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HSBC SOUTH YORKSHIRE GLOBAL DATA CENTRE - COMPUTER ROOM J

COAL MINING RISK ASSESSMENT
INFORMATION 1

CONFIDENTIAL

SEPTEMBER 2016

**HSBC SOUTH YORKSHIRE
GLOBAL DATA CENTRE -
COMPUTER ROOM J**
COAL MINING RISK ASSESSMENT
HSBC Bank PLC

**Version 1
Confidential**

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1 INTRODUCTION

1.1 AUTHORISATION

On the instruction of HSBC Bank PLC (HSBC), WSP | Parsons Brinckerhoff has undertaken a Coal Mining Risk Assessment for a proposed extension to the South Yorkshire Global Data Centre (SYGDC) building, located near Tankersley, South Yorkshire.

1.2 SITE LOCATION

The site is situated approximately 1km southwest of the village of Tankersley and Junction 36 of the M1 approximately centred at National Grid Reference E433747, N399283. A site location plan is provided as **Figure 1** in **Appendix B**.

1.3 BACKGROUND & PROPOSED DEVELOPMENT

WSP | Parsons Brinckerhoff understands that HSBC wish to convert their existing Ground Floor North Wing offices at the SYGDC at Tankersley into a computer room in order to support IT growth at the site. At the time of writing, full details of the scheme were not available. However, it is understood that the works are likely to comprise a 20-30m extension to the existing external slab. The slab will be used to support a series of chiller units. Imposed loads, including the slab self-weight, may be in the region of 15kN/m².

1.4 SCOPE OF WORKS

The main objectives of the works are to assess the risk associated with historical mining activities and to propose further investigation or mitigation measures to address identified risks. The scope of works comprises:

- Desk based review of available information including site history, location and geology;
- Review of Coal Authority Report and Database;
- Review of previous intrusive investigations undertaken by Jacobs ^[1] at the site;
- Identification and assessment of site specific coal mining risk;
- Summary of identified risks, need for, and scope of, further investigation and/or remedial measures; and,
- Prepare final CMRA incorporating all of the above.

1.5 SOURCES OF INFORMATION

This report has been prepared using the following information sources:

- British Geological Survey (BGS) mapping;
- BGS Onshore Geoindex;
- The Coal Authority;
- Historical Mapping; and,
- Previous ground investigation reports ^[1].

1.6 LIMITATIONS

This report is addressed to and may be relied upon by the following:

HSBC Bank PLC
8 Canada Square
London
E14 5HQ

This assessment has been prepared for the sole use of the above named party. This report shall not be relied upon or transferred to any other parties without the express written authorisation of WSP | Parsons Brinckerhoff. No responsibility will be accepted where this report is used in its entirety or in part, by any other party. Information provided by others is taken in good faith as being accurate. WSP | Parsons Brinckerhoff cannot and will not accept liability for any deficiencies in third party information.

General limitations are presented in **Appendix A**.

2

INFORMATION REVIEW

2.1

CURRENT SITE USE & SURROUNDING AREA

The SYGDC is currently housed in a multi-level (two and four-storey) building that occupies much of the site. To the north is a small grassed area and car park. To the south, west and east the building is surrounded by landscaped areas.

The site is bounded by the following land uses:

- North: Maple Road and Wentworth Industrial Park
- East: Office buildings
- South: The A61 Westwood New Road
- East: An overgrown, wooded area

2.2

SITE HISTORY

Historical mapping contained within the Jacobs ground investigation report ^[1] has been reviewed to produce the site history presented in **Table 2.1**.

Table 2.1 – Site History

YEAR	ON SITE	SURROUNDING AREA
1855	The site is a wooded area named as Round Spring.	To the north, east, and south the surrounding area is predominantly fenced fields. A road trends northeast to southwest along the southern boundary of the site and a railway cutting trending approximately northwest to southeast forms the western boundary. To the west, beyond the railway, lies Sowell Wood. To the northwest of the site numerous Ironstone Pits (shafts) are marked along with some opencast mining areas. Ironstone Pits are also located approximately 200m to the southeast of the site. Wharnccliffe Silkstone Colliery is located approximately 500m to the north of the site.
1894	No significant change.	Tankersley Colliery has been built approximately 300m to the southeast of the site and Wharnccliffe Silkstone Colliery has significantly expanded. In the area to the northwest, the pits are now marked as Old Ironstone Pits and the pattern of opencast workings has changed. The Ironstone Pits to the southeast are no longer present. An Air Shaft is located in Sowell Wood immediately west of the railway line.
1906 – 1956	No significant change.	The Wharnccliffe Silkstone Colliery expands in 1906. Most of Sowell Wood has been deforested.
1965	No significant change.	Tankersley Colliery is disused and much of the area of the Wharnccliffe Silkstone colliery is marked as refuse or slag heaps.

YEAR	ON SITE	SURROUNDING AREA
1978	The site appears to have been largely deforested and little remains of Round Spring woods.	The railway to the west is now marked as dismantled. Nothing remains of the Tankersley Colliery and the majority of the buildings associated with the Wharcliffe Silkstone Colliery have been demolished.
1982 - 2004	The current building is marked on the map from 1982.	The Wentworth Industrial Park and surrounding road network are built

2.3 GEOLOGICAL MAPPING

Published geological mapping ^[2] indicates the site to be directly underlain by mudstone and siltstone of the Pennine Lower Coal Measures. A north-south trending outcrop of the Flockton Thin Coal is indicated to outcrop close to the western extent of the existing building, dipping to the east by 4°.

Immediately to the west of the site the bedrock changes to an unnamed sandstone unit overlain by Worked Ground. Worked Ground is indicated to be road and railway cuttings or former quarries so this likely represents the path of the dismantled railway identified in **Section 2.2**. Approximately 150m to the west of the site, the Fenton Coal (High and Low) is indicated to outcrop and, further to the west, the Parkgate Coal. Infilled ground representing restored opencast coal workings are present extending from the outcrop of the Parkgate Coal to the outcrop of the Fenton Coal.

Details of the coal seams that outcrop on site or in close proximity are detailed in **Table 2.2**.

Table 2.2 – Summary of coal seams indicated to outcrop on site or nearby

NAME	THICKNESS (m)*	FURTHER DETAILS **
Flockton Thin Coal	≤1.3 in two leaves	Noted to be generally thin and unworked
Fenton Coal (High and Low)	4 – 5, in three or four leaves	Both leaves are noted to have been worked in the region. The intervening measures are up to 6m thick and often contains the Black Mine Ironstone
Parkgate Coal	2.7 – 3.1, in three leaves	Noted to be extensively worked to the southeast of Barnsley. Comprises three main parts; bottom and top bright “soft” coals and a middle “hard” coal containing some dull coal

* As indicated from BGS mapping ^[2]

** From BGS Internal Report IR/06/135 ^[3]

An extract of the geological map is presented as **Figure 2** in **Appendix B**.

2.4 BRITISH GEOLOGICAL SURVEY RECORDS & PREVIOUS SITE INVESTIGATION DATA

Eleven borehole records were available on the BGS Onshore Geoindex ^[4]. The boreholes were located in the landscaped areas to the north and west of the data centre building and in the wooded area to the west of the site.

Jacobs drilled an additional two boreholes in 2006 ^[1], which were located immediately west of the building.

A thin coal seam (0.35 – 0.50m) was recorded in the 2006 Jacobs boreholes at rockhead or within 0.5m of rockhead ^[1] and this was interpreted as the Flockton Thin Coal.

The Fenton Coal and Parkgate Coal seams are identified in the BGS borehole records. The strata encountered are summarised in **Table 2.3** and the borehole records and a borehole location plan are presented in **Appendix C**.

Table 2.3 – Ground Summary

STRATA	DESCRIPTION	DEPTH TO BASE (m BGL)	ELEVATION OF BASE (m AOD)	THICKNESS (m)
Made Ground	Clay with mudstone and coal gravel	1.35 – 6.0	151.62 – 158.9	1.35 – 6.0
Lower Coal Measures	Thick interbeds of siltstone and mudstone, with rare ironstone	13.8 – 20.1	137.58 – 145.22	10.9 – 16.2
Fenton Coal	Coal in three leaves	18.2 – 24.7	132.78 – 140.82	3.8 – 4.8
Lower Coal Measures	Mudstone	39.7 – 42.4	116.08 – 123.15	15.7 – 18.7
Parkgate Coal	Coal in two or three leaves	41.7 – 45.0	113.48 – 118.8	2.0 – 2.6

Possible evidence of workings was recorded in the Parkgate Coal in the form of silty clay and timber recovered within the seam and moderate loss of air flush, which suggests the presence of voids.

In 2007 Jacobs undertook a program of drilling and pressure grouting to facilitate the construction of a new slab ^[5]. An unspecified number of exploratory boreholes were drilled, which were then followed by 102 grouting boreholes. The Jacobs report ^[5] states that the boreholes generally confirmed the desk study assessment of the ground conditions proving the presence of the Fenton Coal and Black Mine Ironstone. The report also states the boreholes encountered evidence of mine workings in the Fenton Coal.

The majority of the grout injection boreholes accepted no more than a nominal volume of grout and the Jacobs report concludes that the mine workings are likely to have collapsed and closed any significant void spaces ^[5]. Some primary boreholes are noted to have accepted more than a nominal volume of grout. However, the number and location is not identified.

A cross section based on the available borehole data is presented as **Figure 3** and plans showing the calculated contours of the base of the Fenton (High) Coal is presented as **Figure 4**. The boreholes show that the strata beneath the site dip at approximately 5° to the east, similar to the published geological mapping ^[2]. Based on the borehole data, the base of the Fenton Coal (High) has been calculated to lie between 21m and 31m bgl beneath the existing building and the base of the Parkgate Coal between 44m and 53m bgl.

2.5 COAL AUTHORITY INFORMATION

COAL AUTHORITY GROUND STABILITY REPORT

A Coal Authority Ground Stability Report ^[6] for the site was provided by HSBC and is presented in **Appendix D**. It should be noted that the enquiry boundary encompasses approximately 12 hectares of land surrounding the proposed slab location.

UNDERGROUND COAL MINING

According to the Coal Authority Report ^[6], the property is in the likely zone of influence from workings in six coal seams between 50m and 220m depth and last worked in 1957. Furthermore,

the site is in the likely zone of influence from workings in one ironstone seam at shallow depth which was last worked in 1827. The report also states that any ground movement associated with these workings should have stopped by now ^[6].

MINE ENTRIES

The report details ten mine entries located within the enquiry boundary, none of these entries are located within 20m of the proposed new slab although it is possible that unrecorded mine entries are present ^[7].

COAL MINING SUBSIDENCE

The Coal Authority has not received a damage notice or claim for the property since 1 January 1984.

MINE GAS

The Coal Authority report states that a development within the search area has been subject to remedial works, by or on behalf of the Coal Authority, associated with a mine gas investigation.

MINE ABANDONMENT PLANS

Coal Authority Mine Abandonment Plans NE853 and 16834 provide information relevant to the site.

Plan NE853 shows longwall underground workings in the Fenton (High) Coal beneath the site, last worked in 1951. The thickness of the seam is noted to be 1m. Plan NE853 also shows opencast workings in the Old Black Mine Ironstone from 1841 to 1848 immediately to the west of the site in what is now a wooded area. Due to the dip of the strata, as calculated from the boreholes, it is likely that the ironstone seam is present beneath the site and the possibility exists that unrecorded workings are present.

Plan 16834 shows workings in "Thin Coal" between 1819 and 1822 in the approximate location of the site. This is likely to be the Flockton Thin Coal. Due to the age of the workings, it is likely that any void spaces have collapsed.

A plan provided by the client (included in **Appendix D**) shows the workings and roadways within the Fenton (High) Coal seam. The plan matches the Coal Authority mine abandonment plans and is considered likely to be an accurate representation of the workings. The plan also shows longwall workings in the Fenton (Low) Coal beneath the site and notes that there are workings in the following seams below site:

- Parkgate Coal – approx. 40m below site;
- Thorncliffe Coal – approx. 65m below site;
- Silkstone Four Foot Coal – approx. 120m below site; and
- Whinmoor Coal – approx. 180m below site.

LONGWALL MINING

Coal Authority records show that the Fenton (High and Low) Coal was worked by longwall mining until 1956. In longwall mining, a panel of coal up to 300m wide (the face) and up to 3500m long is extracted between two parallel roadways ^[7, 8]. Roadways that connect the mine entrance to the longwall panels are known as main headings. The roof of the workings is supported only at the coalface and in the roadways and, as the coal face is advanced, the void (known as the goaf) is

allowed to collapse. The subsidence caused by closure of the goaf is regarded as immediate and any residual subsidence is typically complete within two years, and as such, subsidence progresses at the rate of the advancement of the face ^[7].

Conversations with the Coal Authority on 28 September 2016 (Paul Heap), confirmed that long-term settlement is not usually considered a significant risk with historic long-wall mining.

3

IDENTIFICATION & ASSESSMENT OF SITE SPECIFIC RISKS

3.1

SUMMARY OF RISKS

An identification and assessment of the site's coal mining risks has been undertaken from existing desk based information.

The potential zone of instability caused by void migration from a coal seam is typically taken as ten times the thickness of the seam. Based on an average Fenton (High and Low) Coal seam thickness of 4.4m and the calculated seam depths presented above, the site lies within the potential zone of instability associated with the seam.

Based on the ten times seam thickness method and the depth of the Parkgate Coal seam, it is considered that the site does not lie within the seam's zone of potential instability.

Table 3.1 summarises the potential risks associated with coal mining legacy for the proposed development site, as identified from the sources detailed above.

Table 3.1 – Summary of Potential Coal Mining Risks

SEAM	DETAILS	RISK	ASSESSMENT
Flockton Thin Coal	- Seam outcrops on site - Seam recorded at rockhead and within 0.5m of rockhead - Seam thickness recorded 0.35m and 0.5m - Mine abandonment plans show workings in the area of the site between 1819 and 1822 - No evidence of workings recorded by Jacobs during drill and pressure grouting program^[6]	Low	The Jacobs investigation and drill and grout programme encountered no evidence of workings

SEAM	DETAILS	RISK	ASSESSMENT
Fenton (High) Coal	▪ Mine abandonment plans show working in the seam beneath the site ▪ Longwall mining technique ▪ Boreholes drilled for Jacobs ^[6] encountered evidence of workings within the seam ▪ Only a nominal volume of grout was accepted into grouting boreholes ▪ Coal likely to be present between 21 and 31 m bgl	Moderate	Mine abandonment plans and recent site investigation shows that the seam has been worked at shallow depth beneath the site. However, the longwall mining technique, which typically induces collapse of voids once support has been withdrawn, and the long time period since the date of abandonment (1951) mean that it is likely that voids have collapsed already. The majority of drill and pressure grouting boreholes undertaken by Jacobs ^[6] accepted a nominal volume of grout, suggesting that little void space exists. The Coal Authority report states that ground movement associated with the workings should by now have ceased. Notwithstanding the above, it is possible that some voids associated with the workings (e.g. the headings) may remain.
Old Black Mine Ironstone	▪ No recorded mine workings beneath the site ▪ Coal Authority plans and historical maps show workings to the west and northwest of the site ▪ No evidence of unrecorded workings in the seam during Jacobs drill and pressure grouting program ^[6]	Low	The Coal Authority holds no records of this stratum being worked beneath the site and the Jacobs drill and pressure grouting program encountered no unrecorded mine workings

SEAM	DETAILS	RISK	ASSESSMENT
Fenton (Low) Coal	- Client provided plan and Coal Authority plans show longwall mining dated to 1956 - Longwall mining technique - Jacobs drill and grout program encountered evidence of workings in the seam^[6] - The majority of boreholes accepted only a nominal volume of grout	Low	Mine abandonment plans and recent site investigation shows that the seam has been worked at shallow depth beneath the site. However, the longwall mining technique, which typically induces collapse of voids once support has been withdrawn, and the long time period since the date of abandonment (1956) mean that it is likely that voids have collapsed already. The majority of drill and pressure grouting boreholes undertaken by Jacobs^[6] accepted a nominal volume of grout, suggesting no significant voids remain. The Coal Authority report states that ground movement associated with the workings should by now have ceased. Notwithstanding the above, it is possible that some voids associated with the workings (e.g. the headings) may remain.
Parkgate Coal	- Client provided plan notes that the seam was worked beneath the site - BGS boreholes encountered evidence of working including recovery of soft clay at seam depth, recovery of timber, and loss of air flush	Low	The seam has been worked beneath the site; however it is considered that the depth of the seam beneath the site (approx. 44 - 53m bgl) makes it unlikely that upwards void migration could affect the development. Subsidence is likely to have stopped since the mine working ceased. The Coal Authority report states that ground movement associated with the workings should by now have ceased.

It did not become statutory requirement to maintain and preserve plans of abandoned mines until the Coal Mining Regulations Act of 1872 was enacted and, as significant mining of coal is known to have been undertaken prior to that date, the possibility of unrecorded workings or mine entries cannot be completely discounted. However, as the Coal Authority report states, movement should by now have ceased.

3.2

SUMMARY

Based on the available information the risk associated with the site being impacted by ground movement due to underground coal mining is considered to be low. The Coal Authority reports that ground movement associated with workings beneath the site should by now have ceased and grouting works reported by Jacobs from within the site recorded low grout intakes indicating the absence of significant voids above the worked seams. On the basis that conditions beneath proposed development are likely to be similar to those beneath the existing building, it is considered that significant voids beneath the proposed extension are unlikely to be present.

Further intrusive investigations will be required to facilitate the geotechnical design of the works, although these will likely be focused on determining shallow ground strength and stiffness.

Whilst the mining risk is considered to be low, during the construction, it is recommended that, following excavation to subgrade level, the exposed formation is carefully inspected by a geotechnical engineer or Engineering Geologist. Any suspect areas, such as localised occurrences of colliery spoil, should be fully investigated.

BIBLIOGRAPHY

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Appendix A

GENERAL LIMITATIONS

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.
3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.
4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.
6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.
7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:
 - i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.
16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

effects of any future changes or amendments to these values. Specific assumptions associated with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.
19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.
20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

- 24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
- 25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

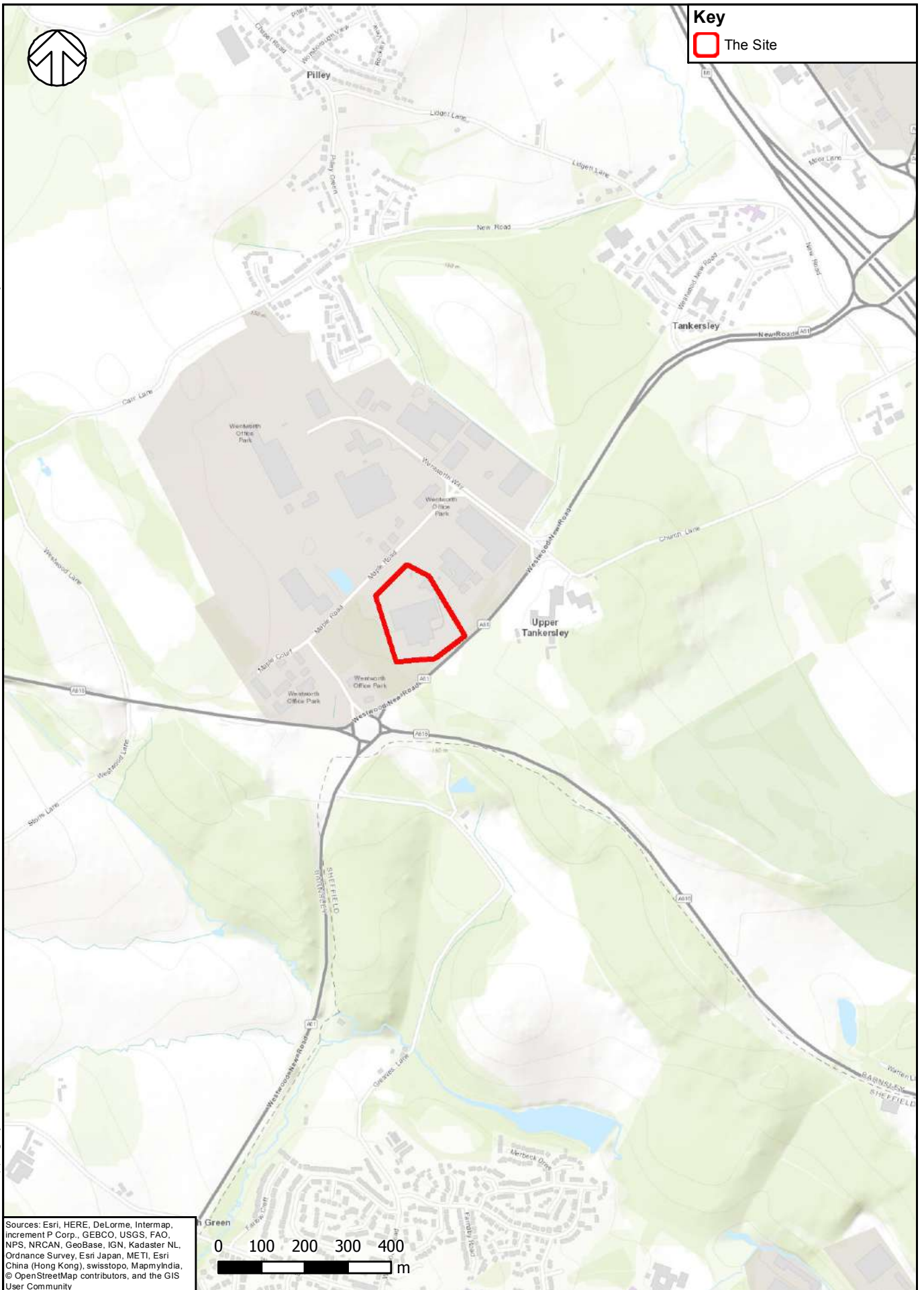
- 26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

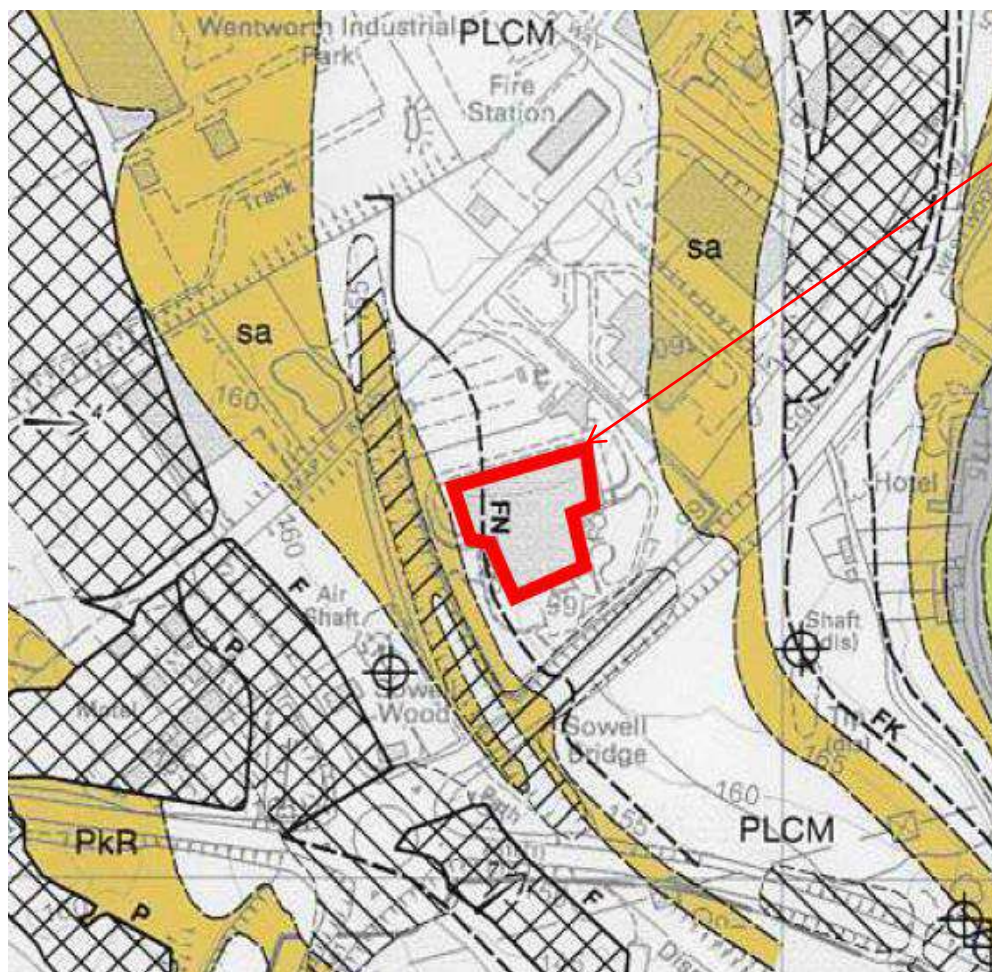
MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

- 27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.
- 28. The data is presented and will be compared with assessment criteria.

Appendix B

FIGURES & DRAWINGS





The Site

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SUPERFICIAL DEPOSITS

ARTIFICIALLY MODIFIED GROUND

	Worked Ground	Road and railway cuttings, former quarries
	Made Ground	Landfill sites and colliery spoil
	Infilled Ground	Restored opencast coal workings

	FK	FLOCKTON THICK COAL 0 to 2" in three leaves
	sa	FLOCKTON THIN COAL up to 1.3" in two leaves
	PLCM	FENTON COAL (HIGH AND LOW) 4" to 5" in three or four leaves
	FN	
	sa	
	F	
	Pkr	PARKGATE ROCK
	P	PARKGATE COAL 2.7" to 3.1" in three leaves
	sa	

Pennine
Lower Coal
Measures

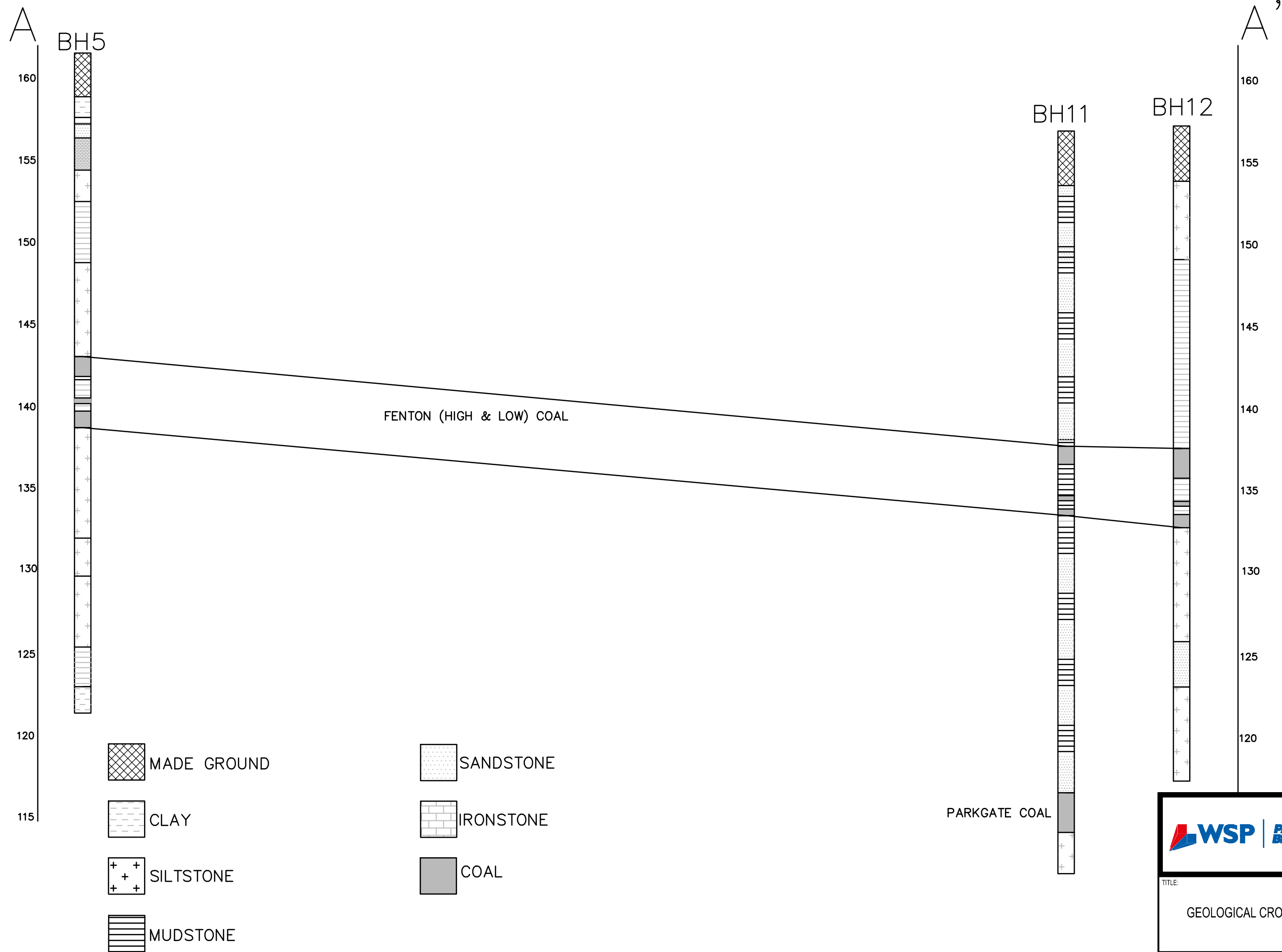


Site: SYGDC Tankersley

Ref: 70005408

Title: Figure 2 – Solid and Drift Geology

Scale: NTS



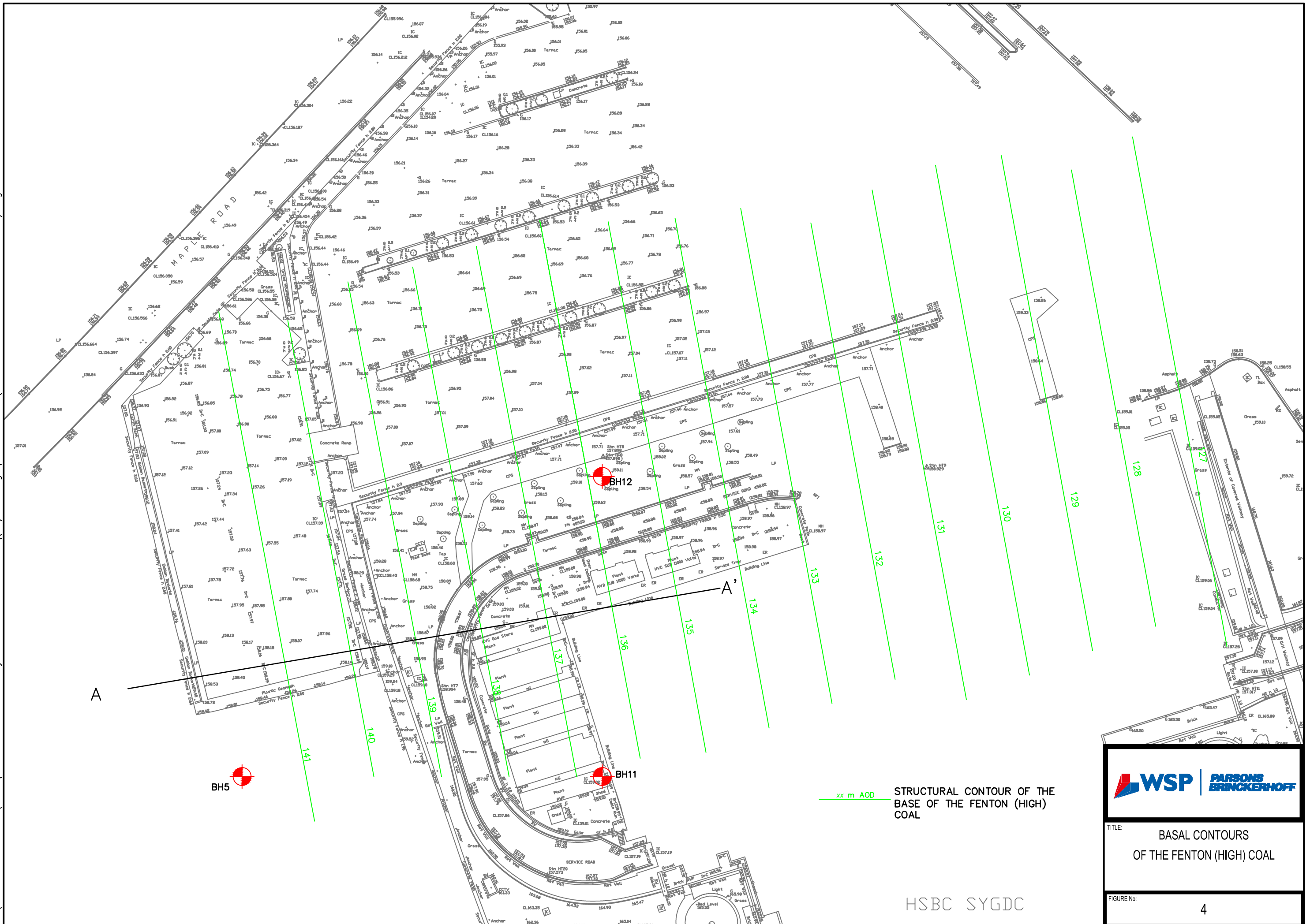


TITLE:

GEOLOGICAL CROSS SECTION

FIGURE No:

3



xx m AOD
STRUCTURAL CONTOUR OF THE
BASE OF THE FENTON (HIGH)
COAL



TITLE:

BASAL CONTOURS
OF THE FENTON (HIGH) COAL

FIGURE No:

4

HSBC SYGDC

Appendix C

BGS BOREHOLE RECORDS

Norwest Holst Soil Engineering Ltd.

Borehole No.

2

Contract No. F8860
Location Tankersley
Client Bylander Waddell
Method of Boring Percussion/Rotary
Diameter of Borehole 150mm/105mm

BOREHOLE LOG

Sheet 1 of 3
Chainage
Ground Level 159.02 m.A.O.D.
Date 9/8/90 - 21/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
TOPSOIL		0.20	158.82				9/8
Very stiff, grey mottled orange, silty CLAY with rootlets		1.35	157.67		0.55 (56)		
Grey, fine grained, highly to moderately weathered MUDSTONE, very weak with ironstone nodules iron staining on joints		4.55	154.47		1.55 s 2.55 s 3.55 s 4.40 s	"66" "76" "78" for 150mm "85" for 110mm	19/8
Grey, slightly to moderately weathered SILTSTONE weak to moderately weak Iron staining on joints and occasional plant remains					7.10 TCR SCR RQD % % % 95 20 35 8.85 100 60 50	19/8 20/8	20/8

Type of Sample

Is S.P.T. Undisturbed

Ic C.P.T. x Vane

0 Jar Δ Water

● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.) U100 blows
* Seating blows only

Groundwater not encountered

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

2

British Geological Survey
Contract No. F8860
Location Tankersley
Client Bylander Waddell
Method of Boring Rotary
Diameter of Borehole 105mm

BOREHOLE LOG

SK39NW 239

British Geological Survey
Sheet 2 of 3
Chainage
Ground Level 159.02 m.A.O.D.
Date 9/8/90 - 21/8/90

Description of Strata British Geological Survey	Legend British Geological Survey	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring British Geological Survey	"N"/R.Q.D.% British Geological Survey	Daily Progress
Grey, slightly to moderately weathered SILTSTONE, weak to moderately weak, with iron staining on joints and occasional plant remains.	+++++	12.40	146.62		TCR % 10.45 100 30	RQD % 10	20/8
Dark grey moderately weathered carbonaceous MUDSTONE, weak to moderately weak with iron staining on joints.		13.80	145.22		13.25 100 10	10	
Black slightly to moderately weathered COAL, weak, with prominent iron staining on joints.	■	15.05	143.97		15.25 75 30	20	
Black slightly to moderately weathered carbonaceous MUDSTONE, weak, shell fragments 15.90m to 16.10m.		16.20	142.82		16.55 100 40	30	
Black fresh COAL, weak with iron staining on joints.	■	17.50	141.52		17.50 100 70	55	20/8
Black moderately weathered carbonaceous MUDSTONE weak (seat earth).		18.20	140.82				
Black moderately weathered COAL, weak.	■	19.15	139.87				
Grey slightly to moderately weathered SILTSTONE, weak to moderately weak, occasional plant remains.	+++++	19.25	134.77				
Black fresh COAL weak.	■						
Grey slight to moderately weathered SILTSTONE, weak to moderately weak, occasional plant remains.	+++++						

Type of Sample

Is S.P.T. ■ Undisturbed

IC C.P.T. x Vane

0 Jar △ Water

● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.)

Groundwater not encountered

Norwest Holst Soil Engineering Ltd.

Borehole No.

2

Contract No. F8860
Location Tankersley
Client Bylander Waddell
Method of Boring Rotary
Diameter of Borehole 105mm

BOREHOLE LOG

SK39NW 239

Sheet 3 of 3
Chainage
Ground Level 159.02 m.A.O.D.
Date 9/8/90 - 21/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey slightly to moderately weathered SILTSTONE, weak to moderately weak with occasional plant remains and iron staining on joints.	+++++	21.20	137.82		TCR 100 SCR 70	ROD 55	20/8
Light grey fine grained slightly weathered SANDSTONE strong to very strong with iron staining on joints.		22.35	136.67		21.40 100	75 50	20/8 21/8
Grey fine grained laminated slightly weathered micaceous SANDSTONE, strong.		23.65	135.37		22.35 95	55 40	
Borehole completed at 23.65m.					23.65		21/8

Type of Sample

Is S.P.T. ■ Undisturbed
Ic C.P.T. x Vane
0 Jar △ Water
● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.)

Groundwater not encountered

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

3

Contract No. F8860

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

Sheet 1 of 3

Client BYLANDER WADDELL

SK39NW 240

Chainage

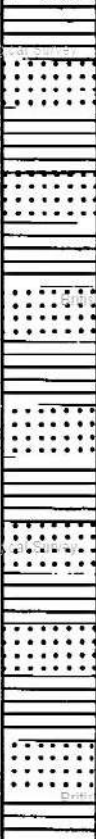
Method of Boring ROTARY OPEN HOLE

3368, 9923

Ground Level 160.46 m.A.O.D.

Diameter of Borehole 83 mm

Date 30/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
MADE GROUND: Clay with rock fragments		4.50	155.96				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. ☒ Undisturbed

Ic C.P.T. ☒ Vane

O Jar ☒ Water

● Bulk ☒ Piezometer

Remarks (Observations of Ground Water etc.)

Strata descriptions from air flush returns

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

3

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW
240

Sheet 2 of 3
Chainage
Ground Level 160.46 m.A.O.D.
Date 30/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey weathered MUDSTONE and SANDSTONE		15.40	145.06				
Black COAL		16.60	143.86				
Black SHALE and MUDSTONE with coal traces		17.85	142.61				
Black COAL		18.25	142.21				
Grey MUDSTONE		19.00	141.46				
Black COAL		19.65	140.81				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. Undisturbed	
Ic C.P.T. x Vane	
0 Jar Water	
Bulk Piezometer	

Water levels are subject to seasonal or tidal variations and should not be taken as constant

3

Sheet 3 of 3

Chainage.....

Ground Level.....160.46.....m.A.O.D.

Date.....30/8/90.....

Casing	Sampling	"A"/	Dail
--------	----------	------	------

British Geological Survey

 Bulk Piezometer

Water levels are subject to seasonal or tidal variations and should not be taken as permanent.

Norwest Holst Soil Engineering Ltd.

Borehole No.

4

Contract No. F8860
Location TANKERSLEY
Client BYLANDER, WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW 241
3372 9920

Sheet 1 of 3
Chainage
Ground Level 161.62 m.A.O.D.
Date 31/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D. %	Daily Progress
MADE GROUND: clay with rock fragments		3.20	158.42				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. Undisturbed	
Ic C.P.T. Vane	
0 Jar Water	
Bulk Piezometer	

4

Date 31/8/90

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

4

Contract No. F8860
Location TANKERSLEY
Client RYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83mm

BOREHOLE LOG

SK39NW 241

Sheet 3 of 3
Chainage 161.62
Ground Level m.A.O.D.
Date 31/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Black SHALE and MUDSTONE with coal traces		20.65	140.97				
Black COAL		21.10	140.52				
Grey MUDSTONE		21.90	139.72				
Black COAL		22.50	139.12				
Grey MUDSTONE and SANDSTONE		24.00	137.62				
Borehole completed at 24.00m							

Type of Sample

Is S.P.T. Undisturbed
Ic C.P.T. x Vane
0 Jar Water
● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

5

Contract No. F8860
Location Tankersley
Client Bylander Waddell
Method of Boring Percussion/Rotary
Diameter of Borehole 150mm/120mm

BOREHOLE LOG

SK39NW 242

3370 9927

Sheet 1 of 4
Chainage
Ground Level 161.55 m.A.O.D.
Date 8/8/90 - 18/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
MADE GROUND : Very loose grey CLAY with mudstone and coal gravel.					0.55-1.00 (15)		
Firm light grey and orange silty CLAY with occasional ironstone nodules.		2.65	158.90		1.55-2.00 (15)	"2"	
Firm grey mottled brown silty CLAY with occasional ironstone nodules.		3.30	158.25		2.55-3.00 (26)		
Grey fine grained completely to highly weathered MUDSTONE, very weak with occasional ironstone nodules.		3.90	157.65		3.55-4.00 (85)		
Brown fine grained moderately weathered SANDSTONE, weak, with bands of stiff sandy clay.		4.30	157.25		4.00-4.30	"76"	
Interbedded grey fine grained moderately weathered IRONSTONE, strong and firm grey brown sandy CLAY with mudstone gravel.		5.15	156.40		4.70 5.00-5.15	blows for 100mm penetration	
Grey, fine grained, moderately to slightly weathered SILTSTONE weak to moderately weak.		7.10	154.45		TCR % 95	"77" for 62mm penetration	8/8 16/8
Dark grey, slightly to moderately weathered MUDSTONE, weak to moderately weak.		9.00	152.55		SCR % 45		
					POD % 30		
					7.00		
					85 15 10		
					9.50		

Type of Sample

Remarks (Observations of Ground Water etc.)

(-) U100 blows

* Seating blows only

Is S.P.T. ■ Undisturbed

Groundwater not encountered

Ic C.P.T. x Vane

0 Jar △ Water

● Bulk ■ Piezometer

Water levels are subject to seasonal or tidal variations and should not be taken as constant

5

Date 8/8/90 - 18/8/90

SK39NW 242
3370 9927

Water levels are subject to seasonal or tidal variations and should not be taken as constant.

Norwest Holst Soil Engineering Ltd.

Borehole No.

5

Contract No. F8860
Location Tankersley
Client Bylander Waddell
Method of Boring Percussion/Rotary
Diameter of Borehole 150mm/120mm

BOREHOLE LOG

British Geological Survey

Sheet 3 of 4

Chainage
Ground Level 161.55 m.A.O.D.
Date 8/8/90 - 18/8/90

SK39NW 242

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
Black, fine grained slightly to moderately weathered carbonaceous MUDSTONE weak to moderately weak.		20.90	140.65		20.25		16/8
Black, fresh, COAL, weak, bright.		21.25	140.30				17/8
Dark grey slightly weathered carbonaceous MUDSTONE, weak.		21.70	139.85		95 40	15	
Black fresh COAL, weak, bright.		22.70	138.85		22.75		
Grey, slightly weathered sandy micaceous SILTSTONE weak to moderately weak.					100 80	70	
					25.10		
					100 85	75	
					27.60		
Light grey, fine to medium grained, slightly weathered SANDSTONE, strong to very strong.					100 70	60	
		29.40	132.15		29.40		

Type of Sample

Is S.P.T. Undisturbed

Ic C.P.T. x Vane

O Jar Water

● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

5

Contract No. F8860

BOREHOLE LOG

British Geological Survey

Location Tankersley

Sheet 4 of 4

Client Bylander Waddell

SK39NW

Chainage 161.55

Method of Boring Percussion/Rotary

Ground Level m.A.O.D.

Diameter of Borehole 150mm/120mm

Date 8/8/90 - 18/8/90

242

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
.... 30.70 to 30.90 becoming micaceous siltstone.	+++++	31.70	129.85		100 90 30.40 80 55 31.30	75 45	16/8 17/8
Grey slightly weathered micaceous SILTSTONE, weak to moderately weak.	+++++				100 85 33.00	75	
	+++++				100 80	65	
Grey and dark grey, moderately to slightly weathered MUDSTONE, weak.	+++++	36.00	125.55		36.00		
	+++++				100 50	30	
Stiff, dark grey, silty CLAY with mudstone lithorelicts (completely weathered mudstone)	+++++	38.40	123.15		38.40		
	+++++				100 45	43	
Borehole completed at 40.00m depth.	+++++				40.00		

Type of Sample

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

O Jar △ Water

● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal & tidal variations and should not be

Norwest Holst Soil Engineering Ltd.

Borehole No.

6

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83mm

BOREHOLE LOG

Sheet 1 of 5

Chainage

Ground Level 162.10 m.A.O.D.

Date 31/8/90 - 1/9/90

SK39NW 243
3373 9924

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
MADE GROUND: Clay with rock fragments		4.00	158.10				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

0 Jar △ Water

● Bulk ■ Piezometer

Groundwater not encountered

Water levels are subject to seasonal or tidal variations and should not be taken as constant

6

Sheet 2 of 5
Chainage
Ground Level 162.10 m.A.O.D.
Date 31/8/90 - 1/9/90

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

6

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83mm

BOREHOLE LOG

SK39NW 243

Sheet 3 of 5
Chainage
Ground Level 162.10 m.A.O.D.
Date 31/8/90 - 1/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Black COAL		20.80	141.30				
Black SHALE and MUDSTONE with coal traces		21.40	140.70				
Grey MUDSTONE		22.30	139.80				
Black COAL		23.00	139.10				
Grey MUDSTONE		23.60	138.50				
Black COAL		24.30	137.80				
Grey MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. Undisturbed

Ic C.P.T. x Vane

0 Jar Water

Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

6

Contract No. **F8860**
 Location **TANKERSLEY**
 Client **BYLANDER WADDELL**
 Method of Boring **ROTARY OPEN HOLE**
 Diameter of Borehole **83mm**

BOREHOLE LOG

SK39NW 243

Sheet **4** of **5**
 Chainage
 Ground Level **162.1** m.A.O.D.
 Date **31/8/90 - 1/9/90**

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Grey MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. Undisturbed

Ic C.P.T. Vane

0 Jar Water

● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

6

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW 243

Sheet 5 of 5
Chainage
Ground Level 162.10 m.A.O.D.
Date 31/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Grey MUDSTONE and SANDSTONE		41.00	121.10				
Black COAL with shale and mudstone (Moderate loss of air flush returns, possible collapsed mine workings)		43.30	118.80				
Grey SILTSTONE and SANDSTONE		45.00	117.10				
Borehole completed at 45.00m							

Type of Sample

Is S.P.T. ☒ Undisturbed
Ic C.P.T. ☒ Vane
O Jar ☒ Water
Bulk ☒ Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

7

British Geological Survey F 8860

BOREHOLE LOG

British Geological Survey

Contract No. F 8860

Location TANKERSLEY

Client BYLANDER WADDELL

Method of Boring PERCUSSION/ROTARY

Diameter of Borehole 150mm/120mm

SK39NW 244

Sheet 1 of 5

Chainage

Ground Level 156.92 m.A.O.D.

Date 3/8/90 - 23/8/90

3378 9911

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
MADE GROUND: Soft to firm brown sandy clay with mudstone and coal fragments.					0.55 - 1.15 C 1.20 - 1.65 (9) 1.65 - 2.25 C 2.55 - 3.00 (20) 3.55 - 4.00 (23)	"3"	
		4.30	152.62			"6"	
MADE GROUND: Black silty fine sand with medium to coarse gravel sized coal fragments.					4.55 - 5.00 (52)		
		5.30	151.62				
Grey, highly to moderately weathered MUDSTONE, very weak with occasional ironstone nodules.					5.35 - 5.65 5.90 6.35 - 6.50 TCR 90 SCR 25 ROD 10 6.90	"83" for 100mm "88" for 100mm	
		6.90	150.02				
Light grey, fine grained, thinly to medium bedded, slightly weathered micaceous SANDSTONE, strong to very strong.					100 80 65 8.90 100 85 80		

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. ■ Undisturbed	() U100 blows.
Ic C.P.T. X Vane	Groundwater not encountered.
O Jar △ Water	* Seating blows only
● Bulk ▲ Piezometer	

Norwest Holst Soil Engineering Ltd.

Borehole No.

7

Contract No. F 8860

BOREHOLE LOG

British Geological Survey

Sheet 2 of 5

Location TANKERSLEY

Client BYLANDER WADDELL

Method of Boring PERCUSSION/ROTARY

Diameter of Borehole 150mm/120mm

SK39NW 244

Chainage

Ground Level 156.92 m.A.O.D.

Date 3/8/90 - 23/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Light grey, fine grained, thinly to medium bedded, slightly weathered micaceous SANDSTONE strong to very strong.		10.80	146.12		10.40 100 85 11.20	70	
Light grey and grey, fine grained laminated, slightly weathered SANDSTONE and SILTSTONE, moderately weak to strong with iron staining on joints.		13.45	143.47		13.35 100 75	50	
Grey, slightly weathered SILTSTONE, moderately weak with iron staining on joints.					100 60	40	
Dark grey, laminated, moderately to slightly weathered carbonaceous MUDSTONE, weak, with frequent plant remains.		15.80	141.12		16.20		
Black, fresh, COAL, weak.		16.60	140.32		100 25	10	
Black, moderately weathered, carbonaceous MUDSTONE, weak with iron staining.		18.20	138.72				
Black, fresh, COAL, weak.		19.35	137.57		18.80		
Grey, slightly weathered, MUDSTONE, very weak with plant remains.		19.60	137.32		95 35	25	

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. Undisturbed

Ic C.P.T. x Vane

0 Jar Water

Bulk Piezometer

Norwest Holst Soil Engineering Ltd.

Borehole No.

7

Contract No. F 8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring PERCUSSION/ROTARY
Diameter of Borehole 150mm/120mm

BOREHOLE LOG

SK39NW 244

Sheet 3 of 5
Chainage
Ground Level 156.92 m.A.O.D.
Date 3/8/90 - 23/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Grey, slightly weathered, MUDSTONE very weak with plant remains.		20.25	136.67				
Black, fresh, COAL, weak.		21.00	135.92		95 35	25	
Grey, slightly weathered, SILTSTONE, weak to moderately weak.		21.80					
		23.40	133.52		100 70	55	
Black, fresh COAL, weak.		23.50	133.42				
Interbedded grey slightly weathered SILTSTONE, weak to moderately weak, and light grey slightly weathered SANDSTONE, moderately strong.		24.55					
					100 65	40	
		26.55					
					100 60	30	
		27.15					
					100 50	50	
Grey, slightly weathered, sandy SILTSTONE, weak to moderately strong, with iron staining on joints.		29.30	127.62				
					29.70		

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. ☒ Undisturbed	
Ic C.P.T. ☒ Vane	
O Jar ☒ Water	
● Bulk ☒ Piezometer	

Norwest Holst Soil Engineering Ltd.

Borehole No.

7

Contract No. F 8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring PERCUSSION/ROTARY
Diameter of Borehole 150mm/120mm

BOREHOLE LOG

SK39NW
244

Sheet 4 of 5
Chainage
Ground Level 156.92 m.A.O.D.
Date 3/8/90 - 23/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey, slightly weathered, sandy SILTSTONE, weak to moderately strong, with iron staining on joints.	+++++				100 60 55		
	+++++				31.55		
	+++++				100 45 30		
	+++++				33.50		
	+++++				95 63 35		
	+++++				36.50		
Grey, moderately weathered MUDSTONE, weak with iron staining on joints	+++++				100 45 35		
	+++++				37.90		
	+++++	39.00	117.92		70 15 10		
Black, highly weathered COAL, weak, highly fragmented with silty clay, mudstone and timber. (Collapsed mine workings).		39.70	117.22				

Type of Sample

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

0 Jar △ Water

● Bulk ● Piezometer

Remarks (Observations of Ground Water etc.)

7

British Geological Survey

Sheet 5 of 5

Chainage.....

Ground Level..... 156.92 m.A.O.D.

Date 3/8/90 - 23/8/90

British Geological Survey

Norwest Holst Soil Engineering Ltd.

Borehole No.

8

Contract No. F8860

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

SK39NW 245

Sheet 1 of 5

Client BYLANDER WADDELL

Chainage

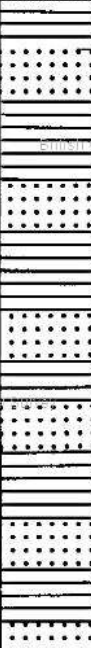
Method of Boring ROTARY OPEN HOLE

3377 9915

Ground Level 158.17 m.A.O.D.

Diameter of Borehole 83 mm

Date 1/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
MADE GROUND: Clay with rock fragments		5.80	152.37				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. ☒ Undisturbed

Ic C.P.T. ☒ Vane

O Jar ☒ Water

☒ Bulk ☒ Piezometer

Remarks (Observations of Ground Water etc.)

Groundwater not encountered

Norwest Holst Soil Engineering Ltd.

Borehole No.

8

British Geological Survey

Contract No. F8860

British Geological Survey

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

SK39NW 245

Sheet 2 of 5

Client BYLANDER WADDELL

Chainage

Method of Boring ROTARY OPEN HOLE

Ground Level 158.17 m.A.O.D.

Diameter of Borehole 83 mm

Date 1/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey weathered MUDSTONE and SANDSTONE							
		18.30	139.87				
Black SHALE		18.90	139.27				
Black COAL							

Type of Sample

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

Jar Water

● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

8

Contract No. F2860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW 245

Sheet 3 of 5
Chainage
Ground Level 158.17 m.A.O.D.
Date 1/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Black COAL		20.40	137.77				
Black SHALE and MUDSTONE		21.40	136.77				
Black COAL		21.70	136.44				
Black COAL		22.40	135.77				
Grey MUDSTONE		22.70	135.47				
Black COAL							
Grey MUDSTONE and SANDSTONE							

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. Undisturbed	
Ic C.P.T. x Vane	
Q Jar Water	
● Bulk Piezometer	

8

British Geological Survey

Sheet...4....of...5.....

Chainage.....

Ground Level..... 158.17 m.A.O.D.

Date...1/9/90.....

245

Type of Sample		Remarks (Observations of Ground Water etc.)
Is	S.P.T.  Undisturbed	
Ic	C.P.T.  Vane	
0	Jar  Water	
	Bulk  Piezometer	

Norwest Holst Soil Engineering Ltd.

Borehole No.

8

Contract No. F8860
Location TANKERSLEY
Client RYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW
245

Sheet 5 of 5
Chainage
Ground Level 158.17 m.A.O.D.
Date 1/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Grey MUDSTONE and SANDSTONE		40.80	117.37				
Black COAL with shale and mudstone		43.20	114.97				
Grey SILTSTONE and SANDSTONE		45.00	113.17				
Borehole completed at 45.00 m depth							

Type of Sample

Is S.P.T. ■ Undisturbed
Ic C.P.T. x Vane
0 Jar △ Water
● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

9

Contract No. F 8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring CABLE PERCUSSION/ROTARY
Diameter of Borehole 150mm/120mm

BOREHOLE LOG

SK39NW 246
3377, 9918

Sheet 1 of 5
Chainage
Ground Level 158.38 m.A.O.D.
Date 8/8/90 - 29/8/90

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D. %	Daily Progress
MADE GROUND: Soft to firm brown sandy clay with mudstone and coal fragments		1.30	157.08		0.55-1.15 c	"5"	
MADE GROUND: Firm orange brown sandy clay with mudstone fragments.		3.40	154.98		1.55-2.00 (12) 2.55-3.00 (13)		
Firm grey silty CLAY with angular mudstone and ironstone gravel.		4.40	153.98		3.55-4.00 (26)		
Dark grey fine grained completely and highly weathered MUDSTONE, very weak with occasional iron staining.		7.35	151.03		4.55-5.00 (120) 5.00-5.45 s	"108"	
...6.75m containing medium gravel sized iron nodules.		8.20	150.18		6.05-6.50 s	"133" blows for 250mm	
Dark grey moderately weathered fractured shaley MUDSTONE moderately weak with much orange staining on fracture surfaces. ...Fracture is blocky.		8.70	149.68		7.00-7.35 7.05 TCR% SCR% RQD% s	"75" blows for 125mm	8/8/90 24/8/90
Dark grey slightly weathered slightly silty fractured MUDSTONE moderately weak to weak with much fossilised organic material in bands.					100 76 0		
See description on next sheet.					100 90 72		

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. ■ Undisturbed Ic C.P.T. x Vane O Jar △ Water Bulk Piezometer	Surveys() U100 blows Groundwater not encountered.

Norwest Holst Soil Engineering Ltd.

Borehole No.

9

Contract No. F 8860

BOREHOLE LOG

Location TANDERSLEY

Client BYLANDER WADDELL

Method of Boring CABLE PERCUSSION/ROTARY

Diameter of Borehole 150mm/120mm

Sheet 2 of 5

Chainage 158.38

Ground Level m.A.O.D.

Date 8/8/90 - 29/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey slightly weathered silty micaceous MUDSTONE moderately strong with some fossilised organic matter and occasional orange staining on fracture surfaces. Discontinuities 0.05 - 0.10m bands of badly fractured rock at spacing of 0.50 - 1.00m. ...silt content of the mudstone varies through the unit from slightly silty to very silty, ...18.60m to 18.80m band of grey brown flattened ovoid nodules of silty mudstone					TCR% SCR% RQD% 11.70 97 83 58 13.50 100 96 59 16.30 83 73 12 19.30		
Black slightly weathered shaley coally MUDSTONE moderately weak.		19.30	139.08				24/8
COAL: bright, brittle with blocky fracture and occasional white veins.		19.50	138.88				28/8

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. Undisturbed

Ic C.P.T. X Vane

O Jar Water

Bulk Piezometer

Norwest Holst Soil Engineering Ltd.

Borehole No.

9

British Geological Survey
Contract No. **F 8860**
Location **TANKERSLEY**
Client **BYLANDER WADDELL**
Method of Boring **CABLE PERCUSSION/ROTARY**
Diameter of Borehole **150mm/120mm**

BOREHOLE LOG

SK39NW

246

British Geological Survey
Sheet **3** of **5**
Chainage.....
Ground Level **158.38** m.A.O.D.
Date **8/8/90 - 29/8/90**

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
COAL: bright, brittle with blocky fracture and occasional white veins.		20.60	137.78		TCR% SCR% RQD%		
					100 53 16		
Black slightly weathered coally shaley MUDSTONE, weak with blocky fracture and bands of coal.		21.20	137.18		21.20		
					100 70 30		
Black slightly weathered MUDSTONE moderately weak.		22.10	136.28		21.70		
COAL: bright, brittle clayey with bands of coally mudstone.		22.80	135.58		96 59 6		
Grey coally friable CLAY with many mudstone and coal fragments.		23.30	135.08				
Black coally MUDSTONE with blocky fracture.		23.65	134.73		24.00		
COAL: bright, brittle with blocky fracture and low specific gravity.		24.10	134.28				
Grey slightly weathered MUDSTONE moderately strong with much fossilised material.		25.00	133.38		97 81 40		
Black coally brittle MUDSTONE with blocky fractures.							
Grey and dark grey slightly weathered silty micaceous MUDSTONE weak with occasional orange staining and occasional fossil roots/rootlets. ...subhorizontal fractures.					27.10		
...silt content varies from slightly silty to very silty					100 97 56		
					30.00		

Type of Sample

Is S.P.T. Undisturbed
Ic C.P.T. x Vane
0 Jar Water
 Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

9

Contract No. F 8860

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

Sheet 4 of 5

Client BYLANDER WADDELL

SK39NW

Chainage

Method of Boring CABLE PERCUSSION/ROTARY

Ground Level 158.38 m.A.O.D.

Diameter of Borehole 150mm/120mm

246

Date 8/8/90 - 29/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey and dark grey slightly weathered silty micaceous MUDSTONE moderately weak with occasional orange staining and occasional fossil roots/rootlets. ...subhorizontal fractures.					30.00 TCR% SCR% 100 92	52	
...30.50m occasional white veins.					32.40		28/8
					82 73	30	29/8
Grey silty micaceous coally and fossiliferous MUDSTONE thinly interbedded with light grey SILTSTONE and fine grained SANDSTONE		34.00	124.38		33.50		
Light grey fine grained slightly weathered fractured SANDSTONE moderately strong with much orange iron staining on fracture surfaces. ...Fractures mostly subvertical, occasionally subhorizontal.		34.60	123.78		100 98	82	
Dark grey slightly weathered MUDSTONE moderately weak to moderately strong with occasional orange staining on fractures. Fractures are mostly horizontal and at 0.05m - 0.10m spacing. ...occasionally slightly silty and or slightly micaceous. ...36.40m - 37.10m closely fractured. ...38.00m becomes shaley and closely fractured.		35.80	122.58		36.30		
...39.00m - 39.70m very badly fractured mudstone fragments in clay matrix.					100 70	35	
					38.30		
					93 27	10	
					39.80		

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

O Jar △ Water

● Bulk ■ Piezometer

Norwest Holst Soil Engineering Ltd.

Borehole No.

9

Contract No. F 8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring CABLE PERCUSSION/ROTARY
Diameter of Borehole 150mm/120mm

BOREHOLE LOG

Sheet 5 of 5
Chainage
Ground Level 158.38 m.A.O.D.
Date 8/8/90 - 29/8/90

SK39NW
246.

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
Dark grey slightly weathered MUDSTONE moderately weak to moderately strong with occasional orange staining on fractures.					TCR% SCR% RQD%		
		42.30	116.08		100 96 38		
COAL, bright brittle with blocky fracture. ...43.80m - 44.40m coally mudstone band. Core loss : possible collapsed coal workings.					42.30		
		44.90	113.48		67 38 3		
Black coally shaley fractured MUDSTONE weak.		45.40	112.98		45.30		
Dark grey slightly weathered MUDSTONE moderately weak.		46.10	112.28				
Thinly interbedded dark grey MUDSTONE and light grey SILTSTONE.		46.80	111.58		100 100 82		
Very fine grained slightly weathered SANDSTONE/SILTSTONE with occasional thin laminations of mudstone.		47.00	111.38				
Grey slightly weathered MUDSTONE moderately weak.		47.85	110.53		47.85		29/8
Borehole complete at 47.85m.							

Type of Sample

Is S.P.T. ■ Undisturbed
Ic C.P.T. x Vane
0 Jar △ Water
● Bulk ● Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

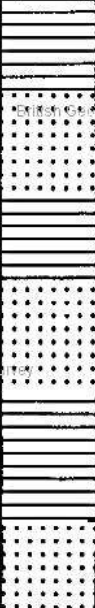
10

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW
247
3376 9922

Sheet 1 of 5
Chainage
Ground Level 159.27 m.A.O.D.
Date 1/9/90 - 2/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D. %	Daily Progress
MADE GROUND: Clay with rock fragments		6.00	153.27				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. ■ Undisturbed
Ic C.P.T. x Vane
0 Jar △ Water
● Bulk ■ Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

10

Contract No. E8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW

247

Sheet 2 of 5
Chainage
Ground Level 159.27 m.A.O.D.
Date 1/9/90 - 2/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

0 Jar △ Water

■ Piezometer

Remarks (Observations of Ground Water etc.)

Norwest Holst Soil Engineering Ltd.

Borehole No.

10

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW

247

Sheet 3 of 5
Chainage
Ground Level 159.27 m.A.O.D.
Date 1/9/90 - 2/9/90

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey weathered MUDSTONE and SANDSTONE		20.10	139.17				
Black COAL		21.30	137.97				
Grey MUDSTONE and SHALE with coal traces		22.00	137.27				
Grey MUDSTONE		22.90	136.37				
Black COAL		23.60	135.67				
Grey MUDSTONE		24.10	135.17				
Black COAL		24.70	134.57				
Grey MUDSTONE and SANDSTONE							

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

O Jar △ Water

● Bulk ■ Piezometer

Norwest Holst Soil Engineering Ltd.

Borehole No.

10

British Geological Survey F8860

BOREHOLE LOG

British Geological Survey

Contract No. F8860

Location TANKERSLEY

Client BYLANDER WADDELL

Method of Boring ROTARY OPEN HOLE

Diameter of Borehole 83 mm

Sheet 4 of 5

Chainage

Ground Level 159.27 m.A.O.D.

Date 1/9/90 - 2/9/90

SK39NW 247

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D. %	Daily Progress
Grey MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

0 Jar Water

● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

10

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW

247

British Geological Survey

Sheet 5 of 5

Chainage

Ground Level 159.27 m.A.O.D.

Date 1/9/90 - 2/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Grey MUDSTONE and SANDSTONE		42.40	116.87				
Black COAL with shale and mudstone traces (Moderate loss of air flush returns, possible collapsed mine workings)		45.00	114.27				
Grey SILTSTONE and SANDSTONE		48.00	111.27				
Borehole completed at 48.00							

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. Undisturbed

Ic C.P.T. x Vane

O Jar Water

Bulk Diameter

Norwest Holst Soil Engineering Ltd.

Borehole No.

11

Contract No. F8860

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

SK35NW 248

Sheet 1 of 5

Client BYLANDER WADDELL

Chainage

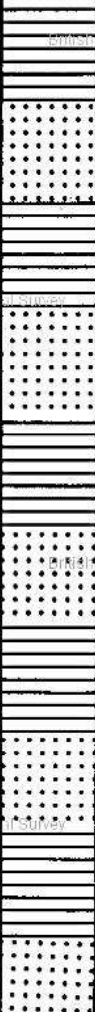
Method of Boring ROTARY OPEN HOLE

Ground Level 156.82 m.A.O.D.

Diameter of Borehole 83 mm

Date 2/9/90

3376 9927

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
MADE GROUND: Clay with rock fragments		3.30	153.52				
Grey weathered MUDSTONE and SANDSTONE							

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T.  Undisturbed Ic C.P.T. X Vane O Jar  Water ● Bulk  Piezometer	Groundwater not encountered

11

Date..2/9/90.....

248

Type of Sample			Remarks (Observations of Ground Water etc.)
Is	S.P.T.	■ Undisturbed	
Ic	C.P.T.	x Vane	
O	Jar	△ Water	
●	Bulk	▨ Piezometer	

Norwest Holst Soil Engineering Ltd.

Borehole No.

11

British Geological Survey

Contract No. FB860

British Geological Survey

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

Client BYLANDER WADDELL

Method of Boring ROTARY OPEN HOLE

Diameter of Borehole 83 mm

SK39NW

248

Sheet 3 of 5

Chainage

Ground Level 156.82 m.A.O.D.

Date 2/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Black COAL		20.20	136.62				
		20.80	136.02				
Black SHALE and MUDSTONE with coal traces							
Grey MUDSTONE		22.10	134.74				
		22.40	134.42				
Black COAL		22.90	133.92				
		23.30	133.52				
Grey MUDSTONE							
Black COAL							
Grey MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. Undisturbed

Ic C.P.T. Vane

Q Jar Water

● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be relied on as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

11

Contract No. F8860
Location TANKERSLEY
Client BYLANDER WADDELL
Method of Boring ROTARY OPEN HOLE
Diameter of Borehole 83 mm

BOREHOLE LOG

SK39NW

248

Sheet 4 of 5
Chainage
Ground Level 156.82 m.A.O.D.
Date 2/9/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
GREY MUDSTONE and SANDSTONE							

Type of Sample

Is S.P.T. ■ Undisturbed

Ic C.P.T. x Vane

O Jar △ Water

● Bulk Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

11

Contract No. F8860

BOREHOLE LOG

British Geological Survey

Location TANKERSLEY

Sheet 5 of 5

Client BYLANDER WADDELL

Chainage

Method of Boring ROTARY OPEN HOLE

Ground Level 156.82 m.A.O.D.

Diameter of Borehole 83 mm

Date 2/9/90

SK39NW
248

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
Grey MUDSTONE and SANDSTONE		40.10	116.72				
Black COAL with shale and mudstone traces		42.50	114.32				
Grey SILTSTONE and SANDSTONE		45.00	111.82				
Borehole completed at 45.00m							

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. ☒ Undisturbed

Ic C.P.T. ☒ Vane

O Jar ☒ Water

● Bulk ☒ Piezometer

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Norwest Holst Soil Engineering Ltd.

Borehole No.

12

Contract No. F 8860

BOREHOLE LOG

British Geological Survey

Location Tankersley

Client Bylander Waddell

Method of Boring Percussion/Rotary

Diameter of Borehole 150mm/105mm

SK39NW 249

3376 9932

Sheet 1 of 4

Chainage

Ground Level 157.13 m.A.O.D.

Date 1/8/90 - 15/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress
TOPSOIL		0.30	156.83				
MADE GROUND : Firm to stiff greyish brown sandy CLAY with mudstone, brick and sandstone fragments.		1.35	155.78		0.55 (26)		
MADE GROUND : Soft to firm light brown sandy CLAY with mudstone, sandstone and wood fragments.		2.85	154.28		1.55 (9)		
MADE GROUND : Soft to firm light brown sandy CLAY with mudstone, sandstone fragments, topsoil and grass remains.		3.35	153.78		2.55 (13)		
Grey fine grained, moderately weathered SILTSTONE, weak.		5.40	151.73		3.40 s	'50' for 25mm	
Light grey, sandy, laminated, fresh, slightly micaceous SILTSTONE, moderately weak to moderately strong. Occasional iron staining on joints.		6.00	151.13		4.40 s	'50' for 25mm	1/8 14/8
Grey sandy, slightly weathered SILTSTONE, moderately strong, occasional plant remains.		8.10	149.03		6.90 100 50 40		
Grey slightly weathered MUDSTONE, weak to moderately weak, 12.90 to 13.20m, dark grey carbonaceous MUDSTONE with occasional plant remains.					9.40 95 35 20		

Type of Sample

Remarks (Observations of Ground Water etc.)

(-) U100 blows

Is S.P.T. Undisturbed

Ic C.P.T. x Vane

0 Jar Water

● Bulk Piezometer

Norwest Holst Soil Engineering Ltd.

Borehole No.

12

Contract No. **F8860**
 Location **Tankersley**
 Client **Bylander Waddell**
 Method of Boring **Rotary**
 Diameter of Borehole **105mm**

BOREHOLE LOG

SK39NW
249

Sheet **2** of **4**
 Chainage
 Ground Level **157.13** m.A.O.D.
 Date **1/8/90 - 15/8/90**

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D. %	Daily Progress
Grey slightly weathered MUDSTONE, weak to moderately weak, 12.90m to 13.20m dark grey carbonaceous MUDSTONE with occasional plant remains.					TCR % SCR % ROD %		
					11.50		
					95 65 50		
					14.60		
					100 65 60		
					16.85		
					100 60 45		
Dark grey, very fine grained, slightly weathered carbonaceous MUDSTONE, moderately weak with plant remains.		19.20	137.43		19.00		
Black, fresh COAL. Bright good quality 20.70m to 20.85 highly weathered MUDSTONE very weak.		19.55	137.58		100 65 55		

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. ■ Undisturbed	
Ic C.P.T. x Vane	
0 Jar △ Water	
● Bulk ■ Piezometer	

Norwest Holst Soil Engineering Ltd.

Borehole No.

12

Contract No. F8860
Location Tankersley
Client Bylander Waddell
Method of Boring Rotary
Diameter of Borehole 105mm

BOREHOLE LOG

SK39NW
249

Sheet 3 of 4
Chainage
Ground Level 157.13 m.A.O.D.
Date 1/8/90 - 15/8/90

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring		"N"/R.Q.D.%	Daily Progress
Black, fresh COAL. 20.70 to 20.85m highly weathered MUDSTONE, very weak.		21.35	135.78		TCR % 100	SCR % 65	RQD % 55	
Black, fresh to slightly weathered, carbonaceous MUDSTONE with shell fragments		22.75	134.38		21.65 100	75	60	
Black, fresh COAL, weak.		23.05	134.08					
Dark grey, slightly to highly weathered MUDSTONE, moderately weak with plant remains.		23.55	133.58		23.55 100	55	45	
Black, fresh COAL, weak.		24.35	132.78					
Grey, slightly weathered to fresh SILTSTONE with plant remains 24.05 to 24.16 coal band.		26.90	130.23		25.75 100	70	50	14/8 15/8
Grey, slightly weathered, slightly micaceous SILTSTONE, moderately strong with occasional fine SANDSTONE layer (100m thick) and plant remains.					27.05 100	70	45	
					28.80 100	70	70	

Type of Sample	Remarks (Observations of Ground Water etc.)
Is S.P.T. Undisturbed Ic C.P.T. x Vane O Jar Water Bulk Piezometer	Very slight seepage at 26.00m

Norwest Holst Soil Engineering Ltd.

Borehole No.

12

Contract No. **F8860**
 Location **Tankersley**
 Client **Bylander Waddell**
 Method of Boring **Rotary**
 Diameter of Borehole **105mm**

BOREHOLE LOG

SK39NW
249

British Geological Survey
 Sheet **4** of **4**
 Chainage
 Ground Level **157.13** m.A.O.D.
 Date **1/8/90 - 15/8/90**

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
Grey sandy, slightly weathered, slightly micaceous SILTSTONE, moderately strong with occasional fine SANDSTONE layers (100mm thick) and occasional plant remains	+++++	31.25	125.88		TCR 100 SCR 70	70	
Light grey fine grained fresh SANDSTONE, strong, moderately weathered layer 31.65m to 32.00m.	+++++	32.60	124.53		100 75	75	
Dark grey moderately weathered MUDSTONE, weak.	+++++	32.75	124.38		100 75	65	
Light grey, fine grained, fresh SANDSTONE, strong.	+++++	33.15	123.98				
Dark grey, moderately weathered MUDSTONE, weak.	+++++	33.35	123.78				
Light grey fine grained, medium bedded, fresh SANDSTONE, strong.	+++++	34.00	123.13				
Grey, sandy, medium bedded, fresh to moderately weathered SILTSTONE, weak to moderately weak.	+++++				35.45		
	+++++				100 50	40	
	+++++				37.55		
	+++++				95 60	40	
Borehole completed at 39.70	+++++	39.70	117.43		39.70		

Type of Sample

Remarks (Observations of Ground Water etc.)

Is S.P.T. ■ Undisturbed
 Ic C.P.T. x Vane
 0 Jar △ Water
 ● Bulk ■ Piezometer

Water levels are subject to seasonal or tidal variations and should not be taken as constant

Appendix D

COAL AUTHORITY INFORMATION

Issued by:

Ground Stability Report Office, 200 LICHFIELD LANE, BERRY HILL, MANSFIELD, NOTTINGHAMSHIRE, NG18 4RG
Website: www.coalminingreports.co.uk - Phone: 0845 762 6848 - DX 716176 MANSFIELD 5

DENISE NORTH,
LINKLATERS,
ONELINKLATERS,
SILK STREET,
LONDON,
EC2Y 8HQ

Person dealing with this matter: **Darren Moody**
Our reference: **00004395-08**
Your reference: L-149226/KIRSTY ORGAN
Electronic Ref: 00000078285580001CH_ESRI
RRUID: 006.00005630730001
Date of your enquiry: **18 January 2008**
Date we received your enquiry: **18 January 2008**
Date of issue: **18 January 2008**

This report is for the property described in the address below and the attached plan. The report is issued subject to the terms and conditions attached, which you are strongly advised to read.

Ground Stability Report

H S B C, Wentworth Industrial Park, Maple Road, Tankersley, Barnsley, S75 3DJ

This report is based on and limited to the records in the possession of the Coal Authority; the records and geological interpretation of The British Geological Survey (BGS) and the records of the Cheshire Brine Subsidence Compensation Board, at the time the search is answered.

Coal mining	Yes
Shrinkable clay	Yes
Running sand	No
Compressible deposits	No
Collapsible deposits	No
Landslide potential	Yes
Soluble rocks	No
Brine extraction	No

Information from the Coal Authority

Underground Coal Mining

Past

The property is in the likely zone of influence from workings in 6 seams of coal at 50m to 220m depth, and last worked in 1957.

The property is in the likely zone of influence from workings in 1 seam of ironstone at shallow depth, and last worked in 1827.

Any ground movement from these coal workings should have stopped by now.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

Within, or within 20 metres of, the boundary of the property there are 10 mine entries, the approximate positions of which are shown on the attached plan.

Coal Authority records disclose the following information:

434399-003. No treatment details.

433399-046. was found filled and subsequently capped at rockhead with 4.5m square concrete by By-Pass Contractors in 1986 .

433399-005. No treatment details.

433399-044. No treatment details.

433399-022. No treatment details.

433399-006. has probably been removed to some extent by opencast mining .

433399-007. has probably been removed to some extent by opencast mining .

433399-009. No treatment details.

433399-008. is capped with concrete on raised brickwork .

433399-056. No treatment details.

Mine entry 433399-056 was conveyed to Secretary of State for Transport in 1994.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

Coal-mining geology

At the surface, there are no known faults or other lines of weakness due to coal mining that have made the property unstable.

Opencast Coal Mining

Past

The property is within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal-mining subsidence

The Coal Authority has not received a damage notice or claim for the property since 1 January 1984. There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority has not received a request to carry out preventive work before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

The property has been subject to remedial works, by or on behalf of the Authority, associated with a mine gas investigation.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of Support

The property is not in an area for which a notice of entitlement to withdraw support has been published.

The property is not in an area for which a notice has been given under section 41 of the Coal Industry Act 1994, revoking the entitlement to withdraw support.

Working Facilities Orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to Owners of Former Copyhold Land

The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Comments on Coal Authority information

Where development proposals are being considered, technical advice should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. This is necessary due to the Public Safety implications of any development in these circumstances.

Information from the British Geological Survey on potential for natural ground movement

Shrinkable Clay

The property is in an area underlain by clay. Clay can swell or shrink if the moisture content changes.

However, the clay deposits in this area are considered to be mainly of "low plasticity". This means it is unlikely that they will cause ground movement.

Running sand

The property is not in an area underlain by running sand.

Deposits which could compress

The property is not in an area underlain by deposits which could compress and cause ground movement.

Deposits which could collapse

The property is not in an area underlain by deposits which could collapse and cause ground movement.

Natural landslide activity

The property is in an area where the local geology and steepness of slope could combine to create the likelihood of landslide activity.

Landslide activity is unlikely to occur unless substantial changes are made to the ground and/or vegetation, including those caused by drought or excessively wet weather.

Soluble rocks

The property is not in an area underlain by soluble rocks.

Comments on the British Geological Survey information

These features should not necessarily give cause for concern.

Whether or not a property is affected by ground movement can depend on a number of factors such as its age, type of construction, and on its surroundings and such matters as drainage and nearby trees.

Since 1992 buildings should have been designed and constructed according to buildings regulations to ensure natural ground movement will not cause damage to a building.

However, you should consider the possible consequences before you:

- carry out any building or excavation work;
- alter the ground surface or drainage of surface or ground water; or
- plant or remove large shrubs or trees

Ground movement can cause uneven damage or subsidence to a property.

Developers should always carry out an appropriate risk assessment before starting any work on, or around, a property.

If you own the property and it is damaged by ground movement: You should contact your insurance company and anyone else who has an interest in the property, for example, the mortgage lender.

If you are considering buying the property and BGS has identified that ground movement could occur you should tell your professional advisers.

Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority, British Geological Survey and the Cheshire Brine Subsidence Compensation Board's Terms and Conditions 2006. These are available to view at www.groundstability.com or by contacting the Coal Authority's customer service team on 0845 762 6848 or by email to groundstability@coal.gov.uk. These terms and conditions apply regardless of the method used to order and receive reports. The report is compliant with Home Information Pack and Purchaser Information Pack requirements.

The Coal Authority and British Geological Survey own the copyright in this report. The information we have used to write this report is protected by our database right. All rights are reserved and unauthorised use is prohibited. If we provide a ground stability report for you, this does not mean that the copyright and any other rights will pass to you. However, you can use the report for your own purposes.

Ordnance Survey (OS) has carried out a Positional Accuracy Improvement Programme to make sure that the maps it produces are accurate. We have no control over who is using the improved information. In some cases, the position of surface features and mining features on the map may have changed. This is because we have updated our database in line with Ordnance Survey's improved maps.

Location map



Approximate
position
of property



Enquiry boundary

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Key

Approximate position of enquiry boundary shown



Disused Adit or Mineshaft



TERMS

DEFINITIONS

In these Terms the following words have the following meanings:

"BGS" means the British Geological Survey of Kingsley Dunham Centre, Keyworth, Nottingham, NG12 5GG, a component organisation of the Natural Environment Research Council;

"CA" means the Coal Authority of 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG;

"Cheshire Brine" means the Cheshire Brine Subsidence Compensation Board of Sir Henry Doulton House, Forge Lane, Etruria, Stoke on Trent, ST1 5BD;

"Customer" means the person, firm or company placing the Order, either on its own behalf as User or as agent for a User;

"Guidance" means the relevant current version of the Guidance Notes and User Guide for the Report, available on request and displayed on the Website;

"Order" means any request for a Report made by the Customer;

"Property" means the address or location specified by the Customer in the Order;

"Report" means a ground stability report (in printed, electronic or any other form) which combines information on coal mining, brine subsidence claims and natural ground movement which has been prepared by CA in respect of the Property using data from, amongst others, the Suppliers and to which these Terms apply;

"Supplier(s)" means all or any of CA, BGS and/or Cheshire Brine;

"these Terms" means these terms and conditions, incorporating the Guidance (if and to the extent of any conflict between these Terms and the Guidance, the provisions of these Terms will prevail);

"User(s)" means the person or persons so described in Clause 15; and

"Website" means CA's website for the provision of the Reports service (currently www.coalminingreports.gov.uk).

TERMS

1. These Terms apply to the provision of Reports by CA to the Customer and/or the User.
2. The Customer and the User agree that the placing of an Order indicates their acceptance of these Terms.
3. These Terms shall apply to the exclusion of all other terms and conditions.
4. CA reserves the right to change these Terms from time to time with immediate effect and without prior notice. Any changes to these Terms will be displayed on the Website. Placement of Orders after any such variation will be deemed to be an acceptance of these Terms as amended in respect of Reports which are provided in response to Orders placed after the variation is made.
5. Where the Customer is acting as an agent for a User, the Customer will provide a copy of the Report and these Terms to the User.

LIMITATIONS OF THE REPORT

General

6. The Report is prepared with due skill and care, but has a number of limitations which are set out in these Terms which the Customer and the User acknowledge and accept when relying on it.

Sources of Information

7. The Report has been prepared by CA using information held by CA, together with information supplied to it by BGS and Cheshire Brine. The Report is based on, and is limited to:
 - a) the specific features identified in the Report, as more particularly described in the Guidance; and

b) each Supplier's interpretation of the records it holds relating to the particular features for which the Report states that the Supplier is responsible (and, in the case of information from BGS and Cheshire Brine, as provided to CA) at the time the Report is prepared.

The Customer and the User therefore acknowledge and agree that the records used to prepare the Report do not represent an exhaustive or comprehensive list of all records that may exist or may be available for the Property (see further Clause 8). The Customer and the User also acknowledge that no physical inspection of the Property has or will be carried out in the preparation of the Report.

8. Without prejudice to the generality of Clause 7:

a) information from CA is based on records in its possession relating to coal mining activity. There may be information held by others on historical coal mining, and information on other types mining, which is not searched as part of the Report;

b) information from BGS relates solely to the following six natural ground stability hazards: shrinkable clay; running sand; compressible deposits; collapsible deposits; landslide activity; and soluble rocks. It does not cover any other geological hazards, or man-made hazards (such as contaminated land). BGS may hold data on other geological hazards and features that may affect the Property which are not searched as part of the Report and consequently the Report should not be taken as a guarantee that there are no other geological hazards or other issues affecting the Property; and

c) information from BGS is prepared using the BGS GeoSure database which is based on 1:10,000 scale geological mapping reduced to 1:50,000 scale. The Customer and the User therefore acknowledge that BGS may be able to provide a more specific and detailed interpretation relating to the geological conditions and ground stability at the Property than that which is included in the Report. A more detailed interpretation is available via the BGS GeoReports service on BGS's website www.bgs.ac.uk.

9. The information from the Suppliers may be derived from records from a number of disparate sources which vary in age, quantity and quality. Such records may include material donated to the Suppliers by third parties, which may not have been subject to any verification or other quality control process.

10. Raw data used to prepare the Reports may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected, where possible, to quality control to ensure reliability, some raw data may have been processed without human intervention and may in consequence contain undetected errors.

11. The records available to the Suppliers are constantly being updated. The Suppliers cannot be responsible to the Customer or Users for any changes in the information on which the Report is based which occur after the date on which the Report is prepared. Where this Report is for a residential property, insurance is included to cover loss in property value caused and arising from these circumstances. The Report includes a policy and key facts summary which outlines the significant features, benefits and limitations of the cover provided. The full terms, conditions and exclusions are shown in the policy document.

Maps

12. The Customer and the User must take all reasonable steps to check that the details in the Order are correct and that the Report provided by CA has been prepared for the correct location and property type, and that the boundaries of the Property as shown in the Report's plan correspond with those of the Property. Any discrepancies between the Order and the Report must be notified to the CA within 28 days after the issue date of the Report and CA will, in the case of error by CA, issue a revised Report free of charge; otherwise a new Report should be ordered with payment of the appropriate fee.

13. The Property has been located using Ordnance Survey ("OS") mapping. The Suppliers do not warrant that the OS information is complete or accurate and accept no liability for the plotted position of the Property as shown on OS maps. Further, the relative position between surface features and coal mining and other geological features may differ between OS maps and the Suppliers' maps used to prepare the Report, depending upon when the Suppliers' maps were prepared.

14. The plan or plans accompanying the Report must not be enlarged otherwise the accuracy will be affected.

RELIANCE ON THE REPORT

Who may rely on the Report

15. Only the following persons ("Users") may rely on the Report:

- a) the owner of the Property at the time the Report is prepared;
- b) any purchaser of the whole of the Property from the owner described in a above; and
- c) any person who provides funding to the persons in a or b above which is secured on the whole of the Property.

Such reliance will be subject to the provisions of Clauses 17 and 24 to 28 (inclusive).

Extent of Reliance

16. The Report has been prepared for use by the Users only and the Report should not be relied upon by any other third party.

17. Customers or Users may not act in reliance upon the Report (either by purchasing the Property, providing funding secured on the Property or carrying out any works on or affecting the Property) more than ninety (90) days after its date of issue.

18. The Report gives an indication of whether ground movement could occur at the Property. This does not necessarily mean that the Property is or will be affected by ground instability. Such an assessment can only be made by inspection of the Property by a qualified professional, such as a surveyor or engineer. The Report DOES NOT therefore:

- a) include any information or warranty relating to the actual state, or the structural or other condition, of the Property;
- b) determine the saleability or value, or the safety, of the Property;
- c) indicate the suitability of the Property for any particular purpose (including, without limitation, its suitability for development (within the meaning of section 55 of the Town and Country Planning Act 1990 as amended) or any building, excavation or landscaping work); or
- d) act as a substitute for any physical inspection, specialist interpretations and/or professional advice.

19. No representations, warranties or terms (whether express or implied by statute, common law, custom, trade usage, course of dealing or otherwise) are given in relation to the Report unless they are expressly set out in these Terms, save to the extent that such terms cannot be excluded by law.

USE OF THE REPORT

20. The Customer and the User acknowledge that the Report is confidential and that it is intended for the purposes of the User only. Accordingly the Customer and the User agree that they are permitted to use and copy the Report for these purposes only.

21. The Customer and the User (or any person who is provided with a copy of the Report) will not:

- a) remove, obliterate or alter any trade mark or any copyright or other proprietary notice which is contained in the Report;
- b) reformat or otherwise change, add to or enhance the Report, or combine it with or incorporate it into any other information, data or materials; or
- c) create any product which is derived directly or indirectly from the data contained in the Report; or
- d) resell the Report (other than in the case of a bona fide legal adviser recharging the cost of the Report as a disbursement) unless this has been specifically authorised in writing by CA.

22. The copyright and all other intellectual property rights in the Report will remain the property of the Suppliers or other third parties (as appropriate). Neither the Customer nor the User will acquire any rights in respect of the Report other than as expressly provided in these Terms.

EVENTS BEYOND THE SUPPLIERS' CONTROL

23. A Supplier will not be liable to the Customer or the User for any delay or failure in performance of its obligations which result from circumstances beyond its reasonable control (including, without limitation, fire, explosion, flood, tempest, unusually adverse weather conditions, war, hostilities, riot, acts of terrorism, failure or shortage of power supplies, telecommunications or processing failure or computer malfunction) or the acts or omissions of any person for which a Supplier is not legally responsible.

LIABILITY

24. The Report has been prepared for the Property on the basis of information on the Property's location and type provided by the Customer and/or the User, and consequently the Suppliers exclude all liability which may arise from any errors or omissions in the information so provided or from any failure to check for discrepancies pursuant to Clause 12.

25. The Report has been prepared specifically for the Property, and on the basis of the property type specified in the Order. Under no circumstances will the Suppliers be liable if a Report is relied on for any other property, or if a Report on a residential property is used for a non-residential or commercial property or for the development of the Property, and vice versa.

26. Except in the circumstances described in Clause 28 the total liability of the Suppliers to the Customer and the User arising from an error in the Report caused by negligence, breach of contract or in any other way will be limited to:

- a) the reasonable costs of carrying out necessary remedial work on the Property reasonably promptly; or
- b) the difference between the true market value of the Property and the market value of the Property on the basis of the Report at the time of reliance on the Report in accordance with these Terms.

27. Except in the circumstances described in Clause 28 or to the extent that a Supplier is found to be liable for the losses described in Clause 26 (a) or (b) arising from an error in the Report, the Supplier will not be liable to the Customer or the User for: loss of business, goodwill, profits or savings, loss of use or opportunity, lost or wasted staff time or for any indirect or consequential loss (whether arising from negligence, breach of contract or in any other way) even if the Customer or User was advised of or knew of the likelihood of that loss or type of loss arising.

28. Nothing in these Terms excludes or limits the liability of the Suppliers for death or personal injury caused by their negligence, or for fraud.

GENERAL

29. The headings in these Terms are for ease of reference only and do not affect their interpretation or construction.

30. Use of the singular includes the plural and vice versa, and use of any gender includes the other genders.

31. The benefit of these Terms cannot be assigned or transferred by the Customer or the User without the Suppliers' prior written consent. The Suppliers may assign any or all of their rights and obligations under these Terms without prior notice.

32. These Terms (together with the Order and the Guidance) represent the entire agreement relating to the supply of the Report and the relationship which that supply creates between the Suppliers and Customers and Users. No prior statement, representation or arrangement of any nature (whether written or oral) will add to, vary or waive terms of this agreement and the Customer and the User acknowledge that they have not relied on any

statement or representation made by or on behalf of CA or any other Supplier in agreeing to enter into this agreement. Nothing in this Clause 32 will operate to limit or exclude liability for fraud.

33. The illegality or invalidity of any part of these Terms will not affect the legality or validity of the remainder of these Terms.

34. Except to the extent that these Terms confer benefits on the Suppliers and the Users, no third party is entitled to the benefit of these Terms under the Contracts (Rights of Third Parties) Act 1999.

35. These Terms are governed by English law. The English courts (where the Property is situated in England or Wales) and the Scottish courts (where the Property is situated in Scotland) have exclusive jurisdiction to deal with any dispute which may arise out of or in connection with them.

**THESE TERMS ARE AVAILABLE IN LARGER PRINT FOR THOSE WITH IMPAIRED VISION OR AT
WWW.COAL.GOV.UK**

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HSBC TANKERSLEY
124843
MINING CONSTRAINTS PLAN

