Eastwood&Partners
CONSULTING ENGINEERS

E⊕P

A PHASE 2 REPORT

OF LAND OFF WOOD VIEW

ELSECAR

FOR

GUINNESS NORTHERN COUNTIES

32526 **APRIL 2010**

Eastwood & Partners St Andrews House, 23 Kingfield Road, Sheffield, S11 9AS
Tel: 0114 255 4554 Fax: 0114 255 4330 mail@eastwoodandpartners.com www.eastwoodandpartners.com

A PHASE 2 REPORT

OF LAND OFF WOOD VIEW

ELSECAR

FOR

GUINNESS NORTHERN COUNTIES

Job No.	:	32526
Report Status	:	1
Document Date	:	April 2010
Approved	:	

CONTENTS

EXECUTIVE SUMMARY

1.0 INTRODUCTION

2.0 GROUND INVESTIGATION
2.1 Site Works
2.2 Laboratory Testing

3.0 GROUND CONDITIONS

4.0 GEOTECHNICAL APPRAISAL
4.1 General
4.2 Mining
4.3 Foundations
4.4 Ground Slabs
4.5 Superstructure Precautions
4.6 Problems Due to Past Development
4.7 Excavation Problems
4.8 Roads
4.9 Surface Water Drainage
4.10 Sulphate Attack on Buried Concrete

5.0 CONTAMINATION APPRAISAL
5.1 Objectives of the Investigation
5.2 Site Characterisation
5.3 Sampling Strategy
5.4 Chemical Assessment Values
5.5 Contamination Test Results

6.0 CONCEPTUAL MODEL
6.1 Description of Site and Surrounding Area
6.2 Significant Pollutant Linkages

7.0 RISK ASSESSMENT
7.1 Human Health During Construction
7.2 Human Health After Development
7.3 Plants
7.4 Ground Gas
7.5 Attack on Construction Materials
7.6 Controlled Waters
7.7 Disposal of Materials
7.8 Conclusions and Recommendations

APPENDICES

APPENDIX 1	Trial Pit Logs TP1-4
APPENDIX 2	Chemtest Results, Report Number 99411 Table of Assessment Values Plasticity Results
DRAWINGS	Site Plan 32526/Fig1A

EXECUTIVE SUMMARY

1. Eastwood & Partners were instructed by Guinness Northern Counties to carry out a Phase 2 site investigation of approximately 0.2 hectares of land situated to the north of Wood View in Elsecar, Barnsley, at Grid Reference 438460, 400340.

2. Topsoil covers the site to around 0.5 m depth and generally contains rare brick fragments. Made ground was not encountered in any of the trial pits but may be present beneath former buildings, although is not expected to exceed 1 m in depth. The underlying natural ground comprises clay over sandstone from 1.5 m across the majority of the site. A thin layer of coal was encountered in TP3 from 1.1 to 1.45 m.

3. Precautions against the effects of mining are not required. A mineshaft is shown on the Coal Authority records on the line of a gas main. The location of the mine shaft will need to be investigated further after the gas main has been disconnected.

4. Unreinforced strip footings are recommended founded at a minimum depth of 750 mm within the natural clay. The footings will also need to be deepened when within influence of existing trees in accordance with NHBC standards.

5. Where footings are to be deepened in excess of 1.5 m due to the effect of existing trees, heave precautions may be required if the foundations are in clay. However, footings need not be deepened further upon reaching the sandstone, which is expected across the majority of the site from around 1.5 m depth.

6. Ground bearing slabs will be suitable where less than 600 mm depth of made ground is present. Where more than 600 mm of made ground is present, suspended slabs will be required or ground improvement will need to be undertaken.

7. If the effect of trees require the footing depth to exceed 1.5 m, for example in the western section of the site where clay was encountered to at least 3.0 m depth, a precast concrete floor with an underlying 125 mm void will be required.

8. DS2 AC2 precautions in sub surface concrete should be appropriate. This would require using FND2 concrete.

9. No radon or landfill gas precautions are required. There may still be a risk from mine gas if the mine shaft is located, and the level of precautions may need to be increased to include a suitably resistant gas membrane and possibly a ventilated void beneath the floor slab.

10. Significant contamination was not encountered on site.

11. These conclusions are subject to agreement with the NHBC and the Local Authority.

1.0 INTRODUCTION

This report presents the findings of a Phase 2 investigation by Eastwood & Partners for Guinness Northern Counties. It is based on a site walkover, trial pit investigation and chemical test results for contamination levels.

This report should be read in conjunction with our Phase 1 report for this site, reference 32526-01 and dated February 2010.

The recommendations are based on the assumption that the site will be developed with residential properties and associated hardstanding and landscaping. It is also assumed that ground levels will remain similar to those at present for the proposed development. Where assessments of the site areas affected in particular ways are given these are approximate.

All information, comments and opinions given in this report are based on the information gained from the ground conditions encountered during the site work and the results of laboratory testing. However, there may be conditions at the site, which have not been taken into account, such as unpredictable soil strata and groundwater conditions between or below trial pit excavations. It should be noted that groundwater levels vary due to seasonal or other effects and may differ from those occurring during the investigation.

This report was prepared for Guinness Northern Counties in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded, unless previously authorised by Eastwood & Partners.

2.0 GROUND INVESTIGATION

2.1 Site Works

Four trial pits, designated TP1 to TP4, were excavated across the site on 31 March 2010 to a maximum depth of 3.2 m bgl in order to ascertain the ground conditions and any contaminative issues that may be present.

The positions of the exploratory locations were set out by Eastwood & Partners following consultation with available services records and scanning the positions with a Cable Avoidance Tool (CAT).

The trial pit and trench logs are enclosed in the appendix and their locations are shown on the appended Site Plan, Drawing Number 32526/Fig1A.

2.2 Laboratory Testing

During the fieldwork, samples of soil were obtained for subsequent laboratory testing. Three samples of topsoil and one sample of natural clay were tested for chemical contaminants, as discussed in section 5.0, by ChemTest which is a UKAS accredited laboratory which provides testing to MCERT standards. The results are enclosed in the appendix.

One sample of natural clay was dispatched to Professional Soils Laboratory in Doncaster for plasticity testing. The results are also enclosed in the appendix.

3.0 GROUND CONDITIONS

The general ground conditions encountered on site were:

Topsoil

Topsoil covers the site to around 0.5 m depth and generally contains rare brick fragments.

Made Ground

Made ground was not encountered in any of the trial pits but may be present beneath former buildings, although not expected to a significant depth. During the site walkover for the Phase 1 report open service trenches recorded less than 1 m of made ground.

Natural Ground

TP1, excavated in the western section of the site, encountered natural clay with mudstone fragments to at least 3.2 m depth. Natural clay was found beneath the topsoil elsewhere on site, over sandstone from around 1.5 m depth. Mudstone was encountered beneath the sandstone in TP2 from 2.2 m.

A thin layer of coal was encountered in TP3 from 1.1 to 1.45 m.

Groundwater

Groundwater was generally not encountered in the intrusive investigation, although the mudstone was noted to be damp in the base of TP2 at 3.1 m.

4.0 GEOTECHNICAL APPRAISAL

4.1 General

Topsoil covers the site to around 0.5 m depth and generally contains rare brick fragments. Made ground was not encountered in any of the trial pits but may be present beneath former buildings, although is not expected to exceed 1 m in depth. The underlying natural ground comprises clay over sandstone from 1.5 m across the majority of the site. A thin layer of coal was encountered in TP3 from 1.1 to 1.45 m.

The natural clay should provide a safe bearing capacity of 125 kN/m^2, increasing to at least 400 kN/m^2 in the sandstone below.

One sample of the natural clay were sent for plasticity testing and produced a modified plasticity index of 11.7 %, which equates to low shrinkability in accordance with NHBC Standards.

4.2 Mining

Four trial pits were excavated and coal 350 mm thick was encountered in one trial pit,. The Coal Authority report states that the shallowest worked seam is the Barnsley seam, around 50 m beneath the site. A nearby borehole log from Elsecar Colliery indicates a thin coal seam around 50 m above the Barnsley seam. This is believed to be the seam found in our trial pit.

The latest geological map shows an inferred outcrop of the Kent's Thin coal seam along the site's southern boundary, dipping beneath the site to the north east at around 5°. This seam is expected to lie around 90 m above the Barnsley seam. As stated in our Phase 1 Report, this information does not correlate with the colliery data. However, if the coal we found corresponds to a thin seam around 50 m above the Barnsley Seam, as indicated in the colliery logs, it is likely that the outcrop of the Kent's Thin (and the underlying Kent's Thick) lies beyond the site to the north east.

Also, if seams of workable thickness such as the Kent's Thin and Kent's Thick lie within 30 m of the surface, the Coal Authority Report states the likelihood of them being

worked. The Coal Authority Report for this site does not record the presence of shallow coal workings, which supports the conclusion that the Kent's Thin and Thick seams lie beyond the site. Therefore, as the Barnsley seam is expected to be the shallowest named worked seam, workings within this seam at 50 m depth, should not affect the proposed development.

The Coal Authority Report shows a mine shaft on the site, however, we could not investigate this as a gas pipe runs through the area where the mine shaft is thought to exist. After the gas pipe has been disconnected, the natural ground will need to be exposed for inspection. The Coal Authority have stated that they are not sure if the mine shaft actually exists. However, if it is found, it will need to be drilled, grouted and capped. The Coal Authority will need to be consulted if development is to take place over the mine shaft.

4.3 Foundations

Unreinforced strip footings are recommended for the proposed residential development, founded at a minimum depth of 750 mm within the natural clay. The footings will also need to be deepened when within influence of existing trees in accordance with NHBC standards. Where footings are to be deepened in excess of 1.5 m in clay soils due to the effect of existing trees, heave precautions will be required. However, footings need not be deepened further upon reaching the sandstone, which is expected across the majority of the site from around 1.5 m depth.

Where coal is found at footing depth it is expected generally to be at least as strong as the surrounding ground and therefore footings may be founded on it. This will however have to be agreed with the regulators.

4.4 Ground Slabs

Ground bearing slabs will be suitable where less than 600 mm depth of made ground is present. Where more than 600 mm of made ground is present, suspended slabs will be required or ground improvement works be undertaken. An in-situ concrete slab, suitably reinforced to span between supports, could be used, or a beam and block floor with an underlying void.

If the effect of trees cause the footing depth to exceed 1.5 m, for example in the western section of the site where clay was encountered to at least 3.0 m depth, a precast concrete floor with an underlying 125 mm void will be required.

4.5 Superstructure Precautions

The ground conditions to not require superstructure precautions to be taken.

4.6 Problems Due to Past Development

The site formerly comprised housing from the 1950s to 2000. Services will need to be redirected. Old foundations may be encountered in excavations.

A mine shaft may also be present on the southern site boundary.

4.7 Excavation Problems

Shallow sandstone was encountered in the eastern and central sections of the site. This may cause some difficulty during excavation. On the basis of the materials encountered, it is likely that the sides of any excavations will remain fairly stable.

Where excavations which workers will enter are over 1.2 m deep, or less where there is a risk of harm from collapse of the side of the excavation, the sides should be supported or batterred back to make them safe.

4.8 Roads

The existing road is to be incorporated into the proposed development.

4.9 Surface Water Drainage

Due to the clayey ground conditions, soakaways will generally not be suitable. Sandstone was found at relatively shallow depth and can sometimes be relatively permeable. If there is the potential for incorporating soakaways into the proposed development, soakaway tests should be undertaken to assess the sandstone's suitability. Alternatively, surface water can be taken to an existing drainage system.

4.10 Sulphate Attack of Buried Concrete

As discussed in Section 7.5, DS2 AC2 precautions in sub surface concrete should be appropriate. This would require using FND2 concrete.

5.0 CONTAMINATION APPRAISAL

5.1 Objectives of the Investigation

The purpose of this section of the report is to make a site specific assessment of the potential risks resulting from the presence of likely contaminants applicable to the site's proposed end use. The approach used will be through characterisation of the sources and redefinition of the conceptual model on the basis of the additional information about the site such as the ground conditions, hydrogeological regime and contaminant levels, to determine the significant pollutant linkages present. Where unacceptable risks are identified an options appraisal detailing feasible remediation strategies will be made.

5.2 Site Categorisation

The site was previously developed with housing, demolished by 2000. It is proposed to build over the former housing with new houses, therefore made ground from the former development should be adequately covered by building or hardstanding.

5.3 Sampling Strategy

On the basis of the above, samples were taken with the objective of ascertaining the levels of possible contaminants. Three samples of topsoil and one sample of natural clay were sent for chemical testing. The soil samples were collected in 1000 ml plastic tubs and 250 ml amber glass jars. Each sample was labelled with the sample position and depth.

The soil samples were tested for a general suite of common contaminants derived from both natural and man made sources, which cover those likely to result in the aforementioned types of materials. The basic suite chosen analysed the concentrations of the following determinands:

Arsenic	Nickel	Cadmium
Lead	Mercury	Copper
Chromium	Selenium	Zinc
Speciated PAH	pH	

The sample natural ground was also tested for a sulphate test suite comprising total sulphur, water soluble sulphate and acid soluble sulphate.

All samples were tested to MCERTS standards by ChemTest in Newmarket, which is a UKAS accredited laboratory. The results have been received and are reported on below and in the sections that follow.

5.4 Chemical Assessment Values

When assessing the chemical test results, the values are initially compared with an assessment value. Concentrations of particular contaminants below their assessment value are considered to be too low to be a cause for concern. Only chemicals with concentrations higher than the threshold values are then considered in the risk assessment section which follows.

Human Receptors

Where available, Soil Guideline Values (SGVs) designed for a residential with plant uptake land use have been used to assess the levels of contamination identified with respect to human health. The threshold values for the first seven metals or metalloids (arsenic to selenium) are the SGVs derived by DEFRA and Environment Agency using the '*Contaminated Land Exposure Assessment*' model. The assessment concentrations for arsenic, cadmium, mercury, nickel and selenium are outlined in the Environment Agency's Science Report series SC050021. The assessment concentrations for the remaining metals/metalloids are described in the Contaminated Land Report Series (CLR), which have now been withdrawn.

Plant Receptors

Copper and zinc are phytotoxic elements that have been included in the test suite. The assessment values have been taken from '*The Soil Code*'.

A summary table of all the assessment values used is enclosed in the appendix.

Cementitious Products

In accordance with BRE Special Digest 1:2005 '*Concrete in Aggressive Ground*', soil samples were tested for pH, total sulphur, acid-soluble sulphate and water-soluble sulphate in order to determine any requirement for concrete precautions. The site is classified as a brownfield site and water is expected to be generally mobile.

5.5 Contamination Test Results

The results of the chemical laboratory analysis have been received and are presented in the appendix. None of the chemical contaminants exceeded their assessment values in the made or natural ground. A visual inspection for asbestos of the samples is carried out by the laboratory before sample preparation. No asbestos was reported to be present.

The following contaminants were found to exceed their assessment values in the topsoil:

Zinc

One sample (TP2 0.15 m) out of three recorded a zinc concentration exceeding the threshold of 300 mg/kg with a concentration of 450 mg/kg.

6.0 CONCEPTUAL MODEL

6.1 Description of the Site and Surrounding Area

The site is approximately 0.2 hectares in area and is currently undeveloped. The land generally falls gently to the east and is surrounded by housing.

A substation is present in the south eastern corner off the site. Trees and hedges are present along the northern site boundary.

Ground Conditions

Topsoil covers the site to around 0.5 m depth and generally contains rare brick fragments. Made ground was not encountered in any of the trial pits but may be present beneath former buildings, although is not expected to exceed 1 m in depth. The underlying natural ground comprises clay over sandstone from 1.5 m across the majority of the site. A thin layer of coal was encountered in TP3 from 1.1 to 1.45 m.

Groundwater

The Groundwater Vulnerability map shows the site to lie on a minor aquifer with overlying soils of a high leaching potential. The site does not lie within a groundwater Source Protection Zone (as identified by the Environment Agency).

The nearest surface water feature are open drains over 230 m to the south west of the site. There are no water abstractions within 250 m of the site.

Receptors

Human Receptors

Construction workers, future residents and visitors to the site are potential receptors.

Plants

Plants in landscaped areas at the development will be receptors.

Controlled Waters

Groundwater is the nearest receptor.

Construction Materials

Cementitious products such as concrete in foundations are receptors.

Sources of Contamination

The topsoil recorded slightly elevated concentrations of zinc. Significant contamination was not encountered in the natural ground.

The Phase 1 report recommended the installation of Amber 1 gas precautions, consisting of a suitably resistant gas membrane and a passively vented sub floor void of at least 150 mm due to the possible presence of a mine shaft.

We now do not consider there to be workings within coal seams at a shallow depth beneath the site. Mine gas is therefore not expected to pose a significant risk to the site.

6.2 Significant Pollutant Linkages

Contaminant	Pathway	Receptor
Zinc in the topsoil	Direct contact	Plants
Sulphate	Direct contact	Cementitious products

7.0 RISK ASSESSMENT

7.1 Human Health During Construction

Site workers should be made aware of the elevated concentrations of contaminants within the topsoil. Normal precautions, such as washing hands before eating, should be sufficient to mitigate any risk posed to construction workers. Any unusual, brightly coloured or odorous material encountered during construction should be brought to the attention of the site staff and investigated.

7.2 Human Health After Development

The topsoil contained slightly elevated zinc (maximum concentration of 450 mg/kg compared to 300 mg/kg threshold). As zinc is a phytotoxic contaminant, elevated concentrations pose a more significant risk to plants than human health.

The natural ground did not record significant contamination. No remedial measures will therefore be required. The above conclusions will need to be approved by the regulators.

7.3 Plants

The topsoil contained slightly elevated zinc (maximum concentration of 450 mg/kg compared to 300 mg/kg threshold). This result only slightly exceeds the threshold, and 'The Soil Code' document from which the threshold is derived states that some species of grass can exist on zinc concentrations up to 1000 mg/kg. The materials on site should therefore not pose a significant risk to plants.

7.4 Ground Gas

No radon or landfill gas precautions are required.

As stated previously, we do not consider there to be shallow coal workings beneath this site. The ground conditions comprise clay over sandstone and mudstone which would hinder the migration of mine gas from underground workings. The mine shaft is therefore the only pathway for mine gas to reach the surface. If this shaft is not found, the risk to the site from mine gas is alleviated. If the shaft is identified, the level of gas precautions

may need to be increased to include a suitably resistant gas membrane and possibly a ventilated void beneath the floor slab.

7.5 Attack on Construction Materials

Tests for water-soluble sulphate, acid-soluble sulphate, sulphur and pH were carried out and these results were compared with BRE Special Digest 1 "Concrete in Aggressive Ground".

Water soluble sulphate results of up to 0.01 g/l were recorded. A maximum total potential sulphate of 0.03 % was calculated. These results equate to a DS1 AC1 concrete classification. However, due to the likely presence of made ground, we recommend the use of DS2 AC2 precautions. This would require using FND2 concrete.

7.6 Controlled Waters

The materials on site should not pose a significant risk to controlled waters. Contaminants are not present in significant or leachable quantities and are therefore unlikely to migrate far off site.

7.7 Disposal of Materials

Ideally, the site will be designed in such a way as to ensure that all excavated material can be kept on the site. If materials are to be disposed of off-site, they will need to be taken to a suitable waste disposal site.

7.8 Conclusions and Recommendations

1. After the gas main has been disconnected, the location of the mine shaft will need to be investigated further.

2. Significant contamination was not encountered on site.

3. No radon or landfill gas precautions are required. There may still be a risk from mine gas if the mine shaft is located, and the level of precautions may need to be increased to

include a suitably resistant gas membrane and possibly a ventilated void beneath the floor slab.

4. DS2 AC2 precautions in sub surface concrete should be appropriate. This would require using FND2 concrete.

5. It is possible that localised zones of contaminated material may be found on the site in areas that were not covered by the investigation. If ashy, odorous, brightly coloured or apparently contaminated material is found on site, this should be tested to check if it is contaminated. If it is found to be contaminated, after consultation with the regulatory authorities, it should be removed or capped.

6. The above conclusions must be agreed with the regulators prior to construction commencing.

APPENDIX 1

Trial Pit Logs TP1 to TP4

Eastwood & Partners
CONSULTING ENGINEERS

Eastwood & Partners
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS

Trialpit No
TP 1
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Date
Wood View, Elsecar	32526	Level: -	31/03/2010
Location: Wood View, Elsecar		Dimensions: -	Scale 1:20
Client: Guinness North Counties		Depth 3.20m	Logged By KE

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
						TOPSOIL: Dark brown slightly sandy slightly gravelly CLAY with many roots. Gravel is fine to coarse subangular of mixed lithologies and brick fragments.
0.30	D		0.50			Firm to stiff orange brown slightly sandy CLAY with rare sandstone fragments.
0.80	D					
			1.80			Stiff to very stiff grey slightly gravelly CLAY. Gravel is fine to coarse subangular mudstone.
			3.20			Trialpit Complete at 3.20 m

1
2
3

Remarks:

Groundwater: No groundwater observed.

AGS

HoleBASE 3.1 (Rb) 427 20xx Standard Trialpit Log v2 dated 27th Nov 03

E&P Eastwood&Partners
CONSULTING ENGINEERS

Eastwood & Partners
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS

Trialpit No
TP 2
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Date
Wood View, Elsecar	32526	Level: -	31/03/2010
Location: Wood View, Elsecar		Dimensions: -	Scale 1:20
		Depth 3.10m	
Client: Guinness North Counties			Logged By KE

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.15	D					TOPSOIL: Dark brown slightly sandy slightly gravelly CLAY with many roots. Gravel is fine to coarse subangular of mixed lithologies and brick fragments.
			0.30			Stiff orange brown slightly sandy CLAY.
0.70	D					
			1.30			Weak pale yellow SANDSTONE, recovered as cobbles.
			2.20			Moderately weak becoming strong dark grey black MUDSTONE.
			3.10			Trialpit Complete at 3.10 m

Remarks:

Groundwater: Damp in mudstone at base of pit.

AGS

HoleBASE 3.1, (Bk 422.06a), Standard Trialpit Log v2 (dated 27th Nov 03)

E&P Eastwood&Partners
CONSULTING ENGINEERS

Eastwood & Partners
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS

Trialpit No
TP 3
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Date
Wood View, Elsecar	32526	Level: -	31/03/2010
Location: Wood View, Elsecar		Dimensions: -	Scale 1:20
Client: Guinness North Counties		Depth 1.80m	Logged By KE

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.15	D					TOPSOIL: Dark brown slightly sandy slightly gravelly CLAY with many roots. Gravel is fine to coarse subangular of mixed lithologies and brick fragments.
			0.40			Firm to stiff orange brown slightly sandy CLAY with rare sandstone fragments.
			1.10			COAL.
			1.45			Firm to stiff orange brown slightly sandy CLAY with rare sandstone cobbles.
			1.70			Strong pale yellow SANDSTONE.
			1.80			Trialpit Complete at 1.80 m

Remarks:

Groundwater: No groundwater observed.

AGS

E&P Eastwood&Partners
CONSULTING ENGINEERS

Eastwood & Partners
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS

Trialpit No
TP 4
Sheet 1 of 1

Project Name	Project No.	Co-ords: -	Date
Wood View, Elsecar	32526	Level: -	31/03/2010
Location: Wood View, Elsecar		Dimensions: -	Scale 1:20
		Depth 1.80m	
Client: Guinness North Counties			Logged By KE

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.15	D					TOPSOIL: Dark brown slightly sandy slightly gravelly CLAY with many roots. Gravel is fine to coarse subangular of mixed lithologies and brick fragments.
			0.40			Firm to stiff orange brown slightly sandy CLAY with rare sandstone cobbles.
0.70	D					
			1.60			Strong pale yellow SANDSTONE.
			1.80			Tnalpit Complete at 1.80 m

Remarks:

Groundwater: No groundwater observed.

AGS

HoleBASE 3.1 (Bld 422.0ca) Standard Trialpit Log v2 dated 27th Nov 03

APPENDIX 2

Chemtest Results, Report Number 99411

Table of Assessment Values

Plasticity Results

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Eastwood & Partners
St. Andrews House
23 Kingfield Road
Sheffield
S11 9AS

FAO Kate Edwards
14 April 2010

Dear Kate Edwards

Test Report Number **99411**
Your Project Reference **Wood View, Elsecar - 32526-05**

Please find enclosed the results of analysis for the samples received 6 April 2010.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Authorised Signatory

- Darrell Hall — Director
- Phil Hellier — Director
- Keith Jones — Technical Manager
- John Crawford — Quality Manager
- Malcolm Avis — Director

UKAS TESTING
2183

MCERTS

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are outside of the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *Stones represent the quantity of material removed prior to analysis*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *Soil descriptions, including colour and texture, are beyond the scope of MCertS accreditation*

Newmarket • Tamworth • Glasgow
Registered in England & Wales - Registration Number 5511736 - Registered Office: 11 Depot Road Newmarket Suffolk CB8 0AL

Eastwood & Partners
St. Andrews House
23 Kingfield Road
Sheffield
S11 9AS

FAO Kate Edwards

LABORATORY TEST REPORT

Results of analysis of 4 samples
received 06 April 2010

Wood View, Elsecar - 32526-05

Chemtest
Report Date
14 April 2010

Login Batch No					99411			
Chemtest LIMS ID					AE83253	AE83254	AE83255	AE83256
Sample ID					TP2	TP3	TP4	TP1
Sample No								
Sampling Date					31/3/2010	31/3/2010	31/3/2010	31/3/2010
Depth					0.15m	0.15m	0.15m	0.8m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*				
2175	Sulfur (total TRL report 447)		%	N				<0.01
2120	*Sulfate (2:1 water soluble) as SO4*	*14808798*	*g l-1*	*M*				*<0.01*
2430	Sulfate (total) by BS1377 (HCl extract)	14808798	%	N				0.02
2450	*Arsenic*	*7440382*	*mg kg-1*	*M*	31	29	23	10
	Cadmium	7440439	mg kg-1	M	0.29	0.47	0.26	<0.10
	Chromium	7440473	mg kg-1	M	21	23	19	13
	Copper	7440508	mg kg-1	M	63	79	57	13
	Mercury	7439976	mg kg-1	M	0.22	0.26	0.18	<0.10
	Nickel	7440020	mg kg-1	M	29	30	23	16
	Lead	7439921	mg kg-1	M	94	96	100	20
	Selenium	7782492	mg kg-1	M	<0.20	<0.20	<0.20	<0.20
	Zinc	7440666	mg kg-1	M	450	180	130	46
2800	Naphthalene	91203	mg kg-1	M	0.1	0.4	0.1	<0.1
	Acenaphthylene	208968	mg kg-1	N	<0.1	<0.1	<0.1	<0.1
	Acenaphthene	83329	mg kg-1	M	<0.1	<0.1	<0.1	<0.1
	Fluorene	86737	mg kg-1	M	<0.1	<0.1	<0.1	<0.1
	Phenanthrene	85018	mg kg-1	M	0.3	0.7	0.5	<0.1
	Anthracene	120127	mg kg-1	M	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	206440	mg kg-1	M	0.7	1.2	1.5	<0.1
	Pyrene	129000	mg kg-1	M	0.6	1	1.2	<0.1
	Benzo[a]anthracene	56553	mg kg-1	M	0.2	0.5	0.6	<0.1
	Chrysene	218019	mg kg-1	M	0.3	0.4	0.5	<0.1
	Benzo[b]fluoranthene	205992	mg kg-1	M	0.9	0.5	0.7	<0.1
	Benzo[k]fluoranthene	207089	mg kg-1	N	0.2	<0.1	0.2	<0.1
	Benzo[a]pyrene	50328	mg kg-1	M	0.6	0.4	0.5	<0.1
	Dibenzo[a,h]anthracene	53703	mg kg-1	N	<0.1	<0.1	<0.1	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-1	M	0.2	<0.1	<0.1	<0.1
	Benzo[g,h,i]perylene	191242	mg kg-1	M	0.2	<0.1	0.2	<0.1
	Total (of 16) PAHs		mg kg-1	N	4.2	5	6	<2

All tests undertaken between 07-Apr-2010 and 12-Apr-2010

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Eastwood & Partners
St. Andrews House
23 Kingfield Road
Sheffield
S11 9AS

FAO Kate Edwards

LABORATORY TEST REPORT

Results of analysis of 4 samples
received 06 April 2010

Wood View, Elsecar - 32526-05

Chemtest

Report Date
14 April 2010

				99411			
				AE83253	AE83254	AE83255	AE83256
				TP2	TP3	TP4	TP1
				31/3/2010	31/3/2010	31/3/2010	31/3/2010
				0.15m	0.15m	0.15m	0.8m
				SOIL	*SOIL*	*SOIL*	*SOIL*
2010	pH	-	M	7.6	7.0	7.3	7.5
2030	Moisture	%	n/a	17.3	19.5	19.9	19.8
	Stones content (>50mm)	%	n/a	<0.02	<0.02	<0.02	<0.02
2140	Soil colour		n/a	brown	brown	brown	brown
	Soil texture		n/a	sand	sand	sand	clay
	Other material		n/a	stones	stones	stones	stones

All tests undertaken between 07-Apr-2010 and 12-Apr-2010

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Metals/Metalloids	Intended Land Use
	Residential (mg/kg)
Arsenic	32
Cadmium	10
Chromium	130
Lead	450
Mercury	1
Nickel	130
Selenium	350
Copper	80 *1
Zinc	200 *1

Notes:

*1 - These are pH dependent; the most conservative value is given in this case.

The assessment values for the first seven metals or metalloids (arsenic to selenium) are the Soil Guideline Values (SGVs)derived by DEFRA and Environment Agency using the '*Contaminated Land Exposure Assessment*' model. The assessment concentrations for arsenic, cadmium, nickel, mercury and selenium are outlined in the Environment Agency's Science Report series SC050021. These are based on a sandy loam soil and 6% soil organic matter. The assessment concentrations for the remaining metals/metalloids are described in the Contaminated Land Report Series (CLR), which have now been withdrawn.

The SGV threshold value is not intended to be applied to individual sample results where materials are similar, as the levels of contaminants will have a natural variability across the site. The modified mean value should instead be compared with the SGV.

The assessment values for the metals copper and zinc are levels at which plant growth is thought to be affected. These are taken from the maximum permissible and advisable concentrations in soil after application of soil sludge given in the '*The Code of Good Agricultural Practice for the Protection of Soil*', MAFF, 1998.

Prepared	CAS	Checked	CAS	Date	20.04.10	Job No	32526

E&P Eastwood&Partners
CONSULTING ENGINEERS
St Andrews House
23 Kingfield Road
Sheffield S11 9AS
Tel: (0114) 2554554 Fax: (0114) 2554330

GUINNESS NORTHERN COUNTIES

WOOD VIEW, ELSECAR

GENERIC ASSESSMENT CRITERIA - RESIDENTIAL

Organic Compounds	Intended Land Use
	Residential (mg/kg)
Phenol	420
Benzene	0.33
Toluene	610
Ethylbenzene	350
o-Xylene	250
m-Xylene	240
p-Xylene	230
Naphthalene	8.7
Acenaphthylene	850
Acenaphthene	1000
Fluorene	780
Phenanthrene	380
Anthracene	9200
Fluoranthene	670
Pyrene	1600
Benzo(a)anthracene	5.9
Chrysene	9.3
Benzo(b)fluoranthene	7
Benzo(k)fluoranthene	10
Benzo(a)pyrene	1.0
Dibenz(a,h)anthracene	0.9
Indeno(1,2,3-cd)pyrene	4.2
Benzo(g,h,i)perylene	47

The assessment values for phenol and the BTEX compounds are the Soil Guideline Values derived by DEFRA and Environment Agency using the '*Contaminated Land Exposure Assessment*' model. These are outlined in the Environment Agency's Science Report series SC050021. The assessment criteria for the sixteen polycyclic aromatic hydrocarbon (PAH) species covered under the USEPA test have been taken from Nathanail, C. P., McCaffrey, C., Ashmore, M. H., Cheng, Y. Y., Gillett, A., Ogden, R. & Scott, D., 2009 *'The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment 2nd Edition'*, Land Quality Press, Nottingham.

These are also all based on a sandy loam soil and 6% soil organic matter. The SGV threshold value is not intended to be applied to individual sample results where materials are similar, as the levels of contaminants will have a natural variability across the site. The modified mean value should instead be compared with the SGV.

Prepared	CAS	Checked	CAS	Date	20.04.10	Job No	32526

E P
Eastwood & Partners
CONSULTING ENGINEERS
St Andrews House
23 Kingfield Road
Sheffield S11 9AS
Tel: (0114) 2554554 Fax: (0114) 2554330

GUINNESS NORTHERN COUNTIES

WOOD VIEW, ELSECAR

GENERIC ASSESSMENT CRITERIA - RESIDENTIAL

PSL
Professional Soils Laboratory

LABORATORY REPORT

4043

Contract Number: PSL10/0606

Client's Reference: Report Date: 09 April 2010

Client Name: Eastwood & Partners
St Andrew's House
23 Kingfield Road
Sheffield
S11 9AS

For the attention of: G M Seaman

Contract Title: Wood View, Elsecar

Date Received: 6-Apr-10
Date Commenced: 6-Apr-10
Date Completed: 9-Apr-10

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.

Checked and Approved Signatories:

R Gunson (Director)
A Watkins (Director)
D Lambe (Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
TP2			0.70	Brown slightly gravelly sandy very silty CLAY.

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	9/4/10		9/4/10		9/4/10

WOOD VIEW, ELSECAR.

Contract No: PSL10/0606

Client Ref: 32526

SUMMARY OF SOIL CLASSIFICATION TESTS

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

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % Clause 3.2	Bulk Density Mg/m^3 Clause 7.2	Dry Density Mg/m^3 Clause 7.2	Particle Density Mg/m^3 Clause 8.	Liquid Limit % Clause 4.3/4.4	Plastic Limit % Clause 5.	Plasticity Index % Clause 6.	% Passing .425mm	Remarks
TP2			0.70	16				31	18	13	90	Low plasticity CL.

SYMBOLS : NP : Non Plastic * : Liquid Limit and Plastic Limit Wet Sieved.

PSL
Professional Soils Laboratory

Compiled by	Date	Checked by	Date	Approved by	Date
	9/4/10		9/4/10		9/4/10

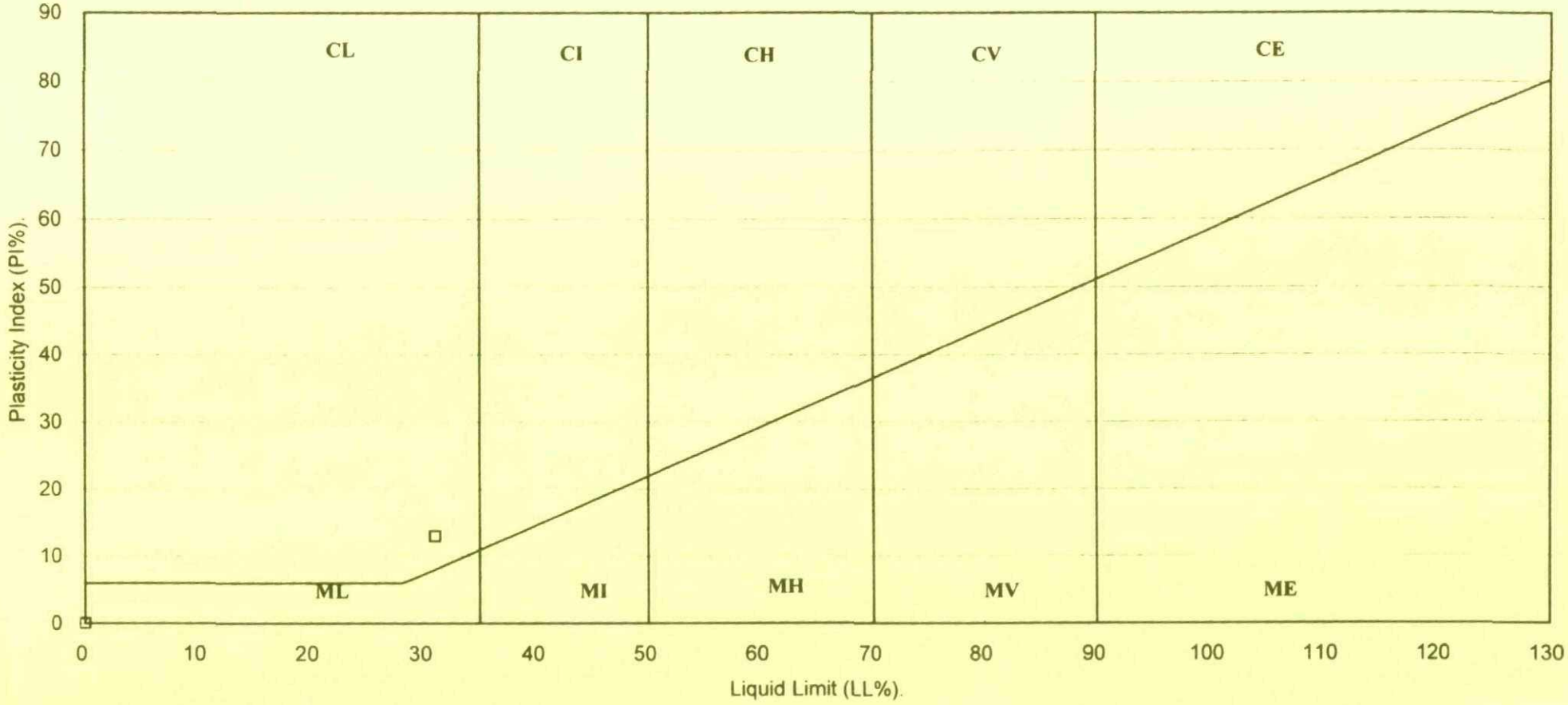
WOOD VIEW, ELSECAR.

Contract No: PSL10/0606

Client Ref: 32526

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)

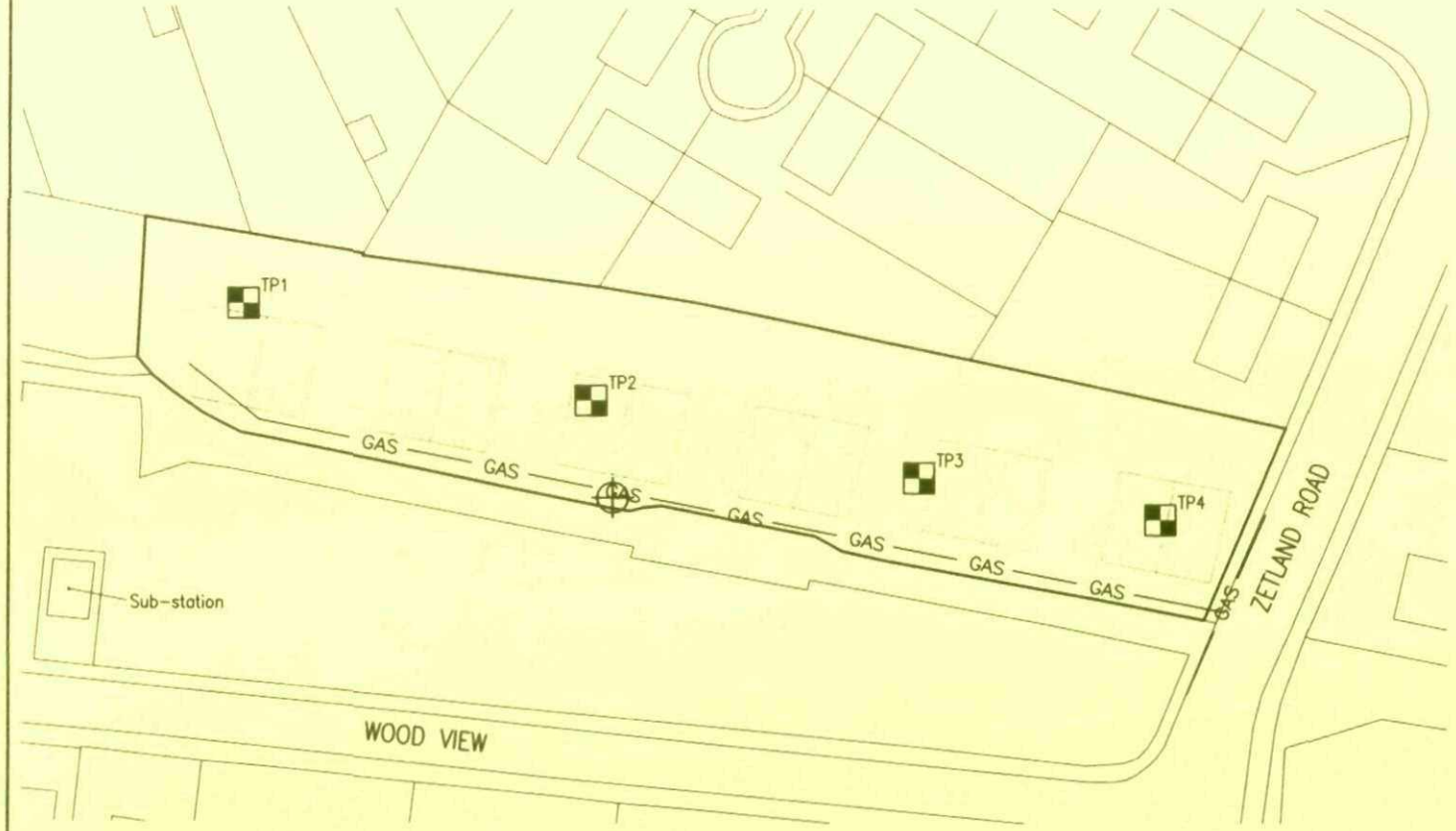


PSL Professional Soils Laboratory	Compiled by	Date	Checked by	Date	Approved by	Date
		9/4/10		9/4/10		9/4/10
	WOOD VIEW, ELSECAR.				Contract No:	PSL10/0606
					Client Ref:	32526

DRAWINGS

Site Plan 32526/Fig1A

Information within this drawing is not necessarily produced to scale.
Always use figured dimensions and co-ordinates – if in doubt, ask.



KEY

- Approximate site boundary
- Approximate location of trial pit excavated by Eastwood & Partners, 31/03/2010
- Approximate location of existing mineshaft
- Approximate position of new housing
- GAS — Approximate route of gas main.

Eastwood & Partners
CONSULTING ENGINEERS
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS
Tel 0114 255 4554
Fax 0114 255 4330
mail@eastwoodandpartners.com
www.eastwoodandpartners.com

GUINNESS NORTHERN COUNTIES
WOOD VIEW, ELSECAR
TRIAL PIT LOCATION PLAN

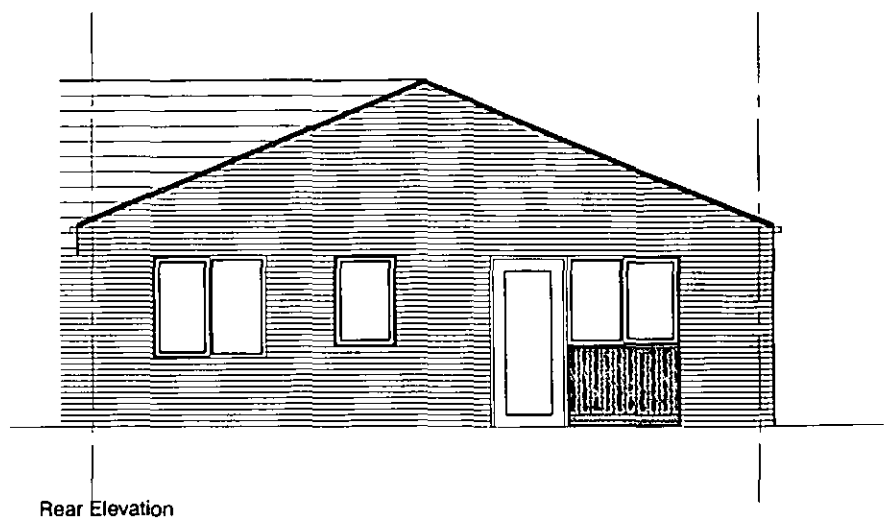
REV	DESCRIPTION	SIG	CHK	DATE
A	First Issue.			

SCALE WHEN PLOTTED AT A3	DRAWING STATUS
1:500	INFORMATION

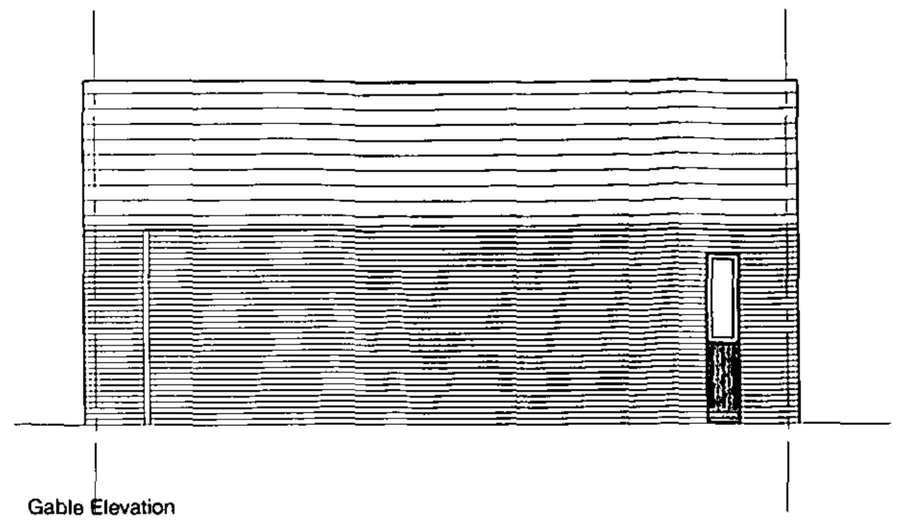
DRAWN	CHECKED	DATE	DRAWING NUMBER	REV
GB	KE	07.04.10	32526/FIG1	A



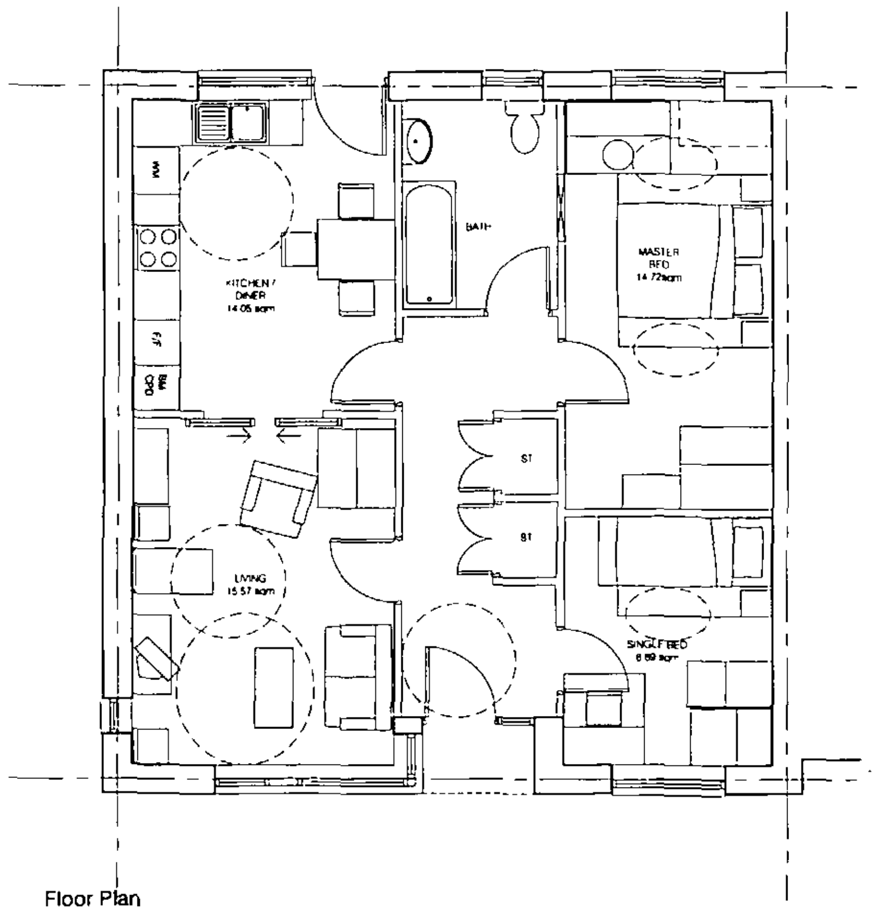
Front Elevation



Rear Elevation



Gable Elevation



Floor Plan

KEY TO MATERIALS:

- (01) Facing brickwork.
- (02) Roof tile - type to be confirmed
- (03) Feature material to be agreed
- (04) Double-glazed windows - colour / type to be confirmed. Obscure glazing shown hatched
- (05) Polyester Powder Coated aluminium surround - colour to be confirmed
- (06) Timber door.

GENERAL NOTES

- This drawing is copyright of PTE architects
- Use figured dimensions only. DO NOT SCALE
- All dimensions are in millimetres unless noted otherwise
- All levels are in metres above ordnance datum unless noted otherwise
- This drawing must be read in conjunction with all other relevant drawings and specifications from the Architect and other consultants

NOTES

- All setting out to be confirmed on site prior to construction - any discrepancy must be immediately reported to the Architect.
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

HTA - 2B3P

LIFETIMES HOMES STANDARDS

72.0m²

rev	date	description	drn	
D	18.06.10	Materials key added	CW	
C	19.05.10	Living Room window ammended	CW	
B	14.05.10	Elevations added. Type B moved to seperate drawing. Amended to Planning status	CW	
A	24.11.09	HTB (other half of semi) added. All updated in accordance with current elevation proposals	CW	

drawing status: PLANNING

Unit 5204, 2nd Floor
Merchants Court, Derby Square
Liverpool L2 1TS

T. 0151 703 2220 URL: www.ptea.co.uk
F. 0151 703 2229 E: forename.surname@ptea.co.uk

PTEa
POLLARD THOMAS EDWARDS architects

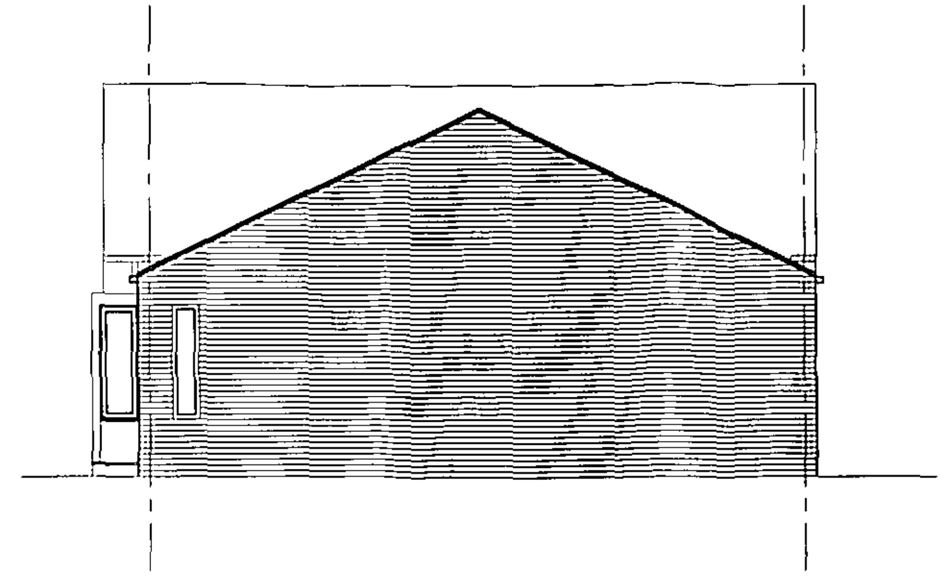
project	drawn	checked	scale	date
WOOD VIEW ELSECAR	CW		1:100 @ A3	14.06.1



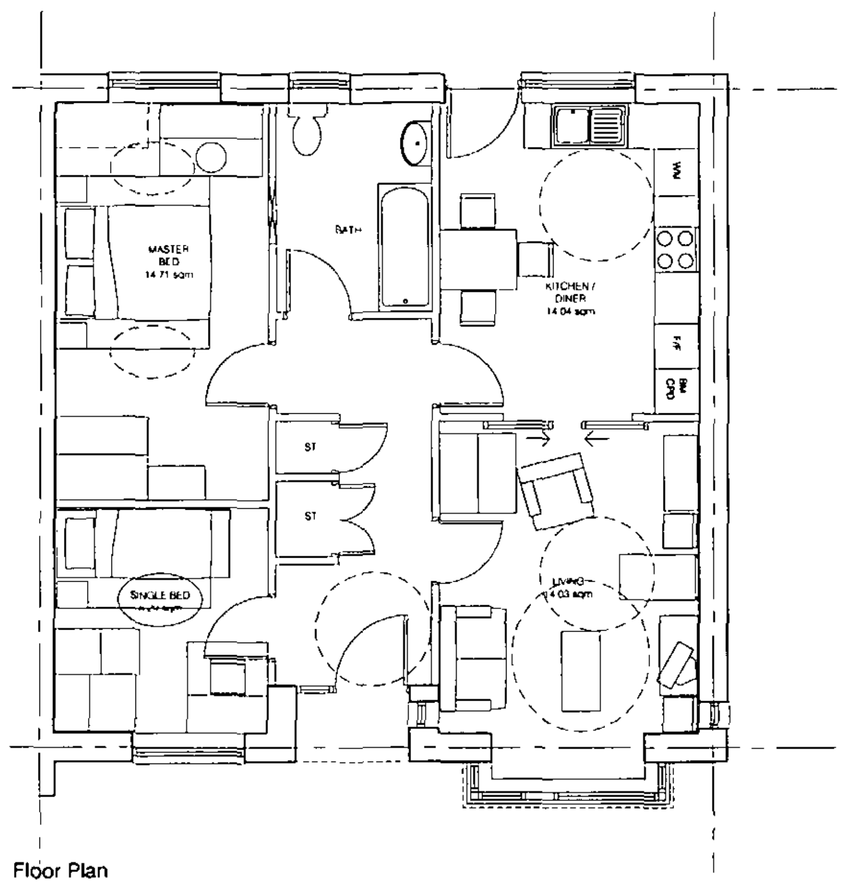
Front Elevation



Rear Elevation



Gable Elevation



Floor Plan

KEY TO MATERIALS:

- (01) Facing brickwork
- (02) Roof tile - type to be confirmed
- (03) Feature material to be agreed
- (04) Double-glazed windows - colour / type to be confirmed. Obscure glazing shown hatched
- (05) Polyester Powder Coated aluminium surround - colour to be confirmed
- (06) Timber door.

HTB - 2B3P	70.0m²
LIFETIMES HOMES STANDARDS	

rev	date	description		
B	15.06.10	Materials key added	CW	
A	19.05.10	Window to living room amended. Floor area amended in accordance	CW	

PLANNING

Unit 5204 2nd Floor
Merchants Court, Derby Square
Liverpool L2 1TS

T 0151 703 2220 URL: www.ptea.co.uk
F 0151 703 2229 E: forename.surname@ptea.co.uk

PTEa
POLLARD THOMAS EDWARDS architects

project	drawn	checked	scale	date
WOOD VIEW ELSECAR	CW		1:100 @ A3	14.05.1
dwg title	**job no**		**dwg no**	**rev**
BUNGALOW TYPE B PROPOSED FLOOR PLAN & ELEVATIONS	09 221		L(00) 101	B

GENERAL NOTES

- This drawing is copyright of PTE architects
- Use figured dimensions only. DO NOT SCALE
- All dimensions are in millimetres unless noted otherwise
- All levels are in metres above ordnance datum unless noted otherwise
- This drawing must be read in conjunction with all other relevant drawings and specifications from the Architect and other consultants

NOTES

- All setting out to be confirmed on site prior to construction - any discrepancy must be immediately reported to the Architect.
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
- xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx