

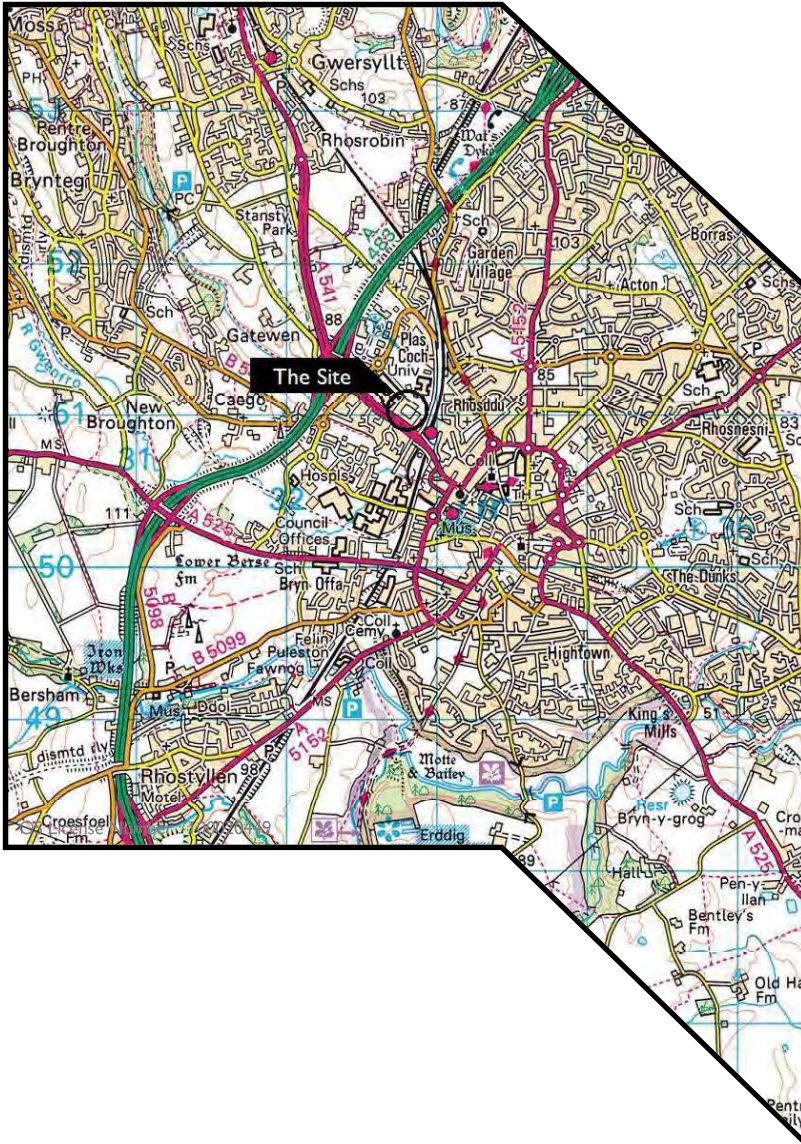
APPENDIX 2

FACTUAL SITE INVESTIGATION INFORMATION

Ground Investigation



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WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION

Factual Report

for
Wrexham A.F.C.

Engineer : Ramboll UK Limited

Project Number PN224453

April 2023

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Factual Report

**WREXHAM F.C. NEW KOP STAND
GROUND INVESTIGATION**

for
Wrexham A.F.C.

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Project No:
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**WREXHAM F.C. : NEW KOP STAND
GROUND INVESTIGATION**

Project No : PN224453
April 2023

1.0 INTRODUCTION

A geotechnical and geo-environmental investigation was undertaken by Geotechnics Limited at the site of the proposed construction of a new south-east stand for the Wrexham F.C. ground, including an entrance concourse, terraced seating, offices and hospitality suites. In addition, the replacement of the existing floodlights is proposed.

The investigation was carried out to the instructions of [the Engineer, Ramboll UK Limited on behalf of the Client, Wrexham A.F.C. This report describes the work undertaken and presents the data obtained.

2.0 OBJECT AND SCOPE OF THE INVESTIGATION

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The investigation comprised two (2 No.) inspection pits, five (5 No.) machine-dug trial pits, six (6 No.) cable percussion boreholes and a single (1 No.) rotary open-hole borehole, in situ and laboratory testing and reporting.

The fieldwork was undertaken in two phases, the first between 28th September and 19th October 2022, and the second, between 15th and 28th February 2023.

A Factual Report was also commissioned.

3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 2. To 11 of this report. Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 12 to aid an understanding of the procedures followed and the context in which the report should be read.

In addition, data in electronic format in accordance with “The Electronic Transfer of Geotechnical Data from Ground Investigations” published by the AGS (the AGS Format) are presented together with a copy of the report in electronic PDF format.

4.0 THE SITE

A Geotechnical and Contaminated Land Desk Study Report “Wrexham AFC – KOP Standard Development” was issued by Ramboll Limited under their Project Number: 1620012485, in June 2022. This desk top report provides more detailed information on the site history, site geology, hydrogeology, etc.

4.1 Location

The site is located within the corners of the existing Racecourse Ground football stadium, off the north side of the A541 Mold Road in Wrexham. The stadium is located approximately 180m northwest of Wrexham Railway Station. The site is centred at National Grid Reference SJ 328 510 and an extract from the relevant 1:50,000 Scale O.S. Map (Sheet No. 117) is included as Appendix 1.

4.2 Description

The site is currently occupied by the existing Racecourse Ground (comprising hardstanding and concrete associated with the development) and part of the land immediately east which consists of a grassed mound. The site is roughly rectangular in shape covers a square area of approximately 14,000m² and is bounded to the north by Wrexham Student Village, to the east by Crispin Lane, to the south by Mold Road and to the west by Wrexham Education Facility.

Access is via the main gates to the science park off Pool Lane.

4.3 Site Geology

The 1:50,000 scale map published by the British Geological Survey, Sheet 121 (Wrexham) dated 1993 and the British Geological Survey online GeoIndex Viewer <https://mapapps2.bgs.ac.uk/geoindex/home.html> accessed on 14th November 2022 shows the site to be underlain by:

Made Ground is not shown to be present on published geological mapping, however, given the site's setting, a thickness of Made Ground would be anticipated associated with the construction of the stadium and surrounding pavements.

Superficial deposits of Glaciofluvial Sheet Deposits (*formally named Glacial Sand and Gravel*) and is described as: “*Sand and gravel, locally with lenses of silt, clay or organic material.*”

Bedrock of Etruria Formation (*formally named Ruabon Marl Formation*) which is Carboniferous in age and can be described as: “*Red, purple, brown, ochreous, green, grey and commonly mottled mudstone, with lenticular sandstones and conglomerates referred to as 'espleys'. Common pedogenic horizons, but coal seams are rare.*”

An unnamed east-west trending fault is shown to traverse the site. The downthrow of the fault is not shown on geological mapping however based on the surrounding geological succession it is evident that the strata to the north have been downthrown relative to those on the south side of the fault.

4.4 Hydrogeology

The Government's DEFRA Magic Map website, <https://magic.defra.gov.uk/MagicMap.aspx> accessed on 14th November 2022, shows that the superficial (Glaciofluvial Sheet Deposits) and bedrock geology (Etruria Formation) are both classified as Secondary A Aquifers. A Secondary A Aquifer is defined as an aquifer that comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers.

5.0 PROCEDURE

5.1 Commissioning

The work was awarded following submission of a tender for work designed by the Engineer for ground investigation of the site in accordance with the Client's requirements.

5.2 General

The procedures followed in this site investigation are based on BS 5930: 2015+A1:2020 – *Code of Practice for Site Investigations* and BS 10175:2011+A2:2017 - *Investigation of Potentially Contaminated Sites*. The soils and rocks encountered have been described in accordance with BS5930:2015+A1:2020 and BS EN ISO 14688-1:2018 and BS EN ISO 14689:2018.

The Exploratory Hole locations were specified by Ramboll and their positions are shown on the Exploratory Hole Location Plan in Appendix 11. The co-ordinates and levels shown on the Exploratory Hole Records were measured using a Leica GPS survey device. The depths quoted on the exploratory hole records are in metres below ground

level.

Prior to the investigation, available records and plans were consulted to check for the presence of buried services at the proposed exploratory hole locations. At each exploratory hole location, with the exception of the trial pits, an inspection pit was excavated using hand tools to a depth of 1.20m below ground level to further check for the presence of underground services. Prior to and on completion of the excavation, the location was scanned using a cable avoidance tool (CAT).

At those locations where concrete was present at ground level, 350mm diameter coring was used to advance the exploratory hole through the concrete and facilitate the excavation of the inspection pit. Details of the concrete coring is included on the appropriate exploratory hole records.

5.3 Hand-Dug Inspection Pits

Two (2 No.) Inspection Pits (numbered IPI00 and IPI01) were excavated to a depth of 1.35m below ground level using a hand tools on 19th October 2022 during the first phase of the ground investigation.

These inspection pits were excavated to investigate the existing floodlight bases. This work was supervised on site by a geotechnical / geo-environmental engineer.

The profiles of strata or other features were recorded as excavation proceeded and measurements taken from ground level. Representative samples were taken, where appropriate, for laboratory examination and analysis and in addition, Environmental soil samples (ES) were recovered at the depths indicated on the Inspection Pit Records, presented in Appendix 2. Samples were taken directly from excavated materials deposited at the surface. Groundwater observations and trench stability notes are included on the Inspection Pit Records.

5.4 Machine-Dug Trial Pits

Five (5 No.) Trial Pits (numbered TPI00 to TPI04) were excavated to a depth of 3.00m below ground level using a 12 Tonne tracked excavator on 15th and 16th February 2023 during the second phase of the ground investigation. This work was supervised on site by a geotechnical / geo-environmental engineer.

The profiles of strata or other features were recorded as excavation proceeded and measurements taken from ground level. Representative samples were taken, where appropriate, for laboratory examination and analysis and in addition, Environmental soil samples (ES) were recovered at the depths indicated on the Trial Pit Records, presented in Appendix 3. Samples were taken directly from excavated materials deposited at the surface. Groundwater observations and trench stability notes are included on the Trial Pit Records.

Photographs of the machine-dug trial pits excavated during the investigation are presented in Appendix 4.

5.5 Cable Percussion Boreholes

Three (3 No.), Cable Percussive Boreholes were sunk using a combination of 200mm and 150mm diameter casings and tools to depths of 30.42m (BH100), 20.37m (BH101) and 30.00m (BH102) below ground level. This boring work was carried out between 28th September and 18th October 2022 during the first phase of the ground investigation.

A further three (3 No.), Cable Percussive Boreholes were sunk using a combination of 200mm and 150mm diameter casings and tools to depths of 15.45m (BH104), 15.43m (BH105) and 20.44m (BH106) below ground level. This boring work was carried out between 20th and 28th February 2023 during the second phase of the ground investigation.

Samples were taken from the service inspection pit, where appropriate, for laboratory examination and analysis. Representative disturbed (D and B) samples and driven open-tube thin-walled (UT) samples of the soils encountered were obtained at regular intervals. In addition, Environmental Soil samples (ES) were recovered at the depths indicated on the Cable Percussive Borehole Records, presented in Appendix 5. Soil samples taken specifically for

chemical analyses were contained within appropriate receptacles and stored alongside ice packs in a cool box to preclude any sample deterioration prior to delivery to the testing laboratory.

Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the Cable Percussive Borehole Records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata. The full details of the SPT results are presented on the SPT Results Summary Sheets, included in Appendix 5, along with a copy of the relevant SPT Hammer Energy Test Report.

On encountering groundwater, boring operations were suspended for 20 minutes in order to record any rise in water level. Full details of groundwater observations during site work are included on the Borehole Records. Where water was added it has been noted on the Borehole Records.

Aquifer protection measures were employed when drilling the boreholes in order to preclude the creation of a pathway for contamination to migrate down towards the underlying aquifer. These protection measures comprised using 200mm diameter casing and tools to drill to the base of the Made Ground, then by installing a 1m thick bentonite plug, prior to reducing to 150mm diameter casing and tools and re-commencing drilling.

On completion, standpipes were installed in all of the cable percussive boreholes (See Section 5.8).

5.6 Rotary Open-hole Borehole

A single (1 No.) 150mm diameter boreholes (numbered BH103) was sunk utilising open-hole, drilling techniques to a depth of 20.43m below ground level. This borehole was drilled using rotary open-hole draining methods rather than cable percussive techniques due to restricted access at the borehole location.

This rotary open-hole drilling work was carried out between 10th and 13th October 2022 during the first phase of the ground investigation.

Symmetrix

The open-hole drilling was carried out utilising a Symmetrix casing advancement system. The Symmetrix system involves a concentric method of drilling through overburden with casing. The three main components of the system are:

- a pilot bit, which drills the centre part of the hole and guides the drill string.
- a casing shoe welded to the casing leading length, which is pulled down by the impact of the hammer and pilot bit.
- a symmetrical ring bit.

The Symmetrix system is an open-hole drilling technique that generally precludes the taking of samples. However, it does facilitate the installation of casing to bedrock. Standard Penetration Tests can be taken during a pause in the drilling following withdrawal of the drill rods.

The drilling equipment on this particular contract utilised water as the flushing medium. The strata descriptions are the Drilling Foreman's estimate based on sediment and chipping returns in the flushing medium. The rate of penetration is also used as an indicator of the type of material being drilled, particularly where there is loss of flush returns. Definitive classification in terms of geology or degree of disturbance is not usually possible from these sources.

Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the Cable Percussive Borehole Records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata. The full details of the SPT results are presented on the SPT Results Summary Sheets, included in Appendix 6, along with the Rotary Open-hole Borehole Record and a copy of the relevant SPT Hammer Energy Test Report.

Groundwater observations are included on the Borehole Records where appropriate. It should be noted that the addition of water to the borehole as part of the drilling process may have masked the presence of groundwater in

the borehole. Where water was added it has been noted on the Borehole Records. On completion, a standpipes was installed in Boreholes BH103 (see Section 5.7).

5.7 Photo-ionisation Detector (PID) Tests

Photo-ionisation detection (PID) tests were undertaken during the drilling of the boreholes and the excavation of the trial pits by testing the headspace of the Environmental Soil samples taken. The tests were carried out using a suitably calibrated MiniRAE 2000 PID Meter fitted with a 10.6eV UV lamp. The results of the PID tests are presented on the Trial Pit Records and the Cable Percussive Borehole Records with the readings reported as Volatile Organic Compounds (VOCs) recorded in parts per million.

5.8 Installations and Monitoring

Long-term monitoring of the gas and groundwater levels was made possible by the installation of standpipes as follows:

Exploratory Hole	Diameter (mm)	Standpipe Slotted Pipe (m)	Standpipe Filter Zone (m)
BH100	50	23.40 to 25.20	23.40 to 25.20
BH101	50	7.00 to 10.00	7.00 to 10.00
BH102	50	12.90 to 15.90	12.90 to 15.90
BH103	50	13.50 to 15.60	13.50 to 15.60
BH104	50	1.00 to 2.80	1.00 to 2.80
	50	12.00 to 15.00	12.00 to 15.00
BH105	50	1.00 to 2.70	1.00 to 2.70
	50	15.00 to 18.00	15.00 to 18.00
BH106	50	0.50 to 2.00	0.50 to 2.00
	50	12.00 to 15.00	12.00 to 15.00

Monitoring of the gas and groundwater levels in Boreholes BH100 to BH103 site commenced on 10th November 2022 with further visits on 16th, 24th and 30th November 2022 and also on 7th and 12th December 2022.

Monitoring of the gas and groundwater levels in Boreholes BH104 to BH106 commenced on 14th March 2023 with further visits on 20th and 29th March 2023 and also on 4th, 11th and 18th April 2023.

On each of the monitoring visits a record of the groundwater level in the standpipes was obtained.

In addition to the groundwater levels, the following parameters were measured and recorded in each standpipe using a Geotech GFM346 Gas Analyser:-

- Concentrations (% Vol) of CH₄, O₂, CO₂, along with (% LEL) CH₄ and (ppm) H₂S, CO
- Flow Rate
- Barometric Pressure
- Air Temperature

The results of the monitoring are presented in Appendix 7.

5.9 Purging and Groundwater Sampling

On 16th November and 7th December 2023, where water was recorded in Boreholes BH100 to BH103, samples were obtained (where possible) following purging of water in the standpipes.

On 14th March 2023, where water was recorded in Boreholes BH104 to BH106, samples were obtained (where possible) following purging of water in the standpipes.

In order to obtain representative groundwater samples, where groundwater was present within the standpipes, purging was carried out by the removal of three times the volume of groundwater (where possible) within each installation. Once the standpipes had been successfully purged, a groundwater sample was taken (where possible) to enable subsequent chemical analyses to be carried out.

Groundwater samples taken specifically for chemical analyses were contained within appropriate receptacles and stored alongside ice packs in a cool box to preclude any sample deterioration prior to immediate delivery to the testing laboratory.

This work was carried on 16th November and 7th December 2022.

6.0 LABORATORY TESTING

6.1 Geotechnical

The laboratory testing schedule was specified by the Engineer. Unless otherwise stated, the tests were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365) and were undertaken in accordance with the appropriate Standards as indicated below and on the Laboratory Test Certificate in Appendix 8. Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The geotechnical testing has been undertaken by Geotechnics Laboratory in Coventry. The tests undertaken can be summarised as follows:-

Standard	Test Description	Quantity
BS EN ISO 17892-1:2014	Water Content Determination	13
BS EN ISO 17892-4:2016	Particle Size Distribution Determination – Sieving Method	44
	Particle Size Distribution Determination – Pipette Method	8
BS EN ISO 17892-8:2018	Unconsolidated Undrained Triaxial Test – Single Stage	2
BS EN ISO 17892-12:2018	Determination of Liquid and Plastic Limits	13

An undisturbed driven open-tube thin-walled (UT) sample taken from Borehole BH102 between 12.50m and 12.95m below ground level was also scheduled for both an unconsolidated undrained triaxial test and an incremental loading oedometer test. It was not possible to undertake these tests due to the short sample length and the gravelly nature of the soil recovered.

The following testing was carried out at the laboratories of Derwentside Environmental Testing Services Limited (UKAS Accredited Laboratory, Number 2139):

Standard	Test Description	Quantity
BRE Special Digest I Suite A	Suites comprising:- Soluble Sulphate pH	9

The results of these geotechnical soil tests are presented in Appendix 8.

6.2 Contamination

Selected samples of soil and groundwater were tested at the laboratories of Derwentside Environmental Testing Services Limited (UKAS Accredited Laboratory, Number 2139) for a number of determinands in order to check on potential site contamination. The determinands were specified by the Engineer and are detailed on the results sheets in Appendix 9 (Soils) and Appendix 10 (Groundwater) together with the test result as well as the test method, accreditation and detection limit.

Signed for and on behalf of Geotechnics Limited.

Prepared by:

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Engineer

Reviewed by:

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UK Registered Ground Engineering Adviser (RoGEP)
Principal Engineer

APPENDIX I

Site Location Plan

SITE LOCATION PLAN



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WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION
for
Wrexham A.F.C.

GEOTECHNICS
geotechnical and geoenvironmental specialists

APPENDIX 2

Inspection Pit Records

DATA SHEET - Symbols and Abbreviations used on Records



Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecon Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content
(All other strengths from undrained triaxial testing)	
S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration (mm)
()	Extrapolated value

Groundwater

Water Strike	
Depth Water Rose To	

Instrumentation

Seal

Filter

Seal

Strata

Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols

Chalk

Limestone

Sandstone

Coal

Strata, Continued

Mudstone

Siltstone

Metamorphic Rock

Fine Grained

Medium Grained

Coarse Grained

Igneous Rock

Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite

Concrete

Sand

Grout

Gravel

Asphalt/Tarmacadam

Rotary Core

RQD Rock Quality Designation (% of intact core >100mm)

FRACTURE INDEX Fractures/metre

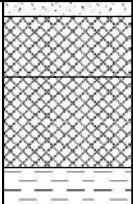
NI Non-intact core

NR No core recovery

AZCL Assumed zone of core loss

TRIAL PIT RECORD - Inspection pit

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332782.8 E 351075.5 N	Location ID	IP100
				Ground Level	86.35 m OD

Samples and Tests				Strata	Scale 1:50		
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.10 - 0.50	B			MADE GROUND: Strong grey concrete.	0.10		86.25
0.30	D			MADE GROUND: Brown mottled red and black sandy clayey angular to subrounded fine to coarse gravel of siltstone, sandstone, tarmacadam and brick fragments.	0.50		85.85
0.30	ES			Sand is of ash.			
0.50 - 1.10	B			MADE GROUND: Dark greyish brown sandy clayey angular to subrounded fine to coarse gravel of siltstone, sandstone and tarmacadam. Rare fragments of glass. Traces of slag.	1.10		85.25
0.80	D			At 0.55m, 0.80m wide concrete footing, extending to 1.10m depth.			
0.80	ES			Firm orangish brown sandy CLAY.			
1.10 - 1.35	B				1.10		
1.20	D				1.35		
1.20	ES			End of Excavation			

Excavation				Groundwater				
Plant	Hand Tools.	Width (B)	0.45	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	19/10/2022	Length (C)	1.45					None encountered.
Shoring	None.	Date Backfilled	19/10/2022					
Stability	Stable during excavation.							

Remarks	 Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial.	Logged by	PC
		Checked by	JN
		Figure	Sheet 1 of 1
			07/03/2023

Symbols and abbreviations are explained on the accompanying key sheets.

All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020



geotechnical and geoenvironmental specialists

All Measurements in Metres

Client:

Project:

Project No: PN224453

View: Section View

Contact: jnoble@geotechnics.co.uk

Fax. 01244 671122

TRIAL PIT RECORD - Inspection pit

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332778.8 E 351070.5 N	Location ID	IP101
				Ground Level	86.36 m OD

Samples and Tests				Strata		Scale 1:50	
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.00 - 0.10	B			MADE GROUND: Black tarmacadam.	0.10		86.26
0.10 - 0.50	B			MADE GROUND: Black mottled borwn sandy angular to subangular fine to coarse gravel of siltstone, sandstone, limestone and brick fragments. Traces of slag. Sand is of ash.	0.50		85.86
0.20	D						
0.20	ES			MADE GROUND: Strong grey concrete.	0.80		85.56
0.40	D			At 0.55m, 0.95m wide concrete footing, extending to 1.10m depth.	1.10		85.26
0.40	ES			MADE GROUND: Dark grey mottled brown sandy slightly clayey angular to subangular fine to coarse gravel of mudstone, slate and brick fragments.	1.35		85.01
0.80 - 1.10	B			Firm orangish brown sandy CLAY.			
1.00	D			End of Excavation			
1.00	ES						
1.10 - 1.30	B						
1.20	D						
1.20	ES						

Excavation				Groundwater				
Plant	Hand Tools.	Width (B)	0.40	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	19/10/2022	Length (C)	1.45					None encountered.
Shoring	None.	Date Backfilled	19/10/2022					
Stability	Stable during excavation.							

Remarks	 Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 x 60ml glass vial, 2 x 258ml amber glass jars and 1 x 1L plastic tub.	Logged by Checked by Figure	PC JN Sheet 1 of 1 07/03/2023
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Symbols and abbreviations are explained on the accompanying key sheets.

All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020



geotechnical and geoenvironmental specialists

All Measurements in Metres

Client:

Project:

Project No: PN224453

View: **Section View**

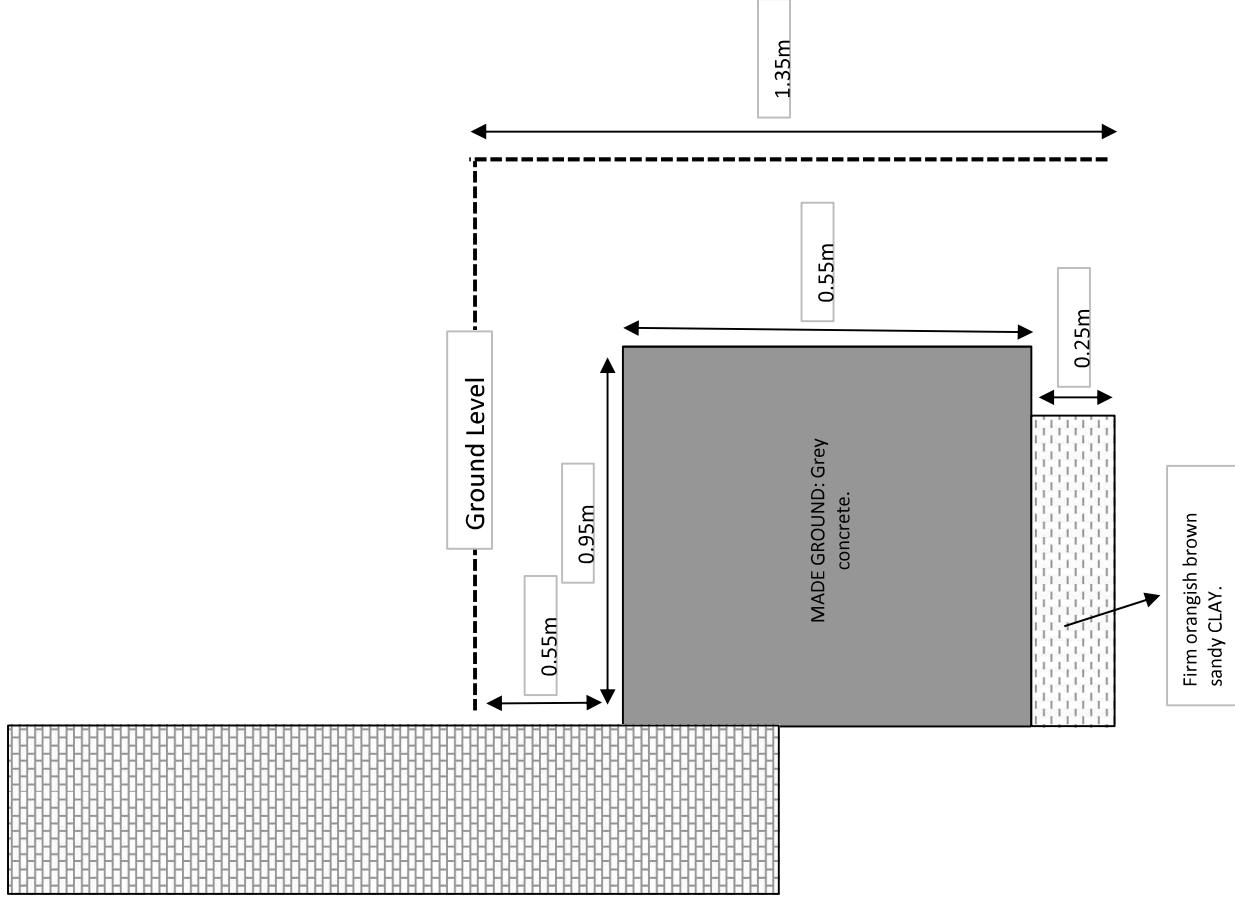
Drawn by: Joshua Noble

Contact: jnoble@geotechnics.co.uk



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Fax. 01244 671122



APPENDIX 3

Machine-Dug Trial Pit Records

DATA SHEET - Symbols and Abbreviations used on Records



Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecon Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content
(All other strengths from undrained triaxial testing)	
S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration (mm)
()	Extrapolated value

Groundwater

Water Strike	
Depth Water Rose To	

Instrumentation

Seal

Filter

Seal

Strata

Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols

Chalk

Limestone

Sandstone

Coal

Strata, Continued

Mudstone

Siltstone

Metamorphic Rock

Fine Grained

Medium Grained

Coarse Grained

Igneous Rock

Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite

Concrete

Sand

Grout

Gravel

Asphalt/Tarmacadam

Rotary Core

RQD Rock Quality Designation (% of intact core >100mm)

FRACTURE INDEX

Fractures/metre

NI Non-intact core

NR No core recovery

AZCL Assumed zone of core loss

TRIAL PIT RECORD - Trial Pit

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332937.0 E 350962.0 N	Location ID	TP100
				Ground Level	87.42 m OD

Samples and Tests				Strata	Scale 1:50		
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.05	B			Tree stumps and weeds over MADE GROUND: Dark brown gravelly slightly clayey fine to coarse sand with many roots and rootlets. Occasional tree roots (up to 20mm diameter).	0.10		87.32
0.05	ES						
0.15	B			Between 0.00-0.10m in South side only, MADE GROUND: Grey concrete slabs.			
0.15	ES						
0.50	B			Orangish brown sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone. Medium subangular to subrounded cobble content of sandstone.	0.90		86.52
0.50	ES			Between 0.15-0.25m in South side only, MADE GROUND: Red sandy angular fine to coarse gravel of burnt shale. Occasional disposable plastic cup.			
1.20	B			Greyish brown clayey medium to coarse SAND and angular to subrounded fine, medium and occasionally coarse GRAVEL of sandstone.			
1.20	ES			Below 1.30m, occasional pockets and lenses of angular coarse gravel of black coal and thinly laminated mudstone. Occasional roots.			
2.00	B				2.10		85.32
2.50	B			Orangish brown sandy clayey subangular to subrounded fine to coarse GRAVEL of mudstone, sandstone and occasional coal. Medium to high subangular to subrounded cobble content of sandstone. Low angular to subrounded boulder content of sandstone. Occasional pockets of soft to firm reddish brown slightly sandy gravelly clay.			
				Cobbles generally iron-stained and splitting along bedding.	3.00		84.42
				End of Excavation			

Excavation				Groundwater				
Plant	13 Tonne Tracked Excavator	Width (B)	1.50	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	15/02/2023	Length (C)	2.60					None encountered.
Shoring	None.	Orientation (degrees)	274					
Stability	Sides Spalling below 2.10m depth.	Date Backfilled	15/02/2023					

Remarks	ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Any clay encountered was too friable and gravelly to undertake hand shear vane tests.	Logged by	JA
		Checked by	JK
		Figure	Sheet 1 of 1
			10/03/2023

Symbols and abbreviations are explained on the accompanying key sheets.

All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

GEOTECHNICS

geotechnical and geoenvironmental specialists

TRIAL PIT RECORD - Trial Pit

Project Wrexham FC : New Kop Stand - Ground Investigation		Engineer Ramboll UK Limited		Project No. PN224453	
Client Wrexham AFC		National Grid Coordinates 332925.0 E 350927.0 N		Location ID TP101	
				Ground Level 87.80 m OD	

Samples and Tests				Strata	Scale 1:50		
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.25	B			MADE GROUND: Light grey/white sandy angular fine to coarse gravel of limestone.	0.10		87.70
0.25	ES			MADE GROUND: Light greyish brown very sandy angular fine to coarse gravel of concrete, glass, slate, metal, plastic, pottery, wire and brick fragments. Medium to high angular cobble content of concrete and occasional bricks. Occasional pockets of black ash. Occasional rootlets. Occasional pieces of polythene damp-proof membrane. Occasional door handle.	0.45		87.35
0.50	B				0.60		87.20
0.50	ES						
0.90	B			Very stiff black occasionally dark orange slightly gravelly to gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone. Grading to clay-bound gravel in places.			
0.90	ES			Orangish brown sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone. Medium to high subangular to subrounded cobble content of sandstone. Low boulder content of sandstone in places. Cobbles generally iron-stained and splitting along bedding. Between 1.10-1.20m in Southeast side only: lens of black coally gravel.			
1.90	B						
2.50	B						
				End of Excavation	3.00		84.80

Excavation				Groundwater				
Plant	13 Tonne Tracked Excavator	Width (B)	1.50	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	15/02/2023	Length (C)	2.60					None encountered.
Shoring	None.	Orientation (degrees)	205					
Stability	Sides spalling below 1.20m depth.	Date Backfilled	15/02/2023					

Remarks	ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Any clay encountered was too friable and gravelly to undertake hand shear vane tests.	Logged by JA Checked by JK Figure Sheet 1 of 1 10/03/2023
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Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

geotechnical and geoenvironmental specialists

TRIAL PIT RECORD - Trial Pit

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332920.0 E 350916.0 N	Location ID	TP102
				Ground Level	87.90 m OD

Samples and Tests				Strata	Scale 1:50		
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.20	B			MADE GROUND: Light grey/white sandy angular fine to coarse gravel of limestone.	0.05		87.85
0.20	ES			MADE GROUND: Light greyish brown very sandy angular fine to coarse gravel of concrete, glass, slate, metal, plastic, pottery, wire and brick fragments. Medium to high angular cobble content of concrete and occasional bricks. Occasional rootlets. Occasional pieces of polythene damp-proof membrane. Occasional green plastic bottle and bullet cartridge.	0.40		87.50
0.50	B				0.60		87.30
0.50	ES				0.80		87.10
0.70	B						
0.70	D			MADE GROUND: Black occasionally red very sandy angular fine, medium occasionally coarse gravel of ash, mudstone and burnt shale.			
0.70	ES			Extends to 1.20m depth in Southwest end only where it becomes red.			
1.40	B			MADE GROUND: Stiff to very stiff friable dark brown slightly gravelly sandy slightly organic clay. Gravel is angular to subangular fine to coarse of coal, black shale, sandstone and brick fragments. Fragment of old smoker's pipe. Traces of rootlets (Possible relict topsoil).			
				Orangish brown sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone. Medium subangular to subrounded cobble content of sandstone. Low boulder content of sandstone in places.			
				Cobbles generally iron-stained and splitting along bedding.			
2.80	B			Between 1.20-1.40m in Southwest end only: MADE GROUND: Grey concrete slab with aggregate of buff sandstone and red brick fragments.			
				End of Excavation	3.00		84.90

Excavation				Groundwater				
Plant	13 Tonne Tracked Excavator.	Width (B)	1.50	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	15/02/2023	Length (C)	2.60					None encountered.
Shoring	None.	Orientation (degrees)	228					
Stability	Sides spalling below 0.80m depth.	Date Backfilled	15/02/2023					

Remarks	ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Any clay encountered was too friable and gravelly to undertake hand shear vane tests.	Logged by	JA
		Checked by	JK
		Figure	Sheet 1 of 1
			10/03/2023

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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TRIAL PIT RECORD - Trial Pit

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332913.0 E 350904.0 N	Location ID	TP103
				Ground Level	87.85 m OD

Samples and Tests				Strata	Scale 1:50		
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.20	B			MADE GROUND: Light grey sandy angular fine to medium predominantly coarse gravel of limestone.	0.10		87.75
0.20	ES			MADE GROUND: Light greyish brown very sandy angular fine to coarse gravel of concrete, glass, slate, metal, plastic, pottery, wire and brick fragments. Medium to high angular cobble content of concrete and occasional bricks. Occasional rootlets. Occasional pieces of polythene bags. Some wood fragments. Occasional pieces of grey plastic ducting.	0.30		87.55
0.40	B				0.60		87.25
0.40	ES			MADE GROUND: Very stiff dark grey/black slightly garvelly to gravelly sandy clay. Gravel is angular fine to coarse of mudstone, sandstone and burnt shale.			
0.90	B			Orangish brown sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone. Medium subangular to subrounded cobble content of sandstone. Low boulder content of sandstone in places.			
				Cobbles generally iron-stained and splitting along bedding.			
2.00	B			Between 0.50-2.40m in North corner: Red brick structure with occasional slate course (Possible sewer manhole) - with wall trending 074° to 254°.			
				Structure 0.70m wide infilled with black ash including pottery saucer to 0.90m depth and brown clayey gravel with clayware pipe fragments below.			
				Wall of structure located at 332912.4mE, 350906.7mN, 87.44m OD.			
3.00	B			End of Excavation	3.00		84.85

Excavation				Groundwater				
Plant	13 Tonne Tracked Excavator.	Width (B)	1.50	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	15/02/2023	Length (C)	3.10					None encountered.
Shoring	None.	Orientation (degrees)	320					
Stability	Sides spalling below 0.60m depth.	Date Backfilled	15/02/2023					

Remarks	ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Any clay encountered was too friable and gravelly to undertake hand shear vane tests.	Logged by	JA
		Checked by	JK
		Figure	Sheet 1 of 1
			10/03/2023

Symbols and abbreviations are explained on the accompanying key sheets.

All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

geotechnical and geoenvironmental specialists

TRIAL PIT RECORD - Trial Pit

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332890.0 E 350899.0 N	Location ID	TP104
				Ground Level	87.53 m OD

Samples and Tests				Strata	Scale 1:50		
Depth	Sample Type	Stratum No.	Results	Description	Depth	Legend	Level (m OD)
0.25	B			MADE GROUND: Light grey/white sandy angular fine to coarse gravel of limestone.	0.10		87.43
0.25	ES			MADE GROUND: Light greyish brown very sandy angular fine to coarse gravel of concrete, glass, slate, metal, plastic, and pottery. Medium to high angular cobble content of concrete. Clayey in places. Occasional rootlets. Occassional tree roots.	0.40		87.13
0.50	ES			MADE GROUND: Stiff to very stiff friable dark brown slightly gravelly sandy clay.	0.60		86.93
0.70	B			Gravel is angular to subangular fine to coarse of sandstone.			
				At 0.55m 50mm grey ducting (Possible redundant BT service) trending North East to South West.			
1.20	B			Orangish brown sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone. Medium subangular to subrounded cobble content of sandstone.			
1.50	ES			Clayey in places. Low boulder content of sandstone in places. Occasional rootlets. Between 0.90-1.30m, grading to orangish brown clayey medium to coarse sand and subangular to subrounded fine to coarse gravel of sandstone.			
				Between 1.00-1.80m in Southeast corner only: grey concrete slab with plastic sheeting. Strong hydrocarbon odour.			
2.50	B						
				End of Excavation	3.00		84.53

Excavation				Groundwater				
Plant	13 Tonne Tracked Excavator.	Width (B)	1.50	Depth Observed	Depth of Pit	Rose to	in Mins	Remarks
Date	16/02/2023	Length (C)	2.60					None encountered.
Shoring	None.	Orientation (degrees)	45					
Stability	Sides spalling below 0.60m depth.	Date Backfilled	16/02/2023					

Remarks	ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. Any clay encountered was too friable and gravelly to undertake hand shear vane tests.	Logged by	JA
		Checked by	JK
		Figure	Sheet 1 of 1
			10/03/2023

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

geotechnical and geoenvironmental specialists

APPENDIX 4

Machine-Dug Trial Pit Photographs

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP100 (I) - Looking West

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP100 (2) - Looking West

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP100 (3) - Looking East

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP100 (4) Arisings

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP101 (I) - Looking Southwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP101 (2) - Looking Northeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TPI01 (3) Arisings

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP102 (I) - Looking Southwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP102 (2) - Looking Northeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP102 (3) Arisings

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (I) - Close-up of brick wall

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (2) - Looking Northwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (3)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (4)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (5) - Looking Northwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (6)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (7)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TPI03 (8)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (9)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TPI03 (10)

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (II) - Looking Southeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP103 (12) Arisings

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP104 (I) - Looking Southwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP104 (2) - Looking Southwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP104 (3) - Looking Northeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TPI04 (4) - Looking Southeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TPI04 (5) - Looking Southeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TPI04 (6) - Looking Southeast

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP104 (7) - Looking Northwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP104 (8) - Looking Northwest

PHOTOGRAPHS

Project Number : PN224453

Project : WREXHAM F.C. NEW KOP STAND GROUND INVESTIGATION



Trial Pit TP104 (9) Arisings

APPENDIX 5

**Cable Percussive Borehole Records,
SPT Results Summary Sheets and
SPT Hammer Energy Test Report**

DATA SHEET - Symbols and Abbreviations used on Records



Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecon Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content
(All other strengths from undrained triaxial testing)	
S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration (mm)
()	Extrapolated value

Groundwater

Water Strike	
Depth Water Rose To	

Instrumentation

Seal

Filter

Seal

Strata

Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols

Chalk

Limestone

Sandstone

Coal

Strata, Continued

Mudstone

Siltstone

Metamorphic Rock

Fine Grained

Medium Grained

Coarse Grained

Igneous Rock

Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite

Concrete

Sand

Grout

Gravel

Asphalt/Tarmacadam

Rotary Core

RQD Rock Quality Designation (% of intact core >100mm)

FRACTURE INDEX

Fractures/metre

NI Non-intact core

NR No core recovery

AZCL Assumed zone of core loss

BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332776.8 E 351079.5 N	Borehole	BH100
				Ground Level	86.38 m OD

Sampling			Properties			Strata	Scale 1:50								
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description	Depth	Legend	Level (m OD)						
0.05 - 0.20	B	(DRY)	PID=<0.1	25	S17	MADE GROUND: Black tarmacadam.	0.05		86.33						
0.15	ES					MADE GROUND: Grey slightly sandy angular to subangular fine to coarse gravel of limestone (Sub base).	0.20		86.18						
0.15	ES					MADE GROUND: Brown mottled red very sandy slightly clayey angular to subangular fine to coarse gravel of sandstone, coal and brick fragments.	0.50		85.88						
0.20 - 0.50	B					Sand is of ash.	0.75		85.63						
0.40	ES					MADE GROUND: Soft to firm brown mottled grey and red slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of siltstone, sandstone and brick fragments.	1.20		85.18						
0.40	ES		PID=<0.1			Brown slightly clayey fine to coarse SAND and subangular to rounded fine to coarse GRAVEL of siltstone, sandstone and limestone. Low to medium subrounded cobble content of limestone and sandstone (Possible Made Ground).	2.00		84.38						
0.40	ES					Medium dense brown very sandy clayey subangular to subrounded fine to coarse GRAVEL of siltstone, sandstone and coal. Occasional pockets of firm gravelly clay (Possible Made Ground).									
0.50 - 0.75	B														
0.60	ES														
0.60	ES					PID=<0.1									
0.75 - 1.20	B														
1.00	ES														
1.00	ES														
1.20 - 1.65	B														
1.20 - 1.65	D		1.70 (DRY)			PID=<0.1	S25								
1.20 - 1.65	D														
1.20 - 1.65	ES														
1.80	D														
2.00 - 2.45															
2.00	ES	3.00 (DRY)	PID=<0.1		S25										
2.00 - 2.45	B														
2.00 - 2.45	D														
2.00															
2.80	D														
3.00 - 3.45		4.00 (DRY)	PID=<0.1		S34	Below 4.00m, dense, very clayey.									
3.00	ES														
3.00 - 3.45	B														
3.00 - 3.45	D														
3.00 - 3.45	ES														
3.00		4.70 (DRY)	PID=<0.1		S41										
3.80	D														
4.00 - 4.45															
4.00	ES														
4.00 - 4.45	B														
4.00 - 4.45	D	6.30 (3.30)	PID=<0.1		S21										
4.00															
4.80	D														
5.00 - 5.45															
5.00	ES														
5.00 - 5.45	B	7.70 (7.80)	PID=<0.1		S31										
5.00 - 5.45	D														
5.00															
6.00	D														
6.00	ES														
6.50 - 6.95		7.70 (7.80)	PID=<0.1		S21										
6.50 - 6.95	B														
6.50 - 6.95	D														
7.00	ES														
7.00															
7.30	ES	7.70 (7.80)	PID=<0.1		S31										
7.30															
7.50	D														
8.00 - 8.45															
8.00	ES														
8.00 - 8.45	B	7.70 (7.80)	PID=<0.1		S31										
8.00 - 8.45	D														
8.00															
8.90	ES														
8.90															
8.90			PID=<0.1												
Boring					Progress					Groundwater					
Depth	Hole Dia.	Technique		Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.05	0.35	Concrete Core		CDS	0.00			28/09/22	08:00	23.50	23.50				Seepage. No rise.
1.20	0.35	Inspection Pit		SL/JL	5.50	5.50	DRY	28/09/22	17:00						
14.60	0.20	Cable Percussion		SL/JL	5.50	5.50	DRY	29/09/22	08:00						
30.42	0.15	Cable Percussion		SL/JL	12.50	12.50	9.80	29/09/22	17:00						

Boring				Progress				Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed
0.05	0.35	Concrete Core	CDS	0.00			28/09/22	08:00	23.50	23.50			
1.20	0.35	Inspection Pit	SL/JL	5.50	5.50	DRY	28/09/22	17:00					
14.60	0.20	Cable Percussion	SL/JL	5.50	5.50	DRY	29/09/22	08:00					
30.42	0.15	Cable Percussion	SL/JL	12.50	12.50	9.80	29/09/22	17:00					

Remarks Tarmacadam surfacing cored using 350mm diameter concrete corer. Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. PID = Photo-ionisation detector reading measuring total Volatile Organic Compounds (VOC's) in ppm. Chiseling from 2.60m- 2.80m for 35 minutes, 2.60m- 2.80m for 35 minutes, 2.60m- 2.80m for 35 minutes, 4.40m- 4.50m for 30 minutes, 5.40m- 5.50m for 50 minutes, 7.10m-7.60m for 80 minutes, 8.80m-9.00m for 40 minutes, 9.90m-10.30m for 60 minutes, 12.90m -13.10m for 30 minutes, 13.50m-14.00m for 275 minutes, 23.10m-23.50m for 85 minutes, 24.50m-25.20m for 170 minutes, 25.20m-25.50m for 105 minutes, 26.30m-26.60m for 115 minutes, 28.80-30.00m for 190 minutes. Water was added to assist boring between 5.50m and 15.00m. Aquifer protection undertaken by

Logged in accordance with BS5930:2015 + A1:2020

Logged by PC
Checked by JN
Figure Sheet 1 of 4
06/04/2023

Project		Wrexham FC : New Kop Stand - Ground Investigation		Engineer		Ramboll UK Limited		Project No.		PN224453	
Client		Wrexham AFC		National Grid Coordinates		332776.8 E 351079.5 N		Borehole		BH100	
								Ground Level		86.38 m OD	

Sampling			Properties			Strata	Scale 1:50				
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description	Depth	Legend	Level (m OD)		
9.00	D										
9.30	ES										
9.50 - 9.95		9.30 (7.10)			S50		10.50			75.88	
9.50 - 9.95	B					Brown very silty fine to coarse SAND with occasional bands of clay and gravel.					
9.50 - 9.95	D										
10.00	ES					Below 11.00m, dense to very dense. Sand is fine to medium.					
10.00											
10.50	D		PID=<0.1								
11.00 - 11.45		10.70 (9.80)			S50						
11.00	ES										
11.00 - 11.45	B		PID=<0.1								
11.00											
12.00	D		PID=<0.1								
12.00	ES		PID=<0.1								
12.00											
12.50 - 12.95		12.20 (8.50)			S35						
12.50 - 12.95	B					Very stiff brown slightly sandy slightly gravelly CLAY with a low subrounded cobble content of siltstone and sandstone. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.	12.90			73.48	
12.50 - 12.95	D										
13.00	ES		PID=<0.1	9							
13.00											
13.50	D										
13.50	ES										
14.00 - 14.28		13.70 (12.10)			S50/ 127mm						
14.00	ES										
14.00 - 14.45	B										
14.00 - 14.45	D		PID=<0.1								
14.00											
15.00	D										
15.00	ES		PID=<0.1								
15.00											
15.50 - 15.95		15.00 (10.30)			S39	Dense brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to coarse of siltstone and sandstone.	15.30			71.08	
15.50 - 15.95	B										
15.50 - 15.95	D										
16.00	D		PID=<0.1								
16.00											
16.50	D					Below 16.50m, mottled black.					
17.00 - 17.43		16.60 (10.80)			S50/ 276mm	Below 17.00m, very dense, very silty. Gravel absent.					
17.00	ES										
17.00 - 17.45	B										
17.00 - 17.45	D		PID=<0.1								
17.00											
18.00	D		PID=<0.1								
18.00											
18.50 - 18.87		18.40 (11.00)			S50/ 220mm						
18.50 - 18.95	B										
19.00	ES		PID=<0.1								
19.00											
19.50	D										
20.00 - 20.29		19.80 (12.20)			S50/ 138mm						

Boring				Progress					Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				12.50	12.50	8.00	30/09/22	08:00						
				15.00	15.00	13.10	30/09/22	17:00						
				15.00	15.00	9.70	03/10/22	08:00						
				23.50	23.50									

BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332776.8 E 351079.5 N	Borehole	BH100
				Ground Level	86.38 m OD

Sampling		Properties				Strata	Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend	Level (m OD)
20.00	ES					Between 20.00-21.00m, many bands of clay (up to 50mm thick).			
20.00 - 20.45	B								
20.00 - 20.45	D								
20.00			PID=<0.1						
21.00	D					Very stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.			
21.00	ES		PID=<0.1						
21.00									
21.50 - 21.94		21.30 (13.10)			S50/292mm				
21.50 - 21.95	B					Brown mottled yellow and grey very sandy silty angular to subangular fine to coarse GRAVEL of siltstone and sandstone.			
22.00	ES		PID=<0.1						
22.00									
22.50	D								
23.00 - 23.27		22.80 (13.90)			S50/123mm	Below 24.50m, dense to very dense, slightly silty.	23.10		63.28
23.00	ES								
23.00 - 23.45	B						23.40		62.98
23.00 - 23.45	D		PID=<0.1						
24.00	D					Very stiff brown slightly sandy slightly gravelly CLAY with a medium subangular to subrounded cobble content of siltstone and sandstone. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.			
24.00	ES		PID=<0.1						
24.00									
24.50 - 24.95		24.20 (6.60)			S50				
24.50 - 24.95	B					Below 24.50m, dense to very dense, slightly silty.			
25.00	ES		PID=<0.1						
25.00									
25.50	D								
25.50	ES		PID=<0.1			Very stiff brown slightly sandy slightly gravelly CLAY with a medium subangular to subrounded cobble content of siltstone and sandstone. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.	25.20		61.18
25.50									
26.00 - 26.32		25.40 (6.80)			S50/169mm				
26.00 - 26.45	B								
26.00 - 26.45	D			12		Below 24.50m, dense to very dense, slightly silty.			
26.00 - 26.45	ES		PID=<0.1						
26.00									
27.00	D								
27.00	ES		PID=<0.1			Below 24.50m, dense to very dense, slightly silty.			
27.00									
27.50 - 27.85		25.40 (7.30)			S50/198mm				
27.50 - 27.95	B								
27.50 - 27.95	D					Below 24.50m, dense to very dense, slightly silty.			
28.00	ES		PID=<0.1						
28.00									
28.50	D								
29.00 - 29.39		25.40 (8.80)			S50/238mm	Below 24.50m, dense to very dense, slightly silty.			
29.00	ES								
29.00 - 29.45	B								
29.00 - 29.45	D		PID=<0.1						
30.00 - 30.27		25.40 (10.90)			S50/118mm				

Remarks												Logged by		PC	
Symbols and abbreviations are explained on the accompanying kcv sheets. All dimensions are in metres.												Checked by		IN	
												Figure		Sheet 3 of 4	
														06/04/2023	
Logged in accordance with BS5930:2015 + A1:2020												 geotechnical and geoenvironmental specialists			

Remarks

Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation
Client	Wrexham AFC

Engineer	Ramboll UK Limited
National Grid Coordinates	332776.8 E 351079.5 N

Project No.	PN224453
Borehole	BH100
Ground Level	86.38 m OD

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Remarks



Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

Logged in accordance with BS5930:2015 + A1:2020

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Figure	Sheet 4 of 4
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BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332729.7 E 350972.2 N	Borehole	BH101
				Ground Level	88.22 m OD

Sampling		Properties			Strata	Scale 1:50		
Depth	Sample Type	Depth Cased (to Water)	Strength kPa	w(%)	SPI N	Description	Depth	Legend
0.10 - 0.30	B					MADE GROUND: Grey stone setts.	0.10	88.12
0.20	ES					MADE GROUND: Reddish brown very sandy slightly clayey angular to subangular fine to coarse gravel of sandstone and brick fragments. Some cinder and ceramic fragments.	0.30	87.92
0.30 - 0.70	B					MADE GROUND: Brown gravelly very clayey fine to medium sand. Gravel is angular to subrounded fine to coarse of siltstone, sandstone, coal and brick fragments.	0.70	87.52
0.50	ES							
0.70 - 1.20	B					Brown very sandy clayey subangular to rounded fine to coarse GRAVEL of siltstone, sandstone and limestone. Medium to high subangular to rounded cobble content of sandstone and limestone (Possible Made Ground).		
1.00	ES					Below 1.20m, medium dense:		
1.20 - 1.65	B	(DRY)			S16			
1.20 - 1.65	D							
1.20 - 1.65	D							
1.80	D							
2.00 - 2.45		1.70 (DRY)			S17			
2.00 - 2.45	B							
2.00 - 2.45	D							
2.00 - 2.45	ES							
2.00								
2.80	D							
3.00 - 3.45		3.00 (DRY)			S18			
3.00	ES							
3.00 - 3.45	B							
3.00 - 3.45	D							
3.00								
3.80	D							
4.00 - 4.45		4.00 (DRY)			S14			
4.00	ES							
4.00 - 4.45	B							
4.00 - 4.45	D							
4.00								
4.80	D							
5.00 - 5.38		4.70 (DRY)			S50/225mm			
5.00	ES							
5.00 - 5.45	B							
5.00 - 5.45	D							
5.00								
6.00	D							
6.00	ES							
6.00								
6.00	ES					Firm brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.	6.20	82.02
6.30								
6.50 - 6.95		6.20 (DRY)			S10			
6.50 - 6.95	B							
6.50 - 6.95	D					Brown mottled yellow and white sandy angular to subrounded fine to coarse GRAVEL of siltstone and sandstone. Low to medium subangular to subrounded cobble content of sandstone.	6.90	81.32
7.00	ES							
7.00								
7.50	D							
8.00 - 8.45		7.70 (6.90)			S35			
8.00	ES					Below 8.00m, dense, very sandy.		
8.00 - 8.45	B							
8.00 - 8.45	D							
8.00								
9.00	D							
9.00	ES					Brown mottled yellow fine to coarse SAND and angular to subrounded fine to coarse GRAVEL of siltstone and sandstone.	8.80	79.42
9.00								
9.50 - 9.95		9.20 (7.80)			S28			
9.50 - 9.95	B					Below 9.50m, medium dense:		
9.50 - 9.95	D							
10.00	ES							

Boring				Progress				Groundwater			
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to in Mins
0.10	0.35	Concrete Core	KS	0.00			06/10/22	08:00			
1.20	0.35	Inspection Pit	SL/JL	5.50	5.50	DRY	06/10/22	17:00			
14.00	0.20	Cable Percussion	SL/JL	5.50	5.50	DRY	07/10/22	08:00			
20.37	0.15	Cable Percussion	SL/JL	14.00	13.50	11.90	07/10/22	17:00			

Remarks	Stone setts cored using 350mm diameter concrete corer. Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. PID = Photo-ionisation detector reading measuring total Volatile Organic Compounds (VOC's) in ppm. Chiselling from 2.50m- 2.70m for 35 minutes, 5.20m- 5.50m for 55 minutes, 10.10-10.30m for 25 minutes, 12.40-12.60m for 30 minutes, 13.10-13.50m for 95 minutes., 14.70-14.80m for 50 minutes, 15.80-16.20m for 95 minutes, 19.60-19.80m for 45 minutes. Water was added to assist boring between 7.00m and 20.00m. Aquifer protection undertaken by installing a 1m thick bentonite seal at 14.00m depth and reducing casing diameter to 150mm. A 50mm standpipe was installed to 10.00m with a geowrapped slotted section from 7.00m to 10.00m with a flush cover installed. Backfill details from base of hole: Logged in accordance with BS5930:2015 + A1:2020	Logged by PC Checked by IN Figure Sheet 1 of 3 06/04/2023
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BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation	Engineer	Ramboll UK Limited	Project No.	PN224453
Client	Wrexham AFC	National Grid Coordinates	332729.7 E 350972.2 N	Borehole	BH101
				Ground Level	88.22 m OD

Sampling			Properties			Strata				Scale 1:50				
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description	Depth	Legend	Level (m OD)					
10.00			PID=<0.1				10.10		78.12					
10.50	D			21		Stiff brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse of siltstone and sandstone.								
10.50	ES					At 10.50m, grading to slightly sandy slightly gravelly silt.								
11.00 - 11.45		10.70 (9.80)			S36	Below 11.00m, very stiff.								
11.00 - 11.45	B					Brown slightly clayey fine to medium SAND with some bands of angular to subangular fine to coarse gravel.	11.30		76.92					
12.00	D						12.10		76.12					
12.50 - 12.95		12.00 (10.70)			S50	Very stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone, sandstone and coal. Some bands of gravel to 17.10m depth.								
12.50 - 12.95	B													
12.50 - 12.95	D													
13.50	D			15		At 13.50m, grading to slightly sandy slightly gravelly silt.								
13.50	ES													
14.00 - 14.34		14.00 (9.30)			S50/ 189mm									
14.00 - 14.45	B													
14.00 - 14.45	D													
15.00 - 15.40		15.20 (10.20)			S50/ 252mm									
15.00	D													
15.50 - 15.95	B													
15.50 - 15.95	D													
16.50	D													
17.00 - 17.42		16.70 (11.70)			S50/ 269mm	Below 17.10m, coal fragments absent.								
17.00 - 17.45	B													
18.00	D			20		At 18.00m, grading to slightly sandy slightly gravelly silt.								
18.50 - 18.88		18.20 (11.00)			S50/ 225mm									
18.50 - 18.95	B													
19.50	D						19.60		68.62					
19.80	D					Brown silty fine to medium SAND.								
20.00 - 20.37		20.00 (10.70)			S50/ 217mm									
Boring					Progress					Groundwater				
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				14.00	13.50	8.90	08/10/22	08:00						
				20.37	20.00	10.70	08/10/22	17:00						

BOREHOLE RECORD - Cable Percussion

Project		Wrexham FC : New Kop Stand - Ground Investigation		Engineer		Ramboll UK Limited		Project No.		PN224453	
Client		Wrexham AFC		National Grid Coordinates		332729.7 E 350972.2 N		Borehole		BH101	
								Ground Level		88.22 m OD	

Sampling			Properties			Strata			Scale 1:50		
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description			Depth	Legend	Level (m OD)
20.00 - 20.45	B					Below 20.00m, very dense, very silty.					
						End of Borehole			20.37		67.85

Boring				Progress					Groundwater					
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks



Symbols and abbreviations are explained on the accompanying key sheets.
All dimensions are in metres.

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BOREHOLE RECORD - Cable Percussion

Project	Wrexham FC : New Kop Stand - Ground Investigation		Engineer	Ramboll UK Limited		Project No.	PN224453														
Client	Wrexham AFC		National Grid Coordinates	332843.9 E 350918.6 N		Borehole	BH102														
						Ground Level	88.59 m OD														
Sampling			Properties			Strata			Scale 1:50												
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w(%)	SPT N	Description	Depth	Legend	Level (m OD)												
0.00 - 0.15	B	(DRY)	PID=<0.1		S7	MADE GROUND: Brown gravelly clayey fine to coarse sand. Gravel is angular to rounded fine to coarse of siltstone, sandstone, limestone and brick fragments. Traces of slag.	0.30			88.29											
0.10	ES																				
0.15 - 0.55	B																				
0.50	ES		PID=<0.1			MADE GROUND: Dark brown sandy angular to subangular fine to coarse gravel of clinker, siltstone, sandstone, and traces of ceramic fragments. Sand is of ash.	0.70			87.89											
0.50																					
0.55 - 1.20	B																				
1.00	ES		PID=<0.1			Brown sandy to very sandy clayey subangular to rounded fine to coarse GRAVEL of siltstone and sandstone. Low to medium subangular to subrounded cobble content of siltstone and sandstone. Below 1.20m, loose.															
1.00																					
1.20 - 1.65	B																				
1.20 - 1.65	D		1.70 (DRY)				S6														
1.80	D																				
2.00 - 2.45																					
2.00 - 2.45	B																				
2.00 - 2.45	D																				
2.00 - 2.45	ES																				
2.00	PID=<0.1			S25	Below 3.00m, medium dense.																
2.80									D												
3.00 - 3.45																					
3.00									ES												
3.00 - 3.45	#	3.00 (DRY)																			
3.00 - 3.45	B																				
3.00	PID=<0.1									S41	Below 4.00m, dense.										
3.80												D									
4.00 - 4.45																					
4.00												ES									
4.00 - 4.45	B								4.00 (DRY)												
4.00 - 4.45	D																				
4.00	PID=<0.1																	S50/ 217mm	Below 5.00m, very dense.		
4.80																				D	
5.00 - 5.37																					
5.00		ES																			
5.00 - 5.45	B	4.80 (DRY)																			
5.00 - 5.45	D																				
5.00	PID=<0.1																		S20	Below 6.50m, medium dense, grey and brown.	
6.00																					D
6.00									ES												
6.00									PID=<0.1		S25										
6.50 - 6.95																					
6.50 - 6.95	B																				
6.50 - 6.95	D																				
7.00	ES								6.20 (DRY)												
7.00	PID=<0.1		S31	Below 9.50m, dense.																	
7.50					D																
8.00 - 8.45																					
8.00					ES																
8.00 - 8.45	B	7.70 (DRY)																			
8.00 - 8.45	D																				
8.00	PID=<0.1																				
9.00																					D
9.00																					ES
9.00									PID=<0.1												
9.50 - 9.95																					
9.50 - 9.95	B																				
9.50 - 9.95	D																				
10.00	ES																				
Boring					Progress					Groundwater											
Depth	Hole Dia.	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater							
1.20	0.50	Inspection Pit	SL/JL	0.00			12/10/22	08:00	12.90	12.20	11.80	20		Fast inflow.							
13.50	0.20	Cable Percussion	SL/JL	9.50	9.20	DRY	12/10/22	17:00													
30.00	0.15	Cable Percussion	SL/JL	9.50	9.20	DRY	13/10/22	08:00													
				18.00	18.00	11.00	13/10/22	18:00													
Remarks	Inspection pit hand excavated to 1.20m depth and no services were found. ES sample = 1 litre plastic tub, 2 x 258ml amber glass jars and 1 x 60ml VOC vial. PID = Photo-ionisation detector reading measuring total Volatile Organic Compounds (VOC's) in ppm. Chiselling from 4.40m- 4.60m for 55 minutes, 5.40m- 6.00m for 75 minutes, 9.60-9.70m for 35 minutes, 11.40-11.70m for 75 minutes, 11.90-12.10m for 50 minutes, 19.90-20.00m for 35 minutes, 20.40-21.00m for 100 minutes, 22.90-23.30m for 65 minutes, 25.40-25.70m for 95 minutes, 26.00-26.40m for 70 minutes, 26.70-27.00m, for 140 minutes. Slow progress from 21.00-21.50m for 70 minutes, 22.00-22.90m for 130 minutes, 23.80-24.50m for 105 minutes, 27.20-27.80m for 140 minutes, 29.00-29.90m for 135 minutes. Water was added to assist boring between 11.00-11.90m,13.50-23.50m and 27.70-30.00m. Aquifer protection undertaken by installing a 1m thick bentonite seal at																				
Logged in accordance with BS5930:2015 + A1:2020																					
Logged by PC																					
Checked by JN																					
Sheet 1 of 3																					
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GEOTECHNICS geotechnical and geoenvironmental specialists																					