# INTRUSIVE GEO-ENVIRONMENTAL FACTUAL REPORT

FINAL

Cardiff and Vale College – Barry Waterfront Campus (BWC)

February 2024

HSP2023-C3297-G-GFPII-1948

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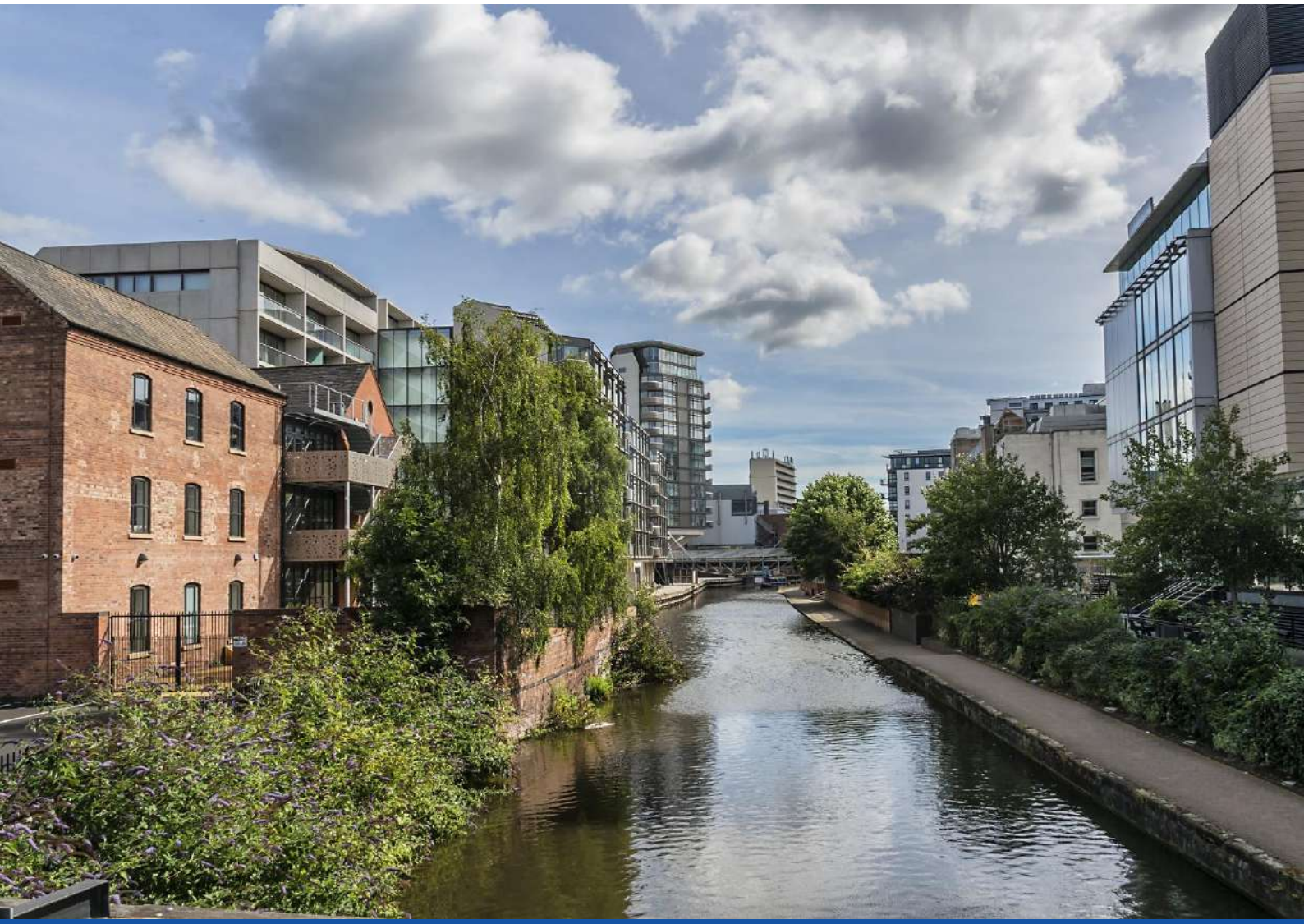

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# Cardiff and Vale College - Barry Waterfront Campus (BWC)

**Ground Investigation Factual Report**

This report was produced by HSP Consulting Engineers Ltd for WEPCo on behalf of Cardiff and Vale College as the Factual Supplementary Ground Investigation Report for a proposed college development on land off Ffordd Y Mileniwm, Barry.

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**Issue & Revision History**

| Revision | Status | Originated | Checked | Approved | Date |
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| - | INTERIM | L.Jones<br>B.Sc (Hons) FGS, MIEnvSci | K. Murray<br>BSc (Hons), MSc FGS, MIMMM | H.Pratt<br>B.Eng (Hons), C.Eng, F.Cons.E, M.I.C.E, MI Mgt. | 05.12.2023 |
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## Appendices

## Executive Summary

HSP Consulting Engineers Ltd has been commissioned by WEPCo on behalf of Cardiff and Vale College to undertake an intrusive ground investigation at the site to investigate the existing ground conditions, identify any buried obstructions or fuel tanks and provide information on likely constraints to the development.

The site is located off Ffordd Y Mileniwm, approximately 0.30 km south east of Barry town centre. The approximate National Grid Reference for the centre of the site is (NGR) 311115, 167399.

The physical methods of investigation employed were 8No mechanically excavated trial pits to a maximum depth of 4.10m begl, 5No. cable percussion boreholes with rotary core follow on to depths in the range of 25.15m begl and 34.50m begl and 10No. static cone penetration tests to a maximum depth of 10.00m begl. In-situ plate load testing and infiltration testing was conducted within the trial pits. The scope of works has been prepared by Ove Arup & Partners Limited ref: VG0201-ARP-ZZ-ZZ-SP-G-00001, 23rd June 2023.

The ground conditions encountered on site generally comprised grass or hardstanding over Made Ground deposits which were encountered to a maximum depth of 4.00m begl. Underlying the Made Ground, Tidal Flat Deposits consisting of very soft to stiff grey blue brown SILT and bands of medium dense grey brown gravelly COBBLES of Limestone to a maximum depth of 20.00m begl. Weathered deposits of the Penarth Group were encountered from a minimum depth of 8.00m begl and comprised very weak weathered LIMESTONE. Competent strong LIMESTONE was encountered from a minimum depth of 15.00m begl. Rapid groundwater ingress was encountered within BH01 at 16.00m begl and BH06 at 21.00m begl during the advancement of the core drilling.

Thirty seven soil samples were scheduled for chemical analysis. In addition, disturbed, bulk and undisturbed samples were scheduled for geotechnical testing from the development area. Testing schedules were prepared by the design engineers Ove Arup and Partners. Three rounds of ground gas and water monitoring has been completed at the site. Ground water samples were collected during each monitoring visit and submitted for chemical analysis.

The executive summary contains an overview of key findings. However, no reliance should be placed on the executive summary until the whole of the report has been read. Other sections of the report may contain information which puts into context the findings noted within the executive summary.

# 1. Introduction

## 1.1 Background

WEPCo on behalf of Cardiff and Vale College propose to construct a new college campus including multi-storey buildings, car park, access roads and areas of landscaping and attenuation.

This investigation forms a supplementary ground investigation and the scope of works has been prepared by Arup Ref: VG0201-ARP-ZZ-ZZ-SP-G-00001, 23rd June 2023. (Ref 9).

## 1.2 Client Brief & Scope

HSP Consulting Engineers Ltd has been commissioned by WEPCo on behalf of the Vale of Glamorgan Council to undertake an intrusive ground investigation at the site to investigate the existing ground conditions and geoenvironmental setting. The scope of the investigation was provided by Arup, the clients engineer.

The ground investigation scope included the following:

- 8No. Machine excavated trial pits to a maximum of 4m begl. This is to confirm the ground conditions and groundwater level, and collect soil samples for laboratory analysis;
- 5No. exploratory holes to a depth of between 25m and 35m using a combination of cable percussion and rotary drilling methods, to confirm ground conditions and groundwater level, and collect soil samples for laboratory analysis;
- 7No. cone penetration tests with piezocone to confirm ground conditions and groundwater level;
- In situ strength and stiffness testing such as Standard Penetration tests and Plate Load tests;
- In situ infiltration testing in 3No. trial pits;
- Geotechnical laboratory testing to inform the design process, including unconfined compression strength test;
- BRE SD1 classification of all strata encountered;
- Sampling and geochemical testing of Made Ground and suspected contaminated materials where encountered;
- Monitoring of groundwater if encountered;
- Sampling and contamination testing of groundwater if encountered;
- Ground gas monitoring;
- Dry weight and waste acceptance criteria (WAC) of soil samples to inform disposal options;

The report presents the following information:

- details of the ground investigation undertaken and the ground conditions encountered,
- details and results of the environmental analysis and geotechnical testing.

- results of ground gas and groundwater monitoring.

Where applicable, the fieldwork was undertaken in accordance with BS5930:2015+A1:2020 Code of Practice for Site Investigations and BS10175:2011+A2:2017 Investigation of Potentially Contaminated Sites.

## 1.3 Limitations

The recommendations made in this report are based on the findings of the intrusive ground investigation undertaken by HSP Consulting Engineers Ltd from the 18th September to the 20th October 2023.

## 1.4 Previous Reports

HSP Consulting Engineers Ltd has produced the following reports for the site:

- HSP Consulting Engineers Limited – Cardiff and Vale College Site - BWF - Phase I Geo-Environmental Desk Study Report, July 2020, Ref: C3297/PI. (Ref 1).
- HSP Consulting Engineers Limited – Cardiff and Vale College Site – BWF - Phase II Geo-Environmental Assessment Report, November 2020, Ref C3297/PII. (Ref 2).

The following third party reports are also available for the site:

- Barry Waterfront Campus Proposed Site Plan [VG0210-SRA-ZZ-ZZ-DR-A-00101-P02-Sheppard Robson – 05/2022]. (Ref 3).
- Barry Waterfront Campus Desk Study Addendum [VG0201-ARP-ZZ-ZZ-RP-G-00001, Arup]. (Ref 4).

# 2. Review of Existing Information & Geoenvironmental Setting

## 2.1 The Site

### 2.1.1 Location

The site is located off Ffordd Y Mileniwm, approximately 0.30 km south east of Barry town centre. The approximate National Grid Reference for the centre of the site is (NGR) 311115, 167399. A Site Location Plan is included in Appendix I.

### 2.1.2 2020 Description

The site is irregular in shape and is approximately 1.15Ha in area. The site is accessed via a gated road off Ffordd Y Mileniwm to the south of the site.

The majority of the site is a mixture of concrete hardstanding and weathered tarmacadam surface. Directly south of the fenced temporary compound is an area of undulating scrubland which has been used for stockpiling topsoil like materials and construction debris.

The site is bounded by a mixture of Heras and Palisade fencing with the temporary site compound in the east of the site bounded by further Heras Fencing. The sites topography is generally level in the west, centre and north east of the site. With the eastern scrubland at a higher elevation, approximately 1.5m compared to the rest of the site.

### 2.1.3 Surrounding Land Use

The main features of interest identified are:

| | |
|---|---|
| North: | Mixed use, heritage rail line and station, commercial, retail and leisure use with residential properties beyond. |
| East: | Barry Docks. |
| South: | Supermarket and residential properties. |
| West: | Railway Lines and residential properties beyond. |

### 2.1.4 Site Access

The site was accessed via a turning head off Ffordd Y Mileniwm along the southern boundary of the site or via a gated entrance from Hood Road on the eastern boundary.

### 2.1.5 Proposed End Use

WEPCo on behalf of Cardiff and Vale College propose to construct a new college campus including multi-storey buildings, car park, access roads and areas of landscaping and attenuation. A site development plan is presented in Appendix II.

## 2.2 Geology

### 2.2.1 Made Ground

The BGS mapping indicates that Made Ground (Undivided) is present across the site, this is described as an area where the land surface (natural or artificial) has been extensively

remodelled, but where it is impractical or impossible to delineate separate zones of made ground, worked ground or disturbed ground of variable composition.

### 2.2.2 Superficial Deposits

The BGS mapping indicates the site is underlain by superficial deposits of Tidal Flats in the centre and east of the site, which comprise sands, gravels, silts and clays. Described by the BGS as '*Tidal flat deposits, including mud flat and sand flat deposits, are deposited on extensive nearly horizontal marshy land in the intertidal zone that is alternately covered and uncovered by the rise and fall of the tide. They consist of unconsolidated sediment, mainly mud and/or sand. They may form the top surface of a deltaic deposit. Normally a consolidated soft silty clay, with layers of sand, gravel and peat. Characteristically low relief*.' Superficial deposits are not expected in the west of the site.

### 2.2.3 Bedrock Geology

BGS bedrock mapping indicates the majority of the site is underlain by mudstone and interbedded limestones of the Penarth Group Mudstone and Limestone, Interbedded of the Triassic Period, described by the BGS as '*Grey to black mudstones with subordinate limestones and sandstones; predominantly marine in origin.'*

With the St Mary's Well Bay Member – Limestone and Mudstone, Interbedded of the Triassic and Jurassic Periods indicated in the extreme west of the site. A detailed description of this unit is not available from the BGS.

## 2.3 Pertinent Site Sensitivity Information

Based on the information collated for the desk study, the geo-environmental setting of the site is summarised as follows:

- The site is shown from earliest mapping (1878) to be part of tidal flats of the *Cadoxton River*. The site and surrounding area is shown as reclaimed from the 1898 mapping forming part of the Barry Docks, a large industrial area with associated railways, tracks, tanks and coal yards until the late 1990's where the site is disused.
- The surrounding land use is recorded as predominantly, industrial and residential. The town of Barry is located to the east of the site. Rapid industrial development in the early 1900s reaching its peak towards the 1970s, with a steady decline to present day. Recent developments include residential and commercial development to the north and south of the site.
- Superficial deposits comprising Tidal Flats with bedrock geology of the Penarth Group and St Mary's Well Bay Member are expected on site.
- Made Ground materials are expected across the site area as the site and surrounding area are recorded on the BGS mapping as Infilled Land
- The superficial geology of the Tidal Flats is designated as Secondary Undifferentiated with bedrock geologies of the Penarth Group and St Mary's Well Bay Member are designated as a Secondary (B) Aquifer and Secondary (A) Aquifer respectively.

Based on the above, the environmental sensitivity of the site can be considered to be Moderate at this stage.

## 2.4 HSP 2020 Intrusive Site Investigation Summary

The ground investigation comprised 12No window sample boreholes to a maximum depth of 4.00m begl. The ground conditions encountered generally comprised hardstanding or topsoil, overlying made ground deposits to a maximum depth of 3.50m begl. Natural Tidal Flats deposits were encountered within four locations across the site.

Due to variable and deep made ground (greater than 3.00m depth) and low strength Tidal Flat deposits, a traditional solution is unlikely to be feasible. Therefore, an alternate foundation solution in the form of piling is recommended. This should be designed and warranted by a specialist contractor. It is recommended that deeper rotary boreholes are advanced within the proposed building footprint on site to determine the depth of competent strata and provide information for initial pile design.

The screening process for on-site human health receptors show that the relevant GACs, were exceeded for lead and asbestos. Mitigation measures in the form of a clean cover system within all soft landscaping areas will be required. Alternatively, the area of the lead exceedance and asbestos detection could be subject to delineation and removal off site to a suitable waste disposal facility.

At this stage, it is considered appropriate to adopt a basic Design Sulphate Class of DS-1 together with and Aggressive Chemical Environment for Concrete (ACEC) of AC-1 within the made ground across the site and a basic Design Sulphate Class of DS-2 together with and Aggressive Chemical Environment for Concrete (ACEC) of AC-1s within the natural soils. An atypical result was encountered within WS02 at 2.80m which would be classified as DS- 4 with ACEC of AC - 4, further testing is recommended to confirm the above concrete classification.

Ground gas concentrations have been monitored on four occasions. Comparison of the results with Table 8.5 of the CIRIA document indicates the site falls in a Characteristic Situation 2 and therefore gas protection measures will be required for the proposed development.

# 3. Fieldwork & Factual Information

Site work was carried out between the 18th September and 20th October 2023. Where applicable, the fieldwork was undertaken in accordance with BS5930:2015+A1:2020 Code of Practice for Site Investigations (Ref. 7) and BS10175:2011+A2:2017 Investigation of Potentially Contaminated Sites (Ref. 8).

## 3.1 Exploratory Methods

The physical methods of investigation employed were:

- 8No mechanically excavated trial pits to a maximum depth of 4.10m begl,
- 3No. of the trial pits were utilised for soakaway infiltration testing,
- 4No. plate load tests were also undertaken within 4No. trial pit locations,
- 5No. cable percussion boreholes were conducted to a maximum depth of 20.15m begl with rotary core follow on to 34.50m begl and
- 10No. Static Cone Penetration Tests were conducted to a maximum depth of 20m begl with dissipation testing.

The exploratory holes were logged and sampled by an engineer from HSP Consulting Engineers Ltd. The exploratory hole logs are presented in Appendix III. The exploratory hole locations are shown on the Ground Investigation Layout Plan presented in Appendix IV. Photographs of the site and rotary cores are presented within Appendix X.

Fragmentary bulk and disturbed samples were recovered from materials revealed within all of the exploratory holes. Rock cores were extruded in plastic liners and placed in suitable core boxes for geotechnical testing. Geo-environmental samples, placed in plastic tubs and glass jars supplied by the laboratory, were also obtained specifically for chemical analysis. The samples were taken to UKAS accredited laboratories for further examination and testing.

## 3.2 In-situ Testing

### 3.2.1 Standard Penetration Tests

Standard Penetration Tests (SPTs) were carried out within the cable percussion and rotary cored boreholes to 22.50m depth. The SPTs were undertaken in accordance with EN ISO 22476-2 2005: A1 2011 and the results are included on the appended borehole logs (Appendix III).

### 3.2.2 Soil Infiltration Tests

Soil Infiltration Tests were conducted within TP05, TP06 and TP9. The tests were undertaken in accordance with BRE Digest 365 Soakaway Design. The results are included within Appendix VII.

### 3.2.3 In-situ Plate Load Tests

In-situ plate load tests were conducted within TP07, TP08, TP09 and TP10 in accordance with BS 1377-9 Section 4.1 using a 300mm diameter plate. The results are presented in Appendix VIII.

### 3.2.4 Dissipation Tests

Dissipation Tests were conducted within four of the static cone penetration test locations. The dissipation test was carried out where there was excess porewater pressure. The results are included in the CPT report presented within Appendix XI.

## 3.3 Laboratory Testing

The laboratory testing schedules were prepared by Arup, the Clients Engineer.

### 3.3.1 Geotechnical Testing

Geotechnical testing has been undertaken by a UKAS accredited laboratory as part of the works at the site:

- 35 No. Particle Size Distributions (Wet Sieving)
- 5 No. Compaction using 2.5kg rammer
- 21 No. Natural Moisture Contents
- 25 No. Atterberg Limits
- 21 No. Sedimentation by Pipette
- 9 No. Organic Matter
- 8 No. Recompacted CBR Testing
- 6 No. Shear Strength 60mm x 60mm
- 9 No. Uniaxial Compressive Strength (rock)
- 5 No. Point Load Strength Index (rock)

The laboratory testing has been carried out by Apex Testing Solutions (ATS) (UKAS accredited, laboratory No. 7771), Professional Soils Laboratories (PSL) (UKAS accredited, laboratory No. 4043) and KIWA CMT (UKAS accredited, laboratory No. 0529) in accordance with BS1377:1990 using calibrated equipment specifically for the British Standard and in accordance with the methodology within the ISRM suggested methods for Rock Testing for UCS and Point Load (ref. 10). The results are presented in Appendix VI.

### 3.3.2 Chemical Analysis

The geo-environmental samples retained specifically for chemical analysis were stored in cooled containers until delivery to the laboratory by courier.

Thirty-seven samples were analysed by the laboratory for the presence of a selected suite of potential contaminants as outlined in the table below. Please refer to the Arup specification (presented in Appendix V) for further details regarding the specifics of each suite:

Table 1 – Chemical Analysis

| Exploratory Hole Location & Depth | Sample Description | Exploratory Hole Location & Depth | Sample Description |
|---|---|---|---|
| TP03, 1.20 – 1.40m | Made Ground[1,2,3,4,8,9,10] | TP08, 2.10 – 2.30m | Made Ground[1,2,3,4,11,12] |
| TP03, 2.20 – 2.40m | Made Ground[13] | TP09, 1.10 – 1.30m | Made Ground[1,2,3,4,6,9,10,11,12] |
| TP03, 3.00 – 3.20m | Made Ground[1,2,3,5,7] | TP09, 2.00 – 2.20m | Made Ground[13] |
| TP04, 1.00 – 1.20m | Made Ground[13] | TP09, 2.10 – 2.30m | Made Ground[1,3,4,7] |
| TP04, 1.00 – 1.40m | Made Ground[1,2,3,4] | TP10, 0.25 – 0.45m | Made Ground[1,2,3,4,6,11,12] |
| TP05, 0.15 – 0.20m | Made Ground[1,2,3,4,6,7,8,9,10] | TP10, 1.15 – 1.35m | Made Ground[13] |
| TP05, 0.90 – 1.00m | Made Ground[13] | TP10, 2.20 – 2.40m | Made Ground[1,2,3,4,6,7,8] |
| TP05, 1.10 – 1.20m | Made Ground[1,2,3,4,6,11,12] | TP10, 2.90 – 3.00m | CLAY[1,3,4] |
| TP05, 2.20 – 2.30m | CLAY[1,3,4] | BH01, 0.80 – 1.00m | Made Ground[1,2,3,4] |
| TP05, 3.10 – 3.20m | CLAY[13] | BH01, 3.00 – 3.10m | Made Ground[1,3,4] |
| TP06, 0.25 – 0.35m | Made Ground[1,2,3,4,6] | BH02, 0.10 – 0.30m | Made Ground[1,2,3,4,6] |
| TP06, 1.00 – 1.20m | Made Ground[1,2,3,4,7,8,9,10] | BH02, 1.00 – 1.20m | Made Ground[1,2,3,4] |
| TP06, 1.10 – 1.30m | Made Ground[13] | BH03, 0.10 – 0.30m | Made Ground[1,2,3,4,6,7,8,9,10] |
| TP06, 2.00 – 2.20m | Made Ground[1,2,3,4,6,11,12] | BH03, 1.80 – 2.00m | Made Ground[1,2,3,4] |
| TP07, 1.00 – 1.20m | Made Ground[13] | BH04, 1.00 – 1.20m | Made Ground[1,2,3,4,6] |
| TP07, 1.20 – 1.40m | Made Ground[1,2,3,4,7,8,9,10] | *BH04, 1.80 – 2.00m* | *Made Ground[1,2,3,4,6]** |
| TP07, 2.00 – 1.40m | CLAY[1,3,4] | BH06, 0.10 – 0.30m | Made Ground[1,2,3,4,6] |
| TP07, 2.90 – 3.00m | CLAY[13] | BH06, 1.80 – 2.00m | Made Ground[1,2,3,4] |
| TP08, 1.00 – 1.20m | Made Ground[13] | | |

[1] Suite E1 – Soil, [2] Suite E2 – Asbestos, [3] Suite E3 - TPHCWG + BTEX, [4] Suite E4 – PAH, [5] Suite E5 – VOC and SVOC, [6] Suite E6 – PCB, [7] Suite E9 – Hexavalent Chromium, [8] Suite E16 - Other (Loss on Ignition), [9] Suite H - WAC soils, [10] Suite I – WAC leachability, [11] Suite J1 – Leachability General, [12] Suite J2 Leachability PAH / BTEX [13] Suite D BRE (Greenfield site – pyrite present)

**This samples were misplaced by the courier / testing laboratory and therefore the requested testing has not been completed.*

The contamination analysis was carried out by Chemtest Environmental Ltd (UKAS accredited, laboratory No. 2183) during the period 21st September to 3rd November 2023. The results are presented in Appendix V.

### 3.3.3 Chemical Analysis – Groundwaters

The groundwater samples were extracted using low-flow techniques and retained specifically for chemical analysis. The samples were stored in cooled containers until delivery to the laboratory by courier. The samples were delivered to the laboratory with 24 hours of abstraction.

Three rounds of ground water monitoring were undertaken between the 15th December 2023 and the 23rd January 2024.

Prior to extraction each borehole was purged for three times the well volume and given ample time to recharge prior to extraction via low flow.

The groundwater samples were analysed by the laboratory for the presence of a selected suite of potential contaminants. Please refer to the Arup specification (presented in Appendix XII) for further details regarding the specifics of each suite.

The contamination analysis was carried out by Chemtest Environmental Ltd (UKAS accredited, laboratory No. 2183) during the period 15th December 2023 to 31st January 2024. The results along with low flow data are presented in Appendix XII.

## 3.4 Ground Conditions

### 3.4.1 Published Geology

The published geology indicates the site is expected to be underlain by Made Ground up to 3.00m in depth and superficial Tidal Flat deposits as described in section 2.2.1 and 2.2.2 The site is underlain by the bedrock geology of the Penarth Group– Limestone and Mudstone, described in section 2.2.3 above.

### 3.4.2 Ground Conditions on site or General Geology & Revealed Strata

The exploratory hole data does conform with the published information, the strata across the site generally comprises:

Table 2 – Encountered Ground Conditions

| Strata | | Depth (m begl) | Thickness (m) | Description |
|---|---|---|---|---|
| Anthropogenic | MADE GROUND | G.L. – 3.00 | 3.00 | MADE GROUND comprising black, brown slightly gravelly clay fill with cobbles of brick and concrete. |
| | | 2.00 – 2.80 | 0.80 | MADE GROUND comprising black, clayey sand and gravel fill. Gravels are of coal, clinker and concrete. |
| | | 2.80 – 4.00 | 1.20 | MADE GROUND comprising grey, brown very gravelly clay fill. Gravels are of brick, concrete, ceramics and occasional fabric. |
| | | 3.00 – 4.00 | 1.00 | POSSIBLE MADE GROUND comprising reworked blue grey sandy CLAY. (BH04 only). |
| Superficial | TIDAL FLAT DEPOSITS | 4.00 – 12.00 | 8.00 | Medium dense light brown sandy clayey gravelly COBBLES. (BH01 only). |
| | | 12.00 – 15.00 | 3.00 | Dense red brown clayey SAND and GRAVEL. (BH01 only). |
| | | 2.80 – 6.50 | 3.70 | Soft to firm blue grey brown SILT. |
| | | 6.50 – 9.70 | 3.20 | Medium dense grey brown gravelly COBBLES of Limestone. |
| | | 9.70 – 16.40 | 6.70 | Soft blue grey SILT. |
| | | 11.00 – 15.00 | 2.00 | Dense slightly clayey sandy GRAVELS of Mudstone and Limestone. |
| | | 16.40 – 20.00 | 3.60 | Soft to stiff blue grey SILT with cobbles of Limestone. |
| Bedrock | PENARTH GROUP – MUDSTONE AND LIMESTONE | 8.00 – 9.00 | 1.00 | Very weak weathered LIMESTONE. (BH04 only). |
| | | 9.00 – 15.00 | 3.00 | Very strong grey LIMESTONE with yellowish brown staining. (BH04 only). |
| | | 15.00 – 21.00 | 6.00 | Very weak to strong greenish grey LIMESTONE. |
| | | 21.00 – 21.10 | 0.10 | Very strong white CALCITE. |
| | | 21.10 – 34.50 | 13.40 | Very strong reddish brown and bluish grey banded LIMESTONE. |

## 3.5 Ground Gas and Groundwater Monitoring

Dual use gas and groundwater monitoring installations were constructed within four of the boreholes at the site during ground investigation (BH01, BH02, BH03 and BH04). Each well has been constructed using 50mm diameter HDPE pipe. All of the borehole installations have a 6mm pea gravel surround to the slotted pipe with a bentonite seal above and a gas tap. The covers are raised round lockable stopcock covers.

HSP Consulting uses a GFM 436 Gas Analyser. Prior to its use a calibration check can be performed against gas readings in air. It is recommended that this check is undertaken once on each day the analyser is used. Annual calibration is undertaken on the unit and a copy of this certificate has been included within Appendix IX.

Three rounds of ground gas and ground water monitoring have been completed on the site. The results are presented within IX.

## 3.6 Groundwater Levels

Groundwater was encountered during the advancement of the exploratory holes. Table 3 below provides further information:

Table 3 – Groundwater during Drilling

| Exploratory Hole Location | Depth of Groundwater (m begl) | Depth of Groundwater (m AOD) | Notes |
|---|---|---|---|
| TP03 | 3.60 | 4.74 | Seepage. |
| TP04 | 3.90 | 4.61 | Seepage. |
| BH01 | 3.00 | 3.91 | Seepage. |
| BH01 | 16.00 | -7.09 | Extremely rapid flow. |
| BH02 | 3.50 | 5.55 | Steady flow. |
| BH03 | 3.90 | 4.97 | Steady flow. |
| BH04 | 6.90 | 1.72 | Steady flow. |
| BH06 | 5.00 | 4.18 | Steady flow. |
| BH06 | 21.00 | -11.82 | Extremely rapid flow. |

Groundwater levels were recorded on three occasions. The results are presented in Table 4 below.

Table 4 – Groundwater Levels

| | Round 1 (06.11.2023) | | Round 2 (21.11.2023) | | Round 3 (12.12.2024) | |
|---|---|---|---|---|---|---|
| Exploratory Location | Depth (m begl) | Depth (m AOD) | Depth (m begl) | Depth (m AOD) | Depth (m begl) | Depth (m AOD) |
| BH02 | 3.12 | 5.93 | 3.48 | 5.57 | 3.91 | 5.14 |
| BH03 (A) | 2.21 | 6.66 | 2.43 | 6.44 | 2.55 | 6.32 |
| BH03 (B) | - | | 1.95 | 6.92 | 2.05 | 6.82 |
| BH04 | 1.80 | 6.82 | 1.97 | 6.65 | 1.93 | 6.69 |

## 4. References


1. HSP Consulting Engineers Limited – Cardiff and Vale College Site - BWF - Phase I Geo-Environmental Desk Study Report, July 2020, Ref: C3297/PI.
2. HSP Consulting Engineers Limited – Cardiff and Vale College Site – BWF - Phase II Geo-Environmental Assessment Report, November 2020, Ref C3297/PII.
3. Barry Waterfront Campus Proposed Site Plan [VG0210-SRA-ZZ-ZZ-DR-A-00101-P02-Sheppard Robson – 05/2022].
4. Barry Waterfront Campus Desk Study Addendum [VG0201-ARP-ZZ-ZZ-RP-G-00001, Arup].
5. BRITISH GEOLOGICAL SURVEY. 1996. Cardiff. England and Wales Sheet 263. Solid and Drift. 1:50 000 (Keyworth, Nottingham: British geological Survey).
6. British Geological Survey Lexicon Search - http://www.bgs.ac.uk/lexicon/
7. BS5930:2015+A1:2020 Code of Practice for Site Investigations
8. BS10175:2011 +A2:2017 Investigation of Potentially Contaminated Sites - Code of Practice.
9. Ove Arup & Partners Limited ref: VG0201-ARP-ZZ-ZZ-SP-G-00001, 23rd June 2023.
10. ISRM (1985)., Suggested method for determining point load strength, International Journal of Rock Mechanics and Mining Sciences and Geomechanics Abstract., Vol 22, Issue 2

# Appendix I

DO NOT SCALE

NOTES:


hsp consulting

Lawrence House, Meadowbank Way,
Eastwood, Nottingham, NG16 3SB
Tel: 01773 535 555 Fax: 0870 600 6091
www.hspconsulting.com


CLIENT:

WEPCo

PROJECT:

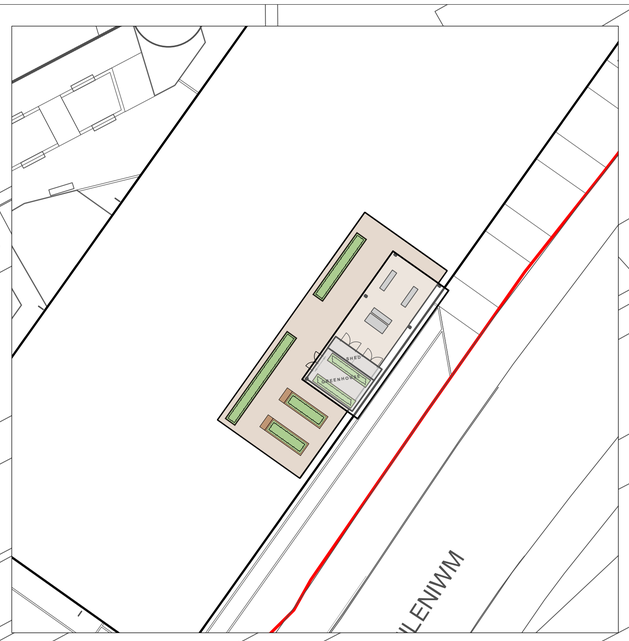
Barry Waterfront Campus

TITLE:

Site Location Plan

| SCALE@SIZE : | ISSUE: |
|---|---|
| NTS | FINAL |
| DESIGN/DRAWN: LEJ | DATE: Dec 2023 |
| PROJECT No: C3297 | DRAWING No: 502 |

# Appendix II



L01 Terrace Illustrative Masterplan SCALE 1:250

HOOD ROAD

FFORDD Y MILENIWM

SEE INSET

## KEY

- A ENTRANCE PLAZA
- B BIN STORE
- C DOUBLE STACKED CYCLE STORAGE
  Number of spaces: 160 long stay, 10 short stay
- D CAR PARK ACCESS
  Automatic barrier with intercom to reception and double gate to enable site to be secured when needed
- E OUTDOOR DINING
- F GRASS LAWN
  For socialising and outdoor learning
- G MUGA (18.5 x 37m)
- H DROP OFF ZONE
- I AIR SOURCE HEAT PUMP
- J CARPARK
  62 spaces (inc. 8no. EVCPs)
- K SPINKLER & PUMP HOUSE
- L ACCESS ROUTE
  For refuse, maintenace and kitchen deliveries only
- M L01 ILS TERRACE
  Including shed, greenhouse, Horticulture planting, canopy and external seating
- N PV CANOPY
- O SITE EGRESS
  For refuse, maintenace and kitchen deliveries only
- P HEDGE
- Q MOTORCYCLE PARKING
  3no. spaces
- R GAS KIOSK
- S EDIBLE GARDEN
- T FEATURE TREES & RAIN GARDEN

### Note

1. Do not scale from this drawing
2. To be read in conjunction with Project Risk Register REF: XXX
3. To be read in conjunction with all other Landscape Architect's drawings

| ID | RISK | MITIGATION | DATE MITIGATED |
|---|---|---|---|

**RESIDUAL PROJECT RISKS**

| DATE | REV | DESCRIPTION OF REVISION | DRAWN BY | APPROVED BY |
|---|---|---|---|---|
| 12/12/2023 | P03 | 1. Issued for Pre-Application Consultation | JJ | MH |
| 12/12/2023 | P02 | 1. Pedestrian pathway to western boundary omitted 2. Paving colours aligned to outline material specifications | JJ | MH |

**REVISIONS**

STATUS

**S2 - *Issued for Pre-Application Consultation***


ares LANDSCAPE ARCHITECTS

Ares Landscape Architects LTD
Gatecrasher,
51 Eyre Lane
Sheffield
S1 4RB

t: 0114 276 2000
e: hello@aresdesign.co.uk
w: ares.eu.com


CLIENT :

**Cardiff and Vale College**

PROJECT TITLE :

**Barry Waterfront Campus**

DRAWING TITLE :

**Landscape Illustrative Masterplan**

| DRAWING SCALE : | DRAWN BY : | DRAWN DATE : |
|---|---|---|
| 1:250 | HS | 15/06/2022 |
| PAPER SIZE : | APPROVED BY : | ALA PROJECT CODE: |
| A1 | HT | ALA724 |

DRAWING NUMBER : STATUS : REVISION :

**VG0201-ALA-00-XX-DR-L-00001 S2 P03**

# Appendix III

# Borehole Log

Borehole No. **BH01**

Sheet 1 of 4

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: | 311148.00 - 167363.00 | Hole Type CP |
| Location: | Ffordd Y Mileniwm, Barry | | Level: | 8.91 | Scale 1:50 |
| Client: | WEPCO | | Dates: | 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 1.20<br>1.20 - 1.65 | B | N=21 (4,4/4,5,6,6) | | | | MADE GROUND comprising black brown slightly gravelly clayey fill with cobbles of brick and concrete. Sand is fine to coarse, gravel is fine to coarse subangular brick and concrete. |
| | | 2.00<br>2.00 - 2.45 | B | N=20 (3,2/2,6,6,6) | | | | |
| | ▼ | 3.00<br>3.00 - 3.45 | B | N=31 (5,5/7,8,8,8) | 2.80 | 6.11 | | MADE GROUND comprising grey brown very gravelly clay fill. Gravels are fine to coarse angular to subangular brick, concrete, ceramics and occasional fabric pieces. |
| | | 4.00<br>4.00 - 4.45 | B | N=33 (4,6/8,9,8,8) | 4.00 | 4.91 | | Wet medium dense light brown clayey gravelly COBBLES. Gravels are fine to coarse, angular to subrounded mudstone, limestone and flint. |
| | | 5.00<br>5.00 - 5.45 | B | N=35 (5,7/7,10,9,9) | | | | |
| | | 6.00<br>6.00 - 6.45 | B | N=34 (7,7/10,8,7,9) | | | | |
| | | 7.00<br>7.00 - 7.45 | B | N=38 (6,6/11,9,9,9) | | | | |
| | | 8.00<br>8.00 - 8.45 | B | N=35 (10,7/6,9,10,10) | 8.00 | 0.91 | | Wet medium dense light brown sandy clayey gravelly COBBLES. Sand is fine to coarse. Gravels are fine to coarse, angular to subrounded mudstone, limestone and flint. |
| | | 9.00<br>9.00 - 9.45 | B | N=38 (7,7/8,10,9,11) | | | | |
| | | 10.00 | | N=39 (4,8/10,9,9,11) | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Borehole Log

Borehole No. **BH01**

Sheet 2 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311148.00 - 167363.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.91 | Scale 1:50 |
| Client: WEPCO | | Dates: 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description | |
|---|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | | |
| | | 10.00 - 10.45 | B | | | | | | |
| | | 11.00 | | N=34 (6,6/6,7,10,11) | | | | | 11 |
| | | 11.00 - 11.45 | B | | | | | | |
| | | 12.00 | | N=38 (10,11/11,9,9,9) | 12.00 | -3.09 | | | 12 |
| | | 12.00 - 12.45 | B | | | | | Dense wet red brown clayey SAND and GRAVEL. Sand is fine to coarse, gravels are fine to coarse, angular to subangular mudstone and limestone. | |
| | | 13.00 | | N=42 (8,8/12,11,9,10) | | | | | 13 |
| | | 13.00 - 13.45 | B | | | | | | |
| | | 14.00 | | N=49 (10,11/10,11,14,14) | | | | | 14 |
| | | 14.00 - 14.45 | B | | | | | | |
| | | 15.00 | | 50 (10,12/50 for 295mm) | 15.00 | -6.09 | | | 15 |
| | | 15.00 - 15.45 | B | | | | | Very weak weathered grey LIMESTONE. Recovered as gravels and cobbles. Gravels and cobbles are fine to coarse angular to subangular. | |
| | ▼ | 16.00 - 16.50 | C | | | | | | 16 |
| | | 16.50 | | 50 (25 for 120mm/50 for 295mm) | | | | | |
| | | 16.50 - 17.25 | C | | | | | | 17 |
| | | 17.25 - 18.00 | C | | | | | | |
| | | 18.00 | | 50 (8 for 110mm/50 for 249mm) | 18.00 | -9.09 | | | 18 |
| | | 18.00 - 19.50 | C | | | | | Strong greenish grey LIMESTONE recovered as non-intact | |
| | | | | | | | | | 19 |
| | | 19.50 - 21.00 | C | | 19.40 | -10.49 | | Strong grey LIMESTONE with orange staining | |
| | | | | | 19.80 | -10.89 | | Very strong greenish grey and grey banded LIMESTONE with orange staining and occasional 5mm bands of calcite. | 20 |
| | | | | | | | | Continued on next sheet | |

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Borehole Log

Borehole No. **BH01**

Sheet 3 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311148.00 - 167363.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.91 | Scale 1:50 |
| Client: WEPCO | | Dates: 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | | | | | | | *Band of non-intact mudstone.* |
| | | 21.00 - 22.50 | C | | 21.00<br>21.10 | -12.09<br>-12.19 | | Very strong white CALCITE<br>Very strong reddish brown and bluish grey banded LIMESTONE with regular 5-15mm bands of non-intact LIMESTONE and orangish brown staining. Fractures very closely to widely spaced 0-30° rough planar and 70-90° rough vertical. |
| | | 22.50 - 24.00 | C | | | | | |
| | | | | | 23.55 | -14.64 | | Very strong reddish brown and bluish grey LIMESTONE with orange brown staining. Fractures closely spaced 0-20° rough planar. |
| | | 24.00 - 25.50 | C | | 24.00 | -15.09 | | Very strong dark grey with orange staining and very frequent bands of non-intact limestone. Fractures closely spaced 0-20° rough planar and 80-90° rough closed undulating. |
| | | | | | | | | *Band of white calcite.* |
| | | 25.50 - 27.00 | C | | | | | |
| | | | | | 25.90 | -16.99 | | Very strong and bluish grey mottled LIMESTONE with dark orange staining and frequent 5mm veins of calcite from 27.95m bgl. Fractures 0-20° very closely so closely spaced rough closed planar and very widely spaced 50-60° rough undulating. |
| | | 27.00 - 28.50 | C | | | | | |
| | | 28.50 - 30.00 | C | | | | | *Band of white calcite* |
| | | | | | 29.55 | -20.64 | | Very strong brown and bluish grey banded LIMESTONE. Fractures are closely to widely spaced 0-25° smooth to rough planar and very widely spaced 50-70° rough undulating. |
| | | 30.00 - 31.50 | C | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Borehole Log

Borehole No. **BH01**

Sheet 4 of 4

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: | 311148.00 - 167363.00 | Hole Type CP |
| Location: | Ffordd Y Mileniwm, Barry | | Level: | 8.91 | Scale 1:50 |
| Client: | WEPCO | | Dates: | 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 31.50 - 33.00 | C | | | | | |
| | | 33.00 - 34.50 | C | | 33.15 | -24.24 | | Very strong reddish brown and bluish grey banded LIMESTONE with occasional 5mm veins of calcite and orange staining. Fractures very closely to widely spaced 0-20° smooth to rough closed planar and very widely spaced 40-60° rough undulating. |
| | | | | | 34.50 | -25.59 | | End of borehole at 34.50 m |

31 32 33 34 35 36 37 38 39 40

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Rotary Core Log

Borehole No. **BH01**

Sheet 1 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311148.00 - 167363.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.91 | Scale 1:50 |
| Client: WEPCO | | Dates: 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.20 - 1.65 | B | | | | | | | MADE GROUND comprising black brown slightly gravelly clayey fill with cobbles of brick and concrete. Sand is fine to coarse, gravel is fine to coarse subangular brick and concrete. |
| | | 2.00 - 2.45 | B | | | | | | | |
| | ▼ | 3.00 - 3.45 | B | | | | 2.80 | 6.11 | | MADE GROUND comprising grey brown very gravelly clay fill. Gravels are fine to coarse angular to subangular brick, concrete, ceramics and occasional fabric pieces. |
| | | 4.00 - 4.45 | B | | | | 4.00 | 4.91 | | Wet medium dense light brown clayey gravelly COBBLES. Gravels are fine to coarse, angular to subrounded mudstone, limestone and flint. |
| | | 5.00 - 5.45 | B | | | | | | | |
| | | 6.00 - 6.45 | B | | | | | | | |
| | | 7.00 - 7.45 | B | | | | | | | |
| | | 8.00 - 8.45 | B | | | | 8.00 | 0.91 | | Wet medium dense light brown sandy clayey gravelly COBBLES. Sand is fine to coarse. Gravels are fine to coarse, angular to subrounded mudstone, limestone and flint. |
| | | 9.00 - 9.45 | B | | | | | | | |
| | | 10.00 - 10.45 | B | | | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Rotary Core Log

Borehole No. **BH01**

Sheet 2 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311148.00 - 167363.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.91 | Scale 1:50 |
| Client: WEPCO | | Dates: 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 11.00 - 11.45 | B | | | | | | | |
| | | 12.00 - 12.45 | B | | | | 12.00 | -3.09 | | Dense wet red brown clayey SAND and GRAVEL. Sand is fine to coarse, gravels are fine to coarse, angular to subangular mudstone and limestone. |
| | | 13.00 - 13.45 | B | | | | | | | |
| | | 14.00 - 14.45 | B | | | | | | | |
| | | 15.00 - 15.45 | B | | | | 15.00 | -6.09 | | Very weak weathered grey LIMESTONE. Recovered as gravels and cobbles. Gravels and cobbles are fine to coarse angular to subangular. |
| | ▼ | 16.00 - 16.50 | C | | | | | | | |
| | | 16.50 - 17.25 | C | | | | | | | |
| | | 17.25 - 18.00 | C | | | | | | | |
| | | ~~18.00 - 19.50~~ | C | | | | 18.00 | -9.09 | | Strong greenish grey LIMESTONE recovered as non-intact |
| | | 18.00 - 19.50 | | 53 | 9 | 0 | | | | |
| | | ~~19.50 - 21.00~~ | C | | | | 19.40 | -10.49 | | Strong grey LIMESTONE with orange staining |
| | | | | | | | 19.80 | -10.89 | | Very strong greenish grey and grey banded LIMESTONE with orange staining and occasional 5mm bands of calcite. |

Continued on next sheet

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Rotary Core Log

hsp consulting

Borehole No. **BH01**

Sheet 3 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311148.00 - 167363.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.91 | Scale 1:50 |
| Client: WEPCO | | Dates: 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 19.50 - 21.00 | | 53 | 34 | 24 | | | | *Band of non-intact mudstone.* |
| | | ~~21.00 - 22.50~~ | C | | | | 21.00 | -12.09 | | Very strong white CALCITE |
| | | | | | | | 21.10 | -12.19 | | Very strong reddish brown and bluish grey banded LIMESTONE with regular 5-15mm bands of non-intact LIMESTONE and orangish brown staining. Fractures very closely to widely spaced 0-30° rough planar and 70-90° rough vertical. |
| | | 21.00 - 22.50 | | 94 | 52 | 15 | | | | |
| | | ~~22.50 - 24.00~~ | C | | | | | | | |
| | | 22.50 - 24.00 | | 87 | 81 | 36 | | | | |
| | | | | | | | 23.55 | -14.64 | | Very strong reddish brown and bluish grey LIMESTONE with orange brown staining. Fractures closely spaced 0-20° rough planar. |
| | | ~~24.00 - 25.50~~ | C | | | | 24.00 | -15.09 | | Very strong dark grey with orange staining and very frequent bands of non-intact limestone. Fractures closely spaced 0-20° rough planar and 80-90° rough closed undulating. |
| | | 24.00 - 25.50 | | 97 | 28 | 10 | | | | *Band of white calcite.* |
| | | ~~25.50 - 27.00~~ | C | | | | | | | |
| | | | | | | | 25.90 | -16.99 | | Very strong and bluish grey mottled LIMESTONE with dark orange staining and frequent 5mm veins of calcite from 27.95m bgl. Fractures 0-20° very closely so closely spaced rough closed planar and very widely spaced 50-60° rough undulating. |
| | | 25.50 - 27.00 | | 97 | 91 | 30 | | | | |
| | | ~~27.00 - 28.50~~ | C | | | | | | | |
| | | 27.00 - 28.50 | | 100 | 95 | 57 | | | | |
| | | ~~28.50 - 30.00~~ | C | | | | | | | *Band of white calcite* |
| | | 28.50 - 30.00 | | 89 | 81 | 41 | | | | |
| | | | | | | | 29.55 | -20.64 | | Very strong brown and bluish grey banded LIMESTONE. Fractures are closely to widely spaced 0-25° smooth to rough planar and very widely spaced 50-70° rough undulating. |
| | | ~~30.00 - 31.50~~ | C | | | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

AGS

# Rotary Core Log

Borehole No. **BH01**

Sheet 4 of 4

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: | 311148.00 - 167363.00 | Hole Type RC |
| Location: | Ffordd Y Mileniwm, Barry | | Level: | 8.91 | Scale 1:50 |
| Client: | WEPCO | | Dates: | 04/10/2023 - 10/10/2023 | Logged By LH+LJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 30.00 - 31.50 | | 88 | 87 | 87 | | | | |
| | | ~~31.50 - 33.00~~ | C | | | | | | | |
| | | 31.50 - 33.00 | | 100 | 100 | 89 | | | | |
| | | ~~33.00 - 34.50~~ | C | | | | 33.15 | -24.24 | | Very strong reddish brown and bluish grey banded LIMESTONE with occasional 5mm veins of calcite and orange staining. Fractures very closely to widely spaced 0-20° smooth to rough closed planar and very widely spaced 40-60° rough undulating. |
| | | 33.00 - 34.50 | | 100 | 100 | 65 | 34.50 | -25.59 | | End of borehole at 34.50 m |

31 32 33 34 35 36 37 38 39 40

Remarks

1. Cable Percussion to 16m with Rotary Core to 34.50m begl. 2.Extremely rapid groundwater encountered whilst coring from 16m begl.

# Borehole Log

hsp consulting

Borehole No. **BH02**

Sheet 1 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311145.00 - 167423.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.05 | Scale 1:50 |
| Client: WEPCO | | Dates: 16/10/2023 - 18/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 1.20<br>1.20 - 1.65 | B | N=31 (3,4/6,6,9,10) | | | | MADE GROUND comprising black brown sandy gravelly clay fill. Sand is fine to coarse, gravel is fine to coarse angular to sub angular brick, concrete, mudstone and limestone. |
| | | 2.00<br>2.00 - 2.45 | B | N=16 (3,4/4,4,4,4) | 2.00 | 7.05 | | MADE GROUND comprising black clayey sand and gravel fill. Sand is fine to coarse, gravel is fie to coarse angular to subangular coal, clinker and concrete. |
| | | 3.00<br>3.00 - 3.45 | B | N=22 (4,4/6,6,6,4) | 2.80 | 6.25 | | Stiff blue grey SILT. |
| | ▼ | | | | | | | ....Wet from 3.60m. |
| | | 4.00<br>4.00 - 4.45 | B | N=22 (3,4/6,5,5,6) | | | | |
| | | 5.00<br>5.00 - 5.45 | B | N=21 (4,3/3,5,6,7) | | | | |
| | | 6.00<br>6.00 - 6.45 | B | N=22 (4,5/5,6,5,6) | | | | |
| | | 7.00<br>7.00 - 7.45 | B | N=29 (6,5/4,7,9,9) | 6.50 | 2.55 | | Wet medium dense grey brown COBBLES oF Limestone. Cobbles are fine to coarse angular to subangular. |
| | | 8.00<br>8.00 - 8.45 | B | N=37 (4,6/9,9,10,9) | 7.60 | 1.45 | | Wet medium dense grey brown sandy COBBLES oF Limestone. Sand is fine to coarse, cobbles are fine to coarse angular to subangular. |
| | | 9.00<br>9.00 - 9.45 | B | N=33 (7,7/7,8,9,9) | 8.80 | 0.25 | | Wet medium dense grey brown clayey GRAVELS and COBBLES oF Limestone. Gravels and cobbles are fine to coarse angular to subangular. |
| | | 10.00 | | N=3 (0,0/0,1,1,1) | 9.70 | -0.65 | | Very soft wet blue grey SILT. |
| | | | | | | | | Continued on next sheet |

Remarks

1. Cable Percussion to 18m with Rotary Core to 25.5m begl.

AGS

# Borehole Log

Borehole No. **BH02**

Sheet 2 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311145.00 - 167423.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.05 | Scale 1:50 |
| Client: WEPCO | | Dates: 16/10/2023 - 18/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description | |
|---|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | | |
| | | 10.00 - 10.45 | B | | | | | | |
| | | 11.00 | | N=3 (0,0/0,1,1,1) | | | | | 11 |
| | | 11.00 - 11.45 | B | | | | | | |
| | | 12.00 | | N=2 (1,0/0,1,0,1) | | | | | 12 |
| | | 12.00 - 12.45 | B | | | | | | |
| | | 13.00 | | N=3 (1,0/0,1,1,1) | | | | | 13 |
| | | 13.00 - 13.45 | B | | | | | | |
| | | 14.00 | | N=4 (1,0/1,1,1,1) | | | | | 14 |
| | | 14.00 - 14.45 | B | | | | | | |
| | | 15.00 | | N=4 (0,0/0,1,1,2) | | | | | 15 |
| | | 15.00 - 15.45 | B | | | | | | |
| | | 16.00 | | N=36 (5,6/5,10,9,12) | | | | | 16 |
| | | 16.00 - 16.45 | B | | | | | | |
| | | | | | 16.40 | -7.35 | | Stiff wet blue grey SILT with cobbles of Limestone. Cobbles are fine to coarse angular to subangular. | |
| | | 17.00 | | N=50 (8,9/10,11,14,15) | | | | | 17 |
| | | 17.00 - 17.45 | B | | | | | | |
| | | 18.00 | | 50 (25 for 145mm/50 for 265mm) | 18.00 | -8.95 | | Very strong bluish grey LIMESTONE - Recovered as non-intact | 18 |
| | | 18.00 - 19.50 | C | | | | | | |
| | | | | | | | | | 19 |
| | | 19.50 | | 50 (25 for 95mm/50 for 245mm) | 19.50 | -10.45 | | Very strong bluish grey and yellowish brown mottled LIMESTONE with orangish brown staining and occasional 15mm nodular of calcite. Fractures closely spaced 10-30° rough planar and 60-70° very widely spaced smooth open planar. | |
| | | 19.50 - 21.00 | C | | | | | | 20 |

Continued on next sheet

Remarks

1. Cable Percussion to 18m with Rotary Core to 25.5m begl.

# Borehole Log

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311145.00 - 167423.00 | Borehole No. **BH02** Sheet 3 of 3 |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.05 | Hole Type CP |
| Client: WEPCO | | Dates: 16/10/2023 - 18/10/2023 | Scale 1:50 |
| | | | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 21.00 - 22.50 | C | | | | | *Band of reddish brown mudstone - recovered as non-intact.* |
| | | | | | 21.20 | -12.15 | | Very strong reddish brown and grey banded LIMESTONE with occasional orange staining. Fractures 0-20° very closely to widely spaced rough open to closed planar and 80-90° vertical smooth undulating. |
| | | 22.50 - 24.00 | C | | | | | |
| | | 24.00 - 25.50 | C | | 24.00 | -14.95 | | Very strong grey mottled reddish brown LIMESTONE with very frequent bands of yellowish brown moderately strong mudstone and dark orange staining. Fractures 0-20° extremely closely to closely spaced rough planar and 70-80° vertical smooth planar. |
| | | | | | | | | *Band of pinkish white calcite.* |
| | | | | | 25.30 | -16.25 | | End of borehole at 25.50 m |

Remarks
1. Cable Percussion to 18m with Rotary Core to 25.5m begl.

# Rotary Core Log

Borehole No. **BH02**

Sheet 1 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311145.00 - 167423.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.05 | Scale 1:50 |
| Client: WEPCO | | Dates: 16/10/2023 - 18/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.20 - 1.65 | B | | | | | | | MADE GROUND comprising black brown sandy gravelly clay fill. Sand is fine to coarse, gravel is fine to coarse angular to sub angular brick, concrete, mudstone and limestone. |
| | | 2.00 - 2.45 | B | | | | 2.00 | 7.05 | | MADE GROUND comprising black clayey sand and gravel fill. Sand is fine to coarse, gravel is fie to coarse angular to subangular coal, clinker and concrete. |
| | | 3.00 - 3.45 | B | | | | 2.80 | 6.25 | | Stiff blue grey SILT. |
| | ▼ | | | | | | | | | *....Wet from 3.60m.* |
| | | 4.00 - 4.45 | B | | | | | | | |
| | | 5.00 - 5.45 | B | | | | | | | |
| | | 6.00 - 6.45 | B | | | | | | | |
| | | 7.00 - 7.45 | B | | | | 6.50 | 2.55 | | Wet medium dense grey brown COBBLES oF Limestone. Cobbles are fine to coarse angular to subangular. |
| | | 8.00 - 8.45 | B | | | | 7.60 | 1.45 | | Wet medium dense grey brown sandy COBBLES oF Limestone. Sand is fine to coarse, cobbles are fine to coarse angular to subangular. |
| | | 9.00 - 9.45 | B | | | | 8.80 | 0.25 | | Wet medium dense grey brown clayey GRAVELS and COBBLES oF Limestone. Gravels and cobbles are fine to coarse angular to subangular. |
| | | 10.00 - 10.45 | B | | | | 9.70 | -0.65 | | Very soft wet blue grey SILT. |
| | | | | | | | | | | Continued on next sheet |

Remarks

1. Cable Percussion to 18m with Rotary Core to 25.5m begl.

# Rotary Core Log

Borehole No. **BH02**

Sheet 2 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311145.00 - 167423.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.05 | Scale 1:50 |
| Client: WEPCO | | Dates: 16/10/2023 - 18/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 11.00 - 11.45 | B | | | | | | | |
| | | 12.00 - 12.45 | B | | | | | | | |
| | | 13.00 - 13.45 | B | | | | | | | |
| | | 14.00 - 14.45 | B | | | | | | | |
| | | 15.00 - 15.45 | B | | | | | | | |
| | | 16.00 - 16.45 | B | | | | | | | |
| | | | | | | | 16.40 | -7.35 | | Stiff wet blue grey SILT with cobbles of Limestone. Cobbles are fine to coarse angular to subangular. |
| | | 17.00 - 17.45 | B | | | | | | | |
| | | ~~18.00 - 19.50~~ | C | | | | 18.00 | -8.95 | | Very strong bluish grey LIMESTONE - Recovered as non-intact |
| | | 18.00 - 19.50 | | 50 | 50 | 7 | | | | |
| | | ~~19.50 - 21.00~~ | C | | | | 19.50 | -10.45 | | Very strong bluish grey and yellowish brown mottled LIMESTONE with orangish brown staining and occasional 15mm nodular of calcite. Fractures closely spaced 10-30° rough planar and 60-70° very widely spaced smooth open planar. |

Continued on next sheet

Remarks

1. Cable Percussion to 18m with Rotary Core to 25.5m begl.

# Rotary Core Log

Borehole No. **BH02**

Sheet 3 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311145.00 - 167423.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.05 | Scale 1:50 |
| Client: WEPCO | | Dates: 16/10/2023 - 18/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 19.50 - 21.00 | | 97 | 73 | 8 | | | | *Band of reddish brown mudstone - recovered as non-intact.* |
| | | ~~21.00 - 22.50~~ | ~~C~~ | | | | 21.20 | -12.15 | | |
| | | 21.00 - 22.50 | 5.3 | 100 | 100 | 63 | | | | Very strong reddish brown and grey banded LIMESTONE with occasional orange staining. Fractures 0-20° very closely to widely spaced rough open to closed planar and 80-90° vertical smooth undulating. |
| | | ~~22.50 - 24.00~~ | ~~C~~ | | | | | | | |
| | | 22.50 - 24.00 | 6.7 | 87 | 87 | 49 | | | | |
| | | ~~24.00 - 25.50~~ | ~~C~~ | | | | 24.00 | -14.95 | | Very strong grey mottled reddish brown LIMESTONE with very frequent bands of yellowish brown moderately strong mudstone and dark orange staining. Fractures 0-20° extremely closely to closely spaced rough planar and 70-80° vertical smooth planar. |
| | | 24.00 - 25.50 | 9.3 | 99 | 93 | 20 | | | | *Band of pinkish white calcite.* |
| | | | | | | | 25.30 | -16.25 | | End of borehole at 25.50 m |

21 22 23 24 25 26 27 28 29 30

Remarks

1. Cable Percussion to 18m with Rotary Core to 25.5m begl.

AGS

# Borehole Log

Borehole No. **BH03**

Sheet 1 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311196.00 - 167435.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.87 | Scale 1:50 |
| Client: WEPCO | | Dates: 12/10/2023 - 17/10/2023 | Logged By LEJ+LH |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 1.20<br>1.20 - 1.65 | B | N=13 (3,3/4,3,3,3) | | | | MADE GROUND comprising black brown sand gravelly clayey fill. Sand is fine to coarse, gravels are fine to coarse angular to subrounded brick, concrete, flint, mudstone and limestone. |
| G | | 2.00<br>2.00 - 2.45 | B | N=20 (4,4/6,4,5,5) | | | | |
| W | | 3.00<br>3.00 - 3.45 | B | N=9 (1,1/2,3,2,2) | 3.00 | 5.87 | | Very soft wet grey brown SILT. |
| | ▼ | 4.00<br>4.00 - 4.45 | B | N=4 (1,1/1,1,1,1) | | | | |
| | | 5.00<br>5.00 - 5.45 | B | N=8 (2,2/2,2,2,2) | | | | |
| | | 6.00<br>6.00 - 6.45 | B | N=4 (1,1/1,1,1,1) | 6.00 | 2.87 | | Very soft wet grey brown SILT with occasional cobbles and gravels of LIMESTONE. Gravels and cobbles are fine to coarse, angular to subangular. |
| | | 7.00<br>7.00 - 7.45 | B | N=3 (1,0/1,0,1,1) | 7.00 | 1.87 | | Very soft wet grey brown SILT. |
| | | 8.00<br>8.00 - 8.45 | B | N=6 (2,1/2,2,1,1) | | | | |
| | | 9.00<br>9.00 - 9.45 | B | N=4 (1,1/1,1,1,1) | | | | |
| | | 10.00 | | N=7 (2,2/1,2,2,2) | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 15.5m with Rotary Core to 25.30m begl.

AGS

# Borehole Log

Borehole No. **BH03**

Sheet 2 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311196.00 - 167435.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.87 | Scale 1:50 |
| Client: WEPCO | | Dates: 12/10/2023 - 17/10/2023 | Logged By LEJ+LH |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 10.00 - 10.45 | B | | | | | |
| | | 11.00 | | N=37 (8,9/9,9,9,10) | 11.00 | -2.13 | | |
| | | 11.00 - 11.45 | B | | | | | Dense wet slightly clayey sandy GRAVELS. Sand is fine to coarse, gravels are fine to coarse angular to subrounded flint, mudstone and limestone. |
| | | 12.00 | | N=37 (9,10/9,10,9,9) | | | | |
| | | 12.00 - 12.45 | B | | | | | |
| | | 13.00 | | N=34 (9,8/9,8,8,9) | 13.00 | -4.13 | | |
| | | 13.00 - 13.45 | B | | | | | Very weak weathered grey LIMESTONE. Recovered as gravels and cobbles of Limestone. Gravels and cobbles are fine to coarse, angular to subangular. |
| | | 14.00 | | N=39 (7,10/9,9,10,11) | | | | |
| | | 14.00 - 14.45 | B | | | | | |
| | | 15.00 | | N=50 (7,10/10,10,15,15) | | | | |
| | | 15.00 - 15.45 | B | | | | | |
| | | 15.50 - 16.50 | C | | 15.50 | -6.63 | | Very strong dark grey LIMESTONE with yellowish brown staining. Fractures closely spaced 0-20° rough planar. |
| | | 16.50 - 18.00 | C | | 16.50 | -7.63 | | *Band of white calcite.* Very strong greenish grey LIMESTONE, recovered as non-intact |
| | | | | | 17.20 | -8.33 | | Very strong greenish grey mottled grey LIMESTONE with dark orange staining and frequent bands of non-intact limestone. Fractures are closely spaced 20-30° rough undulating and 70-80 smooth planar. |
| | | 18.00 | | 50 (25 for 115mm/50 for 245mm) | | | | |
| | | 18.00 - 19.50 | C | | | | | |
| | | 19.50 - 21.00 | C | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 15.5m with Rotary Core to 25.30m begl.

# Borehole Log

Borehole No. **BH03**

Sheet 3 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311196.00 - 167435.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.87 | Scale 1:50 |
| Client: WEPCO | | Dates: 12/10/2023 - 17/10/2023 | Logged By LEJ+LH |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | | | | 20.20 | -11.33 | | *Band of yellowish brown limestone.* *Band of pinkish white calcite.* Very strong grey and reddish brown mottled with dark orange staining and occasional 5mm calcite veins. Fractures very closely to closely 0-20° spaced smooth open planar and 70-90° smooth planar. |
| | | 21.00 - 22.50 | C | | | | | |
| | | 22.50 - 24.00 | C | | | | | |
| | | | | | 23.60 | -14.73 | | Very strong yellowish brown and grey LIMESTONE. Fractures extremely closely to closely spaced 0-20° smooth to rough planar and very widely spaced 50-60° rough planar. |
| | | 24.00 - 25.30 | C | | 24.30 | -15.43 | | *Band of white calcite.* *Band of pinkish white calcite.* Dark grey and dark bluish grey mottled LIMESTONE with dark orange and yellowish brown staining. Fractures closely 0-20° rough undulating and 70-90° vertical smooth undulating |
| | | | | | 25.30 | -16.43 | | End of borehole at 25.30 m |

Remarks

1. Cable Percussion to 15.5m with Rotary Core to 25.30m begl.

# Rotary Core Log

Borehole No. **BH03**

Sheet 1 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311196.00 - 167435.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.87 | Scale 1:50 |
| Client: WEPCO | | Dates: 12/10/2023 - 17/10/2023 | Logged By LEJ+LH |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.20 - 1.65 | B | | | | | | | MADE GROUND comprising black brown sand gravelly clayey fill. Sand is fine to coarse, gravels are fine to coarse angular to subrounded brick, concrete, flint, mudstone and limestone. |
| G | | 2.00 - 2.45 | B | | | | | | | |
| W | | 3.00 - 3.45 | B | | | | 3.00 | 5.87 | | |
| | ▼ | 4.00 - 4.45 | B | | | | | | | Very soft wet grey brown SILT. |
| | | 5.00 - 5.45 | B | | | | | | | |
| | | 6.00 - 6.45 | B | | | | 6.00 | 2.87 | | |
| | | 7.00 - 7.45 | B | | | | 7.00 | 1.87 | | Very soft wet grey brown SILT with occasional cobbles and gravels of LIMESTONE. Gravels and cobbles are fine to coarse, angular to subangular. |
| | | 8.00 - 8.45 | B | | | | | | | Very soft wet grey brown SILT. |
| | | 9.00 - 9.45 | B | | | | | | | |
| | | 10.00 - 10.45 | B | | | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 15.5m with Rotary Core to 25.30m begl.

# Rotary Core Log

Borehole No. **BH03**

Sheet 2 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311196.00 - 167435.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.87 | Scale 1:50 |
| Client: WEPCO | | Dates: 12/10/2023 - 17/10/2023 | Logged By LEJ+LH |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 11.00 - 11.45 | B | | | | 11.00 | -2.13 | | Dense wet slightly clayey sandy GRAVELS. Sand is fine to coarse, gravels are fine to coarse angular to subrounded flint, mudstone and limestone. |
| | | 12.00 - 12.45 | B | | | | | | | |
| | | 13.00 - 13.45 | B | | | | 13.00 | -4.13 | | Very weak weathered grey LIMESTONE. Recovered as gravels and cobbles of Limestone. Gravels and cobbles are fine to coarse, angular to subangular. |
| | | 14.00 - 14.45 | B | | | | | | | |
| | | 15.00 - 15.45 | B | | | | | | | |
| | | ~~15.50 - 16.50~~ | C | | | | 15.50 | -6.63 | | Very strong dark grey LIMESTONE with yellowish brown staining. Fractures closely spaced 0-20° rough planar. |
| | | 15.50 - 16.50 | 4 | 60 | 55 | 11 | | | | |
| | | ~~16.50 - 18.00~~ | C | | | | 16.50 | -7.63 | | *Band of white calcite.* Very strong greenish grey LIMESTONE, recovered as non-intact |
| | | 16.50 - 18.00 | | 67 | 49 | 11 | 17.20 | -8.33 | | Very strong greenish grey mottled grey LIMESTONE with dark orange staining and frequent bands of non-intact limestone. Fractures are closely spaced 20-30° rough undulating and 70-80 smooth planar. |
| | | ~~18.00 - 19.50~~ | C | | | | | | | |
| | | 18.00 - 19.50 | 8 | 73 | 34 | 10 | | | | |
| | | ~~19.50 - 21.00~~ | C | | | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 15.5m with Rotary Core to 25.30m begl.

# Rotary Core Log

Borehole No. **BH03**

Sheet 3 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311196.00 - 167435.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.87 | Scale 1:50 |
| Client: WEPCO | | Dates: 12/10/2023 - 17/10/2023 | Logged By LEJ+LH |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 20.20 | -11.33 | | *Band of yellowish brown limestone.* *Band of pinkish white calcite.* Very strong grey and reddish brown mottled with dark orange staining and occasional 5mm calcite veins. Fractures very closely to closely 0-20° spaced smooth open planar and 70-90° smooth planar. |
| | | 19.50 - 21.00 | 10 | 73 | 53 | 0 | | | | |
| | | ~~21.00 - 22.50~~ | ~~C~~ | | | | | | | |
| | | 21.00 - 22.50 | 5 | 93 | 92 | 61 | | | | |
| | | ~~22.50 - 24.00~~ | ~~C~~ | | | | | | | |
| | | 22.50 - 24.00 | 9 | 100 | 85 | 53 | | | | |
| | | ~~24.00 - 25.30~~ | ~~C~~ | | | | 23.60 | -14.73 | | Very strong yellowish brown and grey LIMESTONE. Fractures extremely closely to closely spaced 0-20° smooth to rough planar and very widely spaced 50-60° rough planar. |
| | | | | | | | 24.30 | -15.43 | | *Band of white calcite.* *Band of pinkish white calcite.* Dark grey and dark bluish grey mottled LIMESTONE with dark orange and yellowish brown staining. Fractures closely 0-20° rough undulating and 70-90° vertical smooth undulating |
| | | 24.00 - 25.30 | | 100 | 85 | 8 | | | | |
| | | | | | | | 25.30 | -16.43 | | End of borehole at 25.30 m |

Remarks

1. Cable Percussion to 15.5m with Rotary Core to 25.30m begl.

# Borehole Log

Borehole No. **BH04**

Sheet 1 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311099.00 - 167403.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.62 | Scale 1:50 |
| Client: WEPCO | | Dates: 18/10/2023 - 20/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 1.20<br>1.20 - 1.65 | B | N=16 (2,4/4,4,4,4) | | | | MADE GROUND comprising black brown sandy gravelly clayey fill. Sand is fine to coarse, gravel is fine to coarse subangular of brick, concrete, limestone, flint and mudstone. |
| | | 2.00<br>2.00 - 2.45 | B | N=26 (2,4/6,6,7,7) | | | | |
| | | 3.00<br>3.00 - 3.45 | B | N=18 (4,3/3,4,6,5) | 3.00 | 5.62 | | Possible MADE GROUND comprising reworked blue grey sandy CLAY. Sand is fine to coarse. |
| | | 4.00<br>4.00 - 4.45 | B | N=4 (1,1/1,1,1,1) | 4.00 | 4.62 | | Very soft blue grey SILT with occasional organic partings. |
| | | 5.00<br>5.00 - 5.45 | B | N=2 (1,0/1,0,0,1) | | | | |
| | | 6.00<br>6.00 - 6.45 | B | N=2 (1,0/1,1,0,0) | | | | |
| | ▼ | 7.00<br>7.00 - 7.45 | B | N=42 (6,9/9,9,10,14) | 6.80 | 1.82 | | Stiff wet blue grey SILT with occasional gravels of Limestone. Gravels are fine to coarse, angular to subangular. |
| | | 8.00<br>8.00 - 8.45 | B | N=50 (10,12/25,25,0,0) | 8.00 | 0.62 | | Very weak weathered LIMESTONE. Recovered as gravels and cobbles which are fine to coarse, angular to subangular. |
| | | 9.00<br>9.00 - 10.50 | C | N=50 (25,0/50,0,0,0) | 9.00 | -0.38 | | Very strong grey LIMESTONE with yellowish brown staining and frequent bands of non-intact limestone. Fractures 0-20° very closely to widely spaced rough open planar. |
| | | | | | | | | Continued on next sheet |

Remarks

1. Cable Percussion to 9.14m with Rotary Core to 25.50m begl.

# Borehole Log

Borehole No. **BH04**

Sheet 2 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311099.00 - 167403.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.62 | Scale 1:50 |
| Client: WEPCO | | Dates: 18/10/2023 - 20/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 10.50 | | 50 (25 for 105mm/50 for 275mm) | | | | |
| | | 10.50 - 12.00 | C | | | | | |
| | | 12.00 - 13.50 | C | | 12.00 | -3.38 | | Very strong yellowish brown and dark grey mottled with dark orange staining and occasional 5-15m veins of calcite. Fractures closely to widely spaced 10-30° rough open planar, *Band of pinkish white calcite.* |
| | | 13.50 - 15.00 | C | | 13.50 | -4.88 | | Very strong yellowish brown mottled dark grey LIMESTONE. Fractures 0-20° very closely to closely spaced rough open undulating/planar and 50-60° very widely spaced rough open planar. *Band of white calcite.* *Band of yellowish brown mudstone.* |
| | | 15.00 | | 50 (25 for 85mm/50 for 245mm) | | | | *Band of white calcite.* |
| | | 15.00 - 16.50 | C | | | | | *Band of pinkish white calcite.* |
| | | 16.50 - 18.00 | C | | 15.70 | -7.08 | | Very strong dark grey LIMESTONE with yellowish brown staining and occasional 5-10mm veins of calcite. Fractures closely spaced 0-20° smooth planar and 80-90° vertical closed planar. *Band of dark grey mudstone.* |
| | | 18.00 - 19.50 | C | | 17.10 | -8.48 | | Very strong bluish grey LIMESTONE with dark orange staining and very frequent 5mm veins of calcite, becoming less frequent with depth. Fractures extremely closely to closely spaced 0-20° rough planar and widely 30-40° smooth undulating. |
| | | 19.50 - 21.00 | C | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 9.14m with Rotary Core to 25.50m begl.

AGS

# Borehole Log

Borehole No. **BH04**

Sheet 3 of 3

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311099.00 - 167403.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.62 | Scale 1:50 |
| Client: WEPCO | | Dates: 18/10/2023 - 20/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | | | | | | | *Band of reddish brown mudstone.* |
| | | | | | | | | *Band of pinkish white calcite.* |
| | | 21.00 - 22.50 | C | | | | | *Band of yellowish brown mudstone with calcite nodules.* |
| | | | | | 21.20 | -12.58 | | Very strong reddish brown and grey banded LIMESTONE with occasional 5mm veins of calcite and orange staining. Fractures closely to very widely spaced 10-20° rough open to closed planar and very widely spaced 30-40° smooth open planar. |
| | | 22.50 - 24.00 | C | | | | | |
| | | | | | | | | *band of dark grey mudstone.* |
| | | 24.00 - 25.50 | C | | | | | |
| | | | | | 24.20 | -15.58 | | Very strong grey LIMESTONE with orange staining and occasional bands of pinkish white calcite and dark grey mudstone. Fractures 0-20° closely spaced smooth open planar |
| | | | | | 25.50 | -16.88 | | End of borehole at 25.50 m |

21 22 23 24 25 26 27 28 29 30

Remarks

1. Cable Percussion to 9.14m with Rotary Core to 25.50m begl.

AGS

# Rotary Core Log

Borehole No. **BH04**

Sheet 1 of 12

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311099.00 - 167403.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.62 | Scale 1:50 |
| Client: WEPCO | | Dates: 18/10/2023 - 20/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.20 - 1.65 | B | | | | | | | MADE GROUND comprising black brown sandy gravelly clayey fill. Sand is fine to coarse, gravel is fine to coarse subangular of brick, concrete, limestone, flint and mudstone. |
| | | 2.00 - 2.45 | B | | | | | | | |
| | | 3.00 - 3.45 | B | | | | 3.00 | 5.62 | | |
| | | | | | | | | | | Possible MADE GROUND comprising reworked blue grey sandy CLAY. Sand is fine to coarse. |
| | | 4.00 - 4.45 | B | | | | 4.00 | 4.62 | | |
| | | 5.00 - 5.45 | B | | | | | | | Very soft blue grey SILT with occasional organic partings. |
| | | 6.00 - 6.45 | B | | | | | | | |
| | ▼ | 7.00 - 7.45 | B | | | | 6.80 | 1.82 | | Stiff wet blue grey SILT with occasional gravels of Limestone. Gravels are fine to coarse, angular to subangular. |
| | | 8.00 - 8.45 | B | | | | 8.00 | 0.62 | | Very weak weathered LIMESTONE. Recovered as gravels and cobbles which are fine to coarse, angular to subangular. |
| | | ~~9.00 - 10.50~~ | C | | | | 9.00 | -0.38 | | |
| | | 9.00 - 10.50 | | 50 | 21 | 9 | | | | Very strong grey LIMESTONE with yellowish brown staining and frequent bands of non-intact limestone. Fractures 0-20° very closely to widely spaced rough open planar. |
| | | | | | | | | | | Continued on next sheet |

Remarks

1. Cable Percussion to 9.14m with Rotary Core to 25.50m begl.

# Rotary Core Log

Borehole No. **BH04**

Sheet 2 of 12

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311099.00 - 167403.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.62 | Scale 1:50 |
| Client: WEPCO | | Dates: 18/10/2023 - 20/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ~~10.50 - 12.00~~ | C | | | | | | | |
| | | 10.50 - 12.00 | | 80 | 61 | 17 | | | | |
| | | ~~12.00 - 13.50~~ | C | | | | 12.00 | -3.38 | | Very strong yellowish brown and dark grey mottled with dark orange staining and occasional 5-15m veins of calcite. Fractures closely to widely spaced 10-30° rough open planar, |
| | | 12.00 - 13.50 | | 88 | 87 | 28 | | | | *Band of pinkish white calcite.* |
| | | ~~13.50 - 15.00~~ | C | | | | 13.50 | -4.88 | | Very strong yellowish brown mottled dark grey LIMESTONE. Fractures 0-20° very closely to closely spaced rough open undulating/planar and 50-60° very widely spaced rough open planar. |
| | | 13.50 - 15.00 | | 80 | 73 | 10 | | | | *Band of white calcite.* *Band of yellowish brown mudstone.* |
| | | ~~15.00 - 16.50~~ | C | | | | | | | *Band of white calcite.* |
| | | 15.00 - 16.50 | | 90 | 83 | 11 | 15.70 | -7.08 | | *Band of pinkish white calcite.* Very strong dark grey LIMESTONE with yellowish brown staining and occasional 5-10mm veins of calcite. Fractures closely spaced 0-20° smooth planar and 80-90° vertical closed planar. |
| | | ~~16.50 - 18.00~~ | C | | | | | | | *Band of dark grey mudstone.* |
| | | 16.50 - 18.00 | | 90 | 67 | 33 | 17.10 | -8.48 | | Very strong bluish grey LIMESTONE with dark orange staining and very frequent 5mm veins of calcite, becoming less frequent with depth. Fractures extremely closely to closely spaced 0-20° rough planar and widely 30-40° smooth undulating. |
| | | ~~18.00 - 19.50~~ | C | | | | | | | |
| | | 18.00 - 19.50 | | 97 | 93 | 15 | | | | |
| | | ~~19.50 - 21.00~~ | C | | | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 9.14m with Rotary Core to 25.50m begl.

# Rotary Core Log

Borehole No. **BH04**

Sheet 3 of 12

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311099.00 - 167403.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 8.62 | Scale 1:50 |
| Client: WEPCO | | Dates: 18/10/2023 - 20/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 19.50 - 21.00 | | 94 | 80 | 36 | | | | *Band of reddish brown mudstone.* |
| | | ~~21.00 - 22.50~~ | C | | | | | | | *Band of pinkish white calcite.* |
| | | 21.00 - 22.50 | | 94 | 94 | 61 | | | | *Band of yellowish brown mudstone with calcite nodules.* |
| | | ~~22.50 - 24.00~~ | C | | | | 21.20 | -12.58 | | Very strong reddish brown and grey banded LIMESTONE with occasional 5mm veins of calcite and orange staining. Fractures closely to very widely spaced 10-20° rough open to closed planar and very widely spaced 30-40° smooth open planar. |
| | | 22.50 - 24.00 | | 100 | 100 | 73 | | | | *band of dark grey mudstone.* |
| | | ~~24.00 - 25.50~~ | C | | | | | | | |
| | | 24.00 - 25.50 | | 97 | 65 | 37 | 24.20 | -15.58 | | Very strong grey LIMESTONE with orange staining and occasional bands of pinkish white calcite and dark grey mudstone. Fractures 0-20° closely spaced smooth open planar |
| | | | | | | | 25.50 | -16.88 | | End of borehole at 25.50 m |

21 22 23 24 25 26 27 28 29 30

Continued on next sheet

Remarks

1. Cable Percussion to 9.14m with Rotary Core to 25.50m begl.

AGS

# Borehole Log

Borehole No. **BH06**

Sheet 1 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 1.20<br>1.20 - 1.65 | B | N=26 (3,4/6,6,7,7) | | | | MADE GROUND comprising black brown sandy gravelly clayey fill. Sand is fine to coarse, gravel is fine to coarse angular to subangular brick, concrete, mudstone and limestone, |
| | | 2.00<br>2.00 - 2.45 | B | N=25 (4,4/7,6,6,6) | | | | |
| | | 3.00<br>3.00 - 3.45 | B | N=6 (1,1/2,2,1,1) | 3.00 | 6.18 | | Wet very soft grey brown SILT with occasional organic partings. |
| | | 4.00<br>4.00 - 4.45 | B | N=3 (1,1/1,0,1,1) | | | | |
| | ▼ | 5.00<br>5.00 - 5.45 | B | N=5 (2,2/2,1,1,1) | | | | |
| | | 6.00<br>6.00 - 6.45 | B | N=8 (2,3/2,2,2,2) | | | | |
| | | 7.00<br>7.00 - 7.45 | B | N=4 (1,1/1,1,1,1) | | | | |
| | | 8.00<br>8.00 - 8.45 | B | N=10 (1,1/2,3,3,2) | | | | |
| | | 9.00<br>9.00 - 9.45 | B | N=8 (2,2/2,2,2,2) | | | | |
| | | 10.00 | | N=15 (3,2/4,4,3,4) | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

# Borehole Log

Borehole No. **BH06**

Sheet 2 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description | |
|---|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | | |
| | | 10.00 - 10.45 | B | | | | | | |
| | | 11.00 | | N=14 (3,3/3,4,3,4) | | | | | 11 |
| | | 11.00 - 11.45 | B | | | | | | |
| | | | | | 11.50 | -2.32 | | Medium dense yellow brown SAND and GRAVELS. Sand is fine to coarse, gravel is fine to coarse angular to subangular flint, limestone and mudstone. | |
| | | 12.00 | | N=8 (1,2/2,2,2,2) | | | | | 12 |
| | | 12.00 - 12.45 | B | | | | | | |
| | | 13.00 | | N=16 (3,4/4,4,4,4) | | | | | 13 |
| | | 13.00 - 13.45 | B | | | | | | |
| | | 14.00 | | N=17 (4,6/5,4,4,4) | | | | | 14 |
| | | 14.00 - 14.45 | B | | | | | | |
| | | 15.00 | | N=4 (1,1/1,1,1,1) | 15.00 | -5.82 | | Soft blue grey SILT. | 15 |
| | | 15.00 - 15.45 | B | | | | | | |
| | | 16.00 | | N=4 (2,2/1,1,1,1) | | | | | 16 |
| | | 16.00 - 16.45 | B | | | | | | |
| | | 17.00 | | N=11 (1,2/2,3,3,3) | | | | | 17 |
| | | 17.00 - 17.45 | B | | | | | | |
| | | 18.00 | | N=10 (2,2/3,2,3,2) | | | | | 18 |
| | | 18.00 - 18.45 | B | | | | | | |
| | | 19.00 | | N=13 (2,2/3,3,4,3) | | | | | 19 |
| | | 19.00 - 19.45 | B | | | | | | |
| | | 20.00 | | 50 (10,12/24,26,,) | 20.00 | -10.82 | | | 20 |

Continued on next sheet

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

AGS

# Borehole Log

Borehole No. **BH06**

Sheet 3 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type CP |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 20.00 - 20.30 | B | | | | | Very weak weathered LIMESTONE. Recovered as gravels and cobbles of Limestone. Gravels and Cobbles are fine to coarse, angular to subrounded. |
| | ▼ | 21.00 - 21.75 | C | | | | | |
| | | 22.50 | | 50 (25 for 80mm/50 for 275mm) | 22.50 | -13.32 | | |
| | | 22.50 - 24.00 | C | | | | | Very strong reddish brown mottled grey LIMESTONE with alternating bands of intact and non-intact limestone. |
| | | 24.00 - 25.50 | C | | | | | |
| | | | | | 24.50 | -15.32 | | Very strong grey and reddish brown mottled LIMESTONE with orange staining. Fractures very closely to widely spaced 0-20° rough open planar and 70-80° rough open planar. |
| | | | | | | | | *Band of white calcite.* |
| | | 25.50 - 27.00 | C | | | | | |
| | | | | | 26.10 | -16.92 | | Very strong dark blue and dark grey mottled LIMESTONE with orange staining. Fractures widely spaced 0-20° smooth planar, 70-90° smooth planar and widely to very widely spaced 50-60° rough open undulating. |
| | | 27.00 - 28.50 | C | | | | | |
| | | 27.75 | C | | | | | |
| | | 28.50 - 30.00 | C | | | | | |
| | | 30.00 - 31.50 | C | | 30.00 | -20.82 | | *Band of pinkish white calcite.* |

Continued on next sheet

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

# Borehole Log

Borehole No. **BH06**

Sheet 4 of 4

| | | | | | |
|---|---|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: | 311177.00 - 167395.00 | Hole Type CP |
| Location: | Ffordd Y Mileniwm, Barry | | Level: | 9.18 | Scale 1:50 |
| Client: | WEPCO | | Dates: | 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | Depth (m) | Type | Results | | | | |
| | | 31.50 - 33.00 | C | | | | | Very strong grey and reddish brown LIMESTONE. Fractures 0-20° very closely to widely spaced rough open to closed planar. |
| | | 33.00 - 33.50 | C | | 32.40 | -23.22 | | Very strong reddish brown mottled grey with occasional 5-15mm calcite veins. Fractures are very closely to widely spaced are 0-10° and very widely spaced 30-40° smooth undulating |
| | | | | | 34.50 | -25.32 | | End of borehole at 34.50 m |

31 32 33 34 35 36 37 38 39 40

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

# Rotary Core Log

Borehole No. **BH06**

Sheet 1 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.20 - 1.65 | B | | | | | | | MADE GROUND comprising black brown sandy gravelly clayey fill. Sand is fine to coarse, gravel is fine to coarse angular to subangular brick, concrete, mudstone and limestone, |
| | | 2.00 - 2.45 | B | | | | | | | |
| | | 3.00 - 3.45 | B | | | | 3.00 | 6.18 | | |
| | | 4.00 - 4.45 | B | | | | | | | Wet very soft grey brown SILT with occasional organic partings. |
| | ▼ | 5.00 - 5.45 | B | | | | | | | |
| | | 6.00 - 6.45 | B | | | | | | | |
| | | 7.00 - 7.45 | B | | | | | | | |
| | | 8.00 - 8.45 | B | | | | | | | |
| | | 9.00 - 9.45 | B | | | | | | | |
| | | 10.00 - 10.45 | B | | | | | | | |

Continued on next sheet

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

# Rotary Core Log

Borehole No. **BH06**

Sheet 2 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 11.00 - 11.45 | B | | | | | | | |
| | | | | | | | 11.50 | -2.32 | | |
| | | 12.00 - 12.45 | B | | | | | | | Medium dense yellow brown SAND and GRAVELS. Sand is fine to coarse, gravel is fine to coarse angular to subangular flint, limestone and mudstone. |
| | | 13.00 - 13.45 | B | | | | | | | |
| | | 14.00 - 14.45 | B | | | | | | | |
| | | 15.00 - 15.45 | B | | | | 15.00 | -5.82 | | |
| | | 16.00 - 16.45 | B | | | | | | | Soft blue grey SILT. |
| | | 17.00 - 17.45 | B | | | | | | | |
| | | 18.00 - 18.45 | B | | | | | | | |
| | | 19.00 - 19.45 | B | | | | | | | |
| | | 20.00 - 20.30 | B | | | | 20.00 | -10.82 | | |

Continued on next sheet

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

# Rotary Core Log

Borehole No. **BH06**

Sheet 3 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | ▼ | 21.00 - 21.75 | C | | | | | | | Very weak weathered LIMESTONE. Recovered as gravels and cobbles of Limestone. Gravels and Cobbles are fine to coarse, angular to subrounded. |
| | | ~~22.50 - 24.00~~ | C | | | | 22.50 | -13.32 | | |
| | | 22.50 - 24.00 | | 100 | 28 | 15 | | | | Very strong reddish brown mottled grey LIMESTONE with alternating bands of intact and non-intact limestone. |
| | | ~~24.00 - 25.50~~ | C | | | | | | | |
| | | 24.00 - 25.50 | | 60 | 55 | 8 | 24.50 | -15.32 | | Very strong grey and reddish brown mottled LIMESTONE with orange staining. Fractures very closely to widely spaced 0-20° rough open planar and 70-80° rough open planar. |
| | | ~~25.50 - 27.00~~ | C | | | | | | | *Band of white calcite.* |
| | | 25.50 - 27.00 | | 60 | 57 | 7 | 26.10 | -16.92 | | Very strong dark blue and dark grey mottled LIMESTONE with orange staining. Fractures widely spaced 0-20° smooth planar, 70-90° smooth planar and widely to very widely spaced 50-60° rough open undulating. |
| | | ~~27.00 - 28.50~~ | C | | | | | | | |
| | | 27.00 - 28.50 | 6 | 97 | 90 | 42 | | | | |
| | | ~~28.50 - 30.00~~ | C | | | | | | | |
| | | 28.50 - 30.00 | 7 | 98 | 75 | 25 | | | | |
| | | ~~30.00 - 31.50~~ | C | | | | 30.00 | -20.82 | | *Band of pinkish white calcite.* |

Continued on next sheet

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

# Rotary Core Log

Borehole No. **BH06**

Sheet 4 of 4

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311177.00 - 167395.00 | Hole Type RC |
| Location: Ffordd Y Mileniwm, Barry | | Level: 9.18 | Scale 1:50 |
| Client: WEPCO | | Dates: 06/10/2023 - 13/10/2023 | Logged By LH+LEJ |

| Well | Water Strikes | Depth (m) | Type / FI | Coring TCR | Coring SCR | Coring RQD | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 30.00 - 31.50 | 4 | 71 | 69 | 59 | | | | Very strong grey and reddish brown LIMESTONE. Fractures 0-20° very closely to widely spaced rough open to closed planar. |
| | | ~~31.50 - 33.00~~ | ~~C~~ | | | | | | | |
| | | 31.50 - 33.00 | 2.6 | 100 | 100 | 85 | 32.40 | -23.22 | | Very strong reddish brown mottled grey with occasional 5-15mm calcite veins. Fractures are very closely to widely spaced are 0-10° and very widely spaced 30-40° smooth undulating |
| | | ~~33.00 - 33.50~~ | ~~C~~ | | | | | | | |
| | | 33.00 - 34.50 | 5 | 98 | 97 | 43 | | | | |
| | | | | | | | 34.50 | -25.32 | | End of borehole at 34.50 m |

31 32 33 34 35 36 37 38 39 40

Remarks

1. Cable Percussion to 21.15m with Rotary Core to 34.5m begl. whilst coring from 21m to 34.5m

2. Extreme groundwater encountered

AGS

# Trial Pit Log

Trialpit No **TP03** Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: 311035.00 - 167374.00 Level: 8.34 |
| Location: | Ffordd Y Mileniwm, Barry | Dimensions (m): Depth 4.00 | Date 20/09/2023 |
| Client: | WEPCO | | Scale 1:25 Logged LAB |

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.15 - 0.30 | TJ | | 0.15 | 8.19 | | MADE GROUND - Asphalt concrete. |
| | 0.15 - 0.30 | TJV | | | | | |
| | | | | 0.30 | 8.04 | | MADE GROUND - Sub base material (Type 1). |
| | 0.50 - 0.60 | B | | | | | MADE GROUND - Dark brown sandy gravelly clay with occasional cobbles. Sand is fine to coarse. Gravel is fine to medium angular to sub angular of bricks, concrete. Cobbles are angular of concrete and brick. |
| | 0.60 - 0.80 | B | | | | | |
| | 0.70 - 1.00 | B | | 0.70 | 7.64 | | MADE GROUND - Brown sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to medium angular to sub angular of mudstone, siltstone and limestone (Reworked). |
| | 1.00 - 1.20 | TJ | | | | | |
| | 1.20 - 1.40 | TJV | | | | | |
| | 1.50 - 1.70 | B | | | | | |
| | 1.70 - 1.90 | B | | | | | |
| | 1.80 - 2.10 | B | | | | | |
| | 2.00 - 2.20 | TJ | | | | | |
| | 2.20 - 2.40 | TJV | | | | | |
| | 2.50 - 2.70 | B | | | | | |
| | 2.70 - 2.90 | B | | | | | |
| | 2.90 - 3.10 | B | | | | | |
| | 3.00 - 3.10 | TJ | | | | | |
| | 3.20 | TJV | | | | | *...slight hydrocarbon odour and staining between 3.20m to 3.60m depth.* |
| ▼ | 3.50 - 3.70 | B | | | | | |
| | 3.80 - 4.00 | B | | | | | |
| | 4.00 - 4.10 | TJ | | 4.00 | 4.34 | | End of pit at 4.00 m |
| | 4.00 - 4.10 | TJV | | | | | |

Remarks: 1. Slight groundwater was encountered at 3.60m depth during the excavation process.
2. Trial pit was terminated at 4.00m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

# Trial Pit Log

Trialpit No **TP04** Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: 311021.00 - 167370.00 Level: 8.51 |
| Location: | Ffordd Y Mileniwm, Barry | Dimensions (m): Depth 4.00 | Date 20/09/2023 |
| Client: | WEPCO | | Scale 1:25 Logged LAB |

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.15 - 0.30 | TJ | | 0.20 | 8.31 | | MADE GROUND - Sub base material (Type 1). |
| | 0.15 - 0.30 | TJV | | | | | MADE GROUND - Brown sandy gravelly clay. Sand is fine to coarse. Gravel is fine to coarse angular to sub angular of mudstone, siltstone and limestone. |
| | 0.50 - 0.60 | B | | | | | |
| | 0.60 - 0.80 | B | | | | | |
| | 0.70 - 1.00 | B | | | | | |
| | 1.00 - 1.20 | TJ | | | | | |
| | 1.20 - 1.40 | TJV | | | | | |
| | 1.50 - 1.70 | B | | | | | |
| | 1.70 - 1.90 | B | | | | | |
| | 1.80 - 2.10 | B | | 1.90 | 6.61 | | |
| | 2.00 - 2.20 | TJ | | | | | Soft to firm brown grey sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to medium angular to sub angular of limestone, mudstone and siltstone. |
| | 2.20 - 2.40 | TJV | | | | | |
| | 2.50 - 2.70 | B | | | | | |
| | 2.70 - 2.90 | B | | | | | |
| | 2.90 - 3.10 | B | | | | | |
| | 3.00 - 3.10 | TJ | | | | | |
| | 3.20 | TJV | | | | | |
| | 3.50 - 3.70 | B | | 3.40 | 5.11 | | Medium dense black brown slightly clayey SAND and GRAVEL. Sand is fine to coarse. Gravel if fine to medium angular to sub angular mudstone and shale. |
| ▼ | 3.80 - 4.00 | B | | | | | |
| | 4.00 - 4.10 | TJ | | 4.00 | 4.51 | | End of pit at 4.00 m |
| | 4.00 - 4.10 | TJV | | | | | |

Remarks: 1. Slight groundwater was encountered at 3.90m depth during the excavation process.
2. Trial pit was terminated at 4.00m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

AGS

# Trial Pit Log

hsp consulting

Trialpit No **TP05** Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311139.00 - 167361.00<br>Level: 9.01 | Date 18/09/2023 |
| Location: Ffordd Y Mileniwm, Barry | | Dimensions (m): Depth 3.10 | Scale 1:25 |
| Client: WEPCO | | | Logged DRS |

| Water Strike | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | Depth | Type | Results | | | | |
| | 0.15 | TJV | | | | | MADE GROUND - scrub overlying brown sandy slightly gravelly clayey topsoil. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of brick fragments, concrete, asphalt concrete, sandstone and mudstone. |
| | 0.25 | TJ | | 0.35 | 8.66 | | |
| | 0.50 | B | | | | | MADE GROUND - dark brown sandy very gravelly clay with occasional cobble content. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of bricks, brick fragments, concrete, asphalt concrete, sandstone and mudstone. Cobbles are sub angular of concrete. |
| | 0.60 | B | | | | | |
| | 0.70 | B | | | | | |
| | 1.00 | TJ | | 1.00 | 8.01 | | MADE GROUND - black plastic membrane. |
| | 1.10 | TJV | | 1.01 | 8.00 | | MAADE GROUND - dark brown sandy gravelly clay with occasional cobble content. Sand is fine to coarse. Gravel is fine to coarse angular to sub angular of bricks, brick fragments, concrete, plastic, timber, asphalt concrete. Cobbles are sub angular of concrete. |
| | 1.50 | B | | | | | |
| | 1.60 | B | | | | | |
| | 1.70 | B | | | | | |
| | 2.00 | TJV | | 1.90 | 7.11 | | Soft brown mottled grey orange sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub angular to sub rounded of mudstone and sandstone. |
| | 2.20 - 2.30 | TJ | | | | | |
| | 2.50 | B | | | | | |
| | 2.60 | B | | | | | |
| | 2.70 | B | | | | | |
| | 3.00 | TJV | | | | | |
| | 3.10 | TJ | | 3.10 | 5.91 | | End of pit at 3.10 m |

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit was terminated at 3.10m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

AGS

# Trial Pit Log

Trialpit No **TP06**

Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: 311126.00 - 167387.00<br>Level: 9.39 |
| Location: | Ffordd Y Mileniwm, Barry | Dimensions (m): Depth 3.00 | Date 18/09/2023<br>Scale 1:25 |
| Client: | WEPCO | | Logged DRS |

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.15 | TJV | | | | | MADE GROUND - scrub overlying brown sandy slightly gravelly clayey topsoil. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of brick fragments, concrete, asphalt concrete, sandstone and mudstone. |
| | 0.25 | TJ | | 0.30 | 9.09 | | |
| | 0.50 | B | | | | | MADE GROUND - dark brown sandy gravelly clay with occasional cobble content. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of bricks, brick fragments, concrete, asphalt concrete, clinker. Cobbles are angular of bricks and concrete. |
| | 0.60 | B | | | | | |
| | 0.70 | B | | | | | |
| | 1.00 | TJV | | | | | |
| | 1.10 | TJ | | | | | |
| | 1.50 | B | | | | | |
| | 1.60 | B | | | | | |
| | 1.70 | B | | | | | |
| | 2.00 | TJV | | | | | |
| | 2.10 | TJ | | | | | |
| | 2.50 | B | | 2.50 | 6.89 | | Soft brown mottled yellowish grey brown sandy very gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of sandstone, mudstone and occasional limestone. |
| | 2.60 | B | | | | | |
| | 2.70 | B | | | | | |
| | 2.80 | B | | | | | |
| | | | | 3.00 | 6.39 | | End of pit at 3.00 m |

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit was terminated at 3.00m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

# Trial Pit Log

hsp consulting

Trialpit No **TP07** Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: Barry Waterfront | Project No. C3297 | Co-ords: 311153.00 - 167410.00<br>Level: 9.13 | Date 20/09/2023 |
| Location: Ffordd Y Mileniwm, Barry | | Dimensions (m): Depth 3.00 | Scale 1:25 |
| Client: WEPCO | | | Logged LAB |

| Water Strike | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | Depth | Type | Results | | | | |
| | 0.15 - 0.30 | TJV | | 0.20 | 8.93 | | MADE GROUND - scrub overlying brown sandy slightly gravelly clayey topsoil. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of brick fragments, concrete, asphalt concrete, sandstone and mudstone. |
| | 0.20 - 0.30 | TJ | | | | | |
| | 0.50 - 0.70 | B | | | | | MADE GROUND - dark brown sandy gravelly clay with occasional cobbles. Sand is fine to coarse. Gravel is fine to medium angular to sub angular of bricks, concrete. Cobbles are angular of concrete and brick. |
| | 0.60 - 0.80 | B | | | | | |
| | 0.70 - 1.00 | B | | | | | |
| | 1.00 - 1.20 | TJ | | | | | |
| | 1.20 - 1.40 | TJV | | | | | |
| | 1.50 - 1.70 | B | | | | | |
| | 1.70 - 1.90 | B | | | | | |
| | 1.80 - 2.10 | B | | | | | |
| | 2.00 - 2.20 | TJ | | | | | |
| | 2.20 - 2.40 | TJV | | 2.20 | 6.93 | | Firm brown yellow slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium rounded to sub rounded of sandstone and mudstone. |
| | 2.50 - 2.70 | B | | | | | |
| | 2.70 - 2.90 | B | | | | | |
| | 2.90 - 3.10 | B | | | | | |
| | 3.00 - 3.10 | TJ | | 3.00 | 6.13 | | End of pit at 3.00 m |
| | 3.00 - 3.20 | TJV | | | | | |

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit was terminated at 3.00m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

AGS

# Trial Pit Log

Trialpit No **TP08**

Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: 311062.00 - 167385.00<br>Level: 8.25 |
| Location: | Ffordd Y Mileniwm, Barry | Dimensions (m): Depth 3.00 | Date 20/09/2023<br>Scale 1:25 |
| Client: | WEPCO | | Logged DRS |

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.30 | 7.95 | | MADE GROUND - compacted layer of stone. Recovered as a gravel. Gravel is sub angular of limestone. |
| | 0.50 | B | | | | | MADE GROUND - reddish brown sandy gravelly clay with occasional cobble content. Sand is fine to coarse. Gravel is sub angular to sub rounded of bricks, brick fragments, concrete, sandstone and mudstone with occasional limestone. Cobbles are angular of brick and concrete. |
| | 0.60 | B | | | | | |
| | 0.70 | B | | | | | |
| | | | | 0.90 | 7.35 | | |
| | 1.00 | TJ | | | | | MADE GROUND - yellowish grey brown sandy gravelly clay with occasional cobble content. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of bricks, brick fragments, concrete, timber fragments, metal sheeting, sandstone and mudstone with occasional limestone. Cobbles are angular of concrete. |
| | 1.20 | TJV | | | | | |
| | 1.60 | B | | | | | |
| | 1.70 | B | | | | | |
| | 1.80 | B | | | | | |
| | 2.10 | TJ | | | | | |
| | 2.20 | TJV | | | | | |
| | 2.50 | B | | | | | |
| | 2.60 | B | | | | | |
| | 2.70 | B | | | | | |
| | 2.90 | TJ | | | | | |
| | 3.00 | TJV | | 3.00 | 5.25 | | End of pit at 3.00 m |

Remarks:
1. No groundwater was encountered during the excavation process.
2. Trial pit was terminated at 3.00m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

# Trial Pit Log

Trialpit No **TP09** Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: 311028.00 - 167400.00 Level: 8.89 |
| Location: | Ffordd Y Mileniwm, Barry | Dimensions (m): Depth 3.00 | Date 19/09/2023 |
| Client: | WEPCO | | Scale 1:25 Logged DRS |

| Water Strike | Samples and In Situ Testing | | | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | Depth | Type | Results | | | | |
| | 0.15 | TJ | | 0.10 | 8.79 | | MADE GRROUND - asphalt concrete. |
| | 0.20 | TJV | | | | | MADE GROUND - reddish sub base material. Recovered as an gravel. Gravel is fine to coarse sub angular limestone. |
| | | | | 0.40 | 8.49 | | |
| | 0.50 | B | | | | | MADE GROUND - light yellowish grey sandy gravelly CLAY with abundant cobble content. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of mudstone and sandstone with occasional limestone. Cobbles are sub rounded of mudstone and sandstone (Possible Reworked). |
| | 0.50 | C | | | | | |
| | 0.60 | B | | | | | |
| | 0.70 | B | | | | | |
| | 1.00 | TJ | | | | | |
| | 1.10 | TJV | | | | | |
| | 1.50 | B | | | | | |
| | 1.60 | B | | | | | |
| | | | | 1.90 | 6.99 | | |
| | 2.00 | TJ | | | | | MADE GROUND - yellowish grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse of sandstone, mudstone, shale and flint. |
| | 2.10 | TJV | | | | | |
| | 2.50 | B | | 2.50 | 6.39 | | Firm dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub angular of shale and flint. |
| | 2.60 | B | | | | | |
| | 2.90 | TJ | | | | | |
| | 3.00 | TJV | | 3.00 | 5.89 | | End of pit at 3.00 m |

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit was terminated at 3.00m depth and backfilled with arisings.

Stability: Sides unstable within the made ground.

# Trial Pit Log

hsp consulting

Trialpit No **TP10** Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Barry Waterfront | Project No. C3297 | Co-ords: 311119.00 - 167411.00<br>Level: 8.61 |
| Location: | Ffordd Y Mileniwm, Barry | Dimensions (m): Depth 3.00 | Date 19/09/2023<br>Scale 1:25 |
| Client: | WEPCO | | Logged DRS |

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|
| | 0.15 | TJ | | 0.10 | 8.51 | | MADE GROUND - scrub overlying brown sandy slightly gravelly clayey topsoil. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of brick fragments, concrete, asphalt concrete, sandstone and mudstone. |
| | 0.25 | TJV | | | | | |
| | 0.50 | B | | | | | MADE GROUND - dark brown sandy gravelly clay with occasional cobbles. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of bricks, brick fragments, concrete, asphalt concrete, plastic, fabric sandstone and mudstone. Cobbles are angular of brick and concrete. |
| | 0.60 | B | | | | | |
| | 0.70 | B | | | | | |
| | 1.00 | TJV | | | | | |
| | 1.15 | TJ | | 1.10 | 7.51 | | MADE GROUND - yellowish grey brown sandy gravelly clay with occasional cobble content. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of bricks, brick fragments, concrete, plastic, timber, sandstone and mudstone with occasional limestone. |
| | 1.60 | B | | | | | |
| | 1.70 | B | | | | | |
| | 1.80 | B | | | | | |
| | 2.10 | TJ | | | | | |
| | 2.20 | TJV | | | | | |
| | 2.50 | B | | 2.50 | 6.11 | | Soft brown mottled yellowish grey brown sandy very gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse sub angular to sub rounded of sandstone, mudstone and occasional limestone. |
| | 2.60 | B | | | | | |
| | 2.70 | B | | | | | |
| | 2.90 | TJ | | | | | |
| | 3.00 | TJV | | 3.00 | 5.61 | | End of pit at 3.00 m |

1 2 3 4 5

Remarks: 1. No groundwater was encountered during the excavation process.
2. Trial pit was terminated at 3.00m depth and backfilled with arisings.

Stability: Sides unstable within made ground.

AGS

# Appendix IV