
D B	2.55m - 2.55m	-		Stiff fissured dark brown sandy gravelly CLAY, (High plasticity - Field test), Gravel is angular to subrounded, fine to coarse of sandstone and occasional limestone.	2.55		
ם	3.55m ~ 4.00m			End of Trial Pit at 4.00 m	- 4.00		
	ks and Water O				- The state of the	Fìg. No.	
1. No gr Z. Side t	oundwaler encoun <b>ie</b> ; walle remained stable	red. e during excavalin	ก.			TP28	

				TRIAL PIT RECORD	TP N		TP29			
	( .	<u>.</u>	\	Site: Heighington Lane West, Newton Aycliffe	Contract	Na:	C2761			
	\Sir	îUS	/	Client: Merchant Developments & Anglo Irish Bank [						
	SAMPLE DETAILS  Be Depth Vans Results 0			Method : JCB 3CX with 0.50m wide toothed bucket.		Scale 1:25				
SA	MPLE DET	AILS		·	Logged By:	кı				
iype	Depth	Vane	acndw	STRATA RECORD  Description	Checked B	-	1.			
	From - To(m)	Results kN/m²	<u>.</u>	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field	Depth:	Level (mAC/O) PIO (nom)	Legend 1			
}	0 10m	<u> </u>		test). Sand is fine and medium.		ļ. 1				
o i	0.50m	51,0		Firm medium strength brown mottled grey slightly gravelly sandy CLAY. (High plasticity - Field test). Sand is line and medium. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	••••••••••••••••••••••••••••••••••••••	92 53				
	1.00m	59.0	<u>.</u> ·							
	2.00m	700		Firm medium strength brown mottled grey gravelly CLAY. (High plasticity - Field test). Gravel is subrounded, fine to coarse of sandstone and occasional limestone.	1.90	91.03				
	Andrew Community	-			2.60	90.25				
	3 0 <b>7</b> m <sub>.</sub>			Very stiff triable grey gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subrounded, fine to coarse of sandstone and occasional limestone. Cobbles are subrounded to rounded of sandstone and rare limestone.						
				·						
	4.£Vm	-		End of Trial Pit at 4.10 m	410	86 7E				
	: :	. –								
1. No gr	ks and Water C	ned .		GL (r 92.88	n AOD)	 Fig. I	No.			
≰ \$ide	walis romained stable	e dufing excuvati	non	Easti	ng:		TP29			





Northing:

**TP31** Sheel 1 of 1

Site: Heighington Lane West, Newton Aycliffe

Contract No:

TP No.

C2761

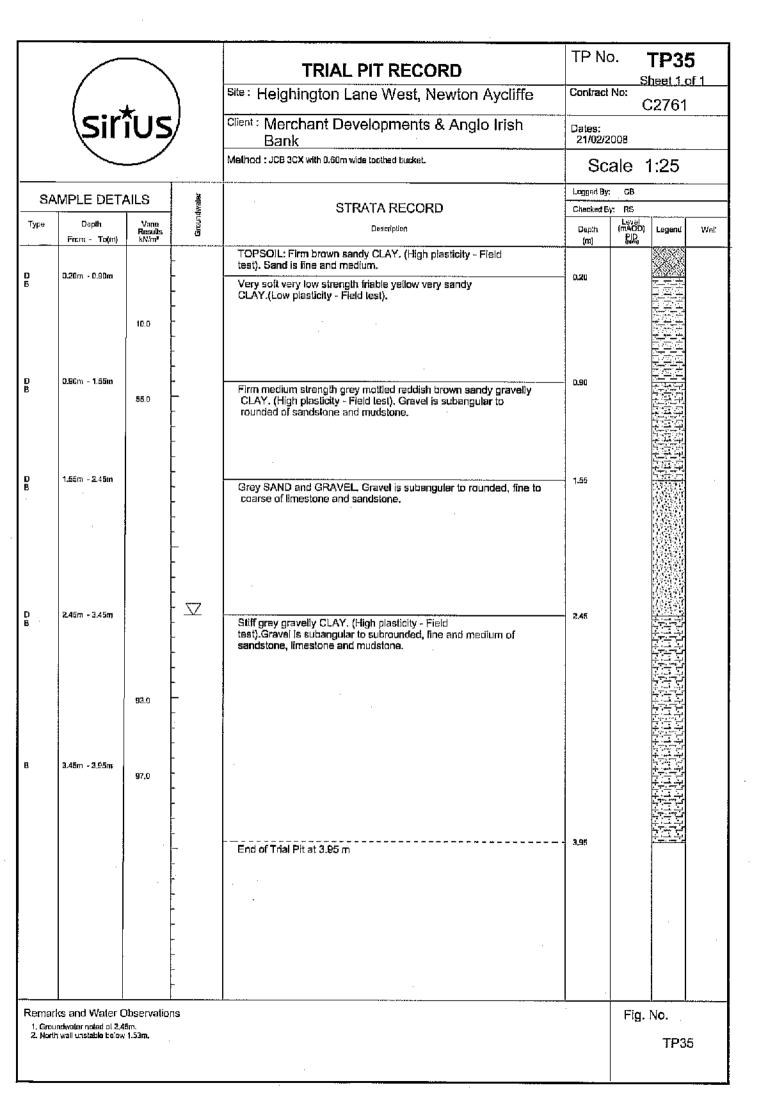
Client: Merchant Developments & Anglo Irish Bank Dates: 19/02/2008

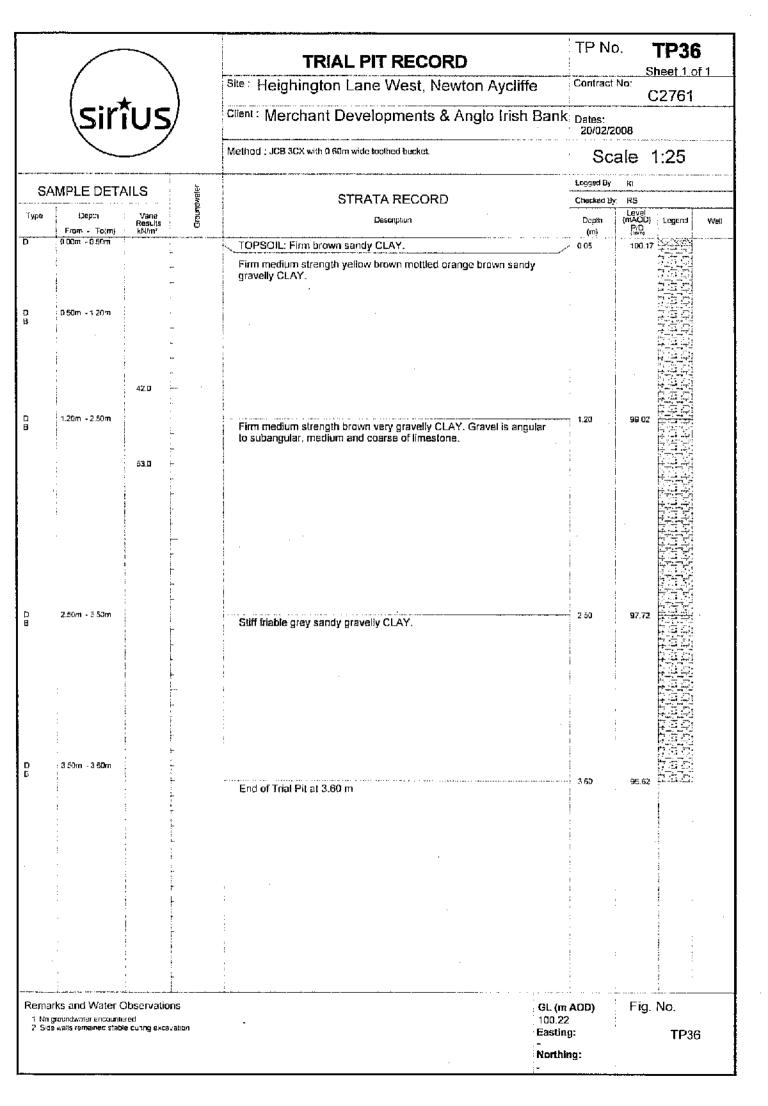
				Melhad; JCB 3CX with 0.60m wide toothed buckst.	Sc	ale 1:25	
SA	MPLE DETA	AILS	<u> </u>		Logged By:	K!	
		<del></del>	Groundwafe	STRATA RECORD	Спескед Б		
Type	Depth From - To(m)	Vane Results kN/m²	. <u> </u>	Description	Depth (m)	Enval (mAQD) Legend	W
1	O TUM		<b>*</b> 	TOPSOIL: Firm brown slightly sandy slightly gravelly CLAY, (High plasticity - Field test). Sand is fine to coarse. Gravel is subangular to subrounded, fine to coarse of sandstone and rare limestone.			
1	0 50m		: !	Firm friable light brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	0 55 0 60	92.50	
•	: : : : 1.03m	73.0	: - - - - - - - - - -	Firm and stiff medium strength slightly friable gravelly CLAY (High plasticity - Field test) with rare cobbles. Gravet is subangular to rounded, fine to coarse of sandstone and occasional limestone. Cobbles are subrounded of sandstone and rare timestone.		92.65	
	· · · · · · · · · · · · · · · · · · ·				The state of the s		
	: 2 00m :	75 D		From 2.00m: Becoming high strength.			
	3.60m		-	From 3.00m; Becoming friable.			
	3.90m	:	• •				
			- 	End of Trial Pit at 4 00 m	4,03	89.25	
			-				
1 Na m	ks and Water O roundwater empounter wats remained stable	LIII .		GL (r 93.25	n AOD)	Fig. No.	

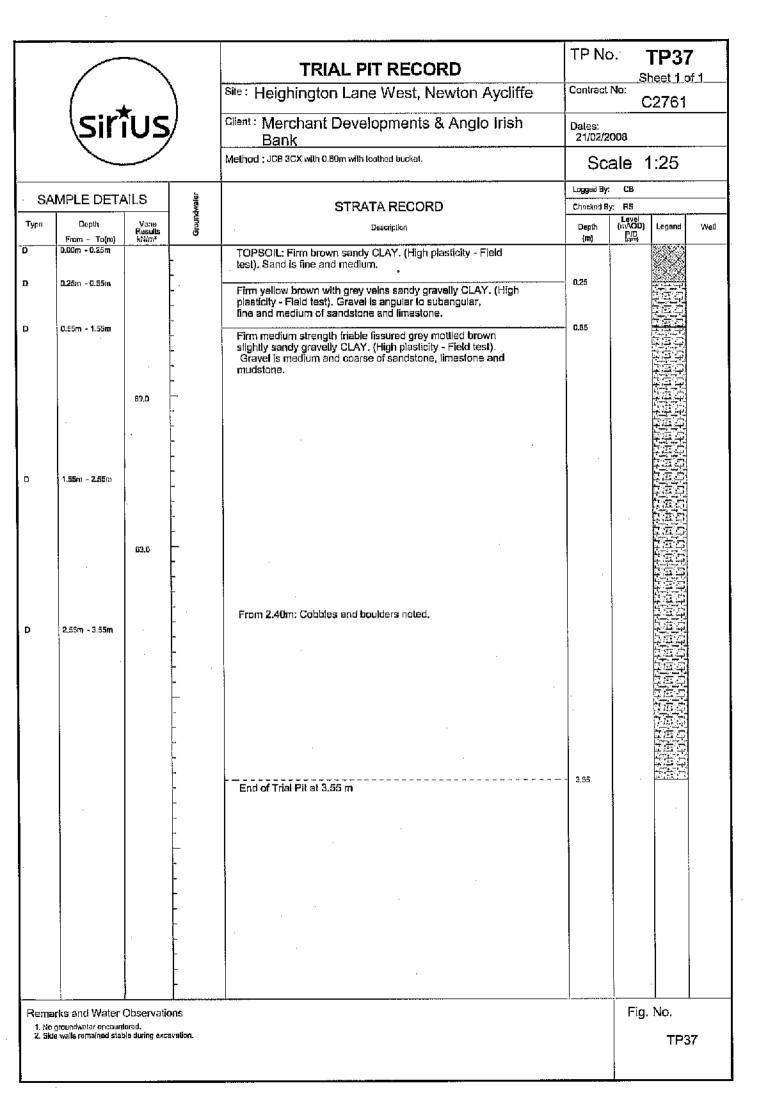
				TRIAL PIT RECORD	TP N		TP3:	
		. '	\	Sile: Heighington Lane West, Newton Aycliffe	Contrac	t No:	2761	
	\sir	îัUS		Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/		<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
				Method ; JCB 3CX with 0.60m wide toothed bucket.	Sc	ale :	1:25	
S	Depth Vana Results From - To(m) Vana Results 0.00m - 0.35m  0.35m - 0.96m  32.0	valer .	STDATA BECORD	Logged By				
Турв		Vane Results	Ground	STRATA RECORD  Description	Овріh	ked By: RS Level (mAOD) Legand (maoD)		
)		kN/m²	-	TOPSOIL: Firm brown sandy CLAY. (High plasticity - Field lest). Sand is fine and medium.	(m)	Georgia .		
			_	esty, saind is line and medium.				
ID	0,35m - 0,96m	25.0	_	Soft low strength friable brown sandy CLAY.	0.35	97.67		
		320	_					
			<b>-</b> -					
3D	0.9 <b>0</b> m ~1.75m		_	Firm medium strength brown very gravelly CLAY, (High plasticity - Field test). Gravel is angular to subangular,	0.90	97,12		
			-	medium and coarse of limestone.				
			_					
		57.0	_					
10	1.75m - 2.75m		_		1.75	95.27		
			-	Yellow angular to subangular COBBLES of limestone. Possible completely weathered bedrock.	1.75	30.21	2	
			<del>-</del>					
			_	·	1 .		o ·	
			-	·				
iD	2.75m - 3.30m		_				s ,	
			_					
			-					
3D	3.30m - 3.40m .		$\nabla$	Grey brown weathered LIMESTONE. Recovered as: Orange brown	3.30	94.72		
			-	<ul> <li>slightly sandy very clayey COBBLES. Sand is fine to coarse.</li> <li>Cobbles are angular to subangular of limestone.</li> </ul>	3.40	94.62	- <del>1/</del>	
			-	End of Trial Fit at 3,40 m				
			- -				.	
			-					
			-					
			-					
			-					
			- ·					
			-					
	rks and Water ( groundwater encounte		15	GL (r	n AOD)	Fig,	No.	
2. Side	groungwater encounte e walls remained stabil	e during excav	alion,	98.02 Easti			TP32	2
				North	ning:	,		

				TRIAL PIT RECORD	TP No		TP33	
			\	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	heet 1 c 2761	
	\sir	ľUS,	)	Client: Merchant Developments & Anglo Irish Bank	Dates; 21/02/2	<u> </u>	,2101	
				Method : JCB 3CX with 0.60m wide toothed bucket.	Sc	ale 1	1:25	
SA	MPLE DETA	All S			Logged By:	: CO		
 :e	Depth		Groundwaler	STRATA RECORD	Checked B		T T	
	From - To(m)	Vana Results kN/m²	<u></u>	Description	Dapth (m)	Level (mAOD) PID (em)	Lagend	
		<u> </u>		TOPSOIL: Firm brown sandy CLAY.				
	0,20m - 0.50m	-	•	Light brown clayey slightly gravelly fine and medium SAND,	0.20			
	0,50m - 1,05m	38,0 -	•	Soft low strength gray fissured light brown sandy gravelly CLAY. (High plasticity - Field test). Gravel is subangular to munded of sandstone and mudstone.	— 0. <b>5</b> 0			
	1,05m - 2,00m	- -	<del>-</del>	Grey SAND and GRAVEL. Gravel is subangular to rounded, fine to coarse of limestone and sandstone.	1,05			
	2.00m - 3,00m,	93.0		Stiff high strength grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine and medium of sandstone, limestone and mudstone.	2.00			
	3.03m - 3.40m	-	- -	End of Trial Pit at 3,40 m	3,40			
		The second secon						
							<u>                                      </u>	
ΠAſ	ks and Water C noweler encountered		3			Fig. I	No.	

				TRIAL PIT RECORD	TP N	o. TP3	
	1	,	\	<sup>Site</sup> : Heighington Lane West, Newton Aycliffe	Contract	: No: C2761	
	\sir	îUS	)	Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/2	<del>.</del>	
				Method : JCB 3CX with 0.60m wide tackhed bucket.	Sc	ale 1:25	
SA	MPLE DETA	AILS	Japan	CTDATA DECORD	Loggad By	WE	
Турв	Depth	Vane Results kN/m²	Groundwater	STRATA RECORD Description	Checked B	•	Weil
	From - To(m)	kN/m³		TOPSOIL: Firm brown sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	(m)	(mAOI) Legend	
	0.25m 0.25m - 0.90m	-		Firm medium strength orange brown sandy CLAY. (High plasticity	0,25		
		40,0		- Field test).			
		-		•			
	ggp- 400	<u> </u>					
	0.90m - 1,90m	-		Firm medium strength greyish brown gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of sandstone and limestone.	0,90		
				fine to coarse of sandstone and limestone.			
		-					
		48.0					
		-					
	1.90m - 2.70m	-					
		-	<del>-</del>				
		-		·			
	·	' <u> </u>					
	2.70m . 2.45m	1					
	2,70m + 3,45m 2,70m - 3,40m	-		Light brown angular to subangular, medium and coarse GRAVEL of limestone. Possible rockhead.	2.70		
		<u> </u> -	-				
		-					
		_			3.40	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
		-		End of Trial Pit at 3.40 m			
		-					
		-	-				
		-					
		-					
		-					
		-			:		
						3 6 1	
	ks and Water C roundwater encounter walls ramained stable			•		Fig. No.	
. a:da	: waxa ramamad stabje	equinig excava	won.			TP3	4







			TRIAL PIT RECORD	TP No	Sheet 1	
1	`	\	Site: Heighington Lane West, Newton Aycliffe	Contract	No: C276	
∖Si∣	ŗŤUS	/	Client: Merchant Developments & Anglo Irish Bank	Dales; 20/02/2	100B	
			Method ; JCS 3CX with 0.50m wide toothed bucket.	Sc	ale 1:25	
SAMPLE DE	TAILS			Logged By	CB .	
Type Depth	Vane	Grandwater	STRATA RECORD	Checked B	Lavel	
From - To(r 0.00m - 0.30m	Results  N/m²	6	Description	Depth (m)	(mAOD) Lagen: PID (port)	d Wel
0.30m - 1.25m		-	TOPSOIL: Firm brown sandy CLAY.(High plasticity - Field test).  Sand is fine and medium.			
0.30m - 1.25m	62.0	- - -	Firm medium strength brown mattled orange brown sandy CLAY. (High plasticity - Field test).	0,30		
	<b>V</b> 2.0	- -				
	1	- - 		Constitution (Co		
1.25m - 2.15m		-		1.25	<u> </u>	
	Ī	<u>-</u> -	Firm medium strength brown mottled grey sandy very gravelly CLAY. (High plasticity - Field test). Gravel includes Ilmestone, mudstone and coal.	1.25	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	59.0	-			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1
	Front Inc.	- -				
2.15m - 3,05a		-	Stiff friable greyish brown sandy gravelly CLAY with some	2,15		년 펜
		- -	cobbles. (High plasticity - Field lest). Sand is micaceous.  Gravel is angular to subrounded, fine to coarse of mudstone and sandstone. Cobbles are tabular of mudstone.			
		<b>-</b> -				
		-				
3.05m - 3.30m	' .	<del>-</del> - -	From 3.05m: Becoming very stiff with some iron staining noted,			
3.30m - 3.45m 3.45m - 3.75m		<b>-</b> -	Yellow angular to subrounded, fine to coarse GRAVEL of sandstone and limestone.	3.30	125 - 1 125 - 1 125 - 1 125 - 1	레 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전 전
			Grey fine to medium SAND.			
3,75m - 3,95n		-	Reddish brown purple micaceous sandstone with pockets of firm reddish purple sandy day.	3,75		
		<del>-</del> -	End of Trial Pit at 3.95 m			
		-				
		- - -	-			
		<b>-</b> -				
emarks and Wate	_:				Fig. No.	<del></del>



Northing:

**TP39** Sheet 1 of 1

Sile: Heighington Lane West, Newton Aycliffe

Contract No.

C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 19/02/2008

TP No.

	_			Method: JCB 3CX with 0.60m wide toothed bucket.	So	ale 1:25	
67	MPLE DETA	NII C			Logged By	+()	· · · · · · · · ·
	WILLE DELY	AILQ :	IÓWRI	STRATA RECORD	Checked 8	<del>.</del>	
Туре	Depoi From - To(m)	Væne Results kN/m²	Graundwater	Description	Depth (m)	Level (mAOD) Legend PID	Weli
	O 1Dan			TOPSOIL: Stiff brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	0.30	161,00	
) <b>3</b>	0 50m			Stiff medium strength friable brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.			
1	1 00នា	59 0 -	-	From 1.00m: Becoming slightly triable.			
)	2 00m			Very weak orange brown LIMESTONE. Completely weathered. Recover as firm orange brown gravelly clay. (High plasticity - Field test). Gravel is angular to subangular, fine to coarse of limestone.	t.en ered	99.50	
	3 <b>6</b> 0m	month control to down where a consult on the col-		Moderately weak orange brown LIMESTONE. Moderately weathered. Recovered as orange brown slightly sandy very clayey subangular, line to coarse cobbles of limestone. Sand is fine to coarse.	2.60	96 70	
					3,50		
	370·n		-	Very weak thinly laminated dark grey MUDSTONE. Completely weathered. Recovered as stiff dark grey thinly laminated gravelly clay. (Low plasticity - Field test). Gravel is angular, fine to coarse of mudstone.  End of Trial Pit at 3.90 m	3.90	97.70	
					a manage of the control of the contr		
	<u>.                                    </u>	l l		4	<u>!</u>	<u> </u>	
l No g 2. Side	ks and Water C roundwater encounter walls unstable from t pir abandoned at 3 \$2	red :.60:n ta 3.60m		GL (r 101.3 Easti		Fig. No.	19

				TRIAL PIT RECORD	TP N	St	<b>FP4(</b>		
				Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761		
	√sir'	โบร	1	Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/2				
				Method: JCB 3CX with 0.60m wide toothed bucket.	Scale 1:25				
SA	MPLE DETA	AILS	ller .	077474 050000	Logged By				
yps .	Depth	Vene Results kN/m²	Groundwaler	STRATA RECORD  Description	Checked B	Level (mAQD)	bnegal	Well	
	From - To(m) 0.00m - 0.20m	kiNimi		TOPSOIL: Light brown sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	(m)	PID (		•	
	0.20m - 1.10m			Firm medium strength brown sandy CLAY. (High plasticity - Field test).	- 0.20				
		-		Field (est).					
		40,0							
		-							
	1		-						
	1.10m - 1.90m			Firm medium strength very gravelly CLAY. (High plasticity - Field test). Gravel is angular to subangular, medium to coarse	1,10				
	-			of Ilmestone.			도감 문감		
		50.0							
		<u> </u>							
	1.99m - 2.10m	-	_	Yellow tabular weathered LIMESTONE. Suspected rockhead.	1,90				
		<u> </u>		End of Trial Pit at 2.10 m	2.10		<u> </u>		
		-				:			
		-							
	***************************************								
				,	:				
			<b>-</b>						
		-							
			•						
			<del>-</del>						
		-							
			•						
		-				<u>                                     </u>	<u> </u>		
	irks and Water ( groundwater encount o wollo remained stati					Fig.		•	
							TP4	·U	

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# TP No. TP41 TRIAL PIT RECORD Sheet 1 of Site: Heighington Lane West, Newton Aycliffe Contract No: C2761 Client: Merchant Developments & Anglo Irish Bank Dates: 20/02/2008 Method: JCB 3CX with 0.60m wide toothed bucket. Scale 1:25 Logged By SAMPLE DETAILS STRATA RECORD Checked By Level (mAOD) PIO (mm) Type Description Depth Legend From -Termi (115) TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field lest). Sand is fine and medium. 0.10m 0.30 Stiff high strength brown slightly gravelly CLAY, (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and rare quartz. 0.50m Stiff medium strength greyish brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, line to coarse of limestone and rare sillstone. 1.50m 75.0 From 1.60m: Rare subangular limestone cobbles. From 2.30m: Gravel includes angular to subrounded, fine to coarse mudstone. 2.50m 102.0 From 2.50m: Becoming high strength. Very weak prange brown LiMESTONE. Completely weathered. Recovered as firm orange brown gravelly clay. (High plasticity - Field test). Gravel is angular to subangular, fine to coarse of 3 50m limestone. End of Trial Pit at 4.00 m

Remarks and Water Observations

No groundwater encountered
 Side walls remained stable during excavation

GL (m AOD) 101.71 Easting:

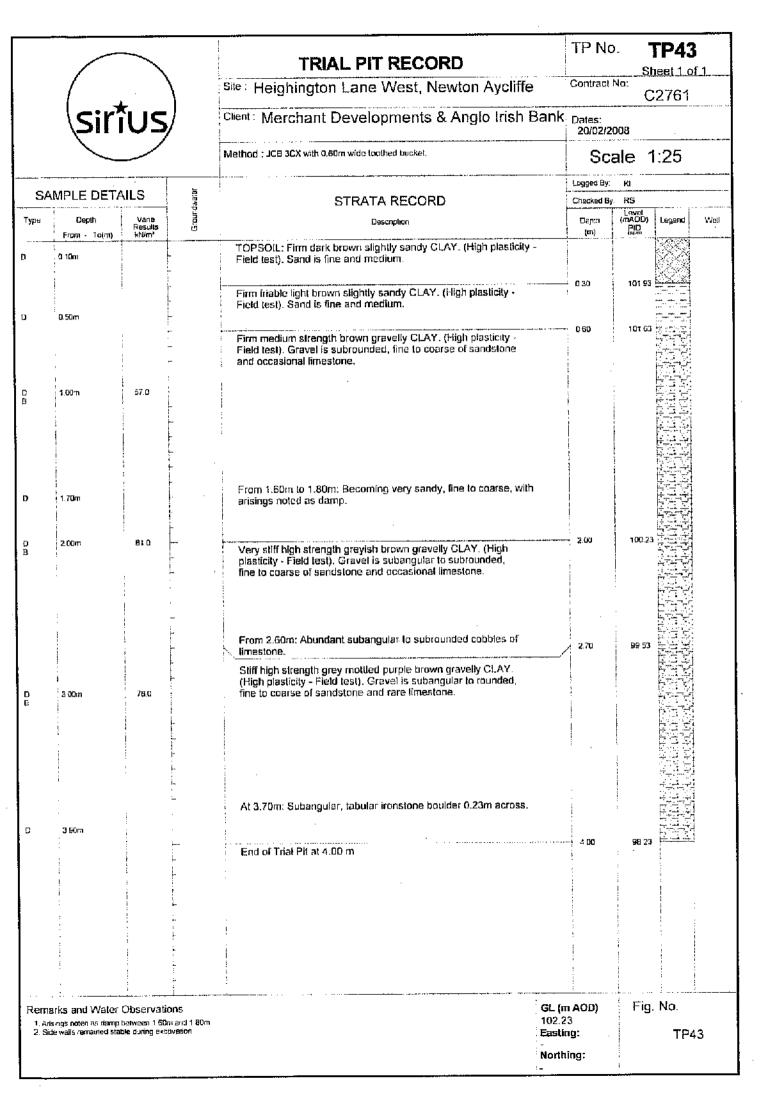
Northing:

TP41

Fig. No.

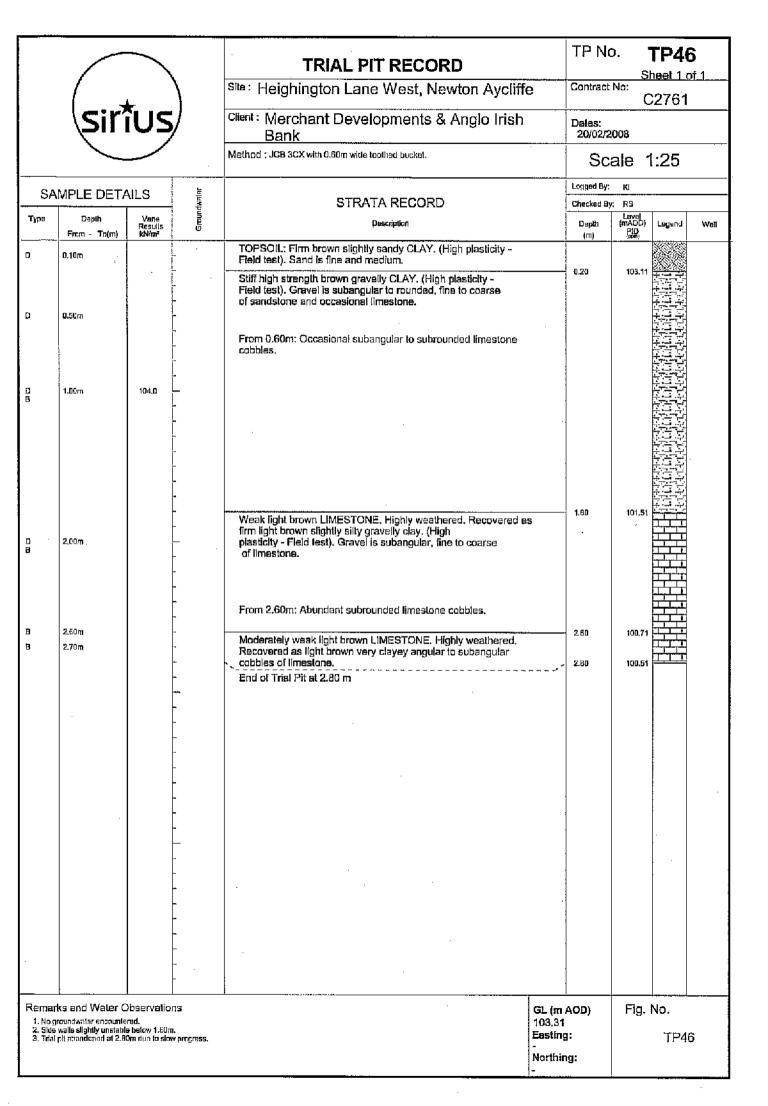
				TRIAL PIT RECORD	TP No		TP42 heet_1_c	
	( .	\ L	\	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761	
	\Sir	โบร	)	Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/2	2008		
				Method : JCB 3CX with 0.60m wide toothed bucket.		ale 1	1:25	
SA	SAMPLE DETAILS		valer	STRATA RECORD	Logged By: CB Checked By: RS			
ypα	Depth	Vane Resulls kN/m²	Groundwaler	Description	Depth (m)	Level (mAOD)	Legend	Well
_	From - To[m] 0.00m - 0.30m	AIWITP	- -	TOPSOIL: Firm brown sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	, ,	I TENT		
	0.30m - 0.95m		<b>-</b> -	Firm medium strength brown sandy CLAY. (High plasticity - Field test).	0.30			
		54.0	· -					
	0.95m - 1.95m		• - -	Firm medium strength brown very gravelly CLAY. (High	0,95			
			<del>-</del> -	plasticity - Field test). Gravel is engular to subangular, medium and coarse of limestone.				
		61,D	- -					
			- - -		5.00			
,	1,95m - 2,20m		_					
ı	<b>2.20</b> a1 - <b>2.45</b> m		- -	Gravel of limestone onto tabular cobbles of limestone. Suspected rockhead.	2,20			
			- -	End of Trial Pil at 2.45 m	_ 2.45			
			- -					
			<del>-</del> - -					
			-					
			-					
			-			1		
		1	 -					
			<u> </u>					
			-					
	arks and Water		ns		ı	Fig.	No.	
1. No 2. Sk	groundwater epecun le walls remained stat	lered. Die during excer	vation.				TP4	2

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			TRIAL PIT RECORD	TP N	o. <b>TP44</b> Sheet 1 o	
	( .	)	<sup>জান</sup> Heighington Lane West, Newton Aycliffe	Contract		
	∖sirौ	ับร	Client : Merchant Developments & Anglo Irish Bank	Dates: 20/02/		
_,			Methad: JCB 3CX with 0.60m wide toothed bucket	Sc	ale 1:25	
SA	MPLE DETA	ILS #	STRATA RECORD	Logged By Checked B		,,
bв	(Depth From - To(m)	Vane Results o	Descapbon	Depth [m]	Level (mAOD) Legand PID	Wal
	0.00m = 0.30m		TOPSOIL: Firm brown sandy CLAY. (High plasticity - Field test). Sand is fine and medium.			
	0 30m + 1.20m	-  -  -  -  -	Firm brown motified yellow and grey slightly gravelly very sandy CLAY. (High plasticity - Field test). Gravel is angular to subangular, medium and coarse of limestone.	030	101 88	
		·				
	1.20m - 1 70m		Firm brown very gravelly CLAY. (High plasticity - Field test). Gravet is angular to subangular, medium and coarse of limestone.	1 <i>2</i> 0	100.93	
	1,70m - 1,80m		Tabular weathered LIMESTONE. Suspecied rockhead. Recovered as: Orange brown slightly sandy very clayer COBBLES. Sand is fine to coarse. Cobbles are angular to subangular of limestone. End of Trial Pit at 1.80 m	1.70 1 BD	100.48	
				:		
		-				
				· ! !		•
	:					
	: : :					
		-		:		
No	rks and Water C groundwaler excuante e walls remained stabil	er <b>ad</b> .	GL (m 102.18 Eastin		Fig. No.	4
			- Northi			

				TRIAL PIT RECORD	TP N	o. <b>TP4</b> Sheet 1			
		. \	١	Sile: Heighington Lane West, Newton Aycliffe	Contrac				
	\sir	îus,		Glient : Merchant Developments & Anglo Irish Bank	Dates: 20/02/		-		
				Method: JCB 3CX with 6.60m wide toothed bucket.	Scale 1:25				
SÆ	MPLE DET	AILS	two:er	STRATA RECORD	Logged By: KI Checked By: RS				
Туре	Depth From + To(m)	Vane Results kN/m²	Graundwater	Description	Depin (m)	Level (mAOD) Legend PID	Well		
	9.10m		·u u.u.	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.			3		
ז	0 50m			Firm grange brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular, fine to coarse of limestone and rare ironstone.	กรเก	99.65			
D fi	1,09m	61.0		Firm medium strength greyish brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is angular to rounded, fine to coarse of limestone, rare coal and rare sandstone. Cobbles are subangular to subrounded of limestone.	0.50	99 35 Republication of the control o			
	:								
	: : :	-		From 1.80m: Cobbles becoming frequent.					
3	2 00m	E0 0 -	-	From 2.00m: Becoming high strength.					
							л л		
D.	3 00 m	950			: : :		5 5 5 6		
		<b></b>					4 1 1 1 1 1		
Ď	5 90m						e 6 5 6 7		
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	End of Trial Pit at 4.00 m	4 00	95 95	Ċ,		
	 		•						
				*			:		
Rema	irks and Water		  )S	GI Im	AOD)	Fig. No.			
1 No	groundwater encount e wai s remained stat	lered		99.95 Eastin	ıg:	TP	45		
				Northi	ng:	!			



		_		TRIAL PIT RECORD	TP N		TP4				
		<b>.</b>	١	Site: Heighington Lane West, Newton Aycliffe	Contrac	t No:	heet 1 o				
	∖Sir	ŤUS	)	Client: Merchant Developments & Anglo Irish Ban	k Dates: 20/02/	Dates: 20/02/2008					
				Method: JCB 3CX with 0.60m wide toothod bucket,	Scale 1:25						
S	AMPLE DET	AILS	dwater	STRATA RECORD	Logged By Checked B						
Туре	Depth From - To(m)	Vane Results kN/m?	Groundwater	Description	Depth (m)	Level (ITACO)	Legend	Weil			
ם	6 10m	-		TOPSOIL: Firm brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine and medium.							
٥	0,50m			Firm orange brown slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subangular, fine to coarse of limestone.	0.25	98 80					
٥	t 02m	61.0		Firm medium strength brown mottled grey gravelty CLAY (High plasticity - Field test) with rare cobbles. Gravel is angular to rounded, fine to coarse of limestone, rare coal and rare sandstone. Cobbles are subangular to subrounded of limestone.	0.60	98 48					
Đ		51.0									
	:			From 1.70m: Cobbles becoming frequent.							
D B	. 2 UU:ne	690	-	From 2.00m: Becoming high strength.							
D B	3 COm			From 3.00m: Becoming friable.							
D	3 90 11			End of Trial Pit at 4.00 m	a dear .	95 08					
 Rema	arks and Water	Observations	5	CI to	n AOD)	Fig.	No.	-ur			
1 No 2 Sa	i groundwater encount de walls remained stal	ered. Ne osing exceva	::on:	99.08 Eastii	ng;		TP47	7			

		TRIAL PIT RECORD	TP N	•	<b>P48</b>		
(	, )	Site: Heighington Lane West, Newton Aycliffe	Contrac	t No:	2761		
∖sir	îUS/	Client: Merchant Developments & Anglo Irish Bank	Dates: 20/02/2008 Scale 1:25				
		Method: JCB 3CX with 0.60m wide toothed bucket.					
SAMPLE DET	AILS	STRATA RECORD	Logged By Checked f				
Type Depth	Vane Results kN/m²	Description	Depth (m)	evel	Legend	Wei	
0.00m 0.25m	-	TOPSOIL: Firm light brown sandy CLAY. (High plasticity - Field test). Sand is fine and medium.		10-7			
0.25m - 1.25m		Firm brown mottled yellow and grey slightly gravelly very sandy CLAY. (High plasticity - Field test), Gravel is angular to subangular, medium to coarse of limestone.	0.25				
1.25m - 2.20m	- - - 44.D	Firm medium strength brown very gravelly CLAY. (High plasticity - Field test). Gravel is angular to subangular, medium and coarse of limestone.	1.25				
2.20m - 2.70m		LIMESTONE. Suspect rockhead. Recovered as: Orange brown slightly sandy very clayey COBBLES. Sand is fine to coarse. Cobbles are angular to subangular of limestone.	2.25				
		End of Trial Pit at 2.70 m	2.70				
			- Listanova et a				
	-						
Remarks and Water  1. Moderate groundwater  2. Side walls remained sta				Fig. I	No. TP4	8	



TP No.

**TP49** 

C2761

Site: Heighington Lane West, Newton Aycliffe

Northing:

Contract No:

Sheet 1 of 1

Client: Merchant Developments & Anglo Irish Bank Dates: 20/02/2008

Method ; JCB 3CX with 0.60m wide toothed bucket,

Scale 1:25

SA	MPLE DETA	NLS .		BTD.T. BTD.T.	Logged By KI				
	T		Вфр	STRATA RECORD	Checked By				
Туре	Depth From To(m)	Vane Results kN/m²	Greindwater	Description	: Depth (m)	Leve! (niAOD)	Legend	Wei	
	0.10m	·	-	TOPSOIL: Firm brown slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subrounded, fine to coarse of limestone.		1			
<b>)</b>	4:50m	- - - -	-	Firm medium strength brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of limestone, occasional siltstone and rare coal.		98.39			
)	1. <b>00</b> m	430	• • •			:			
		-	- -	From 1.60m; Frequent subrounded cobbles of sandstone and rare sittstone.					
3	2 00m		 	From 1.80m: Becoming stiff and friable.		:			
			• • •						
) ā	3 00kn		- -						
					A 400 - 100				
ם	3 99m		,  -	End of Trial Pit at 4,00 m	4 00	94 79			
			-  		,				
	rks and Water C		-  18	GL	(m <b>AOD)</b> 79	Fig.	No.	<del></del>	

( , )			Sheet 1	o <u>f 1</u>			
· · · · · ·	Site: Heighington Lane West, Newton Aycliffe	Contract	No: C2761				
\sir <b>î</b> us/	Client: Merchant Developments & Anglo Irish Bank	Dates: 21/02/2008					
	Method: JCB 3CX with 0.60m wide toothed bucket.	Scale 1:25					
AMPLE DETAILS	STRATA RECORD	Legged By: Checked By					
Depth Venus Results States	Description	Depth (m)	Level (mAOD) Legend PID	Well			
D.00m - 0.28m	MADE GROUND; Firm brown sandy gravelly CLAY. Gravel includes ash and some brick.						
0.26m ~ 0.56m	MADE GROUND: Cobbles of timestone set in a bed of angular to sub angular fine to medium ash and fine to medium brick.  (Possible farmyard)	0.28					
0.50m - 1.50m -	Firm medium strength orange brown sandy CLAY. (High plasticity - Flatd test).	u.au					
-							
62.0			<u> </u>				
		- 1,50		 			
1.50m - 1.85m -	Firm brown very gravelly CLAY. (High plasticity - Field test). Gravel is angular to subangular, medium and coarse of limestone.						
1.85m - 2.85m	Moderately weak light brown LIMESTONE. Moderately weathered. Recovered as light brown very clayey angular to subangular cobbles of limestone.	1.B5					
-							
•	End of Trial Pit at 2.65 m	- 2.85		† † †			
-							
	•						
narks and Water Observations to groundwater encountered.			Fig. No.				



TP No.

**TP51** 

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank

Dates: 20/02/2008

Northing:

SA	MPLE DETA	AILS	旨	PTDATA BEOODS	Logged By:			
ype	Depth	Vane	Greundwater	STRATA RECORD Description	Checked 8	Level (mADD)	Logend	We
	Fran - To(m)	Results kN/m²		TOPSOIL: Firm dark brown slightly sandy CLAY. (High plasticity -	<u>(m)</u>	[70m] [70m]	200	
	O 10m	-	-	Field test). Sand is fine to coarse.				
	0 40m	     		Stiff brown slightly sandy CLAY. (High plasticity - Field (est). Sand is fine to coarse.	030	96 86		
			· · · ·	Stiff high strength closely fissured brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of limestone, occasional slitstone and rare coal.	0.53	96.65		
	1 00m	A50 -	<del>-</del>					
	 					:		
			• -	Greyish brown sandy very clayey GRAVEL. Sand is fine to coarse. Gravel is subangular to rounded, fine to coarse of siltstone and occasional sandstone.	1 70	95 45 :		
	2.00m -		_	And the second of the second o		:		
			· -		2.60	94 55		
	2.70m			Very stiff high strength greyish brown gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of limestone, occasional sillstone and rare coal.				
	: : : : : : : : : : : : : : : : : : : :	97.0	<u>.</u>					
		:	· ·	From 3.40m: Frequent subangular to subrounded cobbles of sandstone and rare limestone.				
	3 70m				**   *   *   *   *   *   *   *   *   *			
			<u>.</u>	End of Trial Pit at 4.00 m	4.00	93 15		
					! ! !			
	:							
	<u> </u>				<u> j</u>	!		

			•	TRIAL PIT RECORD	TP No		ГР52 1eet 1 c		
		`	\	Site: Heighington Lane West, Newton Aycliffe	Contract	Na:	2761	·	
	√sir'i	<b>N</b> S	)	Client: Merchant Developments & Anglo Irish Bank	Dates: 21/02/2				
		_/		Method: JCB 3CX with 0.50m wide toothed bucket.	Scale 1:25				
SA	MPLE DETA	All S	į.		Logged By:				
урв	Depth	Vano	Groundwater	STRATA RECORD	Checked B		Legend	We	
, p.o	From - To(m)	Results kN <i>i</i> or	5	Description	Depth (m)	Leval (mAOD) PID Hemi	regend	YV P	
	0.00m = 0.10m 0.10m = 0.30m		-	MADE GROUND: Firm brown sandy CLAY with some ash, brick and clinker.	0.10	3			
	<b>0.30</b> m <b>- 0.6</b> 0m		- - -	MADE GROUND: Loose redish grey GRAVEL. Gravel includes angular to sub angular medium to coarse brick, state, limestone cobbles. Fibres noted on broken edges of roof tiles. (Suspected asbestos)	0.30				
	0,60m - 1,60m		- - -	MADE GROUND: Light brown sandy gravelly CLAY. Gravel includes brick and some charcoal. Roots noted					
			<del>-</del> - -	Firm medium strength brown sandy gravelly CLAY. Gravel is angular to subrounded of sandstone.	0.90	***			
	**		_ 						
	1.80m - 2.20m		<u>-</u> -						
		61.0	_		100				
	2,20m - 3,40m	T. Lawrence and T. Lawrence an	- -	Moderately weak light brown LIMESTONE. Moderately weathered.	2.20				
			<b>-</b> - -						
			_	Yellow tabular weathered LIMESTONE. Suspected rockhead.	3.20				
	***************************************		_ _ _ _	End of Trial Pit at 3.40 m					
			:- 						
			- - -			range (			
			-						
	arks and Water	Observation	ons			Fig.	No.		
1. No	groundweter encount te walls tempined stat of thes suspected to c	ered.		sken oʻ jiles and soll.		l ig.	TP5	52	



TP No.

**TP53** 

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 20/02/2008

Method ; JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

SA	MPLE DETA	AILS	<u>:</u>	OTDATA DECODO	Logged By	KI		
	7	STRATA RECURD		STRATA RECORD	Checked By			
Гур€	Depth From - To(co)	Vane Results kN/m²	Gra	<b>D</b> escription .	Depth (m)	Leve! (m/ADD) PID:	Legend	W
1	0 10m		-	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field	N9			.,.,.
	1		-	test). Sand is fine and medium.	!			
	!		. <u>.</u>					
	]		-	Firm light brown mottled grey slightly gravelly CLAY. (High	D40	99 08		
)	0 50m		_	plasticity - Field test). Gravel is subangular to subrounded, fine and medium of siltstone, rare limestone and rare coal.	:			
	1		<u>-</u>		<b> 0</b> ,70	<b>9</b> 7 78		
	•	•	-	Firm medium strength brown gravelly CLAY. (High plasticity – Field test). Gravel is angular to subrounded, line to coarse of				
			-	limestone, occasional siltstone and rare coal.				
	1.09m	780	-					
			-					
			-	:				
			<u> </u>					
			_	:				
			-	From 1.70m: Becomes friable.				
		1	-				문교리	
	2.00m		-					
			_					
				: ! !				
		1	-					
-		[ ]	-				날	
			•					
			-					
	3.00m	ì						
			_		}			
			•					
		1	-					
	:		-	End of Trial Pit at 3.50 m	3.50	94 98		
		j. T.	<del>-</del> -					
	:						 	
	:	ĺ						
			- -					
	·	ļ	-					
		ļ						
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		İ	-					
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		. [		• •	i		į	

Remarks and Water Observations

No groundwater encountered
 Side walls remained stable during excavation
 Trial pit abandoned at 3 50m due to instability.

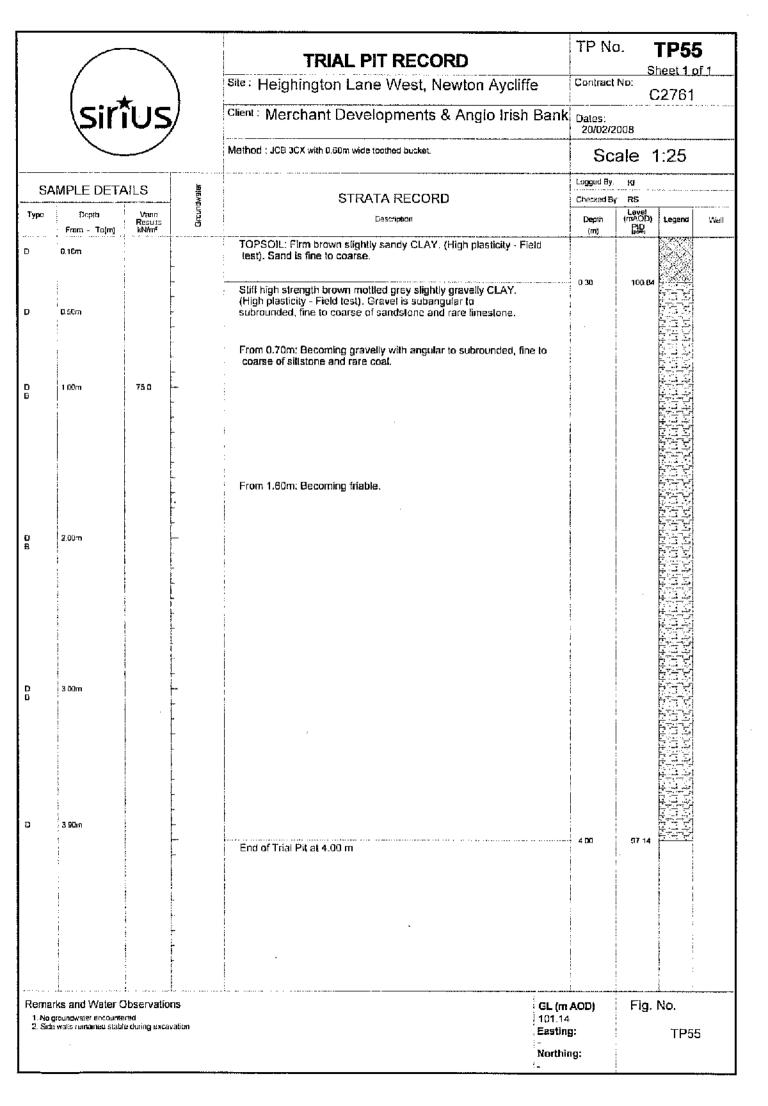
GL (m ADD) 98.48 Easting:

Fig. No.

**TP53** 

Northing:

		•		TRIAL PIT RECORD			TP54			
		, )	١	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761			
	∖sir'	<b>โ</b> บร/		Client: Merchant Developments & Anglo Irish Bank	Dates: 21/02/2008					
				Method: JCB 3CX with 0.60m wide foothed bucket.	Scale 1:25					
SAN	MPLE DETA	AILS			Logged By: CB					
Тура	Depth	Vans	Groundwaler	STRATA RECORD	Checked By: RS  Level (mAOD) Legend			Well		
	From - To(m)	Results kN/m²	ច	Description	(m)	Lavel (mAOD) PID Emi	regeno	weii		
				TOPSOIL: Firm brown sandy CLAY.(High plasticity - Field test). Sand is fine and medium.						
3	0.30m - 0,85m	  -  -		Firm yellow brown with grey vains sandy gravelly CLAY. (High plasticity - Field test). Gravel is angular to subangular, fine and medium of sandstone and limestone.	- 0.30					
	0,85m + 1.00m	- - -		Grey clayey SAND and GRAVEL. Gravel is subangular to subrounded, medium to coarse of sandstone and mudstone.	- 0.85					
3.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4		- - - - -		Contains pockets of firm fissured reddish brown very gravelly CLAY.	- With a state of the state of					
3	1,80m -2.50m	68.0 - - -	-	Firm medium strength greyish brown very gravelly CLAY. (High plasticity - Field test). Gravel is subrounded to rounded, medium and coarse of mudstone and sandstone.	1.80					
				End of Trial Pit at 2.50 m	- 2,50					
:		  -  -	-							
		- - -								
		- -								
;			-							
	,	-  -  **								
		  -  -		· .						
		ļ~								
Remark	s and Water (	Observation	<u>-</u>		<u> </u>	Fig.	⊥ No			
1. No gr 2. Side v	pundwater encounts walls remained stabl alt abandoned et 2,5	ared, le during excava	inn.			l ig	TP5			



				TRIAL PIT RECORD	TP No		TP56	
		_ \	1	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761	
	\sir	<b>โ</b> บร/		Client: Merchant Developments & Anglo Irish Ban	k Dates: 22/02/2	···································	, E T U	····
				Method: JCB 3CX with 0.60m wide toothed bucket.	<del></del>	ale '	1:25	<del> / \ ***</del>
SA	MPLE DETA	AILS	<u> </u>	OTDATA DECODE	Logged By			
Туре	Оеріл	Vane Results	Grounciwater	STRATA RECORD Description	Checked B	Level (mAOD)	Legend	We
. <u>.</u>	From + Ta(m) 0 10m	kN/m²		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	<u>(</u> सा)			<u></u>
	0.50m	  -  -  -  -  -  -  -  -		Firm orange brown slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subangular, fine to coarse of limestone and rare sandstone.	0.35	94.01		
		<u> </u>		Greyish brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of sandstone and rare limestone.	0.63	93 75		
<b>3</b>	160m					A LA LA LA LA LA LA LA LA LA LA LA LA LA		
) •	2 00m			Stiff friable grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of limestone.	1.80	92.56		
) 3	3.00m							
		73.0		From 3.50m: Becoming slightly friable with high strength.				
ס	3 90m		_	End of Trial Pit at 4.00 m	4.00	90.36		
	-		-					
		1		· :				 
i Nas	irks and Water groundwater encount e walls remained state	tered.		94.: Eas -	(m AOD) 36 ting: thing:	Fig	. No. TP5	56

				TRIAL PIT RECORD	TP N		TP57		
	(	<u>.</u> \	1	Site: Heighington Lane West, Newton Aycliffe	Contract No: C2761				
	\sir	ŤUS/	)	Client: Merchant Developments & Anglo Irish Bank	,				
				Method : JCB 3CX with 0.60m wide toolhed bucket.	Scale 1:25				
SA	MPLE DET	AILS		STRATA DECORD					
Туре	Depth	Vang	Graundwater	STRATA RECORD	Checked 8	y: RS l,evel (mAOD)			
D.	From To(m)	Results kN/m²	<u></u>	TOPSOIL; Firm brown slightly sandy CLAY. (High plasticity - Field lest). Sand is fine and medium.	Depth (m)	PID	Legand We		
				rest, sand is one and medicin.					
D	0.50m			Firm orange brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and rare limestone.	9.40	101.26			
				Stiff high strength slightly friable reddish brown mottled grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.	0.65	101.03			
D B	1. <b>D</b> 0n1	79.0							
D B	2.00m		-	Very stiff friable grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of limestone and occasional sandstone.	1.690	99.98			
)	3. <b>00</b> m								
š	Stan	.1. 1.	,	·		:			
<b>)</b>	3.70m					:			
-				End of Trial Pit et 3.80 m	380	97.8B			
				·					
	and the second management of the second seco					:			
		<u> </u>			!				
1 No ç	rks and Water ( proundwater encourse walls remained stabl	ered		GL (m 101.68		Fig. I			
		gr arrange tal	•	Easting - Northin		 	TP57		



Remarks and Water Observations

No groundwater encountered
 Side walls remained stable during excavation

#### TRIAL PIT RECORD

TP No.

**TP58** 

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 22/02/2008

GL (m AOD) 95.39

Easting:

Northing:

Fig. No.

TP58

		,		22/02/2008						
				Method 13CB 3CX with 0.60m wide toothed bucket.	Sc	ale 1	:25			
SA	MPLE DETA	AILS	ij		Logged Hy:	кі				
	I	·	Grevudwaler	STRATA RECORD	Checked By					
Type	Depth From - Tolm)	Vane Results kN/m²		Description	Depth (m)	Level (mADD)	Legend	Wall		
D	Ð.19m	:	- -	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.						
ם	0.55m		- •	Firm friable brown gravelly CLAY (High plasticity - Field test) with rare cobbles. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular of limestone.	030	95 09				
û a	1.00m		- - - -							
			-							
B	2 00m	52.0	- - -	From 2.00m; Becoming slightly friable.  At 2.20m; Subangular, tabular sandstone boulder 0.45m across.	The state of the s					
0 5	3.00m		· - - -	Stiff friable greyish brown gravelty CLAY (High plasticity – Field test) with rare cobbles. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone: Cobbles are subangular of timestone.	270	92.69				
,			- - - -							
D	] 90m		-	End of Trial Pit at 4.00 m	4 03	<b>91.39</b>				
			-							



TP No.

**TP59** 

C2761

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1

Client: Merchant Developments & Anglo Irish Bank Dates: 22/02/2008

Method: JCB 3CX with 0.50m wide toothed bucket.

Soolo 1:25

				Method : 3CB 3CX with 0.50m wide loothed bucket.	Scale 1:25				
SAMPLE DETAILS			<b>∦</b> 211€:	STRATA RECORD	Loggad By. Kg Checked By: RS				
Туре	Depth From - To(m)	Vane Results kN/m²	Groundwater	Description	Creeked B Cepth (m)	Level (mAOD)	Legend	₩el	
3	O 10m			TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.  Stiff high strength reddish brown mottled grey slightly grayelly.	030	100.77			
	<b>0</b> 50m	1		Stiff high strength reddish brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of sandstone, occasional limestone and rare coal.	:			-	
	1.00m	1200	-						
	2 90m	436	_	Firm medium strength slightly friable brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular to subrounded of limestone and rare sandstone.	- 1 5.BO	99.27			
	3 09m	-     	-	From 3.00m; Becoming friable.					
		:							
	4 10 ш			End of Trial Pit at 4.20 m	420	5 <b>6 8</b> 7			
emar	ks and Water O	bservations	5 ·	GL (m	ΔΩΤ\	Fig.	No.	. <del></del>	

No groundwater encountered.
 Side walls remained stable duting excavation.

GL (m AOD) 101.07 Easting:

Northing:

Fig. No.

**TP59** 



TP No.

**TP60** 

Contract No:

Sheet 1 of 1

Site: Heighington Lane West, Newton Aycliffe

C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 22/02/2008

Method: JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

SAMPLE DETAILS		₩.		Logged By: KI					
		HEG	dwel	STRATA RECORD  Description	Checked By: RS				
fypa	Depth From - To(m)	Vane Results kN/m²	Groundwater		Dapth (m)	Level (mAOD) (,egend PID (44-1)	Well		
	0 <b>1</b> 0m		<del>-</del>	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.					
0	0 50m		- - - -	Firm orange brown gravelly CLAY (High plasticity - Field test) with rare cobbles Gravel is subangular to rounded, fine to coarse of firnestone and occasional sandstone. Cobbles are subangular of sandstone.	0.30	94 35			
0 B	1.00m :	46.0		Firm medium strength slightly friable brown slightly sandy gravelly CLAY (High plasticity - Field test) with occasional cobbles. Sand is fine to coarse. Gravel is angular to subrounded, fine to coarse of sandstone and occasional limestone. Cobbles are subangular to subrounded of sandstone and rare limestone.	E 50	93 75 (1.1.5) (1.1.5) (1.1.5) (1.1.5) (1.1.5) (1.1.5) (1.1.5)			
			-	From 1.40m: Becoming stiff.	:				
<u>ດ</u> ສ	2 COm	102 0	- - - - -	From 2.00m; Becoming high strength.					
a	3.00m		-	From 3.00m: Becoming friable.					
ם	. 3 90m			End of Trial Pit at 4.10 m	4 10	90 55			
	· :		- - - - :						

Remarks and Water Observations

No grountwater encountered
 Gide wats remained stable during excavation

GL (m AOD) Fig. No. 94.65

Easting:

TP60

Northing:

				TRIAL PIT RECORD	TP N		TP6'		
sirtus)			\	Site: Heighington Lane West, Newton Aycliffe	Sheet 1 of 1 Contract No: C2761  k Dates: 22/02/2008				
			)	Client: Merchant Developments & Anglo Irish Bank					
				Method : JCB 3CX with 6 50m wide toolhed bucket.	ale	le 1:25			
SAMPLE DETAILS			Yeler	STRATA RECORD	Logged By. KI Checked By. RS				
Туро	Depth From - To(m)	Vane Results kN/m²	Gaure	Description	Depth (m)	Level (mADD)	Legend	VVell	
D	0 10:т			TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.					
D	0 50m		•	Stiff high strength reddish brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular to subrounded, fine to coarse of limestone and occasional sandstone.	<b>+ 0 4</b> 0	99 54			
<b>D</b> ឆ្	1 <b>6</b> 0m	82.0 -	_						
D 6	1.50m	55.0		Firm medium strength slightly friable brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.	1 20	98.74			
	-   		- - -						
		-	•	From 2.10m: Becoming friable.		·			
ם	<b>2.50</b> m		-						
			· · ·	: :					
	C C C C C C C C C C C C C C C C C C C		•		!				
D	3.50m								
				End of Trial Pit at 4.00 m	400	85.94			
				: : : :					
						:			
Remarks and Water Observations  1. No groundwater encountered  99.94					AOD)	Fig.	No.		
2 Side walls remained stable during excevation Easting - NorthIn							TP6	1	
		·		i Northi	.p.				



TP No.

**TP62** 

C2761

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1

Client: Merchant Developments & Anglo Irish Bank

	Sir	iUS	/	Client: Merchant Developments & Anglo Irish Ban	k <sub>Dales:</sub> 21/02/	2008		
· · · · · · · · · · · · · · · · · · ·				Method : JCB 3CX with 0.60m wide loothed bucket.	Sc	ale 1	1:25	
SA	AMPLE DETA	AILS	alei.		Loggest By	. кі		
	T	<u> </u>	Grcundyalai	STRATA RECORD	Checked E			
Туре	Depth From - To(m)	Vane Results NN/nF	. <b>6</b> 	Description	Depth (m)	Level (mAOD) P:D	Legend	Well
ט	; O 10m	\$	- ·	TOPSOIL: Firm brown slightly sandy CLAY. (High plastfelty - Field test). Sand is fine and medium.				
ם	0 <del>6</del> 0:n		- -	Firm orange brown motiled grey slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is angular to subrounded, fine to coarse of limestone, occasional sandstone and rare siltstone.	0.55	97.73		
D B	1.60m	610	- - - -	Firm medium strength brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular to subrounded of limestone.	9.90	97.38		
08	2 00ar.	40.0		Stiff high strength grey gravelly CLAY (High plasticity - Field test) with rare cobbles. Gravel is subangular to rounded, fine to	260	95 68		
, D	3 70m	120 0		coarse of sandstone and occasional limestone. Cobbles are subrounded of sandstone.				
	:			End of Trial Pit at 4.00 m	400	94.28		

Remarks and Water Observations

No groundwater encountered
 Side waits remained stable during excavation.

GL (m AOD) 98.28 Easting:

Northing:

Fig. No.

TP62

				TRIAL PIT RECORD	TP N		TP63	
	1	<b>.</b> \	١	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761	
	\sir	îUS	)	Client: Merchant Developments & Anglo Irish Ban	k <sub>Dates:</sub>			
				Method : JCB 3CX with 0.50m wide toothed bucket.	Sc	ale 1	1:25	
SA	MPLE DETA	AILS	aler.	STRATA RECORD	Logged By:			
Туре	Septh	Vace Results	Greentwater	Description	Checked B	Level (mAOD)	Legand	
 D	From - To(m)	kN/m²		TOPSOIL: Firm brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine and medium.	(m)	PID (see)		
b	0.56m			Shif high strength reddish brown mottled grey slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	0 40	150.83		
D 0	1. <b>00</b> m	107.0	-	The state of the s				
D B	2.06m	129.0	-					
D	3 Odin	1200						
D B	3 <b>6</b> 0m				:			
				End of Trial Pit at 3.90 m	390	97 23	PT-TAG	
	*							
	and the state of t					 		
1 Nog	ks and Water C roundvater encounte walls remained stabil	rea		101.2		Fig.		
e- 01 UE	жана ганипа <b>сь 5,40</b> 0	८ कालसु स्टब्स्ट	adi i	Easti		  -  -	TP63	<b>,</b>
				North	ing:	:		

				TRIAL PIT RECORD	TP No		TP64	
		•	)	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	C2761	•
	\Sir'	โปร	)	Client: Merchant Developments & Anglo Irish Ban	K Dates: 21/02/2	008		
		_/		Method: JCB 3CX with 0.60m wide toothed bucket.	Sc	ale	1:25	
SA	MPLE DETA	AİLS	Water	STRATA RECORD	Logged By. Checked By	KI RS		
ype	Depth From Telsa)	Vane Results NVm*	Graundwater	Cescription	Depth	Level (mACD	) Legend	We
	Ó 10m		-	TOPSOIL: Firm brown slightly sandy CLAY, (High plasticity - Field test). Sand is fine to coarse.	(m)	i tayad		
	0 50m	-	- - -	Firm brown mottled grey slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	0.30	97.13		
			-	Firm grey mottled brown slightly gravelly CLAY. (High plasticity - Field test). Gravel is subangular, fine and medium of limestone.	0.60	. <b>95</b> 63		
	1.00ss		<del>-</del> - -	Firm orange brown slightly gravelly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse. Gravel is subrounded, fine to coarse of sandstone.	110	95 33		
	1.50m		- -	: : : : :				
	2.0cm	GG O	<del>-</del>	Firm medium strength grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone,	1.93	95 53		
	2.50m		. <u>\$</u> 2	Brown clayey sandy GRAVEL, Sand is fine to coarse. Gravel is subrounded to rounded, fine to coarse of sandstone and rare timestone.	2.30	95.13		
			-	End of Trial Pit at 2.70 m	; <b>2</b> .70	94.73		
			<del>-</del>					
		P	· ·		MANUFACTOR IVA			
			- -					
			-					
	is and Water C groundwater saepa wats unstable throug it abandoned at 2.70			97.43		Fig.	No.	
i riat p	nit abandoned at 2.70	Örn due to insta	blity	Eastir - North			TP64	

				TRIAL PIT RECORD	TP N		TP6	
	1	, \	١	Site: Heighington Lane West, Newton Aycliffe	Contrac	t No:	2761	
	\sir	<b>î</b> US	)	Client: Merchant Developments & Anglo Irish Ban	K <sub>Dates:</sub> 21/02/		IUI	
	SITTUS  MPLE DETAILS  Depth Vane Results From - To(in) KN/m²  D 10m  1 00m  44.0		Method ; JCB 3CX with 0.60m wide toothed bucket.	Sc	Scale 1:25			
S	AMPLE DET	Depth Vane Results From - To(in) Pulm?  D 10m  D.50m  44.0	weler	STRATA RECORD	Logged By Checked B	<del></del>		
Гуре	i	Vane Results	Groundwater	Description	Deprin	Level	Legend	Wal
		KNIm?		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.	[m}	PID.		to disent
	D.50m			Firm orange brown gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of limestone and occasional sandstone.	D.35	95.05		
	1 00m	44.0		Firm medium strength slightly friable brown mottled grey gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is angular to subrounded, fine to coarse of limestone, occasional sandstone and rare coal. Cobbles are subangular to subrounded of limestone and rare sandstone.	0.90	94.50		
	2.00m	780	-	From 1.70m: Cobbles becoming frequent.  From 2.00m: Becoming stiff and high strength.				
	3 00m			From 3.00m: Becoming friable.	CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR			
	3 90m			End of Trial Pit at 4.00 m	4 00	91.40		
	: : : : : : : : : : : : : : : : : : : :							-
	vice and history	)				<u></u>	       	<del></del>
n Ne i	rks and Water ( groundwater encount e walls remained state	ered		GL (π 95.40 Eastir - North	ıg;	Fig.	No. TP68	š



No groundwater encountered
 Side walls ramained stable during excavation

### **TRIAL PIT RECORD**

TP No.

**TP66** 

C2761

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1

Client: Merchant Developments & Anglo Irish Bank Dates:

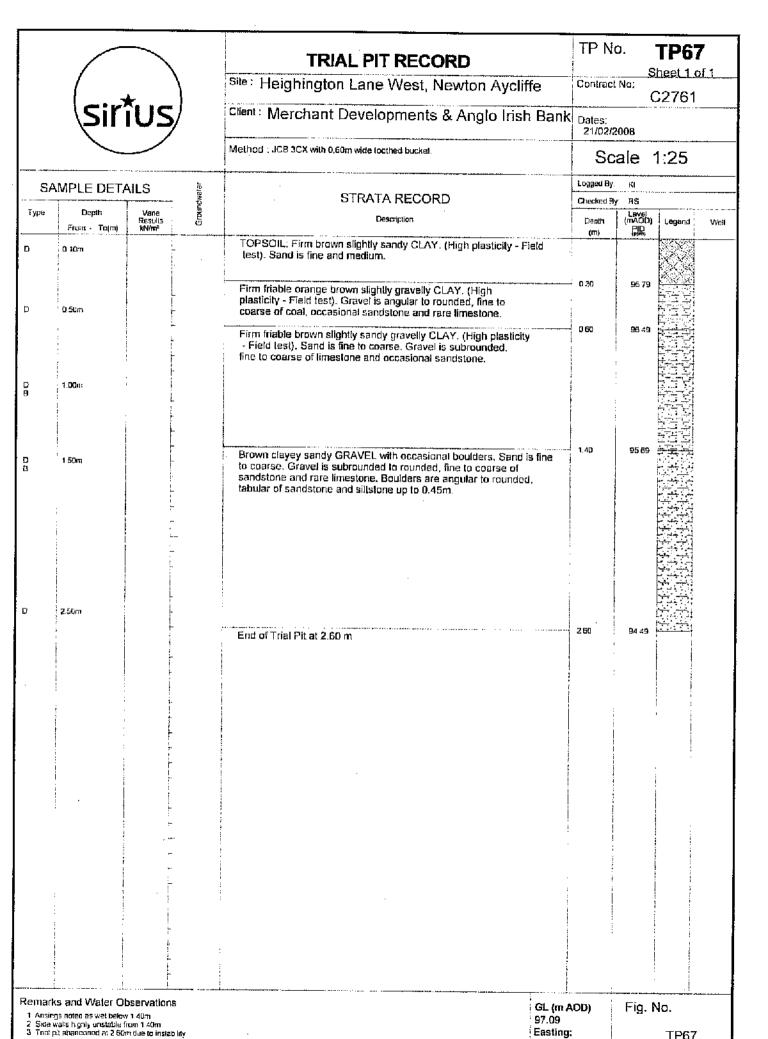
22/02/2008

98,40 Easting:

Northing:

TP66

				: Method : JCB 3CX with 0.60m wide toothed bucket.	Sc	ale 1	1:25	
SA	MPLE DETA	All S	<u>ā</u>		Logged By:	ю		
	T		EMPL	STRATA RECORD	Checked 6	•		
Type	Depth From - To(ist)	Vane Results kN/m²	Groundwaler	Description	Depth (#1)	Level (mAQD) PID	Legend	<b>V</b> /
1	0 10m	- -		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.	3			
	0.50m	33.0		Firm medium strength slightly friable sandy gravelly CLAY. (Fligh plasticity - Field test). Sand is fine to coarse. Gravel is angular to subangular, fine to coarse of sandstone.	040	96 00		
	: 1 00m	230	<del>.</del>	Soft low strength brown very gravelly CLAY. (High plasticity - Field test). Gravel is subangular, fine to coarse of limestone and occasional sandstone.	O 80	97.63		
	5 tcm	154.G	-	Stiff high strength greyish brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subangular to subrounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular to subrounded of sandstone.	2.03	96.40		
	3 1Gm	-	-			:		
	3.50m	120.Q ·		Stiff high strength gray gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of sandstone and rare limestone.	340	95.00		
			-	End of Trial Pit at 4.00 m	4 80	94.40		
		.  -			The second secon			
	ks and Water O		s	· <b>GL</b> ()	n AOD)	Fig.	No.	



**TP67** 

Northing:

				TRIAL PIT RECORD	TP No		TP68	
			)	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	C2761	
	∖sir	ĩUS		Client: Merchant Developments & Anglo Irish Bank	Dates: 21/02/2			
· · · · · · · · · · · · · · · · · · ·		/	······································	Method: JCS 3CX with 0.50m wide tootned bucket	Sc	ale	1:25	v. n
S/	AMPLE DET	AILS	waln	STRATA RECORD	Loggad By.			
Туре	Depth	Vane Results	Groundwale	Description	Checked By Dapth	Level (mAGD)	Legend	w
	From • Ta(m)	. klu/m²	-	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	(ম)			
מ	: : 0 20m		-	Firm orange brown slightly sandy slightly gravelly CLAY. (High plasticity - Field test). Sand is fine and medium. Gravel is subangular to subrounded, fine and medium of limestone and rare	0.20	97.78 97.58		
ם	0.50m		- -	sandstone.  Firm medium strength brown gravetly CLAY (High plasticity - Field lest) with occasional cobbles. Gravet is subangular to subrounded, fine to coarse of limestone and rare sandstone.  Cobbles are subangular of limestone.				
i i	1.06m	43.0	·					
				Brown slightly clayey sandy GRAVEL. Sand is fine to coarse.	1.90	95.08		
	2.00m			Gravel is subrounded to rounded, fine to coarse of sandstone and rare limestone.				
			- - -	End of Trial Pit at 2.80 m	2.60	95.16		
	:	: 	-					
					:			
	:							
	. :		-		:			
		)						
	:	<u> </u>	<del></del>					
1. Stror 2. Side	ks and Water C aggroundwater seep walls highly unstable pri abandoned at 2.6	age noted from from 1.90m	1 90m	GL (m A 97.98 Easting: Northing	:	Fig.	No. TP68	



No groundwaler encountered.
 Side walls remained stable during excavation.

### TRIAL PIT RECORD

TP No.

**TP69** 

Sheet 1 of 1

Site: Heighington Lane West, Newton Aycliffe

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 22/02/2008

97.05 Easting:

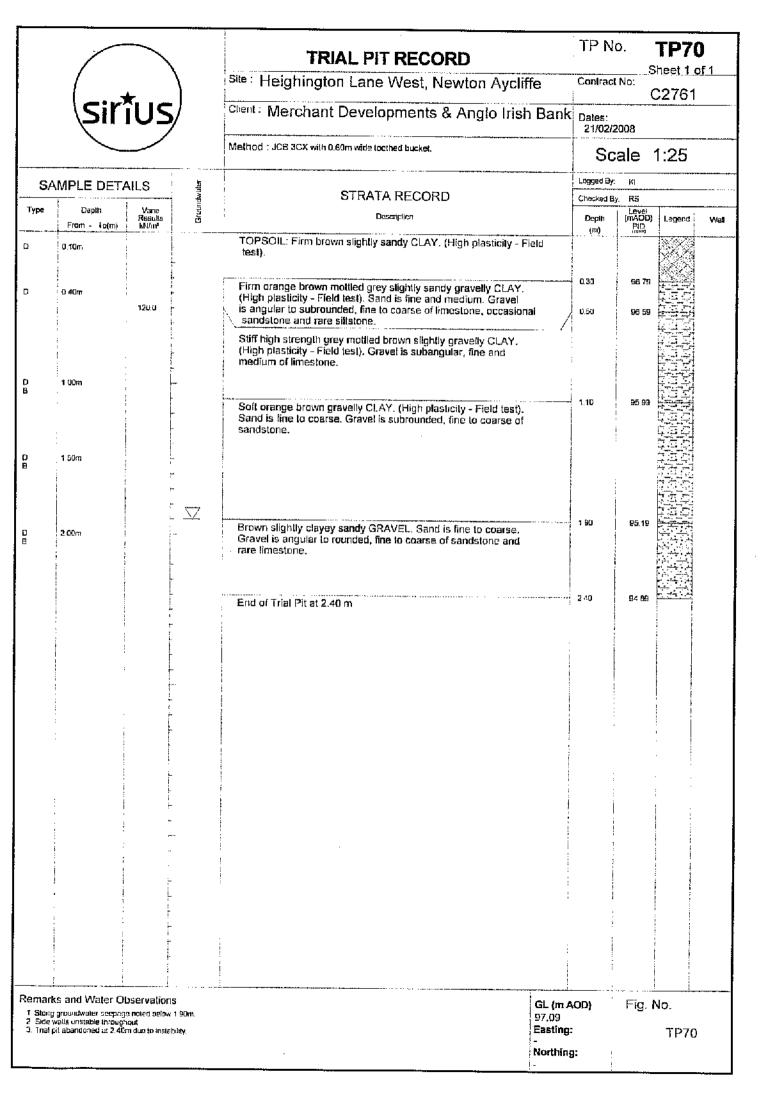
Northing:

**TP69** 

Method: JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

	······	Depth Vana G		:	Ocale 1.20					
SA	E-50m Results kN/m²  0 10m  1 00m  2 00m  84 II	AILS	aler	CTRATA DECORD	Logger By:	ки				
Туре	1	Vane Results	Groundw	STRATA RECORD Description	Checked By	Leves (mAOD)	ređang	w		
- <del></del> -		kidhin.	-11013	TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is line and medium.	(#T)	PID				
	B.50m			Firm friable brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is angular to subrounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular to subrounded of sandstone and occasional timestone.	0.35	96 70				
	1 00m		-							
				From 1.40m: Becoming stiff and slightly friable.						
		840 :-		From 2.00m: High strength.	THE CONTROL OF THE CO					
				Stiff friable greyish brown gravelly CLAY. (High plasticity - Field test). Gravet is angular to subrounded, fine to coarse of sandstone and occasional limestone.	240	94.65				
	3 00m				:					
	de dan de la companya	+								
	3 70m	1200		Very stiff high strength dark grey gravelly CLAY. (High plasticity - Field test). Gravel is angular to subrounded, fine to coarse of limestone and occasional sandstone.	360	<b>93 45</b>				
	· · · · · · · · · · · · · · · · · · ·		:	End of Trial Pit at 4.20 m	420	92 85				
emar	ks and Water Q	bservations		i co	m AOD}	Fig. I	Ma			





TP No.

**TP71** 

Sile: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 21/02/2008

Method : JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

		<del></del>			50	ale 1	1:25	
SA	MPLE DETA	AILS	超		Logged By	кі		
уре	: Doreth	1	Graundwater	STRATA RECORD	Chackad B		·	
	Depth From - To(m)	Vane Results kN/m²	ğ	: Description :	Depth (m)	Level (mAOD) PID	Legeno	V
	O TOm	-		TOPSOIL: Stiff brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.		: : :		
	C 50m	1		Firm slightly friable orange brown mottled grey slightly sandy gravelly CLAY. (High plasticity - Field test). Sand is line to coarse. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.	0 35	95.54		
	1 00m	BD.0		Firm high strength brown motiled grey gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.	—: 070	95 19		
		, who was a second of the seco						
	2 DOkn	59.0		From 2.00m: Becoming medium strength.				
	3 COm	52.0		Firm medium strength grey very gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subengular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular of completely weathered limestone and occasional sandstone.	<u>270</u>	93.19		
		}						
	4 00m			End of Trial Pit at 4,20 m	4.20	91.69		
		-	:			· 1	:	
			i		!		<u> </u>	

Remarks and Water Observations

No groundwater encountered
 Side walls remained stable during excavation

GL (m AOD) 95.89 Easting:

Fig. No.

Northing:

TP71



Site: Heighington Lane West, Newton Aycliffe

TP No.

**TP72** Sheet 1 of 1

Contract No:

C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 22/02/2008

Northing:

Melhod: JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

SA	Firm Toylo Pieses Company Comp							
Гуре		Vane	Water				15====	
		KUIII		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field		F10	Legalo I	W
	D 60:n			Soft, locally firm, low strength slightly gravelly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse, Gravel is angular to subrounded, fine to coarse of sandstone and	<b>u.5</b> 0	95 17		
	<b>1 D</b> Ωτη.	250			* 1000 A A			
	1.50m	66 D	-	Field lest). Gravel is subangular to rounded, fine to coarse of	1 40	94.27		
	2.5 <b>0</b> m	44.0	-		3 10	52.57		
	7.50-		:	as firm light brown gravelly clay. (High plasticity - Field lest). Gravel is angular to subangular, fine to coarse of	ered			
				End of Trial Pit at 3.60 m	360	92.07		
No gro	s and Water Of bundwater epopularicals undatable from 1.	eti		GL () 95.6:	m AOD)	Fig. N	Vo.	

				TRIAL PIT RECORD	TP N		TP7	
	(,	-	\	Site: Heighington Lane West, Newton Aycliffe	Contract	No:	2761	- fX
	\Sir	îUS,	/	Client: Merchant Developments & Anglo Irish Ban	Dates:			
				Method : JCB 3CX with 0.50m wide toothed bucket.	Sc	ale	1:25	
SA	MPLE DET	AILS	waler	STRATA RECORD	Logged By			
Туре	Depth From - To(m)	Vane Results kN/m²	Groundwaler	Description	Depth	Level (mACD)	Legend	Wel
	0 10m			TOPSOIL: Firm brown stightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	(m)	(pier)		
	0 50m			Stiff slightly desiccated brown gravelly CLAY. (High plasticity - Field test). Gravet is subangular to subrounded, fine to coarse of firmestone and occasional sandstone.	0.25	98.09		
	1.00m	·		Firm friable brown gravelly CLAY (High plasticity - Field test) with occasional cobbles. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subangular to subrounded, fine to coarse of limestone and rare sandstone.	0.60	. 97 74		
		  -    -				i		
)				Brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is	170	90:64		
	, 1,80m		<del>-</del>	subangular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subrounded to rounded of sandstone.				
	2.20m	103.0		Stiff high strength grey gravelly CLAY. (High plasticity - Field test). Gravel is subrounded to rounded, fine to coarse of sandstone and rare limestone.	2 10	96.24		
			· -	At 2.80m; Subrounded, tabular sandstone boulder 0.80m across.				
	3.20m	940			:	·		
			-	End of Tria! Pit at 3.90 m	3.90	<b>34.4</b> 4		
					in a second seco			
Simon	ks and Water C ggroundwater seape walls highly unstable	ige noted batwe	en 1.70m and	GL (m 98.34 Eastin	g;	Fig.	! No. TP73	



Site: Heighington Lane West, Newton Aycliffe

TP No.

**TP74** 

Sheet 1 of 1

Contract No: C2761

Client: Merchant Developments & Anglo Irish Bank Dates: 22/02/2008

Method : JCB 3CX with 0,60m wide toothed bucket.

Scale 1:25

			l		- 00	alt I		
SA	MPLE DETA	AILS	ater		Logged By.	КI		
Туре	<del></del>		Groundwater	STRATA RECORD	Checked By			
. ype	Depth From - To(m)	Vane Results kNum	<u> </u>	Description	Depth (m)	Level (mAQE) (PID	Legend	v
>	O tDm			TOPSOIL: Firm brown slightly sandy CI.AY. (High plasticity - Field test). Sand is fine and medium.				
3	0.59m		- -	Firm orange brown slightly gravelly very sandy CLAY. (High plasticity - Field test). Sand is line to coarse. Gravel is subangular, fine and medium of sandstone and rare limestone.	0.30	96 57		
	் 1.60ள	£10	<u>-</u>	Firm medium strength greyish brown gravelly very sandy CLAY, (High plasticity - Field test). Sand is fine to coarse. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone.	<b>a</b> .oo	96 07		
			<u>√</u>	From 1.30m: Becoming soft.				
	2 00m		-					
	2.50m			Firm friable greyish brown gravelly CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.	240	94.47		
	3.56m	· cold— · cold ·		Very weak light yellow brown LIMESTONE: Completely weathered. Recovered as firm light yellow brown gravelly clay. (High plasticity - Field test). Gravel is angular to subangular, fine to coarse of limestone.	330	93 57		
			-	End of Trial Pit at 4.10 m	4.10	92 77		

### Remarks and Water Observations

Sight groundwater seepage noted from 1 30m to 2 40m
 Ansings noted as well below 3 30m
 Side walls unstable below 3 30m

GL (m AOD) 96.87

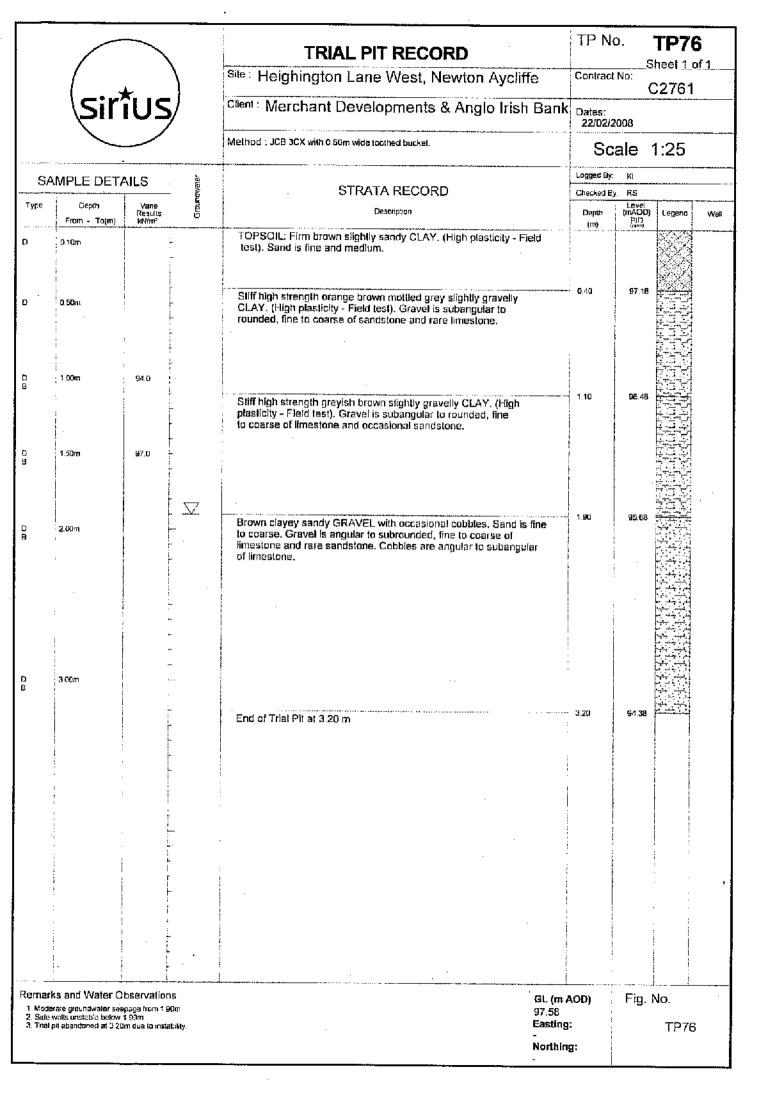
Fig. No.

Easting:

TP74

Northing:

				TRIAL PIT RECORD	TP No		TP7	
	1	. <b></b> .	)	sile: Heighington Lane West, Newton Aycliffe	Contract	No:	C2761	<u>ı_!_</u>
	SILTUS  AMPLE DETAILS  Depth Results  From - To(in) RN/m²  D.10m  0.30m		Client: Merchant Developments & Anglo Irish Bank	Dates: 21/02/2		<u> </u>	<del></del>	
				Method : JCB 3CX with 0.60m wide toothed bucket,	Sc	ale	1:25	
S	AMPLE DET	AILS	. 1	CTRATA DECORD	Lagged By:	KI		
уре	- Cepth	Vane Perulis	Graundwater	STRATA RECORD  Ceacription	Checked By Depth	: RS Level (mAOD)	Legend	w
		kN/m³		TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine to coarse.	(m)			
	<b>6</b> 30т.	!	<u> </u>    -	Firm prange brown sandy CLAY (High plasticity - Field test)	0.25	98.21		
			<del> </del>	Sand is line and medium.				
	1 00m	<b>57</b> D		Firm medium strength brown gravelty CLAY. (High plasticity - Field test). Gravel is subangular to rounded, fine to coarse of timestone and occasional sandstone.	070	97.76		
	2 O0cu		- - -	From 1.60m: Becoming friable.				
			- - <u>\</u>		240	95,06		
	2 50m		_	Brown clayey sandy GRAVEL. Sand is fine to coarse. Gravel is angular to rounded, fine to coarse of sandstone.	2.60	95.86		
	270m	1200	- ~ - -	Stiff high strength grey gravelly CLAY (High plasticity - Field test) with rare cobbles. Gravel is subangular to rounded, fine to coarse of sandstone and occasional limestone. Cobbles are subangular to subrounded of limestone.				
	3 70m		- -					
				End of Trial Pil at 4,00 m	4,00	94 46		
		-						
Mod	rks and Water O lerate groundwarer see e walls unstable belwe	epage batwaen	2 40m and 2.1	Easting	<b>j</b> :	Fig.	No. TP <b>7</b> 5	
				Northi	g:			





TP No.

**TP77** 

Site: Heighington Lane West, Newton Aycliffe

Contract No:

Sheet 1 of 1 C2761

Client: Merchant Developments & Anglo Irish Bank, Dates: 21/02/2008

Method : JCB 3CX with 0.60m wide toothed bucket.

Scale 1:25

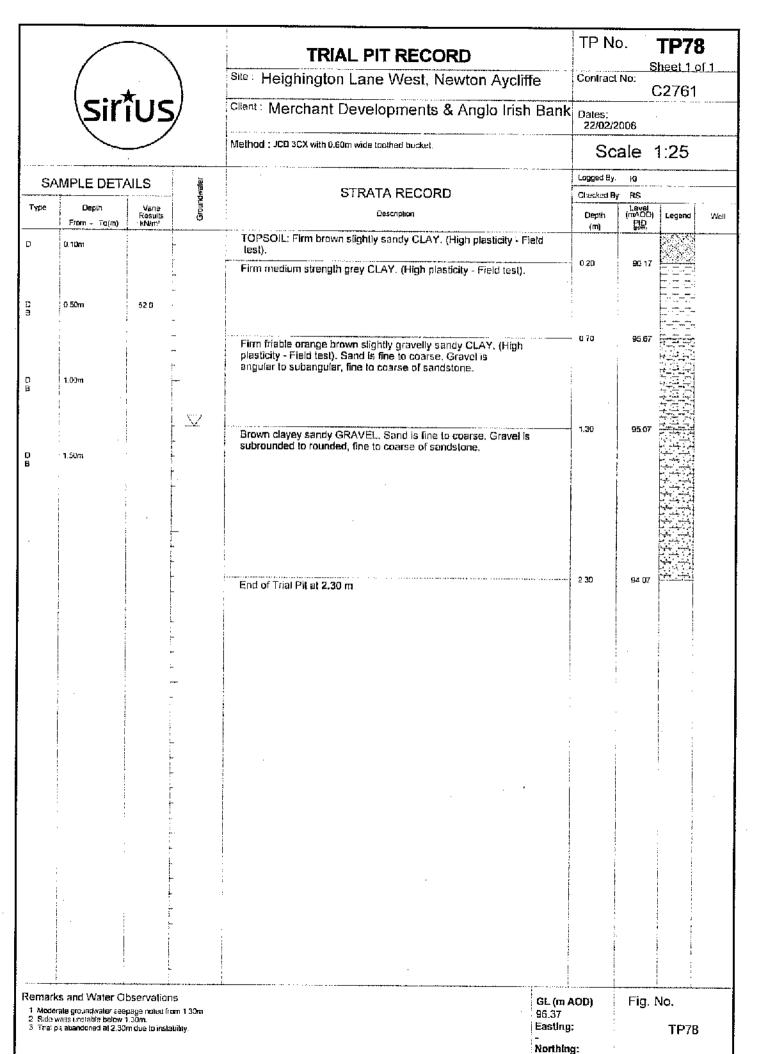
SΔ	MPLE DETA	uis İ	<u> </u>		Logged By:	KI		
	1		Groundwaler	STRATA RECORD	Checked By			
ype.	Depth From - To(m)	Vane Results kNim	<u> </u>	Description .	Depth (m)	Level (mACC) PID	Legend	V
	D.70m			TOPSOIL: Firm brown slightly sandy CLAY. (High plasticity - Field test). Sand is fine and medium.	-			
	0.50m			Firm friable light orange brown slightly sandy gravelly CLAY.  (High plasticity - Field test). Sand is fine to coarse. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone.	0.30	96 95		
	† 00m	690		Firm medium strength brown gravelly CLAY (High plasticity - Field test) with rare cobbles. Gravel is subangular to rounded, fine to coarse of limestone and occasional sandstone. Cobbles are subrounded of timestone.	D 60	95 65		
		- : <b>-</b>		From 1.70m: Becoming stiff.	TOTAL CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF T			
	2 XXm	86 0	-	From 2,00m; Becoming high strength.				
	2 70m	-  -  -  -		Brown slightly clayey sandy GRAVEL. Sand is fine to coarse.	2.60	94.65		
		  -  -  -  -  -		Gravel is subrounded to rounded of sandstone.	**************************************			
	3.30m			End of Trial Pil at 3.40 m	3 40	93 <b>85</b>		
	· :		-		-			
	: :	-  -  -			:			
			:					

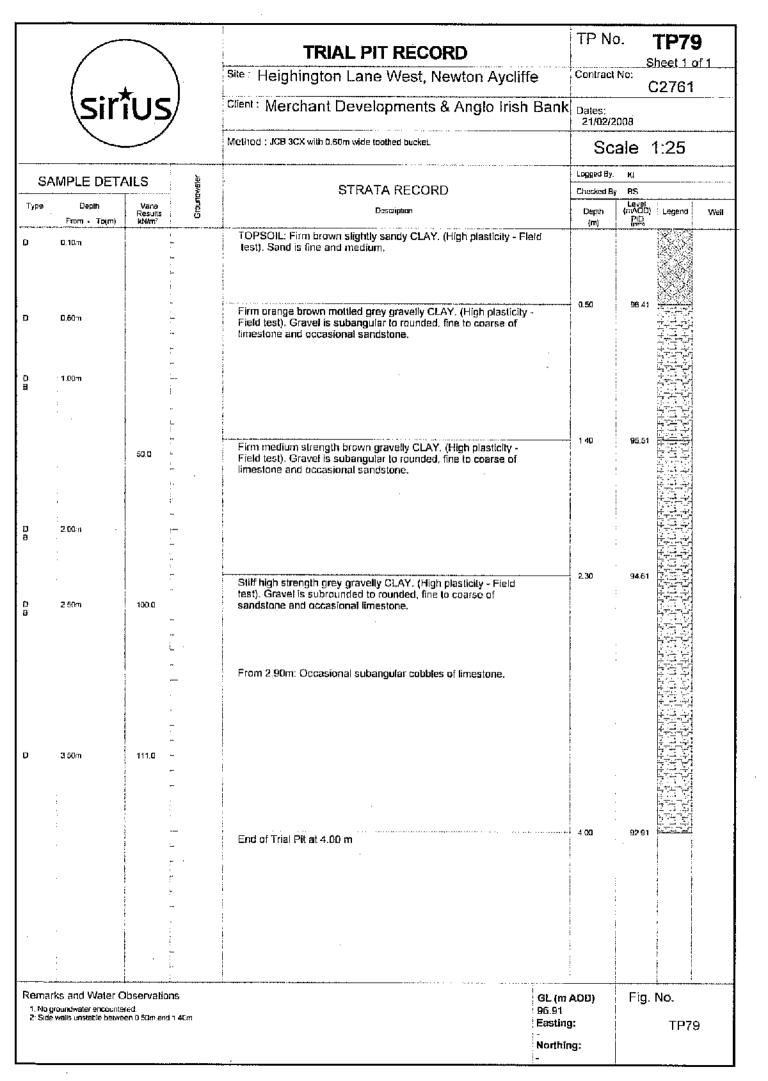
1 Assings noted as wet from 2.50m 2 Side walls highly unstable below 2.50m 3 Trial pit abandoned at 0.40m due to instability

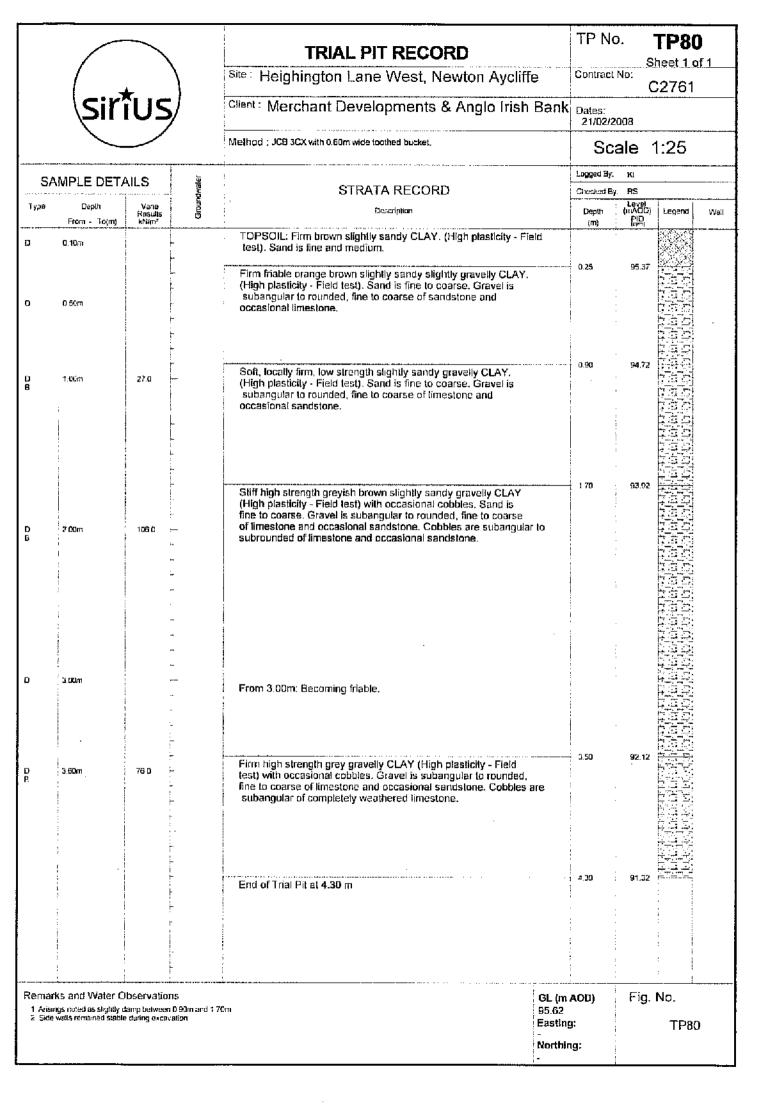
97.25 Easting:

Northing:

**TP77** 









### APPENDIX E LABORATORY TEST RESULTS





### Certificate of Analysis



Date: 11/03/2008

2139

Certificate Number: 08-17679 1

Client:

Sirius Geotechnical & Environmental

Russel House

Suite 2 Mill Road Langley Moor DH7 8HJ

Our Reference:

08-17679 1

Client Reference:

Contract Title:

Heighington Lane West, Newton Aycliffe

Description:

4 leachate samples, 18 soil samples

Date Received:

26/02/2008

Date Started:

26/02/2008

Date Completed:

11/03/2008

Test Procedures:

Identified by prefix DETSn, details available upon request.

Notes:

Observations and interpretations are outside the scope of UKAS accreditation

\* denotes test not included in laboratory scope of accreditation

# denotes test that holds MCERT accreditation

\$ denotes tests completed by approved subcontractors

I/S denotes insufficient sample to carry out test N/S denotes that the sample is not suitable for testing

Solid samples will be disposed 1 month and liquids 2 weeks

after the date of issue of this test certificate

NAD denotes no Asbestos detected

Please note this report supersedes any previous report

Missing results added

Approved By:

Authorised Signatories:

Rob Brown

Business Manager

Page 1 of 15

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the faboratory.

Derwentside Environmental Testing Services Ltd

Our Ref: 08-17578\_1 Client Ref: Comract Tille: Heighington Lane West, Newton Aycliffe

Sample Details

Preservalion Analysis Complete	None 114/03/2008	•	•	-		•	•	•	-	•	<del></del>	•
Time Sampled	Not Provided	Not Provided	Not Provided	Nol Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided
Date Sampled	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Pravided	No! Provided	Not Pravided	Not Provided
DETS_Ref Matrix Description	Soft yollow brown gravelly sandy CLAY (occasional rootlets)	Boft brown sandy CLAY (frequent rootlets)	Soft brown sandy CLAY (occasional roollets)	Soft brown gravelly sandy CLAY (occasional rootlets)	Soft brown sandy CLAY (frequent grass rootlets)	Firm brown gravelly sandy CLAY (occasional rootiets)	Soft brown gravelly sandy CLAY (occasional rootlets)	Loose darkish brown clayey gravelly Sand (frequent rootlets)	Soft brown gravelly sandy CLAY	Loose dark brown clayey gravelly SAND (made ground contains brick)	Soft brown gravelly sandy CLAY (frequent rootiets)	Soft brown gravelly sandy CLAY (occasional rootlets)
DETS Ref	120342	120344	120345	120346	120347	120348	120350	120351	120352	120353	120357	120359
Sample ID Sample Ref Depth	0.50-1.00 120342	0.00-0.20	0.10	0.00-0.35	0.00-0.25	0.00-0.10	0.00-0.30	0.00-0.28	0.00-0.10	0.10-0.30	0.40	0.10
O Sample	щ	۵	0	Ω	۵	_	_	<u> </u>	ם	ם	ם	Ω
Sample	EH9	TP6	11-11	TP32	TP34	TP27	TP42	TP50	TP52	7P52	TP66	TP77

Our Ref;

08-17679\_1

Client Ref:

		Lab No.	120342	120343	120344	120345	120345
		Sample Ref	8H5	TP4	T₽6	TP17	TP32
		Depth	0.50-1.00	0.0-0.3	0.00-0.20	0.10	0.00-0.35
		Other Ref					
		Sample Type	₿	D	D	D	D
Test	Units	DETSxx					
Arsenic	mg/kg	DETS 042#	5		7	6	5
Cadmium	m <b>g</b> /kg	DETS 042	1.0		0.8	1.0	0.7
Chromium	mg/kg	DETS 042	14		24	17	16
Copper	mg/kg	DET\$ 042	9		15	14	13
Lead	mg/kg	DETS 042	22		40	42	35
Mercury	mg/kg	DETS 081*	< 0.3		< 0.3	< 0.3	< 0.3
Nickel	mg/k <b>g</b>	DETS 042	16		17	15	13
Selenium	mg/kg	DETS 042	1.0		0.4	< 0.3	< 0.3
Zinc	mg/kg	DET\$ 042#	110		71	90	78
Total Sulphate as SO4	%	DETS 075#	0.03		0.05	0.06	0.05
Sulphate Aqueous Extract as SO4	g/I	DETS 076#	0.02		0.02	0.03	0.03
Total Organic Carbon	%	DETS 002	0.8		2.3	2.4	1.9
Hq		DETS 008#	9.9		9,5	9.3	9.1
Acenaphthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Acenapthylene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	0,4
Benzo(a)pyrane	m <b>g</b> /kg	DETS 050	< 0.1		< 0.1	< 0.1	0.5
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	0.3
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0,1		< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1		0.2	< 0.1	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1		< 0.1	< D.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1		0.8	1.0	1.4
Napthalene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1		< 0.1	< 0.1	< 0.1
PAH	mg/kg	DETS 050	< 5.0		< 5.0	< 5.D	< 5.0
PRO (C6-C10)	mg/kg	DETS 062*	4.0		· J.u	~ 0.0	< 0.1
DRO (C10-C24)	mg/kg	DETS 051			•		< 10. i
Mineral Oils (C24-C40)	mg/kg	DETS 051					
Phenol - Manohydric	mg/kg	DETS 067#	< 0.3		< 0.3	< 0.3	27
•	2779	D=10 00/1F	~ <b>U</b> , µ		~ 0.3	< U.3	< 0.3

Our Ref:

08-17679\_1

Client Ref:

		Lab No. Sample Ref	120342 BH5	120343 TP4	120344 TP6	120345 TP17	120346 TP32
		Depth	0.50-1.00	0.0-0.3	0.00-0.20	0.10	0.00-0.35
		Other Ref					
		Sample Type	В	D	D	D	D
Test	Units	DETSxx					
Dichlorvos	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Mevinphas	mg/kg	DETSM-138°		<0.10		<0.10	<0.10
Demeton-O	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Ethoprop	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Naled	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Phorate	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Dameton-S	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Diazinon	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Disulfaton	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Methyl parathion	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Ronnel	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Fenthion	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Chlopyrifos	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Trichlorinate	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Merphos	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Stirofos	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Tokuthion	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Fensulfothion	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Bolstar	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Azinphos methyl	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
Coumaphos	mg/kg	DETSM-138*		<0.10		<0.10	<0.10
OPP (total)	mg/kg	DETSM-138*		<0.10		<0.10	<0.10

Our Ref:

08-17679\_1

Client Ref:

		Lab No.	120347	120348	120349	120350	120351
		Sample Ref	TP34	TP27	TP <b>37</b>	TP42	TP50
		Depth	0.00-0.25	0.00-0.10	0.0-0.25	0.00-0.30	0.00-0.28
		Other Ref					
		Sample Type	D	D	D	ם	D
Test	Units	DETSxx					
Arsenic	mg/kg	DETS 042#	7	6		7	6
Cadmium	mg/kg	DETS 042	8.0	0.7		0.9	0,9
Chromium	mg/kg	DETS 042	21	18		16	16
Copper	mg/kg	DETS 042	20	11		14	27
Lead	mg/kg	DETS 042	36	34		41	47
Mercury	mg/kg	DETS 081*	< 0.3	< 0.3		< 0.3	< 0.3
Nickel	mg/kg	DETS 042	15	11		14	14
Selenium	mg/kg	DETS 042	0.4	< 0.3		< 0.3	< 0.3
Zinc	mg/kg	DETS 042#	83	79		94	180
Total Sulphate as SO4	%	DETS 075#	0.07	0.04		0.04	0.10
Sulphate Aqueous Extract as SO4	g/l	DETS 076#	0.04	0.01		< 0.01	0.17
Total Organic Carbon	%	DETS 002	4.7	1.7		1.7	2.1
pН		DET\$ 008#	<b>9</b> ,0	9.3		9.2	9.6
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.2
Acenapthylene	mg/kg	DETS 050	< 0.1	< 0,1		< 0.1	0.1
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.3
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.9
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.9
Banzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	2.4
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< D.1	< 0.1		< 0.1	1,2
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.9
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.4
Fluoranthene	mg/kg	DETS 050	< 0.1	0.5		0.2	3.0
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	0.7	0.5		1.0	2.4
Napthalene	mg/kg	DETS 050	< 0.1	< 0.1		0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	1.5
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1		< 0.1	1.6
PAH	mg/kg	DETS 050	< 5.0	< 5.0		< 5.0	16
PRO (C6-C10)	mg/kg	DETS 062*				- 5.0	< 0,1
DRO (C10-C24)	mg/kg	DETS 051					43
Mineral Oils (C24-C40)	mg/kg	DET\$ 051					
Phenot - Monohydric	mg/kg	DETS 067#	< 0.3	< 0,3		< 0.3	150
• -			- 0.4	٠,٠		~ ∪.3	< 0.3

Our Ref:

08-17679\_1

Client Ref:

Sample Ref   TP34   TP27   TP37   TP42   TP50     Depth   0.00-0.25   0.00-0.10   0.0-0.25   0.00-0.30   0.00-0.25     Other Ref								
Depth   0.00-0.25   0.00-0.10   0.0-0.25   0.00-0.30   0.00-0.21			Lab No.	120347	120348	120349	120350	120351
Other Ref Sample Type D D D D Test Units DETSxx							TP42	TP50
Sample Type D D D D Test Units DETSxx			•	0.00-0.25	0.00-0.10	0.0-0.25	0.00-0.30	0.00-0.28
Test Units DETSxx								
District Control of the Control of t				D	ם	D	D	D
70.10	Pichlorygs	mg/kg	DETSM-138*			<0.10		
Mevinphos mg/kg DETSM-138' <0.10	•	mg/kg				<0.10		
Demeton-O mg/kg DETSM-138* <0.10		mg/kg	DETSM-138*			<0.10		
Ethoprop mg/kg DETSM-138* <0.10	' '	mg/kg	DETSM-138*			<0.10		
Naled mg/kg DETSM-138* <0.10		mg/kg	DETSM-138*			<0.10		
Phorate mg/kg DETSM-138* <0.10	'horate	mg/kg	DETSM-138*			<0.10		
Demetan-S mg/kg DETSM-138* <0.10	Jemetan-S	mg/kg	DETSM-138*			<0.10		
Diazinon mg/kg DETSM-138* <0.10	noniseil	mg/k <b>g</b>	DETSM-138*			<0.10		
Disulfoton mg/kg DETSM-138* <0.10	)isulfoton	mg/kg	DETSM-138*			<0.10		
Methyl parathion mg/kg DETSM-138* <0.10	lethyl parathi <b>on</b>	mg/kg	DETSM-138*			<0.10		
Ronnel mg/kg DETSM-13B* <0.10	lonnel	mg/kg	DETSM-13B*			<0.10		
Fenthion mg/kg DETSM-138* <0.10	enthion	mg/kg	DETSM-138*			<0.10		
Chlopyrifos mg/kg DETSM-138* <0.10	hlopyrifes	mg/kg	DETSM-138*			<0.10		
Trichlorinate mg/kg DETSM-138* <0.10	richlorinate	m <b>g/k</b> g	DETSM-138*			<0.10		
Merphos mg/kg DETSM-138* <0.10	lerph <b>os</b>	mg/kg	DETSM-138*			<0.10		
Stirofos mg/kg DETSM-138* <0.10	tirofas	mg/kg	DETSM-138*			<0.10		
Tokuthion mg/kg DETSM-138* <0.10	okuthion	mg/kg	DETSM-138*					
Fensulfothion mg/kg DETSM-138* <0.10	ensulfothion	mg/kg	DETSM-138*			<0.10		
Bolstar mg/kg DETSM-138* <0.10	olstar	mg/kg	DETSM-138*					
Azinphos methyl mg/kg DETSM-138* <0.10	zinphos methyl		DETSM-138*					
Cottmaphos mg/kg DETSM-138* <0.10	oumaphos		DETSM-138*					
OPP (total) mg/kg DETSM-138* <0.10	PP (total)	mg/kg	DETSM-138*					

Our Ref:

08-17679**\_1** 

Client Ref;

		Lab No.	120352	120353	120354	120355	120357
		Sample Ref	TP52	TP52	TP52	TP55	TP66
		Depth	<b>0</b> .00-0.10	0.10-0.30	0.10-0.30	0.10	0.10
		Other Ref					
		Sample Type	D	D	В	D	D
Test	Units	DETSxx					
Arsenic	mg/kg	DETS 042#	12	7	•		7
Cadmium	mg/kg	DETS 042	0.6	0.5			0.7
Chromium -	mg/kg	DETS 042	14	18			16
Copper	ന്ന്വ/kg	DETS 042	13	33			12
Lead	mg/kg	DETS 042	23	26			39
Mercury	mg/kg	DETS 081*	< 0.3	< 0.3			< 0.3
Nickel	mg/kg	DETS 042	13	33			11
Selenium	mg/kg	DETS 042	E.0 >	< 0.3			< 0.3
Zinc	mg/kg	DETS 042#	66	64			81
Total Sulphate as SO4	%	DETS 075#	0.02	0,11			0.08
Sulphate Aqueous Extract as SO4	g/l	DETS 076#	0.01	0.12			0.04
Total Organic Carbon	%	DETS 002	0,9	2.2			3.4
pΗ		DETS 008#	8.9	9.4			B.7
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1			< 0.1
Acenapthylene	mg/kg	<b>DETS 050</b>	< 0.1	0.2			< 0.1
Anthracene	mg/kg	DETS 050	< 0.1	0.1			< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	0.4			< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	0,6			< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	1.1			< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0,1			< 0.1
Benzo(g.h,i)perylene	mg/kg	DETS 050	< 0.1	0.4			< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	0.4			< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1			< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	0.8			< 0.1
Filtorene	mg/kg	DETS 050	0.1	0.2			< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	0.5	1.2			< 0.1
Napthalene	mg/kg	DETS 050	0.1	< 0.1			< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	0.2			< 0.1
Pyrene	mg/kg	DETS 050	< 0.1	0.6			< 0.1
PAH	mg/kg	DETS 050	< 5.0	6.3			< 5.0
PRO (C6-C10)	mg/kg	DETS 062*		0,0			~ 5.0
DRO (C10-C24)	mg/kg	DETS 051					
Mineral Oils (C24-C40)	mg/kg	DETS 051					
Phenal - Manchydric	mg/kg	DETS 067#	< 0.3	< 0.3			< 0.3

Our Ref:

08-17679\_1

Client Ref:

		Lab No.	120352	120353	120354	120355	120357
		Sample Ref	TP52	TP52	TP52	TP55	TP66
		Depth	0.00-0.10	0.10-0.30	0.10-0,30	0.10	0.10
		Other Ref					
		Sample Type	D	D	В	Þ	Đ
Test	Units	DETSxx					
Dichlorvos	mg/kg	DETSM-138*		"		<0.10	
Mevinphos	mg/kg	DETSM-138*				<0.10	
Demeton-O	mg/kg	DETSM-138*				<0.10	
Ethoprop	mg/kg	DETSM-138*				<0.10	
Naled	mg/kg	DETSM-138*				<0.10	
Phorate	mg/kg	DETSM-138*				<0.10	
Demeton-S	mg/kg	DETSM-138*				<0.10	
Diazinon	mg/kg	DETSM-138*				<0.10	
Disulfaton	mg/kg	DETSM-138*				<0.10	
Methyl parathion	mg/kg	DETSM-138*				<0.10	
Ronnel	mg/kg	DET\$M-138*				<0.10	
Fenthion	mg/kg	DET\$M-138*				<0.10	
Chlopyrifos	mg/kg	DETSM-138*				<0.10	
Trichlorinate	mg/kg	DETSM-138*				<0.10	
Merphos	mg/kg	DETSM-138*				<0.10	
Stirofos	mg/kg	DETSM-138*				<0.10	
Tokuthion	mg/kg	DETSM-138*				<0.10	
Fensulfothion	mg/kg	DETSM-138°				<0.10	
Bolstar	mg/kg	DETSM-138*				<0.10	
Azinphos methyl	mg/kg	DETSM-138*				<0.10	
Coumaphos	mg/kg	DETSM-138*				<0.10 <0.10	
OPP (total)	mg/kg	DETSM-138*					
•	11.3.113					<0.10	

Our Ref.

08-17679\_1

Client Ref:

		Lab No.	120358	120359
		Sample Ref	TP85	TP77
		Depth	0.10	0.10
		Other Ref		
		Sample Type	D	D
Test	Units	DETSxx		
Arsenic	mg/kg	DETS 042#		5
Cadmium	mg/kg	DETS 042		8.0
Chromium	mg/kg	DETS 042		16
Соррег	mg/kg	DETS 042		13
Lead	mg/kg	DETS 042		33
Mercury	mg/kg	DETS 081*		< 0.3
Nickel	mg/kg	DETS 042		13
Selenium	mg/kg	DETS 042		< 0.3
Zinc	mg/kg	DETS 042#		82
Total Sulphate as \$04	%	DETS 075#		0.05
Sulphate Aqueous Extract as SO4	g/l	DETS 076#		0.02
Total Organic Carbon	%	DETS 002		1,9
рH		DETS 008#		8.9
Acenaphthene	mg/kg	DETS 050		0.2
Acenapthylene	mg/kg	DETS 050		< 0.1
Anthracene	mg/kg	DETS 050		Q.1
Велzo(a)anIhraceле	mg/kg	DETS 050		0.4
Benzo(a)pyrene	mg/kg	DETS 050		0.2
Benzo(b)fluoranthene	rng/kg	DETS 050		< 0.1
Benzo(k)fluoranthene	mg/k <b>g</b>	DETS 050		< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050		0.2
Chrysene	mg/kg	DETS 050		0.4
Dibenzo(a,h)anthracene	mg/kg	DETS 050		0.2
Fluoranthene	mg/kg	DETS 050		0.9
Fluorene	mg/kg	DETS 050		< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050		< 0.1
Napthalene	mg/kg	DETS 050		0.4
Phenanthrene	mg/kg	DETS 050		0.4
Pyrene	mg/kg	DETS 050		0.7
PAH	mg/kg	DETS 050		5.1
PRO (C6-C10)	mg/kg	DETS 062*		
DRO (C10-C24)	mg/kg	DETS 051		
Mineral Oils (C24-C40)	mg/kg	DETS 051		
Phenol - Monohydric	mg/kg	DET\$ 067#		< 0.3

Our Ref: **08-17679\_1** 

Client Ref:

		Lab No.	120358	120359
		Sample Ref	TP85	TP77
		Depth	0.10	0.10
		Other Ref		
		Sample Type	D	D
Test	Units	DET5xx		
Dichlorvos	mg/kg	DETSM-138*	<0.10	
Mevinphos	mg/kg	DETSM-138*	<0.10	
Demeton-O	mg/kg	DETSM-138*	<0.10	
Ethoprop	mg/kg	DETSM-138*	<0.10	
Naled	mg/kg	DETSM-138*	<0.10	
Phorate	mg/kg	DETSM-138*	<0.10	
Demeton-S	mg/kg	DETSM-1381	<0.10	
Diazinon	mg/kg	DETSM-138*	<0.10	
Disulfoton	mg/kg	DETSM-138*	<0.10	
Methyl parathion	mg/kg	DETSM-138*	<0.10	
Ronnel	mg/kg	DETSM-138*	<0.10	
Fenthion	mg/kg	DETSM-138*	<0,10	
Chlopyrifos	mg/kg	DETSM-138*	<0.10	
Trichlorinate	mg/kg	DETSM-138*	<0.10	
Merphos	mg/kg	DETSM-138*	<0.10	
Stirofos	mg/kg	DETSM-138*	<0.10	
Tokuthion	mg/kg	DETSM-138*	<0.10	
Fensulfothion	mg/kg	DETSM-138*	<0.10	
Bolstar	mg/kg	DETSM-138*	<0.10	
Azinphos methyl	mg/kg	DETSM-1381	<0.10	
Coumaphos	mg/kg	DETSM-138*	<0.10	
OPP (total)	mg/kg	DETSM-138*	<0.10	

# HEIGHINGTON LANE WEST, NEWTON AYCLIFFE

## Summary of Chemical Analyses on Soil Samples

Asbestas			DETS 062	NAD	NAD	NAD	Chrysoffe
Laboratory	Reference	Number		120346	120351	120353	120354
Sample	Type			٥	٥	a	'n
Sample	Ref			<u> </u>	۵	Ω	<b>5</b>
Depth	Ξ			0.00-0.35	0.00-0.20	0.10-0.30	0.10-0.30
Borahole	ъ	Trial Pit		TP32	TP50	TP52	TP52

Client References

Laboratory Reference: 08-17679\_1

### Summary of Chemical Analysis Leachate Samples

Our Ref:

08-17679\_1

Client Ref:

		Lab No.	120360	120361	120362	120363
		Sample Ref	BH5	TP32	TP50	TP52
		Depth	0.50-1.00	0.00-0.35	0.00-0.28	0.10-0.30
		Other Ref				
		Sample Type	D	D	D	D
Test	Units	DETSxx				
Arsenic Dissolved	<b>ս</b> ը/	DETS 010	< 1	< 1	<1	< 1
Cadmium Dissolved	ug/l	<b>DETS 042</b>	< 2	< 2	< 2	< 2
Chromium Dissolved	ug/i	DETS 042	< 10	< 10	< 10	< 10
Copper Dissolved	ug/i	<b>DETS 042</b>	< 2	2	3	2
Lead Dissolved	ug/l	<b>DETS 042</b>	< 5	< 5	< 5	< 5
Mercury Dissolved	ug/l	DETS 078"	< 0.05	< 0.05	< 0.05	< 0.05
Nickel Dissolved	ug/l	DETS 042	< 10	< 10	< 10	< 10
Selenium Dissolved	ug/l	<b>DETS 017</b>	< 3	< 3	< 3	< 3
Zinc Dissolved	ug/l	DETS 042	39	36	36	43
Hq		DETS 008	6.5	6.5	6.8	7.2
Acenaphthene	ug/l	DETS 074*	< 0.01	< 0.01	< 0.01	< 0.01
Acenapthylene	ug/l	DETS 074*	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	ug/l	DETS 074*	0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	ug/l	DETS 074*	< 0.01	< 0.01	< 0.01	0.03
Benzo(a)pyrene	ug/i	DETS 074*	< 0.01	< 0.01	< 0.01	0.01
Benzo(b)fluoranthene	ug/i	DETS 074*	< 0.01	< <b>0.</b> D1	< 0.01	0.02
Benzo(k)fluoranthene	ug/i	DETS 074*	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(g.h,i)perylene	ug/f	DETS 074*	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	ug/l	DETS 074*	< 0.01	< 0.01	< 0.01	0.02
Dibenzo(a,h)anthracene	ug/l	DETS 074*	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	ug/l	DETS 074*	0.02	0.02	0.03	0.12
Fluorene	ug/l	DETS 074*	0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	ug/l	DETS 074*	< 0.01	< 0.01	< 0.01	< 0.01
Napthalene	ug/l	DETS 074*	< 0.01	< 0.01	0.02	0.03
Phenanthrene	ug/l	DETS 074*	0.05	0,01	< 0.01	0.01
Pyrene	ug/l	DETS 074*	0.09	0.02	0,11	0.20
PAH	ug/l	DETS 074*	< 0.20	< 0.20	< 0.20	0.47
Phenol	الهون	DETS 054*	< 0.50	< 0.50	< 0.50	< 0.50

Derwentside Environmental Testing Services Ltd

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery Full method statements are available on request.

Appendix A - Detalls of Analysis

<u>Units</u>		Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
	5 <b>2</b>	0.01	Air Dried	a Z	Yes	2
	25	0.01	Air Dried	a Z	Yes	χeχ
	<b>%</b>	0.01	Air Dried	o Z	<b>∀</b>	Yes
	%	0.01	Air Dried	o N	se Χ Υ	Yes
	9/1	0.01	Air Driad	N <sub>O</sub>	Yes	Yes
	1/6	0.01	Air Dried	S	Yes	Yes
	mg/kg	0.01	Air Dried	₽	Yes	Yes
	pH Units	0.10	Air Dried	2	Yes	Yes
	тджд	D:30	Air Dried	<b>9</b>	Yes	S
	т9/кд	D.02	Air Dried	<b>0</b>	o Z	Ž
	mg/kg	0.20	Air Dried	No	Yes	Yes
	mg/kg	10,00	Air Dried	o Z	Yes	≺es
	mg/kg	1.00	Air Dried	N <sub>O</sub>	N	2
	mg/kg	1.00	Air Dried	No	Yes	Yes
	mg/kg	1.00	Air Dried	No	Ž	Š
	тдАкд	1.00	Alr Dried	No	<u>0</u>	No No
	mg/kg	0.20	Air Dried	Na	Yes	Š

## Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery Full method statements are available on request.

Name of Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
	тд⁄Хд	0.20	Air Dried	o Z	ΩN	N O
	mg/kg	1.00	Air Dried	Ν	Yes	2
	mg/kg	1.00	Air Dried	N.	Yes	Z
	mg/kg	1.00	Air Dried	Š	2	o Z
	mg/kg	1.00	Air Dried	Š	Yes	N
	mg/kg	1.00	Air Dried	Z	2	S
	mg/kg	0.30	Air Dried	S	Š	S
	mg/kg	1.00	Air Dried	S	8 S	Š
	mg/kg	1.00	Air Driad	N	Yes	2
	By/6m	1.00	Air Dried	No	N <sub>o</sub>	N <sub>O</sub>
	mg/kg	1.00	Air Dried	Š	2	<u>0</u>
	тв/кв	1.00	Air Dried	D.	×es ≻	≺es
	mg/kg	0.50	As Received	Š	Yes	Yes
	mg/kg	0:10	As Received	Š	Yes	2
ТРН (С10 - С40)	тд/кд	20.00	As Received	o Z	Yes	Yes

Derwentside Environmental Testing Services Ltd

## Appendix A - Details of Analysis

Method details are shown only for those determinants listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery Full method statements are available on request.

ted UKAS MCERTS	No Yes Yes	No Yes Yes	No Yes Yes	No Yes Yes	No Yes Yes	No Yes Yes	No Yes Yes	No Yes No	No Yes Yes		No Yes Yes
ion <u>Sub-Contracted</u>	2	~	2	2	Z	Z	Z	z	z		z
tion Sample Preparation	As Received	As Received	As Received	As Received	As Received	Air Dried	Air Dried	Air Dried	Air Dried		Air Dried
Limit of Detection	0.01	0.01	0.01	0.01	0.01	0.3	0.1	0:30	0.40		0.6
ter Units	mg/kg	mg/kg	mg/kg	Б //6Ш	mg/kg	mg/kg	anide mg/kg	mg/kg	mg/kg		mg/kg
Name of Parameter	E 8	Benzene	Toluene	Ethylbenzne	Xylene	Phenol - Monohydric	Easily Liberatable Cyanide	Complex Cyanide	Total Cyanide		Thiocyanate
Method	DETS 052	DETS 062	DETS 062	DETS 062	DETS 062	DETS 067	DETS 067	DETS 067	DETS 067	!	DETS 067

BAE Systems
Property & Environmental
Brisance House
Euxton Lane
Chorley
Lancashire
PR7 6AQ, England

Telephone: (01257) 242000

Facsimile: (01257) 242018

### **TEST CERTIFICATE**

Certificate No: BC0215/08

**NEWTON AYCLIFFE** 

A0009/00

Client:

DETS

Date Received :

29/02/2008

Address :

Derwentside Environmental Testing Services

Date Completed:

05/03/2008

Unit 2a/2b

Consett, Co Durham

Park Road Industrial Estate South

Date Of Report:

05/03/2008

UK

DH8 5PY

Attention :

R Brown

Accreditation Key:

U = UKAS

M = UKAS & MCERTS

# = Subcontracted Tests

**Test Methods** 

Openspace Explosives

using method ESAL/QC/4 parts a, h and either I or m

Approved:

Dr D.G. Malcolm

Laboratory Manager



No. 1764



REAL SOLUTIONS, REAL ADVANTAGE.

### **TABLE OF RESULTS**

### Soil - Explosives

lab Code	2008	1294		2008	1295	T	2008	31296	:	2008	1297	
Client Ref A	12034	4 TP6		12034	8 TP27		12035	6 TP 63		12035	9 TP77	,
Client Ref B		,										
Sample Type	S	oit		S	ail		S	oil		S	oil	
Soil Type	Clay -	Brown		Clay -	Brown		Clay -	Brown		Clay -	Brown	
NC Colour	-va		M	-və		M	-ye		ы	-78	•	м
NC Calourimetric	<5000	mg/kg	М	<b>&lt;500</b> 0	mg/kg	M	<5000	mg/kg	Ä	<5000	mg/kg	М
HMX	<20	mg/kg	м	<20	mg/kg	M	<20	mg/kg	М	<20	mg/kg	И
RDX	<20	mg/kg	м	<20	mg/kg	M	<20	mg/kg	ы	<20	mg/kg	H
EGDN	<20	mg/kg	м	<20	mg/kg	М	<20	mg/kg	W	<20	mg/kg	М
Tetryl	<20	mg/kg	м	<20	mg/kg	М	<20	mg/kg	-N	<20	mg/kg	N
NG	<20	mg/kg	М	<20	mg/kg	М	<20	mg/kg	W	<20	mg/kg	N
TNT	<20	mg/kg	M .	<20	mg/kg	М	<20	mg/kg	M	<20	mg/kg	N
PETN	<20	mg/kg	M	<20	mg/kg	М	<20	mg/kg	м	<20	mg/kg	M
HNS	<5	mg/kg	N.E	<5	mg/kg	M	<5	mg/kg	М	<5	mgikg	N
Picrite	<20	mg/kg	М	<20	mg/kg	М	<20	mg/kg	W	<20	mg/kg	N
Picric Acid	<20	mg/kg	M	<20	mg/kg	М	<20	mg/kg	М	<20	mg/kg	M
2,4-DNT	<20	mg/kg	M	<20	mg/kg	M	<20	mg/kg	М	<20	mg/kg	М
2,6-DNT	<20	mg/kg	M	<20	mg/kg	M	<20	mg/kg	М	<20	mg/kg	Ņ

### COMMENTS AND DEPARTURES FROM STANDARD PROCEDURES

Lab ID	Notes

There were no comments or departures from standard procedures

### NOTES

- 1. This test report shall not be reproduced except in full, without written approval of the laboratory.
- 2. All results for soil samples are reported based on dry weight of soil which has been air-dried in open, shallow trays at ambient temperatures below 30°C and subsequently ground and sieved to pass through a nominal 750µm aperture sieve. In most cases, analysis is carried out directly on these prepared soils, with the following exceptions: volatile organic compounds; total and speciated phenois; free, total and complex cyanide; petrol range organic compounds; sulphide. These analyses are carried out on the soil "As received" and corrected for the known dry weight (at 105 °C) prior to reporting.
- 3. BAE Systems does not correct results for analytical recoveries.
- 4. Where provided, the value for total cresols is derived from the sum of the results for m- & p- cresol and p- cresol.
- 5. Where provided, the value for total xylenols is derived from the sum of the results for 3,4-dimethylphenol, 2,6-dimethylphenol, 3,5-dimethylphenol, 2,3-dimethylphenol, 2,5-dimethylphenol and 2,4-dimethylphenol,
- 6. Where provided, the value for total phenols is derived from the sum of the results for resorcinol, phenol, m- & p-cresol, o- cresol, 3,4-dimethylphenol, 2,6-dimethylphenol, 3,5-dimethylphenol, 2,3-dimethylphenol, 2,5-dimethylphenol, 2,4-dimethylphenol, 1-naphthol, 2-isopropylphenol, 2,3,5-trimethylphenol and pentachiorophenol.
- 7. All samples were received in good condition unless otherwise stated. Results provided by the Laboratory are based on samples submitted by clients. Once submitted, samples requiring analysis are stored at below 8 °C. The Laboratory cannot be held responsible for the storage, condition or preservation of samples prior to arrival.
- 8. Validation studies indicate that the concentration of nitrocellulose in high organic content soils may be overestimated.
- 9. A value of NQ indicates that a quantitative result could not be obtained because doping trials showed that the compound was retained by the matrix.
- Soil descriptions are given in order to provide a log of sample matrices submitted and are not intended as full geological descriptions.
- 11. The initials or common names used for reporting explosives relate to the following compounds; Nitrocellulose(NC); Cyclotetramethylene Tetranitramine (HMX); Cyclo-1,3,5-Trimethylene-2,4,6-Trinitramine (RDX); Ethylene Glycol Dinitrate (EGDN); 2,4,6-Trinitro-Phenylmethyl Nitramine (Tetryl); Glycerol Trinitrate (NG); 2,4,6-Trinitrotoluene (TNT); Pentaeryhritol Tetranitrate (PETN); Hexanitro-Stilbene (HNS); Nitroguanidine (Picrite); 2,4,6-Trinitro Phenol (Picric Acid); 2,4-Dinitrotoluene (2,4-DNT); 2,6-Dinitrotoluene (2,6-DNT).
- 12. \* Some reporting limits may be raised due to poor recovery of internal standard or dilution of highly contaminated samples.
- 13. # Mass spectral match criteria were not fully met, possibly indicating a co-eluting peak that may inflate the result.
- 14. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

End of Report BC0215/08

BC0215/08 Report Page 4 of 4

Please Note These Results Are VALIDATED

REAL SOLUTIONS, REAL ADVANTAGE.

Soil Analysis Results: Newton Aycliffe: Project: A0009/00

Property and Environmental Services Laboratories

**NC Colourimetric** 

XMH

TNT

ИG

Tetryl

**ECDN** 

ВDХ

**MC Colour** 

Sample Reference	Depth	Laboratory Reference	/ Date	Date Printed		тд/кд	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
120344 TP6		20081294	20081294 29/02/2008 05/03/2008	05/03/2008	-46	<5000	<20	<20	<20	<20	<20	<20
120348 TP27		20081295	20081295 29/02/2008 05/03/2008	05/03/2008	-ve	<5000	<20	<20	<20	<20	<20	<20
120356 TP 63		20081296	20081296 29/02/2008 05/03/2008	05/03/2008	-46	<5000	<20	<20	<20	<20	<20	<20
120359 TP77		20081297	20081297 29/02/2008 05/03/2008	05/03/2008	-ve	<5000	<20	<20	<20	<20	<20	<20

Please Note These Results Are VALIDATED

REAL SOLUTIONS, REAL ADVANTAGE.

Property and Environmental Services Laboratories

Soil Analysis Results: Newton Aycliffe: Project: A0009/00

Picrite

SNH

PETN

Picric Acid

Z,4-DNT

Z,6-DNT

Sample Reference	Depth	Laboratory Reference	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ву/вш
120344 TP6		20081294	<20	<5	<20	<20	<20	<20
120348 TP27		20081295	<20	<b>-</b> 2>	<20	<20	<20	<20
120356 TP 63		20081296	<20	<b>5</b> >	<20	<20	<20	<20
120359 TP77		20081297	<20	<5	<20	<20	<20	<20

# Mountainheath Laboratories

### Environmental Analysis & Consultancy Analytical Report

Derwentside Environmental Testing Services

Unit 2

Park Road Industrial Estate

Consett

Co. Durham, DH8 5PY

For the attention of: Rob Brown

Report No:

08-08030/2

Date Received:

29/02/2008

Date Tested: 04/03/2008 to 06/03/2008

Date Issued:

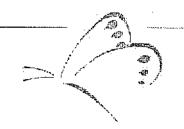
19/03/2008

Page: By email 1 of 3

6 soil samples received from Derwentside Environmental Testing Services (O/N: 25895; Project: 08-17679; Site: Heighington Lane W.Newton Aycliffe) in 250ml amber glass jars were analysed as shown below. Analytical methods employed are available on request. Results are reported on an as received basis unless otherwise specified.

Laboratory re	erence idea	131541 120343 TP4 0-0.3	131542 120345 TP17-0.10	131543 120346 TP32 0-0.35
aldrin	(309-00-2) mg/kg	< 0.02	< 0.02	< 0.02
alpha-HCH	(319-84-6) mg/kg	< 0.02	< 0.02	< 0.02
bela-HCH	(319-85-7) mg/kg	< 0.02	< 0.02	< 0.02
cls-chlordane	[6103-71-9] mg/kg	< 0.02	< 0.02	< 0.02
della-HCH	(319-86-8] mg/kg	< 0.02	< 0.02	< 0.02
deldrin	[60-57-1] mg/kg	< 0.02	< 0.02	< 0.02
endosulian A	(959-98-8) mg/kg	< 0.02	< 0.02	< 0.02
endosullan B	<i>[33213 65-9]</i> mg/kg	< 0.02	< 0.02	< 0.02
endrija (ili	(72-20-8) mg/kg	< 0.02	< 0,02	< 0.02
gamma-HCH (lindene)	<i>[58-89-9]</i> mg/kg	< 0.02	< 0.02	< 0.02
heptachlor	(76-44-8) mg/kg	< 0.02	< 0.02	< 0.02
heptachlor epoxide	/1024-57-3/ mg/kg	< 0.02	< 0.02	< 0.02
hexachlorobenzene (HCB)	[118-74-1] mg/kg	< 0.02	< 0.02	< 0.02
Jaodrin 💥 🚉	[465-73-6]. mg/kg	< 0.02	< 0,02	< 0.02
methoxychlor	(72-43-5) ing/kg	< 0.02	< 0.02	< 0.02
o,p'-DDD	(53-19-0) mg/kg	< 0.02	< 0.02	< 0.02
o,p'-DDE	[3424-82-6] mg/kg	< 0.02	< 0.02	< 0.02
o,p-DDT	[789-02-6] mg/kg	< 0.02	< 0.02	< 0.02
<b>p,</b> p'-DDD ### 2	[72-54 8] mg/kg	< 0.02	< 0.02	< 0.02
p,p-DDE	[72-55-9] mg/kg	< 0.02	< 0.02	< 0.02
P,P-DDT	[50-29-3] mg/kg	< 0.02	< 0.02	< 0.02
trans-chlordane	<i>[5103-74-2]</i> mg/kg	< 0.02	< 0.02	< 0,02
tilluralin	(1582-09-8) mg/kg	< 0.02	< 0.02	< 0.02

Unit 2, Shaftesbury Industrial Centre, Icknield Way, Letchworth Garden City, Hertfordshire SG6 1HE Tel: 01462 480400 Fax: 01462 480403 Email: mail@mountainheath.com Company Registration No: 277 2276 Vat No: 676 7556 76



Report No:

08-08030/2

Date

29/02/2008

Date Tested: 04/03/2008 to 06/03/2008

Date Issued:

19/03/2008

Page:

2 of 3

PSEPERENGE   PROCEEDING   PROCEDURE   PROCEDURE   PROCEDURE   PROCEDURE   PROCEDURE   PROCEDURE   PROCEDURE	
I TORDI MARRON DI BARROLI. POR MILLIANDO DE LA CARROLINA DE LA COMPANIO DEL COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DEL COMPANIO DE LA COMPANIO DEL COMPANIO DEL COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DE LA COMPANIO DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION DEL COMPANION	
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1 0000 MONOS CONTROL CONTROL CONTROL CONTROL OF CONTROL OF CONTROL CON	
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This report replaces report 08-08030/1 in its entirety.

Report No:

08-08030/2

Date

29/02/2008

Date Tested: 04/03/2008 to 06/03/2008

Date Issued:

19/03/2008

Page:

3 of 3

Laboratory ra	erence	131544 120349 TP37 0-0.25	131545 120355 TP55 0.10	131546 120358 TP68 0.10m
aldrin contract.	(309-00-2) mg/kg	< 0.02	< 0.02	< 0.02
alpha-HCH	[319-84-6] mg/kg	< 0.02	< 0.02	< 0.02
beta-HCH	[319-85-7] mg/kg	< 0.02	< 0.02	< 0.02
cis-chlordane	[5103-71-9] mg/kg	< 0.02	< 0.02	< 0.02
delta HCH	[319-86-8] mg/kg	< 0.02	< 0.02	< 0.02
deldrin	(60-57-1) mg/kg	< 0.02	< 0.02	< 0.02
endosulfan A	(959-98-8) mg/kg	< 0.02	< 0.02	< 0.02
endosul(an B	<i>[33213-65-9]</i> mg/kg	< 0.02	. < 0.02	< 0.02
endrin	[72-20-8] mg/kg	< 0.02	< 0.02	< 0.02
gamma-HCH (lindane)	(58-89-9) mg/kg	< 0.02	< 0.02	< 0.02
heptachlor	[78:44-8] mg/kg	< 0.02	< 0.02	< 0.02
heplachlor epoxide	(1024-57-3) mg/kg	< 0.02	< 0.02	< 0.02
hexachlorobenzene (HCB)	[118-74-1] mg/kg	< 0.02	< 0.02	< 0.02
ninboal	[465-73-6] mg/kg	< 0.02	< 0.02	< 0.02
methoxychlor		< 0.02	< 0.02	< 0.02
ap-DDD	(58-19-0) mg/kg	< 0.02	< 0.02	< 0.02
gp-DDE	(3424-82:5) mg/kg	< 0.02	< 0.02	< 0.02
o,p-DOT	[789-02-6] mg/kg	< 0.02	< 0.02	< 0.02
P <sub>I</sub> P-DDD	[72-54-8] mg/kg	< 0.02	< 0.02	< 0.02
pp-DDE	<i>[72-55-9]</i> mg/kg	< 0.02	< 0.02	< 0.02
, p-00T	[50-29-3] mg/kg	< 0.02	< 0.02	< 0.02
trans-chlordane	<i>[5103-74-2]</i> mg/kg	< 0.02	< 0.02	< 0.02
irtluralin	(1582-09-8) mg/kg	< 0.02	< 0.02	< 0.02

Pamela M Howarth Director

### Rob Schofield

From: Graham Sinclair [Graham.Sinclair@DETS.co.uk]

Sent: 19 March 2008 10:41

To: Rob Schofield

Subject: Heighington Lane asbestos

Rob.

The sample for TP52 @ 0.1-0.3 from Heighington Lane, Newton Aycliffe (our ref 08-17679 / 120354) which tested positive for chrysotile was composed entirely of asbestos cement. We estimate that the actual asbestos content of this was in the region of 10-15%. If you refer to HSE – MDHS100 (attached) this contains more detailed information on the composition and nature of asbestos cements.

Regards, Graham Sinclair BEng Project Manager

Derwentside Environmental Testing Services Unit 2 Park Road Ind Est Consett Co Durham DH8 5PY

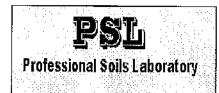
Tel: 01207 582333 (Direct: 01207 610026)

Fax: 01207 582444

Email: graham,sinclair@dets.co.uk

Website: www.dets.co.uk

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### LABORATORY REPORT



Contract Number: PSL08/0533

Client's Reference: Report Date: 17 March 2008

Client Name: Sirius Durham

Russel House Suite 2, Mill Road Langley Moor Durham

DH7 8HJ

For the attention of: Rob Schofield

Contract Title: Heighington Lane West, Newton Ayeliffe

Date Received: 3-Mar-08 Date Commenced: 3-Mar-08 Date Completed: 17-Mar-08

Notes: Observations and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

Approved Signatories:

R Gunson (Director)

A Watkins (Director)

D Lambe (Senior Technician)

5-7 Hexthorpe Road, Hexthorpe,

**Doneaster DN4 0AG** tel: +44 (0)870 240 1964 fax: +44 (0)870 240 1965

e-mail: rgunson@prosoils.co.uk awatkins@prosoils.co.uk Page 1 of

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

pth n	0.90-1.90 Brown gravelly sandy CLAY.	50 Brown gravelly sandy CLAY.	0.95-1.95 Brown gravelly sandy CLAY.	0.60-1.60 Brown gravelly very sandy CLAY.	00 Brown gravelly very saudy CLAY.								
Depth m	0.90-1	1.50	0.95-1	0.60-1.	2.00	1.00							
Sample Number													
Trial Pit Number	TP34	TP41	TP42	TP52	TP59	TP62							

Date Professional Soils Laboratory 



ণ দ্রিক্ষি Date

Jun 06

Issue 1 PSLR001

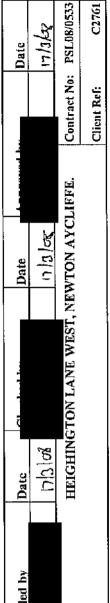
Page

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# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Borehole	Samole	Denth	Description of Sample
Number	Number	  -  -	
ВНЗ		0.50-0.95	Brown slightly gravelly sandy CLAY.
BHI		2.50-2.95	Brown very gravelly very sandy CLAY.
BH3		2.00-2.50	Brown gravelly sandy CLAY.
BH2	:	3.00-3.45	Stiff brown very gravelly very sandy CLAY.
BH3		0.50-0.95	Brown gravelly very sandy CLAY.
BH3		2.50-2.95	Stiff brown very gravelly very sandy CLAY.
BH4		0.50-1.00	0.50-1.00 Brown gravelly sandy CLAY.
BH4		1.00-1.45	Firm brown gravelly very sandy CLAY.
BHS		2.30	Brown very gravelly very sandy CLAY.
BH6		1,00-1.45	Firm brown slightly gravelly sandy CLAY.
BH7		0.50-0.95	Brown gravelly sandy CLAY.
BH8		0.50-1.00	0.50-1.00 Brown gravelly sandy CLAY.
BH8		1.00-1.45	Brown very gravelly very sandy CLAY.
BHB		2.00-2.45	2.00-2.45 Stiff brown gravelly very sandy CLAY.
BH10		1.00-1.45	Brown gravelly very sandy CLAY.
BH11		0.30	Brown slightly sandy CLAV.
BHII		3.00-3.45	Stiff brown gravelly sandy CLAY.
BH12		0,30-1.00	Dark brown gravelly sandy CLAY.
BH12		1.00-1.45	1.00-1.45 Firm brown very gravelly very sandy CLAY.





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Радв

# SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377: PART 2: 1990)

Γ										· · · -	<u> </u>								Γ	1
,	Remarks			Intermediate plasticity CI.	Low plasticity CL.	Low plasticity CL.	Intermediate plasticity CI.	Low plasticity CL.	Intermediate plasticity CI.	Low plasticity CL.	Low plasticity CL.	Low plasticity CL.	Low plasticity CL.	High plasticity CH.	Low plasticity CL.					
%	Passing	.425mm		95	99	70	26	75	90	80	51	80	81	100	54					
Plasticity	Index	%	Clause 5.	25	17	17	20	16	22	11	14	15	15	30	16					
Plastic	Limit	%	Clause 5.	23	15	14	17	14	20	15	17	15	14	24	15					
Liquid	Limit	%	Clause 4.3/4.4	48	32	31	37	30	42	32	31	30	29	54	31					
Particle	Density	Mg/m³	Clause 8.																	
Dry	Density	Mg/m³	Clause 7.2										•				 			
Bulk	Density	Mg/m³	Clause 7.2																•	
Moisture	Content	%	Chuse 3.1	24	14	14	19	14	18	16	1.1	13	14	33	14					
	Depth	=		0.50-0.95	3.00-3.45	2.50-2.95	1.00-1.45	2.30	1.00-1.45	0.50-0.95	1.00-1.45	2.00-2.45	1.00-1.45	0.30	1.00-1.45					
	Sample	Number														 •				
	Borehale	Number		ВН1	BHZ	ВНЗ	BH4	BHS	BH6	BH7	BH8	вне	BH10	BH111	BH12					

SYMBOLS: NP: Non Plastic

\*: Liquid Limit and Plastic Limit Wet Sleved.

Committed by	Date	Checked by	Date	Approved by		Date
	30/5/1		15/13/08			30/E/LI
ofessional Soils Laboratory	HEIGHING	HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.	WTON AYC		ontract No:	Contract No: PSL,08/0533
				<u> </u>	Client Ref:	C2761

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PSLR002

# SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377: PART 2: 1990)

		-		1	Doneite	Donethu	imi i	Limit	Index	Passing	Remarks
Trial Pit	Sample	Deptu	Content	Delisity	Density Market	Ma/m3	70	711	%	425mm	
Number	Number	E	%	m/givi	III/ATAT	m/Alm	0,	2			
			Clause 3.2	Clause 7.2	Clause 7.2	Clause 8.	Clause 4.3/4.4	Clause 5,	Clause 5.		
TP34		0.90-1.90	17				35	18	17	7.5	Intermediate plasticity CI.
TP41		1.50	17				34	17	17	72	Low plasticity CL.
TP42		0.95-1.95	91				39	19	20	80	Intermediate plasticity CI.
TP52		0.60-1.60	17				31	16	15	80	Low plasticity CL.
TP59		2.00	ī.				33	17	16	81	Low plasticity CL.
TP62		1.00	20				37	19	18	76	Intermediate plasticity CI.
				:							
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	:										
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	!					100 100 100	1 0 1				
CVMROLS - NP - Non Plastic	. NP · Non	Plactic		* : Liguid L	* : Liouid Limit and Plastic Limit Wet Sieved.	stic Limit 😿	et Sieved.				

SYMBOLS: NP: Non Plastic

: Liquid Limit and Plastic Limit Wet Sieved.

Contract No: PSL08/0533 Client Ref: HEIGHINGTON LANE WEST, NEWTON AYCLIM দোয়ীপ্স Date in 3 los Date Professional Soils Laboratory 

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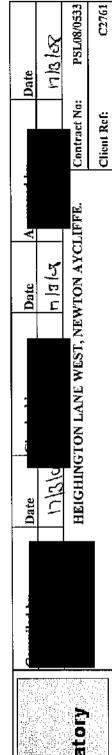
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# SUMMARY OF LABORATORY HAND VANE TESTS

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									******	****				
	Stiff brown very gravelly very sandy CLAY.	Stiff brown very gravelly very sandy CLAY.												
Shear Strength kPa	89	102	 											
Moisture Content	14	14					!							
Depth m	3.00-3.45	2,50-2,95										i		
Sample Number														
Borehole Number	BH2	BH3												





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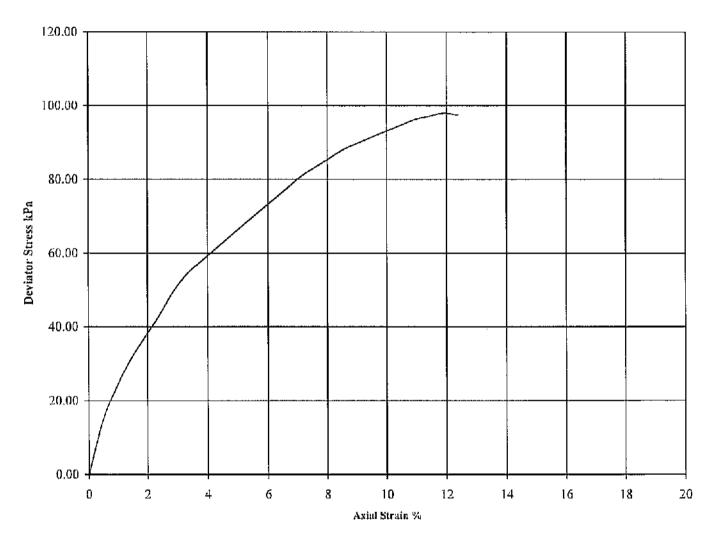
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without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Borchole / Sample Number: BH4

Depth (m):

1.00-1.45



Diamete	er (mm):	102	Height	(mm):	210	Test:	100 mm Single S		Stage.
	Moisture	Bulk	Dry	Cell	Deviator	Cohesion	Failure	Mode	Remarks
Specimen	Content	Density	Density	Pressure	Stress		Strain	aſ	See summary of soil description.
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(k₽a)	(kPa)	(%)	Failure	
Α	19	2.08	1.74	20	98	49	11.9	Plastic	
В									
С									

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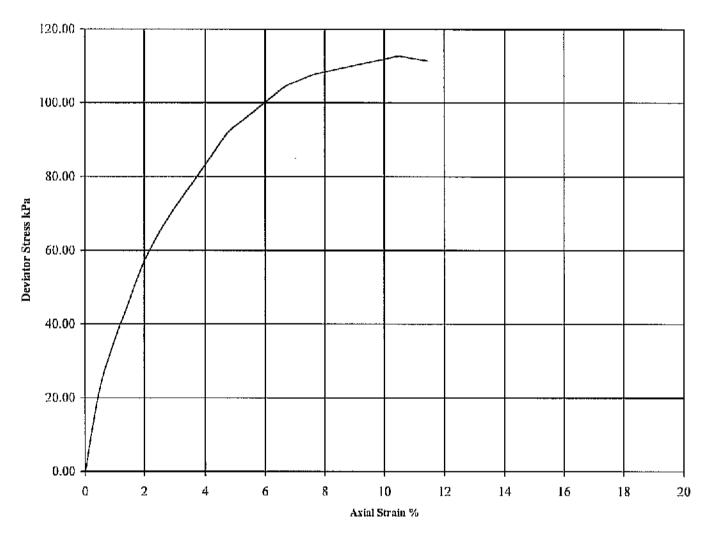
Contract No: PSL08/0533

without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Borehole / Sample Number: BH6

Depth (m):

1.00-1.45



Diamete	er (mm):	102	Height	(mm):	210	Test:	100 m	ım Single S	Stage.
	Moisture	Bulk	Dry	Cell	Deviator	Cohesion	Failure	Mode	Remarks
Specimen	Content	Density	Density	Pressure	Stress		Strain	of	See summary of soil description.
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	(kPa)	(%)	Failure	
A	18	2.14	1.82	20	113	56	10.5	Plastic	
В									
С									

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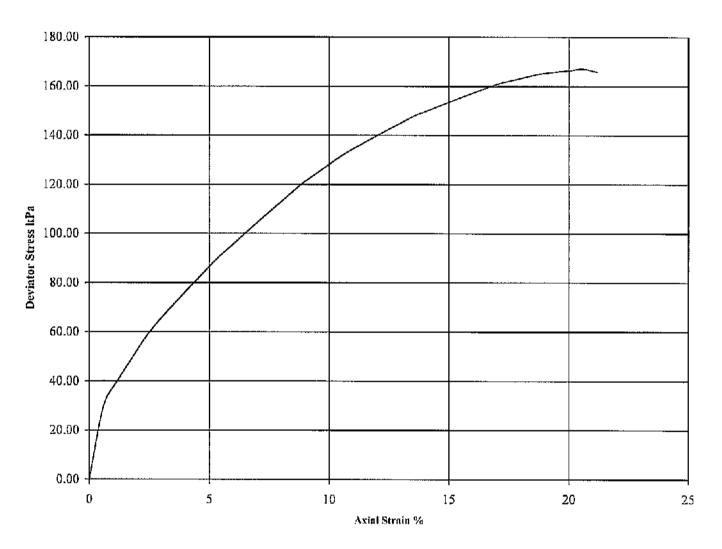
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without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Borehole / Sample Number: BH9 Depth (m): 2.00-2.45



Diamete	er (mm):	102	Height	(mm):	170	'l'est:	100 mm Single St		Stage.
	Moisture	Bulk	Dry	Cell	Deviator	Cohesion	Failure	Mode	Remarks
Specimen	Content	Density	Density	Pressure	Stress		Strain	lo	See summary of soil description.
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	(kPa)	(%)	Failure	
A	13	2,20	1.95	40	167	84	20.6	Plastic	
В									
С									

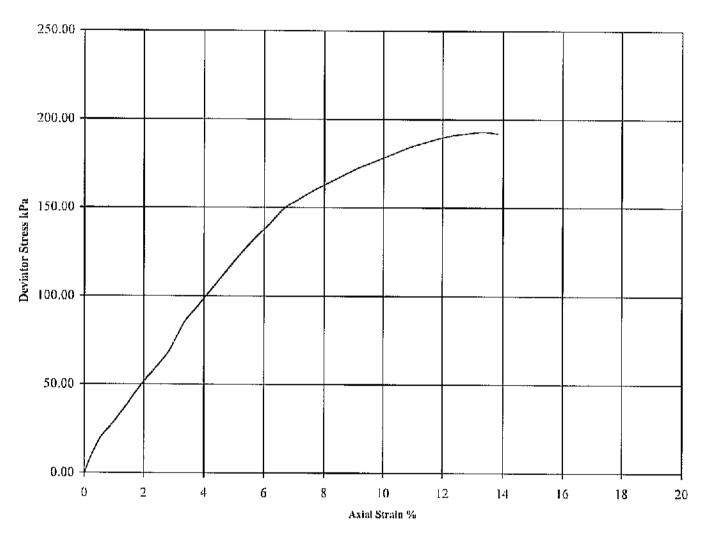
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without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Borehole / Sample Number: BH11

Depth (m):

3.00-3.45



Diamete	er (mm);	102	Height	(mm):	210	Test:	100 π	m Single	Stage,
	Moisture	Bulk	Dry	Cell	Deviator	Cohesion	Failure	Mode	Remarks
Specimen	Content	Density	Density	Pressure	Stress		Strain	10	See summary of soil description.
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	(ltPa)	(%)	Failure	
А	13	2.20	1.95	60	193	97	13.3	Plastic	
В									
С				-					

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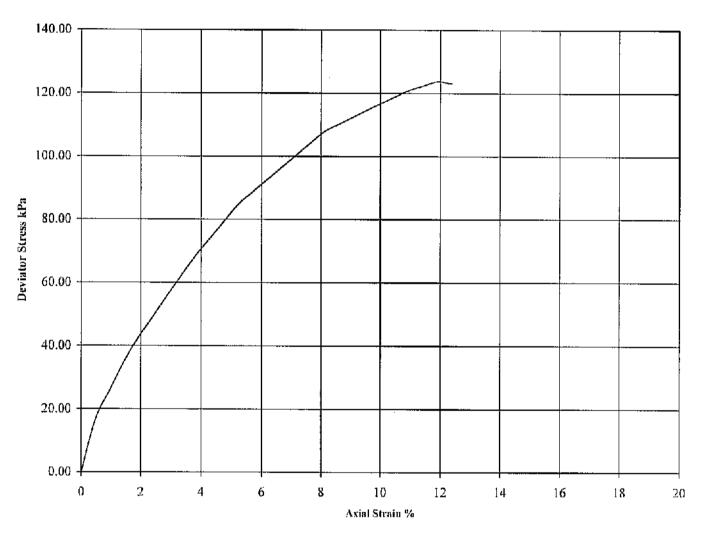
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without measurement of Pore Pressure B.S. 1377: Part7: Clause 8: 1990

Borehole / Sample Number: BH12

Depth (m):

1.00-1.45



Diamete	er (nun):	102	Height	(mm):	210	Test:	100 m	m Single	Stage.
	Moisture	Bulk	Dry	Cell	Deviator	Cohesion	Failure	Mode	Remarks
Specimen	Content	Density	Density	Pressure	Stress		Strain	υſ	See summary of soil description.
	(%)	(Mg/m3)	(Mg/m3)	(kPa)	(kPa)	(kPa)	(%)	Failure	
Λ	14	2,28	2.00	20	124	62	11.9	Plastic	
В									
С									

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Contract No:
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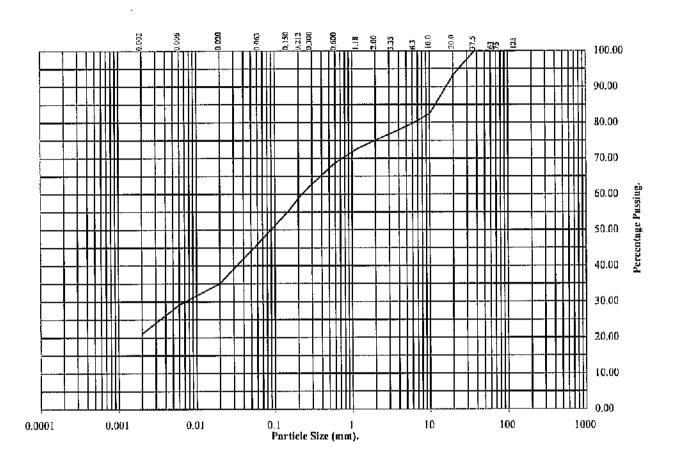
### BS1377:Part 2:1990.

Wet sieve and Pipette Analysis: Clause 9.2 9.4

Borehole/Sample Number:

BH2

Depth (m): 3.00-3.45



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	93
10	83
6.3	80
3.35	77
2	75
1.18	73
0.6	69
0.3	63
0.212	60
0.15	55
0.063	47

Particle	Percentage
Diameter	Passing
0.02	35
0,006	29
0.002	21

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt Clay	0 25 28 26 21

See summary of soil descriptions.

Checked By	Date	Approved By	Date
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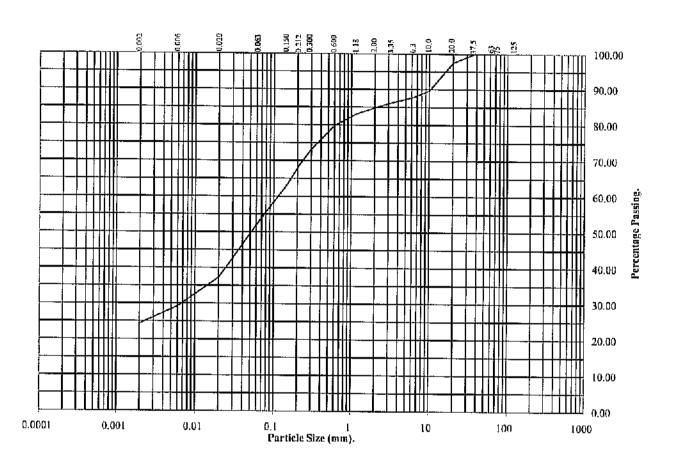
BS1377:Part 2:1990.

Wet sieve and Pipette Analysis: Clause 9.2 9.4

Borehole/Sample Number:

BH4

Depth (m): 1.00-1.45



BS Test	Percentage	
Sieve	Passing	
125	100	
75	100	
63	100	
37.5	100	
20	97	
10	90	
6.3	88	
3,35	86	
2	85	
1.18	83	
0.6	80	
0.3	73	
0.212	69	
0.15	63	
0.063	53	

Particle	Percentage
Diameter	Passing
0.02	37
0.006	29
0.002	24

Soil	Total	
Fraction	Percentage	
Cobbles Gravel Sand Silt Clay	0 15 32 <b>29</b> 24	

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See summary of soil descriptions.

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Contract No.: PSL08/0533

PSLR003,1 Issue 1

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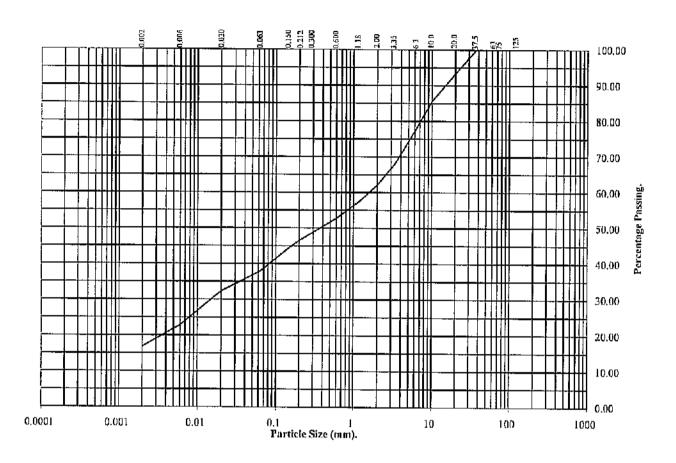
BS1377:Part 2:1990.

Wet sieve and Pipette Analysis: Clause 9.2 9.4

Borehole/Sample Number:

BH8

Depth (m): 1.00-1.45



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	93
10	86
6.3	78
3.35	68
2	62
1.18	57
0.6	53
0.3	49
0.212	47
0.15	45
0.063	38

Particle	Percentage
Diameter	Passing
0.02	32
0.006	23
0.002	17

Soil	Total	
Fraction	Percentage	
Cobbles	л	
Gravel	38	
Sand	24	
Silt	21	
Clay	17	

See summary of soil descriptions.

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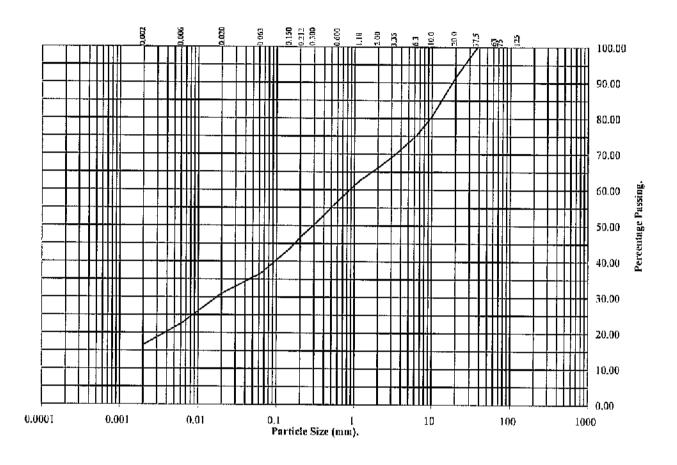
BS1377:Part 2:1990.

Wet sieve and Pipette Analysis: Clause 9.2 9.4

Borehole/Sample Number:

**BH12** 

Depth (m): 1.00-1.45



BS Test	Percentage
Sieve	Passing
125	100
75	100
63	100
37.5	100
20	92
10	<b>8</b> 1
6.3	75
3.35	70
2	66
1.18	63
0.6	57
0,3	50
0.212	47
0.15	44
0.063	37

Particle	Percentage
Diameter	Passing
0.02	31
0.006	23
0.002	17

Soil	Total
Fraction	Percentage
Cobbles Gravel Sand Silt Clay	0 34 29 20 17

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See summary of soil descriptions.

Checked By	Date	Approved By	Date
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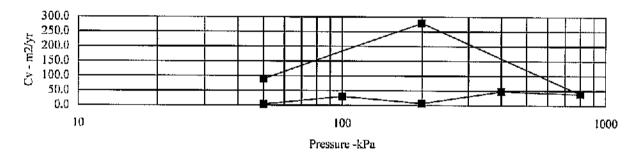
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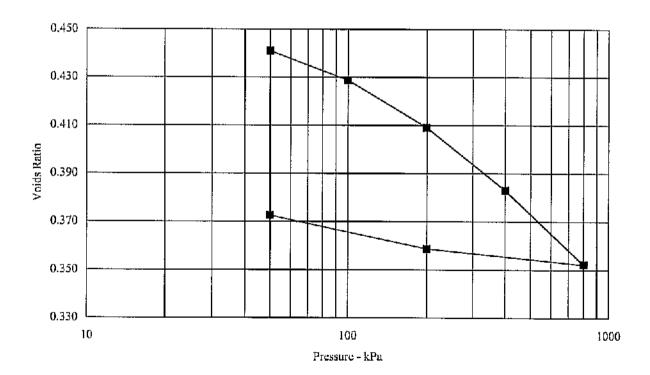
BS 1377: Part 5: 1990

Borehole \ Sample No. BH1

Depth	(111)	2	50-2.	05
	111111	٠	3U-Z.	.ソン

Initial Conditions		Pressure Range		Мν	С٧	Final Conditions		
Moisture Content (%):	17		kPa		m2/MN	m2/yr	Moisture Content (%):	16
Bulk Density (Mg/m3):	2,13	0	<del></del>	50	0.225	3.783	Bulk Density (Mg/m3):	2.24
Dry Density (Mg/m3):	1.82	50	-	100	0.170	30.298	Dry Density (Mg/m3)	1.93
Voids Ratio:	0.4574	100	-	200	0.138	7.120	Voids Ratio:	0.373
Degree of saturation:	99.4	200	-	400	0.092	48.062	Degree of Saturation: :	114.1
Height (mm):	18.69	400	-	800	0.056	38.348	Height (mm) :	17.6
Diameter (mm)	75.03	800	-	200	0.008	279.393	Remarks:	
Particle Density (Mg/m3):	2.65	200	_	50	0.068	89.565	See summary of soil descriptions	
Assumed								•







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HEIGHINGTON LANE WEST, NEWTON AYCLIFFE. Contract No. PSL08/053:

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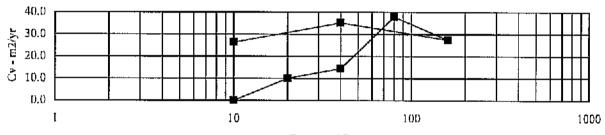
BS 1377: Part 5: 1990

Borehole \ Sample No.

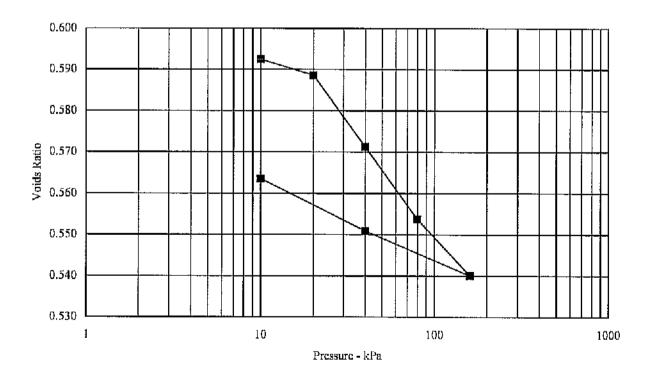
BH3

Depth (m): 0.50-0.95

Initial Conditions		Pressure Range		Mv	Cv	Final Conditions		
Moisture Content (%):	20		kPa		m2/MN	m2/yr	Moisture Content (%):	20
Bulk Density (Mg/m3):	2,00	0		10	Swelling	Swelling	Bulk Density (Mg/m3):	2.04
Dry Density (Mg/m3):	1.67	1 <b>0</b>	-	20	0.241	10.041	Dry Density (Mg/m3)	1.69
Voids Ratio;	0.5900	20	-	40	0.548	14.513	Voids Ratio;	0.564
Degree of saturation:	90.0	40	-	80	0.278	37.893	Degree of Saturation: :	95.5
Height (mm):	19.9	80	-	160	0.110	27.548	Height (mm) :	19.57
Diameter (mm)	75.02	160	-	40	0.059	35.188	Remarks:	
Particle Density (Mg/m3):	2.65	40	-	10	0.271	26.347	See summary of soil descriptions.	
Assumed								



Pressure -kPa



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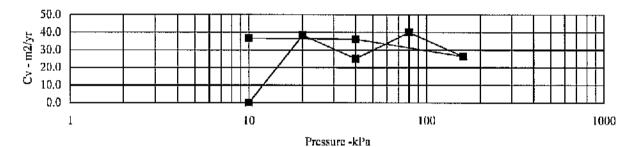
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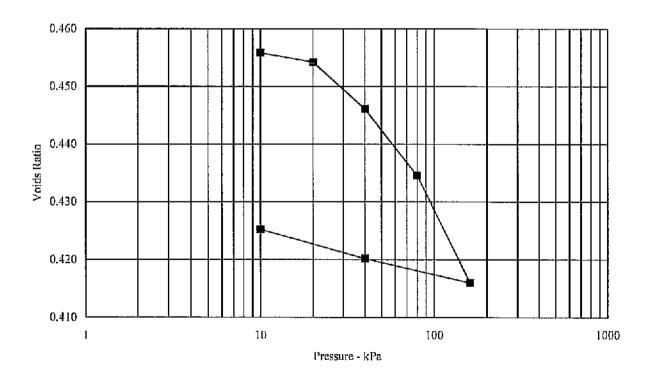
BS 1377: Part 5: 1990

Borehole \ Sample No. BH7

Depth (	(+++)	0.50-0.95
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Initial Conditions		Pressure Range		Mv .	Cy	Final Conditions		
Moisture Content (%):	16		kPa		m2/MN	m2/yr	Moisture Content (%):	16
Bulk Density (Mg/m3):	2.10	0	-	10	Swelling	Swelling	Bulk Density (Mg/m3):	2.16
Dry Density (Mg/m3):	1.82	10	-	20	0.109	38.376	Dry Density (Mg/m3)	1.86
Voids Ratio:	0.4558	20	-	40	0.280	25.129	Voids Ratio:	0.425
Degree of saturation:	90.8	40	-	80	0.199	39.976	Degree of Saturation: :	102.3
Height (mm):	20.21	80	-	160	0.162	26.334	Height (mm):	19.78
Diameter (mm)	75,02	1 <b>60</b>	-	40	0.025	36.145	Remarks:	
Particle Density (Mg/m3):	2.65	40	-	10	0.118	36.689	See summary of soil descriptions.	
Assumed								





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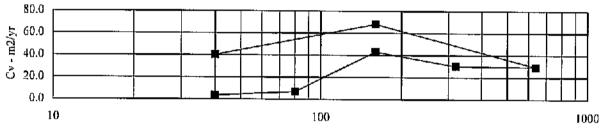
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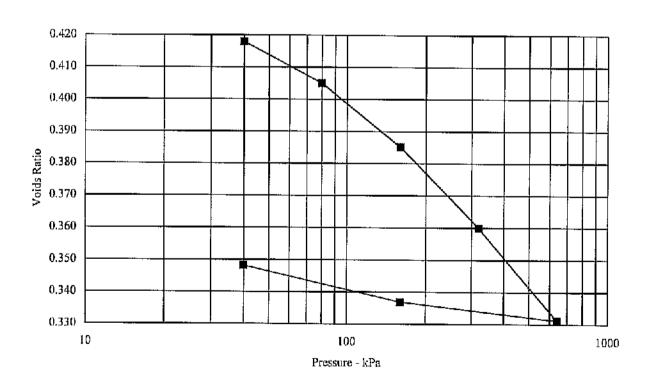
BS 1377: Part 5: 1990

Borehole \ Sample No. BH9 Depth (m): 2.00-2.45

Initial Conditions		Pressure Range		Mv	Cv	Final Conditions		
Moisture Content (%):	15		kPa		m2/MN	m2/yr	Moisture Content (%):	15
Bulk Density (Mg/m3):	2.13	0	-	40	0.233	3.598	Bulk Density (Mg/m3):	2.26
Dry Density (Mg/m3):	1.85	40	-	80	0.227	6.965	Dry Density (Mg/m3)	1.97
Voids Ratio:	0,4313	80	-	160	0,178	43.093	Voids Ratio:	0.348
Degree of saturation:	91.8	160	-	320	0.114	30.173	Degree of Saturation: :	112.4
Height (mm);	20.42	320	-	640	0.066	29.417	Height (mm):	19.23
Diameter (mm)	75.01	640	_	160	0.009	68.124	Remarks:	
Particle Density (Mg/m3):	2.65	160	-	40	0.070	40.305	See summary of soil descriptions	
Assumed								•



Pressure -kPa



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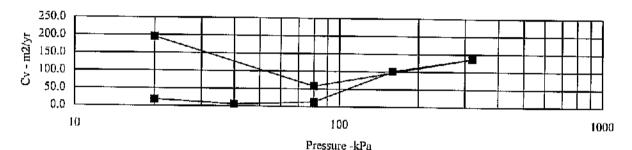
BS 1377: Part 5: 1990

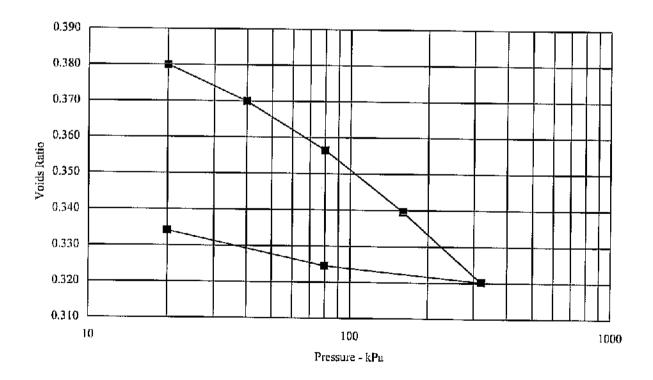
Borehole \ Sample No.

**BH10** 

Depth (m): 1.00-1.45

Initial Conditions		Pres	sure Ra	nge	Mv	Cv	Final Conditions	
Moisture Content (%):	14		kPa		m2/MN	m2/yr	Moisture Content (%):	12
Bulk Density (Mg/m3):	2.18	0	_	20	0.274	18.564	Bulk Density (Mg/m3):	2.23
Dry Density (Mg/m3):	1.91	20	-	40	0.364	5.920	Dry Density (Mg/m3)	1.99
Voids Ratio:	0.3876	40	-	80	0.245	13.168	Voids Ratio:	0.334
Degree of saturation:	95.7	80	-	160	0.156	100.974	Degree of Saturation: :	96.9
Height (mm):	20.05	160	-	320	0.090	136.596	Height (mm) :	19.28
Diameter (mm)	75.02	320	_	80	0.014	57.882	Remarks:	
Particle Density (Mg/m3):	2.65	80	-	20	0.120	194.974	See summary of soil descr	intions :
Assumed								







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HEIGHINGTON LANE WEST, NEWTON AYCLIFFE. Contract No.

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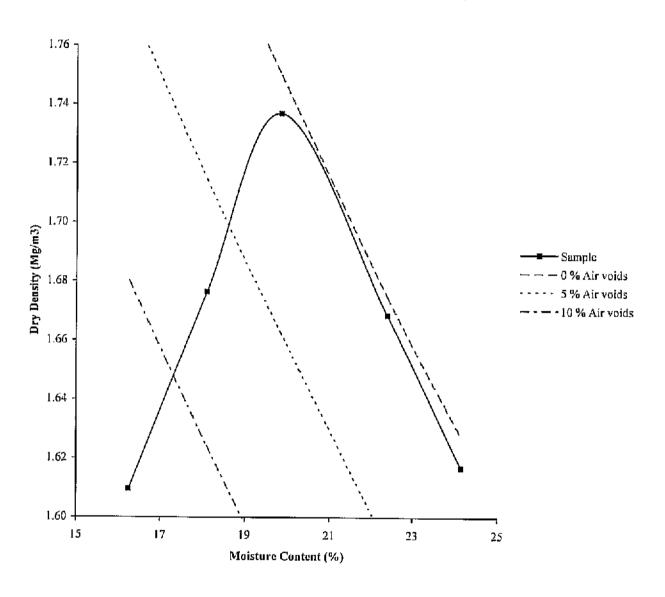
Sept 06

BS 1377 : Part 4 : 1990

Borehole /Sample Number: BH2

Depth (m):

2.00-2.45

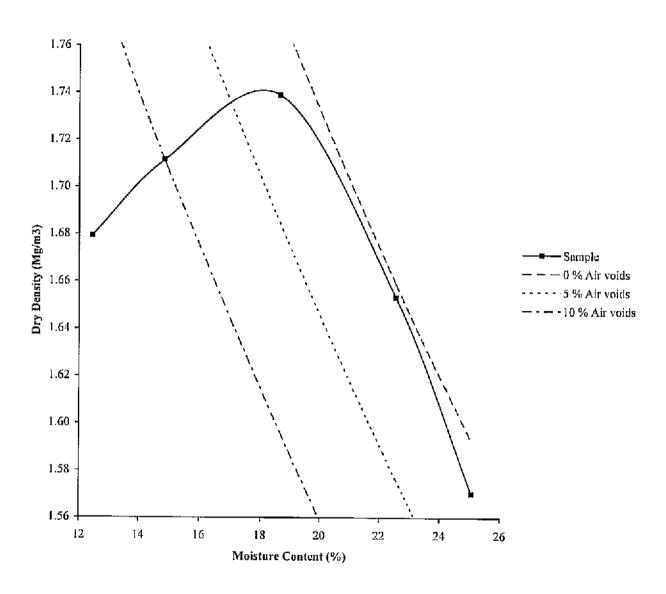


Initial Moisture Content:	20	Method of C	ompaction	2.5Kg	1	Separate	Sample
Particle Density (Mg/m3):	2.68	Assumed	Material Retained on 37.5 mm Test Sieve (%):				• 1
Maximum Dry Density (mg/m3):			Material Retained on 20.0 mm Test Sieve (%):			/e (%):	
Optimum Moisture Content (%):		20				<u> </u>	"
Remarks	See S	summary of Soil	Descriptions.			<del></del>	

	Checked By Date	Approved By Date
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BS 1377 : Part 4 : 1990

Borchole /Sample Number: BH4 Depth (m): 0.50-1.00



Initial Moisture Content:	19	Method of C	ompaction	2,5Kg	/ s	eparate	Sample
Particle Density (Mg/m3):	2.65	Assumed	Material Retained on 37.5 mm Test Sieve (%):				0
Maximum Dry Density (mg/m3):	1.74	Material Retained on 20.0 mm Test Sieve (%):			5):	3	
Optimum Moisture Content (%):							
Remarks	Sec S	Summary of Soil	Descriptions.				

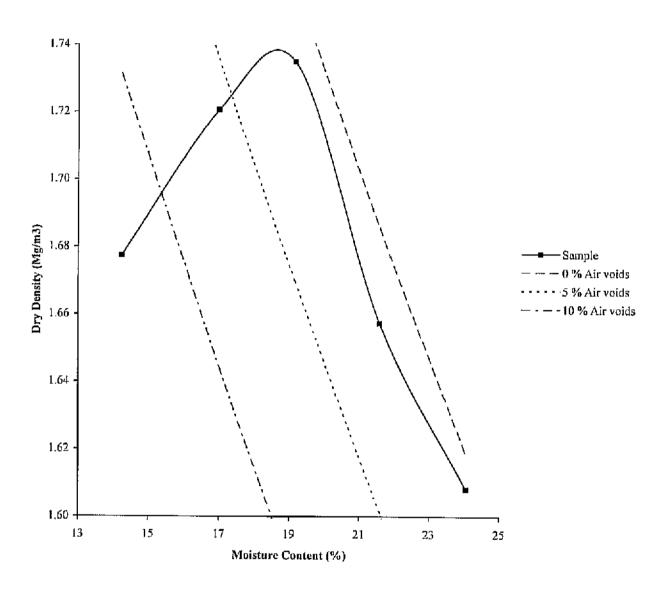
	Checked By Date	Approved By Date
<b>PSL</b> Professional Soils Laboratory	HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.	Contract No. PSL08/0533

BS 1377 : Part 4 : 1990

Borehole /Sample Number: BH8

Depth (m):

0.50 - 1.00



Initial Moisture Content:	19	Method of C	ompaction	2.5Kg	7	Separate	Sample
Particle Density (Mg/m3):	2.65	Assumed	Assumed Material Retained on 37.5 mm Test Sieve (%):				6
Maximum Dry Density (mg/m3):			Material Retained on 20.0 mm Test Sieve (%):			ve (%);	5
Optimum Moisture Content (%):		19		-		··	-
Remarks	See S	Summary of Soil	Descriptions.				

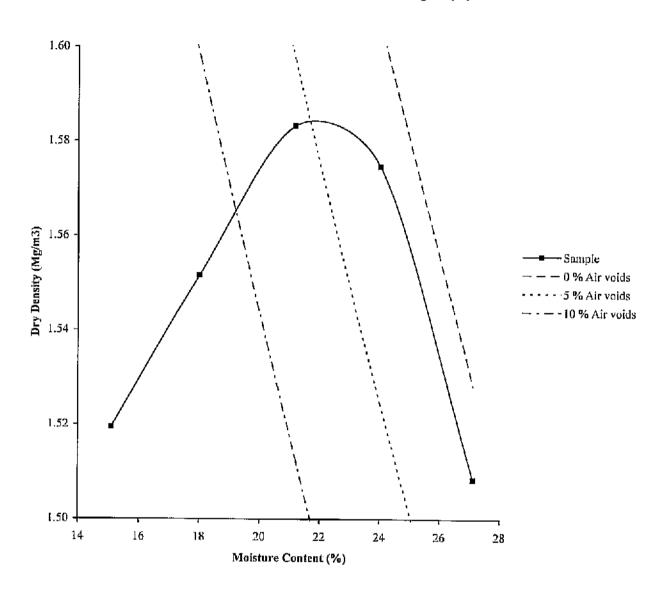
	Checked By Date	Approved By Date
<b>PSL</b> Professional Soils Laboratory	HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.	Contract No. PSL08/0533

BS 1377 : Part 4 : 1990

Borchole /Sample Number: BH12

Depth (m):

0.30 - 1.00



Initial Moisture Content:	27	Method of Co	ompaction	2.5Kg	1	Separate	Sample
Particle Density (Mg/m3);	2,61	Assumed	Material R	tetained on 37.5	mm Test Sieve	(%):	10
Maximum Dry Density (mg/m3):		1.58	Material R	letained on 20.0	mm Test Sieve	(%):	3
Optimum Moisture Content (%):		22			·		
Remarks	See S	Summary of Soil	Descriptions.	·			

	Checked By Date	Approved By Date
<b>PSL</b> Professional Soils Laboratory	HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.	Contract No. PSL08/0533

### California Bearing Ratio Test.

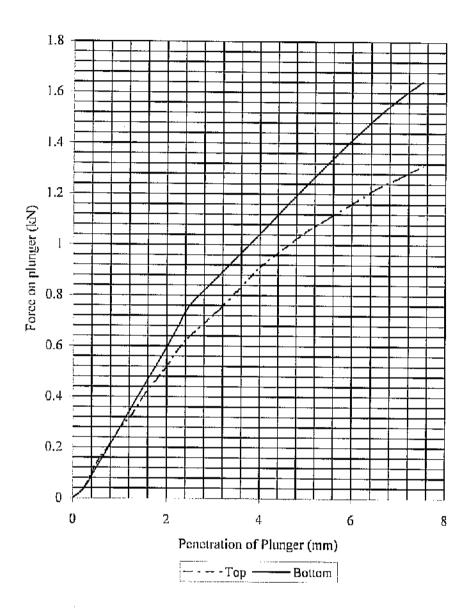
BS 1377 : Part 4 : 1990

Trial Pit Number

**TP34** 

Depth (m):

0.90-1.90



Initial Sample Condition	ons .	Test Conditions		Method of compac	tion	2.5 Kg Rammer	
Moisture Content:	17.2	Surcharge Kg:	4.20	Final Moisture Con	ntent %	C.B.R. Value %	
Bulk Density Mg/m3:	2.11	Soaking Time hrs	0	Sample Top	17.5	Sample Top	5,3
Dry Density Mg/m3:	1.80	Swelling mm:	0	Sample Bottom	17.0	Sample Bottom	6.2
Percentage retained on	20mm	Remarks:	See Su	ımmary of Soil De	escription.		
BS test sieve:	4						

Checked by	Date	Approved By	Date
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Professional Soils Laboratory

HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.

Contract No. PSL08/0533

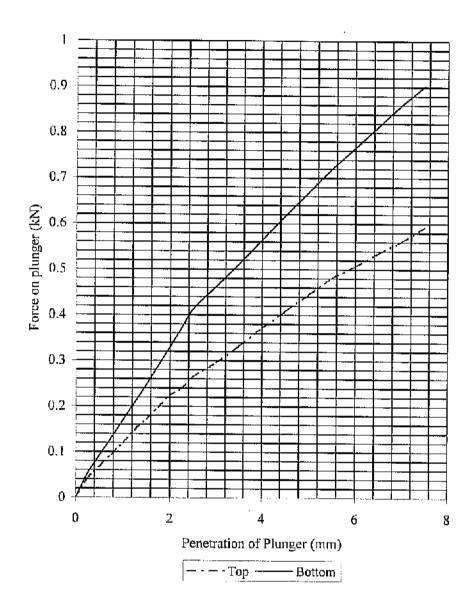
BS 1377 : Part 4 : 1990

Trial Pit Number

TP41

Depth (m):

1.50



Initial Sample Condition	ons	Test Conditions		Method of compac	tion	2.5 Kg Rammer	
Moisture Content:	17.3	Surcharge Kg:	4.20	Final Moisture Cor	ntent %	C.B.R. Value %	
Bulk Density Mg/m3:	2.10	Soaking Time hrs.	0	Sample Top	17.0	Sample Top	2.2
Dry Density Mg/m3:	1.79	Swelling mm:	0	Sample Bottom	17.6	Sample Bottom	3.3
Percentage retained on 20mm Remarks: See			See Su	mmary of Soil De	escription.		
BS test sieve:	15				-		

Checked by	Date	Approved By	Date
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Professional Soils Laboratory

HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.

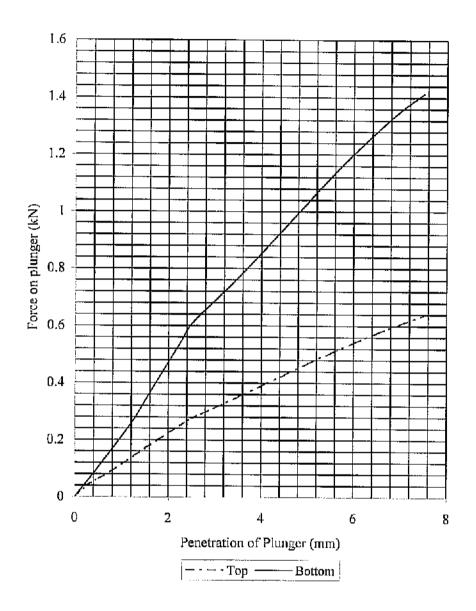
BS 1377 : Part 4 : 1990

Trial Pit Number

TP42

Depth (m):

0.95-1.95



Initial Sample Condition	บบร	Test Conditions		Method of compac	tion	2.5 Kg Rammer	
Moisture Content:	15.8	Surcharge Kg:	4.20	Final Moisture Cor	itent %	C.B.R. Value %	
Bulk Density Mg/m3:	2.13	Soaking Time hrs	0	Sample Top	16.6	Sample Top	2.3
Dry Density Mg/m3:	1.84	Swelling mm:	0	Sample Bottom	15.0	Sample Bottom	5.2
Percentage retained on	20mm	Remarks:	See Su	mmary of Soil De	scription.		
BS test sieve:	2				•		

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**Professional Soils Laboratory** 

HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.

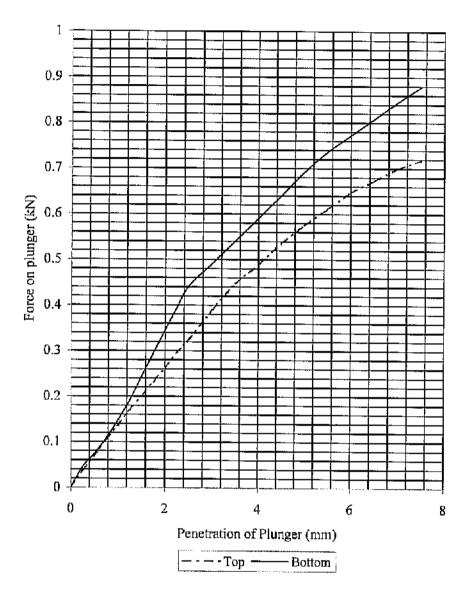
BS 1377: Part 4: 1990

Trial Pit Number

TP52

Depth (m):

0.60-1.60



Initial Sample Conditi	ons	Test Conditions		Method of compac	tion	2.5 Kg Rammer	
Moisture Content:	16.9	Surcharge Kg:	4.20	Final Moisture Cor	ntent %	C.B.R. Value %	
Bulk Density Mg/m3:	2.26	Soaking Time hrs	0	Sample Top	17.0	Sample Top	2.9
Dry Density Mg/m3:	1.93	Swelling mm:	0	Sample Bottom	16.8	Sample Bottom	3.5
Percentage retained on	20mm	Remarks:	See Su	mmary of Soil Da	escription.		
BS test sieve;	(	<u>,                                    </u>		•	•		

Checked by	Date	Approved By	Date
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**PSU**Professional Solls Laboratory

HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.

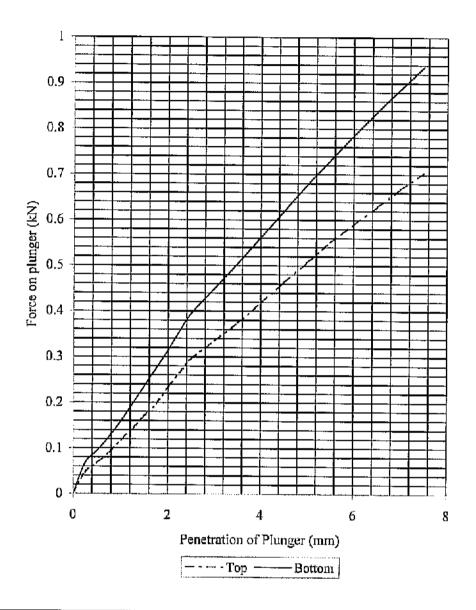
BS 1377: Part 4: 1990

Trial Pit Number

TP59

Depth (m):

2.00



Initial Sample Conditi	ons	Test Conditions		Method of compac	tion	2.5 Kg Rammer	
Moisture Content:	15.1	Surcharge Kg;	4.20	Final Moisture Cor	itent %	C.B.R. Value %	
Bulk Density Mg/m3:	2.13	Soaking Time hrs	0	Sample Top	15.3	Sample Top	2,5
Dry Density Mg/m3:	1.85	Swelling mm:	0	Sample Bottom	15.0	Sample Bottom	3.4
Percentage retained on	20mm	Remarks:	See Su	mmary of Soil De	escription.		
BS test sieve:	3						

Checked by	Date	Approved By	Date
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**PSL**Professional Suits Laboratory

HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.

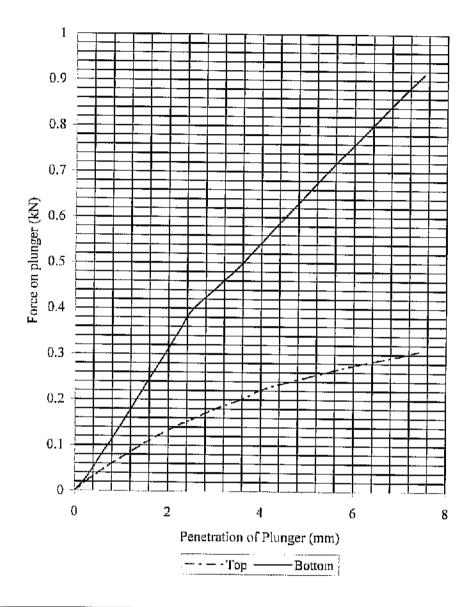
BS 1377: Part 4: 1990

Trial Pit Number

TP62

Depth (m):

1.00



Initial Sample Condition	ons	Test Conditions		Method of compac	ction	2.5 Kg Rammer	
Moisture Content:	19,6	Surcharge Kg:	4.20	Final Moisture Co	ntent %	C.B.R. Value %	
Bulk Density Mg/m3:	2.08	Soaking Time hrs	0	Sample Top	19.9	Sample Top	1.2
Dry Density Mg/m3:	1.74	Swelling mm:	0	Sample Bottom	19,3	Sample Bottom	3.3
Percentage retained on	20mm	Remarks:	See Su	mmary of Soil D	escription.	· ·	
BS test sieve:	- (			_	•		

Checked by	Date	Approved By	Date
	nisia		17/3/2

Professional Soils Laboratory

HEIGHINGTON LANE WEST, NEWTON AYCLIFFE.

**PSL** Professional Soils Laboratory

#### TEST AMENDMENT NOTICE

(Please tick boxes	as appropriate)	
From: L.10	MIGHT	To: Ros.S
Date: \(\)3 / 3	/2008	Laboratory Ref: PSLOS/0533
Contract Nun	ber: C2761	Location: HEIGHINGON LANE NEWTON AYCLIFFE
Sample Type: Test/s:	P Sample Number 2.  U o B  TUAMAL  inple cannot be tested for the following the state of the following the state of the following the state of the following the state of the following the state of the following the state of the following the state of the following the state of	Depth (m): 3.00 o D o W o P o C
О	The Sample has not been received	ived
0	There is insufficient material for Maximum Grand Coarse Sample Mass (Required Mass	ain Size (Minimum 10%): o Fine o Medium o  (kg):
0	The Sample has been previously	
0	The Sample has been misplaced	ed in the Laboratory ( CARGE GRAVEL
6	The Sample is unsuitable for te.  SAMPLE TOO GRAVEL	
Please advise a	ection required:	
O	Perform original test on the following	
	· ·	o TP Sample Number: Depth (m) o U o B oD oW oP o C
o	Combine original Sample with	the following Sample:
	о ВН	o TP Sample Number: Depth (m)
	Sample Type:	
0	Perform the following alternative	ive test/s on the original Sample:
o	Perform non-standard test on m (Written Confir	naterial available rmation is required from the Client).
o	Take no further action.	
Signed		Date
_	ect Engineer)	_ <del></del>
	· ·	

**PSL**Professional Solls Laboratory

## TEST AMENDMENT NOTICE

(Please tick boxes a	s appropriate)	
From: L.K.	J(GHT	To: Qad - S
Date: \3 / 3	/2008	Laboratory Ref: PSCO8/0533
Contract Numb	per: C2761	Location: HEIGHINGTON LANE NEUTON AYECIFFE
Sample Type: Test/s:	TRIAXIAL	Depth (m): 2.500 o D o W o P o C
The above sam	ple cannot be tested for the follo	wing reasons:
0	The Sample has not been receive	ved
o	Coarse Sample Mass (I	in Size (Minimum 10%): o Fine o Medium o
	Required Mass	(kg):
0	The Sample has been previously	y tested.
0	The Sample has been misplaced	in the Laboratory
	The Sample is unsuitable for tes	sting because:
Please advise ac	ction required:	
Q	Perform original test on the foll o BH Sample Type:	o TP Sample Number: Depth (m)
o	Combine original Sample with to BH Sample Type:	o TP Sample Number: Depth (m)
o .	Perform the following alternativ	re test/s on the original Sample:
· a	Perform non-standard test on ma (Written Confirm	aterial available mation is required from the Client).
О "	Take no further action.	
Signed (Projec	t Engineer)	Date

**PSL**Professional Solis Laboratory

Please tick boxes	AVIENDIVIENT N as appropriate)	OTICE
From: L	sa willson	To: Rob. S
Date:13/3	/2008	Laboratory Ref: PSI 08 0533
Contract Num BHO T Sample Type: Test/s:	P Sample Number	Depth (m) o. S-O. GIS o P o C
The above san	aple cannot be tested for the follo	owing reasons:
o	The Sample has not been receive	ved
o	There is insufficient material for Maximum Grain Coarse Sample Mass (In Required Mass)	in Size (Minimum 10%): o Fine o Medium o
О	The Sample has been previously	y tested.
0	The Sample has been misplaced	1 in the Laboratory
Sax	The Sample is unsuitable for te	sting because:
Please advise a	ction required:	
0	Perform original test on the following of BH Sample Type:	o TP Sample Number: Depth (m)
o	Combine original Sample with to BH Sample Type:	the following Sample:  o TP Sample Number: Depth (m) o U o B oD oW oP o C
o .	Perform the following alternative	ve test/s on the original Sample:
o	Perform non-standard test on m (Written Confir	naterial available mation is required from the Client).
o	Take no further action.	
Signed (Proje	ect Engineer)	Date

# PSL

Professional Soils Laboratory

#### TEST AMENDMENT NOTICE

(Please tick boxes as appropriate)													
From: LISA WUSAN	To: 800 - S												
Date: 3 / 3 /2008	Laboratory Ref: PSLO8   OS33												
Contract Number:	Location: Heighington long west Newton Ayaluffe Depth (m): 1-0-1-45 o D o W o P o C												
Sample Type: a O B Test/s:	<u>k</u>												
The above sample cannot be tested for the foll-	owing reasons:												
o The Sample has not been recei	ived												
O There is insufficient material f Maximum Gra Coarse Sample Mass ( Required Mass	nin Size (Minimum 10%): o Fine o Medium o (kg):												
o The Sample has been previous	The Sample has been previously tested.												
o The Sample has been misplace	d in the Laboratory												
The Sample is unsuitable for to	esting because:												
Please advise action required:													
<ul> <li>Perform original test on the following</li> </ul>	llowing alternative Sample:												
o BH Sample Type:	o TP Sample Number: Depth (m) o U o B oD oW oP o C												
o Combine original Sample with o BH Sample Type:	o TP Sample Number: Depth (m)												
o Perform the following alternati	ive test/s on the original Sample:												
o Perform non-standard test on n (Written Confi	naterial available rmation is required from the Client).												
o Take no further action.													
Signed (Project Engineer)	Date /												

#### Schedule of Accreditation

#### **United Kingdom Accreditation Service**

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK



Accredited to ISO/IEC 17025:2005

#### Professional Soils Laboratory Ltd

Issue date: 09 November 2007 Issue No: 002

5/7 Hexthorpe Road

Hexthorpe Doncaster DN4 DAG

Contact: Mr A Watkins Tel: +44 (0)870 240 1964

Fax: +44 (0)870 240 1965

E-Mail: awatkin@presoils.co.uk Website: www.prosoils.co.uk

Testing performed at the above address only

#### **DETAIL OF ACCREDITATION**

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
AGGREGATES	Particle size distribution - sieving method	BS EN 933-1:1997
SOILS for civil engineering purposes	Moisture content - oven drying method	BS 1377-2:1990
	Liquid limit - cone penetrometer	BS 1377-2:1990
	Liquid limit - cone penetrometer - one point	BS 1377-2:1990
	Plastic limit	BS 1377-2:1990
	Plasticity index and liquidity index	BS 1377-2:1990
	Particle density - gas jar	BS 1377-2:1990
	Particle size distribution - wet sieving	BS 1377-2:1990
	Particle size distribution - dry sieving	BS 1377-2:1990
	Particle size distribution - sedimentation - pipette method	BS 1377-2:1990
	Dry density/moisture content relationship (2.5 kg rammer)	BS 1377-4:1990
	Dry density/moisture content relationship (4.5 kg rammer)	BS 1377-4:1990



#### Accredited to ISO/IEC 17025:2005

#### Schedule of Accreditation issued by

# United Kingdom Accreditation Service 21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

#### Professional Soils Laboratory Ltd

Issue No: 002 Issue date: 09 November 2007

#### Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used			
SOILS for civil engineering purposes	California Bearing Ratio (CBR) (loads from 0.2 to 50 kN)	BS 1377-4:1990			
	Moisture condition value (MCV)	BS 1377-4:1990			
	MCV - natural moisture content	BS 1377:Part 4:1990			
	MCV/moisture content relation	BS 1377:Part 4:1990			
	Uniformity coefficient (221 2217)	BS 6100-2.2.1:1992			
· · · · · · · · · · · · · · · · · · ·	FND				



# APPENDIX F

# GROUNDWATER MONITORING CERTIFICATES



## **MONITORING RESULTS**

Client:

Merchant Developments and Anglo Irish Bank Heighington Lane West, Newton Aycliffe

Site:

Date:

26/02/08

Job No:

2761

Sheet:

1 of 1

Ambient cor	ocentration	(% Volu	ıme):	CH <sub>4</sub> O <sub>2</sub>				CO <sub>2</sub>			
Monitoring Point		Gas Concentration							Gas Emission Rate		Base of Standpipe
		Highest	:		Steady (Lowest)				7		
Ref	GWL	CH4 CO2		CO <sub>2</sub>	CH4		CO <sub>2</sub>	O <sub>2</sub>	Litre / Hour		
	(m) bgl	% lel	% v/v	(%)	% lel	% v/v	(%)	(%)	ī	C	-
BH2	5.16				1						5.40
BH4	Dry				<u> </u>						3.00
BH5	0.48				T T						5.68
вн6	NR				1						NR
BH10	0.97				T			<u> </u>			6.02
BH11	NR										NR
							 I				
					+						<del> </del>
	<u> </u>				<del>                                     </del>						
										ļ	
-										-	
Barometric Barometric Weather: Ground:		rend:			D	lonitoring ate of La perator		ration:	Dip Mo	eter	
Key Remark		ks									
ND - None D NR - Not Res I — Instanta C - Constant	orded neous Flow	1) Bore	eholes 6 a	nd 11 not	complete	d (delay l	by drille	r's).			
					Checke			ГС Ар	proved		R



## **MONITORING RESULTS**

Client:

Merchant Developments and

Site:

Anglo Irish Bank Heighington Lane West, Newton Aycliffe

04/03/08 Date:

Job No:

2761

Sheet: 1 of 1

Ambient con	centration	ı (% Volt	ıme):	CH <sub>4</sub> O <sub>2</sub>							
Monitoring Point		Gas Concentration								sion	Base of Standpipe
		Highest	ţ.		Steady (Lowest				Rate		
Ref	GWL	CH <sub>4</sub>		CO <sub>2</sub>	CH4		CO2	O <sub>2</sub>	Litre / Hour		
	(m) hgl	% lei	% v/v	(%)	% lel	% v/v	(%)	(%)	I	C	1
BH2	5.26										5.40
BH4	Dry										3.00
BH5	0.65									1	5.68
BH6	2.77				Ì						5.42
BH10	1.19										6.02
BH11	0.36									1	5.46
•											
• .											
									· · · · · ·	1	
	1		1					<u> </u>	<u> </u>	1	·
	-							1			
									<u> </u>		1
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	<u> </u>										
	1	†		·· <del>·</del>							
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			· · · · · ·							Ì	
									<u> </u>		
Barometric l	Pressure:	I	·!···········		M	Conitorin	g Equip	ment:	Dip Mo	eter	
Barometrie l	Pressure T	Trend:				ate of La	st Calib				
Weather:					O	perator			LC .		
Ground:											
Key		Remar	ks								
ND - None De NR - Not Reco I — Instantau C – Constant	orded ieous Flow						. —				
					Checko	_		FC An	nroved		R





Client:

Merchant Developments and Anglo Irish Bank

Site:

Heighington Lane West, Newton Aycliffe

Job No:

2761

Date:

18/03/08

Sheet:

1 of 1

Ambient concentration (% Volume): CH <sub>4</sub> CC O <sub>2</sub>											
Monitoring Point		Gas Concentration							Gas Emission Rate		Base of Standpipe
		Highest			Steady						
Ref	GWL	_	H4	CO2				O <sub>2</sub>	Litre / Hour		
	(m) bgl	% lel	% v/v	(%)	₩ leI	% v/v	(%)	(%)	1	C	<del>                                     </del>
BH2	Dry										5.40
BH4	Dry									T	3.00
BH5	0.60										5.68
внб	3.07									T	5.42
BH10	1.31				. <u> </u>						6.02
BH11	0.55										5.46
					<del>                                     </del>					1	
										-	
					<u> </u>						
					1				<u> </u>	ļ	
•										1	
								·	•		
Barometric Barometric Weather: Ground:		rend:			D	lonitoring ate of La perator	g Equip st Calib	ration;	Dip M TC	eter	
Key		Remar	ks								
ND - None D NR - Not Re I – Instanta C – Constan	corded neous Flow										