Gourock Pierhead Regeneration Ground Investigation



Interpretative Report

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1.0 Introduction and Objectives

As part of the regeneration of the Gourock Pierhead area, proposals are in place for a variety of new and upgraded facilities. The plans include the construction of a quay wall/ revetment on the present shore line, the development of an area of currently unoccupied land with commercial properties and the upgrading of existing car parking facilities both on Kempock Street and around the railway station. In order to satisfy regulatory authorities and to obtain information for the detailed design of the proposals, a geotechnical and geo-environmental ground investigation has been carried out across the area.

In June 2010 a desk study report was produced by W A Fairhurst & Partners (Fairhurst) for the Gourock Pierhead site and this represented the first phase of the geotechnical and geoenvironmental review. An intrusive ground investigation was then carried out between September and December 2011 in order to obtain factual information on the geotechnical properties of the ground and the nature of any contamination present at the site. This report will present an interpretation of the ground investigation data and will provide geotechnical parameters for use in the design process. An environmental risk assessment will also be carried out to establish if there are any issues associated with contamination at the site. Outline recommendations will be given to address any identified development constraints.

2.0 **Previous Reports**

2.1 Desk Study Information

In June 2010 a geotechnical and geo-environmental desk study report (Reference 1) was produced by Fairhurst to assist in the masterplanning stage of the project. Although at that time the development proposals were not known, the area of the site addressed by the desk study was the same as the area currently being investigated. The site location is given on drawing no 87097/REP/9001 in Appendix 1.

The site area includes at its western end, a car park which runs parallel to Kempock Street. This is accessed from Kempock Street by a ramp that is retained by a wall on its seaward side. In the central part of the site is a natural shingle beach with larger angular blocks placed higher on the shore line. In the east of the site is Gourock Railway Station with associated car parking and an area of largely flat, unoccupied and grass covered ground.

The desk study report used published geological maps to determine that the superficial geology beneath the site was expected to be raised marine deposits of sand and gravel over much of the site. Both Kempock Street and the railway car parks were noted to be underlain by made ground indicating that they may have been constructed on reclaimed land. The bedrock in the area was determined to be a mixture of sedimentary sandstones and siltstones and igneous feldspathic trachyte. The geological map showed the differing rock types to be separated by a number of faults.

The rock types present in Gourock are non-coal bearing strata and underground mining is therefore not a concern, however the trachyte is known to have been locally extracted in the area. An old quarry located around 600m south of the site is now noted to be a local authority registered landfill.

A Landmark Envirocheck report was purchased for the site and historical map extracts were reviewed to establish if any potentially contaminative historical site uses were present in the vicinity of the site. A plan was produced to summarise the potential historical sources of contamination. This showed historical railway sidings through the current railway car park, reclaimed land across the Kempock Street and Railway car parks and two gas works approximately 60m south of the site. The landfill site 600m south of the site was also highlighted on the plan.

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The preliminary conceptual site model concluded that hardstanding and building footprints would effectively break the pathway to receptors and the only sensitive type of development with respect to contamination would be areas of reserved green space. A potential pollutant linkage could exist if the soils at any such locations were found to be contaminated because site users could then come into contact with the contamination through dermal contact, inhalation or ingestion.

3.0 Development Proposals

Development proposals are shown on Drawing No. 87097/REP/9002 in Appendix 1. The site can be conveniently split into four discrete areas based on the type of development that is intended for each. A summary of the principal development proposals' is given below:

- Kempock Street car park it is proposed to alter the layout of the existing car park to accommodate a carriageway on the southern side. The retaining wall adjacent to the access ramp will be replaced and other minor superficial improvements will be made including the introduction of raised planters.
- Shingle beach the new carriageway will be extended through the current beach area and a quay wall/ revetment will be constructed. It is possible that the Kempock Street car park will be extended into the western end of the current beach area.
- The layout of the railway car park will be altered and it will be extended to the south to provide additional car parking spaces. Localised soft landscaping areas will be introduced.
- Grassed area the currently unoccupied grassed area of ground is shown to be partially soft landscaping with around half of the zone indicated to be without any development proposals. It is understood, however that this area is intended for future commercial development.

4.0 Ground Investigation

A ground investigation was designed by Fairhurst and was carried out in two phases by BAM Ritchies. The first phase of the works included Kempock Street Car Park, the shingle beach and the grassed area and was carried out between 12th September and 29th October 2011. During this period there were days where no work was carried out due to unfavourable tide conditions preventing work from progressing on the beach. The investigation within the railway car park was subject to prior approval from Network Rail which delayed the commencement of works in this area. These works were therefore carried out as a second phase of ground investigation between 14th and 18th December 2011.

4.1 Site Works

In order to investigate potential constraints to each type of development proposed, the following intrusive investigation was scoped and carried out:

• 3 no. rotary open hole boreholes – on the shingle beach to determine the density profile of superficial soils and the position of rockhead

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- 3 no. cable percussion boreholes with rotary cored follow on on the grassed area proposed for commercial development, to investigate the geotechnical and contamination properties of superficial deposits and the condition of bedrock for a possible piled foundation solution
- 13 no. machine excavated trial pits 6 no. on the shingle beach to investigate the geotechnical nature of near surface deposits and to collect samples for contamination testing. 7 no. on the grassed area proposed for commercial development, to investigate the geotechnical and contamination properties of shallow superficial soils
- 20 no. window sample holes 1 no. on the proposed commercial land, 3 no. in Kempock Street car park and 16 no. in the railway car park to investigate the geotechnical nature of shallow soils whilst minimising the area requiring reinstatement
- 3 no. road pavement cores in Kempock Street car park to assess the condition of the existing road make up
- 15 no. Dynamic Cone Penetration tests 4 no. in Kempock Street car park (in hand dug inspection pits), 1 no. on the proposed commercial land and 10 no. in the railway car park to assess the engineering property of soils at possible road formation level.

A plan showing the location of exploratory holes is given on drawing no. 87097/REP/9003 in Appendix 1.

4.1.1 Variations to Site Works

Initially it had been proposed to carry out cable percussion boreholes on the beach with rotary open hole follow on, however due to the expected density of granular deposits there and the time restrictions associated with tidal variations, the cable percussion holes were cancelled in favour of rotary open hole drilling throughout the full depth.

Machine excavated trial pits were originally proposed of the two car parks, however it was recognised that this would cause greater disruption during the works and would require a larger area of asphalt reinstatement than the preferred window sample solution.

The Dynamic Cone Penetration (DCP) tests that were carried out in both the Kempock Street and railway car parks and on the proposed commercial site were originally intended to be California Bearing Ratio (CBR) tests. The TRL equation (Reference 2) was used to calculate the equivalent CBR value.

BH02 on the beach was moved to a new position slightly to the east of its original location. This was necessary as tidal variations made it impossible to drill the hole in its original location using the plant that was available for the task. Having reviewed historical map extracts, it is expected that ground conditions at the new position will be representative of those at the original location.

During the excavation of a hand pit to clear services at WS23, an obstruction was encountered. The exploratory hole had to be moved to the side to avoid the obstruction and was undertaken as WS23A.

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4.2 Laboratory Testing

Geotechnical laboratory tests were scheduled to characterise the ground and to obtain parameters for the design stage. In line with the preliminary qualitative risk assessment in the June 2010 Desk Study (reference 1); contamination testing was targeted at areas of possible soft landscaping in the proposed commercial development area and the railway car park. Testing required to satisfy the Water Regulations Advisory Scheme (WRAS) and the Building Research Establishment (BRE) were also carried out where water supply pipes or buried concrete respectively could be required. Additionally contamination testing was carried out on samples collected on the beach to assess the possible impact on the marine environment when soil is disturbed during construction works.

Laboratory testing results are presented in the BAM Ritchies factual report in Appendix 2.

4.2.1 Geotechnical Laboratory Testing

The following geotechnical laboratory testing was scheduled and carried out:

- 16 no. natural moisture content tests
- 11 no. plasticity index tests
- 28 no. particle size distribution (PSD) tests
- 7 no. organic matter tests
- 39 no. sulphate and pH tests
- 3 no. one dimensional consolidation tests
- 3 no. triaxial compression tests
- 2 no. uniaxial compressive strength (UCS) tests
- 7 no. point load tests

There were a small number of additional tests (2 no. compaction and 1 no. UCS) that were scheduled but could not be carried out because the samples were unsuitable.

4.2.2 Geo-Environmental Laboratory Testing

The following geo-environmental laboratory testing was scheduled and carried out:

- 22 no. metals suites
- 22 no. total petroleum hydrocarbons (TPH) suites
- 22 no. poly aromatic hydrocarbons (PAH) suites
- 22 no. poly chlorinated biphenols (PCB) suites
- 22 no. volatile organic carbon (VOC) suites
- 22 no. semi-volatile organic carbon (SVOC) suites

5.0 Ground Conditions

The ground descriptions below are based on the factual exploratory hole records from the recent ground investigation. The findings of the intrusive ground investigation are given in the BAM Ritchies factual report in Appendix 2.

5.1 Made Ground

Made ground was encountered in almost all exploratory holes across the site (with the exception of BH02) and was generally found to be granular in nature.

In Kempock Street carpark the made ground was typically gravel with a proportion of sand and less commonly clay. It was encountered for the full depth of the window samples (maximum 3.0m bgl) and was noted to include brick, concrete, ash and tarmac. Obstructions of concrete and brick were recorded at 2.4m in WS30 and at 2.0m in WS32.

On the beach the made ground was encountered to a maximum depth of 2.3m bgl and usually took the form of slightly silty, sandy gravel and cobbles. Foreign debris noted within the made ground in this area included shells, glass, brick, wood, blaes, pottery, cable and wire.

On the grassed area, made ground was recorded to a maximum depth of 4.6m bgl in BH04. The composition of the made ground in this area was a mixture of granular and cohesive material. In places the made ground was noted to be possible land reclamation deposits including reworked bedrock or beach deposits, however elsewhere it was noted to contain foreign debris including brick, concrete, clinker and slag. Black organic silt was also noted locally in TP12.

Made ground was the only material encountered in any of the exploratory holes undertaken in the Network Rail carpark. The made ground here was observed to be almost entirely granular in nature, but usually containing a silt or clay component. Occasionally the granular material was noted to be intermixed with cohesive soil typically described as soft to firm, reddish brown, sandy gravelly clay. In the few locations where the made ground was logged as clay, it was noted to contain significant quantities of sand and gravel. Other material in the made ground in this area included ash, cinders, brick, slag, timber, concrete, blaes and plastic. Obstructions were encountered in WS14, WS23 and WS25 at 2.65m, 0.6m and 2.5m respectively. In WS14 and WS25 the logs indicate that these are likely to be boulders. No comment was made on the nature of the obstruction in WS23.

5.2 Natural Deposits

Natural superficial soils were encountered in none of the window sample holes and in only two trial pits. However, all boreholes extended into natural superficial deposits.

5.2.1 Granular

On the beach, natural granular soils were encountered immediately beneath the made ground and are likely to represent raised marine or beach deposits. They are typically recorded as medium dense reddish brown or brown silty, gravelly fine to coarse sand, sometimes mixed with layers of sandy fine to coarse gravel. The gravel is noted to be of mixed lithologies but is sometimes described as dolerite, basalt or quartz.

The natural granular soils on the beach have been encountered from a minimum depth of 0.6m bgl and extend to a maximum recorded depth of 12.0m bgl where they give way to cohesive soils.

No natural granular material was recorded in the boreholes on the grassed area.

5.2.2 Cohesive

Natural cohesive soils were encountered beneath the granular soils on the beach and also immediately beneath made ground in the proposed commercial area. The cohesive soils have been consistently described in the exploratory hole logs as slightly sandy slightly gravelly clay and is likely to represent a deposit of glacial till. The till is usually stiff, becoming very stiff in BH01, however in BH02 the clay between 11m and 22m depth is recorded as being soft becoming very soft before giving way to very stiff clay at 22m. In BH03 the upper 1.1m of clay was also noted to be soft.

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5.3 Bedrock

Bedrock was encountered at 20.7m in BH01 and at 18.7m in BH03 on the shore but was not encountered within the 27.0m hole drilled at BH02. Both BH01 and BH03 continued by open hole drilling through 6.3m of rock. Rock was described as very hard red basalt with 1m of red sandstone recorded at rockhead in BH01.

Beneath the proposed commercial area, the rock was noted to be medium strong or strong, grey, medium grained trachyte. Some slight weathering was visible in fracture zones and two discontinuity sets were detailed – one sub horizontal, close to medium spaced and one sub vertical, medium to widely spaced. Discontinuities are noted to be rough, undulating and sometimes planar. In this area rockhead was encountered at depths ranging from 5.6m to 6.3m bgl and 6m of rock core was obtained from each borehole.

5.4 Road Pavement Cores

Three road pavement cores were obtained in Kempock Street car park. Each of these showed a 50mm thick tarmac wearing coarse underlain by a tarmac base coarse ranging from 70mm to 90mm thick. The stratum beneath this was described as grey angular coarse gravel and cobbles of basalt coated in a fine red dust. Underlying this was a granular material described as brown silty, very gravelly fine to coarse sand or brown sandy fine to coarse gravel.

5.5 Groundwater

Groundwater was encountered in a number of exploratory holes, however it should be noted that, particularly in the vicinity of the beach (BH01, TP01 - TP05) groundwater conditions could be subject to tidal variations.

A summary of groundwater strikes is given in table 1 below:

Exploratory Hole No.	Depth of Groundwater Strike	Description of Flow Rate
BH01	20.8m	None given
BH04	7.0m	None given
BH05	6.8m None giv	
TP01	0.4m	Strong inflow
TP02	0.3m	Seepage

Table 1: Summary of Groundwater Strikes

Exploratory Hole No.	Depth of Groundwater Strike	Description of Flow Rate	
TP03	0.1m	None given	
TP04	0.5m	Strong upweeling flow	
TP05	0.1m	Strong flow	
TP08	0.4m	Seepage	
TP10	0.3m	Seepage	
TP12	0.4m	Local seepage	

Almost all trial pits (except TP11 and TP13) were noted to be unstable, either locally or affecting all sides. In some cases, particularly on the shore, this may be related to the presence of groundwater within the pit, but even those pits that were recorded as being dry were often noted to have unstable sides.

Groundwater monitoring standpipes were installed in two boreholes on the grassed area that is proposed for future commercial development. The installations were installed through the full depth of made ground at each location. Six rounds of groundwater monitoring were undertaken over the 3 month period following installation of the standpipes. Results are given in Table 2 below:

	BH04	BH06
Depth of Installation	4.60m	3.90m
Visit 1: 25/10/2011	DRY	3.90m
Visit 2: 02/11/2011	DRY	Damp at base
Visit 3: 21/12/2011	DRY	3.88m
Visit 4: 16/01/2012	DRY	3.88m
Visit 5: 21/01/2012	DRY	3.87m
Visit 6: 24/01/12	DRY	3.87m

Table 2: Summary of Groundwater Monitoring Results

Borehole BH04 has been consistently dry and BH05 appears to have only a very small amount of water at the base of the hole.

6.0 Geotechnical Testing and Engineering Properties

The results of all geotechnical laboratory tests are given in the BAM Ritchies factual report in Appendix 2.

6.1 Made Ground

Laboratory tests carried out in made ground were mainly limited to classification tests, together with a number of sulphate and pH tests to carry out a BRE assessment. A summary of the testing

carried out in made ground, both cohesive and granular, is given in table 3 below. This also includes in-situ tests (DCPs and SPTs).

Test	No. of Tests	Range	Average
SPT 'N' Value	54	0 - 50	13
Natural Moisture Content	10	12 – 21 %	14.8 %
Sulphate Content (2:1 Aqueous Extract)	35	0.05 – 0.73 g/l	0.18 g/l
рН	35	7.5 – 11	8.4

 Table 3: Summary of Test Results for Made Ground

SPT results for the made ground have been plotted against depth in a graph presented in Appendix 3. The graph shows that the results are typically between 4 and 17 (loose to medium dense) with a small number of higher results.

A graph of natural moisture content against depth is given in Appendix 3 and shows a clustering of results for made ground around 12 to 14%.

As well as natural moisture content tests, several samples of made ground were tested to establish Atterberg Limits. The results of these tests are shown on the Graph in Appendix 3. The cohesive samples of made ground that were tested are shown to be typically low but occasionally intermediate plasticity clay.

A total of 26 PSD tests were also undertaken in the made ground and generally confirm the predominantly granular nature of this material.

The results of sulphate and pH tests have been used to carry out a BRE Special Digest 1 classification. This is discussed in Section 10.0.

A total of 15 DCP tests were undertaken: 4 no. in Kempock Street car park (in hand dug inspection pits), 1 no. on the proposed commercial land and 10 no. in the railway car park. All tests were carried out through made ground materials and the resulting CBR values are variable. Results for each position are given in the Factual Report in Appendix 2 and are discussed in Section 10.0.

6.2 Natural Superficial Deposits

6.2.1 Granular

Due to the limited number of samples of granular material (as it was encountered only in the shore area where boreholes were advanced by open hole methods) laboratory tests in this stratum were restricted to two sulphate and pH tests and two PSD tests. Results are summarised below, together with in-situ SPTs.

Test	No. of Tests	Range	Average
SPT 'N' Value	16	10 - 38	21.6
Sulphate Content (2:1 Aqueous Extract)	2	0.1 – 0.15 g/l	0.125 g/l
рН	2	8.4 - 8.5	8.45

Table 4: Summary of Test Results for Natural Granular Material

The SPT N-values for granular material are plotted against depth on a graph given in Appendix 3. The graph shows that most results are between 19 and 27 indicating that the majority of the material is medium dense.

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PSD test results confirm the high granular content of the material.

6.2.2 Cohesive

A summary of the tests carried out in the natural cohesive deposits is given in Table 5 below.

Table 5: Summary of Test Results for Natural Cohesive Material

	No. of Tests	Range	Average
SPT 'N' Value	21	4 - 50	32.2
Moisture Content (%)	6	9.8 – 15 %	12.3 %
Sulphate Content (2:1 Aqueous Extract)	2	0.1 – 0.15 g/l	0.125 g/l
рН	2	8.4 - 8.5	8.45
Undrained shear strength (triaxial test) (kPa)	3	58 – 333 kN/m²	181 kN/m ²
Undrained shear strength from SPT correlation* (kPa)	21	18 – 225 kN/m ²	145 kN/m ²
Compressibility (m ² /MN)	3	0.06 – 0.12 m ² /MN	0.09 m ² /MN
(Pressure range 100-200 kPa)			

* SPT correlation for cohesive material only, as presented by Stroud (Reference 3), with a conservative factor of 4.5.

The graph of SPT N values against depth in Appendix 3 shows results for the natural cohesive soils and show that the majority plot between 23 and 38 with no particular trend with increasing depth. This generally classifies the clay as stiff to very stiff.

Results of moisture content tests are plotted against depth on a graph presented in Appendix 3. The graph confirms that the natural moisture content of the clay is consistently between 10 and 15% as detailed in the table above.

Results of Atterberg Limits testing are shown on the Plasticity chart in Appendix 3. Although only three results are available, these indicate that the natural cohesive material is low plasticity clay.

Three undrained triaxial compression tests were undertaken on samples of natural clay. These have been plotted against depth on a graph presented in Appendix 3. Also on this graph are shear strengths determined by correlation with SPT N values for the clay. The Stroud correlation was used (Reference 3) with a conservative correlation factor of 4.5. Although the plasticity index for the clay material has been recorded as 13 which would give a correlation factor greater than 6, plasticity indexes are available over a limited depth range of between 4 and 6m and the plasticity index therefore cannot be relied upon for all SPT results. Results of these tests and correlations indicate that the majority of clay samples tested fall into the high to very high strength category.

Three one dimensional consolidation tests were carried out on samples of the cohesive soil and the resulting coefficient of volume compressibility (Mv) values indicate that the material is of low to medium compressibility. Coefficient of consolidation (Cv) values range from $1.99m^2/yr$ to $3.6m^2/yr$

for samples of the clay. Values quoted take into account in-situ overburden pressures with an allowance of around 100kPa for structural loads.

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6.3 Bedrock

Samples of bedrock were tested in the laboratory and results are summarised in Table 6 below and presented on graphs in Appendix 3.

Table 6: Summary of Test Results for Bedrock

	No. of Tests	Range	Average
Point Load Test - Axial	7	2.78 – 7.49 MN/m ²	5.73 MN/m ²
Point Load Test - Diametral	9	4.39 – 7.21 MN/m ²	5.51 MN/m ²
Uniaxial Compressive Strength Test	2	80.76 – 143.02 N/mm ²	111.9 N/mm ²

Uniaxial compressive strength (UCS) tests were carried out on 2 samples of bedrock and these results have been plotted against depth on a graph presented in Appendix 3. A further 8 number point load index tests (7 no. axial and 9 no. diametral) were carried out on rock samples and these have been correlated with UCS using the correlation after Bieniawski, Z.T., 1975 (reference 4). The correlated UCS values from point loads have also been plotted on the graph in Appendix 3. The majority of results indicate that the rock is very strong with two results falling into the strong category.

Axial and diametral point load index tests have been distinguished and presented separately within the plot however no significant differences between the two data sets have been noted, most likely because discontinuities do not favour a single orientation as they are more likely to do in a sedimentary rock.

7.0 Derivation of Characteristic Values

Site wide Characteristic Values have been derived based on a cautious estimate of the in-situ and laboratory test result data taking into account a well established experience of the type of ground conditions present at the site and the nature of the proposed development.

A graph showing SPT 'N' values plotted against depth is given in Appendix 3. The graph has been annotated with lines to represent a cautious estimate of the characteristic N-value for the natural deposits. A dashed line has been used to represent the natural granular material and a solid line has been used to define the natural cohesive material. The profile for the characteristic values represents $10 + (1.8 \times \text{depth})$ and $24 + (0.4 \times \text{depth})$ for the granular and cohesive deposits respectively. It should be noted that the four low (<10) N values shown below 10m depth on the graph were all recorded in BH02. Therefore the characteristic values quoted should not be relied upon in the vicinity of BH02 where material appears to be generally softer or less dense.

Insufficient consistent or reliable results are available to provide an accurate estimate of the characteristic N-value of the made ground.

Appendix 3 shows the results of moisture content laboratory tests against depth for the various strata tested during the intrusive investigation. A line showing the best fit conservative average for moisture content values for the cohesive soils are shown on that drawing. The characteristic moisture content value for this material has been taken as 12%. This value should only be

assumed to be accurate over the depth range shown on the graph as the moisture content would normally be expected to be higher within the weathered zone near the top of the deposit.

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The natural moisture content appears to decrease with depth in the made ground material, however it is considered that showing this as a characteristic value would give a false impression of the reliability of the data for a variable deposit such as made ground.

The characteristic value of undrained shear strength for the natural clay is shown by the line plotted on the graph in Appendix 3. The profile for these values has been taken as $123 + (1.35 \times \text{depth})\text{kN/m}^2$. Although these results are quite widely scattered, this is considered to be a reasonable conservative average. Again, the three results that are < 50kN/m^2 relate to the correlation with SPT results obtained in BH02. The characteristic value for undrained shear strength quoted for clay should therefore not be relied upon for soils in the vicinity of BH02.

The uniaxial compressive strength of rock samples was obtained by laboratory testing both directly and through correlation with point load index tests. The plotted results are shown in Appendix 3. The point load index correlations have been used in combination with the direct UCS test results to obtain the characteristic UCS value for the bedrock. The value has been taken as 132MPa.

8.0 Geo-Chemical Testing and Geo-Environmental Assessment

The Fairhurst Desk Study report produced in June 2010 (Reference 1) included a preliminary geo-environmental assessment and a preliminary conceptual site model. Although the desk study was produced at master planning stage, before development proposals or a plan were available, it did consider options including each of the types of development now being proposed:

- Extension to the promenade and sea wall construction/ repair/ alteration
- New build, mixed use structures
- New roads
- Parking areas
- Areas of soft/ hard landscaping

The following assessment will take forward the initial geo-environmental assessment with consideration of the development plan that is now available and is shown on Drawing No 87097/REP/9002. The principles of environmental risk assessment are given in Appendix 4.

8.1 Human Health Risk Assessment

The preliminary conceptual model confirmed that where hardstanding or building footprints were introduced, the pathway between potential contamination and site users would be effectively broken. These types of land use account for the majority of the development.

The exception to this was noted to be where soft landscaping was proposed. Based on current development proposals, this is likely to be restricted to local areas of planting around the Network Rail car par and the proposed commercial development zone in the east of the site. Although small areas of soft landscaping are shown south of the proposed quay wall/ revetment, it is understood that this ground will be raised as part of the development, reducing the likelihood of end users coming into contact with existing potentially contaminated soils present at the site.

A further possible risk to end users is where water supply pipes could be attacked by contaminants in the soil leading to contamination of the water supply.

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The possible pollutant linkages highlighted above have been investigated through the testing of soil deposits in proposed landscaped areas and in areas that could come into contact with water supply pipes. Soils were tested for a range of determinands based on the contaminants of concern identified in the desk study (Reference 1) and those required to carry out a WRAS assessment (Reference 5).

Due to the anticipated presence of made ground and railway land on site, the potential for the migration and build up of gases in confined spaces was highlighted in the initial geoenvironmental assessment. This could also impact end users of the site and was therefore assessed by installing ground gas monitoring standpipes in the area proposed for commercial development, i.e. where buildings may be introduced.

8.1.1 Assessment for Soft Landscaped Areas

There will be a risk of site end users coming into contact with potential contamination in areas of soft landscaping either by dermal contact, or by inhalation or ingestion of soil particles. This possible pollutant linkage has been investigated by testing soils in areas that may be occupied by soft landscaping for the contaminants of concern identified at desk study stage. Test results were interpreted using assessment criteria appropriate for residential developments without plant uptake. Where assessment criteria applicable to "residential with no plant uptake" were not available, the criteria suitable for "residential with plant uptake" were used and this is considered to provide a more conservative interpretation. For Benzene the assessment criteria of 0.27μ g/kg is lower than the laboratory detection limit of 10μ g/kg. In each sample tested Benzene was found at concentrations lower than the limit of detection, however it cannot be confirmed that this determinand passes the assessment criteria.

The test results are given in the Factual Report in Appendix 2 and the assessment is summarised in Table 7 below.

No. of No. of Samples Assessment Maximum Determinand Samples Exceeding Criteria Concentration Tested **Assessment Criteria** 19 1 Napthalene 1.5 mg/kg7.2 mg/kg 6 Benz(a)anthracene 19 3.1 mg/kg 26.1 mg/kg 19 3 Chrysene 6 mg/kg 19.9 mg/kg 2 Benzo(b)fluoranthene 19 5.6 mg/kg 20.0 mg/kg Benzo(k)fluoranthene 19 1 8.5 mg/kg 13.9 mg/kg 19 13 0.83 mg/kg 17.5 mg/kg Benzo(a)pyrene Indeno(1,2,3-cd)pyrene 19 2 3.2 mg/kg 9.7 mg/kg 6 19 Dibenz(a,h)anthracene 0.76 mg/kg 3.8 mg/kg 1 TPH >C16-C21 Aromatic 19 250 mg/kg 300 mg/kg

Table 7:Summary of Exceedances in Soil Samples from Possible Areas of SoftLandscaping

FAIRHURST

In order to break the pathway from these contaminants (and potentially benzene which cannot be fully assessed) to site end users, it is recommended that a 600mm thick layer of clean soils are introduced to all areas of soft landscaping. The clean cover should comprise a geotextile separator at the base overlain by a 300mm granular deposit of clean crushed stone to act as a capillary break layer. Above this a further 200mm of subsoil and 100mm of topsoil will provide a plant growing medium. This has been designed with reference to the BRE Document, Cover Systems for Land Regeneration (Reference 6).

8.1.2 WRAS Assessment

In areas of contaminated material, water supply pipes may be at risk of failure resulting in leakage to ground and potentially the introduction of contaminants to the water supply. This can happen as a result of the permeation and accelerated deterioration of the pipe material due to chemical reaction between the pipe and contaminants in the ground in which it is laid. Different contaminants have different effects on pipe materials so it is therefore important to consider the effect of contaminants present on a site by site basis. Careful selection, design and installation will not only reduce the risk to human health, it will also conform to the requirement of the various UK Regulations relating to the supply of drinking water.

To assess the risk of this potential linkage, soil results have been analysed using WRAS Report No 9-04-03 Issue 1 "The selection of materials for water supply pipes to be laid in contaminated land" (Reference 5) to allow appropriate pipeline material selection. This guidance states that where soil concentrations exceed the prescribed threshold values specification of the material selected for the pipes will be required.

Samples from exploratory holes on the proposed commercial development site were selected for testing in accordance with WRAS guidelines. Samples were obtained from 0.5m in each exploratory hole and based on logs this material is representative of soils to depths of 1m or

greater. This is considered to be representative of the soils that water supply pipes are likely be in direct contact with.

Table 8 sh	ows the soil t	est exceedar	nces f	or WR	AS testing	for specification o	f water pipes.
							-

Determinand	No. of Samples Tested	No. of Samples Exceeding Assessment Criteria	Assessment Criteria	Maximum Concentration
Arsenic	10	3	10 mg/kg	14 mg/kg
Mercury	10	1	1 mg/kg	1.7 mg/kg
pН	10	10	< 5 and > 8	9.1
РАН	10	2	50 mg/kg	77.1 mg/kg
ТРН	10	3	50 mg/kg	187 mg/kg

 Table 8: Summary of Exceedances in Soil Samples for WRAS Assessment

The testing and subsequent analysis shows that the samples tested contain levels of corrosive substances, organic contaminants and toxic substances which exceed the WRAS criteria. The guidance states that where these types of substances are recorded, barrier pipes may be specified. Therefore, to reduce the risk posed by the substances encountered, barrier pipes should be specified for new water pipes. It is expected that only a very short length of new water supply pipe will be required as it is considered likely that the pipe will be brought to the development from Shore Street immediately to the west of the proposed commercial development site.

8.1.3 Ground Gas Assessment

Six rounds of gas monitoring were undertaken at the Gourock Pierhead site in accordance with good practice. The results are summarised in Table 9 below.

	BH No.	Visit 1 25/10/11	Visit 2 02/11/11	Visit 3 21/12/11	Visit 4 16/01/12	Visit 5 21/01/12	Visit 6 24/01/12
CH ₄ (%)	BH04	0.0	0.0	0.0	0.0	0.0	0.0
UT4 (%)	BH06	0.0	0.0	0.0	0.0	0.1	0.0
$co(\theta)$	BH04	0.1	0.4	1.1	0.2	1.1	0.1
CO ₂ (%)	BH06	0.0	0.1	0.5	0.0	0.6	0.1
O(0)	BH04	19.8	20.3	20.3	20.9	20.5	20.5
O ₂ (%)	BH06	19.8	20.6	20.6	21.1	20.6	20.6
	BH04	0.0	0.0	0.0	0.0	0.0	0.0
H₂S (ppm)	BH06	0.0	0.0	0.0	0.0	0.0	0.0
CO(nmm)	BH04	0.0	0.0	0.0	0.0	0.0	0.0
CO (pmm)	BH06	0.0	0.0	0.0	0.0	0.0	0.0
Atmospheric	BH04	995	998	1012	1022	1002	1012
Pressure	BH06	995	998	1012	1022	1002	1012
Flow (1/b)	BH04	0	0	0.1	0.0	0.0	0.0
Flow (l/h)	BH06	0	0	0.1	0.0	0.2	0.0

 Table 9: Summary of Ground Gas Monitoring

These results have been used to undertake a gas risk assessment as follows:

CIRIA Guideline

A series of guidance documents were published for the construction industry as part of CIRIA's 1990s research programme 'Methane and Associated Hazards to Construction'. These publications included advice on protecting development from methane (Protecting Development from Methane Report 149, 1995) and on the assessment of risk (Risk Assessment for Methane and Other Gases from the Ground, Report 152). Other widely used guidance on ground gases was published by Wilson and Card (1999).

FAIRHURST

The report 'Assessing Risks Posed by Hazardous Ground Gases to Buildings' (Report C659, CIRIA, December 2006) has been published aiming to clarify, simplify and update earlier guidance. In December 2007, CIRIA published the revised version of the C659 document under the name 'Assessing Risks Posed by Hazardous Ground Gases to Buildings (revised) (Report C665, CIRIA, December 2007)' (Reference 7). Previous guidelines all used a method, based on both gas concentrations and borehole flow rates to define a characteristic situation for a site based on the limiting borehole gas volume flow for methane and carbon dioxide. In the new guidance, the limiting borehole gas volume flow is now renamed as the Gas Screening Value (GSV) and can be calculated as follows:

(Source: C665, CIRIA 2007)

The calculation has been carried out for both methane and carbon dioxide and the worst case value adopted. The 'Characteristic Situation' can then be determined from Table 8.5 in the C665 report.

Ground Gas – Methane and Carbon Dioxide

Six gas monitoring rounds were undertaken between 25th October 2011 and 24th January 2012, and results are enclosed. Carbon dioxide has been recorded at concentrations ranging from 0% (BH06) to 1.1% (BH04), and methane was recorded at concentrations of 0% on all occasions with the exception of visit number 5 when BH06 gave a recording of 0.1%. Flow rate was recorded as 0.0 l/hr with the exception of visit number 3, where it was recorded as 0.1 l/hr and visit number 5 when it was recorded as 0.2 l/hr in BH06 only.

Based on worst case levels for Carbon dioxide, methane and flow rate, the GSV was calculated for each borehole. For BH04 and BH06 the GSV values calculated for both carbon dioxide and methane were found to be less than 0.07 l/hr and therefore lie within Characteristic Situation 1. Furthermore methane levels were always recorded to be below the trigger value of 1% and carbon dioxide concentrations were below 5%. Characteristic situation 1 is classified as very low risk and therefore no special gas protection precautions are considered to be necessary.

8.2 Water Environment Risk Assessment

8.2.1 Superficial Aquifer

The June 2010 desk study report estimated that there was unlikely to be an extensive superficial aquifer due to the limited thickness of natural superficial soils that were expected beneath the site. The ground investigation has confirmed that in the vicinity of the shoreline, natural superficial

deposits are extensive with granular soils encountered to a maximum depth of 12m bgl and then underlain by cohesive material to a maximum confirmed depth of 27m bgl. However, no water was encountered in the granular or cohesive soils soils.

FAIRHURST

The exploratory holes that were carried out on the proposed commercial site found that natural superficial deposits are limited in this area with a maximum thickness of 2.4m of slightly sandy, slightly gravelly clay being encountered beneath made ground. Water strikes were encountered in two of the three boreholes in this area, however both were within rock. Boreholes BH4 and BH6 had groundwater monitoring standpipes installed through the made ground deposit but these have been found to be dry or contain only a very small amount of water (maximum 30mm) on each occasion that they have been monitored.

Although trial pits in the intertidal zone on the shoreline recorded strong inflows of water, this is related to the tidal conditions and the proximity of these trial pits to the waters edge. Trial pits undertaken on the commercial site recorded only a near surface seepage in three of the seven trial pits carried out in this area (TP08, TP10 and TP12).

None of the twenty window sample holes that were completed on the site recorded any groundwater in superficial deposits.

Excluding the five trial pits on the shore that were affected by water inflow from the Clyde, a total of thirty four exploratory holes were undertaken on the site to investigate the superficial soils. Of these thirty four positions, only three trial pits (TP08, TP10 and TP12) recorded any water strikes within superficial soils and these were noted to be seepages in each case at depths of 0.3m to 0.4m. Furthermore, the groundwater monitoring standpipes that were installed through made ground deposits in two boreholes have been noted to be dry or contain only a very small amount of water (maximum 30mm) on each occasion that they have been monitored. It is therefore considered that the ground investigation confirms that an extensive or continuous superficial aquifer is not present in this area and superficial groundwater is therefore not a viable receptor.

8.2.2 Bedrock Aquifer

Based on published sources detailed in the desk study report (Reference 1), the rock beneath the site is generally classified as a moderately permeable aquifer that does not have a high primary permeability but it is noted that permeability may be variable due to the number of fractures and fissures present in the rock.

On the basis that the site is located very close to the sea, any bedrock aquifer would not be considered suitable as a future drinking water source and therefore it does not represent a receptor. Furthermore, wherever bedrock has been investigated, a layer of relatively impermeable glacial till has been encountered separating the near surface made ground from the bedrock essentially breaking any pathway from potentially contaminated soils to the bedrock.

8.2.3 Surface Waters

The Firth of Clyde surface water body is present to the north of the site. Possible pathways for contaminants to reach the Clyde are either by transport via superficial or bedrock aquifer or by surface water run-off directly into the surface water body.

Section 8.2.1 above concludes that there is no extensive or continuous superficial aquifer and therefore the pathway for transporting potential contamination to the Clyde is broken. Similarly in

Section 8.2.2 the pathway for contamination to reach any bedrock aquifer is broken by the layer of glacial till that been confirmed to be present above the bedrock.

FAIRHURST

The risks from contaminated surface water run-off to surface water bodies are considered to be reduced by the development as it will introduce or retain existing hardcover. In areas of soft landscaping it has been recommended that clean cover be introduced as part of the recommendations to address the risk to human health described in Section 8.1.1. In the vicinity of the shoreline, the ground will be raised to construct the new carriageway and material will be added to the ground surface to construct the revetment type solution. Each part of the development will therefore reduce the likelihood of potentially contaminated surface water run-off reaching the Firth of Clyde.

During construction of the revetment/ sea wall soil particles will be disturbed near the shoreline. This will increase the likelihood of potentially contaminated soils entering the Firth of Clyde over the construction phase. The construction Contractor should be alerted to this potential pollutant linkage in order that it be addressed in the construction phase method statement and risk assessments.

8.3 Buildings and Services Risk Assessment

The integrity of buried concrete may be at risk from direct contact with aggressive contaminants in made ground present beneath the site. The hardstanding may also be at risk from aggressive contaminants in superficial groundwater from on site sources. Aggressive contaminants include sulphates and sulphides, and acidic conditions. These cause cementitious bonds to break down effectively causing the concrete to disintegrate. Although it has been concluded that superficial groundwater is not present beneath the site, the nature of soil deposits requires an assessment using guidelines set out in BRE Special Digest 1, 2005 3rd Edition (Reference 8). The BRE assessment is detailed in Section 8.3.1 below.

The potential build-up of soil gas in confined spaces could pose an explosion risk to buildings. As discussed in section 8.1 above, ground gas monitoring was carried out on the site proposed for commercial development as it is understood that this is the only part of the site where a building (confined space) is currently proposed. The assessment of the risk from ground gas, together with the recommended mitigation measures are detailed in Section 8.1.3.

8.3.1 BRE Testing

Sulphate and pH testing were undertaken on soil samples in accordance with BRE guidance. Testing was undertaken on samples at a range of depths in exploratory holes located on the shore, in the proposed commercial development site and in the car park areas. Samples were mainly of made ground, however in BH04 and BH06 natural clay was also tested at 5.2 and 4.55m bgl respectively. Natural granular material from TP01 and TP02 was also tested. Based on the history of the site and presence of made ground, the results were assessed for a Brownfield site.

Of the 39 no. samples tested, only one sample (from granular made ground at 2m depth in TP08) recorded a sulphate concentration in excess of 0.5g/l. All 39 samples tested were found to have a pH greater than 6.5. Based on these laboratory test results (excluding TP08, 2m), buried concrete in contact with the range of materials tested should be of design sulphate class DS-1 and ACEC Class AC-1. Locally at TP08, 2m depth the laboratory test result indicates that buried concrete here should be of design sulphate class DS-2 and ACEC class AC-2.

9.0 Geo-Environmental Conclusions

The findings of the ground investigation have been used to update the preliminary conceptual site model that was included in the original Desk Study Report (reference 1). The revised conceptual site model is shown on Drawing No 87097/REP/9004 in Appendix 1 and is summarised below:

- Site end users exposure to contaminated soil via inhalation, ingestion or dermal contact. It is understood that soft landscaping areas are proposed in parts of the network rail car park and over parts of the proposed commercial development. This introduces a pathway from contaminated made ground to site end users. It is recommended that a layer of clean cover be introduced in areas of soft landscaping to effectively break this pathway and remove the pollutant linkage. Elsewhere, hardstanding or buildings will break the pathway from contaminated made ground to site end users.
- Site end users ingestion of contaminated drinking water. The risk may be mitigated by selection of appropriate water supply pipe material. Based on the chemical results obtained, barrier pipes may be specified to reduce the risk posed by the substances encountered.
- Site end users build-up of ground gas posing an asphyxiation or explosion risk. The
 potential for ground gas generation has been assessed using the results of ground gas
 monitoring in accordance with CIRIA guidance document C665, 2007. The results of the
 assessment classify the site Characteristic Situation 1 which is very low risk and does not
 require any special gas protection measures.
- Water Environment Superficial aquifer. Based on the findings of the intrusive ground investigation, particularly the absence of consistent groundwater observations, it is considered unlikely that a continuous superficial aquifer is present beneath the site.
- Water Environment Bedrock Aquifer. Given that the site is in very close proximity to the Firth of Clyde, any aquifer within the bedrock is unlikely to be considered a viable drinking water source and therefore this would not be considered a receptor. Furthermore a layer of relatively impermeable cohesive glacial till has been recorded above bedrock in each exploratory hole where bedrock has been encountered. This would effectively break the pathway from contaminated made ground to the bedrock aquifer.
- Water Environment Surface Water. Contaminants cannot be transported to surface
 water bodies via a superficial or bedrock aquifer as it has been demonstrated that a
 continuous superficial aquifer does not exist beneath the site and because relatively
 impermeable glacial till above bedrock will prevent contaminants from the made ground
 reaching the bedrock aquifer. The potential for surface run off to transport contaminants
 to surface water is reduced by the introduction of hardstanding or clean cover across all
 parts of the development.
- Buildings and services potential for ground to be aggressive to buried concrete. The risks may be mitigated through specification of appropriate concrete. Chemical results obtained generally indicate that concrete to Design Sulphate Class DS-1 and ACEC Class AC-1 should be specified. A local result leading to Design Sulphate Class DS-2 and ACEC Class AC-2 was obtained from TP08.

 Construction and maintenance workers may be exposed to potentially contaminated soil and groundwater via inhalation, ingestion and dermal contact. However the risks posed to construction and maintenance works may be mitigated through the adoption of safe systems of work including the wearing of appropriate PPE.

FAIRHURST

 Construction and maintenance workers – potential for build up of ground gas in confined spaces such as excavations and service trenches, posing an asphyxiation or explosion risk. The findings of the intrusive ground investigation indicate that the potential for generation of significant levels of ground gas is low. However, entry to confined spaces should be carried out in accordance with best practice.

10.0 Engineering Discussion

10.1 Ground Conditions

The intrusive ground investigation confirmed the presence of typically granular made ground across the entire site (with the exception of BH02). The made ground, whilst generally sand and gravel, is usually noted to contain some silt or clay material and also a significant proportion of anthropogenic material including brick, concrete, ash and cinders. Beneath the commercial site layers of cohesive made ground are more common.

A significant thickness of natural silty gravelly sand was recorded in the boreholes on the shingle beach and this was underlain by cohesive material at around 12m depth. On the grassed area, no granular natural soils were encountered but glacial till directly underlay the made ground.

On the beach, rock of red sandstone and basalt was confirmed in only two of the three rotary boreholes at depths of 18.7m and 20.7m. The third rotary hole extended to 27m bgl but terminated in cohesive superficial material. Bedrock was found at depths ranging from 5.6m to 6.3m beneath the proposed commercial site and comprised grey trachyte.

With the exception of the trial pits on the beach, which were heavily affected by the proximity to the Firth of Clyde, very little groundwater was encountered on the site. Water strikes in boreholes were generally at or below rockhead and three trial pits on the grassed area recorded seepages at shallow depths. The groundwater monitoring installation in BH04 was noted to be dry on each of the six monitoring visits. The installation at BH06 usually found a very small amount of water (maximum 30mm) in the base of the hole.

10.2 Foundation Design

Buildings are proposed only on the grassed part of the site. Exploratory holes undertaken here indicate that ground conditions comprise granular and cohesive made ground to depths ranging from 3.5m to 4.6m underlain by stiff slightly sandy, slightly gravelly clay. Trachyte bedrock was encountered at depths ranging from 5.6m to 6.3m. The made ground is likely to have variable engineering properties which is confirmed by the variable SPT and CBR values obtained throughout this material. Untreated made ground is rarely considered to be a suitable bearing stratum for structural foundations in view of the unacceptably high risk of compression and/or differential settlement.

The geotechnical properties of the made ground could be improved using a ground improvement technique such as vibro replacement subject to consultation with specialist contractors. Suitable treatment of the made ground will increase the allowable bearing capacity and traditional strip

foundations for a low rise commercial structure are likely to be feasible. A second possible foundation solution is the use of mini-piles to carry loads to deeper levels within the underlying competent glacial till or bedrock. Stiff glacial till would be expected to have a minimum presumed bearing value of around 150 – 200kN/m² with trachyte having a presumed bearing value in excess of 500kN/m². Given the minimal thickness of clay situated above the rock, it may prove more economical to drive piles through the clay to rock in order to increase the capacity of each pile and optimise the spacing. It is suggested that driven steel tubes or precast concrete will be the most economical mini-pile solution. Few obstructions were encountered during the ground investigation across the entire site and none were found in the area of the proposed commercial development, however trial pits in this area did record boulders, brick and concrete. A specialist piling contractor should be consulted to discuss the most appropriate detailed design.

The presence of sulphates within soil and groundwater may lead to the attack and corrosion of concrete structures. Based on the geochemical test results in relation to BRE Special Digest the site generally has an Aggressive Chemical Environment for Concrete (ACEC) site classification of AC-1. The design sulphate class is DS-1. However, a local variation was found at TP08 where the ACEC class is AC-2 with design sulphate class DS-2.

Shallow foundations or piles will come into contact with the made ground and it is therefore recommended that all buried concrete be designed in accordance with BRE Special Digest 1 for the conditions indicated above.

10.3 Earthworks, Excavations and Dewatering

It is understood that the majority of the development, excluding the shore area, will not require any significant earthworks and that excavations are likely to be restricted to those required for foundations and installing services. During the trial pitting exercise, most trial pits were noted to be unstable to some degree, regardless of the presence or absence of groundwater. It is therefore expected that excavations in the made ground will require support to side walls.

Shallow excavations in cohesive glacial till are likely to remain stable in the short term, however support may be required if excavations are deep or require to stay open for extended periods of time.

Granular material encountered beneath made ground on the shore was generally noted to be medium dense and excavations in this material may be expected to remain stable in the short term. However groundwater fluctuations associated with tidal conditions will lead to instability and it is likely that when excavations are required to remain open for long periods, wall support will be necessary.

Near the shingle beach proposals include raising ground level and constructing a sea wall or revetment. Given the granular nature of the soils in this area no special measures are considered necessary to prepare the ground prior to upfilling other than those required for normal earthworks exercises including levelling and benching. A geotechnical global stability check will be required regardless of whether a sea wall or a revetment solution is taken forward. Additionally it is anticipated that an engineering assessment of bearing, overturning and sliding potential will be required for the sea wall option.

Trial pits excavated near the shore were subject to almost instantaneous water ingress, however it is recognised that this will vary with location and tidal fluctuations. This should be highlighted as a construction hazard and should be addressed within the construction methodology. It is expected that the effects of groundwater inflow will be more significant in the event that a sea wall design is taken forward than would be for a rock armour solution.

FAIRHURST

Across the proposed commercial development area groundwater was encountered only as local relatively minor seepages and no water has been recorded in groundwater monitoring standpipes. Exploratory holes carried out in the two car parks did not record any water strikes. It is therefore considered that sump pumping should be an adequate method of dewatering any shallow excavations undertaken in these areas.

It is understood that there are proposals for improving the retaining wall that currently forms the access into Kempock St car park. Window samples undertaken in this area indicate that the existing retaining wall is founded on granular made ground, and the wall currently appears to be in good condition.

10.4 Roads and Car Parking

Car parking is proposed over a large part of the site and CBRs (converted from DCPs) were carried out within near surface material in order to establish the nature of the shallow soils for road pavement construction. All DCPs were undertaken in made ground as this material extended the full depth of the window sample hole in each case. Graphs showing CBR values plotted against depth are given in the Factual Report in Appendix 2. The CBR values obtained are variable, as would be expected in this type of material. For example when debris such as brick or concrete is encountered a false high CBR value will be recorded but this cannot be relied upon.

Given the presence of variable made ground, a full capping thickness is considered to be necessary for the road construction. Generally this is required where made ground is present and the road is to be adopted. If the existing car parks to not have to meet adoptable standard, it may be possible to reduce the capping thickness. However it is recommended that as a minimum, the area be proof rolled and any soft spots are removed and replaced with compacted granular material, such as type 1, to achieve a consistent formation platform.

Based on the descriptions shown on the exploratory hole logs, made ground beneath the car parks is predominantly granular. It may therefore be possible to reuse this material as capping beneath the new road subject to compliance testing. Grading and crushing may be required in order to meet grading requirements.

10.5 Obstructions and Services

During the ground investigation, obstructions were encountered in five window sample holes: WS14, WS23 and WS25 in the Network Rail car park and WS30 and WS32 in the Kempock Street car park. In the Network Rail car park the obstructions were typically thought to be boulders, however in Kempock Street the obstructions were noted to be concrete and brick. Obstructions within the made ground can therefore be expected during excavation works, however the ground investigation revealed no conditions that would indicate that there are large or onerous obstructions present beneath the site. Active buried services are present frequently beneath the site and redundant services are also thought to be present beneath the grassed area proposed for commercial development.

Allowance should also be made for breaking out hard cover at the surface as this is widely present across the site.

Water supply pipes should be specified in accordance with the WRAS assessment outlined in Section 8.1.2. Barrier pipes are considered appropriate at this site.

FAIRHURST

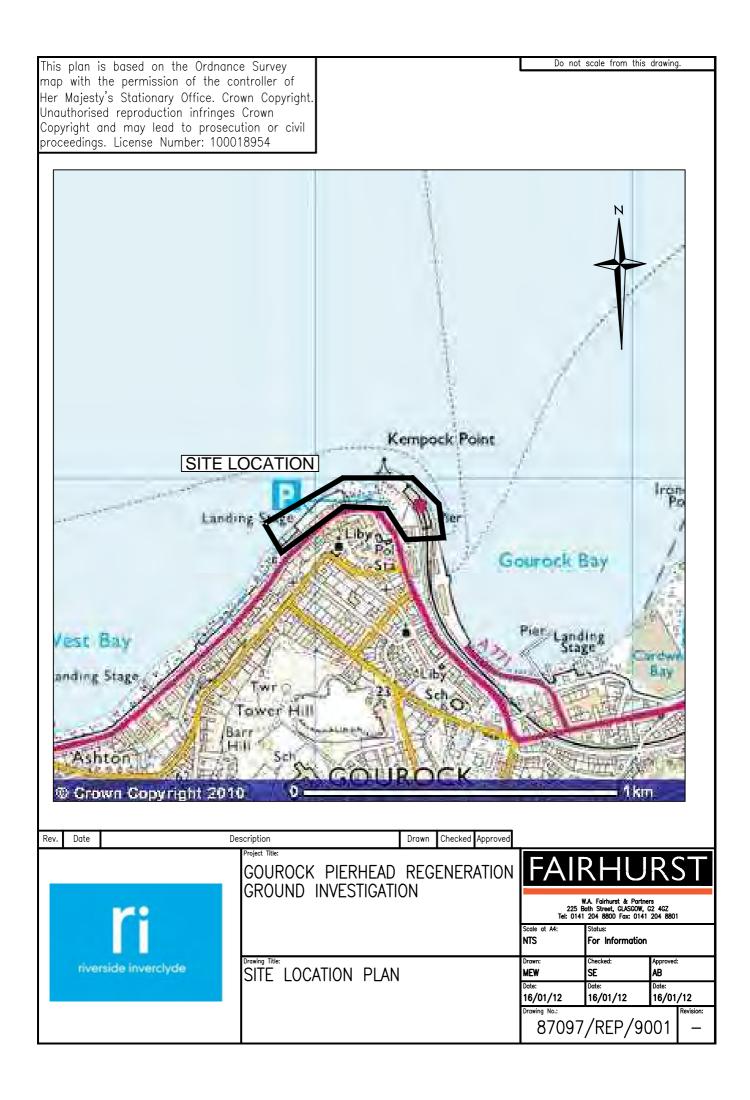
11.0 References

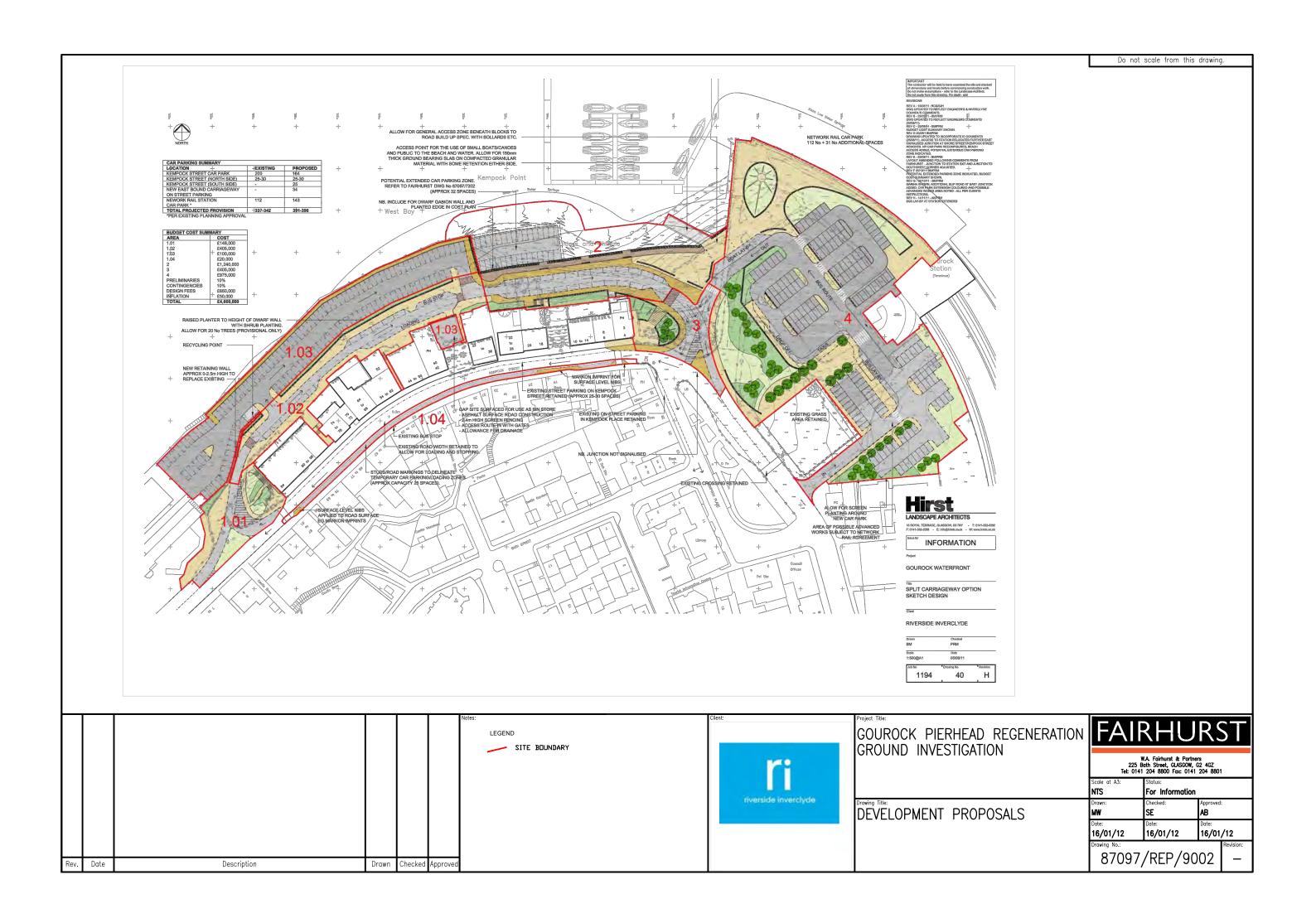
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- 6. BRE Press, Cover Systems for Land Regeneration, Thickness Design of Cover Systems for Contaminated Land, March 2004
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Appendix 1

Drawings

87097/REP/9001	Site Location Plan
87097/REP/9002	Development Proposals
87097/REP/9003	Exploratory Hole Location Plan
87097/REP/9004	Developed Conceptual Site Model





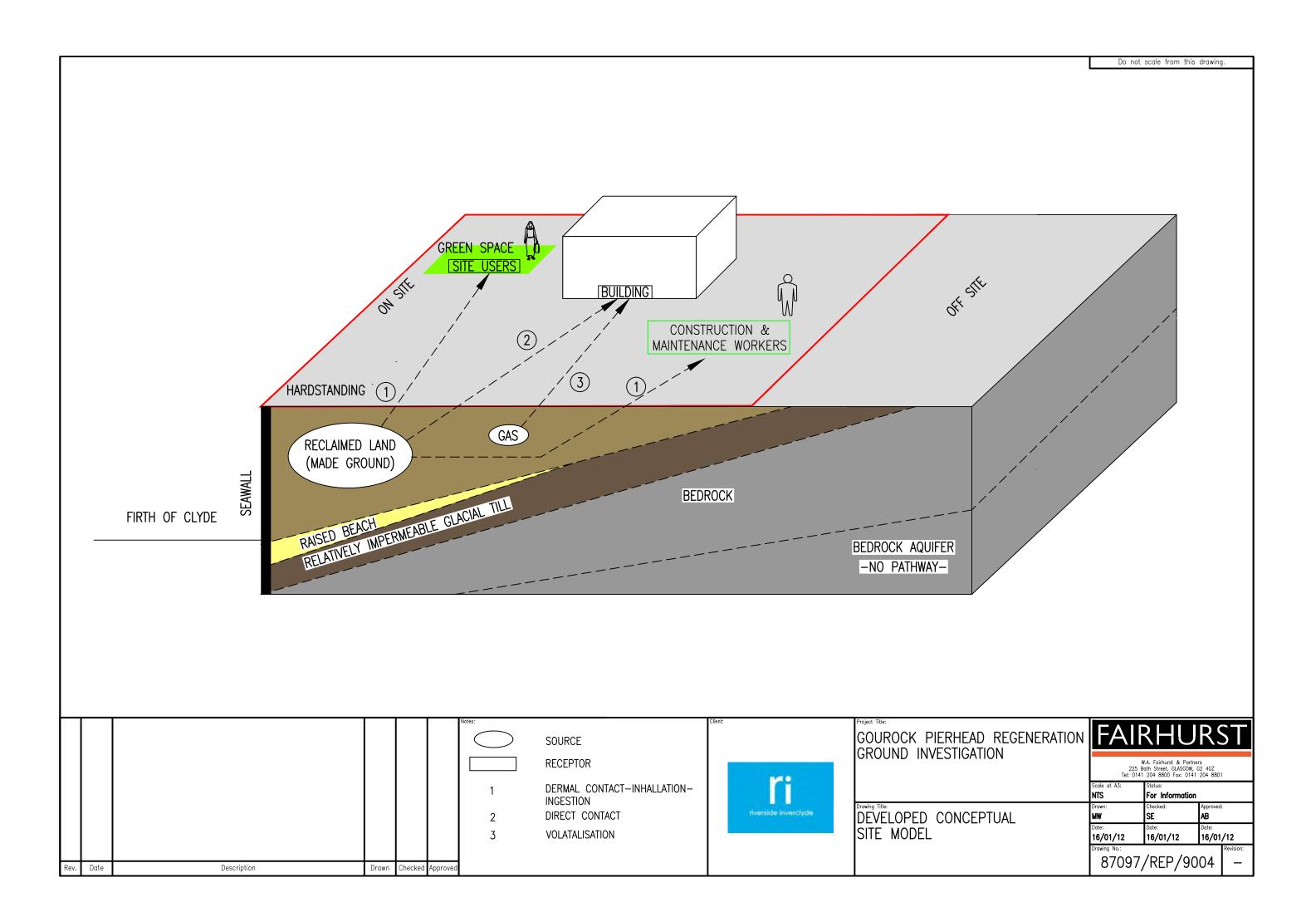


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	TRIAL PIT
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0	CBR TEST
	AREA OF PROPOSED HARDSTANDING/CAR PARKING
	EXISTING CAR PARK
\square	AREA OF PROPOSED QUAY WALL/REVETMENT
	AREA OF PROPOSED COMMERCIAL DEVELOPMENT
\mathbb{Z}	AREA OF EXISTING CAR PARKING
Rev. Date	Description Drwn. Chkd. Ap Client:
FAIR	
W.A. Fairhurst & Partn 225 Bath Street	ers
GLASGOW G2 4GZ	
Tel: 0141 204 8800 Fax: 0141 204 8801	riverside inverclyde
Project Title:	
	<pre>K PIERHEAD REGENERATION INVESTIGATION</pre>
GRUUND	INVESTIGATION
Drawing Title:	
ΙΗ ΧΡΙ ΟRA	TORY HOLE LOCATION PLAN

EXPLORATORY HOLE LOCATION PLAN

Scale at A1:	Status:		
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Date:	Date:	Date:	
16/01/12	16/01/12	16/01/12	
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	87097/RE	P/9003 –	



Appendix 2

Factual Ground Investigation Report



Ground Investigation Report



Gourock Pierhead

For

W.A. Fairhurst & Partners



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BAM Ritchies

Ground	Investigation	Report
Control	Sheet	

Control Sheet		Division of BAM Nuttall Ltd. Group Company of Royal BAM
Contract No.	4618	Glasgow Road Kilsyth Glasgow. G65 9BL
Report Status	Final	Telephone 01236 467000 Telefax 01236 467030
Issued To:	W.A. Fairhurst & Partners	
Site:	Gourock Pierhead Regeneration	
Consultant:	W.A. Fairhurst & Partners 225 Bath Street Glasgow G2 2GZ	
Volume No.:	1	
Copy Number:	1 pdf copy	
Prepared &: P. McGinily: BS Checked By	c(Hons) MSc FGS <u>R Camers</u> ical Engineer	

H. Steunsn 03-02-12 Date: Approved By: A.H. Stevenson: BEng. <u>V-1</u> Ground Investigation Manager





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APPENDIX 3.0 DCP TESTS
APPENDIX 4.0 GROUNDWATER AND GAS MONITORING RESULTS
APPENDIX 5.0 GEOTECHNICAL LABORATORY TEST RESULTS
APPENDIX 6.0 GEOCHEMCIAL LABORATORY TEST RESULTS
APPENDIX 7.0 ROCK CORE PHOTOGRAPHS
APPENDIX 8.0 TRIAL PIT PHOTOGRAPHS



1.0 INTRODUCTION

The contents of this report relate to a ground investigation carried out at Gourock Railway Station Car Park and the area immediately to the west and south of the Station.

The purpose of the investigation was to provide additional information on the sequence of strata and soil Conditions' at the site. This report has been prepared in accordance with the principles of BS EN 1997-2:2007¹ and BS EN ISO 22475-1:2006².

The report was commissioned by W.A. Fairhurst & Partners, 225 Bath Street, Glasgow, G2 2GZ.

A factual account only of all fieldwork and laboratory testing was requested by the Engineer

2.0 BRIEF DESCRIPTION OF THE SITE

The site is located in Gourock, west of the City of Glasgow, at approximate national Grid Reference 224100E 67795N. The site is suited on the seaward boundary of the headland between West Bay and Gourock Bay. The site can be broken into four areas:-

- 1. Kempock street car park running west from the Shingle beach to the Outdoor swimming pool.
- 2. Shingle beach north-west of the station, between the Station car park and Kempock Street Car park.
- 3. Station car park and derelict ground running south east from the existing car park
- 4. Vacant land between the station car park and Shore Street, site of the former Bay Hotel and Post office.

3.0 PROPOSED DEVELOPMENT

Consideration is being given to the regeneration of the area around the Railway Station, which at the time of the ground Investigation was undergoing a major redevelopment. The regeneration includes:-

- A new quay wall/revetment along the shingle beach.
- Extension and alteration of the existing station car park
- Area of vacant land intended for commercial use.

¹ BS EN 1997-2:2007 Eurocode 7 – Geotechnical design – Part 2: Ground Investigation and testing.

² BS EN IS0 22475-1: 2006 Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1: Technical principles for execution.



4.0 RECORDED GEOLOGY

From the 1:50,000 scale published geological maps³ of the area the following stratigraphy of the site has been inferred. No assurance is given as to its accuracy.

The drift deposits at the site are documented as consisting Recent Raised Beach Deposits and associated marine and estuarine alluvium from post-Glacial times. It is inferred that Glacial Till deposits underlie the Raised Beach Deposits.

The underlying solid geology at the site is recorded as being from the Lower Carboniferous era and is expected to be in the Kinnesswood Formation consisting mainly of red sandstones and siltstones. Also a Trachyte igneous intrusion is shown to underlie the centre portion of the site

The published geological records consulted during the preparation of this report show made ground, of varying thicknesses will be encountered across the area of the site covering the station and car park up to Kempock Street in direct relation to past land reclamation.

5.0 FIELDWORK

5.1 Position Fixing and Levelling

The Client's preferred borehole and trial pit locations were set out by BAM Ritchies Geotechnical Engineer in agreement with the Engineer and the locations were scanned for the presence of any Statutory Undertakers and/or any other apparatus. On completion of the fieldwork all boreholes and trial pits were co-ordinated to the Ordnance Survey National Grid and levelled to Ordnance Datum by BAM Ritchies survey team.

A location plan of the surveyed positions is contained in Appendix 1.0 of this report.

5.2 Fieldwork Period

Fieldwork was carried out between 12th September 2011 and 6th October 2011 and the 25th October 2011 and 29th October 2011 to complete the intertidal work. Weekly groundwater and gas monitoring of the borehole installations was carried out from 6th October to 4th November 2011.

³ BGS Scotland Sheet 30W and 29E: Solid and Drift Editions



5.3 Ground Investigation

5.3 1 Hand Excavation and Buried Services

Prior to the commencement of each exploratory hole, a BAM Ritchies Buried and Overhead Services Co–ordinator undertook a CAT and Genny survey of the site. In addition an inspection pit was hand excavated to a depth of 1.20m at each borehole location in order to locate any otherwise undetected service pipes, ducts, conduits or cables.

5.3.2 Continuous Percussion Boring

Three number boreholes, WS30 to WS32 were formed using a Dando 'Terrier' 200 continuous percussion soils boring rig and were sunk to depths of between 2.00m (WS32) and 3.00m (WS31).

Regular undisturbed U86's for geotechnical testing were recovered, in addition, Standard Penetration Tests (S.P.T.) were carried out. Environmental samples comprising, tub, amber jar and vial were obtained from the inspection pit for contamination testing

5.3.3 Light Cable Percussion Boring

Three boreholes, BH04 to BH06 were sunk using light cable percussion soils boring techniques. Bulk soil samples were recovered from the hand dug inspection pits and at intervals throughout the borehole. In predominantly fine soils, U100 open-drive soil samples were attempted at regular depth intervals. Standard Penetration Tests (SPTs) were carried out in predominantly coarse soils.

5.3.4 Trial Pitting

Thirteen number trial pits, TP01 to 13 were excavated using a 13t tracked excavator (TP01 to 06) and JCB 3Cx (TP 07 to TP13). The purpose of the pits was to allow inspection of the soil deposits and to recover samples for subsequent laboratory testing. The machine-dug pits were logged by BAM Ritchies Geotechnical Engineer. Photographs were taken of pit side, base and spoil and are presented in Appendix 8.



5.3.5 Rotary Boring

Three number boreholes, 01 to 03, were undertaken by rotary open hole and methods from ground level. Boreholes 04 to 06, were continued from the base of the LCP boreholes by rotary coring methods.

A track mounted hydraulic top-drive rig was utilised for all rotary drilling. During coring operations, double-tube face discharge 412DT core barrels were used in conjunction with air and flush and diamond tipped core bits; the resultant rock cores were nominally 76mm in diameter.

5.3.6 Pavement Cores

Three number pavement cores RPC01 to RPC03, were recovered from Kempock Car Park by rotary coring techniques. After completing the coring operation the holes were extended by hand digging to confirm the depth of sub base.

5.4 Insitu and Field Testing

5.4.1 Standard Penetration Tests

Standard Penetration Tests (SPTs) were performed at regular depths in coarse soils or where undisturbed sampling proved ineffective. A split barrel sampler or cone was used as appropriate. The uncorrected N-value results of these tests have been used to describe the relative density of coarse soils as illustrated in section 41.3.2 of BS5930:1999 Amendment 2⁴.

The relative density terms displayed on the borehole logs are for descriptive purposes only and no correction or interpretation of N-values, or density terms relating to corrected values, has been made. Any corrections to the N-values or relative density terms should only be made using procedures contained within BS EN 1997-2:2007 and associated relevant standards.

The uncorrected results of the standard penetration tests are displayed on the borehole logs provided in Appendix 2.0 of this report. A certificate of calibration for SPT Hammer BRK 02 is presented after the borehole logs in Appendix 2.0.

⁴ BS 5930:1999 Amendment 2 – Code of practise for site investigations.



5.4.2 Dynamic Cone Penetration Tests

Four number DCP tests, CBR01 to 04 were undertaken in Kempock Car park from the base of hand dug pits. The results of these tests are presented in Appendix 3.0.

5.5 Standpipe Installations

On the instruction of the Client, perforated standpipes complete with valve taps and removable screw caps were installed at shallow depths in two boreholes, 04 and 06, to allow monitoring of groundwater levels and gas concentrations. Water sampling was carried out in compliance with BS 10175:2001⁵.

Details of the installations are provided on the appropriate borehole log in Appendix 2.0 of this report.

5.6 Groundwater Observations

In the course of drilling each borehole, the incidence of groundwater was noted by the driller.

All groundwater observations are detailed in the borehole logs in Appendix 2.0 of this report.

Subsequently, upon installation of the standpipes, BAM Ritchies Geotechnical Engineer has taken electric dipmeter soundings on a regular basis in accordance with CIRIA C665-2007⁶.

The results of the soundings are presented in Appendix 4.0 of this report.

5.7 Gas and Groundwater Monitoring

Upon the completion of the site works, Ritchies Geotechnical Engineer returned to site on six occasions to monitor groundwater levels, flow rates and composition. Monitoring for gas included oxygen, carbon dioxide, methane, carbon monoxide and hydrogen sulphide levels together with barometric pressure and flow. This was carried out using a GA-2000 Infra Red Analyser manufacture by Geotechnical

⁵ BS 10175:2001 – Investigation of potentially contaminated sites.

 $^{^{\}rm 6}$ CIRIA C665: 2007 Assessing risks posed by hazardous ground gases to buildings.



Instruments. These results are presented in Appendix 4.0 of this report.

6.0 ROCK

All rock cores were logged by BAM Ritchies Geotechnical Engineer using guidelines detailed in BS EN ISO 14689-1:2003⁷. Measurements of Total and Solid Core Recovery together with Rock Quality Designation are detailed on the borehole logs in Appendix 2.0 of this report.

All rock cores were photographed by BAM Ritchies Geotechnical Engineer using a digital camera. Each core photograph includes a clear title sheet indicating the borehole number, core run information and a standard colour chart and grey scale. Photographs are presented in Appendix 7.0 of this report.

7.0 LABORATORY WORK

7.1 Soil

All soil samples were described in the laboratory by BAM Ritchies Geotechnical Engineer using guidelines detailed in BS EN ISO 14688-1:2002⁸ and BS EN ISO 14688-2:2004⁹. The relative density terms, relating to coarse soils, displayed on the borehole logs are for descriptive purposes only and no correction or interpretation of N-values, or density terms relating to corrected values, has been made.

The relative density terms and corresponding uncorrected N values are illustrated in section 41.3.2 of BS5930:1999 Amendment 2. Consistency terms for fine soils are based on manual tests as detailed in BS EN ISO 14688-1:2002.

Borehole and hand pit logs are provided in Appendix 2.0 of this report.

A programme of laboratory testing instructed by the Engineer was carried out on selected soil samples. All testing was undertaken in accordance with BS1377:1990¹⁰ and other relevant, current standards as appropriate. References and methods for each test are detailed on the appropriate result sheets in Appendix 5.0 of this report.

⁷ BS EN ISO 14689: 2003 Geotechnical investigation and testing – Identification and classification of rock – Part 1: Identification and description.

⁸ BS EN ISO 14688-1:2002 Geotechnical investigation and testing – Identification and classification of a soil – Part 1: Identification and description.

⁹ BS EN ISO 14688-2:2004 Geotechnical investigation and testing – Identification and classification of a soil – Part 2: Principles for a classification.



7.1.1 Soil Classification Tests

The following soil classification tests were carried out:

- Sixteen Natural Moisture Content determinations.
- Eleven Atterberg Limits tests.
- Twenty eight Particle Size Distribution tests including ten Sedimentation tests.

7.1.2 Soil Chemical Tests

The following soil chemical tests were carried out:

- Twenty seven Sulphate Content tests on 2:1 aqueous extracts.
- Twenty seven pH. Value tests
- Seven organic Matter tests

7.1.3 Soil Compressibility Tests

The following soil compressibility tests were carried out.

• Three Oedometer One Dimensional Consolidation tests.

7.1.4 Soil Strength Tests

The following soil strength tests were carried out:

• Three Immediate Undrained Triaxial Compression Strength tests, performed using multi stage testing techniques on approximately 100mm diameter undisturbed samples

The results of all Geotechnical laboratory tests are contained in Appendix 5.0 of this report

¹⁰ BS1377:1990 Methods of test for soils for civil engineering purposes: Incorporating Amendment No.1.



7.1.5 Soil Contaminant Tests

Analyses for the presence and quantity of the following contaminants were carried out:

- Thirteen tests for Arsenic, Cadmium, Chromium, Chromium VI, Lead, Mercury, Selenium, Boron, Copper, Nickel, Zinc
- Thirteen, free Cyanide, Phenols, Ammonia
- Thirteen Fractional Organic Carbon
- Thirteen speciated TPH Banded (Aliphatic/ Aromatic split) tests.
- Thirteen Speciated PAHs
- Thirteen PCBs
- Thirteen SVOCs
- Thirteen Volatile Organic Compounds
- Thirteen Asbestos Screens

The results of all soils laboratory tests are contained in Appendix 6.0 of this report.

7.2 Soil Leachate

7.2.1 Leachate Tests

Analyses for the presence and quantity of the following contaminants were carried out.

Thirteen tests for Arsenic, Boron, Cadmium, Chromium, Chromium VI, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide (free), Phenols(total), TPH, speciated PAH (USEPA 16), BTEX, PCBs, Ammonia.

The leachate test results are expressed in accordance with BS EN 12457-3:2002¹¹ and are contained in Appendix 6.0 of this report.

The results of all Geochemical laboratory tests are contained in Appendix 6.0 of this report

¹¹ BS EN 12457-3:2002 Characterisation of waste. Compliance test for leaching of granular waste materials and sludges.



7.3 Rock

The following tests were carried out on selected sections of rock core:

• Seven Point Load Tests.

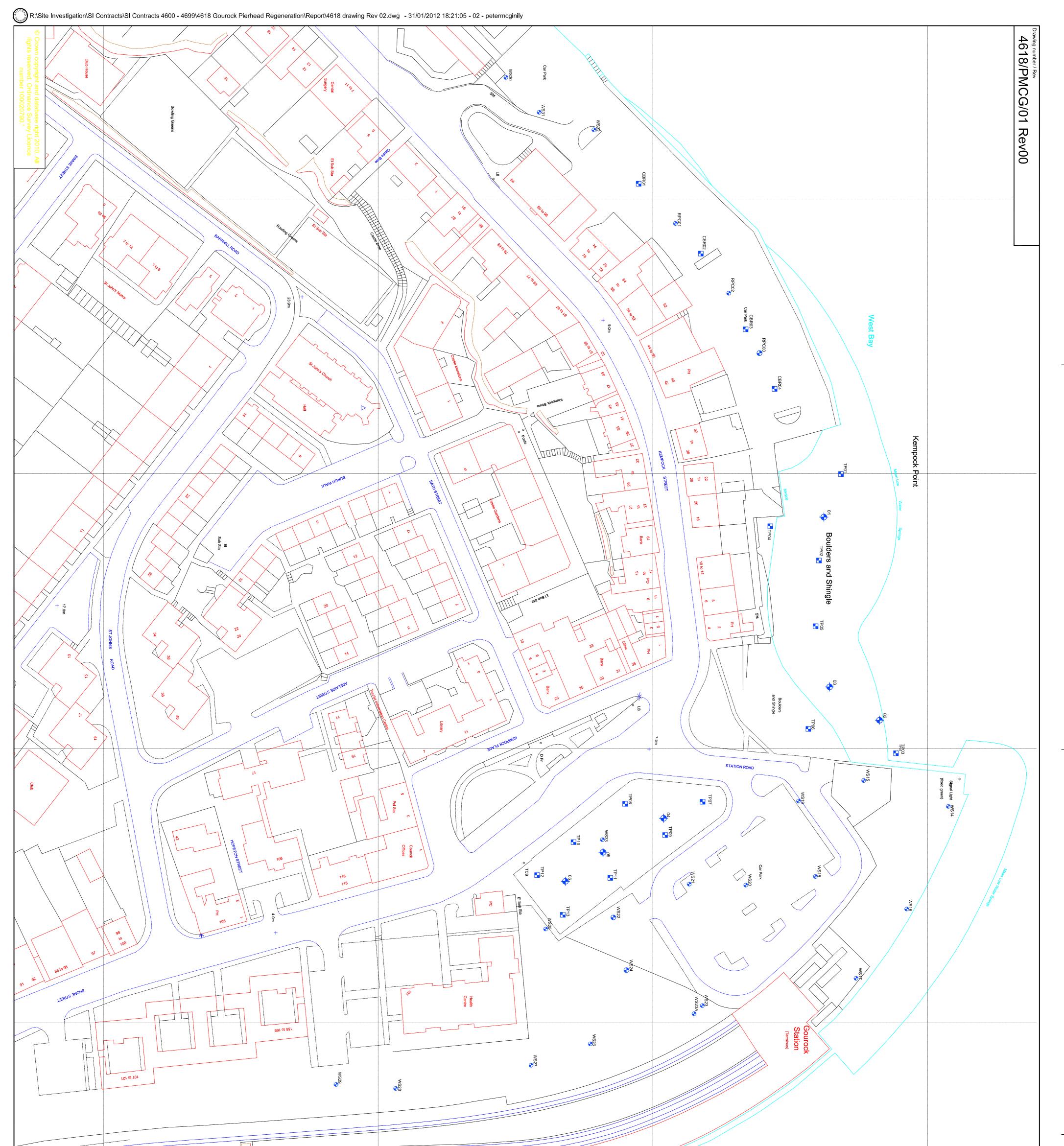
Sample unsuitability prevented the following tests from being carried out:

• Two Uniaxial Compression tests

The results of all Rock laboratory tests are contained in Appendix 5.0 of this report.



APPENDIX 1.0 BOREHOLE LOCATION PLAN



o Terminal			
Project Project GOUROCK PIERHEAD REGENERATION Drawing title GROUND INVESTIGATION 2011 LOCATION PLAN SHEET 1 OF 1 Scale Invo BAX.4618 Client.no. Drawing status Traving status This drawing is not to be used in whole or part other than for the interded purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.	Image: orgen construction Pmcc Pmcc Luds Rev. Date Purpose of revision Pmcd Luds Contractor Purpose of revision Drawn Checkd Rev. d Kilsyth, Glasgow Road Kilsyth, Glasgow, G65 BL Vervee Vervee	Freme Image: Control Image: Control Trail Pit Location	notes 1.



APPENDIX 2.0 EXPLORATORY HOLE LOGS



Appendix 2.1 Borehole Logs



Gourock Pierhead

Borehole No 01 Sheet 1 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhu	Irst & Partners								Job N	0: 46	0	
Date Started 01/10/2011 Date Complete: 03/10/2011	Initial Borin Initial Core	Diameter		125mm		Coordi				15.820 m 962.190 m		
Hole Type: RO Equipment: A65	Rotary Cas Core Barrel			-Robit		Plunge	d Level: e:		90 °			
	Core Bit:	1 1				Scale:		1	1:50			1
Description of Strata		Legend [Depth	Reduced Level		npling/ re Run	U	In Site	u Testing Result	TCR (SCR) RQD	FI	Insta -atio
MADE GROUND: Sand and grave (Open holed).	el (Driller's description)											
MADE GROUND: Medium dense rounded to rounded fine to coarse basalt with occasional fragments and shells.	gravel of quartz and		.50 .95	-1.10 -1.55	D	1.50-1.95		S	22			
Medium dense reddish brown silty coarse SAND. Gravel is sub roun coarse of quartz and basalt.	very gravelly fine to ded to rounded fine to				D	3.00-3.45		S	15			
					D	4.50-4.95		S	24			
Medium dense brown silty slightly coarse SAND. Gravel is sub round coarse of quartz and basalt.		6	.00	-5.60	D	6.00-6.45		S	25			
Continued next sheet					D	7.50		S	21			
U Undisturbed U100 / U86 Sample Piston Sample W Thin Wall Sample D Small Disturbed Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Design FI Fracture Index		S C 32 /175 /25#	Cone N for For g Seati	Penetra full 300n iven pen ng blows	nm penetration etration (mm) only (mm)		CP RO RC SO CONP		en Hole ed h holed s Percussi		
B Bulk Disturbed Sample Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core	NI Non Intact U* Blows to drive U100 UT Thin wall undisturbe NA Not Applicable NR No Recovery		PP K L IV IVR	Perm Packe Insitu Insitu	eability T er Test (L Vane Te Vane Te	ometer Test est (m/s) ugeons) est. Peak est. Residual			Windowles ation Slotted Pipe Piezometer Tip Grout	Sa	nd Filte	Seal
Amber Jar Sample		HV	Hand	Vane Te	est. Peak			2.001	Gra	avel Filte	er	



Gourock Pierhead

Borehole No 01 Sheet 2 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhur	•	rs								Job No	n [.] 461	8	
Date Started 01/10/2011 Date Complete: 03/10/2011 Hole Type: RO Equipment: A65		Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	imeter		125mm -Robit		Coordi Groun Plunge Scale:	d Level: e:		E 2241	15.820 m 62.190 m	Nationa	
Description of Strata		•	Legend	Depth	Reduced Level		npling/ nre Run	U		u Testing	TCR (SCR)	FI	Install -ation
Medium dense brown silty slightly g coarse SAND. Gravel is sub rounde coarse of quartz and basalt.		ine to				-	9.00		S	26	RQD		
Medium dense light brown slightly of angular to sub rounded fine to coar various lithologies. Sand is fine to c	se GRAVEL of	ub		10.50	-10.10	D	10.50-10.95		S	25			
Stiff light brown slightly sandy sligh CLAY. Gravel is sub angular to sub coarse of quartz, basalt and schist. coarse.	rounded fine	io >		1 2.00	-11.60	D	12.00-12.45		S	31			
			r. 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 194 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 181 18	- - - - - - - - - - - -		D	13.50-13.95		S	36			
Continued next sheet				-		D	15.00-15.95		S	36			
U Undisturbed U100 / U86 Sample	-	e Run		S			etration Test	•	СР	Cable Perci			•
P Piston Sample TW Thin Wall Sample	SCR Soli	al Core Recovery d Core Recovery		C 32	N for	full 300n	tion Test nm penetration		RO RC	Rotary Ope Rotary Core	ed		
D Small Disturbed Sample		k Quality Designatio cture Index	on	/175 /25#	-		etration (mm) s only (mm)		SO CONP	Sonic Open Continuous		ion	
B Bulk Disturbed Sample	Intact vs to drive U100 / U	186	PP K	Pock	et Peneti	rometer Test Fest (m/s)		WLS	Windowless				
LB Large Bulk Disturbed Sample W Water Sample	UT Thir	wall undisturbed s		L	Pack	er Test (l	Lugeons)			Slotted Pipe	Sa	nd Filte	r
G Gas Sample		Applicable		IV IVR			est. Peak est. Residual			Piezometer Tip		ntonite	
C Core J Amber Jar Sample		Recovery Penetration		HV	Hand	Vane Te	est. Peak			Grout	Gr	avel Filt	er
V Vial Sample				HVR	Hand	Vane Te	est. Residual			Concrete			



Gourock Pierhead

Borehole No 01 Sheet 3 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhurs	at & Partners							Job N	o: 461	8	
Date Started01/10/2011Date Complete:03/10/2011Hole Type:ROEquipment:A65	Initial Boring Initial Core I Rotary Casir Core Barrel: Core Bit:	Diameter ng Type	125mm -Robit		Coordir Ground Plunge Scale:	I Level:			15.820 m		
Description of Strata		Legend De	Reduce pth Level	Sampli Core	-	U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Instal -atior
Stiff light brown slightly sandy slightl CLAY. Gravel is sub angular to sub coarse of quartz, basalt and schist. S coarse.	rounded fine to				6.50		S	50/0			
Very stiff light bluish grey slightly sau gravelly CLAY. Gravel is sub angula fine to coarse of quartz and schist. S coarse.	to sub rounded		.00 -17.60		8.00-18.45		S	32			
Very stiff reddish brown slightly sand gravelly CLAY. Gravel is sub angula fine to coarse of quartz, basalt and s fine to coarse.	r to sub rounded chist. Sand is				9.50-19.95		S	33			
Red SANDSTONE (Driller's descript	ion) (Open holed).										
Red BASALT very hard (Driller's Des holed). Continued next sheet			.70 -21.30								
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designa FI Fracture Index	ation	C Cor 32 N fo /175 For	ndard Penetr e Penetration full 300mm given penetr ting blows or	n Test penetration ation (mm)		CP RO RC SO CONP	Cable Perc Rotary Ope Rotary Core Sonic Oper Continuous	n Hole ed holed	ion	
B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample	U86 I sample	PP Poo K Per L Pao IV Insi IVR Insi	ket Penetron meability Tes ker Test (Luç tu Vane Test. tu Vane Test. d Vane Test.	eter Test t (m/s) eons) Peak Residual		WLS Installa	Windowles	s Sample	r	Seal	



Gourock Pierhead

Borehole No 01 Sheet 4 of 4 Status Final 01/02/2012

Consultant: W.A. Fairh	urst & Partners								Job No	o: 461	8	
Date Started01/10/2011Date Complete:03/10/2011Hole Type:ROEquipment:A65	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		125mm -Robit		Coordir Ground Plunge Scale:	Level:			15.820 m 62.190 m		
Description of Strata		Legend	Depth	Reduced Level	Sampling Core Ru		U	In Site	u Testing Result	TCR (SCR) RQD	FI	Install -ation
Red BASALT very hard (Driller's holed).	Description) (Open			-26.60				lest	Kesult	KQD		
	Core Run		- - - - - - - - - - - - - - - - - - -	Stand	ard Penetratic	on Test		СР	Cable Perc	ussion		
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designati FI Fracture Index NI Non Intact U* Blows to drive U100 / L UT Thin wall undisturbed st NA Not Applicable NR No Recovery NP No Penetration	J86	C 32 /175 /25# PP K L IV IVR HVR	Cone N for f For gi Seatir Pocke Perme Packe Insitu Insitu Hand	Penetration T full 300mm per ven penetration g blows only ablity Test (Penetrometer abbility Test (r r Test (Lugeo Vane Test. Per Vane Test. Per Vane Test. Per Vane Test. Per Vane Test. Per Vane Test. Per	est enetration on (mm) (mm) er Test n/s) ns) eak esidual eak		RO RC SO CONP WLS Installa	Rotary Ope Rotary Core Sonic Oper Continuous Windowless	n Hole holed Percussi Sample Sample	r	Seal

		bai ritchie			B	Bo	01 Information Status Final 01/02/2012	No							
Client: Consul	ltant [.]		Fairhurs	-							loh	No: 46			
Date Starte Date Comp Hole Type: Equipment	ed blete:	01/10/2011 03/10/2011 RO A65			Initial E Initial C			25mm Robit		Coordin Ground Plunge: Scale:	ates:	E 2241	15.820 m Nati 62.190 m Nati		
			PROG	RESS						DRILL	ING DET				
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chisel To	ling Hours	From	То	Rotary Hole Dia	Core Dia	Flush	
01/10/2011 03/10/2011 03/10/2011	14:00 08:15 12:00	16.50 16.50 27.00	12.00 12.00 13.50	20.80	Tidal										
		1 1	WA	TER S	TRIKE	S				IN S	ITU SPT	TEST	DETAI	LS	
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow		s	ealed	Depth	Blows for 75mr	n Increments			
03/10/2011	00:00	20.80	-	-	12.00	-			-	1.50 3.00 4.50 6.00 7.50 10.50 13.50 15.00 16.50 18.00 19.50	N=22 (4.5.5,4 N=15 (4.4.5.3 N=24 (4.4.5.6 N=25 (5.6.5.6 N=21 (5.4.4.5.7 N=35 (6.4.5.7 N=35 (6.4.8.6,8 N=36 (4.8.6,8 N=36 (7.8.9,8 50/0mm (25.0 N=32 (5.8.7,7,9)	(3,4) (6,7) (6,8) (6,6) (6,8) (7,6) (7,6) (7,8) (10,12) (10,9) (50,0,0,0) (9,9)			
							NOTE	S							
Ground	water leve undertake		to seasonal, t jh and low tide	idal and othe e, rig removed	from beach	and should not be at end of each shi surface.									
-							PERS	ONNE	L						
Driller: G	U				Logged	by: PMcG				Checked	by: PMcG				



Gourock Pierhead

Borehole No 02 Sheet 1 of 4 Status Final 01/02/2012

Con	sultant: W.A. F	airhurst & Partne	ers								Job No	o: 461	8	
Date S	Started 25/10/2011		Initial Boring Di	ameter:		125mm		Coord	linates:		E 2241	89.490 m	Nationa	al Grid
Date C	Complete: 29/10/2011		Initial Core Diar	neter							N 6779	84.450 m	Nationa	al Grid
Hole T	ype: RO		Rotary Casing	Гуре		Robit		Groun	nd Level	:	-0.05 m OE)		
Equipr	ment: A65		Core Barrel:					Plung			90 °			
			Core Bit:					Scale:			1:50	1		r
						Reduced	Sam	pling/		In Sit	u Testing	TCR (SCR)	FI	Install
	Description of Stra			Legend	Depth	Level	Cor	re Run	U	Test	Result	RQD		-ation
Greer ∫litholg	n angular coarse GRA	/EL and COBBLES o	of various		0.10	-0.15								
Mediu	um dense brown sandy arse GRAVEL of variou				-		D	1.00-1.45		s	15			
coars	um dense pale reddish se SAND. Gravel is sul	o rounded to rounded	fine		3 .00	-3.05	D	2.50-2.95		S	14			
and m	nedium occasionally co	arse of various litholo	jies.		-		D	4.00-4.45		s	19			
							D	5.50-5.95		S	20			
to rou litholo	um dense pale reddish unded fine to coarse G gies. nued next sheet		b angular		6.70 	-6.75								
			e Run		S	Stand	dard Pen	etration Test	<u> </u>	СР	Cable Perc	ussion	<u> </u>	•
U P	Undisturbed U100 / U86 S Piston Sample	ample TCR Tota	al Core Recovery		С		Penetrat			RO	Rotary Ope			
TW	Thin Wall Sample		id Core Recovery ck Quality Designatio	n	32 /175			nm penetration etration (mm)		RC SO	Rotary Core Sonic Oper			
D	Small Disturbed Sample		cture Index		/25#	-		only (mm)		CONP	•		ion	
В	Bulk Disturbed Sample		n Intact		PP	Pocke	et Penetr	ometer Test		WLS	Windowless			
LB	Large Bulk Disturbed Sam	pie	ws to drive U100 / U8 n wall undisturbed sa		K		eability T er Test (L			Installa	ation Slotted Pipe	<u>ेल्</u> च -	. —	
W G	Water Sample Gas Sample		Applicable	anpie	IV		i Vane Te	• •			Piezometer Tip		nd Filter	
C	Core		Recovery		IVR		Vane Te	est. Residual			Grout	1.7.9	ntonite S	
C														
J V	Amber Jar Sample Vial Sample		Penetration		HV HVR		I Vane Te	est. Peak est. Residual		1 mart	Concrete	<u>स्त</u> Gr	avel Filte	er



Gourock Pierhead

Borehole No 02 Sheet 2 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhurs	st & Partners							Job No	o: 461	8	
Date Started25/10/2011Date Complete:29/10/2011Hole Type:ROEquipment:A65	Initial Boring Initial Core I Rotary Casir Core Barrel: Core Bit:	Diameter	125mm Robit		Coordi Ground Plunge Scale:	d Level:	:		89.490 m 84.450 m		
Description of Strata		Legend Depth	Reduced Level	Sampli Core		U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Insta -atio
Medium dense pale reddish brown v to rounded fine to coarse GRAVEL lithologies.	of various	- - - - - - - - - - - - - - - - - - -	-9.55	D 8	9.50-8.95		S	22			
Medium dense greyish brown silty g coarse SAND with many shell fragm rounded to rounded fine to coarse of lithologies.	ents. Gravel is sub		0.00								
Below 10.50m becoming clayey		11.00) -11.05	D 1	0.50-10.95	5	S	10			
Gravel is sub angular to sub rounde of various lithologies. Sand is fine to Continued next sheet					2.80-13.25	5	S	10			
U Undisturbed U100 / U86 Sample P Piston Sample W Thin Wall Sample D Small Disturbed Sample	ation /11 /25	Cone N for 5 For g 5# Seati	iven penetra	n Test penetration ation (mm)		CP RO RC SO CONP WLS	Cable Perci Rotary Ope Rotary Core Sonic Oper Continuous Windowless	n Hole ed holed Percuss			



Gourock Pierhead

Borehole No 02 Sheet 3 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhurst &	Partners								Job No	o: 461	8	
Date Started25/10/2011Date Complete:29/10/2011Hole Type:ROEquipment:A65	Initial Boring D Initial Core Diau Rotary Casing Core Barrel: Core Bit:	meter		125mm Robit		Coordi Groun Plunge Scale:	d Level e:	:		89.490 m 84.450 m)		
Description of Strata	ł	Legend	Depth	Reduced Level	Sampl Core	-	U		u Testing	TCR (SCR)	FI	Instal -atior
Soft brown slightly sandy slightly gravelly Gravel is sub angular to sub rounded find of various lithologies. Sand is fine to coar Below 19.00m becoming very soft	e to coarse se.		22.00	-22.05	D 1	9.00-19.45		S	9 9	RQD		
Very stiff light grey brown slightly sandy s gravelly CLAY. Gravel is sub angular to s fine to coarse of various lithologies. Sand coarse.	sub rounded		· · · · · ·		D 2	3.20-23.65	ò	S	61			
Continued next sheet Undisturbed U100 / U86 Sample Piston Sample Piston Sample Small Disturbed Sample Bulk Disturbed Sample Bulk Disturbed Sample Water Sample Bulk Disturbed Sample Core Water Sample Core NA Not Applicable Core Amber Jar Sample Vial Sample		86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seatii Pocke Perm Packe Insitu Insitu Hand	Jard Penetra Penetratio full 300mm iven penetron g blows or et Penetron eability Tes er Test (Luç Vane Test Vane Test Vane Test Vane Test Vane Test	n Test penetration ation (mm) nly (mm) neter Test t (m/s) geons) Peak Residual Peak			Windowless	n Hole holed Percussi Sample	r	Seal



Gourock Pierhead

Borehole No 02 Sheet 4 of 4 Status Final 01/02/2012

	sultant: W.A. Fairhurs	st & Partners									Job No	o: 461	8	
Date St Date Co Hole Ty Equipm	pmplete: 29/10/2011 /pe: RO	lı F	nitial Boring Dia nitial Core Diarr Rotary Casing T Core Barrel: Core Bit:	leter		125mm Robit		Coordii Ground Plunge Scale:	d Level:	:	E 2241	89.490 m 84.450 m	Nationa	
	Description of Strata			Legend	Depth	Reduced Level	Sampling Core Ru		U		u Testing	TCR (SCR)	FI	Install -ation
gravell fine to coarse	tiff light grey brown slightly sa y CLAY. Gravel is sub angula coarse of various lithologies. e. Borehole at 27.00 m	r to sub rounded			27.00	-27.05				Test	Result	RQD		
U P W D B L B W G C J	Undisturbed U100 / U86 Sample Piston Sample Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample Large Bulk Disturbed Sample Water Sample Gas Sample Core Amber Jar Sample	SCR Solid Core RQD Rock Qua FI Fracture I NI Non Intac U* Blows to core	e Recovery e Recovery ality Designation Index t drive U100 / U8 undisturbed sa cable very	6	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for f For gi Seatin Pocke Perme Packe Insitu Insitu	ard Penetratic Penetration Tr ull 300mm per ven penetratic g blows only t Penetrometer abablity Test (n r Test (Lugeo Vane Test. Re Vane Test. Re	est netration n (mm) (mm) er Test n/s) ns) pak esidual			Windowless	n Hole holed Percussi Sample	r	Seal

1		bai ritchio	es			OREH Gouro			02 02 Information Status Final	No					
Client:			side Inve Fairhurs	-										01/02/2012	
Consu			Faimurs	a Part						Creat	linetee		No: 46		
Date Starte Date Comp Hole Type: Equipment	olete:	25/10/2011 29/10/2011 RO A65			Initial C			25mm Robit						89.490 m Nati 84.450 m Nati)	
			PROG	RESS						DRIL	LIN	G DET	AILS		
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chisell To	ing Hours	Fror	n	То	Rotary Hole Dia	Core Dia	Flush
25/10/2011 26/10/2011 27/10/2011 27/10/2011 28/10/2011 28/10/2011 29/10/2011	18:30 16:20 19:20 17:00 20:00 05:50 08:30 06:30	7.50 7.50 13.00 20.50 27.00 27.00	7.50 7.50 13.00 20.50 23.20 23.20		R STRIKES IN SITU SPT TE										Air
			WA	TER S	TRIKE	S				IN	SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow		Se	ealed	Depth	Ble	ows for 75mn	n Increments		
										1.00 2.50 5.50 8.50 12.86 16.00 19.00 23.20		=15 (3,4,4,3, =14 (3,4,4,5, =20 (3,4,4,5, =22 (4,5,5,5, =10 (1,2,2,2, =9 (1,1,2,2,2) =4 (1,1,1,1,1 =61 (4,10,12)	3,4) 5,5) 6,5) 6,6) 3,3) 2,3) ,3) ,1)		
							NOTE	S							
Ground	water leve	s; all diameter Is are subject ed at 27.00m			fluctuations	and should not be	e taken as con	stant							
							PERS	ONNE	L						
Driller:					Logged	by: PMcG				Check	ed by:	PMcG			



Gourock Pierhead

Borehole No 03 Sheet 1 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhurs	st & Partners								Job No	o: 461	8	
Date Started27/09/2011Date Complete:30/09/2011Hole Type:ROEquipment:A65	Initial Boring I Initial Core Di Rotary Casing Core Barrel: Core Bit:	ameter		125mm Robit		Coordi Groun Plunge Scale:	d Level:			77.715 m 64.246 m		
Description of Strata		Legend D	Depth	Reduced Level	Samp Core	bling/ e Run	U	In Situ Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Loose gravel (Dril ((Open holed) .	ler's description)	0.	.30	1.01								
MADE GROUND: Sand and gravel ((Open holed).			.50	-0.19				S	37			
MADE GROUND: Dense greyish bro sub angular to sub rounded fine to c sandstone, quartz and dolerite and o sized fragments of brick. Sand is fine	oarse gravel of ccasional gravel		.95	-0.64				0	01			
SAND and GRAVEL (Driller's descri	· · · · · · · · · · · · · · · · · · ·		00	-1.69		2 00 2 45		6	20			
Medium dense light reddish brown s to coarse SAND. Gravel is sub angu fine to coarse of dolerite and quartz.			.00	-1.69	D	3.00-3.45		S	38			
					D	4.50-4.95		S	22			
					D	6.00-6.45		S	22			
Continued next sheet					D	7.50-7.95		S	27			
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designati FI Fracture Index NI Non Intact U* Blows to drive U100 / U UT Thin wall undisturbed NA Not Applicable NR No Recovery NP No Penetration	J86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seatin Pocke Perm Packe Insitu Insitu Hand	Penetration full 300mr iven penel ng blows of eat Penetro eability Te er Test (Lu Vane Tes Vane Tes Vane Tes	m penetration tration (mm) only (mm) meter Test est (m/s) ugeons) t. Peak t. Residual			Windowless	n Hole holed Percussi Sample		Seal



Gourock Pierhead

Borehole No 03 Sheet 2 of 4 Status Final 01/02/2012

	urst & Partners							Job No	o: 461	8	
Date Started27/09/2011Date Complete:30/09/2011Hole Type:ROEquipment:A65	Initial C		125mm Robit		Coordi Ground Plunge Scale:	d Level e:	:		77.715 m 64.246 m		
Description of Strata		Legend Dept	Reduced	Sampli Core	-	U		u Testing	TCR (SCR)	FI	Install -ation
Medium dense light reddish brown to coarse SAND. Gravel is sub an fine to coarse of dolerite and quar	gular to sub rounded						Test	Result	RQD		
Soft CLAY with gravel bands (Dril (Open holed).	er's description)	9.40	-8.09								
Stiff light brown slightly sandy slig CLAY. Gravel is sub angular to su coarse	htly gravelly b rounded fine to		9.19	- 1	0.50		S	38			
				D 1	2.00-12.45	5	S	50			
				D 1	3.50-13.95		s	32			
Continued next sheet				D 1	5.00-15.45	5	s	32			
U Undisturbed U100 / U86 Sample	Core Run TCR Total Core Reco	S		dard Penetr		•	CP RO	Cable Perc			•
P Piston Sample W Thin Wall Sample	SCR Solid Core Reco	very 3	2 N fo	r full 300mm	penetration		RC	Rotary Ope Rotary Core	ed		
D Small Disturbed Sample	RQD Rock Quality De FI Fracture Index	-		given penetr ing blows or			SO CONP	Sonic Oper Continuous		ion	
B Bulk Disturbed Sample	NI Non Intact	P	P Pocł	ket Penetrom	neter Test		WLS	Windowless			
	U* Blows to drive U	100 / U86 K		neability Tes				ation			
LB Large Bulk Disturbed Sample	UT Thin wall undist	urbed sample	Pack	er Test (Luc	geons)	l.		Slotted Pipe	1	nd Ett	-
LB Large Bulk Disturbed Sample W Water Sample G Gas Sample	UT Thin wall undistu NA Not Applicable	IV.	Insit	u Vane Test.	Peak			Slotted Pipe Piezometer Tip		nd Filte	
W Water Sample			Insit R Insit		Peak Residual				Be	nd Filter ntonite : avel Filte	Seal



Gourock Pierhead

Borehole No 03 Sheet 3 of 4 Status Final 01/02/2012

Consultant: W.A. Fairhurst	t & Partners								Job No	o: 461	8	
Date Started27/09/2011Date Complete:30/09/2011Hole Type:ROEquipment:A65	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		125mm Robit				:		77.715 m 64.246 m		
Description of Strata		Legend De	epth	Reduced Level	Sam Core	oling/ e Run	U		u Testing Result	TCR (SCR) ROD	FI	Install -ation
Stiff light brown slightly sandy slightly CLAY. Gravel is sub angular to sub re coarse Red BASALT very hard (Driller's desc holed).	ounded fine to			-17.39	-	16.50 18.00		S	26 23	RQD		
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	 Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designati FI Fracture Index NI Non Intact U' Blows to drive U100 / U UT Thin wall undisturbed si NA Not Applicable NR No Recovery NP No Penetration 	J86	S C 32 /175 /25# PP K L IV IVR HVR	Cone N for f For gi Seatir Pocke Perme Packe Insitu Insitu Hand	Penetrati full 300mi ven pene ng blows et Penetro eability Te er Test (Lu Vane Tes Vane Tes Vane Tes	m penetration tration (mm) only (mm) ometer Test est (m/s) ugeons) st. Peak st. Residual			Windowless	n Hole holed Percussi Sample	r	Seal



Gourock Pierhead

Borehole No 03 Sheet 4 of 4 Status Final 01/02/2012

onsultant: W.A. Fairhurst & Partners											Job No	o: 461	8	
Started Complete: 'ype: ment:	27/09/2011 30/09/2011 RO A65		Initial Core Dia	meter		125mm Robit		Groun	d Level: e:	:				
De	escription of Strata			Legend	Depth	Reduced Level	•	•	U		-	TCR (SCR)	FI	Install -ation
3ASALT ve).						00.00				Tesi	Result			
f Borehole	at 25.00 m													
Piston Sam Thin Wall S Small Distur Bulk Distur Large Bulk Water Sam	tal Core Recovery lid Core Recovery ck Quality Designatio acture Index n Intact ws to drive U100 / U in wall undisturbed s t Applicable	86	S C 32 /175 /25# PP K L IV IVR HV	Cone N for f For gi Seatir Pocke Perme Packe Insitu Insitu	Penetration full 300mm p iven penetrating blows onling the Penetrome eability Test er Test (Luge Vane Test. I	Test benetration tion (mm) y (mm) eter Test (m/s) eons) Peak Residual		WLS	Rotary Ope Rotary Core Sonic Open Continuous Windowless ation Slotted Pipe	n Hole d holed Sample Sample San Ber	nd Filter	Seal		
	tarted complete: ype: nent: ASALT ve ASALT ve f Borehole f Borehole Piston Sam Thin Wall S Small Distur Bulk Disturi Bulk Disturi Large Bulk Water Sam Gas Sampl	tarted 27/09/2011 complete: 30/09/2011 ype: RO nent: A65 Description of Strata ASSALT very hard (Driller's des f Borehole at 25.00 m Borehole at 25.00 m Undisturbed J100 / U86 Sample Piston Sample Piston Sample Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample Bulk Disturbed Sample Large Bulk Disturbed Sample Bulk Disturbed Sample	tarted 27/09/2011 iomplete: 30/09/2011 ype: RO nent: A65 Description of Strata ASALT very hard (Driller's description) (Op , f Borehole at 25.00 m f Borehole at 25.00 m f Borehole at 25.00 m f Borehole at 25.00 m Control of Strata f Borehole at 25.00 m f Borehole at 25.00 m	Undisturbed U100 / U86 Sample Initial Boring D Description of Strata Core Run ASALT very hard (Driller's description) (Open I. Initial Core Barreling /ASALT very hard (Driller's description) (Open I. Initial Core Recovery SCR /f Borehole at 25.00 m Ferror Core Run Initial Boring D Solid Core Recovery SCR Buik Disturbed Sample Ferror Total Core Recovery RQD Small Disturbed Sample Fire Core Run Buik Disturbed Sample Fire Core Run Buik Disturbed Sample Fire Core Run Small Disturbed Sample Fire Core Run Sub Robustion Sample Fire Core Run Scale Core Run Solid Core Recovery RCD Rock Quality Designatic Fire Core Run Total Core Recovery RCD Rock Quality Designatic Fire Core Run Non Intact U'' Blows to drive U100 / U'' Water Sample NA Not Applicable	Initial Boring Diameter: Initial Core Diameter Initial Core Diameter Retary Casing Type Core Barrel: Core Bit: Description of Strata ASALT very hard (Driller's description) (Open If Borehole at 25.00 m If Borehole at 25.00 m If Borehole at 25.00 m Initial Core Recovery ROD Rock Quality Designation FI Fracture Index Small Disturbed Sample Thin Wall Sample Small Disturbed Sample Large Bulk Disturbed Sample NA Not Applicable	Undisturbed U100 / U86 Sample Initial Sorie Rourely Core Run S Undisturbed U100 / U86 Sample Initial Core Rourely S 25.00 It Borehole at 25.00 m S Core Run S 25.00 It Borehole at 25.00 m S S S S S S It Borehole at 25.00 m S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S	Undisturbed U100 / U86 Sample Thin Wall Sample Thin Wall Sample Small Database Sample Table Disturbed Sample Thin Wall Sample	tarind 2709/2011 Initial Boing Dameter: 126mm initial Core Diameter Rotary Casing Type Rotat per: A65 Core Barret Rotat Description of Strata Legend Depth Reduced Samplin ASALT very hard (Driller's description) (Open	tarted 27/04/2011 Initial Boring Demoter: 125mm Core omplex: 30/04/2011 Initial Core Dameter Robit Core pre:: A65 Core Barrel: Robit Core Description of Strata Logerd Depth Reduced Sampling/ Core Run ASALT very hard (Driller's description) (Open . 25.00 -23.69 -23.69 If Borehole at 25.00 m Tore Tore 25.00 -23.69 If Borehole at 25.00 m Tore Tore Core Run Core Run Tore Tore Tore Tore Core Run South Core Run South Core Sample Tore Tore Core Run South Core Run Tore Tore Core Run South Core Run South Core Run South Core Run South Core Run South Core Run Tore Tore Core Run South Core Run South Core Run Tore Tore Core Run South Core Run South Core Run Tore Tore Core Run South Core Run South Core Run Tore Tore Core Run South Core Run South Core Run Tore Tore Core Run South Core Run South Core Run Tore Tore Core Run South Core Run South Core Run Tore Core Run South Core Run South Core Run Tore Run Run South Co	Undisturbed U100 / U80 Sample Per Care Ruh Sample Sample Score Ruh Sample Sample Score Ruh Sample Sample Sample Ruh I Coordinates: Instal Gore Dismater Ruh I Instal Boring Diameter Ruh I Ruh I Coordinates: Grown Long Description of Strata Lagent (Daring Type Care Baret: Core Baret: Core Baret: Core Baret: Core Baret: Core Ruh I Deptin Reduced Ruh I Serreling/ Core Ruh I U ASALT very hard (Driller's description) (Open I Image Ruh I Per Ruh I Serreling/ Core Ruh I U If Borehole at 25:00 m Image Ruh I Image Ruh I Serreling/ Land I U If Borehole at 25:00 m Image Ruh I Serreling I U Image Ruh I Trace Ruh I Serreling I U Image Ruh I Trace Ruh I Serreling I U Image Ruh I Trace Ruh I Serreling I U Image Ruh I Trace Ruh I Serreling I U Image Ruh I Trace Ruh I Serreling I U Image Ruh I Trace Ruh I Serreling I Image Ruh I Image Ruh I Trace Ruh I Serreling I Serreling I Image Ruh I Trace Ruh I Sereling I	Larred 270/802011 Initial Borng Duminter: 125em Coordinates: Longroup ROB Coordinates: Ground Laret Initial Core Diameter Robit Coordinates: Description of Strata Lagand Posth Reduced ASALT very hard (Driller's description) (Open Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates: Image: Coordinates: If Borehole at 25.00 m Image: Coordinates: Image: Coordinates: Image: Coordinates:	Juncticulated U100 / U08 Sampler Dama Sample Matel Boring Damater: Hotel Core Damater Rouge Core Damater	Annel 27032011 Initial Borng Diamoter: 120mm Correlation: E 24477.75 m Arribelits 20020211 Initial Borng Diamoter: 120mm Correlation: N 070708.26 m Initial Borng Diamoter: Add Correlation: Return Correlation: Return Correlation: N 070708.26 m Insertion: Add Correlation: Return Correlation: Return Correlation: N 070708.26 m Insertion: Add Correlation: Return Correlation: Return Correlation: N 070708.26 m Insertion: Correlation: Return Correlation: Return Correlation: Sarothing! U 1.1507.1507.150 m Add Correlation: Lager Depth Return Correlation: Sarothing! U 1.1507.1507.150 m Return	Land 2009/2011 Heiki Borng Demeter: 120mm Conditate: E 2417/715 m Nace arriber: 900 - Note: Note:<

	-	bai ritchie	es	erclyde L	B		Bo	orehole 03 Information Status Final 01/02/2012							
Client: Consu	ltant:			st & Part								loh	No: 46	18	
Date Starte Date Comp Hole Type: Equipment	ed plete:	27/09/2011 30/09/2011 RO A65			Initial E Initial (25mm Robit			Coordinat Ground Lu Plunge: Scale:	es:	E 2241	77.715 m Nat 164.246 m Nat	
			PROG	RESS		л					DRILLII	NG DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To	selling Hou		From	То	Rotary Hole Dia	Core Dia	Flush
27/09/2011 28/09/2011 29/09/2011 29/09/2011 30/09/2011 30/09/2011	16:30 08:00 12:15 07:00 12:30 06:00 12:00	1.50 1.50 10.50 10.50 16.50 25.00	1.50 1.50 10.50 10.50 13.50 13.50 13.50	1.00	- Tidal Tidal Tidal Tidal Tidal Tidal						0.00	25.00	125	-	air
		<u> </u>	WA	TER S	TRIKE	S	L	1			IN SI	TU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed		Depth	Blows for 75mr	n Increments		
27/09/2011	:	1.00	Risen After n Casing												
							NOTE	S							
Ground Drilling 9.00m I	All depth in metres; all diameters in millimetres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Drilling undertaken between high and low tides, rig removed from beach at the end of each shift. No SPT test at 9.00m blowing sand. Borehole completed at 25m, backfilled with cement bentonite grout to rockhead and arisings to ground level.														
							PERS	ONN	IEL		1				
Driller: G	U				Logged	by: PMcG					Checked b	y: PMcG			



Gourock Pierhead

Borehole No 04 Sheet 1 of 2 Status Final 01/02/2012

Consultant WA Fairburst & Partners Job No. 4618 Das Stanus S000211 Insta Cast Barden Paren Consultant Insta Cast Barden Insta C	Consultant: W.A. Fairhurs	•	rs								Job N	o∙ 461	8	
Epulyment 201 Dards + AB Cons Ref H2 Page	Date Started 30/09/2011 Date Complete: 03/10/2011		Initial Boring D Initial Core Dia	meter		76mm					E 2242 N 6779	25.560 m 03.810 m	Nation	
Description of Strate Local Description of Strate U In Statu Cattor Tots Pil Parallelic MADE GROUND: Turd over brown slightly sandy slightly gravely (bay, Gravel is sub angular to sub rounded fine to coarse durinos lith outgost coables of concrete. Gravel is angular to sub rounded fine to coarse coarse sand with coassional angular obbies of concrete. Gravel is angular to sub rounded fine to coarse coarse sand with coassional angular cobbies of concrete. Gravel is angular to sub rounded fine to coarse of biol., concrete and slight coassional angular obbies of concrete. Gravel is angular to sub rounded fine to coarse of biol., concrete and slight coassional angular obbie of sandbione. Gravel is and fine to coarse. Revised angular biologies S 10 In Statu biologies S 10 MADE GROUND: Firm pale red purple and light gravelly coassional angular obbie of sandbione. Gravel is and firme to coarse. 2.00 3.89 B 1.30 S S 10 MADE GROUND: Firm pale red purple and light gravelly coassional angular obbie of sandbione. Gravel is and. Gravel is sub rounded fine to coarse of various sand. Gravel is sub rounded fine to coarse. 3.70 2.19 BD 3.70 2.19 BD 3.70 I S 3.30 MADE GROUND: Brown slightly sandy slightly gravelly recoverse to monthed fine to coarse. 5.50 0.01 1.29 U 4.60-5.05			Core Barrel:	туре		412		Plur	ge:	:	90 °			
Description of Strate Legand Deef User Cone Fun U Test Beault Form Beault <td></td> <td></td> <td>Core Bit:</td> <td></td> <td></td> <td></td> <td>Sar</td> <td>I</td> <td></td> <td>In Sit</td> <td></td> <td></td> <td>FI</td> <td>Install</td>			Core Bit:				Sar	I		In Sit			FI	Install
gravely cay. Gravel is sub angular to sub angular to sub rounded 0.30 5.59 DJJ 0.20 MADE GROUND: Medium dense dark brown sity very gravely fine to costres and with works sub rounded fine to coarse sea with which costsponel angular to sub rounded fine to coarse and with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely cases with were transmitted signifity sandy sightly gravely fine to coarse sea with gravely were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitted signifity sandy sightly gravely were transmitted signifity sandy sightly gravely fine to coarse sea with were transmitter were t				Legend	Depth	Level			U					
MADE GROUND: Medium dense dark brown sity very gravely fine to coarse san diffuences 8 0.50 S 100 MADE GROUND: Firm pale red purple and light grey montled sightly sandy slightly gravelly coarse of quark and locations of sandstone. Sand is fine to coarse of sandstone. Sand is fine to coarse of sandstone. Sand is fine to coarse of various inthologies. 3.89 B 1.80 D S 9 I MADE GROUND: Firm pale red purple and light grey montled slightly sandy slightly gravelly cocasional angular coble of sandstone. Sand is fine to coarse of sandstone. Sand is fine to coarse of various inthologies. 3.70 2.19 BD 3.70 S 122 MADE GROUND: Brown silty very gravelly coarse of quark and basit. Sand is fine to coarse inthologies. 3.70 2.19 BD 3.70 S 122 I 6.00-5.05 69 S 3.33 Af 5.90m hard TR Coarse of quark and basit. Sand is fine to coarse inthologies. 5.90 1.29 U 4.60-5.05 69 S 3.33 100 12 Medium strong gray medium grained porphyritic TRRACHYTE. Weathering. Slight weathering visible as brown percentarious trained. Unour building. 5.90 0.01 5.00 S 3.33 100 12 100 12 100 12 100 12	gravelly clay. Gravel is sub angular to	o sub rounded			-0.30	5.59								
MADE GROUND: Firm pale red purple and light gray motted sightly sandy sightly gravely lay with motted sightly gravely (CLAV: Gravel is sub rounded fine to coarse of various inithologies. 3.70 2.19 BD 3.70 S 9 Stiff light brown sightly sandy slightly gravely (CLAV: Gravel is sub rounded fine to coarse. 3.70 2.19 BD 3.70 6 6 5 S 12 Stiff light brown sightly sandy slightly gravely (CLAV: Gravel is sub rounded fine to coarse. 5.90 -0.01 6 6.20-9.20 S 3.33 at 5.90m hard -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01 -0.01	gravelly fine to coarse sand with occ cobbles of concrete. Gravel is angula	asional angula ar to sub roun	ar				B DJJ B	0.50 1.00 1.00		s	10			
Sand is fine to coarse. Sand is fine to coarse. MADE GROUND: Brown silty very gravelly fine to coarse sand. Gravel is sub rounded fine to coarse of various ithologies. 3.70 2.19 BD 3.70 2.19 BD 3.70 2.19 BD 3.70 2.19 BD 3.70 2.19 BD 3.70 2.19 BD 3.70 2.19 BD 3.70 2.19 BD 3.70 3.70 2.19 BD 3.70 5.20 D 5.60-5.90 S 33 at 5.90m hard 4.60 1.29 DJ 4.80 B 5.20 D 5.60-5.90 S 33 at 5.90m hard Medium strong grey medium grained porphytic TRACHTP: Weathering, Stipt weathering visible as brown penetralive staining at fracture zones. Fractures: Discontinuities are 5 - 10 ⁹ sub horizontal resolution stars for - 6 ⁹ sub vertical medium to widely spaced, rough, undulating. U Uditarubed U100 / U88 Sample Pheno Sample N Norizontal Penetralize stample N Norinat N Norizontal Penetralize stample N Norizontal Penetra	mottled slightly sandy slightly gravell occasional angular cobble of sandsto	y clay with one. Gravel is				3.89	D DJJ	1.80 2.00		s	9			
MADE GROUND: Brown silp very gravely ine to coarse of various silpt very gravely is sub rounded fine to coarse of various silpt very sand; Gravel is sub angular to sub rounded fine to coarse. 4.60 1.29 U 4.60-5.05 69 Stiff light brown slightly sandy slightly gravely coarse of quartz and basalt. Sand is fine to coarse. 4.60 1.29 U 4.60-5.05 69 at 5.90m hard		<u>).</u>				D	2.75		s	12				
Stiff light brown slightly sandy slightly gravelly CLAY. Gravel is sub angular to sub rounded fine to coarse of quartz and basalt. Sand is fine to coarse. DJJ 4.80 at 5.90m hard B 5.20 D 5.20 D Medium strong grey medium grained porphyritic TRACHYTE. Weathering: Slight weathering visible as brown penetrative staining at fracture zones. Fractures: Discontinuities are 5 - 10° sub horizontal very coarse to medium spaced, rough undulating. -0.01 6.20-9.20 S 33 U Undisturbed U100 / U86 Sample Plasin Sample Core Run TCR Core Run TCR S Standard Penetration Test CC C C Core Penetration Test CC C CP Cable Percussion RO RO Rotary Open Hole RO Ro	sand. Gravel is sub rounded fine to a				-3.70	2.19	BD	3.70						
at 5.90m hard -0.01 D 5.60-5.90 S 33 Medium strong grey medium grained porphyritic TRACHTPE. Weathering: Slight weathering visible as brown penetrative staining at fracture zones. Fractures: Discontinuities are 5 - 10° sub horizontal very coarse to medium spaced, rough, undulating. Discontinuities are 75 - 85° sub vertical medium to widely spaced, rough, undulating. -0.01 6.20-9.20 S 33 100 U Undisturbed U100 / U86 Sample P - Core Run TCR - - 6.20-9.20 S Cole Percussion RO Rotary Open Hole RC U Undisturbed U100 / U86 Sample P - Core Run TCR S Standard Penetration Test SCR CP Cable Percussion RO Rotary Open Hole RC U Undisturbed U100 / U86 Sample P N N No Initiat S Standard Penetration Test SCR So Sid Core Recovery RQD So Sid Core Recovery RQD So Sid Core Recovery RQD So Sid Core Recovery RQD No Initiat No full 300mm penetration (mn) RO Rotary Open Hole RC So Sid Core Penetration Test So So Sonic Open holed So Sid Core Rocovery RCD So Sid Core Recovery RQD No full 300mm penetration (mn) So Sonic Open holed So Sonic Open	CLAY. Gravel is sub angular to sub	rounded fine t	0		-4.60 	1.29	DJJ	4.80	69					
All south Hald Medium strong grey medium grained porphyritic Image Strengther Stre				1 × 1 × 1 × 1 × × 1 ×	-					s	33			
Medium strong grey medium grained porphyritic +++++ TRACHYTE. Weathering: Slight weathering visible as +++++ brown penetrative staining at fracture zones. +++++ Fractures: Discontinuities are 5 - 10° sub horizontal ++++++ very coarse to medium spaced, rough undulating. ++++++ Discontinuities are 75 - 85° sub vertical medium to ++++++++++++++++++++++++++++++++++++	∖at 5.90m hard		/	× · · · · · · · · · · · · · · · · · · ·	5.90	-0.01								
Fractures: Discontinuities are 5 - 10° sub horizontal very coarse to medium spaced, rough undulating. Discontinuities are 75 - 85° sub vertical medium to widely spaced, rough, undulating. 12 Discontinuities are 75 - 85° sub vertical medium to widely spaced, rough, undulating. 14 Continued next sheet 14 U Undisturbed U100 / U86 Sample P Core Run TCR Total Core Recovery Core Recovery SCR Solid Core Recovery Cone Pertention Test SCR Solid Core Recovery Cone Pertention Test RQD Rock Quality Designation /175 File Fracture Index PP NN Non Intact PP V Water Sample Ni G Gas Sample V M Not Applicable K NA Not Applicable NR NP No Penetration V Hand Vane Test. Residual H Filter NP No Penetration			eas	+ + + + +	-			6.20-9.20						
Continued next sheet +++++ - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - </td <td>Fractures: Discontinuities are 5 - 10 very coarse to medium spaced, roug Discontinuities are 75 - 85° sub verti</td> <td>^o sub horizont h undulating.</td> <td></td> <td>+ + + + + + + + + + +</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>65</td> <td>12</td> <td></td>	Fractures: Discontinuities are 5 - 10 very coarse to medium spaced, roug Discontinuities are 75 - 85° sub verti	^o sub horizont h undulating.		+ + + + + + + + + + +								65	12	
U Undisturbed U100 / U86 Sample TCR Total Core Recovery C Cone Penetration Test RO Rotary Open Hole P Piston Sample SCR Solid Core Recovery 32 N for full 300mm penetration RC Rotary Open Hole TW Thin Wall Sample RQD Rock Quality Designation /175 For given penetration (mm) SO Sonic Open holed D Small Disturbed Sample FI Fracture Index /25# Seating blows only (mm) CONP Continuous Percussion B Bulk Disturbed Sample NI Non Intact PP Pocket Penetrometer Test WLS Windowses Sample LB Large Bulk Disturbed Sample U* Blows to drive U100 / U86 K Permeability Test (m/s) Institu Idation Institu Idation W Water Sample UT Thin wall undisturbed sample L Packer Test (Lugeons) Image: Slotted Pipe Sand Filter G Gas Sample NR No Recovery IVR Institu Vane Test. Residual Piezometer Tip Bentonite Seal J Amber Jar Sample NP No Penetration HV <	Continued next sheet			+ + + + + + + + + + + + + + + + + + +	-								4	
Large bluk Distribed Sample UT Thin wall undisturbed sample L Packer Test (Lugeons) I Slotted Pipe Sand Filter W Water Sample NA Not Applicable IV Insitu Vane Test. Peak II Piezometer Tip Bentonite Seal G Gas Sample NR No Recovery IVR Insitu Vane Test. Residual IV Grout IV Grout IV J Amber Jar Sample NP No Penetration HVR Hord Vane Test. Peak IV ISIN Test Vane Test. Peak IV Grout IV Gravel Filter	P Piston Sample TW Thin Wall Sample D Small Disturbed Sample	U Undisturbed U100 / U86 Sample TCR Total Core Recovery P Piston Sample SCR Solid Core Recovery W Thin Wall Sample RQD Rock Quality Designatic D Small Disturbed Sample FI Fracture Index B Bulk Disturbed Sample NI Non Intact						ation Test mm penetration etration (mm) s only (mm) rometer Test		RO RC SO CONF WLS	Rotary Ope Rotary Core Sonic Oper Continuous Windowless	n Hole ed holed Percussi		
	W Water Sample G Gas Sample C Core J Amber Jar Sample		L IV IVR HV	Pack Insitu Insitu Hand	er Test (Vane Te Vane Te Vane Te	Lugeons) est. Peak est. Residual est. Peak			Slotted Pipe Piezometer Tip Grout	Be	ntonite	Seal		



Gourock Pierhead

Borehole No 04 Sheet 2 of 2 Status Final 01/02/2012

Consultant: W.A. Fairhurst &	Partners								Job No	o: 461	8	
Date Started30/09/2011Date Complete:03/10/2011Hole Type:CP+RCEquipment:3.0T Dando + A65	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		200mm 76mm Robit 412 Diam FC		Coordin Ground Plunge: Scale:	Level:			25.560 m 03.810 m		
Description of Strata		Legend	Depth	Reduced Level	Sampling Core Rui		U	In Situ Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
Medium strong grey medium grained por TRACHYTE. Weathering: Slight weather brown penetrative staining at fracture zor Fractures: Discontinuities are 5 - 10° sub very coarse to medium spaced, rough un Discontinuities are 75 - 85° sub vertical r widely spaced, rough, undulating.	ing visible as nes. o horizontal idulating.	+ + + + + + + + + + + + + + + + + + +	- - - - - - - -			0.42.20					5	
		+ + + + + + + + + + + + + + + + + + + + + + + + +	- - - - - - -		9.2	0-12.20				100 (90) 83	2	
		+ + + + + + + + + + + + + + + + + + +	- - - - - -								1	
		+ + + + + + + + +	-12.20	-6.31							8	
End of Borehole at 12.20 m	Com Pure											
U Undisturbed U100 / U86 Sample TCF P Piston Sample SCF TW Thin Wall Sample RQ D Small Disturbed Sample FI B Bulk Disturbed Sample NI LB Large Bulk Disturbed Sample U* W Water Sample UT G Gas Sample NA C Core NR J Amber Jar Sample NP V Vial Sample NP	R Solid Core Recovery D Rock Quality Designatic Fracture Index Non Intact Blows to drive U100 / Ut Thin wall undisturbed so Not Applicable No Recovery	86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for f For gin Seatin Pocke Perme Packe Insitu Insitu Hand	ard Penetratic Penetration Tr ull 300mm per ven penetratic g blows only t Penetromette eability Test (n r Test (Lugeo Vane Test. Per Vane Test. Per Vane Test. Re Vane Test. Re	est enetration on (mm) (mm) er Test m/s) ons) eak esidual eak			Windowless	n Hole d holed Sample Sa Be	r	Seal



Gourock Pierhead

Borehole	No
04	

04 Information

Status

Final 01/02/2012

Job No: 4618

Client: Riverside Inverclyde Ltd

Consultant:

W.A. Fairhurst & Partners

Date Complete: 03/10/2011 Initial Core Dian Hole Type: CP+RC Rotary Casing T Equipment: 3.0T Dando + A65 Core Barrel:						/ Casing Type	7 F	00mm 6mm Robit 12		Grou Plun			N 6779 5.89 m OD 90 °	25.560 m Nat 03.810 m Nat	
				2500	Core E	Bit:		Diam FC		Scale			1:50		
		Hole		XESS Water				CP Chisell		DRIL	LIN.	IG DET	AILS Rotary		
Date	Time	Depth	Depth	Depth	Remarks		From	То	Hours	Fro		То	Hole Dia	Core Dia	Flush
30/09/2011 03/10/2011 03/10/2011	17:00 14:00 17:00	5.90 5.90 12.20	4.20 5.90 5.90	-	Dry -		3.90 5.90	4.50 5.90	1.00		5.90	12.20	105	74	Air
			WA	TER S	TRIKE	S				IN	SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen	After n Minutos	Casing	Flow		S	ealed	Depth					
WATER STRIKES Date Time Strike Risen To After n Minutes Casing Depth Flow Sealed 03/10/2011 7.00 - - 5.90 - - 1.20 2.10 N=10 (2,2,2,3,2) N=9 (2,2,2,3,2) N=3 (6,7,7,8,8,10) 1 7.00 - - 5.90 - - - 1 7.00 - - 5.90 - - 1 7.00 - - 5.90 - - 1 7.00 - - 5.90 - - 1 7.00 - - 5.90 - - 1 7.00 - - 5.90 - - 1 7.00 - - 5.90 - - 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1															
						50mm standpipe ir s valve and toby co		и,							
							PERS	ONNE	L						
Driller: A	5				Logged	by: PMcG				Check	ed by:	PMcG			



Gourock Pierhead

Borehole No 05 Sheet 1 of 2 Status Final 01/02/2012

Job No: 4618

Client: Riverside Inverclyde Ltd

Consultant: W.A. Fairhurst & Partners

001	Suitarit.									300 14	001	0			
Date St	tarted	27/09/2011		Initial Boring D	liameter:		200mm		Coord	inates:		E 2242	237.950 m	Nationa	al Grid
Date Co	omplete:	04/10/2011		Initial Core Dia	meter		76mm					N 6778	881.750 m	Nationa	al Grid
Hole Ty	/pe:	CP+RC		Rotary Casing	Туре		Robit		Groun	d Level		5.46 m OD			
Equipm	nent:	3.0T Dando + A65		Core Barrel:			412DT		Plung			90 °			
				Core Bit:			Diam FC	-	Scale:		1	1:50	-		-
							Reduced	Sar	npling/		In Sit	u Testing	TCR (SCR)	FI	Install
	De	escription of Strata			Legend	Depth	Level	Co	ore Run	U	Test	Result	RQD		-ation
		D: Turf over brown s	lightly sandy	slightly				DJ	0.20						
Ŭ	y clay. (To	,				0.40	5.06								
		D: Brown slightly sa onal sub angular col						DJB	0.50						
		r to sub rounded fin													
		and quartz. Sand is f			XXX	1.00	4.46	DJB	1.00						
MADE	GROUN	D: Loose brown and	red silty very	/ sandy				D	1.20-1.65		S	9			
		ngular fine to coarse inker. low cobble co			1.40	4.06									
	ete and cli coarse.	s /													
\		/				В	1.80								
		D: Firm red and red tly gravelly clay. Gra		iottied light		_		D DJJ	1.80 1.90		S	8			
angula	ar to sub ro	ounded fine to coars	nantly				DJJ	2.00-2.45							
		d is fine to coarse. I			,		-								
cobble						2.70	2.76	в	2.70						
		D: Loose brown silty				2.10	2.70	D	2.70						
		n low cobble content b rounded fine to co			-		DJJ	2.90		S	9				
	ete and bri		arse or quart	.Ζ,				D	3.00-3.45						
		-				3.50	1.96	D	3.50-3.95		s	27			
Stiff lig	ght brown	slightly sandy slight	y gravelly		<u>k</u> orxo	5.50	1.90		3.50-3.95		3	21			
		obble content. Grave to coarse of sands			A CONTRACT										
	to coarse		storie, quartz	. Janu	X o Xo	-		В	4.00						
								D DJJ	4.00 4.20						
								000	4.20	78					
								0	4.50-4.95	10					
					20 × 0 × 0	-									
								в	5.30						
								Б	5.50						
at 5.60	Om hard			/	+ + + + + + + + + + + + + + + + + + +	5.60	-0.14	DNR			S	50/0	100		
Strong	aroonish	grey and brown me	dium arained		+ + + + + + + + + + + + + + + + + + + +				5.70-8.70				(83)		
		pathic TRACHYTE.			+ + + + + + + + + + + + + + + + + + + +	-							20		
		y visible as brown p			+ + + + + + + + + +									14	
		ing at fracture zone are 5 - 15º sub horiz			+ + + +										
		ed, rough, undulatir			+ + + + + + + + + + + + + + + + + + + +										
		o vertical medium to	widely space	ed,	+ + + +										
rough,	pianar an	d undulating.			+ + + + + + + + + + + + + + + + + + + +										
					+ + + + + + + + + + + + + + + + + + + +									7	
					+ + + + + + + + + + + + + + + + + + + +										
					+ + + + + + + + + + + + + + + + + + + +										4
Contin	ued next s	sheet			+ + + + +										
			Co	re Run		S	Stan	ard Per	etration Test	·	CP	Cable Perc	ussion	•	
U		d U100 / U86 Sample		tal Core Recovery		c			ition Test		RO	Rotary Ope			
Р	Piston Sam	•		lid Core Recovery		32			mm penetration		RC	Rotary Core	ed		
τw				ick Quality Designation Acture Index	n	/175 /25#	-		etration (mm) s only (mm)		SO CONF	Sonic Oper Continuous		ion	
	Thin Wall S Small Distu	rhed Sample						-	rometer Test				Fercuss		
D	Small Distu	irbed Sample bed Sample		n Intact		PP	POCK	el Penel	IOMELEI TESL	l	WLS	Windowles	s Sample	r	
TW D B LB	Small Distu Bulk Distur	•	NI No U* Blo	n Intact ows to drive U100 / U		к	Perm	eability -	Test (m/s)				s Sample	r	
D B LB W	Small Distu Bulk Disturk Large Bulk Water Sam	bed Sample Disturbed Sample ple	NI No U* Blo UT Thi	n Intact ows to drive U100 / U in wall undisturbed s		K L	Perm Pack	eability ⁻ er Test (Γest (m∕s) Lugeons)			ation Slotted Pipe	'a≂at	r nd Filte	r
B LB W G	Small Distu Bulk Disturt Large Bulk Water Samp Gas Sample	bed Sample Disturbed Sample ple	NI No U* Blo UT Thi NA No	n Intact ows to drive U100 / U in wall undisturbed s t Applicable		к	Perm Pack Insitu	eability er Test (Vane T	Test (m/s)		Install	ation Slotted Pipe Piezometer Tip	Sa		
D B LB W	Small Distu Bulk Disturk Large Bulk Water Sam	bed Sample Disturbed Sample ple e	NI No U* Blo UT Thi NA No NR No	n Intact ows to drive U100 / U in wall undisturbed s		K L IV	Perm Pack Insitu Insitu	eability er Test (Vane Te Vane Te	Γest (m/s) Lugeons) est. Peak			ation Slotted Pipe	Sa	nd Filte	Seal



Gourock Pierhead

Borehole No 05 Sheet 2 of 2 Status Final 01/02/2012

Ciler	sultant: W.A. Fairhurs		S								Job N	o: 461	8	
Date St	earted 27/09/2011 omplete: 04/10/2011 /pe: CP+RC		Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		200mm 76mm Robit 412DT Diam FC		Coordi Ground Plunge Scale:	d Level:		E 2242	37.950 m 81.750 m	Nationa	
	Description of Strata			Legend	Depth	Reduced Level	Samplir Core F	-	U		u Testing	TCR (SCR) RQD	FI	Install -ation
porphy slight penetr Discor to me	greenish grey and brown me rritic feldspathic TRACHYTE. weathering visible as brown p ative staining at fracture zone ntinuities are 5 - 15° sub horiz dium spaced, rough, undulatir	Weathering: S bartial s. Fractures: ontal very coars	se ties	+ + + + + + + + + + + + + + + + + + +				.70-11.70		Test	Result	100 (93)	6	
are 80 rough,	- 90° sub vertical medium to planar and undulating.	widely spaced	,	+ + + + + + + + + + + + + + + + + + +								80	5	
				+ + + + + + + + + + + + + + + + + + +									3	
				+ + + + + + + + + + + + + + + + + + + +	-11.70	-6.24							5	
	Borehole at 11.70 m	■ Core	Run			Stan	ard Penetra	tion Test		CP	Cable Perc			
U P TW D B LB W G C J V	U Undisturbed U100 / U86 Sample TCR Total Core Recovery P Piston Sample SCR Solid Core Recovery TW Thin Wall Sample RQD Rock Quality Designation D Small Disturbed Sample FI Fracture Index B Bulk Disturbed Sample NI Non Intact LB Large Bulk Disturbed Sample U* Blows to drive U100 / U86 W Water Sample UT Thin wall undisturbed sample G Gas Sample NA Not Applicable C Core NR No Recovery J Amber Jar Sample NP No Penetration						lard Penetra Penetration full 300mm iven penetra ng blows on et Penetrom eability Test er Test (Luge Vane Test. Vane Test. Vane Test. Vane Test.	Test penetration ation (mm) ly (mm) eter Test (m/s) eons) Peak Residual Peak			Windowles	n Hole holed Percussi Sample	r	Seal



Gourock Pierhead

Borehole	No
05	

Information

Status

Final 01/02/2012

Job No: 4618

Client: Riverside Inverclyde Ltd

Consultant:

W.A. Fairhurst & Partners

Date Starte	ed	27/09/2011			Initial I	Boring Diameter:	2	00mm		Coordi	nates:	E 2242	237.950 m Nat	ional Grid
Date Comp		04/10/2011				Core Diameter		6mm					381.750 m Nat	ional Grid
Hole Type:		CP+RC	. 405			Casing Type		Robit			d Level:	5.46 m OE)	
Equipment		3.0T Dando	+ A65		Core E Core E			12DT Diam FC		Plunge Scale:		90 ° 1:50		
			PROG	RESS	Core L	ы. Эц.	L			וווסח	ING DE			
_		Hole	Casing	Water				CP Chiselli				Rotary	•	
Date 27/09/2011	Time 17:00	Depth 1.20	Depth -	Depth	Remarks Dry		From 2.50	<u>To</u> 2.70	Hours 0.50	From 5.0	To 50 11.70	Hole Dia 105	Core Dia 74	Flush Air
28/09/2011 28/09/2011 04/10/2011 04/10/2011	07:30 17:00 10:30 13:00	1.20 5.60 5.60 11.70	4.00 5.60 5.70	- - -	Dry Dry Dry -		5.60	5.60	1.00					
		4 1	WA	TER S	TRIKE	S						TEST	DETAI	LS
Date	Time	Strike	Risen	After n	Casing	Flow		Se	aled	Depth	Blows for 75m			
	Time		То	Minutes	Depth			00	aicu	1.20	N=9 (2,2,3,2,		2	
		6.80			5.70	-	NOTE	S	-	2.00 3.00 5.60	N=8 (2,2,2,2, N=9 (2,2,2,3, N=27 (6,6,6,5,5 50/0mm (25,0	2,2) 2,2) 3,7,6)		
All door	h in motre	e: all diameter	re in millimetre											
Ground	All depth in metres; all diameters in millimetres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Inspection pit dug to 1.20m. Borehole completed at 11.70m, on completion borehole backfilled with cement bentonite pellets to rockhead and arisings to ground level.													
							PERS	ONNE	L					
Driller: A	5				Logged	by: ARM				Checke	d by: PMcC	3		



Gourock Pierhead

Borehole No 06 Sheet 1 of 2 Status Final 01/02/2012

Consultant: W.A. Fairhurs	st & Partners								Job No	o: 461	8		
Date Started29/09/2011Date Complete:04/10/2011Hole Type:CP+RCEquipment:3.0T Dando + A65	Initial Core Di				76mm			N 6778 nd Level: 5.13 m OD e: 90 °			248.530 m National Grid 368.060 m National Grid)		
Description of Strata	Legend	Depth	Reduced Level	pling/ re Run			u Testing Result	TCR (SCR) RQD		Install -ation			
MADE GROUND: Turf over brown s gravelly clay (Topsoil) .	lightly sandy slightly		0.05	4.70	DJJ	0.20							
MADE GROUND: Medium dense br fine to coarse sand with occasional a basalt and brick. Gravel is angular t fine to coarse of brick, concrete. Wit	angular cobbles of o sub rounded		0.35	4.78	DJJ B	0.50 0.50 1.00						었 (3) 	
gravel sized fragments of ceramic					B D	1.00 1.20-1.65		S	11		•		
			· · · ·		B D DJJ D	1.70 1.70 2.00 2.10-2.55		s	11		- - - - - - - - - - - - - - - - - - -		
at 2.80m slightly clayey with gravel rotten vegetation.				2.03	B D DJJ D	2.80 2.80 3.00 3.20-3.65		s	12		• • • • • •		
MADE GROUND: Medium dense br fine to coarse sand. Gravel is sub ar rounded fine to coarse of various lith	ngular to sub				в	3.75					• • • •		
Stiff light brown slightly sandy slightl CLAY. Gravel is sub angular to sub coarse of quartz and basalt. Sand is	rounded fine to		3.90	1.23	D U	3.75 3.90-4.35	55				*		
					B D DJJ	4.55 4.55 4.60							
			-		D	5.10-5.55		S	24				
∖at 6.30m hard.	/		- 6.30	-1.17	B D D	6.00 6.00 6.00-6.30 6.30-9.30		S	35/125	100 (33)			
Medium strong to strong grey mediu porphorytic TRACHYTE. Weathering weathering visible as brown partial p staining at fractures zones. Fracture Discontinuities are 5 - 20° sub horizv medium spaced, rough undulating. 80 - 85° sub vertical medium to wid	g: Some slight benetrative s: ontal closely to Discontinuities are	+ + + + + + + + + +				0.00 0.00				20	12		
planar and undulating. Continued next sheet		+ + + + + + + + + + + + + + + + + + + +									NI		
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample	Piston Sample SCR Solid Core Recovery / Thin Wall Sample RQD Rock Quality Designation Small Disturbed Sample FI Fracture Index			Standard Penetration Test Cone Penetration Test N for full 300mm penetration For given penetration (mm) Seating blows only (mm) Pocket Penetrometer Test				CP RO RC SO CONF WLS					
LB Large Bulk Disturbed Sample U* Blows to drive U100 / U86 W Water Sample UT Thin wall undisturbed sample G Gas Sample NA Not Applicable C Core NR No Recovery J Amber Jar Sample NP No Penetration			K L IV IVR HV HVR	Permeability Test (m/s) Packer Test (Lugeons) Insitu Vane Test. Peak Insitu Vane Test. Residual Hand Vane Test. Peak Hand Vane Test. Residual					Piezometer Tip Bentonite Seal Grout Gravel Filter				



BOREHOLE LOG

Gourock Pierhead

Borehole No 06 Sheet 2 of 2 Status Final 01/02/2012

Riverside Invercivde Ltd Client

Client: Riverside Inve	rclyde Ltd									1/02/2		
Consultant: W.A. Fairhurst	& Partners								Job N	o: 46′	18	
Date Started29/09/2011Date Complete:04/10/2011Hole Type:CP+RCEquipment:3.0T Dando + A65	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter	200mm 76mm - 412DT Diam FC			Coordinates: Ground Level: Plunge: Scale:		N 6778	N 677868.060 m National Grid 5.13 m OD 90 °			
Description of Strata		Legend	Depth	Reduced Level	Sampling, Core Rui		U		u Testing	TCR (SCR)	FI	Install -ation
Medium strong to strong grey medium porphorytic TRACHYTE. Weathering: weathering visible as brown partial pe- staining at fractures zones. Fractures Discontinuities are 5 - 20° sub horizon medium spaced, rough undulating. D 80 - 85° sub vertical medium to wide planar and undulating.	Some slight enetrative : ntal closely to viscontinuities are ly spaced, rough,			-7.17		0-12.30		Test	Result	93 (63) 57	5 7 4 NI	
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample	SCR Solid Core Recovery RQD Rock Quality Designation FI Fracture Index NI Non Intact			S Standard Penetration Test C Cone Penetration Test 32 N for full 300mm penetration /175 For given penetration (mm) /25# Seating blows only (mm) PP Pocket Penetrometer Test K Permeability Test (m/s) L Packer Test (Lugeons) IV Insitu Vane Test. Peak IVR Insitu Vane Test. Residual HV Hand Vane Test. Peak			CP Cable Percussion RO Rotary Open Hole RC Rotary Cored SO Sonic Open holed CONP Continuous Percussion WLS Windowless Sampler Installation Solted Pipe Piezometer Tip Bentonite Seal Grout Gravel Filter					



Gourock Pierhead

Borehole	No
06	

Information

Status

Final 01/02/2012

Riverside Inverclyde Ltd Client:

W.A. Fairhurst & Partners Consultant:

Consu	ltant:	W.A.	Fairhurs	st & Part	ners							Job	No: 46	18				
Date Starte Date Comp Hole Type: Equipment	plete: :	29/09/2011 04/10/2011 CP+RC 3.0T Dando			Initial (Rotary Core E	Initial Boring Diameter: 200mm Initial Core Diameter 76mm Rotary Casing Type - Core Barrel: 412DT Core Bit: Diam FC			Coordinates: Ground Level: Plunge: Scale:			E 224248.530 m National Gri N 677868.060 m National Gri 5.13 m OD 90 ° 1:50						
PROGRESS									DRILLING DETAILS									
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chiselli To	ng Hours	Rotary From To Hole Dia Core Dia FI								
29/09/2011 04/10/2011 04/10/2011	17:00 13:30 17:00	6.30 6.30 12.30	6.30 6.30 6.30		Dry Dry Dry		2.60 6.30	2.75 6.30	0.50		5.30	12.30	105	74	Air			
WATER STRIKES IN SITU SPT TEST DETAILS										IS								
Date	Time	Strike	Risen	After n	Casing	Flow		Se	aled	Depth		lows for 75mr						
			Το	Minutes	Depth					1.2(2.11) 3.2(5.1(6.00)	1 (1 (1 (N=11 (2,2,3,3, N=11 (4,3,4,2, N=12 (2,3,3,3, N=24 (4,6,6,6, 35/125mm - A	,3,2) ,2,3) ,3,3) ,6,6)					
NOTES																		
Ground Inspect	dwater leve	g to 1.20m. Bo	to seasonal, t rehole comple	idal and othe eted at 12.30n	n, on complet	and should not b ion. 50mm standp r cap, gas valve ar	pipe installed a	t										

	PERSONNEL	
Driller: AP	Logged by: ARM	Checked by: PMcG



Gourock Pierhead

Borehole No WS14 Sheet 1 of 1 Status Final 01/02/2012

Con	sultant:	W.A. Fairhurs	t & Partn	ers								Job No	o: 461	8	
Date S Date C Hole T Equipr	Complete: Type:	14/12/2011 14/12/2011 CONP Competitor 130		Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		115mm -				:		21.210 m 07.440 m		
	Des	cription of Strata		-	Legend	Depth	Reduced Level		npling/ re Run	U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
gravel fragm coarse MADE round occas	l intermixed ents of bric e. E GROUND ed fine to c ional fragm	: Dark grey sandy a with brown silty sar k. Traces of ash. Sa : Dark dark grey sa parse gravel of ash ents of slag and sar	nd. Occasio and is fine t ndy angular and cinders	nal o/ r to sub s with		0.15	4.12 3.87	DJ DJ D DJ	0.20 0.50 1.00-1.45 1.00		S	9			
coars grave	E GROUND	: Loose reddish bro angular to sub rou sional cobbles and o	nded fine to	coarse				U D	1.00-2.00 2.00-2.45		s	45			
boulde		t sandstone obstruc	tion presun	ned			1.62	D	2.50-2.65		S	50			
U P TW D B LB W G C J V	Piston Samp Thin Wall Sa Small Distur Bulk Disturb	imple bed Sample ed Sample Disturbed Sample le ample	TCR TI SCR S RQD R FI FI NI N U* B UT TI NA N NR N	ore Run otal Core Recovery olid Core Recovery ock Quality Designation racture Index on Intact Iows to drive U100 / U nin wall undisturbed so ot Applicable o Recovery o Penetration	86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	Penetra full 300n jiven pen- ing blows et Penetr neability T er Test (L I Vane Te I Vane Te I Vane Te	nm penetration etration (mm) only (mm) ometer Test rest (m/s) .ugeons) est. Peak est. Residual			Windowless	n Hole holed Percussi Sample	-	Seal

1		ba l			В	OREH Gouro								vrehole WS14 Information Status Final	No
Client:				erclyde L										01/02/2012	
Consul	tant:	W.A.	Fairhurs	st & Parti	ners							Job I	No: 461	8	
Date Starte Date Comp Hole Type: Equipment:	lete:	14/12/2011 14/12/2011 CONP Competitor 1	30		Initial		-	15mm		Gro	ordinates ound Leve inge: ale:			21.210 m Nati 07.440 m Nati	
			PROG	RESS						DRI	LLIN	G DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chiselli To	ng Hours		om	To	Rotary Hole Dia	Core Dia	Flush
14/12/2011	10:00	2.65	-	-	Dry						511				
			WA	TER S	TRIKE	S				IN	I SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow		Se	ealed	Depth	Blo	ows for 75mm	n Increments		
										2.	00 N	I=9 (2,2,2,3,2 I=45 (1,1,2,2, I=50 (25,0,50)	3,38)		
							NOTE	S							
Ground	water level		to seasonal, t	idal and othe		and should not be h arisings on comp		stant							
							PERS	ONNE	L						
Driller: SK	(F				Logged	by: SKF	_			Che	cked by:	PMCG			



Gourock Pierhead

Borehole No WS15 Sheet 1 of 1 Status Final 01/02/2012

Con	sultant: W.A. Fairhurs	st & Partners									Job No	o: 461	8	
Date Si Date C Hole Ty Equipn	omplete: 17/12/2011 /pe: CONP		Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		115mm -						11.800 m 76.640 m		
	Description of Strata			Legend	Depth	Reduced Level		pling/ e Run	U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE	GROUND: Type one overlyin	g Tarmac.			-0.18	4.22								
MADE	GROUND: Weak concrete.		/		0.30	4.10								
mottle with fr	GROUND: Loose brown, ligh d silty gravelly fine to coarse s agments of brick, concrete, as l is angular to sub rounded an	and intermixed sh and cinders.	0 /		-1.10	3.30	DB DJ D DJ	0.50 0.50 1.00-1.45		S	9			
coarse gravel and sa gravel	GROUND: Loose dark grey a e sand and angular to sub ang with occasional fragments of andstone and with occasional sized very sandy light grey po sh and cinders. Clayey at dept	ular fine to coars brick, clay pipe cobbles. Occasio ckets intermixed	se onal				U	1.00 1.00-2.00 2.00-2.45 2.00-3.00		S	6			
End of	Borehole at 3.00 m					1.40								*****
U P TW D B LB W G C J V	Undisturbed U100 / U86 Sample Piston Sample Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample Large Bulk Disturbed Sample Water Sample Gas Sample Core Amber Jar Sample Vial Sample	SCR Solid C RQD Rock Q FI Fractur NI Non Int U* Blows t UT Thin wa NA Not App NR No Rec	ore Recovery core Recovery quality Designatic e Index act to drive U100 / Ut all undisturbed si plicable	86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	Penetrati full 300m iven pene ng blows et Penetro reability Te er Test (Li vane Tes vane Tes vane Tes vane Tes	m penetration etration (mm) only (mm) preter Test est (m/s) ugeons) st. Peak st. Residual			Windowless	n Hole holed Percuss Sample	r	Seal

1	•	bai	es			ORE Gouro				ì				ws15 Information Status Final 01/02/2012	No
Client: Consul	tant:			erclyde L st & Parti								Job I	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	17/12/2011 17/12/2011 CONP Competitor 1			Initial E Initial C		-	15mm			-	:	E 2242	11.800 m Nati 76.640 m Nati	
			PROG	RESS						DRI	LLIN	G DET	AILS		
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chis To	elling Hours	Fro	om	То	Rotary Hole Dia	Core Dia	Flush
17/12/2011	15:30	3.00			Dry										
		<u> </u>	WA	TER S	TRIKE	S				IN	I SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Depth	Ble	ows for 75mm	n Increments		
										1.0		l=9 (1,1,2,3,2 ⊫6 (1,1,1,1,2			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be h arisings on com		stant							
							PERS	ONN	EL						
Driller: Sk	٢F				Logged	by: SKF				Chec	ked by:	PMCG			



Gourock Pierhead

Borehole No WS16 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	t & Partners								Job N	o: 461	8	
Date Started14/12/2011Date Complete:14/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		115mm -		Coordi Groun Plunge Scale:	d Level e:	:		258.620 m 992.330 m		
Description of Strata		Legend	Depth	Reduced Level	Samplir Core F	-	U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Loose brown clay rounded fine to coarse gravel with oc sized pockets of soft brown sandy gr fragments of timber, concrete and br ash. MADE GROUND: Medium dense rea fine to coarse sand and angular to su coarse gravel with occasional cobble sized very sandy pockets.	casional gravel avelly clay, ick. Traces of ddish brown and red silty ub rounded fine to		3.00	3.23	DJ 0. DJ 1. DJ 1. U 1. DJ 2.	20 50 00-1.45 00-2.00 00-2.45 00-3.00		S	4			
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designati FI Fracture Index	on	S C 32 /175 /25#	Cone N for For g	lard Penetra Penetration full 300mm iven penetra	Test penetration tion (mm)		CP RO RC SO	Cable Perc Rotary Ope Rotary Cor Sonic Ope	en Hole ed n holed		
D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	Fracture index NI Non Intact U* Blows to drive U100 / L UT Thin wall undisturbed s NA Not Applicable NR No Recovery NP No Penetration		/25# PP K L IV IVR HV HVR	Pocke Perm Packe Insitu Insitu Hand	et Penetrom eability Test er Test (Lug Vane Test. Vane Test. Vane Test. Vane Test.	eter Test (m/s) eons) Peak Residual Peak			Windowles	s Sample	r	Seal

1	•	bal	es			ORE Gouro				G				ws16 WS16 Information Status Final 01/02/2012	No
Client: Consul	tant:			erclyde Li st & Partr								loh	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	14/12/2011 14/12/2011 CONP Competitor 1			Initial E Initial C		-	15mm			Coordina Ground I Plunge: Scale:	tes:	E 2242	58.620 m Nat 92.330 m Nat	
			PROG	RESS							DRILLI	NG DET	AILS		
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		lours	From	То	Rotary Hole Dia	Core Dia	Flush
WATER STRIKES IN SITU SPT TEST DETAILS															
		I	WA	TER S	TRIKE	S		1			IN S	TU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	4	Depth	Blows for 75mm	n Increments		
											1.00 2.00	N=4 (3,1,1,1 N=17 (3,4,4,5,			
							NOTE	S							
Ground	water level	s are subject		idal and other		and should not be h arisings on com		istant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF					Checked	oy: PMCG	i		



Gourock Pierhead

Borehole No WS17 Sheet 1 of 1 Status Final 01/02/2012

													~	
Con	sultant: W.A. Fairhur	st & Partne	rs								Job N	lo: 461	8	
Date St			Initial Boring D			115mm		Coord	inates:			283.840 m		
	omplete: 14/12/2011		Initial Core Dia									'973.830 m	Nation	al Grid
Hole Ty			Rotary Casing Core Barrel:	Туре		-		Groun	d Level:		4.39 m O 90 °	J		
Equipm	lent. Competitor 130		Core Barrei. Core Bit:					Scale:			90 1:50			
	Description of Strata			Legend	Depth	Reduced Level		npling/ ore Run	U		u Testing	TCR (SCR)	FI	Instal -ation
MADE	GROUND: Compact becomi	na verv loose	brown and		_					Test	Result	RQD		
slightly	y reddish brown mottled claye	y sandy angula	ar to		-		DJ	0.20						
gravel	ounded fine to coarse gravel v sized pockets of soft brown s	andy gravelly	clay				DJ	0.50						
and fr	agments of plastic, blaes, tim Sand is fine to coarse. Trace	ber, concrete	and		-									
DIICK.	Sand is line to coarse. Trace	is of ash at top			-		D	1.00-1.45		s	0			
							DJ U	1.00 1.00-2.00						
					-1.50	2.89	0	1.00-2.00						
MADE fine to	GROUND: Loose reddish br coarse sand and angular to	own and red n	nottled silty		-	2.00								
to coa	rse gravel with occasional col	obles, fragmen	its of		-			0 00 0 45						
timbe	r and gravel sized very sandy	pockets.			_		D U	2.00-2.45 2.00-3.00		S	4			
					-									
					L .									
End of	Borehole at 3.00 m				3.00	1.39								$\sim\sim\sim$
					-									
					_									
					_									
					-									
					-									
					_									
					-									
					-									
					-									
					-									
					_									
					-									
					-									
		Cor	9 Run		s	Stan	dard Per	etration Test		СР	Cable Per	cussion		
	Undisturbed U100 / U86 Sample Piston Samole	TCR Tota	al Core Recovery		С	Con	e Penetra	tion Test		RO	Rotary Op	en Hole		
Р	Undisturbed U100 / U86 Sample Piston Sample Thin Wall Sample	TCR Tota SCR Solie	al Core Recovery d Core Recovery	on		Con N for	e Penetra full 300r	ition Test nm penetration		RO RC	Rotary Op Rotary Co	en Hole red		
P W D	Piston Sample Thin Wall Sample Small Disturbed Sample	TCR Tota SCR Solie RQD Roc FI Frac	al Core Recovery d Core Recovery k Quality Designati cture Index	on	C 32 /175 /25#	Con N for For g Seat	e Penetra full 300r given per ing blows	ition Test nm penetration etration (mm) s only (mm)		RO RC SO CONP	Rotary Op Rotary Co Sonic Ope Continuou	en Hole red en holed is Percuss		
P W D B	Piston Sample Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample	TCRTotaSCRSolidRQDRocFIFracNINon	al Core Recovery d Core Recovery k Quality Designati cture Index I Intact		C 32 /175 /25# PP	Con N for For g Seat Pock	e Penetra full 300r given per ing blows tet Penet	tion Test nm penetration etration (mm) s only (mm) rometer Test		RO RC SO CONP WLS	Rotary Op Rotary Co Sonic Ope Continuou Windowle	en Hole red en holed is Percuss		
P W D B	Piston Sample Thin Wall Sample Small Disturbed Sample	TCR Tota SCR Soli RQD Roc FI Frac NI Non U* Blow UT Thir	al Core Recovery d Core Recovery k Quality Designati cture Index	J86	C 32 /175 /25# PP K L	Cond N for For g Seat Pock Pern Pack	e Penetra full 300r given per ing blows aet Penet neability	tion Test nm penetration letration (mm) s only (mm) rometer Test Test (m/s) Lugeons)		RO RC SO CONP WLS Installa	Rotary Op Rotary Co Sonic Ope Continuou Windowle	en Hole red en holed is Percuss ss Sample	r	r
P W D B LB W G	Piston Sample Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample Large Bulk Disturbed Sample Water Sample Gas Sample	TCR Tota SCR Solii RQD Roc FI Frac NI Non U* Blov UT Thir NA Not	al Core Recovery d Core Recovery k Quality Designati cture Index I Intact ws to drive U100 / U wall undisturbed s Applicable	J86	C 32 /175 /25# PP K L IV	Cond N foi For g Seat Pock Perm Pack Insitu	e Penetra full 300r given per ing blows aet Penet neability aer Test (u Vane T	tition Test mm penetration letration (mm) s only (mm) rometer Test Fest (m/s) Lugeons) est. Peak		RO RC SO CONP WLS Installa	Rotary Op Rotary Co Sonic Ope Continuou Windowle	en Hole red en holed is Percuss ss Sample	r	
U P W D B LB W G C J	Piston Sample Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample Large Bulk Disturbed Sample Water Sample	TCR Tota SCR Solii RQD Roc FI Frac NI Non U* Blov UT Thir NA Not NR No F	al Core Recovery d Core Recovery k Quality Designati cture Index I Intact ws to drive U100 / L n wall undisturbed s	J86	C 32 /175 /25# PP K L	Cond N for For Seat Pock Pack Insitu	e Penetra full 300r given per ing blows aet Penet heability ar Test (J Vane To J Vane To	tion Test nm penetration letration (mm) s only (mm) rometer Test Test (m/s) Lugeons)		RO RC SO CONP WLS Installa	Rotary Op Rotary Co Sonic Ope Continuou Windowle ation Slotted Pipe	en Hole red en holed is Percuss ss Sample	r nd Filte	Seal

	•	bai	es	erclyde L		ORE Gouro				5				ws17 WS17 Information Status Final 01/02/2012	No
Client: Consul	tant:			st & Parti								Job I	No: 461	8	
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	14/12/2011 14/12/2011 CONP Competitor 1	30		Initial C		-	15mm			Coordinates Ground Lev Plunge: Scale:	5:	E 22428	33.840 m Nati 73.830 m Nati	
		1	PROGI							D	RILLIN	IG DET			
Date 14/12/2011	Time 12:00	Hole Depth 3.00	Casing Depth	Water Depth	Remarks		From	CP Chis To	selling Hour	s	From	То	Rotary Hole Dia	Core Dia	Flush
					Dry										
		11	WA	TER S	TRIKE	S		1			IN SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	D	epth B	lows for 75mm	n Increments		
												N=0 (0,0,0,0,0 N=4 (1,1,1,2,1			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be h arisings on com		stant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF			_		Checked by:	PMCG			



Gourock Pierhead

Borehole No WS18 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	t & Partners								Job No	o: 461	8	
Date Started 17/12/2011 Date Complete: 17/12/2011 Hole Type: CONP Equipment: Competitor 130	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		115mm -		Coordi Ground Plunge Scale:	d Level:			46.770 m		
Description of Strata		Legend	Depth	Reduced Level	Samplin Core R	-	U	In Sit	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Tarmac.		XXXX	-0.10	4.39				Test	Result	RQD		
MADE GROUND: Grey sandy angula	ar fine to coarse gravel.		-0.40	4.09	DJ 0.	.20						
MADE GROUND: Loose brown becc fine to coarse sand intermixed with fr brick, concrete and glass. Intermixed cinders at depth. Gravel is angular to fine to coarse.	ming grey silty gravelly agments of with ash and		-0.40 	3.09	DJ 1.	.50 .00-1.45 .00 .00-2.00		S	7			
MADE GROUND: Medium dense bro mottled slightly clayey gravelly fine to intermixed with soft to firm reddish br gravelly clay with occasional fragmen Locally darker brown with traces of a	coarse sand own very sandy its of sandstone.		-	3.09		.00-2.45 .00-3.00		S	12			
End of Borehole at 3.00 m				1.49								
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designation FI Fracture Index NI Non Intact U* Blows to drive U100 / U UT Thin wall undisturbed s NA Not Applicable NR No Recovery NP No Penetration	186	S C 32 /175 /25# PP K L NV IVR HV HVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	dard Penetra Penetration full 300mm p iven penetrating blows onl et Penetrome weability Test er Test (Luge Vane Test. I Vane Test. I Vane Test. I Vane Test. I	Test penetration ution (mm) ly (mm) eter Test (m/s) eons) Peak Residual Peak			Windowless	n Hole holed Percussi Sample		Seal

	•	bal	es			ORE Gouro							ws18 WS18 Information Status Final 01/02/2012	No
Client: Consul	tant:		side Inve Fairhurs	-							loh I	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	17/12/2011 17/12/2011 CONP Competitor 1			Initial E Initial C		1	115mm		Coordin Ground Plunge: Scale:	ates: Level:	E 22424	46.770 m Nati 59.070 m Nati	
			PROG	RESS	Core L	Sit.				1	ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chis To	elling Hours	From		Rotary Hole Dia	Core Dia	Flush
17/12/2011	12:15	3.00	-	-	Dry									
			WA	TER S	TRIKE	S	<u> </u>					TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Depth	Blows for 75mm			_
										1.00 2.00	N=7 (3,4,2,2,2 N=12 (1,1,5,3,2			
							NOTE	S						
Ground Hand du	water level	s are subject		idal and othe		and should not be h arisings on com								
							PERS	ONN	EL					
Driller: Sk	٢F				Logged	by: SKF				Checked	by: PMCG			



Gourock Pierhead

Borehole No WS19 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhur	st & Partners								Job No	o: 461	8	
Date Started15/12/2011Date Complete:15/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		115mm -		Coordi Groun Plunge Scale:	d Level: e:			17.950 m 54.390 m		
Description of Strata		Legend	Depth	Reduced Level	Samp Core	•	U	In Site	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND:- Turf/Topsoil			0.15	4.69	DJ	0.20						
MADE GROUND:- Grey slightly silt to coarse gravel. Sand is fine to coa					DJ	0.50 0.50						
MADE GROUND:- Medium dense of fine to coarse sand and angular to s with occasional fragments of brick, sandstone, cobbles and gravel sized intermixed with ash and cinders.	sub rounded gravel clay pipe and		0.90 1.60	3.94 3.24	DJ	1.00-1.45 1.00 1.00-2.00		S	10			
MADE GROUND:- Loose brown an clayey gravelly fine to coarse sand i firm reddish brown sandy gravelly c fragments of sandstone. Gravel is a rounded and fine to coarse.	ntermixed with lay with occasional		- 3.00	1.84		2.00-2.45 2.00-3.00		S	8			
			-									
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designatie FI Fracture Index NI Non Intact U* Blows to drive U100 / U UT Thin wall undisturbed s NA Not Applicable NR No Recovery NP No Penetration	J86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	Penetratic full 300mm iven penet ng blows o et Penetron eability Te er Test (Lu Vane Tess Vane Tess Vane Tess	n penetration ration (mm) nly (mm) meter Test st (m/s) geons) t. Peak t. Residual			Windowless	n Hole holed Percuss Sample		Seal

1	•	bai	es			ORE Gouro				G				ws19 WS19 Information Status Final 01/02/2012	
Client: Consul	tant:			erclyde L st & Parti								loh l	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	15/12/2011 15/12/2011 CONP Competitor 1			Initial I Initial (15mm			Coordina Ground Plunge: Scale:	ates:	E 2242	17.950 m Nati 54.390 m Nati	
			PROG	RESS		Sit.						ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		ours	From	То	Rotary Hole Dia	Core Dia	Flush
15/12/2011	16:30	3.00			dry										
			WA	TER S	TRIKE	S		1			IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed		Depth	Blows for 75mm	n Increments		
											1.00 2.00	N=10 (2,3,2,3, N=8 (1,2,1,2,2			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be arisings on comp		istant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF					Checked	by: PMCG			



Gourock Pierhead

Borehole No WS20 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	st & Partners								Job No	o: 46′	8	
Date Started17/12/2011Date Complete:17/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring I Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		115mm -		Coordi Groun Plunge Scale:	d Level:	:		49.900 m 33.700 m		
Description of Strata		Legend	Depth	Reduced Level	Samp Core	eling/ Run	U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Tarmac.			-0.10	4.86	DJ	0.20						
MADE GROUND: Grey sandy angul	ar fine to coarse gravel.		-	4.40								
MADE GROUND: Concrete.			-0.50 _0.60	4.46 4.36	DJBD	0.50						
MADE GROUND: Loose dark brown silty gravelly fine to coarse sand inte fragments of brick, concrete, ash an is angular to sub rounded fine to coa recovery at depth	rmixed with d cinders. Gravel				DJ	1.00-1.45 1.00 1.00-2.00		S	6			
MADE GROUND: Medium dense br mottled slightly clayey gravelly fine to intermixed with soft to firm reddish b gravelly clay with occasional fragmed Gravel is angular to sub rounded fin Locally darker brown and dark reddis traces of ash.	o coarse sand rown very sandy nts of sandstone. e to coarse.		-1.80	3.16		2.00-2.45 2.00-3.00		S	11			
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	■ Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designati FI Fracture Index NI Non Intact U* Blows to drive U100 / L UT Thin wall undisturbed s NA Not Applicable NR No Recovery NP No Penetration	J86	S C 32 /175 /25# PP K L IV IVR HV	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	Penetration full 300mr iven penel ng blows of et Penetro eability Te er Test (Lu Vane Tes Vane Tes Vane Tes	m penetration mathematical (mm) only (mm) meter Test st (m/s) ugeons) t. Peak t. Residual			Windowless	n Hole holed Percuss Sample		Seal

	-	bal	es			OREH Gouro							ws20 Information Status Final 01/02/2012	No
Client: Consul	ltant:		side Inve Fairhurs	-							loh	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed olete:	17/12/2011 17/12/2011 CONP Competitor 1			Initial E Initial C Rotary Core B		1	15mm		Coordin Ground Plunge: Scale:	ates:	E 22424	49.900 m Nat 33.700 m Nat	
			PROG	RESS	Core B	at:					ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chise To	lling Hours	From		Rotary Hole Dia	Core Dia	Flush
17/12/2011	12:40	3.00	-	-	Dry									11031
			WA	TER S	TRIKE	S				IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Depth	Blows for 75mm	Increments		
										1.00 2.00	N=6 (2,2,1,1,2, N=11 (2,2,2,3,3			
							NOTE	S						
Ground Hand du	water level	s are subject on pit 0.30m		idal and othe		and should not be h arisings on com								
							PERS	ONNI	ΞL					
Driller: Sk	٢F				Logged	by: SKF				Checked	by: PMCG			



Gourock Pierhead

Borehole No WS21 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhur	st & Partners								Job No	o [.] 461	8	
Date Started 17/12/2011 Date Complete: 17/12/2011 Hole Type: CONP Equipment: Competitor 130	Initial Boring D Initial Core Dia Rotary Casing Core Barrel:	ameter		115mm -		Groun Plung		:	E 2242	49.530 m	Nationa	
	Core Bit:			Reduced	Samp	Scale:		In Sit	tu Testing	TCR	FI	Install
Description of Strata		Legend	Depth	Level	Core	-	U	Test	Result	(SCR) RQD		-ation
MADE GROUND: Tarmac.			-0.08	4.88	DJ (0.20						
MADE GROUND: Grey sandy angu MADE GROUND: Medium dense d silty gravelly fine to coarse sand int fragments of brick, concrete, ash ar occasional gravel sized clayey pock coarse and angular to sub rounded depth.	ark brown and brown mottled ermixed with id cinders with ets. Gravel fine to		0.35	4.61	DJ '	0.50 1.00-1.45 1.00 1.00-2.00		s	17			
MADE GROUND: Medium dense b reddish brown mottled slightly claye coarse sand intermixed with soft to brown very sandy gravelly clay with fragments of sandstone. Locally dar with occasional pockets intermixed	y gravelly fine to firm reddish occasional ker brown and grey		-1.60	3.36		2.00-2.45 2.00-3.00		s	10			
End of Borehole at 3.00 m				1.96								
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designativ FI Fracture Index NI Non Intact U* Blows to drive U100 / U UT Thin wall undisturbed s NA Not Applicable NR No Recovery	186	S C 32 /175 /25# PP K L IV IVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu	iven penet ng blows o et Penetror leability Te er Test (Lu I Vane Test	n Test n penetration ration (mm) nly (mm) meter Test st (m/s) geons) Peak Residual		CP RO RC SO CONF WLS Install	Windowless	n Hole holed Percussi Sample	nd Filter ntonite \$	Seal
J Amber Jar Sample V Vial Sample	NP No Penetration		HV HVR		I Vane Tesi I Vane Tesi				Concrete	Gr	avel Filt	ər

Client:	•	ba ritchio River		erclyde L		OREH Gouro				Ì			WS21 MS21 Information Status Final 01/02/2012	No
Consu			Fairhurs	-							Job N	No: 461	18	
Date Starte Date Comp Hole Type: Equipment	ed olete:	17/12/2011 17/12/2011 CONP Competitor 1	30		Initial C			15mm		Coordi Groun Plunge Scale:	nates: d Level:	E 22424	49.530 m Nati 13.130 m Nati	
			PROG	RESS		or.								
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chis To	elling Hours	From		Rotary Hole Dia	Core Dia	Flush
17/12/2011	13:15	3.00	-		Dry									
			WA	TER S	TRIKE	 S					SITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Depth	Blows for 75mm			_
										1.00 2.00	N=17 (5,5,5,4,4 N=10 (2,2,1,1,3			
							NOTE	S						
Ground Hand d	lwater leve	ls are subject ion pit 0.30m		idal and othe		and should not be h arisings on comp								
							PERS	ONN	IEL					
Driller: SI	KF				Logged	by: SKF				Checke	d by: PMCG			



Gourock Pierhead

Borehole No WS22 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurst	t & Partners								Job No	o: 461	8	
Date Started17/12/2011Date Complete:17/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		115mm -		Coordi Groun Plunge Scale:	d Level: e:	:		61.700 m 85.490 m		
Description of Strata		Legend	Depth	Reduced Level		oling/ e Run	U		u Testing	TCR (SCR)	FI	Install
MADE GROUND: Tarmac.					Con	e Run		Test	Result	RQD		-ation
MADE GROUND: Grey sandy angula	r fine to coarse gravel.		0.19	4.49	DJ DJBD	0.20						
MADE GROUND: Dark brown and da fine to coarse sand intermixed with fra brick, concrete, ash and cinders with gravel sized clayey pockets towards b to coarse and angular to sub rounded	agments of occasional base. Gravel fine		0.55	4.13 3.58	D DJ	1.00-1.45 1.00 1.00-2.00		S	9			
MADE GROUND: Loose brown, dark mottled slightly clayey gravelly fine to intermixed with soft to firm and firm re very sandy gravelly clay and with occa of sandstone. Locally darker brown a occasional pockets intermixed with as	o coarse sand eddish brown asional fragments and grey with /		2.00	2.68	D	2.00-2.45 2.00-3.00		s	10			
MADE GROUND: Firm reddish brown with occasional fragments of sandsto brown and intermixed with clayey gra coarse sand. Gravel is angular to sub coarse. End of Borehole at 3.00 m	ne. Locally darker avelly fine to		3.00	1.68								
			· · · · ·									
			- - - - - - - - - -									
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designatic FI Fracture Index NI Non Intact U* Blows to drive U100 / Ut UT Thin wall undisturbed si NA Not Applicable NR No Recovery	86	S C 32 /175 /25# PP K L IV IVR	Cone N for For g Seatii Pocke Perm Packe Insitu Insitu	Penetrati full 300m iven pene ng blows et Penetro eability Te er Test (Lu Vane Tes Vane Tes	m penetration tration (mm) only (mm) ometer Test est (m/s) ugeons) st. Peak st. Residual			Windowless	n Hole d holed Percussi Sample	nd Filter ntonite \$	Seal
C Core J Amber Jar Sample V Vial Sample	NR No Recovery NP No Penetration		HV HVR	Hand	Vane Tes			1000 ct	Grout Concrete	Gra	avel Filte	ər

1	•	bal	es			ORE Gouro				j			ws22 Information Status Final 01/02/2012	No
Client: Consul	tant:		side Inve Fairhurs	-							loh I	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	17/12/2011 17/12/2011 CONP Competitor 1			Initial E Initial C		1	15mm		Coordir Ground Plunge Scale:	nates:	E 22420	61.700 m Nati 35.490 m Nati	
			PROG	RESS	Core L	on.					ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chis To	elling Hours			Rotary Hole Dia	Core Dia	Flush
17/12/2011	14:30	3.00	-	-	Dry									
			WA	TER S	TRIKE	S					SITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Depth	Blows for 75mm			
										1.00 2.00	N=9 (1,1,3,4,1, N=10 (2,2,1,1,5			
							NOTE	S						
Ground Hand du	water level	s are subject		idal and othe		and should not be h arisings on com								
							PERS	ONN	EL					
Driller: Sk	٢F				Logged	by: SKF	_			Checked	by: PMCG			



Gourock Pierhead

Borehole No WS23 Sheet 1 of 1 Status Final 01/02/2012

Con	nsultant:	W.A. Fairhurs	st & Partne	rs									Job No	o: 461	8	
		14/12/2011 14/12/2011 CONP Competitor 130		Initial Boring Di Initial Core Dia Rotary Casing Core Barrel: Core Bit:	neter		115mm -			Coordi Ground Plunge Scale:	d Level:			93.760 m 17.890 m		
	De	escription of Strata			Legend	Depth	Reduced Level		npling/ re Run		U		u Testing	TCR (SCR)	FI	Install -ation
silty s MADE to su grave clay, o of as at 0.6	E GROUN and at dep E GROUN b rounded I sized poc cobbles an h. Intermix	D: Topsoil / turf inter th. D: Brown and dark b fine to coarse gravel kets of soft brown sa d fragments of brick ed with ash at depth te obstruction	rown clayey s I with occasio andy gravelly and blaes. Tr	sandy angular nal			4.59	DJ	0.20			Test	Result	RQD		
U P TW D B LB W G C J V	Piston Sam Thin Wall S Small Distu Bulk Distur	Sample Irbed Sample bed Sample Disturbed Sample ple e Sample	TCR Tota SCR Solii RQD Roc FI Frac NI Non U* Blov UT Thir NA Not NR No F	e Run al Core Recovery d Core Recovery k Quality Designatic cture Index Intact s to drive U100 / Ui a wall undisturbed si Applicable Recovery Penetration	36	- - - - - - - - - - - - - - - - - - -	Cone N for For g Seatii Pocke Perm Packe Insitu Insitu Hand	Jard Penetrat full 300m iven penetrat ng blows at Penetri eability T er Test (L Vane Te Vane Te Vane Te Vane Te	tion Test m pene etration (only (m ometer 7 cest (m/s .ugeons) est. Peak est. Resid est. Resid	tration (mm) Fest) dual			Cable Perci Rotary Ope Rotary Core Sonic Oper Continuous Windowless ttion Slotted Pipe Piezometer Tip Grout Concrete	n Hole d holed Percussi Sample		Seal

1		bal			B	OREH Gouro				3				ws23 MS23 Information Status Final	No
Client:		River	side Inve	erclyde L	td									01/02/2012	
Consul	tant:	W.A.	Fairhurs	st & Parti	ners							Job	No: 461	8	
Date Starte Date Comp Hole Type: Equipment:	lete:	14/12/2011 14/12/2011 CONP Competitor 1	30		Initial C		-	15mm			Coordinat Ground L Plunge: Scale:			93.760 m Nat 17.890 m Nat	
			PROG	RESS	Core L	л				. [DRILLI	NG DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To	selling Hou		From	То	Rotary Hole Dia	Core Dia	Flush
14/12/2011	15:00	0.60	-		Dry										
			WA	TER S	TRIKE	S					IN SI	TU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed			Blows for 75mr			
							NOTE	S							
Ground Hand du to side a	water level: ug inspection	s are subject on pit 0.30m attemps to cle	x 0.30m x 0.60	idal and other Om. Obstruction (concrete), E	on (buried ma	and should not be anhole) encountere filled with arisings	ed at 0.50m, n	noved pit							
							PERS		IEL						
Driller: Sk	KF				Logged	by: SKF					Checked b	y: PMCC			



Gourock Pierhead

Borehole No WS23A Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	st & Partners								Job N	o: 46′	18	
Date Started14/12/2011Date Complete:14/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring I Initial Core Di Rotary Casing Core Barrel: Core Bit:	ameter		115mm -						296.780 m 914.840 m		
Description of Strata		Legend	Depth	Reduced Level	Sampl	-	U	In Sit	u Testing	TCR (SCR)	FI	Install
MADE GROUND: Medium dense bro silty sandy angular to sub rounded f gravel with occasional gravel sized p grey sandy gravelly ash and cinders, fragments of timber, brick and concr	ine to coarse ockets of dark cobbles and ete.		-1.60	3.08	DJBD (D 1 DJ 1).20		S	Result 13	RQD		-ation
MADE GROUND: Loose reddish bro fine to coarse sand and angular to s coarse gravel with occasional cobble sized very sandy pockets. Clayey bar	subrounded fine to			1.68		2.00-2.45 2.00-3.00		s	6			
	Core Run			Stanc	Jard Penetr	ration Test		СР	Cable Per			
U Undisturbed U100 / U86 Sample P Piston Sample W Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core	TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designati FI Fracture Index NI Non Intact U* Blows to drive U100 / L UT Thin wall undisturbed si NA Not Applicable	J86	C 32 /175 /25# PP K L IV IVR	Cone N for For g Seatii Pocke Perm Packe Insitu	Penetratio	n Test penetration (mm) nly (mm) neter Test st (m/s) geons) . Peak		RO RC SO CONP WLS Install	Rotary Op Rotary Co Sonic Ope Continuou Windowles ation Slotted Pipe Piezometer Tip	en Hole red n holed s Percuss ss Sample		
C Core J Amber Jar Sample V Vial Sample	NR No Recovery NP No Penetration		HV HVR	Hand	Vane Test Vane Test	. Peak		1 mail	Grout Concrete	🔄 Gr	avel Filt	er

	•	bai	es	erclyde L		ORE Gouro				Ì				rehole WS23A Information Status Final 01/02/2012	No
Client: Consul	tant:			st & Parti								.lob I	No: 461		
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	14/12/2011 14/12/2011 CONP Competitor 1			Initial E Initial C		1	15mm			Coordinates Ground Lev Plunge: Scale:	:	E 22429	96.780 m Nati	
			PROG	RESS						D	RILLIN	G DET	AILS		
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chis To	selling Hours	s	From	То	Rotary Hole Dia	Core Dia	Flush
Date Time Strike Risen To After n Minutes Casing Depth Flow Sealed Depth Blows for 75mr															
		<u> </u>	WA	TER S	TRIKE	S					IN SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike			-	Flow			Sealed	De	pth Bl	ows for 75mm	Increments		
												N=13 (6,5,4,3, N=6 (2,2,2,1,2,			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be h arisings on com		stant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF				(Checked by:	PMCG			



D

в

LB

W

G

С

J

V

Water Sample

Amber Jar Sample

Gas Sample

Vial Sample

Core

Small Disturbed Sample

Bulk Disturbed Sample

Large Bulk Disturbed Sample

FI

NI

U*

UT

NA

NR

NP

Blows to drive U100 / U86

Thin wall undisturbed sample

Fracture Index

Not Applicable

No Penetration

No Recovery

Non Intact

BOREHOLE LOG

Gourock Pierhead

Borehole No WS24 Sheet 1 of 1 atus nal /2012

		ritchies			Got	IIOCK	Pier	nead	J				Stat	us	
													Fina 01/02/20		
	Client:	Riverside Inve										1-1-1			
	Consultant:	W.A. Fairhurs	at & Partner										lo: 461		
	Date Started Date Complete:	14/12/2011 14/12/2011		Initial Boring Di Initial Core Dia			115mm		Coord	inates:			280.820 m 890.280 m		
	Hole Type:	CONP		Rotary Casing			-		Groun	d Level		4.52 m Ol			
	Equipment:	Competitor 130		Core Barrel: Core Bit:					Plung Scale:			90 ° 1:50			
							Reduced	Sam	pling/		In Situ	Testing	TCR	FI	Install
		escription of Strata			Legend	Depth	Level		e Run	U	Test	Result	(SCR) RQD		-ation
/	silty sand at dept	D: Topsoil / turf intern th.	mixed with bro	own		0.25	4.27	DJ	0.20						
		D: Brown and dark be ounded fine to coars		clayey sandy		-0.60	3.92	DJ	0.50						
	occasional grave	el sized pockets of so obles and fragments	oft brown sand			- -									
١	of ash.		or slag. Trace			- - -			1.00-1.45 1.00		S	0			
	sandy gravelly as	D: Very loose dark gr sh and cinders interr	nixed with ver					U	1.00-2.00						
	soft brown sandy fragments of slag	y gravelly clay with o g, brick and sandsto	ccasional ne. Gravel is												
	angular to sub ro	ounded fine to coarse ravel sized pockets of	e. Sand is fine			2.00	2.52		2.00-2.45 2.00-3.00		S	4			
	sand at depth.								2.00-3.00						
	fine to coarse sa	D: Loose reddish bro and and angular to s	ub rounded fi	ne											
· ·	to coarse gravel sized very sandy	with occasional cobl pockets	oles and grave	əl 		- -3.00	1.52								
	End of Borehole	at 3.00 m				-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
						-									
			Core	Run		s	Stand	dard Pene	etration Test	<u> </u>	СР	Cable Per	cussion		
1	P Piston Sam		TCR Tota	Core Recovery		C 32	Cone	Penetrati			RO RC	Rotary Op Rotary Co	en Hole		
Т	W Thin Wall S	ample		Quality Designation	n	/175			etration (mm)		SO	Sonic Ope			

/25#

PP

κ

1

IV

IVR

ΗV

HVR

Seating blows only (mm)

Pocket Penetrometer Test

Insitu Vane Test. Residual

Hand Vane Test. Residual

Permeability Test (m/s)

Packer Test (Lugeons)

Insitu Vane Test. Peak

Hand Vane Test. Peak

CONP

Installation

Slotted Pipe

Concrete

Piezometer Tip

WLS

 \mathbb{K} Grout

Sonic Open holed

Continuous Percussion

Sand Filter

Gravel Filter

Bentonite Seal

Windowless Sampler

1	•	bai	es			ORE Gouro				G				rehole WS24 Information Status Final	
Client: Consul	tont			erclyde L st & Parti								lob	No: 461	01/02/2012 0	
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	14/12/2011 14/12/2011 CONP Competitor 1			Initial I Initial (Rotary Core E		1	15mm			Coordin Ground Plunge: Scale:	ates:	E 22428	80.820 m Nati 90.280 m Nati	
			PROGI	RESS	Core E	SIC:						ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		Hours	From		Rotary Hole Dia	Core Dia	Flush
14/12/2011	15:00	3.00	-	-	Dry										
			WA	TER S	TRIKE	S		•			IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	d	Depth	Blows for 75mn	n Increments		
											1.00 2.00	N=0 (0,0,0,0 N=4 (3,2,2,1,0			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be		stant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF					Checked	by: PMCG			



Gourock Pierhead

Borehole No WS25 Sheet 1 of 1 Status Final 01/02/2012

Consultan	t: W.A. Fairhurs	st & Partne	rs								Job No	o: 46′	8	
Date Started	15/12/2011		Initial Boring D			115mm		Coord	linates:			65.870 m		
Date Complete:	15/12/2011		Initial Core Dia					0				60.840 m	Nation:	al Grid
Hole Type: Equipment:	CONP Competitor 130		Rotary Casing Core Barrel:	Type		-		Plung	nd Level:		4.75 m OD 90 °			
Equipment.	Competitor 130		Core Barrel. Core Bit:					Scale			90 1:50			
						Reduced	Sam	pling/		In Sit	u Testing	TCR	FI	Install
	Description of Strata			Legend	Depth	Level		e Run	U	Test	Result	(SCR) RQD		-ation
MADE GROU	IND: Topsoil / moss.				- 0.25	4.50	DJ	0.20						
MADE GROU intermixed wi rounded fine	IND: Brown clayey gra th topsoil. Gravel is an to coarse.	velly fine to co gular to sub	oarse sand		0.25	4.30	DJ DB	0.50 0.50						
to coarse grav occasional fr	IND: Very loose dark g vel intermixed with brov agments of brick, conc ravel sized slightly clay	wn silty sand v crete, ash and	with				D DJ U	1.00-1.45 1.00 1.00-2.00		S	2			
fine to coarse coarse grave	IND: Loose reddish bro sand and angular to s I with occasional cobbl ockets. At 2.50m hard Jlder.	ub rounded fin es and gravel			2.20	2.55 2.25	D U	2.00-2.45 2.00-2.50		S	4			
End of Boreh		Core	∋ Run			Stan	dard Pene	etration Test		СР	Cable Perci	ussion		
P Piston S TW Thin Wa D Small D B Bulk Dis LB Large B W Water S G Gas Sa C Core	all Sample isturbed Sample sturbed Sample ulk Disturbed Sample iample	TCR Tota SCR Solii RQD Roc FI Frac NI Non U* Blow UT Thir NA Not NR No	e Run al Core Recovery d Core Recovery k Quality Designatic ture Index Intact vs to drive U100 / U vall undisturbed s Applicable Recovery Penetration	186	S C 32 /175 /25# PP K L IV IVR HV	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	Penetrat full 300m jiven pene ing blows et Penetro neability To er Test (L u Vane Te u Vane Te d Vane Te	ion Test am penetration etration (mm) only (mm) ometer Test est (m/s) ugeons) st. Peak st. Residual		RO RC SO CONF WLS	Rotary Ope Rotary Core Sonic Oper Continuous Windowless	n Hole holed Percuss Sample		Seal

1	•		es			ORE Gouro				G				rehole WS25 Information Status Final	No
Client: Consul	tont.			erclyde L st & Parti								lob l	No: 461	01/02/2012	
Date Starte Date Comp Hole Type: Equipment	ed olete:	15/12/2011 15/12/2011 CONP Competitor 1			Initial I Initial (-	15mm			Coordina Ground Plunge: Scale:	ates:	E 22426	0 65.870 m Nati 60.840 m Nati	
			PROGI	RESS		Sit.						ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		lours	From	То	Rotary Hole Dia	Core Dia	Flush
Image: Date Image: Strike After n Casing Decth Flow Seeled Depth Bioxs for 75mm Increments															
		II	WA	TER S	TRIKE	S	L				IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike				Flow			Sealed	1	Depth	Blows for 75mm	n Increments		
											1.00 2.00	N=2 (1,0,1,0,1 N=4 (0,0,0,1,1			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be		istant							
							PERS		IEL						
Driller: Sł	٢F				Logged	by: SKF					Checked	by: PMCG			



Gourock Pierhead

Borehole No WS26 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	•										lob N	o: 461	Q	
Date Started 15/12/2011 Date Complete: 15/12/2011 Hole Type: CONP Equipment: Competitor 130	Initi Initi Rot Coi	ial Boring Dia ial Core Diarr tary Casing T re Barrel:	neter		115mm -			Plunge	d Level:		E 224 N 677 4.71 m OI 90 °	307.710 m 877.110 m	Nationa	
	Col	re Bit:			Reduced	Sam	npling/	Scale:		In Site	1:50 u Testing	TCR	FI	Install
Description of Strata MADE GROUND: Brown and grey m	ottled silty gravelly		Legend	Depth	Level		re Run		U	Test	Result	(SCR) RQD		-ation
fine to coarse sand intermixed with fr brick, timber, concrete ash and cinde occasional gravel sized slightly clayey Gravel angular to subrounded fine to	agments of rs with / pockets.			0.25	4.46	DJ DJBD	0.20 0.50							
MADE GROUND: Soft to firm brown clay intermixed with clayey gravelly sa fragments of sandstone. Traces of as angular to subrounded fine to coarse coarse.	and. Some sh. Gravel is	y /		0.90	3.81	D DJ U	1.00- 1.00 1.00-	·1.45 ·2.00		S	11			
MADE GROUND: Medium dense dar coarse sand and angular to sub roun gravel with occasional fragments of b sandstone, cobbles and gravel sized intermixed with ash and cinders.	ded fine to coarse rick, slag and	5		-	0.11	D U	2.00- 2.00-			S	8			
MADE GROUND: Loose brown and r silty gravelly fine to coarse sand inter firm reddish brown sandy gravelly cla grey ash and cinders and occasional sandstone. Gravel angular to subrour coarse. End of Borehole at 3.00 m	mixed with y. Traces of dark fragments of	tled		3.00	1.71									
				- - - - - - - - - - - - - - - - - - -										
				· · · · ·										
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	FIFracture IndNINon IntactU*Blows to drive	Recovery y Designation dex ve U100 / U8 ndisturbed sa ble y	6	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	dard Pene Penetrat full 300m iven pene ng blows et Penetre eability T vare Te Vane Te Vane Te Vane Te Vane Te	tion Tes and pene etration only (m ometer est (m/s ugeons est. Peal est. Resi est. Peal	t (mm) nm) Test s)) c dual			Windowles	en Hole red n holed s Percuss s Sample		Seal

	•	bai	es	erclyde L		ORE Gouro				G				ws26 WS26 Information Status Final 01/02/2012	No
Client: Consul	tant:			st & Parti								Job	No: 461	18	
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	15/12/2011 15/12/2011 CONP Competitor 1			Initial E Initial C			15mm			Coordina Ground I Plunge: Scale:	tes:	E 2243	07.710 m Nat	
		г	PROGI								DRILLI	NG DET			
Date 15/12/2011	Time 15:30	Hole Depth 3.00	Casing Depth	Water Depth	Remarks		From	CP Chi To		lours	From	То	Rotary Hole Dia	Core Dia	Flush
Date Time Strike Pisen After n Casing Flow Sealed Depth Blows for 75mm Increments															
		<u> </u>	WA	TER S	TRIKE	S	L	1	I		IN S	TU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	i	Depth	Blows for 75mm	n Increments		
											1.00 2.00	N=11 (5,4,4,3, N=8 (1,2,1,2,2			
							NOTE	S							
Ground	water level	s are subject		idal and other		and should not be		stant							
							PERS		IEL						
Driller: Sk	٢F				Logged	by: SKF					Checked	oy: PMCG	i		



Gourock Pierhead

Borehole No WS27 Sheet 1 of 1 Status Final 01/02/2012

Clier			*0											0	
Con	sultant: W.A. Fairhurs	st & Partne	rs									Job N	0: 461	8	
Date St			Initial Boring D			115mm			Coord	inates:			15.520 m		
Hole Ty	pomplete: 15/12/2011 rpe: CONP		Initial Core Dia Rotary Casing						Groun	d Level:		N 6778 4.77 m OD	55.550 m	Nation	ai Grid
Equipm			Core Barrel:	туре					Plung			90 °			
			Core Bit:			-			Scale:	-		1:50	-		
	Description of Strata			Legend	Depth	Reduced Level	Sai	npling/ ore Rur		U	In Sit Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
	GROUND: Dark grey and gre		y fine to		-	4.50	DJ	0.20	n						
\ timber	e sand intermixed with fragme , concrete, ash and cinders. G rounded fine to coarse.		ar /		0.25	4.52	DJ	0.50	0						
	GROUND: Soft to firm brown					0.07	DB	0.50	0						
\ sands	ied with clayey gravelly sand. tone and timber. Gravel is and	gular to sub	nts of		0.90	3.87	D DJ	1.00			S	12			
\	ed fine to coarse. Sand is fine		/		-		U	1.00	0-2.00						
	GROUND: Medium dense da sand and angular to sub rour				1.60	3.17									
\ gravel	with occasional fragments of one, cobbles and gravel sized	brick, slag and	d /		-						_				
	nixed with ash and cinders.	very sariuy p	UCKEIS		<u> </u>		DU		0-2.45 0-3.00		S	16			
	GROUND: Medium dense br						_								
	d silty gravelly fine to coarse s m reddish brown sandy grave														
dark g	rey ash and cinders and occa	sional fragme	ents of		Ę										
sands coarse	tone. Gravel is angular to sub	rounded fine t	tO		3.00	1.77									$\sim\sim\sim\sim$
End of	Borehole at 3.00 m		<i>r</i>		-										
					-										
					-										
					-										
					-										
					-										
					-										
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					-										
					-										
					_										
					-										
					-										
 [Core	e Run	1	s	Stan	dard Per	netratio	n Test	· 	СР	Cable Perc	ussion	•	·
U P	Undisturbed U100 / U86 Sample Piston Sample		l Core Recovery d Core Recovery		C 32		e Penetra		est netration		RO RC	Rotary Ope Rotary Core			
τw	Thin Wall Sample	RQD Roc	k Quality Designation	on	/175	For g	given per	netratio	n (mm)		SO	Sonic Oper			
D B	Small Disturbed Sample Bulk Disturbed Sample		ture Index Intact		/25# PP		ing blows tet Penet				CONP WLS	Continuous Windowles			
LB	Large Bulk Disturbed Sample	U* Blov	vs to drive U100 / U		к	Perm	neability ⁻	Test (m	1/s)		Install		N≂a		
W G	Water Sample Gas Sample		wall undisturbed s Applicable	ample	L IV		er Test (J Vane T		,			Slotted Pipe Piezometer Tip		nd Filte	
C	Core		Recovery		IVR		u Vane T					Grout	<u>िल</u> ाव	ntonite	
J V	Amber Jar Sample Vial Sample	NP No F	Penetration		HV HVR		d Vane T d Vane T				1000.00	Concrete	<u>isa</u> Gr	avel Filt	er
L	via Jampio	l									الشينية				

1	•		es			ORE Gouro				G				rehole WS27 Information Status Final	No
Client: Consul	tant:			erclyde L st & Parti								lob	No: 461	01/02/2012	
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	15/12/2011 15/12/2011 CONP Competitor 1			Initial I Initial (15mm			Coordin Ground Plunge: Scale:	ates:	E 2243	0 15.520 m Nati 55.550 m Nati	
			PROG	RESS		Sit.						ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		Hours	From	To	Rotary Hole Dia	Core Dia	Flush
Date Time Strike Risen To After n Minutes Casing Depth Flow Sealed Depth Blows for 75mm Increments															
			WA	TER S	TRIKE	S					IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen	After n	Casing				Sealed	d					
											1.00 2.00	N=12 (2,2,3,3, N=16 (1,2,3,4,			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be		stant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF					Checked	by: PMCG			



Gourock Pierhead

Borehole No WS28 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	t & Partners								Job No	o: 461	8	
Date Started 15/12/2011	Initial Boring Di	ameter:		115mm		Coord	linates:		E 2243	23.970 m	Nationa	al Grid
Date Complete: 15/12/2011	Initial Core Diar									06.240 m	Nationa	al Grid
Hole Type: CONP	Rotary Casing	Туре		-			nd Level:		4.36 m OD			
Equipment: Competitor 130	Core Barrel: Core Bit:					Plung			90 ° 1:50			
Description of Strata		Legend	Depth	Reduced Level		npling/	U	In Sit	u Testing	TCR (SCR)	FI	Install
MADE GROUND: Topsoil / rough gra	iss and roots		0.10	4.26	Cor	re Run		Test	Result	RQD		-ation
MADE GROUND: Medium dense bec top becoming brown silty fine to coars angular to sub rounded fine to coarse occasional fragments of brick, slag ar cobbles and gravel sized clayey pock with ash and cinders.	se sand and gravel with nd sandstone,				DJ DB DJ DJ U	0.20 0.50 0.50 1.00-1.45 1.00 1.00-2.00		S	12			
					D	2.00-2.45		s	9			
					D	2.50-3.00		s	5			
End of Borehole at 3.00 m			- 3.00	1.36								****
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designatio FI Fracture Index NI Non Intact U* Blows to drive U100 / U8 UT Thin wall undisturbed sa NA Not Applicable NR No Recovery NP No Penetration	36	S C 32 /175 /25# PP K L IV IVR HV	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hand	e Penetrat full 300m given pene ing blows tet Penetro neability T ter Test (L u Vane Te u Vane Te d Vane Te	nm penetration etration (mm) only (mm) ometer Test rest (m/s) .ugeons) est. Peak est. Residual			Windowless	n Hole ed Percuss s Sample		Seal

1	•				В	ORE Gouro							ws28 WS28 Information Status Final	
Client:				erclyde L st & Parti									01/02/2012	
Consul Date Starte		VV.A.	Faimurs	a Parti		Boring Diameter:		15mm		Coordir		No: 46'	18 23.970 m Nat	ional Grid
Date Comp Hole Type: Equipment	lete:	15/12/2011 CONP Competitor 1	30		Initial (Core Diameter Casing Type Barrel:	-			Ground Plunge Scale:	Level:		06.240 m Nat	
			PROGI	RESS						DRILL	ING DET	AILS		
Date 15/12/2011	Time 13:00	Hole Depth 3.00	Casing Depth	Water Depth	Remarks Dry		From	CP Chise To	Hours	From	То	Rotary Hole Dia	Core Dia	Flush
Image: Date Image: Strike Risen Atter n Casing Flow Sealed Depth Blows for 75mm Increments														
		11	WA	TER S	TRIKE	S				IN S		TEST	DETAI	LS
Date	Time	Strike				Flow			Sealed	Depth	Blows for 75mm	n Increments		
										1.00 2.00 2.50	N=12 (2,2,2,3, N=9 (1,2,2,3,2 N=5 (2,1,1,2,1	2,2)		
							NOTE	S						
Ground	water level	s are subject		idal and othe		and should not be		stant						
							PERS	ONNI	EL					
Driller: Sk	٢F				Logged	by: SKF				Checked	by: PMCG	3		



Gourock Pierhead

Borehole No WS29 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurst & F	Partners						Job No	o: 461	8	
Date Started15/12/2011Date Complete:15/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring Dia Initial Core Dian Rotary Casing T Core Barrel: Core Bit:	neter	115mm -		Coordina Ground L Plunge: Scale:			22.540 m 84.550 m		
Description of Strata		Legend Dept	Reduced h Level	Sampling Core Ru		J Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Compact dark grey san and coarse gravel of slag. Sand is fine to Roots and weeds at top. MADE GROUND: Dark grey silty fine to c angular to subrounded fine to coarse grav occasional fragments of brick, slag and sa cobbles and gravel sized very sandy pocked with ash and cinders. MADE GROUND: Medium dense becomin reddish brown mottled silty gravelly fine to sand intermixed with firm reddish brown s clay. Traces of dark grey ash and occasio fragments of sandstone. Gravel angular to fine to coarse. MADE GROUND: Loose brown and light I gravelly fine to coarse sand with occasion of sandstone. Gravel angular to sub roun coarse. End of Borehole at 3.00 m	coarse. oarse sand and rel with andstone, ets intermixed Ing loose brown and o coarse andy gravelly onal o sub rounded brown silty al fragments	0.10	4.22 3.32 1.62 1.32	DJ 1.0 U 1.0 D 2.0	60 90-1.45	S	38			
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample RQD D Small Disturbed Sample FI B Bulk Disturbed Sample U' UE Large Bulk Disturbed Sample U' W Water Sample UT G Gas Sample NA C Core NR J Amber Jar Sample NP V Vial Sample	Solid Core Recovery	/2 P6 K Imple L IN IN H	Cone 2 N for 75 For g 55# Seati P Pock Perm Pack / Insitu /R Insitu V Hand	dard Penetration Penetration T full 300mm pe iven penetratic ng blows only et Penetromete leability Test (r er Test (Lugeo I Vane Test. Re I Vane Test. Re I Vane Test. Re I Vane Test. Re	Test enetration on (mm) (mm) er Test m/s) ons) eak eak esidual eak		Windowless	n Hole holed Percussi Sample		Seal

1	•		es			ORE Gouro				G				rehole WS29 Information Status Final	No
Client: Consul	tont.			erclyde L st & Parti								lob	No: 461	01/02/2012 O	
Date Starte Date Comp Hole Type: Equipment	ed olete:	15/12/2011 15/12/2011 CONP Competitor 1			Initial I Initial (15mm			Coordin Ground Plunge: Scale:	ates:	E 22432	22.540 m Nati 34.550 m Nati	
			PROGI	RESS		Sit.						ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		Hours	From	То	Rotary Hole Dia	Core Dia	Flush
Image: Date Image: Strike Risen of Minutes After n of Minutes Casing of Depth Flow Sealed Depth Blows for 75mm Increments															
		II	WA	TER S	TRIKE	S	L				IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike				Flow			Seale	d	Depth	Blows for 75mm	n Increments		
											1.00 2.00	N=38 (1,1,1,2, N=7 (1,1,1,2,2			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be		stant							
							PERS		<u>IEL</u>						
Driller: Sł	٢F				Logged	by: SKF					Checked	by: PMcG			



Gourock Pierhead

Borehole No WS30 Sheet 1 of 1 Status Final 01/02/2012

Consultant: W.A. Fairhurs	st & Partners								Job No	o: 461	8	
Date Started 13/09/2011 Date Complete: 13/09/2011 Hole Type: CONP Equipment: Terrier	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		115mm -		Coord Groun Plung Scale:	d Level:			55.735 m 46.373 m		
Description of Strata		Legend	Depth	Reduced Level	Sampli Core	-	U	In Sit	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Tarmac.			0.14	4.01		0.05						
MADE GROUND: Brown and grey s coarse gravel of sandstone.	andy angular fine to		-0.25	3.90	DJV 0).25).50						
MADE GROUND: Brown clayey graves and. Gravel is angular fine to coars sandstone and concrete and some a	e of brick, /		0.70	3.45	DJV 1	.00						
MADE GROUND: Brown and grey s coarse gravel of brick, concrete, ash sandstone.			-		D 1	.00 .20-1.65 .20-2.00	21	S	8			
			- - 			2.00-2.45 2.00-2.60	91	S	16			
MADE GROUND: Concrete (Driller's End of Borehole at 2.60 m	s description).	KXXXX4	2.40	1.75 1.55	D 2	2.60						
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample G Gas Sample C Core J Amber Jar Sample V Vial Sample	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designatio FI Fracture Index NI Non Intact U* Blows to drive U100 / U UT Thin wall undisturbed s NA Not Applicable NR No Recovery NP No Penetration	86	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seatii Pocke Perm Packe Insitu Insitu Hand	lard Penetra Penetration full 300mm iven penetra ng blows or et Penetrom eability Tes er Test (Lug Vane Test. Vane Test. Vane Test. Vane Test.	n Test penetration ation (mm) hly (mm) heter Test t (m/s) geons) . Peak . Residual . Peak			Windowless	n Hole d holed Percussi Sample		Seal

Client:	•	bal ritchie River		erclyde L		ORE Gouro							rehole WS30 Information Status Final 01/02/2012	No
Consul	ltant:	W.A.	Fairhurs	t & Part	ners						Job I	No: 461	8	
Date Starte Date Comp Hole Type: Equipment	olete:	13/09/2011 13/09/2011 CONP Terrier			Initial (1	15mm		Coordin Ground Plunge: Scale:	Level:		55.735 m Nati 46.373 m Nati	
			PROG	RESS	Core L	Sit.				1	ING DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chisell To	ling Hours	From	То	Rotary Hole Dia	Core Dia	Flush
13/09/2011	17:00	2.60	2.00		Dry									
		<u> </u>	WA	TER S	TRIKE	S	L			IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow		s	ealed	Depth	Blows for 75mm	Increments		
										1.20 2.00	N=8 (1,2,2,2,2, N=16 (2,3,4,4,			
							NOTE	S						
		s; all diameter			fluctuations	and should not be	e taken as con	stant						
							PERS	ONNE	L					
Driller: AF	5				Logged	by: ARM				Checked	by: PMcG			



BOREHOLE LOG

Gourock Pierhead

Borehole No WS31 Sheet 1 of 1 Status Final 01/02/2012

Client: Riverside Inverclyde Ltd

Ciler		urot 8 Dortoo									lah N	~		
		nurst & Partne									Job N			
Date St	tarted 13/09/2011 omplete: 13/09/2011		Initial Boring D Initial Core Dia			115mm		C	coordinates:			968.448 m 358.489 m		
Hole Ty			Rotary Casing			-		G	Found Level	:	4.05 m OD		, ridition	
Equipm	nent: Terrier		Core Barrel:						lunge:		90 ° 1:50			
			Core Bit:				1	5	icale:		1.50	1	<u> </u>	1
	Description of Strata			Legend	Depth	Reduced Level	Jan	npling/ ore Run	U		tu Testing	TCR (SCR)	FI	Install
MADE	GROUND: Tarmac.				0.14	3.91		ore Run		Test	Result	RQD		-ation
	GROUND: Brown and gro	ey sandy angular	fine to		0.30	3.75	DJV	0.30						
·	e gravel of sandstone.		/		-		DJV	0.60						
	GROUND: Loose becomi rown slightly clayey sandy		e brown and				В	0.60						
angula	ar fine to coarse gravel wit	h occasional ban	lds		-		DJV B	1.00		s	9			
	ash, tarmac and occasiona		₫,				D U	1.20-1.0	65 00 31	3	9			
							0	1.20-2.0	50 51					
					ļ.					_		1		
							D U	2.00-2.4		S	8			
							D	2.60-3.0	05	s	16			
						4.05								
End of	f Borehole at 3.05 m				-3 .00	1.05								*****
l					-									
					-									
					_									
					-									
					-									
					-									
					_									
					-									
					_									
					_									
					_									
					-									
					_									
					_									
					-									
					-									
					-									
U	Undisturbed U100 / U86 Sample	-	e Run		S			etration Tes	it	CP	Cable Perc			
Р	Piston Sample	SCR Sol	al Core Recovery id Core Recovery		C 32	N for	full 300r	ition Test nm penetrat		RO RC	Rotary Ope Rotary Cor			
TW D	Thin Wall Sample Small Disturbed Sample		ck Quality Designation cture Index	on	/175 /25#			etration (mr s only (mm)	n)	SO CONF	Sonic Oper Continuous		ion	
В	Bulk Disturbed Sample NI Non Intact				PP	Pock	et Penet	rometer Tes	t	WLS	Windowles			
LB W	Water Sample UT Thin wall undistu				K L	Pack	er Test (I	Fest (m/s) Lugeons)		Install	Slotted Pipe	Sa	nd Filte	r
G	Gas Sample NA Not Applicable				IV IVR			est. Peak est. Residua	ı		Piezometer Tip		ntonite	
J C	Core Amber Jar Sample		Recovery Penetration		HV	Hand	d Vane Te	est. Peak			Grout	Gr	avel Filt	er
V	Vial Sample				HVR	Hand	d Vane Te	est. Residua	l		Concrete			

1	•		es			ORE Gouro				Ì				ws31 Ws31 Information Status Final	No
Client:	4		side Inve Fairhurs	-								lah I		01/02/2012	
Consul Date Starte		13/09/2011	Fairruis			Boring Diameter:	1	15mm		Coo	ordinates:		No: 461	68.448 m Nati	ional Grid
Date Comp Hole Type:		13/09/2011 CONP			Initial (Core Diameter				Gro	und Leve			58.489 m Nati	
Equipment:		Terrier			Core E Core E	Barrel:					nge:		90 ° 1:50		
			PROGI	RESS	Core E	ы				1		G DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chis To	selling Hours				Rotary Hole Dia	Core Dia	Flush
13/09/2011	17:00	3.00	2.00		Dry										
			WA	TER S	TRIKE	S				IN	I SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Depth	Blo	ows for 75mm	Increments		
										1.2 2.0 2.6	00 N	=9 (2,2,3,2,2, =8 (2,2,2,2,2, =16 (2,2,4,4,4	2)		
							NOTE	S							
			rs in millimetre		fluctuations	and should not be	e taken as con	stant							
							PERS	ONN	IEL						
Driller: AF	þ				Logged	by: ARM				Chec	ked by:	PMcG			



BOREHOLE LOG

Gourock Pierhead

Borehole No WS32 Sheet 1 of 1 Status Final 01/02/2012

Client: Riverside Inverclyde Ltd

Cons	sultant:	W.A. Fairhurs	st & Partr	ners									Job	No: 4	461	8	
Date St Date Co Hole Ty Equipm	omplete: pe:	13/09/2011 13/09/2011 CONP Terrier		Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	ameter		115mm -		0	Coordina Ground I Plunge: Scale:				223974.8 677878.4 1 OD			
	De	scription of Strata			Legend	Depth	Reduced Level		npling/ re Run		U		u Testing	TC (SC	R)	FI	Install -ation
MADE	GROUN	D: Tarmac.				0.14	4.37	001				Test	Result	R	ΣD		
MADE	GROUN): Brown and grey s sandstone.	andy angul	ar fine to		0.30	4.21	DJV DJV	0.25 0.50								
fine to boulde Grave	coarse grand in rs. Sand in l is of bric	D: Medium dense da avel with frequent co s fine to coarse preco k, ash and sandstor	obbles and dominantly o ne.	some			2.54	DJV B D U	1.00 1.00 1.20-1. 1.20-2.	00		S	11				
·		ated on brick obstru at 2.00 m	iction.				2.51	D	2.00-2.	10		S	50/0				
U P TW D B LB W G C J	Piston Sample / Thin Wall Sample Small Disturbed Sample Bulk Disturbed Sample Carge Bulk Disturbed Sample / Water Sample Core MR No Recovery Amber Jar Sample NP No Penetration			Total Core Recovery Solid Core Recovery Rock Quality Designati Fracture Index Jon Intact Blows to drive U100 / U Thin wall undisturbed Not Applicable No Recovery	J86	S C 32 /175 /25# PP K L IV IVR HV	Cone N for For g Seati Pock Perm Pack Insitu Insitu	Penetrat full 300m given pene ing blows et Penetro neability T er Test (L u Vane Te	nm penetra etration (m only (mm) ometer Tes fest (m/s) .ugeons) est. Peak est. Residua	tion m) st			Rotary Rotary Sonic Contin Windo	<u> </u>	ed cussio mpler		Seal
V	Vial Sample		INF N			HVR	Hand	l Vane Te	est. Residua	al			Concrete				

Client:	•	bai ritchie	es	erclyde L		ORE Gouro				G				rehole WS32 Information Status Final 01/02/2012	No
Client: Consul	tant:			st & Part								Job	No: 461	8	
Date Starte Date Comp Hole Type: Equipment	ed olete:	13/09/2011 13/09/2011 CONP Terrier			Initial I Initial (1	15mm			Coordina Ground Plunge: Scale:	ites:	E 2239	74.817 m Nati 78.450 m Nati	
			PROG	RESS	Core E	SIC.						NG DET			
Date	Time	Hole Depth	Casing Depth	Water Depth	Remarks		From	CP Chi To		ours	From	То	Rotary Hole Dia	Core Dia	Flush
13/09/2011	17:00	2.00	2.00		Dry										
			WA	TER S	TRIKE	S					IN S	ITU SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed		Depth	Blows for 75mm			
											1.20 2.00	N=11 (3,2,3,3, 50/0mm (16,9,			
							NOTE	S							
		s; all diameter			r fluctuations	and should not be	e taken as con	stant							
					-1		PERS	ONN	IEL						
Driller: AF	>				Logged	by: ARM					Checked	oy: PMcG			



BOREHOLE LOG

Gourock Pierhead

Borehole No WS33 Sheet 1 of 1 Status Final 01/02/2012

Client: Riverside Inverclyde Ltd

Consultant: W.A. Fairhurst	& Partners								Job No	o: 461	8	
Date Started15/12/2011Date Complete:15/12/2011Hole Type:CONPEquipment:Competitor 130	Initial Boring D Initial Core Dia Rotary Casing Core Barrel: Core Bit:	meter		115mm -		Coordi Groun Plunge Scale:	d Level: e:			33.410 m 81.510 m		
Description of Strata		Legend	Depth	Reduced Level	Sampli Core	-	U	In Site Test	u Testing Result	TCR (SCR) RQD	FI	Install -ation
MADE GROUND: Clayey topsoil / turf MADE GROUND: Medium dense bec brown and grey silty fine to coarse sa rounded fine to coarse gravel with ocd fragments of brick and concrete, cobb sized very sandy pockets intermixed w cinders.	oming loose greyish nd and angular to sub casional les and gravel rith ash and		0.40	5.30	DJ 0 DB 0 DJ 1 DJ 1 U 1 DJ 2	0.20 0.50 0.00-1.45 .00 .00-2.00 2.00-2.45 2.00-3.00		S S	13			
U Undisturbed U100 / U86 Sample P Piston Sample TW Thin Wall Sample D Small Disturbed Sample B Bulk Disturbed Sample LB Large Bulk Disturbed Sample W Water Sample G Gas Sample C Core	Core Run TCR Total Core Recovery SCR Solid Core Recovery RQD Rock Quality Designatik FI Fracture Index NI Non Intact U* Blows to drive U100 / U UT Thin wall undisturbed s NA Not Applicable NR No Recovery NP No Penetration	186	S C 32 /175 /25# PP K L IV IVR HV HVR	Cone N for For g Seati Pock Perm Pack Insitu Insitu Hanc	dard Penetr Penetration full 300mm iven penetr ng blows or et Penetrom eability Tes er Test (Lug Vane Test. Vane Test. Vane Test.	n Test penetration ation (mm) hly (mm) heter Test t (m/s) geons) . Peak . Residual . Peak			Cable Percu Rotary Open Rotary Core Sonic Open Continuous Windowless tition Slotted Pipe Piezometer Tip Grout Concrete	n Hole d holed Percuss Sample		Seal

Client:	•	bai ritchio _{River}	es	erclyde L		ORE Gouro				5				rehole WS33 Information Status Final 01/02/2012	No
Cilent: Consul	tant:			st & Parti								Job I	No: 461	8	
Date Starte Date Comp Hole Type: Equipment	ed Ilete:	15/12/2011 15/12/2011 CONP Competitor 1	30		Initial (-	15mm			Coordinates Ground Leve Plunge: Scale:	:	E 22423	33.410 m Nati 31.510 m Nati	
		1	PROGI							DF	RILLIN	G DET			
Date 15/12/2011	Time 10:45	Hole Depth 3.00	Casing Depth	Water Depth	Remarks Dry		From	CP Chis To	selling Hours	s	From	То	Rotary Hole Dia	Core Dia	Flush
		<u> </u>	WA	TER S	TRIKE	S	L				IN SIT	U SPT	TEST	DETAI	LS
Date	Time	Strike	Risen To	After n Minutes	Casing Depth	Flow			Sealed	Dep	oth Bl	ows for 75mm	Increments		
												I=13 (3,3,3,4,3			
							NOTE	S							
Ground	water level	s are subject		idal and othe		and should not be h arisings on com		stant							
							PERS	ONN	IEL						
Driller: Sk	٢F				Logged	by: SKF	_			С	checked by:	PMCG			



Appendix 2.2 Trial Pit Logs

	am tchies			AL Pl Durock P						(s	rial Pit No CBR01 ^{Sheet 1 of 1} Status Final	,
Client:	Riverside Inv										01/02/2012	
Consultant: Date Started Date Complete: Hole Type: Equipment:	W.A. Fairhu 15/09/2011 15/09/2011 TP Hand Tools		Dimensions	○ 0.50m ▷	∆ 0.30m ▽	Bearing		ordinates: ound Level: ale:	E		156 m National 667 m National	
MADE GROU MADE GROU basalt. Coated MADE GROU with occasiona	ND: Grey angula d in a fine red dua ND: Brown silty al angular cobble angular to sub ro sandstone.	ar coarse gravel st. very gravelly fin e of light grey sa	ne to coarse sand andstone.		Legend	Depth 0.14 0.36 0.45	Reduced 4.40 4.18 4.09	Samplin	ng	In S Depth	itu Testing Result	Install -ation
				NOTES								
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	are subject to s Dry Stable None Hand dug inspe	ection pit. DCP	nd other fluctuatio test undertaken at rising and finished	ons and should t base of pit. P	not be ta	hs taken						
Logged by:	PMcG				Ch	ecked by	: PMc	G				
		ĸ	EY TO SYMB	OLS AND /	ABBRE	VIATIC	NS					
B Bulk Distu LB Large Bulk			W V G C NR N * E J <i>A</i>	Water Sample Gas Sample No Recovery Estimated Rela Amber Jar San Vial Sample				HV HVR PP ICBR IDEN MCV	Ha Po In In	nd Vane	sity Test	

	a m tchies	TRIAL P Gourock					(rial Pit No CBR02 Sheet 1 of 1 Status	,
Client:	Riverside Inverclyde	e Ltd						Final	
Consultant:	W.A. Fairhurst & P	artners					Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	15/09/2011 15/09/2011 TP Hand Tools	☐ 0.44m ▷ Dimensions		Bearing -		dinates: Ind Level: e:		891 m National 341 m National)	
Dec	cription of Strata		Logond	Depth	Reduced	Sampling		itu Testing	Install
MADE GROU	•			0.12	Level 4.42		Depth	Result	-ation
MADE GROU basalt. Coated	ND: Grey angular coarse I in a fine red dust. ND: Brown silty very grav angular to sub rounded fi gies.	relly fine to coarse sand.		0.12	4.42 4.01 3.87				
		NOTE	S		I	l	I I		
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	are subject to seasonal, Dry Stable None Hand dug inspection pit	tidal and other fluctuations and shou DCP test undertaken at base of pit. illed with arising and finished at grou	Photograp	ohs taken		l spoil. On			
Logged by:	PMcG		Cł	necked by	/: PMcG	3			
		KEY TO SYMBOLS AND	ABBRE	VIATIO	ONS				
B Bulk Distu LB Large Bulk		W Water Sampl G Gas Sample NR No Recovery * Estimated Re J Amber Jar Sa V Vial Sample		sity	H P IC	IVR H P F CBR I DEN I	Hand Vane	sity Test	lual

	am tchies	TRIAL PI Gourock F					(s	rial Pit No CBR03 Sheet 1 of 1 Status	,
Client:	Riverside Inverclyde Ltd	I					(Final	
Consultant:	W.A. Fairhurst & Partne	ers					Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	15/09/2011 15/09/2011 TP Hand Tools	 ⊲ 0.48m ▷ Dimensions 	∆ 0.36m ▽	Bearing -		dinates: nd Level: a:		536 m National 617 m National	
Des	cription of Strata		Legend	Depth	Reduced	Sampling		itu Testing	Install
MADE GROU	•			0.13	Level 4.38		Depth	Result	-ation
basalt. Coated	IND: Grey angular coarse grave d in a fine red dust. IND: Brown slightly sandy sub us lithologies. Sand is fine to c it at 0.47 m	rounded fine to coarse		0.37 0.47	4.14 4.04				
		NOTES	5						
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	s are subject to seasonal, tidal Dry Stable None Hand dug inspection pit. DCF	and other fluctuations and should P test undertaken at base of pit. P with arising and finished at groun	hotograp	hs taken		spoil. On			
Logged by:	PMcG		Ch	ecked by	: PMcG	i			
		KEY TO SYMBOLS AND	ABBRE	VIATIC	NS				
B Bulk Distu LB Large Bulk		W Water Sample G Gas Sample NR No Recovery * Estimated Rela J Amber Jar San V Vial Sample	ative Dens nple	sity	PI IC ID	VR H P F BR I DEN I	land Vane	sity Test	

	am tchies		CIAL PI Gourock F						rial Pit No CBR04 ^{Sheet 1 of 1} Status)
Client:	Riverside Invercly	yde Ltd							Final	
Consultant:	W.A. Fairhurst &	Partners						Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	15/09/2011 15/09/2011 TP Hand Tools	Dimensions	⊲ 0.55m ⊳	∆ 0.35m ▽	Bearing -		rdinates: und Level: le:		205 m National 145 m National D	
								In S	Situ Testing	Install
	scription of Strata			Legend		Reduced Level	Sampling	Depth	Result	-ation
basalt. Coated	IND: Grey angular coa d in a fine red dust.	rse gravel and cobbles o			0.13	4.36 3.89				
with occasion	al sub angular cobble o o angular of blaes and	of sandstone. Gravel is			0.80	3.69				
			NOTES	5						
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	s are subject to season Dry Stable None Hand dug inspection	al, tidal and other fluctu pit. DCP test undertake ackfilled with arising and	n at base of pit. F	hotograp	hs taken		d spoil. On			
Logged by:	PMcG			Cł	ecked by	: PMc	G			
		KEY TO SYN	MBOLS AND	ABBRE	VIATIC	NS				
B Bulk Distu LB Large Bulk		W G NR * J V	Water Sample Gas Sample No Recovery Estimated Rela Amber Jar Sar Vial Sample		sity	F F	HV HVR PP CBR DEN MCV	Hand Vane	sity Test	lual

v ba ritch	ies	TRIAL PI Gourock F					l s	rial Pit No RPC01 Sheet 1 of 1 Status	
Client: Riv	verside Inverclyde Ltd							Final	
Consultant: W.	.A. Fairhurst & Partner	'S					Job No	: 4618	
Date Complete: 14/0 Hole Type: TP	109/2011 109/2011 nd Tools	○ 0.45m ▷ Dimensions	∆ 0.35m ▽	Bearing -		und Level:		320 m National 210 m National	
Descripti	ion of Strata		Legend	Depth	Reduced	Sampling		itu Testing	Install
MADE GROUND: MADE GROUND: MADE GROUND: basalt. Coated in a	Tarmac ((Wearing course). Tarmac (Base course). Grey angular coarse gravel a fine red dust. Brown silty very gravelly fin d to rounded fine to coarse	and cobbles of		0.05 0.13 0.45 0.60	Level 4.49 4.41 4.09 3.94		Depth	Result	-ation
Groundwater: Dry Stability: Stal Shoring: Nor General: Pre Pho	subject to seasonal, tidal ar / ible ne ecored to recover 130mm dia	NOTES nd other fluctuations and should ameter road core. Extended by l poil. On completion pit backfilled	not be ta	jing to de	termine b		9.		
Logged by: PM	lcG		Ch	ecked by	: PMcC	G			
	к	EY TO SYMBOLS AND	BBRF	VIATIC	NS				
D Small Disturbed B Bulk Disturbed LB Large Bulk Distr U Undisturbed U1 BLK Block Sample CBR CBR Mould Sar	d Sample J Sample turbed Sample 100 Sample	W Water Sample G Gas Sample NR No Recovery * Estimated Rela J Amber Jar San V Vial Sample			H H P IO II	IVR H PP P CBR Ir DEN Ir	and Vane	sity Test	

	am tchies			AL PI ourock F						l s	rial Pit No RPC02 Sheet 1 of 1 Status	,
Client:	Riverside Inv	verclyde Ltd								(Final	
Consultant:	W.A. Fairhu		rs							Job No	: 4618	
Date Started Date Complete:	14/09/2011 14/09/2011			⊲ 0.48m ⊳			Coo	ordinate			260 m National 510 m National	
Hole Type: Equipment:	TP Hand Tools		Dimensions		∆ 0.38m ▽	Bearing		ound Le		4.54 m OD)	
						-	Sca	ale:		1:50	ity Teating	
Des	cription of Strata	1			Legend	Depth	Reduced Level	Sar	npling	In S Depth	itu Testing Result	Install -ation
	ND: Tarmac (W			/		0.05 0.14	4.49 4.40					
MADE GROU	ND: Tarmac (Ba	ar coarse gravel	and cobbles of	/	/2000	0.35 0.45	4.19 4.09					
MADE GROU	of various litholo	ly sub rounded	to rounded fine to ne to coarse.	//								
l												
				NOTES	<u> </u>							
All Dimensions in N	letres			NOTES)							
Groundwater levels		easonal, tidal a	nd other fluctuation	ons and should	d not be ta	aken as c	onstant					
Stability:	Stable											
Shoring: General:			ameter road core							Э.		
	with HRA.	iken of pit and s	spoil. On complet	ion pit backfille	d with ari	sing and	finisned	at grou	nd level			
Logged by:	PMcG				Ch	ecked by	/: PMc	G				
		K	EY TO SYME	BOLS AND	ABBRE	VIATIC	NS					
	urbed Sample			Water Sample Gas Sample				HV HVR			Test. Peak Test. Resid	ual
LB Large Bulk	Disturbed Sample d U100 Sample		NR	No Recovery Estimated Rela Amber Jar Sar	ative Den	sity		PP ICBR	Po In	ocket Pen Situ CBR	etrometer T ? Test	
BLK Block Sam CBR CBR Moule	ple .			Amber Jar Sar Vial Sample	nple	-		IDEN MCV	In	Situ Dens Situ MC	sity Test	

	am tchies	TRIAL PI Gourock F					l s	rial Pit No RPC03 ^{Sheet 1 of 1} Status)		
Client:	Riverside Inverclyde Ltd	I						Final			
Consultant:	W.A. Fairhurst & Partne	ers					Job No	: 4618			
Date Started Date Complete: Hole Type: Equipment:	14/09/2011 14/09/2011 TP Hand Tools	☐ 0.48m Dimensions	∆ 0.38m ▽	Bearing -		dinates: Ind Level: e:		110 m National 710 m National			
Des	cription of Strata		Legend	Depth	Reduced Level	Sampling	In S Depth	itu Testing Result	Install -ation		
MADE GROU				0.05 0.12	4.39 4.32		Deptit	Result	-41011		
MADE GROUND: Tarmac (Base course). 0.12 4.32 MADE GROUND: Grey angular coarse gravel and cobbles of basalt. Coated in a fine red dust. 0.60 3.84 MADE GROUND: Brown sity very gravely fine to coarse sand. Gravel is sub angular to sub rounded fine to coarse of various lithologies. 1.00 3.44 End of Trial Pit at 1.00 m 1.00 1.00 1.00											
	Stability: Stable Shoring: None										
Logged by:	PMcG		Cł	necked by	: PMcG	6					
	KEY TO SYMBOLS AND ABBREVIATIONS										
B Bulk Distu LB Large Bulk		W Water Sample G Gas Sample NR No Recovery * Estimated Rel J Amber Jar Sar V Vial Sample		sity	H P IC	IVR H P P CBR Ir DEN Ir	land Vane	sity Test			

•	am tchies			AL PI							rial Pit No TP01 ^{Sheet 1 of 1} Status Final)
Client:	Riverside Inver	rclyde Ltd									01/02/2012	
Consultant:	W.A. Fairhurst	t & Partne	ſS							Job No): 4618	
Date Started Date Complete: Hole Type: Equipment:	21/09/2011 21/09/2011 TP 8T Tracked 360		Dimensions	<1 2.40m ▷	∆ 0.80m ▽	Bearing -		ordinate ound Le ale:			222 m National 284 m National D	
Des	scription of Strata				Legend	Depth	Reduced Level	Sa	mpling	In S Depth	Situ Testing Result	Install -ation
coarse gravel lithologies. Nu and some me Brown slightly	y silty very gravelly fi unded cobbles and b	nd boulder co nents, many l	ntent of mixed brick fragments	ine to		1.10	-0.97 -1.37	DJV B DJV B D DJV	0.50 0.50 1.00 1.00 1.50 1.50 1.50		Result	
				NOTES	 S				•			4
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	Metres. s are subject to seas Strong inflow at 0. Unstable None Pit located adjacer arisings on comple	.40m							h			
Logged by:	AGM				Cł	necked b	y: PMc	G				
B Bulk Distu LB Large Bulk			G NR * J	Water Sample Gas Sample No Recovery Estimated Rela Amber Jar Sar Vial Sample				HV HVR PP ICBR IDEN MCV		Hand Vane	sity Test	dual

•	am tchies		TRIA Goi	LP							rial Pit No TP02 ^{Sheet 1 of 1} Status)
Client:	Riverside Inv	verclyde Ltd									Final 01/02/2012	
Consultant:	W.A. Fairhu	irst & Partne	rs							Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	21/09/2011 21/09/2011 TP 8T Tracked 360	0	< Dimensions	1 2.60m ⊳	∆ 1.00m ▽	Bearing -		ordinati ound Le ale:			685 m National 272 m National)	
Dec	scription of Strata				Legend	Depth	Reduced	Sa	mpling		Situ Testing	Install
MADE GROU coarse gravel boulder conte some glass fra Brown gravelly	IND: Brown sligh with a high sub in nt of mixed lithology	tly silty sandy s rounded cobble ogies. Many sh me cobble size SAND with med	ell fragments, d brick fragments.			0.60	-0.32	DJV B D	0.50 0.50 0.50	Depth	Result	-ation
mixed lithologi								DJV B D	1.00 1.00 1.00			
End of Trial Pit at 1.80 m End of Trial Pit at 1.80 m 1.80 -1.52 B 1.80 D 1.8 D 1.8 DJV 1.8												
				NOTES								
	• ·			NOTES	5							
All Dimensions in Metres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Seepage from 0.30m. Stability: Unstable Shoring: None General: Services cleared before commencing pit. Pit backfilled with arisings on completion. Pit located at waters edge during period of low tide.												
Logged by:	AGM				Cł	ecked b	y: PMc	G				
		ĸ	EY TO SYMBO	LS AND	ABBRE	VIATIO	ONS					
B Bulk Disturbed Sample G Gas Sample HVR H LB Large Bulk Disturbed Sample NR No Recovery PP F U Undisturbed U100 Sample * Estimated Relative Density ICBR I BLK Block Sample J Amber Jar Sample IDEN I										Hand Vane	sity Test	lual

	am tchies		TRIAL F Gourock						5	rial Pit No TP03 ^{Sheet 1 of 1} Status Final)
Client:	Riverside Inverce	yde Ltd								01/02/2012	
Consultant:	W.A. Fairhurst &	Partne	rs						Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	21/09/2011 21/09/2011 TP 8T Tracked 360		⊲ 2.70m		Bearing -		ordinat ound Lo ale:			954 m National 239 m National	
Des	cription of Strata			Legend	Depth	Reduced	Sa	mpling		itu Testing	Install
MADE GROU coarse gravel and boulder c	IND: Brown slightly sill with a high sub angula ontent of mixed litholo s, and old cable. Many	o rounded cobble e rebar rods,		1.00	-0.64	DJV B DJV B D	0.50 0.50 1.00 1.00 1.00	Depth	Result	-ation	
			NOT	ËS							
All Dimensions in Metres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Groundwater at 0.10m depth. Stability: Caving in from surface. Shoring: None General: Pit located adjacent to low tide level. Services cleared before commencing pit. Pit backfilled with arisings on completion											
Logged by:	AGM			CI	necked by	y: PMc	:G				
		k	EY TO SYMBOLS AN	ID ABBRE	VIATIO	ONS					
W Water Sample HV B Bulk Disturbed Sample G Gas Sample HVR LB Large Bulk Disturbed Sample NR No Recovery PP U Undisturbed U100 Sample * Estimated Relative Density ICBR BLK Block Sample J Amber Jar Sample IDEN CBR CBR Mould Sample V Vial Sample MCV										Test. Peak Test. Resid etrometer T R Test sity Test / Test	dual

	Dam tchies		\L Pl urock F							Trial Pit No TP04 Sheet 1 of 1 Status)
Client:	Riverside Inverciyo	e Ltd								Final 01/02/2012	
Consultant:	W.A. Fairhurst & F	artners							Job N	o: 4618	
Date Started Date Complete: Hole Type: Equipment:	21/09/2011 21/09/2011 TP 8T Tracked 360	Dimensions	<12.30m ▷	∆ 0.90m ▽	Bearing -		ordinat ound Lo ale:			9.243 m National 2.538 m National DD	
Des	scription of Strata			Legend	Depth	Reduced	Sa	ampling		Situ Testing	Install
MADE GROU cobbles of bas brown silty fin angular fine to	JND: Grey brown gravelly salt, dolerite and concret ne to coarse sand. Grave o coarse of basalt, dolerit			0.70	2.35	DJV B DJV	0.50 0.70 0.70	Depth	Result	-ation	
NOTES All Dimensions in Metres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Strond upweeling flow from 0.50m depth. Stability: Pit sides caving in. Shoring: None General: Services cleared before commencing pit. Pit backfilled with arisings on completion											
Logged by:	AGM			Ch	necked by	y: PMc	G				
		KEY TO SYMBO	DLS AND	ABBRE	VIATIC	ONS					
KEY TO SYMBOLS AND ABBREVIATIONSDSmall Disturbed SampleWWater SampleHVHand Vane Test. PeakBBulk Disturbed SampleGGas SampleHVRHand Vane Test. ResidualLBLarge Bulk Disturbed SampleNRNo RecoveryPPPocket Penetrometer TestUUndisturbed U100 Sample*Estimated Relative DensityICBRIn Situ CBR TestBLKBlock SampleJAmber Jar SampleIDENIn Situ Density TestCBRCBR Mould SampleVVial SampleMCVIn Situ MCV Test											dual

	Dam tchies		TRIAL P Gourock							rial Pit No TP05 Sheet 1 of 1 Status)
Client:	Riverside Inver	rclyde Ltd								Final 01/02/2012	
Consultant:	W.A. Fairhurst	t & Partne	rs						Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	21/09/2011 21/09/2011 TP 8T Tracked 360		⊲ 2.50m ▷ Dimensions	$\begin{bmatrix} \Delta \\ 1 \ 10m \end{bmatrix}$	Bearing -		ordinat ound Lo ale:			570 m National 049 m National)	
Dec	scription of Strata			Legend	Depth	Reduced	Sa	ampling		Situ Testing	Install
MADE GROU rounded fine i and boulder c fragments, gla basalt, sandst wooden plank silty fine to co End of Trial P		1.70	-1.45	DJV B DJV B D DJV	0.50 0.50 1.00 1.00 1.50 1.50 1.50	Depth	Result	-ation			
			NOTE	S							
All Dimensions in Metres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Groundwater at 0.10m depth - strong flow. Stability: Unstable Shoring: None General: Pit located on seaward side of existing sheet piled wall, adjacent to low water line. Services cleared before commencing pit. Pit backfilled with arisings on completion											
Logged by:	AGM			Cł	necked b	y: PMc	G				
		ĸ	EY TO SYMBOLS AND	ABBRE	VIATIO	ONS					
KEY TO SYMBOLS AND ABBREVIATIONSDSmall Disturbed SampleWWater SampleHVBBulk Disturbed SampleGGas SampleHVRLBLarge Bulk Disturbed SampleNRNo RecoveryPPUUndisturbed U100 Sample*Estimated Relative DensityICBRBLKBlock SampleJAmber Jar SampleIDENCBRCBR Mould SampleVVial SampleMCV										Test. Peak Test. Resid Netrometer T Test Sity Test V Test	dual

	Dam tchies	TRIAL P Gourock							rial Pit Nc TP06 ^{Sheet 1 of 1} Status Final)
Client:	Riverside Inverclyd	e Ltd							ГIПАІ 01/02/2012	
Consultant:	W.A. Fairhurst & P	artners						Job No	: 4618	
Date Started Date Complete: Hole Type: Equipment:	21/09/2011 21/09/2011 TP 8T Tracked 360	⊲ 2.40m D Dimensions		Bearing -		ordination ound Le			000 m National 378 m National)	
Dec	scription of Strata		Legend	Depth	Reduced	Sa	ampling		itu Testing	Install
MADE GROL rounded fine lithologies. MADE GROL coarse grave cobbles and r brick and tarn wire rope, me	JND: Brown slightly claye to coarse gravel of aggre JND: Brown slightly claye I with a high sub angular nedium boulder content of nac. Fragments of wood, ital pipe, ceramic fragmer . Sand is fine to coarse.	y, sandy sub rounded fine to and sub rounded i mixed lithologies, rerram, 20mm diameter		2.30	2.00	DJV B D DJV B D DJV B D DJV	0.50 0.50 0.50 1.00 1.00 1.00 1.50 1.50	Depth	Result	-ation
All Dimensions in I Groundwater levels Groundwater: Stability: Shoring: General:	s are subject to seasonal, Dry Unstable None	NOTE tidal and other fluctuations and shou commencing pit. Pit backfilled with a	Ild not be t							
Logged by:	AGM		CI	necked b	y: PMc	G				
		KEY TO SYMBOLS AND		VIATIO		HV			Teet D	
D Small Dist B Bulk Dist LB Large Bulk U Undisturbe BLK Block Sam CBR CBR Moul		Hand Vane Hand Vane Pocket Pen In Situ CBF In Situ Den In Situ MC ^V	Test. Resid etrometer T R Test sity Test	dual						

	am tchies		TRIA Goi	LPÍ urock F							Trial Pit N TP07 Sheet 1 of 1 Status Final	lo
Client:	Riverside In	•									01/02/2012	
Consultant:	W.A. Fairhu	rst & Partne	rs							Job I		
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX		<	ጏ 2.80m ⊳	∆ 0.70m ▽	Bearing -		ordinate ound Le ale:			19.425 m Natior 18.022 m Natior OD	
Des	scription of Strata	1	•		Legend	Depth	Reduced Level	Sa	Impling	lr Dept	h Situ Testin	J Install
MADE GROU	IND: Topsoil					0.20	5.74	DJV	0.20	Бері	iii itesuit	
coarse gravel of brick and co	IND: Brown sligh with a high angu oncrete. Some s d canvas sheetin	llar cobble and ections of meta	boulder content I post, metal			1.00	4.94	DJV B D	0.20 0.50 0.50 0.50 1.00			
with a mediun sub angular to quartz. Sand i	IND: Soft to firm n cobble content o sub rounded fir is fine to coarse.	of mixed litholo to coarse of s (Reworked Lar			· · ·	-	B DJV B D	1.00 1.00 1.00 1.50 1.50				
POSSIBLE M a medium to h limestone, silt angular to sub	Iding beach depo ADE GROUND: high angular and y sandstone and o rounded of mix- ible Land Reclar drock)	with		1.70	4.24	D DJV B DJV B DJV DJV	1.50 1.50 2.00 2.00 2.00 2.50 2.50 2.50					
End of Trial P	it at 3.10 m		****	3.10	2.84	B D DJV	3.00 3.00 3.00					
				NOTES	5							
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	s are subject to s Dry Locally Unstab None	le	nd other fluctuations encing pit. Pit back									
Logged by:	AGM				Cł	necked by	/: PMc	G				
		k	EY TO SYMBO	LS AND	ABBRE	VIATIO	ONS					
B Bulk Distu LB Large Bulk		ble	G Ga NR No * Es J Am	ater Sample as Sample d Recovery timated Rela ober Jar Sar al Sample		sity		HV HVR PP ICBR IDEN MCV		Hand Va Pocket F In Situ C In Situ D	ne Test. Pea ne Test. Res enetrometer BR Test ensity Test CV Test	idual

	Dam tchies	TRIAL PI Gourock F							rial Pit No TP08 ^{Sheet 1 of 1} Status Final)	
Client:	Riverside Inverclyde Ltd								01/02/2012		
Consultant:	W.A. Fairhurst & Partne	ers						Job No	: 4618		
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX	⊲ 3.10m ▷ Dimensions	∆ 0.80m ▽	Bearing -		ordinate ound Le ale:			281 m National 741 m National)		
Des	scription of Strata		Legend	Depth	Reduced	Sa	mpling		itu Testing	Install	
MADE GROU	•				Level			Depth	Result	-ation	
Coarse gravel of brick, conce cobbles. Woo MADE GROU medium sub a Gravel is sub lithologies. Ba 1.70m depth. MADE GROU coarse gravel	IND: Brown slightly silty sandy with a high angular cobble and rete, mortar, sandstone. Rare d d fragments. Sand is fine to co JND: Brown silty gravelly fine to angular cobble content of mixed angular to sub rounded fine to and of black sand of ash betwe JND: Brown slightly silty sandy with a high sub angular and su ked lithologies. Sand is fine to co it at 2.50 m	boulder content lelayed set tar arse. coarse sand with a l lithologies. coarse of mixed en 1.60m and sub rounded fine to b rounded cobble		0.20 1.20 1.75 2.50	6.195.194.643.89	р 2 2 2 2 3 2 3 2 3 3 2 3 3 3 3 3 3 3 3	0.20 0.50 0.50 1.00 1.00 1.50 1.50 1.70 2.00 2.00 2.50 2.50 2.50				
		NOTES	5								
All Dimensions in Metres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Seepage at 0.40m depth. Stability: Unstable from 1.75m depth. Shoring: None General: Services cleared before commencing pit. Pit backfilled with arisings on completion.											
Logged by:	AGM		Cł	ecked by	/: PMC	CG					
	ł	KEY TO SYMBOLS AND	ABBRE	VIATIC	ONS						
D Small Dist B Bulk Dist LB Large Bulk U Undisturbe BLK Block Sarr CBR CBR Moul		Hand Vane	sity Test								

	Dam tchies	TRIAL PI Gourock F							rial Pit No TP09 ^{Sheet 1 of 1} Status)
Client:	Riverside Inverclyde Ltd								Final 01/02/2012	
Consultant:	W.A. Fairhurst & Partne	rs						Job No): 4618	
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX	⊲ 3.00m ▷ Dimensions	∆ 0.70m ▽	Bearing -		ordinate ound Le ale:			516 m National 296 m National D	
		1				6		In S	Situ Testing	Install
	scription of Strata		Legend	Depth	Reduced Level	58	Impling	Depth	Result	-ation
fine to coarse and slate. Sor sandy clay, sa charred wood POSSIBLE M with high ang weak to weal Reworked We POSSIBLE M silty fine grain	JND: Brown slightly clayey, sligh gravel and cobbles of brick, cor me glass fragments, pockets of and and gravel of cinders with fr I. Sand is fine to coarse. IADE GROUND: Firm reddish b ular and sub angular cobble con k silty fine grained sandstone. (F eathered Bedrock). IADE GROUND: Weak to mediu ned sandstone with thin bands of worked Bedrock).	rown slightly agments of rown slightly sandy silt tent of extremely Possible		0.20 1.30 2.10	5.45 4.35 3.75 3.55	DJV B D DJV B D DJV B D DJV B D DJV	0.20 0.50 0.50 1.00 1.00 1.50 1.50 2.00 2.00 2.00			
			\ `							
All Dimensions in Netres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Dry Stability: Locally unstable. Shoring: None General: Services cleared before commencing pit. Pit backfilled with arisings on completion.										
Logged by:	AGM		Cł	necked by	y: PMo	:G				
	k	EY TO SYMBOLS AND	ABBRE		ONS					
D Small Dist B Bulk Dist LB Large Bulk U Undisturbe BLK Block Sam CBR CBR Moul		Hand Vane	sity Test	lual						

	Chies Riverside Inv W.A. Fairhu		Go	AL PI						Job N	Trial Pit No TP10 Sheet 1 of 1 Status Final 01/02/2012 o: 4618	
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX		Dimensions	⊲ 2.80m ⊳	∆ 0.90m ▽	Bearing -		ordinate ound Le			4.251 m National 0.893 m National DD	
MADE GROU MADE GROU with a mediur lithologies, bric Sand is fine to MADE GROU high sub angu of brick and co soot. MADE GROU fine to coarse cobble conter	ND: Brown claye n sub angular cc ck and concrete. o coarse. ND: Soft orangis lar and sub roun oncrete. Sand is ND: Brown sligh gravel with a hig t of mixed litholo pottery. Sand is f	ey sandy angula bble content of Rare plastic fo sh brown sandy ded cobble and fine to coarse tly silty slightly i h sub angular a ories. Some fra	od wrappers. silt with medium to l boulder content of ash and sandy sub rounded		Legend	Depth 0.20 0.50 1.50 2.70	Reduced 5.49 5.19 4.19 2.99	Sa DJV B D DJV B DJV B DJV B DJV B DJV B DJV	mpling 0.20 0.50 0.50 1.00 1.00 1.00 1.50 1.50 1.5	In Depth	Situ Testing Result	Install -ation
				NOTES								
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General: Logged by:	are subject to s Seepage at 0.3 Unstable None	0m depth	nd other fluctuation encing pit. Pit bac		isings on		on.					
B Bulk Distu LB Large Bulk			G G NR N * E J A	OLS AND / /ater Sample as Sample o Recovery stimated Rela mber Jar Sar ial Sample				HV HVR PP ICBR IDEN MCV		Hand Var Pocket Pe In Situ CE	nsity Test	dual

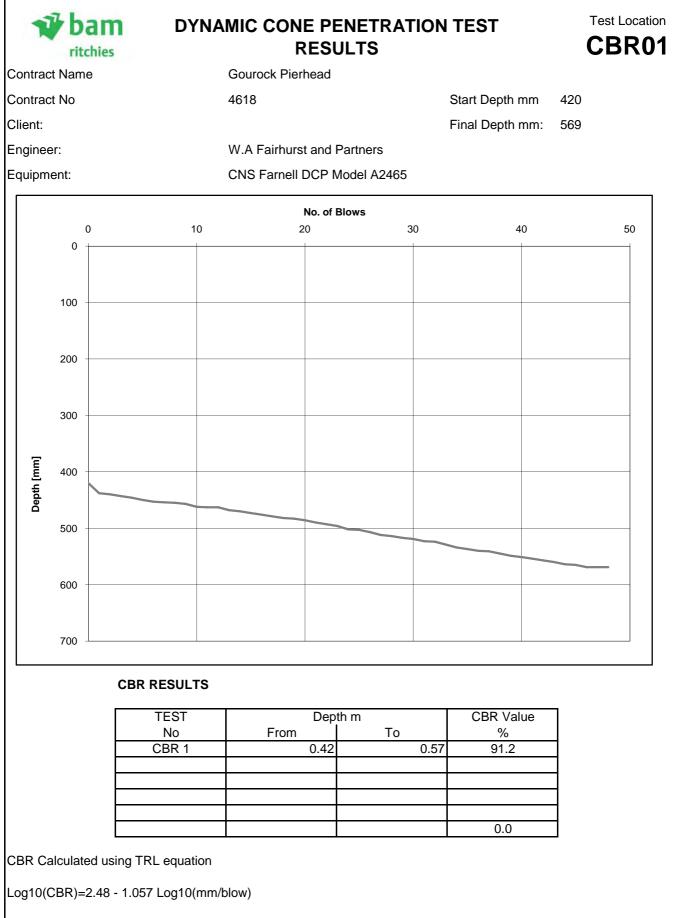
	Dam tchies	TRIAL PI Gourock F							rial Pit No TP11 ^{Sheet 1 of 1} Status Final)
Client:	Riverside Inverclyde Ltd								01/02/2012	
Consultant:	W.A. Fairhurst & Partne	ers						Job No		
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX	⊲ 3.20m ▷ Dimensions	∆ 0.60m ▽	Bearing -		ordination ound Le			266 m National 321 m National)	
Des	scription of Strata		Legend	Depth	Reduced	Sa	mpling		Situ Testing	Install
MADE GROU	•				Level			Depth	Result	-ation
coarse gravel boulder conte lenses of brow coarse. POSSIBLE M angular cobb silty sandston strong reddish	JND: Brown slightly clayey sand with a high sub angular and an int of brick, concrete, slate and i wn soft slightly gravelly silt. San IADE GROUND: Firm reddish b le content of extremely weak to e. Thin bands of weak conglom n brown silty sandstone; recove (Possible Reworked Bedrock).	gular cobble and tarmac. Some d is fine to prown sandy silt with high medium strong erate and medium		0.20	5.004.103.00	D D D D D D D D D D D D D D D D D D D	0.20 0.50 0.50 1.00 1.00 1.50 1.50 2.00 2.00 2.00			
		NOTES	S							
All Dimensions in Wetres. Groundwater levels are subject to seasonal, tidal and other fluctuations and should not be taken as constant Groundwater: Dry Stability: Stable Shoring: None General: Services cleared before commencing pit. Pit backfilled with arisings on completion.										
Logged by:	AGM		Cł	necked b	y: PMc	G				
	ŀ	KEY TO SYMBOLS AND	ABBRE	<u>VIA</u> TIC	DNS					
D Small Dist B Bulk Dist LB Large Bulk U Undisturbe BLK Block Sam CBR CBR Moul	ł	Hand Vane	sity Test	lual						

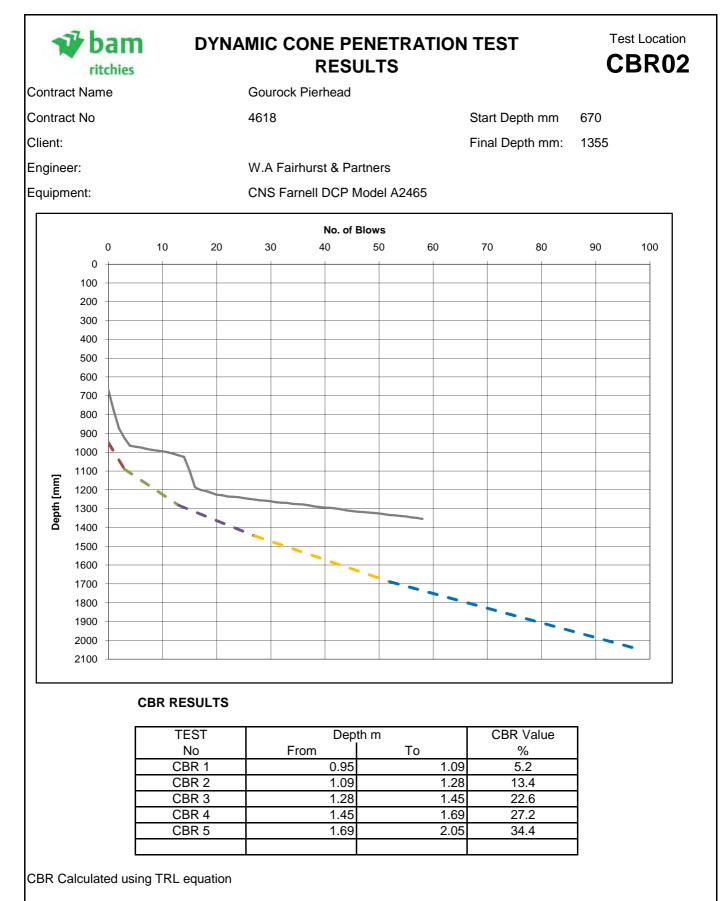
TRIAL PIT LOG Gourock Pierhead									Trial Pit No TP12 Sheet 1 of 1 Status					
Client:	Client: Riverside Inverclyde Ltd									Final 01/02/2012				
Consultant:	W.A. Fairhu	rst & Partne	rs							Job	No:	4618		
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX		⊲ 3.00m ▷ Coordinates: Dimensions △ 0.70m Bearing Scale:					E 224246.273 m National Grid N 677857.673 m National Grid 5.24 m OD 1:50						
Description of Strata					Legend	Depth	Reduced Sampling			Dep		tu Testing Result	• motan	
MADE GROU	ND: Topsoil					0.20	5.04	DJV	0.20	De	Jun	Result	-alion	
with a high su concrete, slat Sand is fine to MADE GROU sand. Gravel is lithologies. MADE GROU angular and su content of mix MADE GROU fine to coarse of basalt. Rar	ub angular cobble e, and sandstone o coarse. ND: Light brown s sub rounded fin ND: Red silty fin ub rounded fine t ed lithologies an ND: Brown sligh gravel with a hig e blue glazed po o of black organic d	e and boulder c e. Some lead pi very silty grave ne to coarse of e to coarse grave d broken red tilt tly sandy sub ro gh sub angular ttery fragments	ipe fragments. elly fine to coarse mixed ad with a high sub l and cobble e. cobble content and concrete.			0.70 1.30 1.50	 5.04 4.54 3.94 3.74 2.24 	D D D D D D D D D D D D D D D D D D D	0.20 0.50 0.50 1.00 1.00 1.00 1.50 1.50 1.50 2.00 2.00 2.50 2.50 3.00 3.00 3.00					
				NOTES										
All Dimensions in N Groundwater levels Groundwater: Stability: Shoring: General:	are subject to s Local seepage Falling in from None	at 0.4m 1.50m	nd other fluctuation encing pit. Pit bacl											
Logged by:	AGM Checked by: PMcG													
		ĸ	EY TO SYMBO	DLS AND	ABBRE	VIATIC	ONS							
D Small Disturbed Sample W Water Sample B Bulk Disturbed Sample G Gas Sample LB Large Bulk Disturbed Sample NR No Recovery U Undisturbed U100 Sample * Estimated Relation BLK Block Sample J Amber Jar Sam CBR CBR Mould Sample V Vial Sample					ative Density ICB nple IDE			HVR		Hand Vane Test. Peak Hand Vane Test. Residual Pocket Penetrometer Test In Situ CBR Test In Situ Density Test In Situ MCV Test				

	TRIAL PIT LOG ritchies Gourock Pierhead							Trial Pit No TP13 Sheet 1 of 1 Status Final					
Client:	Riverside Inverclyde	/erclyde Ltd								61/02/2012			
Consultant:	W.A. Fairhurst & Pa	Inthers						Job No	: 4618				
Date Started Date Complete: Hole Type: Equipment:	22/09/2011 22/09/2011 TP JCB 3CX	⊲ 2.90m ⊳ Coordinates: Dimensions △ 0.90m Bearing - Scale:						 E 224260.691 m National Grid N 677867.012 m National Grid 4.95 m OD 1:50 					
Doc	Logond	Legend Depth		Reduced Sampling			In Situ Testing Inst						
MADE GROU	scription of Strata				Level			Depth	Result	-ation			
Coarse gravel boulder conte skin brick wall coarse. POSSIBLE M brown conglo recovered as	merate with thin layers of a sandy clay with a high a oulder content. Becoming d from 1.70m depth. (Pos	angular cobble and ome blocks of double Sand is fine to v weak to medium strong reddish silty sandstone, igular and sub angular slightly silty fine		0.20	4.75	DJV B DJV B DJV B DJV B DJV B DJV	0.20 0.50 0.50 1.00 1.00 1.50 1.50 2.00 2.00 2.00						
		NOTE	S										
All Dimensions in M Groundwater levels Groundwater: Stability: Shoring: General:	s are subject to seasonal, Dry Stable None	idal and other fluctuations and shou	Ild not be t										
Logged by:	AGM		CI	necked b	y: PMc	G							
		KEY TO SYMBOLS AND	ABBRE	VIATIO	ONS								
DSmall Disturbed SampleWWater SampleBBulk Disturbed SampleGGas SampleLBLarge Bulk Disturbed SampleNRNo RecoveryUUndisturbed U100 Sample*Estimated RelaBLKBlock SampleJAmber Jar SarCBRCBR Mould SampleVVial Sample				e HV HVR PP				Hand Vane Test. Peak Hand Vane Test. Residual Pocket Penetrometer Test In Situ CBR Test In Situ Density Test In Situ MCV Test					

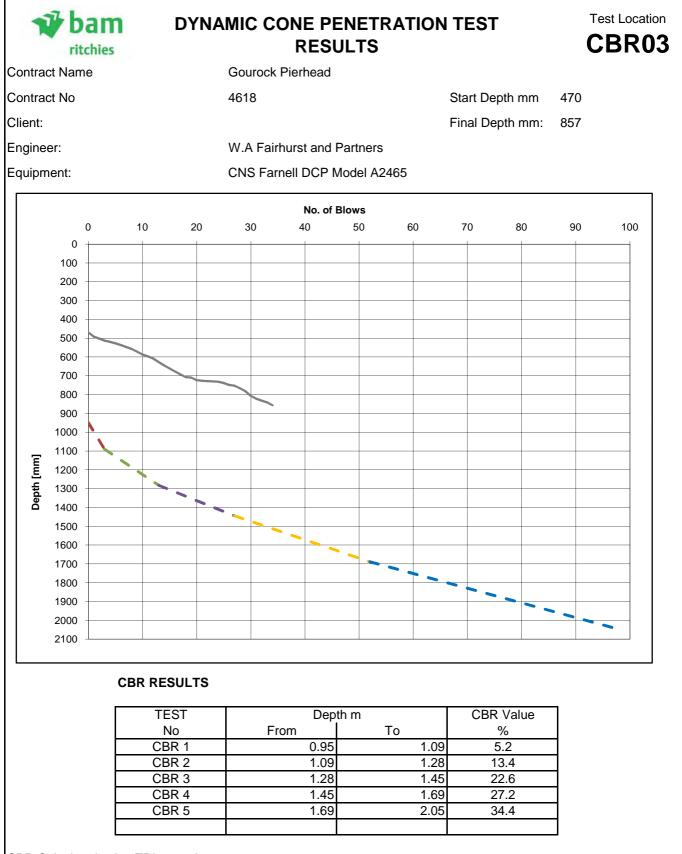


APPENDIX 3.0 DYNAMIC CONE PENETRATION TESTS



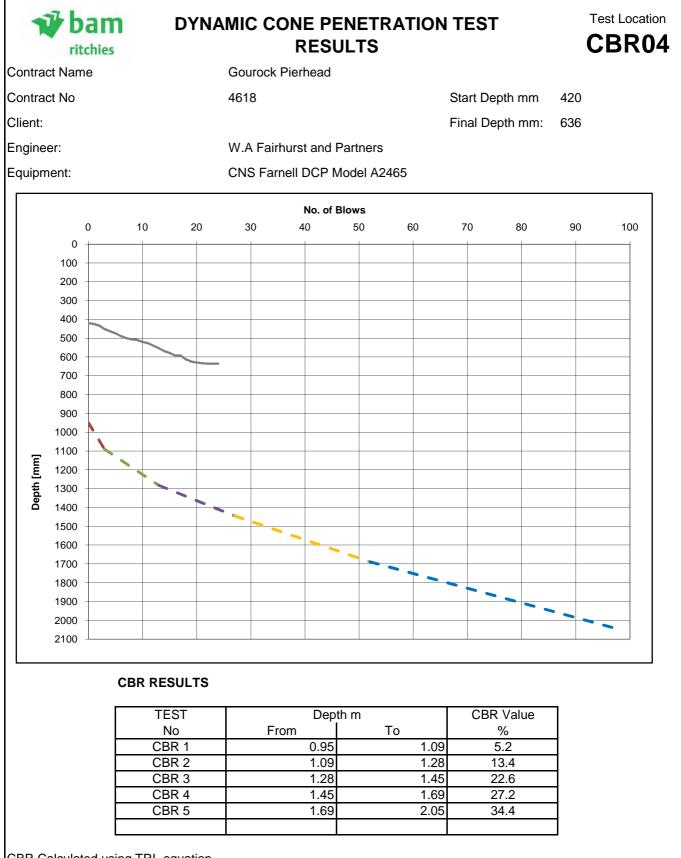


Log10(CBR)=2.48 - 1.057 Log10(mm/blow)



CBR Calculated using TRL equation

Log10(CBR)=2.48 - 1.057 Log10(mm/blow)



CBR Calculated using TRL equation

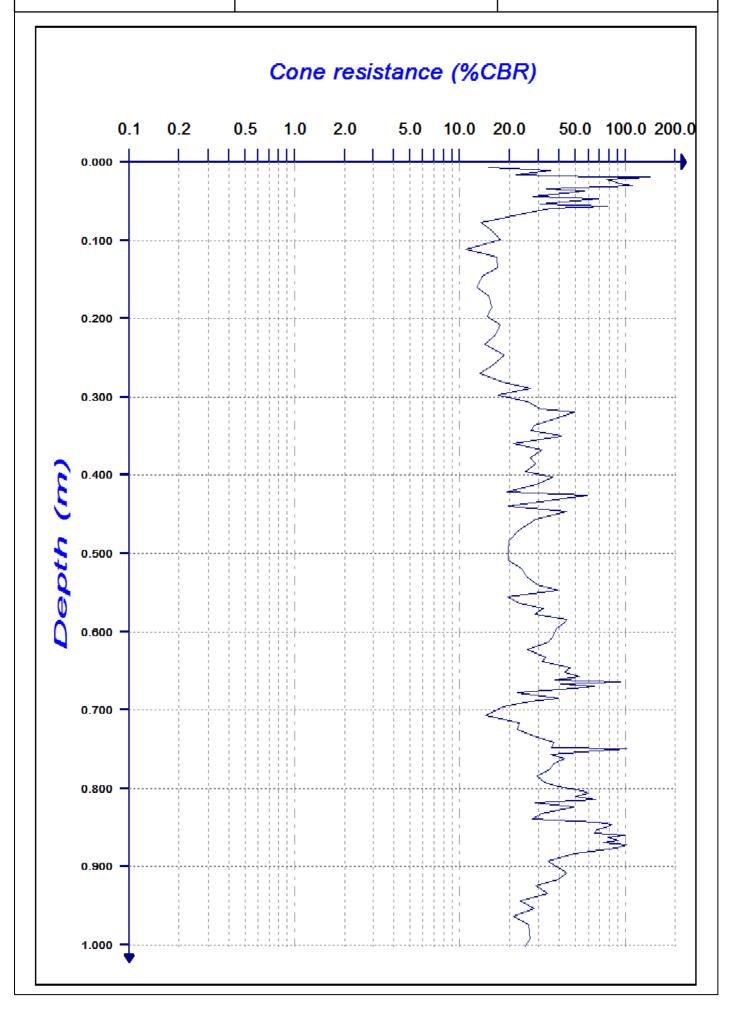
Log10(CBR)=2.48 - 1.057 Log10(mm/blow)



GOUROCK PIERHEAD REGEN.

LOGGED BY: SKF DATE: 21/12/2011

VARIABLE ENERGY DYNAMIC CONE PROBE

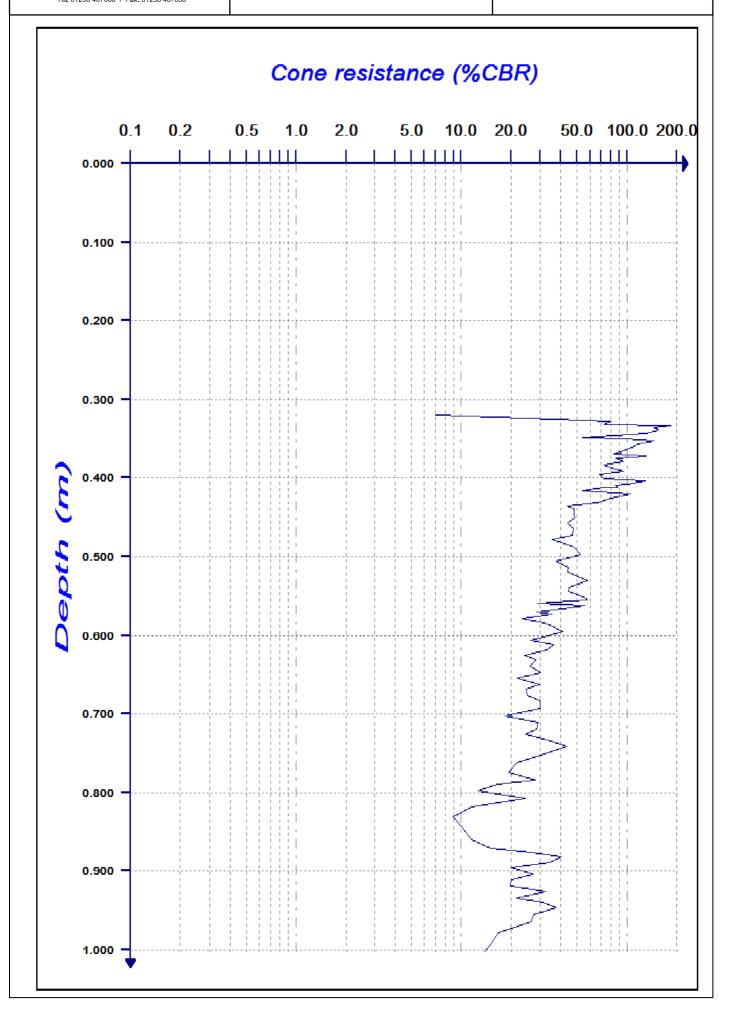


EAM Ritchies. Glasgow Road, Kilsyth, Glasgow. G65 9BL Tel: 01236 467000 / Fax: 01236 467030

GOUROCK PIERHEAD REGEN.

LOGGED BY: SKF DATE: 21/12/2011

VARIABLE ENERGY DYNAMIC CONE PROBE

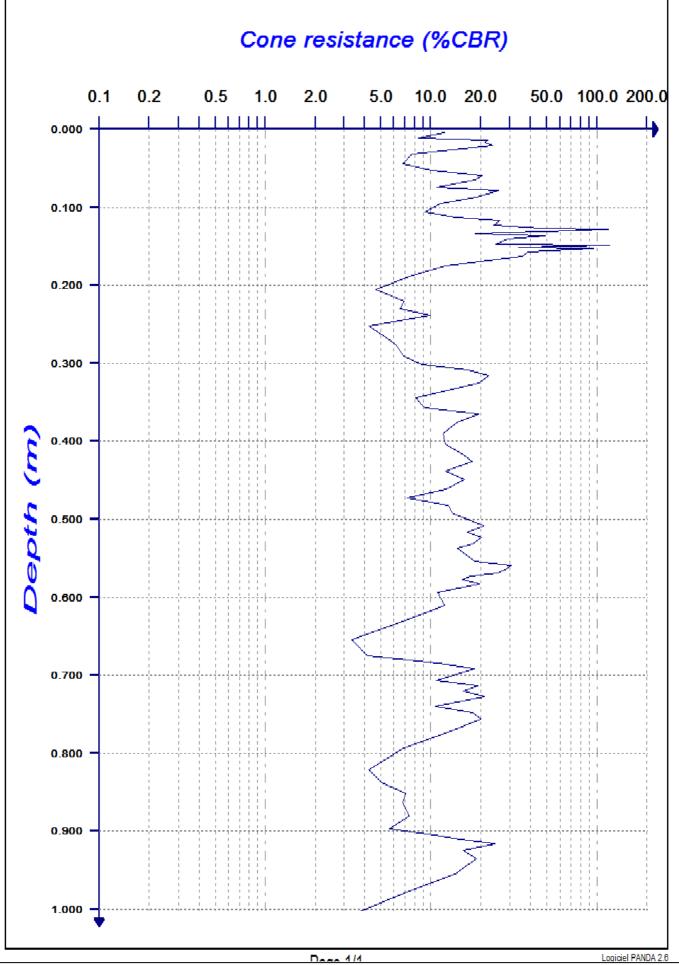




GOUROCK PIERHEAD REGEN.

DATE: 21/12/2011 LOGGED BY: SKF

VARIABLE ENERGY DYNAMIC CONE PROBE

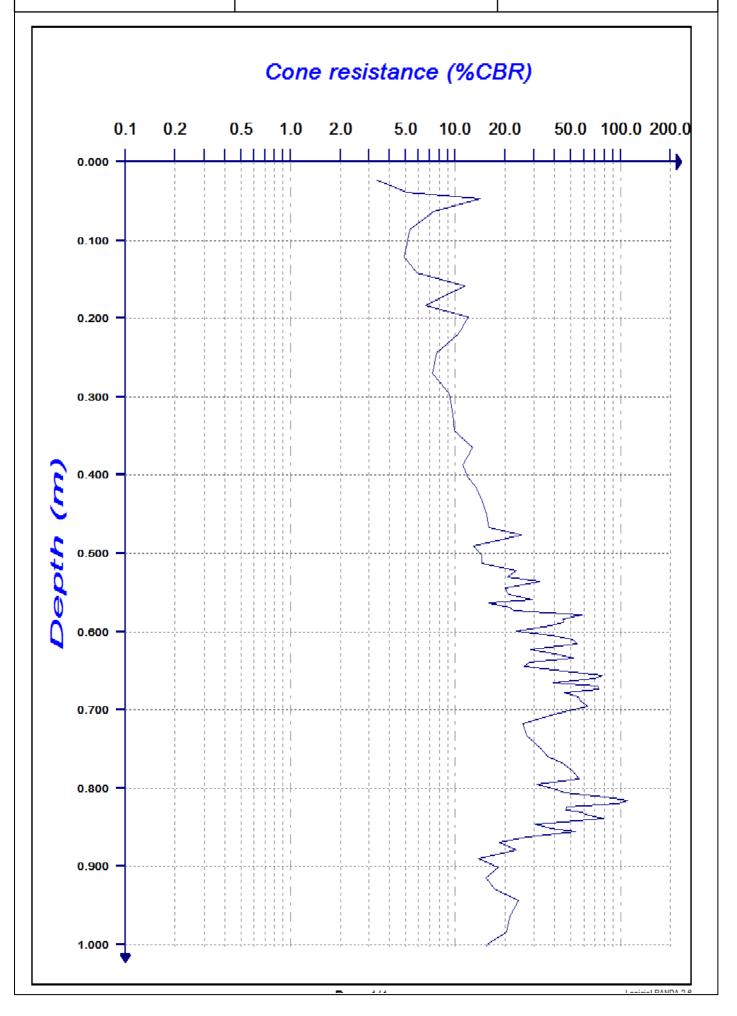




GOUROCK PIERHEAD REGEN.

LOGGED BY: SKF DATE: 21/12/2011

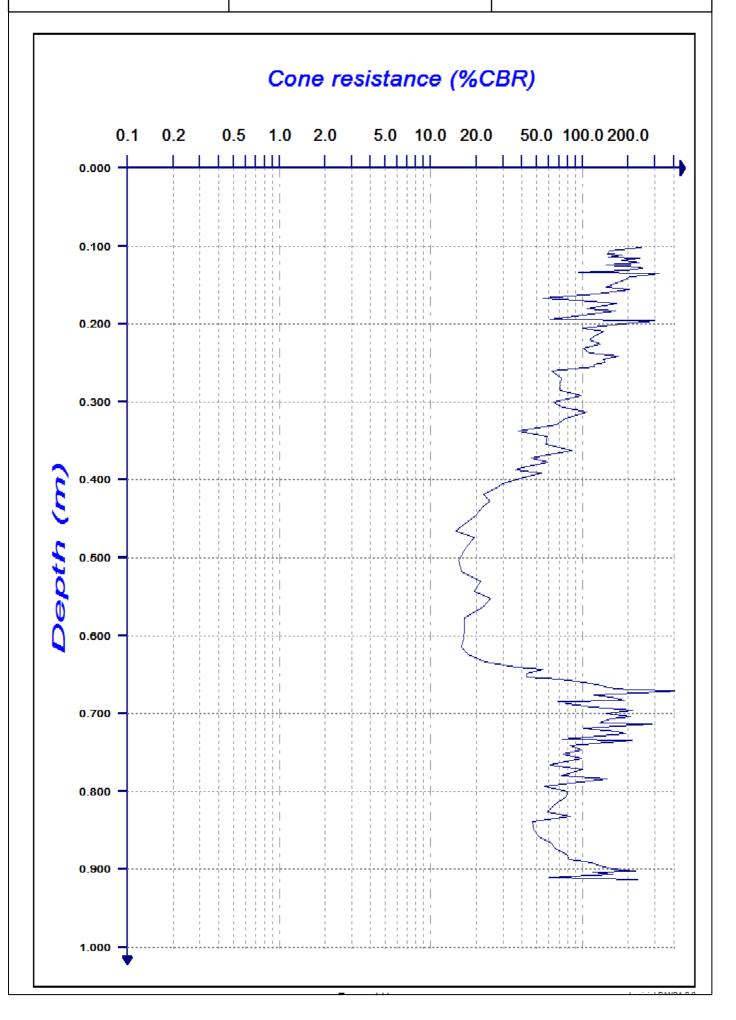
VARIABLE ENERGY DYNAMIC CONE PROBE





LOGGED BY: SKF DATE: 21/12/2011

VARIABLE ENERGY DYNAMIC CONE PROBE



ritchies BAM Ritchies, Glasgow Road, Kilsyth, Glasgow. G65 9BL Tel: 01236 467000 / Fax: 01236 467030 LOGGED BY: SKF DATE: 21/12/2011 HOLE NO: P23 Cone resistance (%CBR) 10.0 20.0 50.0 100.0 200.0 0.1 0.2 0.5 1.0 2.0 5.0 1 1.1 111 0.000 2 0.100 0.200 0.300 0.400 3 Depth 0.500 0.600 0.700 0.800 0.900 1.000 -

GOUROCK PIERHEAD REGEN.

bam

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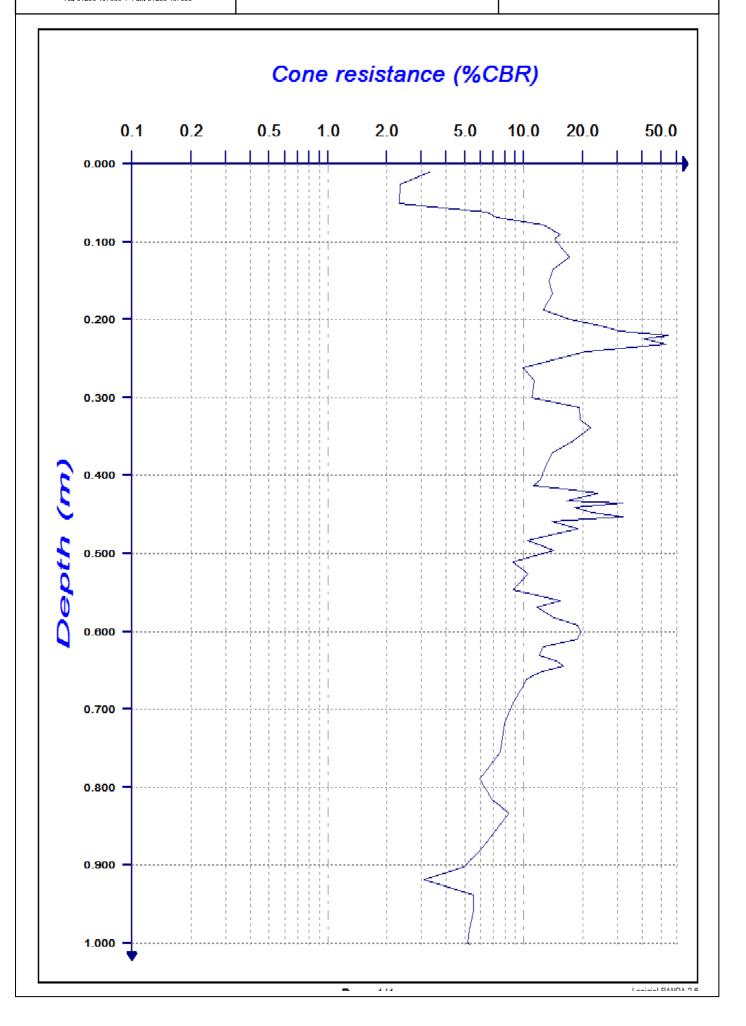
Logicial DANIDA 9 R

VARIABLE ENERGY DYNAMIC CONE PROBE



LOGGED BY: SKF DATE: 21/12/2011

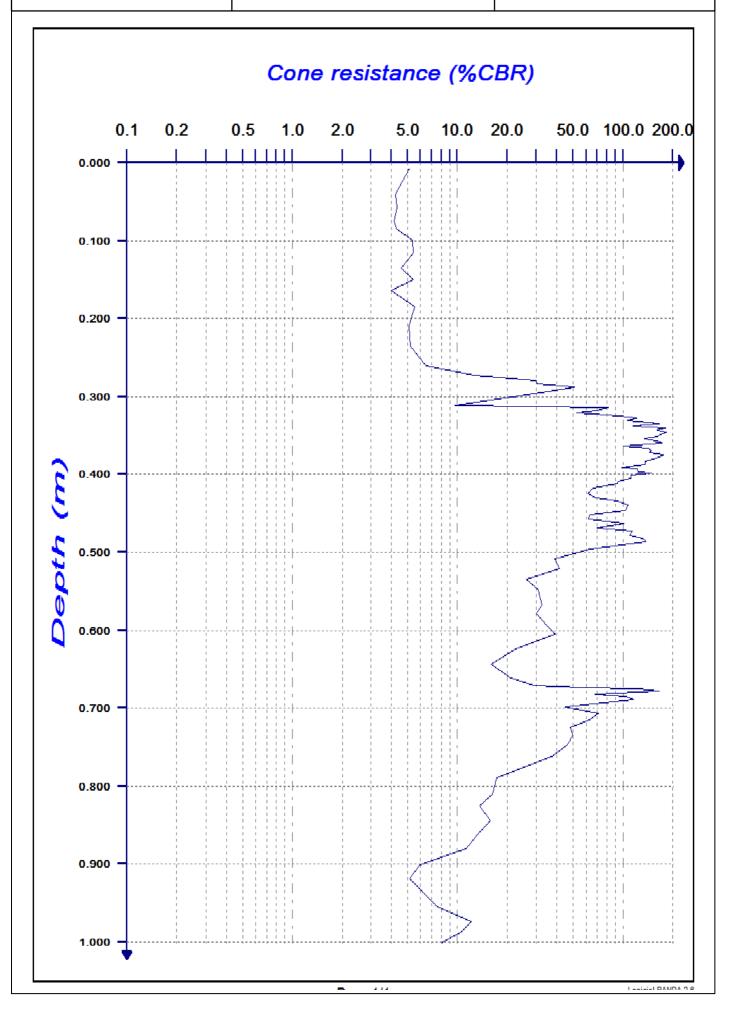
VARIABLE ENERGY DYNAMIC CONE PROBE





BAM Ritchies, Glasgow Road, Kilsyth, Glasgow. G65 9BL Tel: 01236 467000 / Fax: 01236 467030 LOGGED BY: SKF DATE: 21/12/2011

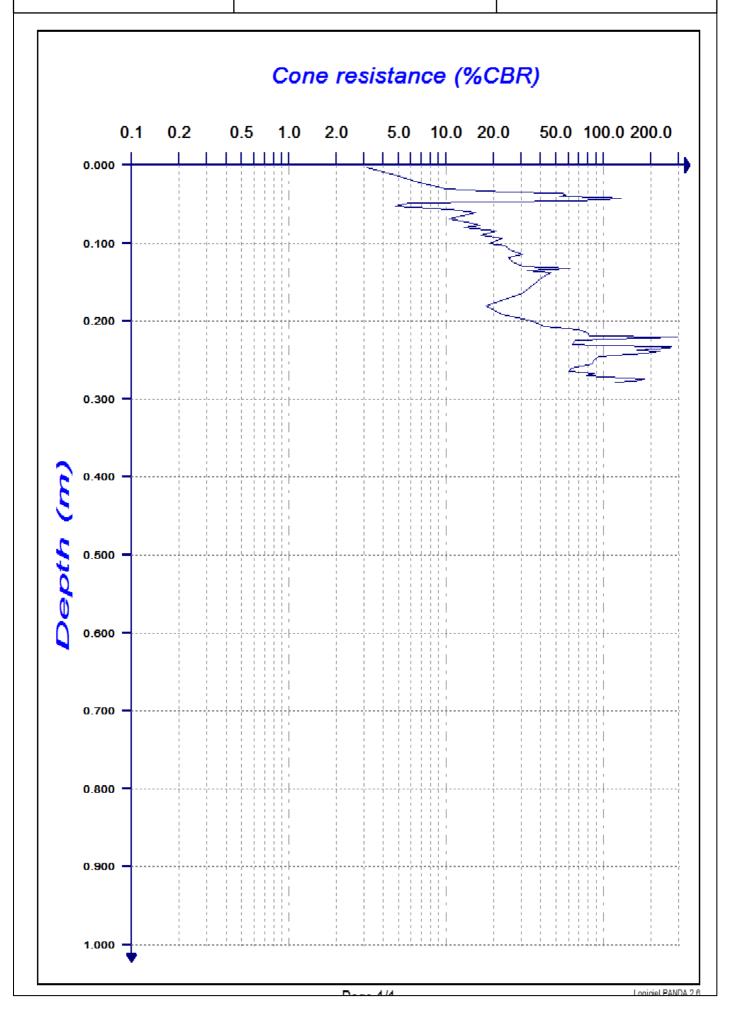
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LOGGED BY: SKF DATE: 21/12/2011

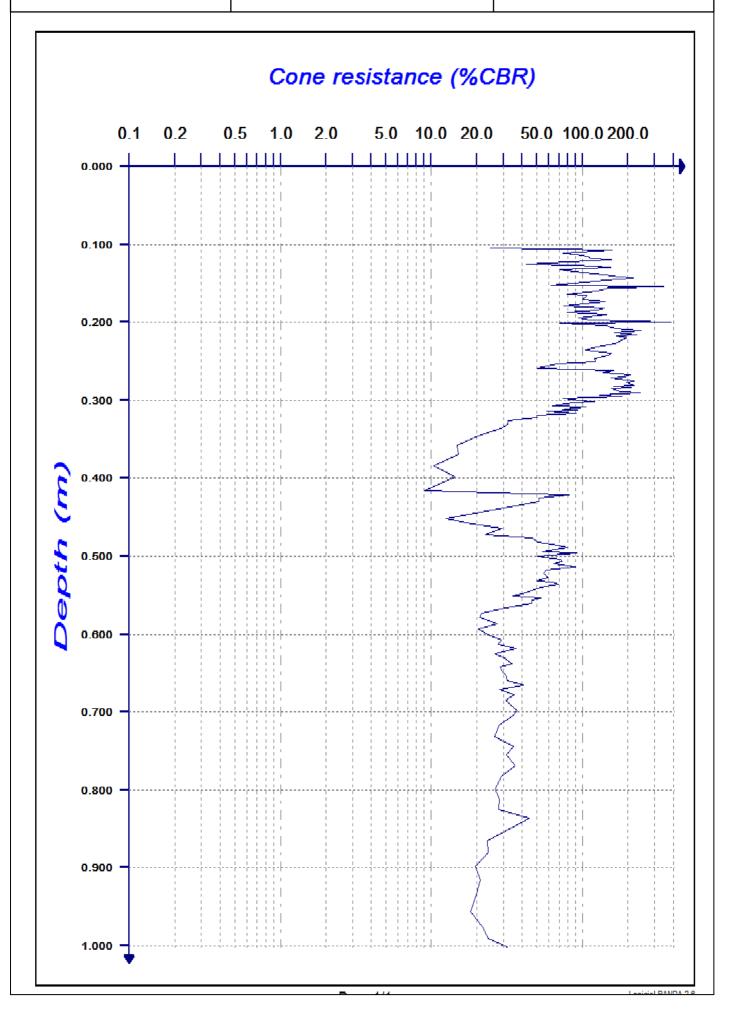
VARIABLE ENERGY DYNAMIC CONE PROBE





LOGGED BY: SKF DATE: 21/12/2011

VARIABLE ENERGY DYNAMIC CONE PROBE

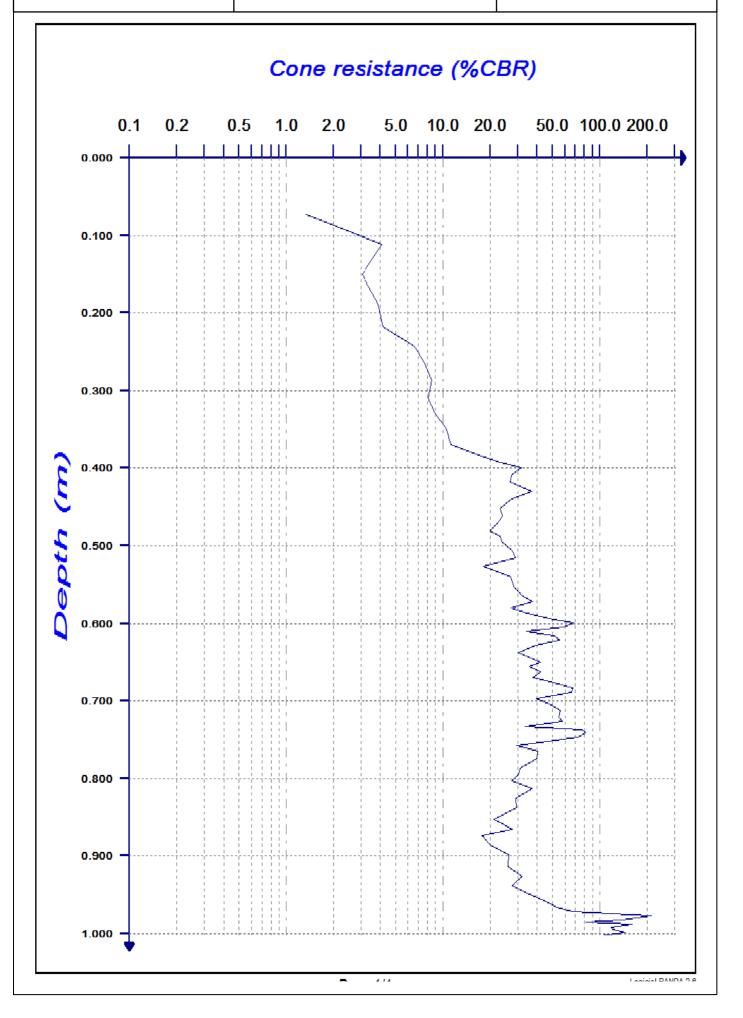


ritchies BAM Ritchies, Glasgow Road, Kilsyth, Glasgow. G65 9BL Tel: 01236 467000 / Fax: 01236 467030

bam

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VARIABLE ENERGY DYNAMIC CONE PROBE





APPENDIX 4.0 GROUNDWATER AND GAS MONITORING RESULTS



Contract No:4618Contract Name:Gourock Pierhead RegenerationEngineer:W.A FairhurstClient:Riverside Inverclyde LtdDate:06/10/2011Weather:Heavy showersGas Meter Type:GA2000Water Meter Type:Battery Operated Dipmeter

Borehole Number	Date	Depth	CH₄	CO2	O ₂	H2S	СО	Atmospheric Pressure	Flow	Time	Water Level	Remarks
	Installed		(%)	(%)	(%)	(ppm)	(ppm)	(mbars)	(l/h)	(hh:mm)	(mbgl)	
04	04/10/2011	4.60	0.0	0.4	13.7	0	0	1000	0.0	08:20	3.70	Probable rain water - installation to be purged
06	05/10/2011	3.90	0.0	0.0	19.3	0	0	1000	0.0	08:30	3.88	



Contract No:4618Contract Name:Gourock Pierhead RegenerationEngineer:W.A FairhurstClient:Riverside Inverclyde LtdDate:25/10/2011Weather:OvercastGas Meter Type:GA2000Water Meter Type:Battery Operated Dipmeter

Borehole Number	Date Installed	Depth	CH₄	CO2	O ₂	H2S	СО	Atmospheric Pressure	Flow	Time	Water Level	Remarks
	Installeu		(%)	(%)	(%)	(ppm)	(ppm)	(mbars)	(l/h)	(hh:mm)	(mbgl)	
04	04/10/2011	4.60	0.0	0.1	19.8	0	0	995	0.0	09:00	Dry	
06	05/10/2011	3.90	0.0	0.0	19.8	0	0	995	0.0	09:07	3.90	



Contract No:4618Contract Name:Gourock Pierhead RegenerationEngineer:W.A FairhurstClient:Riverside Inverclyde LtdDate:02/11/2011Weather:OvercastGas Meter Type:GA2000Water Meter Type:Battery Operated Dipmeter

Borehole Number	Date Installed	Depth	CH₄	CO2	O ₂	H2S	СО	Atmospheric Pressure	Flow	Time	Water Level	Remarks
	Installeu		(%)	(%)	(%)	(ppm)	(ppm)	(mbars)	(l/h)	(hh:mm)	(mbgl)	
04	04/10/2011	4.60	0.0	0.4	20.3	0	0	998	0.0	13:00	dry	
06	05/10/2011	3.90	0.0	0.1	20.6	0	0	998	0.0	13:05	dry	damp at base



Contract No:4618Contract Name:Gourock Pierhead RegenerationEngineer:W.A FairhurstClient:Riverside Inverclyde LtdDate:21/12/2012Weather:Light rainGas Meter Type:GA2000Water Meter Type:Battery Operated Dipmeter

Borehole Number	Date Installed	Depth	CH₄	CO2	O ₂	H2S	СО	Atmospheric Pressure	Flow	Time	Water Level	Remarks
	Installed		(%)	(%)	(%)	(ppm)	(ppm)	(mbars)	(l/h)	(hh:mm)	(mbgl)	
04	04/10/2011	4.60	0.0	1.1	20.3	0	0	1012	0.1	08:50	dry	CO2 rising to 1.0% @ 60 secs, then 1.1% @ 90 secs, steady up to 180 secs
06	05/10/2011	3.90	0.0	0.5	20.6	0	0	1012	0.1	08:57	3.88	
L												



Visit: 4 Contract No: 4618 Contract Name: Gourock Pierhead Engineer: Fairhurst Client: Riverside Inverclyde 16 January 2012 Date: Very cold, dry and overcast Weather: Gas Meter Type: GA2000 Water Meter Type: Battery Operated Dip meter Monitor ID: J.Mchutchison

Borehole Number	Date of Installation	Depth of Installation	CH₄	CO ₂	O ₂	H2S	СО	Atmospheric Pressure	Flow	Time	Water Level	Gas Monitoring Remarks	Groundwater Monitoring Remarks
		(mbgl)	(%)	(%)	(%)	(ppm)	(ppm)	(mbars)	(l/h)	(hh:mm)	(mbgl)	Remarks	Remarks
4	03/10/2011	4.60	0.0	0.2	20.9	0	0	1022	0.0		Dry		
6	05/10/2011	3.90	0.0	0.0	21.1	0	0	1022	0.0		3.88		



APPENDIX 5.0 GEOTECHNICAL LABORATORY TEST RESULTS



NATURAL MOISTURE CONTENT

Job No:

4618

Gourock Pierhead

Client:

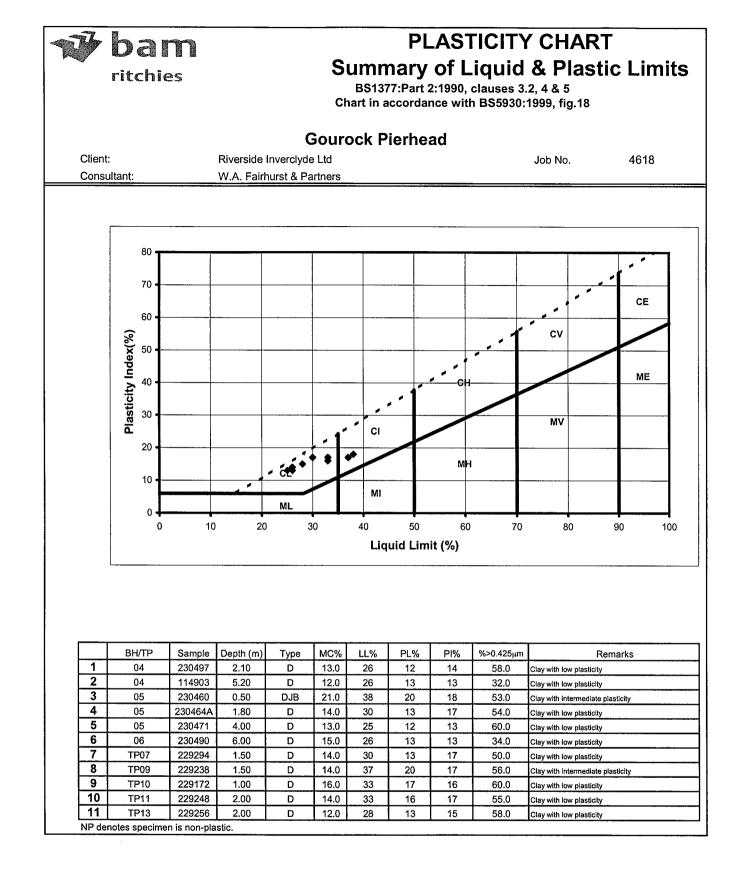
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Riverside Inverclyde Ltd W.A. Fairhurst & Partners

Consultant:

Test Method - BS 1377:1990:Part 2:Method 3.2

	Sample Ide	entification		Moisture Content (%)
Hole ID	Туре	Number	Depth	
04	D	230497	2.10 m	13
04	U	114901	4.60 m	12
04	D	114903	5.20 m	12
05	DJB	230460	0.50 m	21
05	D	230464A	1.80 m	14
05	D	230471	4.00 m	13
05	U	230472	4.50 m	9.8
06	U	230485	3.90 m	12
06	D	230490	6.00 m	15
TP07	D	229294	1.50 m	14
TP08	В	229281	1.00 m	17
TP09	D	229238	1.50 m	14
TP10	D	229172	1.00 m	16
TP11	В	229245	1.50 m	13
TP11	D	229248	2.00 m	14
TP13	D	229256	2.00 m	12



bam	PARTICL	E SIZE DISTRIB	BUTION Borehole No 04 Test Results
Si Si Wan San Si Si Si Naan mad ^{ar}	Gourock I	⊃ierhead	
	le Inverclyde Ltd airhurst & Partners		Job No: 4618
	Test Method - BS 1377:199		
Sample Number:230493 Depth (m) : 1.00 Sample Type: B		Initial Total Dry Weight: 913	5.00 g
CLAY -		Medium Coarse Fine Medium	COBBLES
100 90 80 70 60 40 40 20 10 0 0.002	0.006 0.03 0.06 0.2 Particle	0.6 2 6 Size - mm	
S	IEVING	SEDIME	NTATION
BS Sieve Size mm	Cumulative Percentage Passing	Particle Size mm	Corrected Percentage Passing
125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	100 100 96 93 89 84 77 72 66	0.034 0.025 0.018 0.013 0.009 0.007 0.002	11 10 8 7 5 5 5 2
5.00 3.35 2.00	64 61 58	No Pret	ve washed and/or collected in pan reatment efficient = 109.5
1.18 0.600 0.425 0.300	53 47 42 35	% CLAY %SILT 2 13.8	%SAND %GRAVEL 41.6 42.4
0.212 0.150 0.063	28 21 17	D10 D30 0.0267 0.233	D60 D100 2.93 125.00

		am				Ρ		R 1		LE	ES	SIZ	Έ	D	IS	1 6	710	50	110	ON		04
	ritc	hies					_			_											16	est Res
							Go	our	oc	٢P	erł	nea	ad									
Client:		Rive	erside	Inver	clyde	Ltd												Jol	o No	o:		4618
Consult	tant:	W.A	A. Fair	hurst	& Pa	rtner	s									-						
				Tes	st Met	hod	- BS	5 13	377:'													
Sample N Depth (m		22049: 3,70	98							lr	nitial	To	tal D	ory V	Nei	ght	: 63	11.00) (9		
Sample 1		BD																				
						1		r									1		7		1	
	CI	LAY	Fine		∍dium ILT	Coa	arse		Fine		NE		Coare	50 	Fi	ne (i	∍dium	1	barse		ЭΒΒΙ
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	90 -																			\checkmark		
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Percentage Passing	60 -																		_			
Pas	50 -																\square	11				
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enta	40 -											H	TT-					1				
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	10 -							\mathbb{H}	-													
	10 -	-																				
	10 0	0.0	002	0.006		0.0	3 0.	.06		0.2		0.6		2		6		20		6	0	200
		0.0	002	0.006		0.0	3 0.		Part	0.2	ize -			2		6		20		6	0	200
		0.0				0.0	3 0.		Part		ize -			2				-11			0	200
	₀]			VING						cle S	ize -	mn	n 			SE	DIM	ENTA		 		
BS				VING	ulative					cle S	ize -	mn			e mr	SE	DIM	ENTA		 		200 200
BS	0 Sieve Si: 125.0	ze mm		VING	ulative	Perce	entag			cle S	ize -	mn	n article 0	ə Siz		SE	EDIM	ENTA		 	Percen	
BS	0 Sieve Si: 125.0 75.0	ze mm		VING	ulative	Perce 100 100	entag)			cle S	ize -	mn	n article 0 0	e Siz	; .	SE	EDIM	ENTA		 	Percen 10 8	
BS	0 Sieve Si: 125.0 75.0 63.0	ze mm		VING	ulative	Perce 100 100	entag)))			cle S	ize -	mn	n article 0 0 0	e Siz		SE	EDIM	ENTA		 	Percen 10 8 7	
BS	Sieve Si: 125.0 75.0 63.0 50.0	ze mm		VING	ulative	Perce 100 100 100	entag))))			cle S	ize -	mn	n article 0 0 0 0	e Siz		SE	EDIM	ENTA		 	Percen 10 8	
BS	0 Sieve Si: 125.0 75.0 63.0	ze mm		VING	ulative	Perce 100 100	entag			cle S	ize -	mn	n article 0 0 0 0 0	e Siz 0.034 0.025 0.018 0.013		SE	EDIM	ENTA		 	Percen 10 8 7 6 5 4	
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0	ze mm		VING	ulative	Perce 100 100 100 100 89 80 70	entag			cle S	ize -	mn	n article 0 0 0 0 0 0 0 0 0	e Siz 0.034 0.025 0.018 0.013 0.009	- - - -	SE	EDIM	ENTA		 	Percen 10 8 7 6 5	
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0	ze mm		VING	ulative	Perce 100 100 100 89 80 70 65	entag			cle S	ize -	mn	n article 0 0 0 0 0 0 0 0 0	e Siz	- - - -	SE	EDIM	ENTA		 	Percen 10 8 7 6 5 4	
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0	ze mm		VING	ulative	Perce 100 100 100 100 89 80 70 65 59	entag))))			cle S	ize -	mn	n article 0 0 0 0 0 0 0 0 0	e Siz	- - - -	SE	EDIM	ENTA		 	Percen 10 8 7 6 5 4	
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0	ze mm		VING	ulative	Perce 100 100 100 89 80 70 65	entag)))))			cle S		Pi	n article 0 0 0 0 0 0 0 0 0			SE		ENTA Ca	Drrec	ted P	Percen 10 8 7 6 5 4 2	
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35	ze mm		VING	ulative	Perce 100 100 100 89 80 70 65 59 54 51 49	entag			cle S		Pi	n article 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.0	SE m 263r	mm s lo Pro	ENTA Ca	ashe	ted P	10 8 7 6 5 4 2	tage Pas
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00	ze mm		VING	ulative	Perce 100 100 100 89 80 70 655 59 54 51 49 46	entag))))))))			cle S		Pi	n article 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.0	SE m 263r	mm s lo Pro	ENTA Ca	ashe	ted P	10 8 7 6 5 4 2	tage Pas
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18	ze mm		VING	ulative	Perce 100 100 100 80 70 65 59 54 51 49 46 42	entag))))))))			cle S	Sam	Piple ;	n article 0 0 0 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.(SE m D63r N form	mm s lo Pr	ENTA Co ieve w etreatr	partec ment ent =	ted P	10 8 7 6 5 4 2	tage Pas
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	ze mm		VING	ulative	Perce 100 100 100 80 70 65 59 54 51 49 46 42 38	entag			cle S	Sam		n article 0 0 0 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.(SE n D63r N form SIL	mm s lo Pri iity C	ENTA Co ieve w etreatr	ashe nent = %SA	ed and	10 8 7 6 5 4 2	tage Pas
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	ze mm		VING	ulative	Perce 100 100 100 100 80 70 65 59 54 51 49 46 42 38 34	entag			cle S	Sam	Piple ;	n article 0 0 0 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.(SE m D63r N form	mm s lo Pri iity C	ENTA Co ieve w etreatr	partec ment ent =	ed and	10 8 7 6 5 4 2	tage Pas
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	ze mm		VING	ulative	Perce 100 100 100 80 70 65 59 54 51 49 46 42 38	entag			cle S	Sam		n article 0 0 0 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.(SE n D63r N form SIL	mm s lo Pri iity C	ENTA Co ieve w etreatr	ashe nent = %SA	ed and	10 8 7 6 5 4 2	tage Pas
BS	Sieve Si: 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	ze mm		VING	ulative	Perce 100 100 100 80 70 65 59 54 51 49 46 42 38 34 28 34	entag			cle S	Sam %		n article 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	€ Siz 0.034 0.025 0.018 0.009 0.007 0.002	S 0.(Unit	SE n D63r N form SIL	mm s lo Pr ity C	ENTA Co ieve w etreatr	ashe nent = %SA	ad and 309.1	10 8 7 6 5 4 2	tage Pas

Ŵ	bam	PAR	TICL	E SIZE D	ISTRIB	UTION	Borehole No 05 Test Results
	ritchies	Gol	urock [Pierhead			
		Got	ITOCK I	lemeau			
Client:		le Inverclyde Ltd				Job No:	4618
Consult	ant: W.A. Fa	irhurst & Partners Test Method - BS 1	377.199	0 Part 2 Clause	92895		
	lumber: 230466		0111100	Initial Total Dry		5.00 g	
Depth (m Sample T							
	<u>ypo.</u>					···· · ··· ··· ··· ···	
	CLAY	ne Medium Coarse		Medium Coarse		lium Coarse	COBBLES
	<u> </u>	SILT	3	AND	GRA		
	100						
	90						
%	80						
, D	70						
Percentage Passing	60						
еРа	50						
ntag	40						
erce	30			///////			
, c	20						
	10						
	0.002	0.006 0.03 0.06	0.2	2 0.6 2	6	20 60	200
			Particle	Size - mm			
				(
	<u> </u>				SEDIME	NTATION	
BS	Sieve Size mm	Cumulative Percentage F	Passing	Particle Si	ze mm		centage Passing
	125.0	100	_	0.03			12
	75.0 63.0	90 90		0.02			10 8
	50.0	84		0.01	3		7
	37.5	79		0.00			6
	28.0 20.0	77		0.00			5 2
	14.0	68					
	10.0	66					
	6.30 5.00	61 59		Sample passing I	3S 0.063mm sie	ve washed and/o	or collected in pan
	3.35	56			No Pret	reatment	
1	2.00	51			Uniformity Coe	fficient = 229.1	<u>.</u>
	1.18 0.600	48 41		% CLAY	%SILT	%SAND	%GRAVEL
	0.425	37		2	14.6	34.4	48.6
	0.300	31					
	0.212 0.150	26 22		D10	D30	D60	D100
	0.063	18		0.0246	0.278	5.64	125.00
]					

	am chies	PA	RTICL	E SIZE	DISTRIB	UTION	Borehole No 06 Test Results
	.11162	G	Gourock I	Pierhead			
Client: Consultant:		e Inverclyde Ltd irhurst & Partners				Job No:	4618
		Test Method - E	the second s				
Sample Numbe Depth (m) : Sample Type:	er:230477 1.70 B			Initial Total D	Dry Weight: 614	8.00 g	
C		ne Medium Coars SILT		Medium Coar	se Fine Med GRA	lium Coarse	COBBLES
100 90 80 • 70 60 • 60 • 60 • 60 • 60 • 60 • 60 • 60	0.002	0.006 0.03	0.06 0.2 Particle	0.6 Size - mm	2 6	20 60	200
	SI	EVING			SEDIME		
BS Sieve S	iize mm	Cumulative Percenta	age Passing	Particle	e Size mm	Corrected Per	centage Passing
125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00)) 5))))	100 100 93 93 92 90 84 77 68					
3.35 2.00	5	64 57 52					
1.18 0.600 0.423 0.300	0 5 0	48 41 36 31			%SILT & CLAY 12.1	%SAND 39.8	%GRAVEL 48.1
0.212 0.150 0.065	0	24 16 12		D10	D30 0.293	D60 4.04	D100 125.00

Ŵ	bam	PARTICL	E SIZE D	DISTRIE	UTION	Borehole No 06 Test Results
	ritchies	Gourock	Diorhoad			Test Results
Client:	Riversio	le Inverciyde Ltd	lienieau		Job No:	4618
Consult	ant: W.A. Fa	airhurst & Partners				
		Test Method - BS 1377:199		A - A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.		
Sample N Depth (m) Sample T			Initial Total Dry	Weight: 589	5.00 g	
	*•	in the second	•	· · ·· ·· ·· ··		
	CLAY		Medium Coarse	Fine Med GRA	dium Coarse	COBBLES
Percentage Passing - %	90 80 70 60 50 40 30 20 10 0 0.002	0.006 0.03 0.06 0.0 Particle	2 0.6 ² s Size - mm	6	20 60	200
	S	IEVING		SEDIME	NTATION	
BS §	Sieve Size mm	Cumulative Percentage Passing	Particle S	ize mm	Corrected Pe	rcentage Passing
	125.0 75.0 63.0	100 100 100	0.03 0.02 0.01	25		10 9 7
	50.0 37.5 28.0 20.0	96 88 84 80	0.01 0.01 0.00 0.00	3 10)7		6 4 3 2
	14.0 10.0 6.30 5.00	78 71 64 61	Sample passing		ve washed and/	or collected in par
	3.35 2.00 1.18	57 52 46		No Pret	reatment efficient = 144.2	
	0.600 0.425 0.300	39 34 29	% CLAY 2	%SILT 13.2	%SAND 36.8	%GRAVEL 48.4
	0.212 0.150 0.063	23 18 15	D10 0.0318	D30 0.327	D60 4.59	D100 125.00

		n													
	ritchies	è												Т	est Re
				I	Gou	rock	Pier	hea	d						
Client:	Riv	/ersid	le Invercly	/de I td								Joh	No:		4618
Consulta			airhurst & I									000	140.		4010
Consulta		А. га		Method -		377.10		rt 2 (lause	028	295				
Sample Nr	umber: 2292	209	10311	vication -	00 1	577.10	_				ht: 776	38.00	g		
Depth (m)								. 100	a Diy	Trong			э		
Sample Ty	/pe: B										,				
	CLAY	Fi	ne Medi	L	rse	Fine	Mediu	J	oarse	Fin	I	dium	Coar		овв
			SIL	1			SAN				<u>GR</u>	AVE	<u>L</u>		
	100 111					11	T T T	<u> </u>	11			1			
	90														V
	111														4
%	80 +++														
	70													<u> </u>	
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Percentage Passing -															
geł	50								1			1			
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sice	30					ļ.			\parallel						
Å								11							
	20					1							1		
					1			1111					1		
	10												ļ		
	<u>ہ اللہ</u>	.002	0.006	0.03	0.06).2	0.6	2		6	20		60	200
	<u>ہ اللہ</u>	.002	0.006	0.03		(6	20		60	200
	<u>ہ اللہ</u>	.002	0.006	0.03		().2 le Size				6	20		60	200
	<u>ہ اللہ</u>	.002	0.006	0.03		(6	20		60	200
<u> </u>	<u>ہ اللہ</u>		0.006	0.03		(6 SEDIME			60	200
BS Si	<u>ہ اللہ</u>		EVING	0.03	0.06	(Partic		- mm			SEDIME	I			200 ntage Pa
BS Si	0 0		EVING	ive Percer	0.06	(Partic		- mm			SEDIME	I			
BS Si	0 0 ieve Size mm 125.0		EVING	ive Percer 100	0.06	(Partic		- mm			SEDIME	I			
BS Si	0 0 ieve Size mm 125.0 75.0		EVING	ive Percer	0.06	(Partic		- mm			SEDIME	I			
BS Si	0 0 ieve Size mm 125.0		EVING	ive Percer 100 82	0.06	(Partic		- mm			SEDIME	I			
BS Si	0 ieve Size mm 125.0 75.0 63.0 50.0 37.5		EVING	ive Percer 100 82 76 74 66	0.06	(Partic		- mm			SEDIME	I			
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Percentage Passing -				$ \top $					T	IT		T	Τ	T	\square	•					\prod			X					
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										Ρ	artio	le	Size	- 1	mm														
• • • • • • • • •			SIEVII	NG		·						-							8	EDI	ME	NTA	TIO	N					
<u></u>																													ing
BSS	Sieve Siz	e mm	,	Cun	nulati	ve P	'erce	ntag	je F	as	sing				Pa	ticle	Siz	e m	m	_		с	orre	ctec	l Pe	ercer	ntage	Passi	_
BS S	Sieve Siz	e mm		Cun	nulati	ve P	100)	je F	as	sing				Pa	ticle	Siz	e mi	m			С	orre	ctec	l Pe	ercer	ntage	Passi	
BS S	125.0 75.0	e mm		Cun	nulati	ve P	100 77)	je F	Pas	sing				Pa	ticle	Siz	e mi	m			С	orre	ctec	l Pe	ercer	ntage	Passi	
BS S	125.0 75.0 63.0	e mm		Cun	nulati	ve P	100 77 74)	ge F	^o as	sing				Pa	ticle	Siz	e mi	m			c	orre	ctec	l Pe	ercer	itage	Passi	
BSS	125.0 75.0	e mm		Cun	nulati	ve P	100 77)	ge F	Pas	sing				Pa	ticle	Siz	e mi	m			с	orre	ctec	l Pe	ercer	itage	Passi	
BS S	125.0 75.0 63.0 50.0 37.5 28.0	e mm		Cun	nulati	ve P	100 77 74 72 64 54)	ge F	⁵ as	sing				Pa	ticle	Siz	e mi	m 			с	orre	ctec	I Pe	ercer	itage	Passi	
BS S	125.0 75.0 63.0 50.0 37.5 28.0 20.0	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44)	ge F	bas	sing				Pa	ticle	Siz	e mi	m			с	orre		I Pe	ercer	ntage	Passi	
BS S	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31)	ge F	Pas	sing				Pa	ticle	Siz	e mi	m 			С	orre	ctec	I Pe	ercer	itage	Passi	
BS S	125.0 75.0 63.0 50.0 37.5 28.0 20.0	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44)	ge F	Das	sing				Pa	ticle	Siz		m			с	orre		Pe	ercer	ntage	Passi	
BSS	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13)	ge F	^D as	sing				Pa	ticle	Siz		m			a	orre		I Pe	ercer	ntage	Passi	
BS 5	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13 9)	ge F	^D as	sing				Pa	ticle	Siz			rmit						ercer	ntage	Passi	
BS 5	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13 9 5)	ge F	^o as	sing				Pa	ticle	Siz			rmit		C				ercer	ntage	Passi	
BS S	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13 9)	ge F	Pas	sing				Pa	ticle		Ur	nifo T &	CL	y C	oeffic	%S	= 9 ANI	.2	ercer	%G	RAVE	
BS 5	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13 9 5 3 2 1)	ge F	Pas	sing				Pa	ticle		Ur	nifo	CL	y C	oeffic	%S	= 9	.2	ercer	%G		
BSS	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13 9 5 3 2 1 1)	ge F	Pas	sing				Pa	ticle		Ur	nifo T &	CL	y C	oeffic	%S	= 9 ANI	.2	ercer	%G	RAVE	
BSS	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	e mm		Cun	nulati	ve P	100 77 74 72 64 54 44 31 25 17 13 9 5 3 2 1)	ge F	Pas	sing				Pa	ticle		Ur SIL ⁻	nifo T &	• CL	y C	oeffic	cient %S	= 9 ANI	.2		%G	RAVE	

	bam		P	ARTICI	E SIZE	DISTRIB	UTION	Borehole No TP04 Test Results
	ritchies			0			:	restitesuit
				Gourock	Pierhead			
Client:	Rive	erside	Inverciyde Ltd				Job No:	4618
Consulta	ant: W.A	A. Fairł	nurst & Partners					
· · · · ·			Test Method -	BS 1377:19	90 Part 2 Clau			
Sample N Depth (m)	umber:22920 : 0.70	01			Initial Total D	ry Weight: 1709	94.00 g	
Sample Ty								
	CLAY	Fine	Medium Coa		Medium Coars		lium Coarse	COBBLES
		ļ	SILI		SAND	GRA	VEL	
	100							
	90	\square						
.0	80							
% '	70							
Percentage Passing	60 +						/	
Pas	50							
age								
cent	40							
Pere	30							
	20							
	10							
	<u>م</u>							
	v							hundundardani manana manana 🖡
	-)02 (0.006 0.03	0.06 0	2 0.6	2 6	20 60	200
	-)02 (0.006 0.03		2 0.6	2 6	20 60	200
	-	002 (SIEV			.2 0.0	2 6 SEDIMEI		200
BS S	-			Particl	e Size - mm		NTATION	200 centage Passing
BS S	0.0		/ING Cumulative Percer	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0		/ing	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Sieve Size mm 125.0 75.0 63.0		/ING Cumulative Percer 100 100 88	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Sieve Size mm 125.0 75.0 63.0 50.0		/ING Cumulative Percen 100 100 88 80	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5		/ING Cumulative Percen 100 100 88 80 69	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Sieve Size mm 125.0 75.0 63.0 50.0		/ING Cumulative Percen 100 100 88 80	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Bieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0		/ING Cumulative Percer 100 100 88 80 69 63 55 54	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Neve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0		/ING Cumulative Percer 100 100 88 80 69 63 55 54 49	Particl	e Size - mm	SEDIME	NTATION	
BS S	0.0 Neve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46	Particl	e Size - mm	SEDIME	NTATION	
BSS	0.0 Neve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0		/ING Cumulative Percer 100 100 88 80 69 63 55 54 49	Particl	e Size - mm	SEDIME	NTATION	
BSS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46 44 42 40	Particl	e Size - mm	SEDIME	NTATION	
BSS	0.0 Neve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46 44 42 40 38	Particl	e Size - mm	SEDIME Size mm	NTATION Corrected Per	centage Passing
BSS	0.0 Neve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46 44 42 40 38 33	Particl	e Size - mm	SEDIME Size mm %SILT & CLAY	NTATION Corrected Per	centage Passing
BS S	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46 44 42 40 38	Particl	e Size - mm	SEDIME Size mm	NTATION Corrected Per	centage Passing
BSS	0.0 Neve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46 44 42 40 38 33 28 22 17	Particl	e Size - mm	SEDIME Size mm %SILT & CLAY	NTATION Corrected Per	centage Passing
BSS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300		/ING Cumulative Percen 100 100 88 80 69 63 55 54 49 46 44 42 40 38 33 28 22	Particl	e Size - mm	SEDIME Size mm %SILT & CLAY	NTATION Corrected Per	centage Passing

N.	bam ritchies	PARTI		DISTRIB	UTION	Borehole No TP05 Test Results
	114418123	. Gouroo	ck Pierhead			
Client: Consult		e Inverclyde Ltd irhurst & Partners	· · · .		Job No:	4618
		Test Method - BS 1377				
Sample N Depth (m Sample T			Initial Total Dr	y Weight: 152	73.00 g	
		ne Medium Coarse Find	e Medium Coarse	e Fine Mec	llum Coarse	COBBLES
Percentage Passing - %	100 90 80 70 60 50 40 30 20 10 0 0.002	0.006 0.03 0.06	0.2 0.6 ²		20 60	200
	SI	EVING		SEDIME	NTATION	
BSS	Sieve Size mm	Cumulative Percentage Passi	ng Particle	Size mm	Corrected Per	rcentage Passing
	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	100 93 90 86 80 76 70 61 57 52				
	5.00 3.35 2.00	50 47 43		Uniformity Co	efficient = 61.9	
	1.18 0.600 0.425 0.300	41 35 30 20		%SILT & CLAY 1.7	%SAND 41.7	%GRAVEL 56.6
	0.212 0.150 0.063	10 5 · 2	D10 0.2079	D30 0.428	D60 12.86	D100 125.00

	bam	PARTICL	E SIZE DISTRIE	BUTION Borehole No TP06 Test Results
	ritchies	Gourock I	Pierhead	
Client: Consulta		e Inverclyde Ltd irhurst & Partners		Job No: 4618
Sample Nu	umber: 229225	Test Method - BS 1377:199	00 Part 2 Clause 9.2 & 9.5 Initial Total Dry Weight: 992	2.00 g
Depth (m)	: 0.50			2.00 g
Sample Ty	ipe. D			
	CLAY			
		SILT S	AND GRA	AVEL
Percentage Passing - %	100 90 80 70 60 50 40 30 20 10 0 0.002	0.006 0.03 0.06 0.2 Particle	0.6 2 6 Size - mm	
	SI	EVING	SEDIME	NTATION
BS Si	ieve Size mm	Cumulative Percentage Passing	Particle Size mm	Corrected Percentage Passing
<u> </u>	125.0	100		
	75.0 63.0	100 100		
	50.0 37.5	100 98		
	28.0	87		
	20.0 14.0	73 65		
	10.0	57		
	6.30 5.00	49 44		L
	3.35 2.00	40 35	Iniformity Co	efficient = 86.8
	1.18	31		
	0.600 0.425	23 21	%SILT & CLAY 8.0	%SAND %GRAVEL 27.2 64.8
	0.300	18	0.0	UT.U
	0.212 0.150	14 11	D10 D30	D60 D100
	0.063	8	0.1323 1.095	11.48 125.00

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ritchies	PARTICL	E SIZE DISTRIB	BUTION Borehole No TP06 Test Results
litenies	Gourock I	⊃ierhead	
	de Inverclyde Ltd airhurst & Partners		Job No: 4618
	Test Method - BS 1377:199		
Sample Number:229231 Depth (m) : 2.00 Sample Type: B		Initial Total Dry Weight: 112	95.00 g
CLAY	I	Medium Coarse Fine Med GAND GRA	
100 90 80 70 60 40 40 40 40 40 10 0 0.002	0.006 0.03 0.06 0.1 Particle	0.6 2 6	
5	SIEVING	SEDIME	NTATION
BS Sieve Size mm	Cumulative Percentage Passing	Particle Size mm	Corrected Percentage Passing
125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	100 100 100 96 85 61 47 34 23		
5.00 3.35 2.00	20 17 14	Uniformity Co	efficient = 32.0
1.18 0.600 0.425 0.300	12 10 9 7	%SILT & CLAY 3.7	%SAND %GRAVEL 10.4 85.9
0.212 0.150 0.063	6 5 4	D10 D30 0.6081 8.605	D60 D100 19.45 125.00

V	bam	PARTICL	E SIZE DIS.	TRIB	UTION	Borehole No TP07 Test Results
	ritchies	Gourock	Pierhead			
Client: Consulta		le Inverclyde Ltd airhurst & Partners	lomodu		Job No:	4618
		Test Method - BS 1377:199	90 Part 2 Clause 9.2	& 9.5		
	lumber:229297		Initial Total Dry Wei	ight: 7842	2.00 g	
Depth (m) Sample T): 2.50 Type: B					
	CLAY	LLLL	Medium Coarse Fi	l	llum Coarse	COBBLES
		SILT S	SAND	GRA	VEL	
Percentage Passing - %	100 90 80 70 60 50 40 30 20 10					
	0 0.002	0.006 0.03 0.06 0 Particle	2 0.6 2	6	20 60	200
	0 0.002		2 0.0	6 SEDIMEN		200
BSS	0 0.002	Particle	2 0.0	SEDIMEN	NTATION	200 2centage Passing
BS S	0 0.002	Particle IEVING	2 0.0 Size - mm	SEDIMEN	NTATION	
BSS	0 0.002 0.002 Sieve Size mm 125.0 75.0	Particle EVING Cumulative Percentage Passing 100 100	2 0.0 Size - mm Particle Size m 0.034 0.025	SEDIMEN	NTATION	centage Passing 19 17
BS S	0 0.002 0.002 Sleve Size mm 125.0 75.0 63.0	EVING Cumulative Percentage Passing 100 100 100	2 0.00 Size - mm Particle Size m 0.034 0.025 0.018	SEDIMEN	NTATION	rcentage Passing 19 17 14
BSS	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5	EVING Cumulative Percentage Passing 100 100 100 100 100	2 0.03 • Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009	SEDIMEN	NTATION	rcentage Passing 19 17 14 12 10
BSS	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0	EVING Cumulative Percentage Passing 100 100 100 100 100 100 96	2 5.0 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007	SEDIMEN	NTATION	19 17 14 12 10 9
BS S	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0	EVING Cumulative Percentage Passing 100 100 100 100 100 96 89	2 0.03 • Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009	SEDIMEN	NTATION	rcentage Passing 19 17 14 12 10
BS S	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0	EVING Cumulative Percentage Passing 100 100 100 100 100 100 96	2 5.0 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007	SEDIMEN	NTATION	19 17 14 12 10 9
BS \$	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	EVING Cumulative Percentage Passing 100 100 100 100 100 96 89 81 76 71	2 5.0 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002	SEDIMEN	TATION Corrected Per	rcentage Passing 19 17 14 12 10 9 4
BSS	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	EVING Cumulative Percentage Passing 100 100 100 100 100 96 89 81 76 71 68	2 5.0 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007	SEDIMEN m 063mm siev	TATION Corrected Per	rcentage Passing 19 17 14 12 10 9 4
BS S	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35	EVING Cumulative Percentage Passing 100 100 100 100 100 96 89 81 76 71 68 65	2 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002 Sample passing BS 0.0	SEDIMEN m 063mm siev No Pretr	VTATION Corrected Per Corrected Per ve washed and/o eatment	rcentage Passing 19 17 14 12 10 9 4
BS S	0 0.002 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00	EVING Cumulative Percentage Passing 100 100 100 100 96 89 81 76 71 68 65 65 62	Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002	SEDIMEN m 063mm siev No Pretr	TATION Corrected Per	rcentage Passing 19 17 14 12 10 9 4
BS \$	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18	EVING Cumulative Percentage Passing 100 100 100 100 96 89 81 76 71 68 65 62 58	2 5.00 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002 Sample passing BS 0.1	SEDIMEN m 063mm siev No Pretr formity Coe	VE washed and/o reatment fficient = 182.2	rcentage Passing 19 17 14 12 10 9 4
BS S	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	EVING Cumulative Percentage Passing 100 100 100 100 96 89 81 76 71 68 65 65 62	Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002 Sample passing BS 0.1 Unit % CLAY %	SEDIMEN m 063mm siev No Pretr	VTATION Corrected Per Corrected Per ve washed and/o eatment	rcentage Passing 19 17 14 12 10 9 4
BSS	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18	EVING Cumulative Percentage Passing 100 100 100 100 96 89 81 76 71 68 65 62 58 53	Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002 Sample passing BS 0.1 Unit % CLAY %	SEDIMEN m 063mm siev No Pretr formity Coe	VTATION Corrected Per Ve washed and/o eatment fficient = 182.2 %SAND	rcentage Passing 19 17 14 12 10 9 4 or collected in pan %GRAVEL
BS 5	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300 0.212	EVING Cumulative Percentage Passing 100 100 100 100 100 96 89 81 76 71 68 65 62 58 65 62 58 53 49 49 44 39	Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002 Sample passing BS 0. Uni % CLAY % 5	SEDIMEN m 063mm siev No Pretr formity Coe 6SILT 20.5	VTATION Corrected Per ve washed and/o eatment fficient = 182.2 %SAND 36.4	centage Passing 19 17 14 12 10 9 4 or collected in pan %GRAVEL 38.3
BS 5	0 0.002 0.002 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	EVING Cumulative Percentage Passing 100 100 100 100 96 89 81 76 71 68 65 62 58 53 49 49 44	2 0.0 Size - mm Particle Size m 0.034 0.025 0.018 0.013 0.009 0.007 0.002 Sample passing BS 0. Unit % CLAY % 5 2	SEDIMEN m 063mm siev No Pretr formity Coe	VTATION Corrected Per Ve washed and/o eatment fficient = 182.2 %SAND	rcentage Passing 19 17 14 12 10 9 4 or collected in pan %GRAVEL

	ban		PARTI	CLE SIZ	E DISTRIE	BUTION	TP08
	ritchies		•				
			Gouro	ck Pierhea	d		
Client:	Rive	erside Inverclyde	Ltd			Job No:	4618
Consult	tant: W.A	. Fairhurst & Parl	iners				
			nod - BS 137	7:1990 Part 2 C	lause 9.2 & 9.5		
	Number: 22918	33		Initial Tota	al Dry Weight: 334	18.00 g	
Depth (m Sample T							
	<u></u>			<u>1</u>			
	CLAY	Fine Medium	Coarse Fir	e Medium Co		dium Coarse	COBBLES
		SILT		SAND	GR/	AVEL	
	100						
	90						
	80						
% .	70						
Bu							
assi	60						
Percentage Passing -	50						
entaç	40						
erce	30 +						
٩.	20						
	10						
	0.0	02 0.006	0.03 0.06	0.2 0.6	2 6	20 60	200
	-	02 0.006		0.2 0.6 article Size - mm	2 6	20 60	200
	-	02 0.006 SIEVING		0.2		20 60 ENTATION	200
BS	-	SIEVING		o.2 article Size - mm			
BS	0.0	SIEVING	Pa	o.2 article Size - mm	SEDIME		rcentage Passing
BS	0.0 Sieve Size mm 125.0 75.0	SIEVING	Percentage Pass 100 100	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025		rcentage Passing 39 34
BS	0.0 Sieve Size mm 125.0 75.0 63.0	SIEVING	Percentage Pass 100 100 100	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025 0.018		rcentage Passing 39 34 31
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0	SIEVING	Percentage Pass 100 100 100 100	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025 0.018 0.013		rcentage Passing 39 34
BS	0.0 Sieve Size mm 125.0 75.0 63.0	SIEVING	Percentage Pass 100 100 100	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009 0.007		rcentage Passing 39 34 31 28 25 22
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0	SIEVING	Percentage Pass 100 100 100 100 100 100 100 100	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009		rcentage Passing 39 34 31 28 25
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0	SIEVING	Percentage Pass 100 100 100 100 100 100 100 100 100	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009 0.007		rcentage Passing 39 34 31 28 25 22
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0	SIEVING	Percentage Pass 100 100 100 100 100 100 100 100 100 99	o.2 article Size - mm	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009 0.007		rcentage Passing 39 34 31 28 25 22
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	SIEVING	Percentage Pass 100 100 100 100 100 100 100 100 100 99 95 92	ing Pa	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009 0.007 0.002 sssing BS 0.063mm si	Corrected Pe	rcentage Passing 39 34 31 28 25 22 15
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35	SIEVING	Percentage Pass 100 100 100 100 100 100 100 1	ing Pa	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009 0.007 0.002 sssing BS 0.063mm si	Corrected Pe	rcentage Passing 39 34 31 28 25 22 15
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00	SIEVING	Percentage Pass 100 100 100 100 100 100 100 1	ing Pa	SEDIME ticle Size mm 0.034 0.025 0.018 0.013 0.009 0.007 0.002 sssing BS 0.063mm si	Corrected Per	rcentage Passin 39 34 31 28 25 22 15
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	SIEVING	Percentage Pass 100 100 100 100 100 100 100 1	ing Pau Sample pa	SEDIME ticle Size mm 0.034 0.025 0.018 0.003 0.007 0.009 0.007 0.002 sssing BS 0.063mm si No Pre	ENTATION Corrected Per Corrected Per eve washed and/ treatment	rcentage Passin 39 34 31 28 25 22 15 or collected in pa
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	SIEVING	Percentage Pass 100 100 100 100 100 100 100 1	ing Pau	SEDIME ticle Size mm 0.034 0.025 0.018 0.003 0.009 0.007 0.002 assing BS 0.063mm si No Pre	ENTATION Corrected Per Corrected Per eve washed and/	rcentage Passin 39 34 31 28 25 22 15 or collected in pa
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	SIEVING	Percentage Pass 100 100 100 100 100 100 100 1	ing Pau Sample pa	SEDIME ticle Size mm 0.034 0.025 0.018 0.003 0.007 0.009 0.007 0.002 sssing BS 0.063mm si No Pre	ENTATION Corrected Per Corrected Per eve washed and/ treatment	rcentage Passing 39 34 31 28 25 22 15 or collected in pa
BS	0.0 Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	SIEVING	Percentage Pass 100 100 100 100 100 100 100 1	ing Pau Sample pa	SEDIME ticle Size mm 0.034 0.025 0.018 0.003 0.007 0.009 0.007 0.002 sssing BS 0.063mm si No Pre	ENTATION Corrected Per Corrected Per eve washed and/ treatment	rcentage Passing 39 34 31 28 25 22 15 or collected in pa

🔊 bam	PARTICL	E SIZE DISTRIE	BUTION Borehole No TP09 Test Results
ritchies	Gourock	Pierhead	
	de Inverclyde Ltd airhurst & Partners		Job No: 4618
	Test Method - BS 1377:199		
Sample Number:229233 Depth (m) : 0.50 Sample Type: B		Initial Total Dry Weight: 492	4.00 g
CLAY	l.		dium Coarse COBBLES
100 90 80 70 60 50 40 40 30 20 10 0 0.002	0.006 0.03 0.06 0.3 Particle	0.6 2 6 Size - mm	
	SIEVING	SEDIME	NTATION
BS Sieve Size mm	Cumulative Percentage Passing	Particle Size mm	Corrected Percentage Passing
125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	100 100 100 95 90 88 83 78 73	0.034 0.025 0.018 0.013 0.009 0.007 0.002	14 13 11 9 8 6 3
5.00 3.35 2.00	71 67 61	No Pret	ve washed and/or collected in pan reatment efficient = 128.0
1.18 0.600 0.425 0.300	55 48 43 36	% CLAY %SILT 3 15.8	%SAND %GRAVEL 41.9 39.3
0.212 0.150 0.063	31 26 19	D10 D30 0.0148 0.204	D60 D100 1.90 125.00

N.	bam ritchies	PAF	RTICL	E SIZE	DISTRIB	UTION	Borehole No TP10 Test Results
	IILLINES	Go	ourock l	Pierhead			
Client: Consult		e Inverclyde Ltd irhurst & Partners	4077-400			Job No:	4618
Sample N	lumber: 229275	Test Method - BS			Dry Weight: 1458	<u>82.00 a</u>	
Depth (m Sample T): 2.00					52.00 g	
	CLAY	ne Medium Coarse SILT	1	Medium Coar	se Fine Mec GRA	NEL	COBBLES
Percentage Passing - %	100 90 80 70 60 50 40 30 20 10 0 0.002			2 0.6 Size - mm	2 6	20 60	200
	SI	EVING			SEDIME	NTATION	
BSS	Sieve Size mm	Cumulative Percentage	e Passing	Particle	e Size mm	Corrected Per	centage Passing
	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	100 100 98 87 78 63 53 40 25 22					
	5.00 3.35 2.00	22 17 14			Uniformity Co	efficient = 44.8	
	1.18 0.600 0.425 0.300	12 11 10 9			%SILT & CLAY 3.6	%SAND 10.0	%GRAVEL 86.4
	0.212 0.150 0.063	7 5 4		D10 0.4054	D30 7.492	D60 18.17	D100 125.00

Ŵ	bam ritchies	PA	RTICL	E SIZE	DISTRIB	UTION	Borehole No TP11 Test Results	
	ritchies	G	Gourock F	Pierhead				
Client: Consult		e Inverclyde Ltd irhurst & Partners				Job No:	4618	
		Test Method - B						
Sample N Depth (m Sample T				Initial Total D	Dry Weight: 916	1.00 g		
		ne Medium Coars SILT		Medium Coar	se Fine Med GRA		COBBLES	
Percentage Passing - %	100 90 80 70 60 50 40 30 20 10 0 0.002	0.006 0.03	0.06 0.2 Particle	0.6 Size - mm	2 6	20 60	200	
	SI	EVING		SEDIMENTATION				
BS	Sieve Size mm	Cumulative Percenta	age Passing	Partici	e Size mm	Corrected Per	centage Passing	
125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00		100 100 94 86 76 69 63 60 54 52						
5.00 3.35 2.00		52 49 45						
	1.18 0.600 0.425 0.300 0.212	41 35 31 27 22			%SILT & CLAY 13.2	%SAND 31.7	%GRAVEL 55.2	
	0.212 0.150 0.063	22 18 13		D10	D30 0.386	D60 10.51	D100 125.00	

~	bam	P/	ARTICL	E SIZE	DISTRIB	UTION	Borehole No TP12 Test Results
	ritchies	(Gourock	Diarbood			Test Results
		(SOULOCK	Fiemeau			
Client:		de Inverclyde Ltd				Job No:	4618
Consulta	ant: W.A. F	airhurst & Partners	<u> </u>				
Somplo N	lumber: 229259	Test Method -	BS 1377:199		se 9.2 & 9.5 y Weight: 357	0.00 ~	
Depth (m)					y weight. 557	9.00 g	
Sample T							
		ine Medium Coar	se Fine	Medium Coars	e Fine Med	tium Coarse	
	CLAY	SILT		SAND		VEL	COBBLES
	`.				·	1	
	90						
%	80						
	70						
ssin	60						
еРа	50						
ıtagı	40		_/				
Percentage Passing	30						
Ъе							
	20						
	10						
	0.002	0.006 0.03		2 0.6	6	20 60	
	0.002						200 1
		0.000 0.05	0.06 0. Particle	e Size - mm		20 00	200
		IEVING		2		NTATION	200
BS S			Particle	Size - mm		NTATION	200
BS S	Sieve Size mm 125.0	IEVING	Particle	Size - mm Particle	SEDIME Size mm 035	NTATION Corrected Per	centage Passing 29
BS S	Sieve Size mm 125.0 75.0	IEVING Cumulative Percen 100 100	Particle	2 3 Size - mm Particle 0.0 0.1	SEDIME Size mm 035 026	NTATION Corrected Per	centage Passing 29 23
BS S	Sieve Size mm 125.0 75.0 63.0	IEVING Cumulative Percen 100 100 100	Particle	2 Size - mm Particle 0.0 0.1 0.1	SEDIME Size mm 035 026 019	NTATION Corrected Per	centage Passing 29 23 17
BS S	Sieve Size mm 125.0 75.0	IEVING Cumulative Percen 100 100	Particle	2 Size - mm Particle 0.0 0.0 0.1 0.1 0.1	SEDIME Size mm 035 026	NTATION Corrected Per	centage Passing 29 23
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0	Cumulative Percen 100 100 100 100 100 95	Particle	2 Size - mm Particle 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010 007	NTATION Corrected Per	centage Passing 29 23 17 12 10 7
BS S	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0	EVING Cumulative Percen 100 100 100 100 95 90	Particle	2 Size - mm Particle 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010	NTATION Corrected Per	centage Passing 29 23 17 12 10
BS S	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0	Cumulative Percen 100 100 100 100 100 95	Particle	2 Size - mm Particle 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010 007	NTATION Corrected Per	centage Passing 29 23 17 12 10 7
BS S	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	IEVING Cumulative Percen 100 100 100 100 95 90 88 85 83	Particle	• Size - mm Particle 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010 007 002	NTATION Corrected Per	rcentage Passing 29 23 17 12 10 7 5
BS S	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	IEVING Cumulative Percen 100 100 100 100 95 90 88 85 83 81	Particle	• Size - mm Particle 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie	NTATION Corrected Per	centage Passing 29 23 17 12 10 7
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35	IEVING Cumulative Percen 100 100 100 100 95 90 88 88 85 83 81 80	Particle	• Size - mm Particle 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret	NTATION Corrected Per	rcentage Passing 29 23 17 12 10 7 5
BS 5	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	IEVING Cumulative Percen 100 100 100 100 95 90 88 88 85 83 81 80 78 76	Particle	• Size - mm Particle 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	SEDIME Size mm 035 026 019 014 010 007 002 g BS 0.063mm sie No Pret Uniformity Co	NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2	centage Passing 29 23 17 12 10 7 5
BS S	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	IEVING Cumulative Percen 100 100 100 100 95 90 88 85 83 81 80 78 76 73	Particle	 Size - mm Particle 0.0 0.1 <li< td=""><td>SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret Uniformity Co %SILT</td><td>NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2</td><td>centage Passing 29 23 17 12 10 7 5 or collected in pan %GRAVEL</td></li<>	SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret Uniformity Co %SILT	NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2	centage Passing 29 23 17 12 10 7 5 or collected in pan %GRAVEL
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	IEVING Cumulative Percen 100 100 100 100 95 90 88 85 83 81 80 78 76 73 71	Particle	 Size - mm Particle 0.0 0.1 <li< td=""><td>SEDIME Size mm 035 026 019 014 010 007 002 g BS 0.063mm sie No Pret Uniformity Co</td><td>NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2</td><td>centage Passing 29 23 17 12 10 7 5</td></li<>	SEDIME Size mm 035 026 019 014 010 007 002 g BS 0.063mm sie No Pret Uniformity Co	NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2	centage Passing 29 23 17 12 10 7 5
BS 5	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	IEVING Cumulative Percen 100 100 100 100 95 90 88 85 83 81 80 78 76 73	Particle	 Size - mm Particle 0.0 0.1 <li< td=""><td>SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret Uniformity Co %SILT</td><td>NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2</td><td>centage Passing 29 23 17 12 10 7 5 or collected in pan %GRAVEL</td></li<>	SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret Uniformity Co %SILT	NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2	centage Passing 29 23 17 12 10 7 5 or collected in pan %GRAVEL
BS S	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	IEVING Cumulative Percen 100 100 100 100 95 90 88 85 83 81 80 78 76 73 71 68	Particle	 Size - mm Particle 0.0 0.1 <li< td=""><td>SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret Uniformity Co %SILT</td><td>NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2</td><td>centage Passing 29 23 17 12 10 7 5 or collected in pan %GRAVEL</td></li<>	SEDIME Size mm 035 026 019 014 010 007 002 9 BS 0.063mm sie No Pret Uniformity Co %SILT	NTATION Corrected Per Corrected Per ve washed and/or reatment efficient = 14.2	centage Passing 29 23 17 12 10 7 5 or collected in pan %GRAVEL

Ŵ	bam	PARTICI	E SIZE	DISTRIB	UTION	Borehole No TP12
	ritchies					Test Results
		Gourock	Pierhead			
Client:	Riversid	e Inverclyde Ltd			Job No:	4618
Consult		irhurst & Partners				
		Test Method - BS 1377:19	90 Part 2 Claus	se 9.2 & 9.5		
Sample N Depth (m	lumber:229267): 3.00		Initial Total Dr	y Weight: 880	5.00 g	
Sample T						
					· · · · · · · · · · · · · · · · · · ·	
	CLAY		Medium Coars	e Fine Med GRA	lium Coarse	COBBLES
	<u>I</u>					
	100					
	90					
%	80					
- <u>6</u>	70					
assi	60					
Percentage Passing	50					
enta	40					
Perc	30					
	20					
	10					
			$2 0.6 ^{2}$	6	20 60	200
	0.002	0.006 0.03 0.06 0.	2 o.o		20 00	200
		Faille	- 5120 - 11111			
		EVING	<u></u>	SEDIME	NTATION	
BS :	Sieve Size mm	Cumulative Percentage Passing	Particle	Size mm	Corrected Per	rcentage Passing
	125.0	100				
	75.0 63.0	100 91				
	50.0	88				
	37.5 28.0	79 70				
	20.0	58				
	14.0 10.0	47 38				
	6.30	30				
	5.00	28				
	3.35 2.00	26 24		Uniformity Co	efficient = 88.6	
	1.18	22				
	0.600 0.425	19 . 16		%SILT & CLAY 3.8	%SAND 20.0	%GRAVEL 76.2
	0.300	12		0.0	20.0	
	0.212	9	D40	D30	D60	D100
				1120	1160	111001
	0.150 0.063	6 4	D10 0.2420	6.039	21.45	125.00

Ŵ	bam ritchies	PAI	RTICL	E SIZE	DISTRIB	UTION	Borehole No TP13 Test Results
	1100111003	Go	ourock l	Pierhead			
Client: Consult		e Inverclyde Ltd irhurst & Partners				Job No:	4618
		Test Method - BS	31377:199				
	umber: 229249			Initial Total D	ry Weight: 9772	2.00 g	
Depth (m) Sample T							
	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>						
	Fi	ne Medium Coarse	Fine	Medium Coars	e Fine Med	lium Coarse	
	CLAY	SILT	s	AND	GRA	VEL	COBBLES
	100						
Percentage Passing - %	100 90 80 70 60 50 40 30 20 10 0						
	0.002	0.006 0.03 0.	06 0.2	2 0.6 2	2 6	20 60	200
	SI	EVING	Particle	Size - mm	SEDIME		
BSS	Sieve Size mm	Cumulative Percentage	e Passing	Particle	Size mm	Corrected Pe	rcentage Passing
	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	100 100 95 92 92 87 74 73 68 68 60 55					
	5.00 3.35	55					
	2.00	45					
1	1.18	38					
	0.600 0.425	28 26		1	%SILT & CLAY 13.4	%SAND 31.4	%GRAVEL 55.1
	0.425	20			10.4	01.4	00.1
	0.212	19					<u></u>
	0.150 0.063	16 13		D10	D30 0.709	D60 6.40	D100 125.00

	bar			ΡΑ	RTIC	LE SIZ	E DISTRI	BUTION	Borehole N TP13 Test Result
				Go	ourock	Pierhea	d		
Client:			e Inverciyd					Job No:	4618
Consult	ant: vv	.А. га	irhurst & Pa		2 1277.10	DOD Part 2 C	Clause 9.2 & 9.5		
Sample N	umber: 229	255			5 1377.13		al Dry Weight: 92	80.00 g	
Depth (m)							a Diy weight. 92	.00.00 g	
Sample T									
						· · · · · · · · · · · · · · · · · · ·			
	CLAY	, Fi	ne Mediun	n Coarse	Fine	Medium Co	oarse Fine M	edium Coarse	COBBLE
			SILT			SAND	GR	AVEL	
	100								
	90								
	80								++++
% -	70								
бu									
Percentage Passing	60								
Ğ	50					┝╍┝┥┝┝┝┝			
tage	40 4								
Gen									
erc	30								+++
	20					1			
	10								
	111								
	₀ الللــــــ								
	-	0.002	0.006	0.03 0).2 0.6	2 6	20 60	200
	-	0.002	0.006	0.03 0		0.2 0.6	2 6	20 60	200
	-		0.006	0.03 0).2		20 60	200
BSS	-	SI	EVING	0.03 0	Partic	le Size - mm			
BSS		SI	EVING		Partic	le Size - mm	SEDIM		200 200 rcentage Passing
BSS	(Sieve Size mm	SI	EVING		Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm	SI	EVING	e Percentag	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Gieve Size mm 125.0 75.0	SI	EVING	e Percentag 100 100	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5	SI	EVING	Percentag 100 100 100 100 98	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0	SI	EVING	Percentag 100 100 100 100 98 93	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0	SI	EVING	Percentag 100 100 100 100 98 93 86	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0	SI	EVING	Percentag 100 100 100 100 98 93 86 79	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0	SI	EVING	Percentag 100 100 100 98 93 86 79 73	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	SI	EVING	e Percentag 100 100 100 98 93 86 79 73 66	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	SI	EVING	Percentag 100 100 100 100 98 93 86 79 73 66 64	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35	SI	EVING	Percentag 100 100 100 100 98 93 86 79 73 66 64 61	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00	SI	EVING	Percentag 100 100 100 100 98 93 86 79 73 66 64 61 57	Partic	le Size - mm	SEDIM ticle Size mm		
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18	SI	EVING	e Percentag 100 100 100 98 93 86 79 73 66 64 61 57 53	Partic	le Size - mm	SEDIM	Corrected Per	rcentage Passin
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	SI	EVING	e Percentag 100 100 100 98 93 86 79 73 66 64 61 57 53 46	Partic	le Size - mm	SEDIM ticle Size mm	Corrected Per	rcentage Passin
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18	SI	EVING	e Percentag 100 100 100 98 93 86 79 73 66 64 61 57 53	Partic	le Size - mm	SEDIM	ENTATION Corrected Per	rcentage Passing
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425	SI	EVING	e Percentag 100 100 100 100 98 93 86 79 73 66 64 61 57 53 46 42	Partic	le Size - mm	SEDIM	ENTATION Corrected Per	rcentage Passing
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	SI	EVING	e Percentag 100 100 100 100 98 93 86 79 73 66 64 61 57 53 46 42 34	Partic	le Size - mm	SEDIM	ENTATION Corrected Per	rcentage Passing
BSS	Sieve Size mm 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300 0.212	SI	EVING	Percentag 100 100 100 100 98 93 86 79 73 66 64 61 57 53 46 42 34 26	Partic	le Size - mm	SEDIM ticle Size mm %SILT & CLA 13.4	Y %SAND 43.6	rcentage Passin

v bam	PARTICL	E SIZE DISTRIE	BUTION Borehole No WS30 Test Results
inclues	Gourock	Pierhead	
	de Inverclyde Ltd airhurst & Partners		Job No: 4618
	Test Method - BS 1377:19	90 Part 2 Clause 9.2 & 9.5	
Sample Number:235528 Depth (m) : 0.50		Initial Total Dry Weight: 713	2.00 g
Sample Type: B			
CLAY			dium Coarse AVEL COBBLES
100 90 80 70 60 40 40 30 20 10 0 0.002	0.006 0.03 0.06 0.0 Particle	0.6 2 6 Size - mm	
s	IEVING	SEDIME	NTATION
BS Sieve Size mm	Cumulative Percentage Passing	Particle Size mm	Corrected Percentage Passing
125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	100 100 100 100 100 95 90 89 87 82	0.035 0.026 0.019 0.013 0.010 0.007 0.004	17 14 11 9 6 5 3
5.00 3.35 2.00 1.18	80 78 75 72	No Pret	ve washed and/or collected in pan reatment efficient = 23.4
0.600 0.425 0.300	67 62 55	% CLAY %SILT 3 21.3	%SAND %GRAVEL 50.5 25.4
0.212 0.150 0.063	43 31 25	D10 D30 0.0165 0.131	D60D1000.39125.00

Ŵ	ba	am	PA	RTICL	.E SIZE D	DISTRIB	UTION	Borehole No
	ritc	hies						Test Results
			Go	ourock l	Pierhead			
Client:		Riversid	le Inverclyde Ltd				Job No:	4618
Consult	ant:	W.A. Fa	airhurst & Partners					
·····			Test Method - BS	3 1377:199				
Sample N Depth (m)		r:235529 1.00			Initial Total Dry	Weight: 428	0.00 g	
Sample T		<u>B</u>						
					·····	1 1		
	CI		ne Medium Coarse SILT		Medium Coarse		dium Coarse	COBBLES
						1	1	
	¹⁰⁰ T							
	90 +							
%	80 +							
Percentage Passing -	70 -							
assi	60 -							
де Р	50 -							
centa	40 -				/			
Perc	30 -							
	20 -							
	10 -							
	0 1				0.6 2	6	20 60	200
		0.002	0.006 0.03 0.	.06 0.2	2		20 00	200
				Particle	Size - mm			
		SI	IEVING			SEDIME	NTATION	
BS	Sieve Siz	ze mm	Cumulative Percentage	e Passing	Particle S	ize mm	Corrected Per	centage Passing
	125.0		100		0.03			11
	75.0 63.0		100 100		0.02			9 8
	63.0 50.0		89		0.01			6
	37.5		89		0.01			5
	28.0 20.0		87 85		0.00			4 2
	14.0		83					
	10.0 6.30		80 76					
	5.00		73		Sample passing			or collected in pan
	3.35		71 67				reatment	
	2.00 1.18		64				efficient = 24.8	
	0.600		59		% CLAY	%SILT	%SAND	%GRAVEL
l i	0.425 0.300		53 44		2	14.2	50.5	33.2
					L			
	0.212		34					
		I	34 24 17		D10 0.0291	D30 0.188	D60 0.72	D100 125.00

Ŵ	bam ritchies	PARI	ΓICL	E SIZE	DISTRIB	UTION	Borehole No WS31 Test Results
	IILLINES	Gour	rock F	Pierhead			
Client: Consult		e Inverclyde Ltd irhurst & Partners				Job No:	4618
	·····	Test Method - BS 13				-	
	umber:235534			Initial Total D	ry Weight: 1509	9.00 g	
Depth (m) Sample T							
	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	······································					
		Medium Coarse I SILT		Medium Coars	e Fine Med		COBBLES
Percentage Passing - %	100 90 90 80 70 60 50 60 40 60 30 60 10 10 0 0.002		0.2 Particle	0.6		20 60	200
	SI	EVING			SEDIMEN	NTATION	
BS S	Sieve Size mm	Cumulative Percentage Pa	assing	Particle	Size mm	Corrected Per	centage Passing
	125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30	100 100 100 100 85 72 54 40 28					
	5.00 3.35 2.00	21 17 13			Uniformity Co	efficient = 13.3	
	1.18 0.600 0.425 0.300	10 7 6 5			%SILT & CLAY 3.1	%SAND 9.8	%GRAVEL 87.1
	0.212 0.150 0.063	5 4 3		D10 1.1994	D30 6.872	D60 15.96	D100 125.00

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Client:		Rive																				Jo	b١	lo:			46 [,]	18	
Consult	ant:	W.A	. Fa							07	7.4/			+ 0					0 0										<u></u>
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ample T	'ype: I	3								- 1														-					
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	CL	AY	Fir	l	Med SIL		Coa	arse	-	Fi	ne	1			Co	arse	ə	Fir	· · · · · · · · · · · · · · · · · · ·	I			- I	Coa	rsə	c	OE	BBL	ES
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BSS	Sieve Size 125.0 75.0			EVIN	3	tive F	Perce 100	entag))			artic		 29 -	m	m 	-		mn	SE	ÐII	ME	NTA	TIO						sing
BSS	Sieve Size 125.0 75.0 63.0 50.0 37.5 28.0			EVIN	3	tive F	Perce 100 100 100 80 76 72	entag))			artic		ze -	m	m 	-		mn	SE	EDI	ME	NTA	TIO						sing
BSS	Sieve Size 125.0 75.0 63.0 50.0 37.5 28.0 20.0			EVIN	3	tive F	Perce 100 100 100 76 72 65	entag)))			artic		ze -	m	m 	-		mm	SE	ĐI	ME	NTA	TIO						sing
BSS	Sieve Size 125.0 75.0 63.0 50.0 37.5 28.0			EVIN	3	tive F	Perce 100 100 100 80 76 72	entag))			artic		ize -	m	m 	-		mm	SE	EDII	ME	NTA	TIO						sing
BSS	Sieve Size 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30			EVIN	3	tive F	Perce 100 100 76 72 65 57 48 37	entag)))			artic		ze -	m	m 	-		mn	SE	DI	ME	NTA	TIO						sing
BSS	Sieve Size 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00			EVIN	3	tive F	Perce 100 100 100 76 57 48 37 32	entag))			artic			m	m 	-		mm	SE		ME	NTA	TIO						sing
BSS	Sieve Size 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35			EVIN	3	tive F	Percee 100 100 100 76 72 65 57 48 37 32 28	ntag)))			artic		ze -	m	m 	-	Size		SE			C	orre	ecteo	d Pe				sing
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Client:		River	side	Invero	lyde	Ltd														Job	No:			461	в
Consult	ant:	W.A.	Fairh	nurst 8	k Par	tner	rs																		
				Test	Met	hod	- B	S 1:	377	':19															
Sample N											Init	ial	Tot	al I	Dry	We	eigh	t: 8	887	.00	g				
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BS	Sieve Siz 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00	ze mm		ING	lative	Percc 10 70 60 60 43 3° 23 18 12	enta 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			rticl			mm	-		ize n	5		MEN	ITATI					
BSS	Sieve Siz 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00	ze mm		ING	lative	Perco 10 70 66 43 3 ⁻¹ 23 15 12 10 8	enta 0 0 0 0 0 0 0 0 0 3 3 1 3 5 5 2 0 5			rticl			mm	-			5 nm	EDI		Cor		d Pe			
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BS	Sieve Siz 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600	ze mm		ING	lative	Percc 10 70 66 49 43 31 23 18 12 10 8 6 5	enta 00 00 00 00 00 00 00 00 00 00 00 00 00			rticl			mm	-		Ui	nifor	mity	Сое	fficie	nt = 1	d Pe		tage F	Passir
BS	Sieve Siz 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18	ze mm		ING	ative	Percc 10 70 66 49 43 31 23 19 12 10 8 6 6 5 5 4 3	enta 00 00 00 00 00 00 00 00 00 00 00 00 00			rticl			mm	-		Ui	nm	mity	Сое	fficie	nt = 1	d Pe		tage F	Passir
BS	Sieve Siz 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300 0.212	ze mm		ING	ative	Percc 10 70 66 60 49 33 34 23 19 12 10 88 66 5 4 3 3 3	enta 00 00 00 00 00 00 00 00 00 00 00 00 00			rticl		8 -	Pa	artic		Ui	nifoi 1.1	mity	Сое	fficie	nt = 1 6.1	11.2		tage F %GF 9	Passin RAVE 2.4
BS	Sieve Siz 125.0 75.0 63.0 50.0 37.5 28.0 20.0 14.0 10.0 6.30 5.00 3.35 2.00 1.18 0.600 0.425 0.300	ze mm		ING	lative	Percc 10 70 66 49 43 31 23 19 12 10 8 6 6 5 5 4 3	enta 00 00 00 00 00 00 00 00 00 00 00 00 00			rticl		e -	mm	artic		Ui %SIL	nifor	mity CL/ 0	Сое	fficie	nt = 1	11.2		tage F %GF 9 D	Passir



ORGANIC MATTER CONTENT

Gourock Pierhead

Client: Riverside Inverclyde Ltd

Consultant: W.A. Fairhurst & Partners

Job No.

4618

Test Method - BS 1377 : Part 3 : 1990 : Clause 3

:	Sample Identific	ation			% Passing 2 mm	Organic Matter Content %
05	230460	DJB	0.50	m	49	3.5
TP07	229290	D	0.50	m	35	1.2
TP08	229280	D	0.50	m	48	1.8
TP09	229234	D	0.50	m	58	1.2
TP10	229270	D	0.50	m	52	1.2
TP13	229250	D	0.50	m	45	2.4



pH Value and Sulphate Content

Gourock Pierhead

Client: Consultant: Riverside Inverclyde Ltd

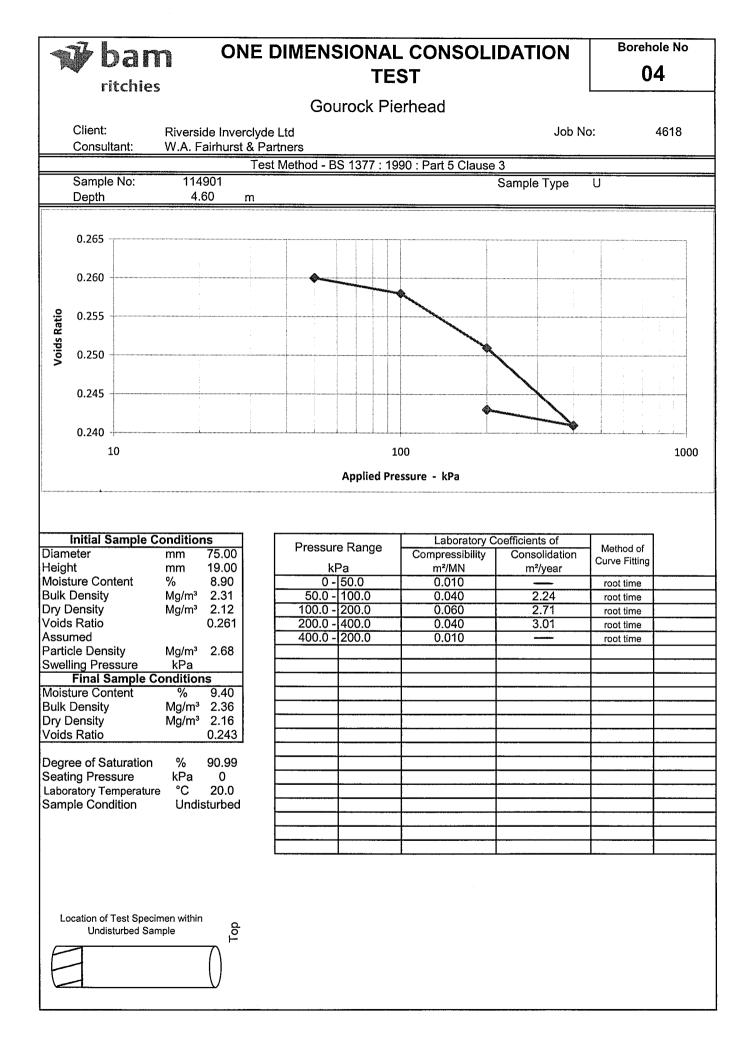
Job No:

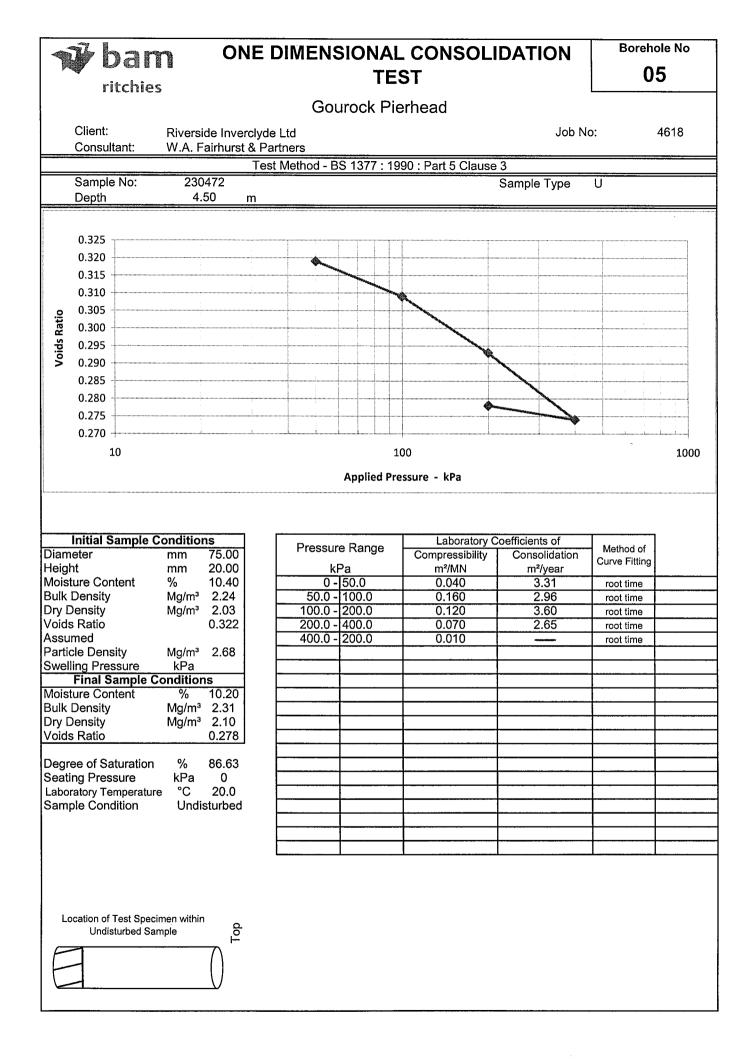
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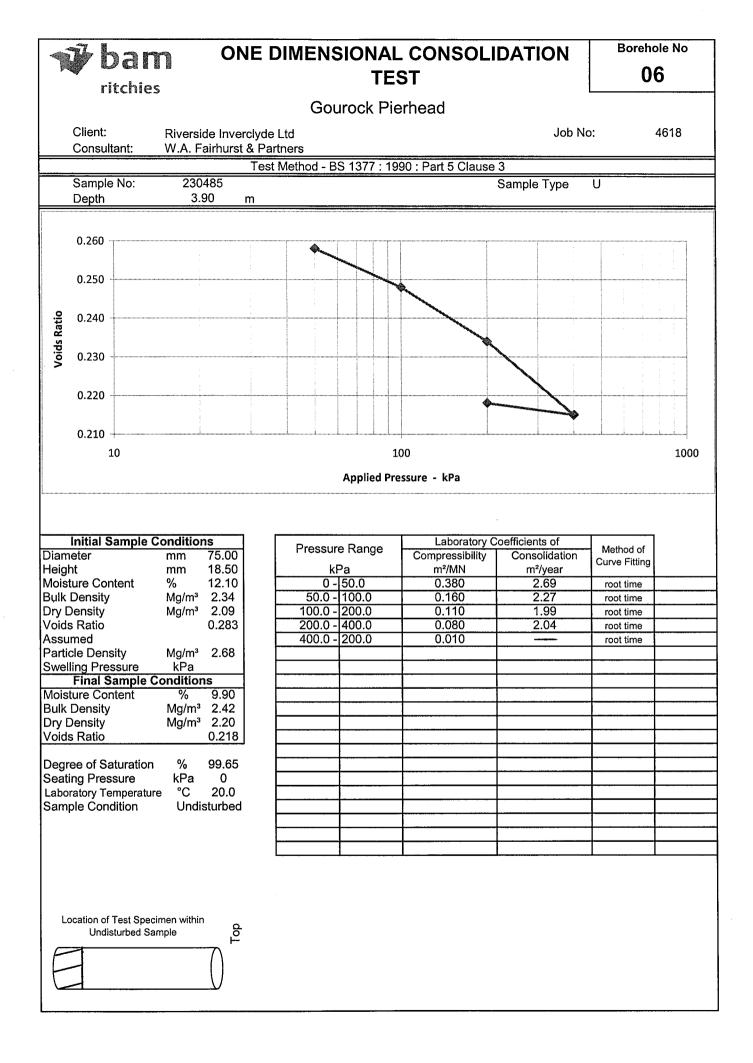
sultant: W.A. Fairhurst & Partners

Test Method - BS 1377:1990:Part 3:Methods 5 & 9

					2:1 Aqueous	Sulphate		
S	ample Identifica	ation		pH Value	Extract g/l	Total %	Water Soluble g/l	%
Hole ID	Sample No.		Depth (m)	Method 9	Method 5.3/5.5	Method 5.2/5.5	Method 5.4/5.5	<2.00mn
04	230499	D	2.75	7.9	0.09			95
04	114903	D	5.20	8.3	0.10			57
05	230460	DJB	0.50	7.9	0.12			77
06	12	DJJ	1.00	8.5	0.28			31
06	230487	D	4.55	8.1	0.11		·······	100
TP01	229210	D	0.50	8.3	0.25			46
TP01	229214	D	1.50	8.4	0.10			73
TP02	229216	D	0.50	8.6	0.09			69
TP02	229219	В	1.80	8.5	0.15			50
TP03	229224	D	1.00	8.2	0.47			11
TP05	229203	В	0.50	8.3	0.33			14
TP05	229206	D	1.00	8.2	0.27			24
TP06	229230	D	1.50	8.0	0.05			32
TP07	229290	D	0.50	8.1	0.09			35
TP07	229294	D	1.50	8.4	0.07			25
TP08	229286	D	2.00	7.7	0.73			25
TP09	229236	D	1.00	8.0	0.35			77
TP10	229270	D	0.50	8.0	0.07	·····		60
TP10	229172	D	1.00	8.3	0.06			33
TP11	229246	D	1.50	8.2	0.07			76
TP12	229260	D	1.00	8.0	0.08		****	67
TP13	229250	D	0.50	8.2	0.09			40
TP13	229256	D	2.00	8.4	0.10			38
WS30	235530	D	1.20	8.3	0.28			58
WS30	191992	D	2.60	8.0	0.31			61
WS31	235537	D	2.00	8.3	0.28	·		46
WS32	235543	D	2.00	9.5	0.26			13

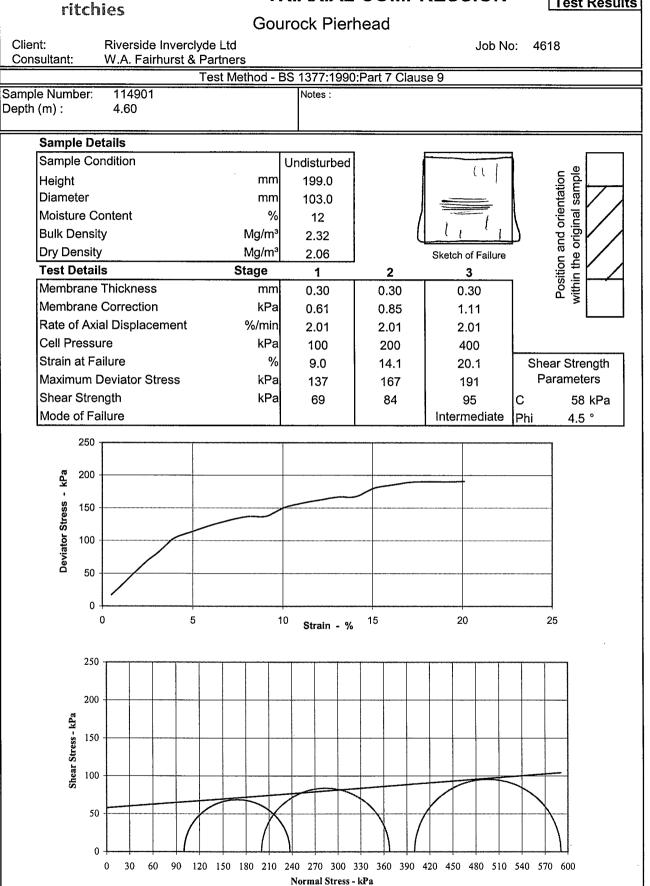


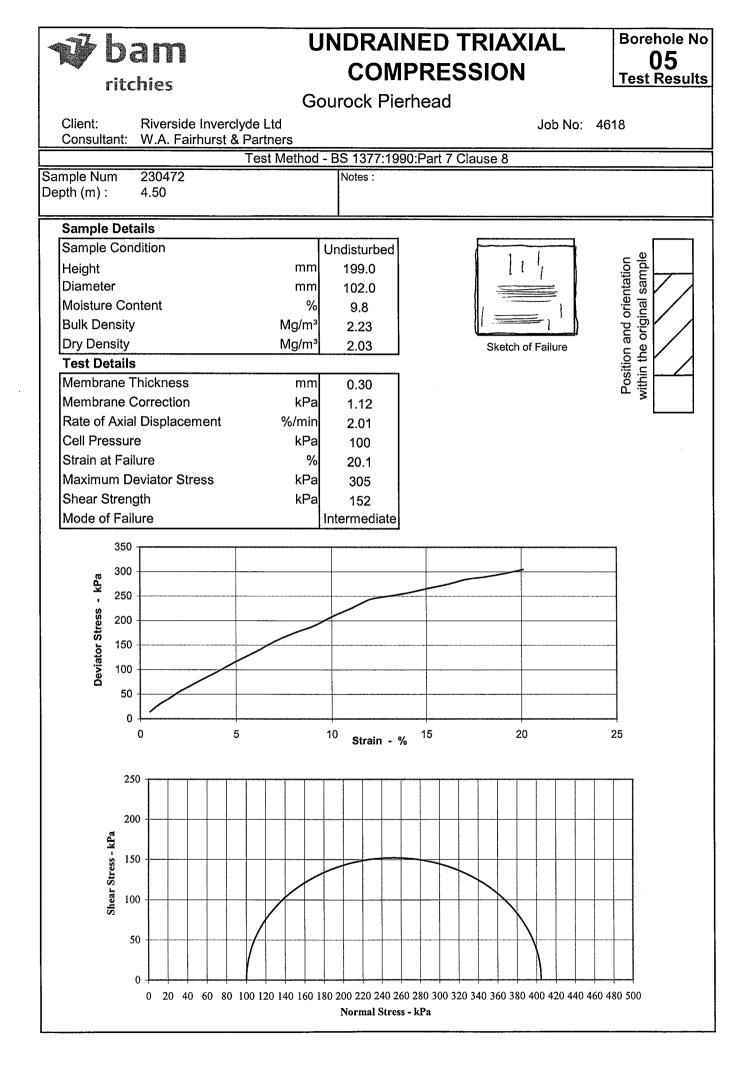


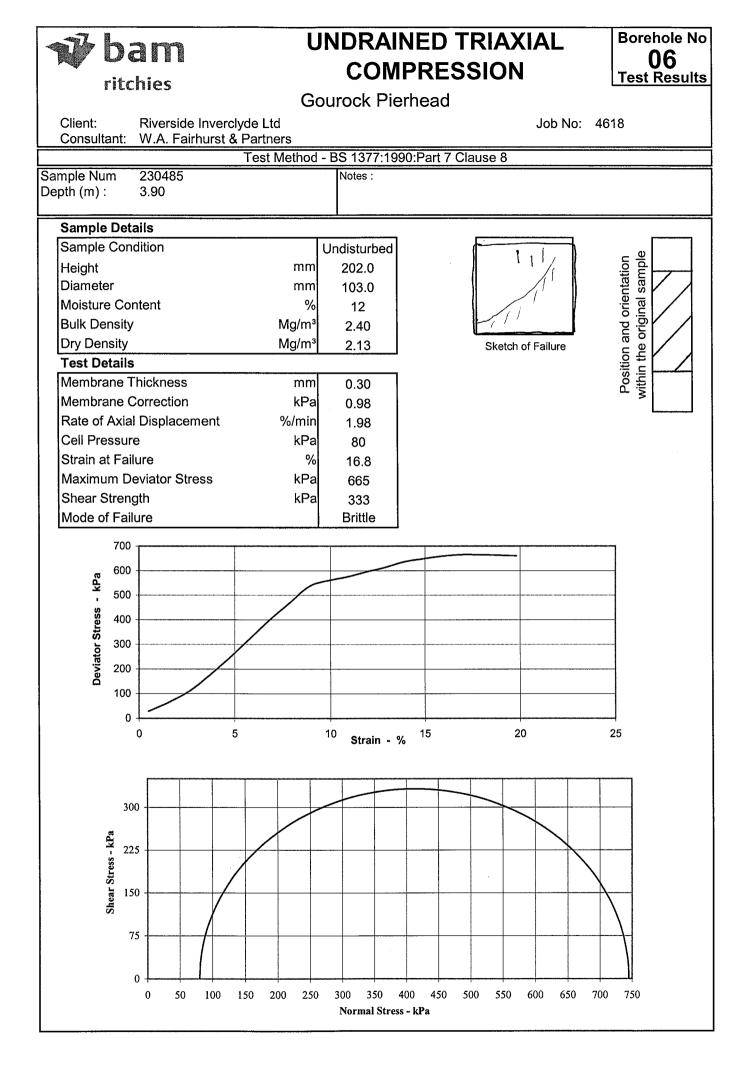


UNDRAINED MULTISTAGE TRIAXIAL COMPRESSION









UNIAXIAL COMPRESSIVE STRENGTH

Tested in accordance with ISRM 1981

bam ritchies

'Suggested Methods for Determination of the Uniaxial Compressive Strength of Rock Materials'

Gourock Pierhead

lient	Riverside Inverclyde Limited		Contract No.	BAX.4618
onsultant	W. A. Fairhurst & Partners			
	Borehole reference		D04	
	Core Run		R04	
	Depth	m	- 7.20	
	Lithologic description of rock	111	TRACHYTE	
	Method of sampling		Rotary	
	Storage environment		Enclosed/Uncontrolled	
	Core Diameter	mm	72.7	
	Core Height	mm	186	
	Water content	%	0.1	
	Test Condition		Moist	
	Rate of loading	kN/s	0.5	
	Test Duration	min.sec	6.02	
	Date of testing		28.10.11	
	Load frame used		ELE Autotest 2000kN	
	Orientation of the axis of loadin	(with respect to lithology)	Perpendicular	
	Failure Load	kN	593.4	
	Mode of failure		Multiple Shear	
	Uniaxial Compressive Strength	n MPa	143.024	
	External		Internal	

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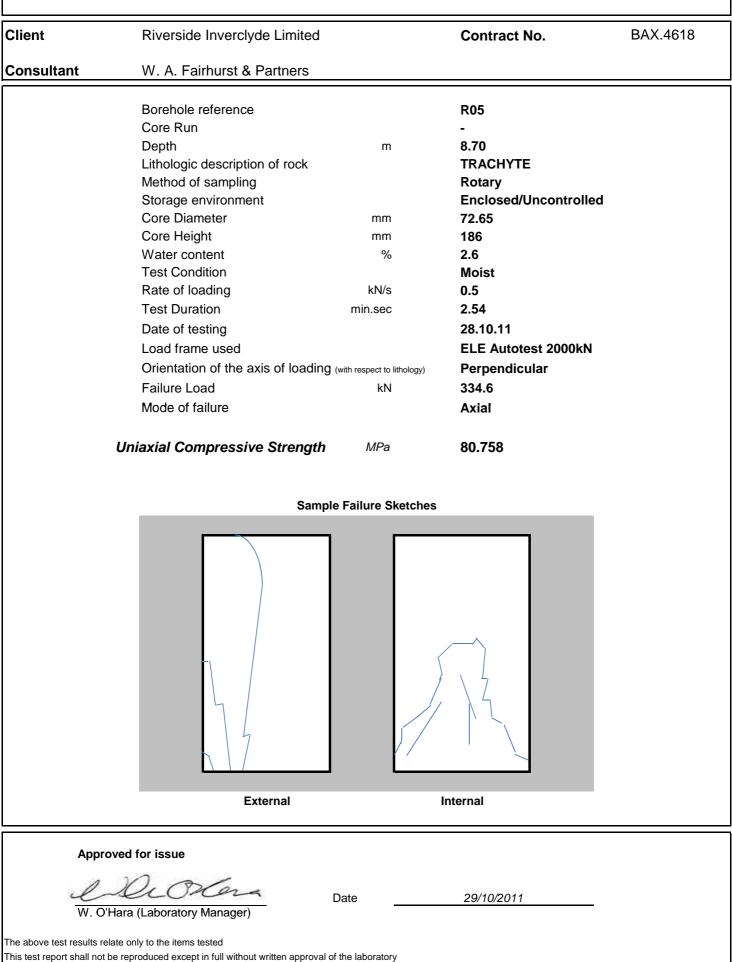
UNIAXIAL COMPRESSIVE STRENGTH

Tested in accordance with ISRM 1981

bam ritchies

'Suggested Methods for Determination of the Uniaxial Compressive Strength of Rock Materials'

Gourock Pierhead



SUMMARY OF POINT LOAD TEST RESULTS

💕 bam

ritchies

Tested in accordance with ISRM Standard 1985

"Suggested Method for determining Point Load Strength"

Gourock Pierhead

Consultar		Riverside Inverclyde Limited BAX. 461								
	nt	W. A. Fai	rhurst & F	artners						
Borehole Reference	Depth	Type of test	Sample Width (mm)	D (mm)	De2	P (kN)	ls (MNm-2)	ls(50) (MNm-2)	Rock Type	Failure Remarks
4	6.20	Diametral	36	73	5329	22.417	4.21	4.99	TRACHYTE	V
	6.25	Axial	73	44	4090	27.409	6.70	7.49	TRACHYTE	V
4	7.20	Diametral	60	73	5329	32.391	6.08	7.21	TRACHYTE	V
	7.25	Axial	73	54	5019	23.820	4.75	5.55	TRACHYTE	V
4	10.20	Diametral	55	73	5329	27.301	5.12	6.07	TRACHYTE	V
	10.30	Axial	73	69	6413	29.419	4.59	5.67	TRACHYTE	V
5	5.70	Diametral	36	73	5329	19.730	3.70	4.39	TRACHYTE	V
	5.80	Axial	73	55	5112	12.101	2.37	2.78	TRACHYTE	Р
5	8.70	Diametral	44	73	5329	23.398	4.39	5.21	TRACHYTE	V
	8.80	Diametral	47	73	5329	23.888	4.48	5.31	TRACHYTE	Р
	8.85	Axial	73	40	3718	20.642	5.55	6.07	TRACHYTE	V
5	9.70	Diametral	43	73	5329	24.652	4.63	5.48	TRACHYTE	V
	9.75	Axial	73	72	6692	34.234	5.12	6.38	TRACHYTE	V
6	6.30	Diametral	45	73	5329	23.732	4.45	5.28	TRACHYTE	V
	6.40	Axial	73	50	4647	24.903	5.36	6.16	TRACHYTE	V
6	8.30	Diametral	45	73	5329	25.252	4.74	5.62	TRACHYTE	V
Failure remark	S	V P B	Valid Through one p Obvious beddii	•		S I	Spall Other Invalid			
Failure remark (D=Distance		P B	Through one p	•			•			
	e between p x 10 ³	P B	Through one p	ng plane	D ^z for diam (4WD)/pi fo	I etral tests	•	ests		



SAMPLES UNSUITABLE FOR TESTING

Gourock Pierhead

Client : Riverside Inverclyde Ltd. Consultant : W.A. Fairhurst & Partners

Contract No: 4618

The following samples have proved unsuitable for testing. Please advise us if any replacement sample(s) are to be tested.

Sample Identification			Test(s) Required	Reason for Unsuitability
TP03	D	1.00m	SO3/pH	Insufficient material passing 425µm test
TDee	-			sieve. (B @ 1.00m used)
TP08	В	1.00m	Vibrating Hammer Compaction	Insufficient material to carry out test, approx. 30Kg required for test. (14Kg)
TP11	В	1.5 & 2.0m	4.5Kg Compaction	>10% Retained on 37.5mm test sieve test test not applicable - BS 1377 Pt 4 Table 2. (70% retained)
WS30	D	2.60m	SO3/pH	Sample is a no recovery.
WS31	В	0.6m	PSD	Sample not received to laboratory.



SAMPLES UNSUITABLE FOR TESTING

Gourock Pierhead

Client :

Contract No :

4618

Consultant : W.A. Fairhurst & Partners The following samples have proved unsuitable for testing. Please advise us if any replacement sample(s) are to be tested. Sample Identification Test(s) Required Reason for Unsuitability BH06 Core 6.30m UCS No suitable length of core available for UCS test, PLT carried out.



APPENDIX 6.0 GEOCHEMICAL LABORATORY TEST RESULTS

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 - Soils Date Tested: 13/10/11 Date Reported: 31 October, 2011 Date Received: 11 October, 2011 Sample Type: Solid, Leachate

Certificate No:	11/2443/C/C1
File No:	11/2443/C
Client Ref:	RIT 136713

		Clier	Lab sample ref: Client sample ref: Sample matrix:		C127889 TP04 0.50m Leachate	C127890 TP06 1.00m Leachate	C127892 TP07 1.50m Leachate	C127894 TP08 1.00m Leachate	C127896 TP09 2.00m Leachate
Determinand	Method	Units	ISO17025	гор					
Metals (Leachate) Arsenic leachable	AN47e		Y	0.25	9.40	12.58	4.98	1.01	0.28
Boron leachable	AN47e AN47c	µg/l	Y	0.25	9.40 51	63	4.98 29	1.01	36
Cadmium leachable	AN470 AN47a	µg/l µg/l	Y	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium leachable	AN47a AN47a	10	Y	0.05	2.52	<0.05 12.61	3.17	3.61	<0.05 0.16
	AN47a AN47a	µg/l	Y	0.05	18.10	12.01		4.60	0.10
Copper leachable Lead leachable	AN47a AN47a	µg/l	r Y	0.05	18.82	90.76	1.51 0.75	4.60 1.70	<0.42 <0.05
	AN47a AN47b	µg/l	r Y	0.05	2.31	90.76 2.17	0.75 1.42	2.16	
Nickel leachable		µg/l	r Y	0.1		<1.00		<1.00	<0.10 <1.00
Selenium leachable	AN47c	µg/l			<1.00		<1.00		
Vanadium leachable	AN47a	µg/l	Y	0.05	12.31	11.53	76.79	5.32	17.38
Zinc leachable	AN47g	µg/l	Y	0.5	9.5	49.8	1.3	3.7	< 0.5
Mercury leachable	Subcontract*	µg/l	Ν	0.015	0.086	0.640	0.649	0.162	0.051
			V	0.0	0.0				0.0
Ammoniacal Nitrogen leachable	HACH9b	mg/I-N	Y	0.2	<0.2	<0.2	< 0.2	<0.2	<0.2
Cyanide (free) leachable	Subcontract*	mg/l	N	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Phenols (screen) leachable	AN45c	mg/l	Y	0.03	< 0.03	<0.03	<0.03	< 0.03	< 0.03
Chromium (VI) leachable	HACH 4	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
BTEX leachable				-	_	-	-	-	-
Benzene leachable	AN15	µg/l	Y	5	<5	<5	<5	<5	<5
Toluene leachable	AN15	µg/l	Y	5	<5	<5	<5	<5	<5
Ethylbenzene leachable	AN15	µg/l	Y	5	<5	<5	<5	<5	<5
m,p-Xylene leachable	AN15	µg/l	Y	5	<5	<5	<5	<5	<5
o-Xylene leachable	AN15	µg/l	Y	5	<5	<5	<5	<5	<5
PAH(USEPA16) leachable	0.01.000		.,						
Naphthalene leachable	GCM502	µg/l	Y	0.02	1.00	0.11	0.04	1.51	0.10
Acenaphthylene leachable	GCM502	µg/l	Y	0.02	1.07	0.10	<0.02	0.17	0.14
Acenaphthene leachable	GCM502	µg/l	Y	0.02	2.06	1.48	0.04	0.79	0.13
Fluorene leachable	GCM502	µg/l	Y	0.02	1.42	0.26	<0.02	0.46	0.13
Phenanthrene leachable	GCM502	µg/l	Y	0.02	1.75	0.43	0.04	1.09	0.35
Anthracene leachable	GCM502	µg/l	Y	0.02	0.60	0.51	0.03	0.32	0.15
Fluoranthene leachable	GCM502	µg/l	Y	0.02	1.19	18.2	0.20	2.68	1.18
Pyrene leachable	GCM502	µg/l	Y	0.02	1.09	15.4	0.10	2.91	1.08
Benzo(a)anthracene leachable	GCM502	µg/l	Y	0.02	1.35	1.38	0.07	2.08	0.42
Chrysene leachable	GCM502	µg/l	Y	0.02	1.34	1.34	0.08	1.80	0.43
Benzo(b)fluoranthene leachable	GCM502	µg/l	Y	0.02	0.66	0.61	0.06	1.29	0.33
Benzo(k)fluoranthene leachable	GCM502	µg/l	Y	0.02	0.57	0.54	0.05	1.57	0.35
Benzo(a)pyrene leachable	GCM502	µg/l	Y	0.02	0.86	0.69	0.06	1.62	0.36
Indeno(1,2,3-cd)pyrene leachable	GCM502	µg/l	Y	0.02	0.32	0.35	0.04	0.71	0.19
Dibenzo(a,h)anthracene leachable	GCM502	µg/l	Y	0.02	0.11	0.13	<0.02	0.30	0.09
Benzo(ghi)perylene leachable	GCM502	µg/l	Y	0.02	0.43	0.50	0.06	0.67	0.20

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 - Soils Date Tested: 13/10/11 Date Reported: 31 October, 2011 Date Received: 11 October, 2011 Sample Type: Solid, Leachate

Certificate No:	11/2443/C/C1
File No:	11/2443/C
Client Ref:	RIT 136713

		Clier	Lab sample ref: Client sample ref: Sample matrix:		C127889 TP04 0.50m Leachate	C127890 TP06 1.00m Leachate	C127892 TP07 1.50m Leachate	C127894 TP08 1.00m Leachate	C127896 TP09 2.00m Leachate
Determinand	Method	Units	ISO17025	ГОР					
PCB Congeners leachable									
PCB 28 leachable _M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 52 leachable _M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 101 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 118 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 153 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 138 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 180 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH Banded(Ali/Aro) leachable									
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C7-C8 Aromatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
C5-C6 Aliphatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
C5-C7 Aromatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	0.04	<0.01	<0.01	<0.01	<0.01
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	0.02	<0.01	<0.01	<0.01	<0.01
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	0.02	<0.01	<0.01	0.02	<0.01
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	0.09	<0.01
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	N	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 - Soils Date Tested: 13/10/11 Date Reported: 31 October, 2011 Date Received: 11 October, 2011 Sample Type: Solid, Leachate

Certificate No: 11/2443/C/C1 File No: 11/2443/C Client Ref: RIT 136713

		Clier	Lab sample ref: Client sample ref: Sample matrix:		C127898 TP10 2.00m Leachate	C127900 TP11 1.50m Leachate	C127902 TP12 1.00m Leachate
Determinand	Method	Units	ISO17025	гор			
Metals (Leachate)			.,				
Arsenic leachable	AN47e	µg/l	Y	0.25	2.49	9.92	1.47
Boron leachable	AN47c	µg/l	Y	1	17	29	16
Cadmium leachable	AN47a	µg/l	Y	0.05	<0.05	<0.05	<0.05
Chromium leachable	AN47a	µg/l	Y	0.05	1.23	2.59	6.59
Copper leachable	AN47a	µg/l	Y	0.05	1.86	2.97	9.52
Lead leachable	AN47a	µg/l	Y	0.05	1.89	0.87	2.48
Nickel leachable	AN47b	µg/l	Y	0.1	0.81	1.48	2.49
Selenium leachable	AN47c	µg/l	Y	1	<1.00	<1.00	<1.00
Vanadium leachable	AN47a	µg/l	Y	0.05	4.22	43.74	6.40
Zinc leachable	AN47g	µg/l	Y	0.5	3.1	1.9	4.3
Mercury leachable Misc	Subcontract*	µg/l	N	0.015	0.053	14.4	0.29
Ammoniacal Nitrogen leachable	HACH9b	mg/I-N	Y	0.2	<0.2	<0.2	0.4
Cyanide (free) leachable	Subcontract*	mg/l	N	0.01	<0.01	<0.2	<0.4 <0.01
Phenols (screen) leachable	AN45c	mg/l	Y	0.01	< 0.03	< 0.03	<0.01
Chromium (VI) leachable	HACH 4	mg/l	N	0.00	<0.00	<0.00	<0.00
BTEX leachable	HAOH 4	iiig/i	IN IN	0.01	<0.01	<0.01	<0.01
Benzene leachable	AN15	µg/l	Y	5	<5	<5	<5
Toluene leachable	AN15 AN15	µg/l	Ý	5	<5 <5	<5 <5	<5
Ethylbenzene leachable	AN15 AN15	µg/i µg/l	Ý	5	<5 <5	<5 <5	<5 <5
m,p-Xylene leachable	AN15	µg/l	Ý	5	<5 <5	<5 <5	<5 <5
o-Xylene leachable	AN15 AN15	µg/i µg/i	Ý	5	<5 <5	<5 <5	<5
PAH(USEPA16) leachable	ANIS	μy/i	1	5	<5	<5	<5
Naphthalene leachable	GCM502	ug/l	Y	0.02	0.02	<0.02	<0.02
Acenaphthylene leachable	GCM502 GCM502	µg/l µg/l	Y	0.02	0.02	<0.02	<0.02
Acenaphthene leachable	GCM502 GCM502		Y	0.02	0.05	<0.02	<0.02 0.03
Fluorene leachable	GCM502 GCM502	µg/l	r Y	0.02	0.05	<0.02 <0.02	<0.03
		µg/l	r Y	0.02			
Phenanthrene leachable	GCM502	µg/l	r Y		0.43	0.03	0.18
Anthracene leachable	GCM502	µg/l	r Y	0.02 0.02	0.14 1.29	<0.02 0.10	0.09
Fluoranthene leachable	GCM502	µg/l	r Y	0.02			1.15
Pyrene leachable	GCM502	µg/l	r Y		1.29	0.10	1.59
Benzo(a)anthracene leachable	GCM502	µg/l		0.02	0.58	0.05	0.53
Chrysene leachable	GCM502	µg/l	Y	0.02	0.62	0.05	0.58
Benzo(b)fluoranthene leachable	GCM502	µg/l	Y	0.02	0.60	0.05	0.71
Benzo(k)fluoranthene leachable	GCM502	µg/l	Y	0.02	0.69	0.06	0.65
Benzo(a)pyrene leachable	GCM502	µg/l	Y	0.02	0.72	0.06	0.87
Indeno(1,2,3-cd)pyrene leachable	GCM502	µg/l	Y	0.02	0.45	0.03	0.62
Dibenzo(a,h)anthracene leachable	GCM502	µg/l	Y	0.02	0.15	<0.02	0.18
Benzo(ghi)perylene leachable	GCM502	µg/l	Y	0.02	0.54	0.04	0.82

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 - Soils Date Tested: 13/10/11 Date Reported: 31 October, 2011 Date Received: 11 October, 2011 Sample Type: Solid, Leachate

Certificate No: 11/2443/C/C1 File No: 11/2443/C Client Ref: RIT 136713

			Client sample ref: Sample matrix:		TP10 2.00m Leachate	TP11 1.50m Leachate	TP12 1.00m Leachate
Determinand	Method	Units	ISO17025	ГОР			
PCB Congeners leachable							
PCB 28 leachable M	GCMS	µg/l	N	0.1	<0.1	<0.1	<0.1
PCB 52 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 101 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 118 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 153 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 138 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 180 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
TPH Banded(Ali/Aro) leachable							
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C7-C8 Aromatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
C5-C6 Aliphatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
C5-C7 Aromatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01

Lab sample ref:

C127898

C127900

C127902

Notes

1. Tests marked * indicate subcontracted analyses.

2. The laboratory has tested the material/items supplied by the client as sampled in accordance with the client's own requirements.

3. Results reported for metals are 'dissolved' unless otherwise stated.

4. Dates of testing for all parameters are available upon request.

5. Leachate preparation is not included in our UKAS accreditation.

6. All analyses performed on the sample dried at <30 $^{\circ}\text{C},$ except analyses suffixed with 'M'.

The contents of this document are governed by the terms and conditions overleaf.

7. Analyses suffixed 'M' were performed on the sample as received and corrected for '% moisture at <30°C' where applicable.

Registered Office: Exova (UK) Ltd. Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL United Kingdom. Reg No. SC 70429

Signed for, and on behalf of Exova (UK) Ltd.

Prepared by:

Lectie tona

F Leckie Logistics Manager

Approved by:

C McGinty Inorganics Head of Section



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Test Certificate

Client:	BAM Ritchies
	Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618 - Soils
Date Tested:	13/10/11
Date Reported:	26 October, 2011
Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11/2443/C/C1 File No: 11/2443/C Client Ref: RIT 136713

			Clien	t sam	ple ref: ple ref: matrix:	C127886 TP01 1.00m S	C127887 TP02 0.50m S	C127888 TP03 0.50mj O	C127891 TP07 0.50m S	C127893 TP08 0.50m S
Determinand Metals (Leachate)	Method	Units	ISO17025	MCERTS	гор					
			.,							
Arsenic leachable	AN47e	µg/l	Y	N	0.25	NR	2.02	NR	NR	NR
Boron leachable	AN47c	µg/l	Y	N	1	NR	90	NR	NR	NR
Cadmium leachable	AN47a	µg/l	Y	N	0.05	NR	< 0.05	NR	NR	NR
Chromium leachable	AN47a	µg/l	Y	N	0.05	NR	0.47	NR	NR	NR
Copper leachable	AN47a	µg/l	Y	N	0.05	NR	1.03	NR	NR	NR
Lead leachable	AN47a	µg/l	Y	Ν	0.05	NR	0.09	NR	NR	NR
Nickel leachable	AN47b	µg/l	Y	Ν	0.1	NR	0.37	NR	NR	NR
Selenium leachable	AN47c	µg/l	Y	Ν	1	NR	<1.00	NR	NR	NR
Vanadium leachable	AN47a	µg/l	Y	Ν	0.05	NR	4.68	NR	NR	NR
Zinc leachable	AN47g	µg/l	Y	Ν	0.5	NR	<0.5	NR	NR	NR
Mercury leachable	Subcontract*	µg/l	N	Ν	0.015	NR	0.046	NR	NR	NR
Metals (soil)										
Arsenic	AN8b	mg/kg	Y	Y	2	4.0	4.7	4.7	11.8	6.5
Boron (water soluble)	AN03	mg/kg	Y	Ν	0.1	1.9	1.7	4.2	1.0	1.1
Cadmium	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium (total)	AN8b	mg/kg	Y	Y	2	6.4	7.5	12.0	20.5	22.1
Copper	AN8b	mg/kg	Y	Y	2	11.1	11.1	33.7	48.5	156.7
Lead	AN8b	mg/kg	Y	Y	2	34.9	12.9	43.4	122.7	148.0
Mercury	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	AN8b	mg/kg	Y	Y	2	6.8	6.1	9.8	26.2	24.0
Selenium	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	AN8b	mg/kg	Y	Y	2	30.9	30.1	57.6	144.0	182.3
Sample Prep(C)										
EMR	EMR	%	N	N/A	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
% Stones	Stones	%	N	N/A	0.1	29.2	13.7	57.1	15.5	27.1
Moisture Content @ <30°C	AN1	%	Y	N/A	0.1	11.5	12.8	8.7	15.0	13.0
Sample Description	MCERTS ver3.	N/A	N	N/A	N/A	1a	1a	7a	6a	6a
Misc										
pH	AN5a	N/A	Y	Y	N/A	9.0	9.0	9.1	9.0	8.1
Ammoniacal Nitrogen (s)	HACH9c	mg/kg	N	Ν	1	<1	<1	<1	2	<1
Cyanide (free) M	AN45i	mg/kg	N	Ν	1	<1	<1	<1	<1	<1
Phenols (screen) M	AN45d	mg/kg	N	Ν	1	<1	<1	<1	<1	<1
Fraction of Organic Carbon (FOC)	AN48	%	Ν	N/A	0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (VI)	AN7	mg/kg	N	N	1	<1.0	<1.0	<1.0	<1.0	<1.0
Asbestos	ASB001	%	Y	N/A	0.001	ND	ND	ND	ND	ND
Ammoniacal Nitrogen leachable	HACH9b	mg/l-N	Y	N/A	0.2	NR	<0.2	NR	NR	NR
Cyanide (free) leachable	Subcontract*	mg/l	N	N/A	0.01	NR	<0.01	NR	NR	NR
Phenols (screen) leachable	AN45c	mg/l	Y	N/A	0.03	NR	<0.03	NR	NR	NR
Chromium (VI) leachable	HACH 4	mg/l	Ν	Ν	0.01	NR	<0.01	NR	NR	NR

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Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11	/2443/C/C1
File No: 11	/2443/C
Client Ref: RI	T 136713

			Lab sample ref: Client sample ref: Sample matrix:		C127886 TP01 1.00m S	C127887 TP02 0.50m S	C127888 TP03 0.50mj O	C127891 TP07 0.50m S	C127893 TP08 0.50m S	
Determinand	Method	Units	ISO17025	MCERTS	LOD					
BTEX leachable			.,		-		-			
Benzene leachable	AN15	µg/l	Y	N	5	NR	<5	NR	NR	NR
Toluene leachable	AN15	µg/l	Y	N	5	NR	<5	NR	NR	NR
Ethylbenzene leachable	AN15	µg/l	Y	N	5	NR	<5	NR	NR	NR
m,p-Xylene leachable	AN15	µg/l	Y	Ν	5	NR	<5	NR	NR	NR
o-Xylene leachable	AN15	µg/l	Y	Ν	5	NR	<5	NR	NR	NR
PAH (USEPA16) PAH (total) _M	001/504						4.0	1.0	45.4	10.0
	GCM501	mg/kg	Y	Y	1	<1	1.9	1.6	15.4	19.2
Naphthalene (PAH) M	GCM501	mg/kg	Y	Y	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene M	GCM501a	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene M	GCM501	mg/kg	Y	Y	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Fluorene M	GCM501	mg/kg	Y	Y	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Phenanthrene M	GCM501	mg/kg	Y	Y	0.1	0.2	0.2	<0.1	0.8	1.5
Anthracene M	GCM501	mg/kg	Y	Y	0.1	<0.1	<0.1	<0.1	0.4	0.7
Fluoranthene M	GCM501	mg/kg	Y	Y	0.1	0.2	0.5	0.2	2.1	3.4
Pyrene M	GCM501	mg/kg	Y	Y	0.1	0.2	0.3	0.2	2.2	3.1
Benz(a)anthracene M	GCM501	mg/kg	Y	Y	0.1	0.1	0.2	0.1	1.3	1.5
Chrysene M	GCM501	mg/kg	Y	Y	0.1	0.2	0.2	0.2	1.5	1.6
Benzo(b)fluoranthene M	GCM501	mg/kg	Y	Y	0.1	<0.1	0.1	0.1	1.3	1.5
Benzo(k)fluoranthene M	GCM501	mg/kg	Y	Y	0.1	<0.1	0.1	0.2	1.5	1.6
Benzo(a)pyrene M	GCM501	mg/kg	Y	Y	0.1	0.1	0.2	0.2	1.9	1.8
Indeno(1,2,3-cd)pyrene M	GCM501a	mg/kg	Y	N	0.1	<0.1	<0.1	0.1	0.9	0.9
Dibenz(a,h)anthracene M	GCM501	mg/kg	Y	Y	0.1	<0.1	<0.1	<0.1	0.5	0.5
Benzo(ghi)perylene M	GCM501	mg/kg	Y	Y	0.1	<0.1	<0.1	0.1	1.2	1.1
PAH(USEPA16) leachable										
Naphthalene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.05	NR	NR	NR
Acenaphthylene leachable	GCM502	µg/l	Y	N	0.02	NR	0.07	NR	NR	NR
Acenaphthene leachable	GCM502	µg/l	Y	N	0.02	NR	0.09	NR	NR	NR
Fluorene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.08	NR	NR	NR
Phenanthrene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.41	NR	NR	NR
Anthracene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.09	NR	NR	NR
Fluoranthene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.64	NR	NR	NR
Pyrene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.61	NR	NR	NR
Benzo(a)anthracene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.29	NR	NR	NR
Chrysene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.33	NR	NR	NR
Benzo(b)fluoranthene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.29	NR	NR	NR
Benzo(k)fluoranthene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.25	NR	NR	NR
Benzo(a)pyrene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.33	NR	NR	NR
Indeno(1,2,3-cd)pyrene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.19	NR	NR	NR
Dibenzo(a,h)anthracene leachable	GCM502	µg/l	Y	N	0.02	NR	0.06	NR	NR	NR
Benzo(ghi)perylene leachable	GCM502	µg/l	Y	Ν	0.02	NR	0.25	NR	NR	NR
PCB Congeners PCB 28 M	COMP		N	м	4	.1	.1	.4	.4	.4
PCB 28 M PCB 52 M	GCMS	µg/kg	N	N	1	<1	<1	<1	<1	<1
PCB 52 M PCB 101 M	GCMS	µg/kg	N	N	1	<1	<1	<1	<1	<1
PCB 101 M PCB 118 M	GCMS	µg/kg	N	N	1	<1	<1	<1	<1	<1
PCB 118 M PCB 153 M	GCMS	µg/kg	N N	N N	1	<1	<1	<1	<1	<1
PCB 133 M PCB 138 M	GCMS GCMS	µg/kg	N N	N	1 1	<1	<1	<1 <1	<1	<1 <1
PCB 138 M PCB 180 M	GCMS	µg/kg	N N	N	1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1
. 35 100 M	GOIVIO	µg/kg	IN	(N		~1	~1	~1	~1	~1

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File No: 11	/2443/C
Client Ref: RI	T 136713

			Lab sample ref: Client sample ref: Sample matrix:		C127886 TP01 1.00m S	C127887 TP02 0.50m S	C127888 TP03 0.50mj O	C127891 TP07 0.50m S	C127893 TP08 0.50m S	
Determinand	Method	Units	ISO17025	MCERTS	LOD					
PCB Congeners leachable										
PCB 28 leachable M	GCMS	µg/l	N	N	0.1	NR	<0.1	NR	NR	NR
PCB 52 leachable M	GCMS	µg/l	N	N	0.1	NR	<0.1	NR	NR	NR
PCB 101 leachable M	GCMS	µg/l	N	N	0.1	NR	<0.1	NR	NR	NR
PCB 118 leachable M	GCMS	µg/l	N	N	0.1	NR	<0.1	NR	NR	NR
PCB 153 leachable M	GCMS	µg/l	N	N	0.1	NR	<0.1	NR	NR	NR
PCB 138 leachable M	GCMS	µg/l	N	N	0.1	NR	<0.1	NR	NR	NR
PCB 180 leachable M	GCMS	µg/l	Ν	Ν	0.1	NR	<0.1	NR	NR	NR
TPH Banded(Ali/Aro)										
>C7-C8 Aromatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
>C6-C8 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
C5-C6 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
C5-C7 Aromatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
>C8-C10 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10	<10
>C8-C10 Aromatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10	<10
>C10-C12 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10	<10
>C10-C12 Aromatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10	<10
>C12-C16 Aliphatic M	AN34A	mg/kg	Ν	Ν	10	<10	<10	<10	<10	<10
>C12-C16 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C16-C21 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C16-C21 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C21-C36 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	25
>C21-C36 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	12	54
TPH Banded(Ali/Aro) leachable										
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C7-C8 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
C5-C6 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
C5-C7 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	<0.01	NR	NR	NR
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	NR	<0.01	NR	NR	NR

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Client Ref: RIT 136713

			Lab sample ref: Client sample ref: Sample matrix:		C127886 TP01 1.00m S	C127887 TP02 0.50m S	C127888 TP03 0.50mj O	C127891 TP07 0.50m S	C127893 TP08 0.50m S	
Determinand	Method	Units	ISO17025	MCERTS	ГОР					
SVOC										
Phenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroethyl)ether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,3-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Chlorophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroisopropyl)ether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-nitrosodi-n-propylamine M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroethoxy)methane M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-Trichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	0.2	0.2	0.7
4-Chloro-3-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5/2,4,6-Trichlorophenol M	AN42a	mg/kg	N	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-chloronaphthalene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Dimethyl phthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-dinitrotoluene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	0.4	0.6	1.7
2,4-dinitrotoluene M	AN42a	mg/kg	N	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitrophenol M	AN42b	mg/kg	N	Ν	2	<2	<2	<2	<2	<2
Fluorene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	0.4	0.2	0.9
Diethylphthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-chlorophenyl-phenylether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-nitrosodiphenylamine M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Bromophenyl-phenyl ether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol M	AN42c	mg/kg	Ν	Ν	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.8	0.7	2.1	3.1	6.9
Anthracene (SVOC)	AN42	mg/kg	Y	Ν	0.1	0.3	0.3	0.8	1.4	3.4
Di-n-butylphthalate M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	1.0	0.8	2.6	7.3	18.0
Pyrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.9	0.7	2.3	6.8	18.6
Chrysene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.6	0.3	1.8	4.2	8.5
Bis(2-ethylhexyl) phthalate M	AN42a	mg/kg	N	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Di-n-octyl phthalate M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	0.5	0.3	0.3	3.6	12.4
Indeno(1,2,3-cd)pyrene (SVOC) M	AN42a	mg/kg	N	N	0.1	0.1	0.1	0.4	1.8	6.7
1,2 Benzanthracene M	AN42a	mg/kg	N	N	0.1	0.3	0.3	1.0	4.2	9.3
1,2:5,6 - Dibenzanthracene (SVOC) (w)	AN42-1	mg/kg	N	N	0.1	<0.1	<0.1	0.1	0.5	1.9
2,3,4,6-Tetrachlorophenol M	AN42-1 AN42a	mg/kg	N	N	0.1	<0.1	<0.1 <0.1	<0.1	<0.5	<0.1
2,6-Dichlorophenol M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Azobenzene M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)fluoranthere (SVOC) M	AN42 AN42	mg/kg	Y	N	0.1	0.6	0.5	0.8	5.8	17.8
Benzo(g,h,i)perylene (SVOC) M	AN42 AN42a	mg/kg	N	N	0.1	<0.0	<0.1	0.5	2.2	7.9
Butyl benzyl phthalate M	AN42a AN42a	mg/kg	N	N	0.1	<0.1	<0.1	1.0	<0.1	<0.1
Hexachloro-1,3-butadiene M	AN42a AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorocyclopentadiene M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
sector of the sector of M	/ ··· • • • • •	gmg			0.1		-0.1	-0.1	-0.1	

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Client:	BAM Ritchies
	Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618 - Soils
Date Tested:	13/10/11
Date Reported:	26 October, 2011
Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11/2443/C/C1
File No: 11/2443/C
Client Ref: RIT 136713

			Lab sample ref: Client sample ref: Sample matrix:		C127886 TP01 1.00m S	C127887 TP02 0.50m S	C127888 TP03 0.50mj O	C127891 TP07 0.50m S	C127893 TP08 0.50m S	
Determinand	Method	Units	ISO17025	MCERTS	LOD					
VOC										
Vinyl chloride M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Bromomethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Trichlorofluoromethane M 1,1-Dichloroethane M	AN15a	µg/kg	Y Y	N	10	<10	<10	<10	<10	<10
2,2-Dichloropropane M	AN15a AN15a	µg/kg	Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
Bromochloromethane M	AN15a AN15a	µg/kg µg/kg	Y	N	10	<10	<10	<10	<10	<10
	AN15a AN15a	μg/kg μg/kg	Y	N	10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane M	AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10	<10
Carbon tetrachloride M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
1,1-Dichloropropene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
Benzene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
1,2-Dichloroethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Trichloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2-Dichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Dibromomethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Bromodichloromethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Toluene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Tetrachloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,3-Dichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2-Dibromoethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Chlorobenzene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Ethylbenzene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
m,p-xylene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
o-Xylene M	AN15a	µg/kg	Y Y	N	10	<10	<10	<10	<10	<10
Styrene M Bromoform M	AN15a AN15a	µg/kg µg/kg	r Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
iso-Propylbenzene M	AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10	<10
Bromobenzene M	AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10	<10
1,2,3-Trichloropropane M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
n-Propylbenzene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
2-Chlorotoluene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,3,5-Trimethylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
4-Chlorotoluene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
tert-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2,4-Trimethylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
sec-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
n-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2-Dibromo-3-chloro-propane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene (VOC) M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Hexachlorobutadiene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,2,3-Trichlorobenzene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,1,2,2 -Tetrachloroethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,1-Dichloroethylene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
4-isopropyltoluene M Chlorodibromomethane M	AN15a AN15a	µg/kg	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
Cis - 1,2 -dichloroethylene M	AN15a AN15a	µg/kg µg/kg	ř Y	N	10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
Naphthalene (VOC) M	AN15a AN15a	µg/kg µg/kg	r Y	N	10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
trans-1,2-Dichloroethylene M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
·										

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Test Certificate

Client:	BAM Ritchies
	Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618 - Soils
Date Tested:	13/10/11
Date Reported:	26 October, 2011
Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11/2443/C/C1 File No: 11/2443/C Client Ref: RIT 136713

			Lab sample ref: Client sample ref: Sample matrix:		C127895 TP09 0.50m S	C127897 TP10 0.50m S	C127899 TP11 0.50m S	C127901 TP12 0.50m S	C127903 TP13 0.50m S	
Determinand Metals (Leachate)	Method	Units	ISO17025	MCERTS	гор					
Arsenic leachable	AN47e		Y	NI	0.05	NR	NR	NR	ND	16.56
Boron leachable	AN47c	µg/l	r Y	N N	0.25 1	NR	NR	NR	NR NR	46
Cadmium leachable	AN47c AN47a	μg/l μg/l	r Y	N	0.05	NR	NR	NR	NR	40 <0.05
Chromium leachable	AN47a AN47a	μg/i μg/i	Y	N	0.05	NR	NR	NR	NR	1.79
	AN47a AN47a		Y	N	0.05	NR	NR	NR	NR	5.39
Copper leachable Lead leachable	AN47a AN47a	µg/l	r Y	N	0.05	NR	NR	NR	NR	2.79
Nickel leachable	AN47a AN47b	µg/l	Y	N	0.05	NR	NR	NR	NR	2.79
Selenium leachable	AN47b AN47c	µg/l	r Y	N	1	NR	NR	NR	NR	<1.00
Vanadium leachable	AN47c AN47a	µg/l	Y	N	0.05	NR	NR	NR	NR	36.73
Zinc leachable	AN47a AN47g	μg/l μg/l	Y	N	0.05	NR	NR	NR	NR	5.2
Mercury leachable	Subcontract*	μg/i μg/i	N	N	0.015	NR	NR	NR	NR	4.69
Metals (soil)	Subcontract	µg/i	IN	IN	0.015	INK	INIX	INIT	INIX	4.09
Arsenic	AN8b	mg/kg	Y	Y	2	6.7	5.7	6.4	5.8	3.9
Boron (water soluble)	AN03	mg/kg	Ý	N	0.1	1.9	0.8	1.2	0.9	1.5
Cadmium	AN8a	mg/kg	Ý	N	1	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium (total)	AN8b	mg/kg	Ý	Y	2	26.9	31.3	22.4	25.8	20.4
Copper	AN8b	mg/kg	Ŷ	Ŷ	2	30.2	54.3	56.3	49.0	27.1
Lead	AN8b	mg/kg	Ý	Ý	2	246.2	150.9	103.1	77.9	35.7
Mercury	AN8a	mg/kg	Ý	N	1	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	AN8b	mg/kg	Ý	Y	2	26.9	27.2	34.7	28.9	20.8
Selenium	AN8a	mg/kg	Ý	N	1	<1.0	<1.0	<1.0	<1.0	<1.0
Zinc	AN8b	mg/kg	Ŷ	Y	2	166.4	139.9	278.7	121.9	59.2
Sample Prep(C)	7.1100	mana			-	100.1	100.0	210.1	12110	00.2
EMR	EMR	%	N	N/A	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
% Stones	Stones	%	N	N/A	0.1	18.9	28.5	32.1	19.3	50.2
Moisture Content @ <30°C	AN1	%	Y	N/A	0.1	14.4	14.2	15.6	13.1	10.2
Sample Description	MCERTS ver3.	N/A	N	N/A	N/A	6a	6a	6a	6a	6a
Misc										
ρH	AN5a	N/A	Y	Y	N/A	8.2	9.1	8.3	8.6	9.0
Ammoniacal Nitrogen (s)	HACH9c	mg/kg	N	Ν	1	<1	2	2	1	2
Cyanide (free) M	AN45i	mg/kg	N	Ν	1	<1	<1	<1	<1	<1
Phenols (screen) M	AN45d	mg/kg	N	Ν	1	<1	<1	<1	<1	<1
Fraction of Organic Carbon (FOC)	AN48	%	N	N/A	0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (VI)	AN7	mg/kg	Ν	Ν	1	<1.0	<1.0	<1.0	<1.0	<1.0
Asbestos	ASB001	%	Y	N/A	0.001	ND	ND	ND	ND	ND
Ammoniacal Nitrogen leachable	HACH9b	mg/l-N	Y	N/A	0.2	NR	NR	NR	NR	<0.2
Cyanide (free) leachable	Subcontract*	mg/l	Ν	N/A	0.01	NR	NR	NR	NR	<0.01
Phenols (screen) leachable	AN45c	mg/l	Y	N/A	0.03	NR	NR	NR	NR	< 0.03
Chromium (VI) leachable	HACH 4	mg/l	Ν	Ν	0.01	NR	NR	NR	NR	<0.01

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Client:	BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618 - Soils
Date Tested:	13/10/11
Date Reported:	26 October, 2011
Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11/2443/C/C1
File No: 11/2443/C
Client Ref: RIT 136713

		Client	sam	ple ref: ple ref: matrix:	C127895 TP09 0.50m S	C127897 TP10 0.50m S	C127899 TP11 0.50m S	C127901 TP12 0.50m S	C127903 TP13 0.50m S
Determinand Method Uni BTEX leachable	its	ISO17025	MCERTS	гор					
	- /1	Y	Ν	5	NR	NR	NR	NR	<5
		r Y	N	5	NR	NR	NR	NR	<5 <5
Toluene leachable AN15 µg Ethylbenzene leachable AN15 µg		r Y	N	5 5	NR	NR	NR	NR	<5 <5
		Y	N	5	NR	NR	NR	NR	<5
		Y		5					
o-Xylene leachable AN15 µg	<u></u> /1	T	Ν	5	NR	NR	NR	NR	<5
PAH (USEPA16) PAH (total) M GCM501 mg/	/ka	Y	Y	1	77.1	61.0	<1	39.9	2.6
Naphthalene (PAH) M GCM501 mg/	•	Ý	Ý	0.1	0.5	0.3	<0.1	0.2	<0.1
Acenaphthylene M GCM501a mg/	•	Ý	N	0.1	0.4	<0.1	<0.1	<0.1	<0.1
Acenaphthene M GCM501 mg/	•	Y	Y	0.1	0.4	0.7	<0.1	0.6	<0.1
Fluorene M GCM501 mg/	•	Y	Y	0.1	0.7	0.6	<0.1	0.5	<0.1
Phenanthrene M GCM501 mg/	-	Ý	Ŷ	0.1	7.4	4.4	<0.1	3.3	0.2
Anthracene M GCM501 mg/	-	Y	Y	0.1	2.3	4.4	<0.1	1.2	<0.2
Fluoranthene M GCM501 mg/	-	Y	Y	0.1	2.3	9.8	<0.1	6.0	<0.1
Pyrene M GCM501 mg/	-	Y	Y	0.1	13.1	9.8	<0.1	5.8	0.4
Benz(a)anthracene M GCM501 mg/	-	Y	Y	0.1	6.4	4.8	<0.1	3.0	0.4
Chrysene M GCM501 mg/	-	Ý	Ŷ	0.1	6.4	4.9	<0.1	3.2	0.2
Benzo(b)fluoranthene M GCM501 mg/	-	Ý	Ŷ	0.1	5.3	5.4	<0.1	3.2	0.2
Benzo(k)fluoranthene M GCM501 mg/	•	Y	Y	0.1	5.4	4.7	<0.1	3.2	0.2
Benzo(a)pyrene M GCM501 mg/	-	Ý	Ý	0.1	6.1	6.5	<0.1	4.1	0.2
Indeno(1,2,3-cd)pyrene M GCM501a mg/	-	Ý	N	0.1	2.8	3.4	<0.1	2.4	0.2
Dibenz(a,h)anthracene M GCM501 mg/	-	Ý	Y	0.1	1.1	1.4	<0.1	0.8	<0.1
Benzo(ghi)perylene M GCM501 mg/	•	Ý	Ŷ	0.1	2.8	3.7	<0.1	2.8	0.2
PAH(USEPA16) leachable	g	·	•	0.1	2.0	0.1	-0.1	2.0	0.2
Naphthalene leachable GCM502 µg	1/1	Y	N	0.02	NR	NR	NR	NR	0.03
Acenaphthylene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	0.18
Acenaphthene leachable GCM502 µg	·	Ŷ	N	0.02	NR	NR	NR	NR	0.06
Fluorene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	0.07
Phenanthrene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	0.99
Anthracene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	0.30
Fluoranthene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	3.19
Pyrene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	3.30
Benzo(a)anthracene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	2.03
Chrysene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	1.89
Benzo(b)fluoranthene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	2.03
Benzo(k)fluoranthene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	2.02
Benzo(a)pyrene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	2.08
Indeno(1,2,3-cd)pyrene leachable GCM502 µg		Ŷ	N	0.02	NR	NR	NR	NR	0.93
Dibenzo(a,h)anthracene leachable GCM502 µg	·	Ŷ	N	0.02	NR	NR	NR	NR	0.34
Benzo(ghi)perylene leachable GCM502 µg	·	Y	Ν	0.02	NR	NR	NR	NR	1.64
PCB Congeners	•								
PCB 28 M GCMS µg/	′kg	Ν	Ν	1	<1	1.2	<1	<1	<1
PCB 52 M GCMS µg/		Ν	Ν	1	<1	<1	<1	<1	<1
PCB 101 M GCMS µg/	′kg	Ν	Ν	1	<1	2.7	<1	3.0	<1
PCB 118 M GCMS µg/	′kg	Ν	Ν	1	<1	<1	<1	15.0	<1
PCB 153 M GCMS µg/	′kg	Ν	Ν	1	<1	<1	<1	2.4	<1
PCB 138 M GCMS µg/	′kg	Ν	Ν	1	<1	<1	<1	<1	<1
PCB 180 _M GCMS µg/	′kg	Ν	Ν	1	<1	<1	<1	<1	<1

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	BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618 - Soils
Date Tested:	13/10/11
Date Reported:	26 October, 2011
Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11/2443/C/C1
File No: 11/2443/C
Client Ref: RIT 136713

			Client sam		Lab sample ref: Client sample ref: Sample matrix:		C127897 TP10 0.50m S	C127899 TP11 0.50m S	C127901 TP12 0.50m S	C127903 TP13 0.50m S
Determinand	Method	Units	ISO17025	MCERTS	LOD					
PCB Congeners leachable										
PCB 28 leachable M	GCMS	µg/l	N	N	0.1	NR	NR	NR	NR	<0.1
PCB 52 leachable M	GCMS	µg/l	N	N	0.1	NR	NR	NR	NR	<0.1
PCB 101 leachable M PCB 118 leachable M	GCMS	µg/l	N	N	0.1	NR	NR	NR	NR	<0.1
PCB 173 leachable M	GCMS	µg/l	N	N	0.1	NR	NR	NR NR	NR	<0.1
	GCMS	µg/l	N	N	0.1	NR	NR		NR	<0.1
PCB 138 leachable M	GCMS	µg/l	N	N	0.1	NR	NR	NR	NR	<0.1
PCB 180 leachable M	GCMS	µg/l	Ν	Ν	0.1	NR	NR	NR	NR	<0.1
TPH Banded(Ali/Aro)										
>C7-C8 Aromatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
>C6-C8 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
C5-C6 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
C5-C7 Aromatic M	AN15a-1	mg/kg	N	N	1	<1.00	<1.00	<1.00	<1.00	<1.00
>C8-C10 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10	<10
>C8-C10 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C10-C12 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C10-C12 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C12-C16 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C12-C16 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C16-C21 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C16-C21 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10	<10
>C21-C36 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	72	<10	17	<10
>C21-C36 Aromatic M	AN34A	mg/kg	N	Ν	10	32	115	37	<10	<10
TPH Banded(Ali/Aro) leachable										
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C7-C8 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
C5-C6 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
C5-C7 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	NR	NR	NR	NR	<0.01
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	NR	NR	NR	NR	<0.01
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	NR	NR	NR	NR	<0.01

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	BAM Ritchies
	Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618 - Soils
Date Tested:	13/10/11
Date Reported:	26 October, 2011
Date Received:	11 October, 2011
Sample Type:	Solid, Leachate

Certificate No: 11/2443/C/C1
File No: 11/2443/C
Client Ref: RIT 136713

			Client	sam	ole ref: ole ref: natrix:	C127895 TP09 0.50m S	C127897 TP10 0.50m S	C127899 TP11 0.50m S	C127901 TP12 0.50m S	C127903 TP13 0.50m S
Determinand	Method	Units	ISO17025	MCERTS	LOD					
SVOC										
Phenol M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroethyl)ether M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,3-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Chlorophenol M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene (SVOC) M 1,2-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroisopropyl)ether M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Methylphenol M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-nitrosodi-n-propylamine M	AN42 AN42	mg/kg	Y Y	N N	0.1 0.1	<0.1	<0.1	<0.1 <0.1	<0.1 <0.1	<0.1
Hexachloroethane M	AN42 AN42	mg/kg	Y	N	0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1 <0.1
4-Methylphenol	AN42 AN42	mg/kg mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrophenol M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroethoxy)methane M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-Trichlorobenzene (SVOC) M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	0.7	3.6	<0.1	2.4	<0.1
4-Chloro-3-Methylphenol M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5/2,4,6-Trichlorophenol M	AN42a	mg/kg	N	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-chloronaphthalene M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	1.8	0.6	<0.1	<0.1	<0.1
Dimethyl phthalate M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-dinitrotoluene M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	1.6	2.9	0.4	3.8	<0.1
2,4-dinitrotoluene M	AN42a	mg/kg	N	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Nitrophenol M	AN42b	mg/kg	N	Ν	2	<2	<2	<2.0	<2	<2
Fluorene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	2.3	2.8	0.2	2.2	<0.1
Diethylphthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-chlorophenyl-phenylether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-nitrosodiphenylamine M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4-Bromophenyl-phenyl ether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol M	AN42c	mg/kg	N	Ν	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	17.1	15.7	1.5	15.9	1.9
Anthracene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	4.7	4.9	0.8	4.9	0.7
Di-n-butylphthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	27.2	18.6	3.6	21.1	3.0
Pyrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	24.9	17.1	2.8	21.6	2.6
Chrysene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	19.9	6.9	1.8	10.0	1.9
Bis(2-ethylhexyl) phthalate M	AN42a	mg/kg	N	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Di-n-octyl phthalate M	AN42a	mg/kg	N	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	16.8	4.1	1.4	14.7	1.3
Indeno(1,2,3-cd)pyrene (SVOC) M	AN42a	mg/kg	N	Ν	0.1	7.0	2.1	0.6	6.6	0.8
1,2 Benzanthracene M	AN42a	mg/kg	N	Ν	0.1	19.2	7.6	1.8	13.3	1.8
1,2:5,6 - Dibenzanthracene (SVOC) (w)	AN42-1	mg/kg	N	N	0.1	1.6	0.9	0.2	1.0	0.2
2,3,4,6-Tetrachlorophenol M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-Dichlorophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Azobenzene M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)fluoranthere (SVOC) M	AN42	mg/kg	Y	N	0.1	25.6	9.0	2.5	20.4	2.8
Benzo(g,h,i)perylene (SVOC) M	AN42a	mg/kg	N	N	0.1	7.7	<0.1	0.7	7.9	1.0
Butyl benzyl phthalate M	AN42a	mg/kg	N	N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hexachloro-1,3-butadiene M	AN42	mg/kg	Y Y	N N	0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <0.1
Hexachlorocyclopentadiene M	AN42	mg/kg	T	IN	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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Test Certificate

BAM Ritchies
Glasgow Road, Kilsyth, Glasgow, G65 9BL
Gourock Pierhead - Job No 4618 - Soils
13/10/11
26 October, 2011
11 October, 2011
Solid, Leachate

Certificate No: 11/2443/C/C1	
File No: 11/2443/C	
Client Ref: RIT 136713	

			Client	sam	ole ref: ole ref: natrix:	C127895 TP09 0.50m S	C127897 TP10 0.50m S	C127899 TP11 0.50m S	C127901 TP12 0.50m S	C127903 TP13 0.50m S
Determinand	Method	Units	ISO17025	MCERTS	Гор					
VOC										
Vinyl chloride M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Bromomethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Trichlorofluoromethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,1-Dichloroethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
2,2-Dichloropropane M Bromochloromethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
	AN15a	µg/kg	Y Y	N N	10 10	<10	<10	<10	<10	<10 <10
1,1,1-Trichloroethane M	AN15a	µg/kg	Y Y			<10	<10	<10	<10	<10 <10
Carbon tetrachloride M	AN15a AN15a	µg/kg	r Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
1,1-Dichloropropene M		µg/kg	Y	N	10	<10	<10	<10	<10	<10
Benzene M	AN15a AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,2-Dichloroethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Trichloroethylene M	AN15a AN15a	µg/kg µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,2-Dichloropropane M	AN15a AN15a	μg/kg μg/kg	Y	N	10	<10	<10	<10	<10	<10
Dibromomethane M	AN15a	μg/kg μg/kg	Y	N	10	<10	<10	<10	<10	<10
Bromodichloromethane M	AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10	<10
cis-1,3-Dichloropropene M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
Toluene M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
trans-1,3-Dichloropropene M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane M	AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10	<10
Tetrachloroethylene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
1,3-Dichloropropane M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
1,2-Dibromoethane M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
Chlorobenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Ethylbenzene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10	<10
m,p-xylene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
o-Xylene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Styrene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Bromoform M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
iso-Propylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
Bromobenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2,3-Trichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
n-Propylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
2-Chlorotoluene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,3,5-Trimethylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
4-Chlorotoluene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
tert-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2,4-Trimethylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
sec-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
n-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2-Dibromo-3-chloro-propane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10	<10
1,2,4-Trichlorobenzene (VOC) M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Hexachlorobutadiene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,2,3-Trichlorobenzene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,1,2,2 -Tetrachloroethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
1,1-Dichloroethylene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
4-isopropyltoluene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Cia 1.2 diablaraathylana	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
Cis - 1,2 -dichloroethylene M Naphthalene (VOC) M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10	<10
trans-1,2-Dichloroethylene M	AN15a AN15a	µg/kg	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10
trans- 1,2-Dichloroethylene M	ANTOA	µg/kg	T	IN	10	<10	<10	<10	<10	<10

Notes
1. All analyses performed on the sample dried at <30°C, except analyses suffixed with 'M'.
2. Analyses suffixed 'M' were performed on the sample as received and corrected for % moisture at <30°C' where applicable.
3. All results are expressed as dry weight.
4. MCERTS accreditation applicable to Sample Matrix 'S' only.
5. Natural stones (pebbles, gravels etc.) which do not pass a 2mm sieve are excluded from dried analyses.
6. Tests marked ' indicate subcontracted analyses.
7. ND denotes None Detected.
8. The laboratory has tested the material/items supplied by the client as sampled in accordance with the client's own requirements.
9. ^Sample Description key: 1. - Sand, 2. Learn, 3. Clay, 4. Sand/loar mix, 5. Sand/clay mix, 6. Clay/loar mix, 7. Other.
suffixed with A. - Stones, B. - Construction tuble, C. V visible Hydrocarbons
10. Leachate preparation is not included in our UKAS accreditation.
11. Dates of testing for all parameters are available upon request.

Signed for, and on behalf of Exova (UK) Ltd.

Prepared by: w Leckie Tiona

F Leckie Logistics Manager



C McGinty Inorganics Head of Section



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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 17/10/11 Date Reported: 26 October, 2011 Date Received: 12 October, 2011 Sample Type: Solid, Leachate



		Clier	Lab sample ref: Client sample ref: E Sample matrix:		C127984 BH04 2.00m Leachate	C127986 BH05 1.00m Leachate	C127988 BH06 3.00m Leachate
Determinand Metals (Leachate)	Method	Units	ISO17025	ГОД			
Arsenic leachable	AN47e	µg/l	Y	0.25	0.93	1.73	2.75
Boron leachable	AN47c	μg/l	Ý	1	254	219	228
Cadmium leachable	AN47a	μg/l	Ý	0.05	<0.05	<0.05	<0.05
Chromium leachable	AN47a	μg/l	Ý	0.05	1.07	1.43	2.53
Copper leachable	AN47a	μg/l	Ý	0.05	2.01	7.17	7.03
Lead leachable	AN47a	μg/l	Ý	0.05	0.22	1.49	2.49
Nickel leachable	AN47b	µg/l	Ŷ	0.00	0.67	0.95	0.81
Selenium leachable	AN47c	µg/l	Ŷ	1	<1.00	<1.00	1.07
Zinc leachable	AN47g	µg/l	Ŷ	0.5	22.8	24.5	16.2
Mercury leachable	Subcontract*	µg/l	N	0.015	0.093	0.145	0.181
Misc	Casconnact	P.97		0.0.0	0.000	01110	0.101
Ammoniacal Nitrogen leachable	HACH9b	mg/I-N	Y	0.2	<0.2	<0.2	<0.2
Cyanide (free) leachable	Subcontract*	mg/l	N	0.01	< 0.01	<0.01	<0.01
Phenols (screen) leachable	AN45c	mg/l	Y	0.03	< 0.03	< 0.03	< 0.03
Chromium (VI) leachable	HACH 4	mg/l	Ν	0.01	<0.01	<0.01	<0.01
BTEX leachable		5					
Benzene leachable	AN15	µg/l	Y	5	<5	<5	<5
Toluene leachable	AN15	µg/l	Y	5	<5	<5	<5
Ethylbenzene leachable	AN15	µg/l	Y	5	<5	<5	<5
m,p-Xylene leachable	AN15	μg/l	Y	5	<5	<5	<5
o-Xylene leachable	AN15	μg/l	Y	5	<5	<5	<5
PAH(USEPA16) leachable							
Naphthalene leachable	GCM502	µg/l	Y	0.02	0.03	0.13	0.38
Acenaphthylene leachable	GCM502	µg/l	Y	0.02	0.05	0.35	0.34
Acenaphthene leachable	GCM502	µg/l	Y	0.02	<0.02	0.21	1.51
Fluorene leachable	GCM502	µg/l	Y	0.02	0.03	0.14	0.76
Phenanthrene leachable	GCM502	µg/l	Y	0.02	0.20	1.62	7.76
Anthracene leachable	GCM502	µg/l	Y	0.02	0.06	0.43	2.63
Fluoranthene leachable	GCM502	µg/l	Y	0.02	0.64	1.94	29.2
Pyrene leachable	GCM502	µg/l	Y	0.02	0.62	2.21	29.4
Benzo(a)anthracene leachable	GCM502	µg/l	Y	0.02	0.21	4.24	16.9
Chrysene leachable	GCM502	µg/l	Y	0.02	0.22	1.89	9.88
Benzo(b)fluoranthene leachable	GCM502	µg/l	Y	0.02	0.17	3.57	11.7
Benzo(k)fluoranthene leachable	GCM502	µg/l	Y	0.02	0.18	3.20	11.5
Benzo(a)pyrene leachable	GCM502	µg/l	Y	0.02	0.20	2.56	13.2
Indeno(1,2,3-cd)pyrene leachable	GCM502	µg/l	Y	0.02	0.13	1.18	0.95
Dibenzo(a,h)anthracene leachable	GCM502	µg/l	Y	0.02	0.08	0.87	0.59
Benzo(ghi)perylene leachable	GCM502	µg/l	Y	0.02	0.18	1.49	0.58

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 17/10/11 Date Reported: 26 October, 2011 Date Received: 12 October, 2011 Sample Type: Solid, Leachate

Certificate No: 11/2461/C/C1 File No: 11/2461/C Client Ref: RIT 136713

			Client sample ref: E Sample matrix:		BH04 2.00m Leachate	BH05 1.00m Leachate	BH06 3.00m Leachate
Determinand	Method	Units	ISO17025	ГОР			
PCB Congeners leachable							
PCB 28 leachable _M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 52 leachable _M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 101 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 118 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 153 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 138 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
PCB 180 leachable M	GCMS	µg/l	Ν	0.1	<0.1	<0.1	<0.1
TPH Banded(Ali/Aro) leachable							
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C7-C8 Aromatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
C5-C6 Aliphatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
C5-C7 Aromatic Leachable	AN15-1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	0.12	0.04
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	Ν	0.01	<0.01	<0.01	<0.01

Lab sample ref:

C127984

C127986

C127988

Notes

1. Tests marked * indicate subcontracted analyses.

2. The laboratory has tested the material/items supplied by the client as sampled in accordance with the client's own requirements.

3. Results reported for metals are 'dissolved' unless otherwise stated.

4. Dates of testing for all parameters are available upon request.

5. Leachate preparation is not included in our UKAS accreditation.

6. All analyses performed on the sample dried at <30°C, except analyses suffixed with 'M'.

7. Analyses suffixed 'M' were performed on the sample as received and corrected for '% moisture at <30°C' where applicable.

Signed for, and on behalf of Exova (UK) Ltd.

Prepared by:

the MCElery

J McEleny Laboratory Manager

Approved by:

C McGinty Inorganics Head of Section



The contents of this document are governed by the terms and conditions overleaf.

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 17/10/11 Date Reported: 26 October, 2011 Date Received: 12 October, 2011 Sample Type: Solid, Leachate

Determinand Metals (soil) Method Units Sp 49 P Q 10.1 0.9 1.4 Arsenic AN8b mg/kg Y N 0.1 0.9 1.4 1.3 Cardmium AN8a mg/kg Y N 0.1 0.9 1.4 1.3 Cardmium AN8a mg/kg Y N 1 et.0 et.0 1.0 Chromium (total) AN8b mg/kg Y Y 2 287 57.6 1400 Lead AN8b mg/kg Y Y 2 287 1.1 3.14 Mercury AN8a mg/kg Y N 1 et.0 1.4 1.0 1.0 1.0 2.0 2.2 240 Selenium AN8b mg/kg Y N 1 2.0 3.1 7.5 5.5 Sotnees Stones Stones N N N N 1 2.1				Clien	Lab sample ref: Client sample ref: Sample matrix:		C127983 BH04 0.50m S	C127985 BH05 0.50m S	C127987 BH06 0.50m S
Metals (soil) $I = I = I$ ArsenicANBbmg/kgYY210.99.114.0ArsenicAN03mg/kgYN0.10.91.41.3CadmiumAN8amg/kgYN1<	Determinand	Method	Units	SO17025	ACERTS	D,			
Arsenic AN8b mg/kg Y Y 2 10.9 9.1 14.0 Boron (water soluble) AN03 mg/kg Y N 0.1 0.9 1.4 1.3 Cadmium AN8a mg/kg Y N 0.1 0.10 0.10 0.10 Chomium (total) AN8b mg/kg Y Y 2 28.7 20.7 24.3 Copper AN8b mg/kg Y Y 2 287 111 314 Mercury AN8a mg/kg Y N 1 -1.0 -1.0 1.0 1.0 1.1 7.10 4.2 286 34.2 24.6 34.2 24.6 34.2 24.6 34.2 24.6 34.2 24.6 34.2 24.6 34.2 24.6 34.2 25.6 5.0 5.0 5.0 5.0 1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 5.5 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8	Metals (soil)			-	-	-			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	· · ·	AN8b	ma/ka	Y	Y	2	10.9	9.1	14.0
Cadmium ANBa mg/kg Y N 1 <1.0 <1.0 <1.0 <1.0 Chromium (total) ANBb mg/kg Y Y 2 28.7 20.7 24.3 Copper ANBb mg/kg Y Y 2 297 57.6 140 Lead ANBb mg/kg Y Y 2 287 111 314 Mercury ANBa mg/kg Y N 1 <1.0	Boron (water soluble)	AN03		Ŷ	N	0.1	0.9	1.4	1.3
	()	AN8a		Y	Ν	1	<1.0	<1.0	<1.0
$\begin{array}{c cccc} Copper & AN8b & mg/kg & Y & Y & 2 & 297 & 57.6 & 140 \\ Lead & AN8b & mg/kg & Y & Y & 2 & 297 & 57.6 & 140 \\ Mercury & AN8a & mg/kg & Y & Y & 2 & 237 & 111 & 314 \\ Mercury & AN8a & mg/kg & Y & N & 1 & <1.0 & <1.0 & 1.7 \\ Nickel & AN8b & mg/kg & Y & Y & 2 & 33.4 & 24.6 & 34.2 \\ Selenium & AN8a & mg/kg & Y & Y & 2 & 33.4 & 24.6 & 34.2 \\ Selenium & AN8a & mg/kg & Y & N & 1 & <1.0 & <1.0 & <1.0 \\ Zinc & AN8b & mg/kg & Y & N & 1 & <1.0 & <1.0 & <1.0 \\ Zinc & AN8b & mg/kg & Y & N & 1 & <1.0 & <1.0 & <1.0 \\ Sample Prep(C) \\ \hline EMR & EMR & % & N & N/A & 0.1 & <0.1 & <0.1 & <0.1 & <0.1 & <0.1 \\ \% Stones & Stones & \% & N & N/A & 0.1 & 17.1 & 15.2 & 13.9 \\ Sample Description & MCERTS ver3. & N/A & N & N/A & 1.4 & 2a & 5a & 5a \\ \hline Misc & & & & & & & & \\ pH & AN5a & N/A & Y & Y & N/A & 8.6 & 8.6 & 8.6 \\ Ammoniacal Nitrogen (s) & HACH9c & mg/kg & N & N & 1 & <1 & <1 & <1 \\ Fraction of Organic Carbon (FOC) & AN48 & \% & N & N & 0.1 & <0.10 & <0.10 & <0.10 \\ Chromium (V1) & AN7 & mg/kg & N & N & 1 & <1 & <1 & <1 \\ Fraction of Organic Carbon (FOC) & AN48 & \% & N & N & 0.1 & <0.10 & <0.10 & <0.10 \\ Chromium (V1) & AN7 & mg/kg & N & N & 1 & <1.0 & <1.0 & <1.0 \\ Abestos & ASBO1 & \% & V & N.1 & 0.1 & <0.1 & <0.1 & <0.1 \\ Acenaphthene M & GCM501 & mg/kg & Y & Y & 0.1 & 0.2 & 0.2 & 0.2 \\ Acenaphthene M & GCM501 & mg/kg & Y & Y & 0.1 & 0.6 & 0.5 & 0.3 \\ Fluorene M & GCM501 & mg/kg & Y & Y & 0.1 & 0.6 & 0.5 & 0.3 \\ Fluorene M & GCM501 & mg/kg & Y & Y & 0.1 & 0.6 & 0.5 & 0.3 \\ Fluorene M & GCM501 & mg/kg & Y & Y & 0.1 & 0.4 & .7 & .5.5 & 3.4 \\ Pyrene M & GCM501 & mg/kg & Y & Y & 0.1 & 0.1 & .2.1 & 2.8 & 1.6 \\ Benzo(h)fluoranthene M & GCM501 & mg/kg & Y & Y & 0.1 & 1.2 & 1.1 & 0.9 \\ Fluoranthene M & GCM501 & mg/kg & Y & Y & 0.1 & 1.4 & 2.1 & 1.4 \\ Benzo(k)fluoranthene M & GCM501 & mg/kg & Y & Y & 0.1 & 1.4 & 2.1 & 1.4 \\ Benzo(k)fluoranthene M & GCM501 & mg/kg & Y & Y & 0.1 & 1.4 & 2.1 & 1.4 \\ Benzo(k)fluoranthene M & GCM501 & mg/kg & Y & Y & 0.1 & 1.4 & 2.1 & 1.4 \\ Benzo(k)fluoranthene M & GCM501 & mg/kg & Y & Y & 0.1 & 1.4 & 2.$	Chromium (total)	AN8b		Y	Y	2	28.7	20.7	24.3
LeadAN8bmg/kgYY2287111314MercuryAN8amg/kgYN1<1.0	. ,	AN8b			Ŷ		297	57.6	140
$\begin{array}{l c c c c c c c c c c c c c c c c c c c$				Ŷ	Ŷ				
Nickel AN8b mg/kg Y Y 2 33.4 24.6 34.2 Selenium AN8a mg/kg Y N 1									
Selenium AN8a mg/kg Y N 1 <1.0 <1.0 <1.0 Zinc AN8b mg/kg Y Y 2 236 122 240 Sample Prep(C) EMR EMR N N/A 0.1 <0.1									
Zinc A N8b mg/kg Y Y 2 236 122 240 Sample Prep(C) EMR K N N/A 0.1 <0.1						-			• ••=
Sample Prep(C) EMR % N N/A 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>									
EMREMR%NN/A0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1<0.1 <t< td=""><td></td><td>74100</td><td>mgmg</td><td>·</td><td>·</td><td>-</td><td>200</td><td></td><td>210</td></t<>		74100	mgmg	·	·	-	200		210
% Stones Stones % N N/A 0.1 33.9 31.7 35.5 Moisture Content @ <30°C		EMR	%	N	N/A	0.1	<0.1	<0.1	<0.1
$\begin{array}{l c c c c c c c c c c c c c c c c c c c$									
Sample Description MCE RTS ver3. N/A N N/A N/A N/A 2a 5a Misc pH AN5a N/A Y Y N/A 8.6 8.6 8.6 Ammoniacal Nitrogen (s) HACH9c mg/kg N N 1 2 <1									
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pH AN5a N/A Y Y N/A 8.6 8.6 Ammonical Nitrogen (s) HACH9c mg/kg N N 1 2 <1							24	ou	ou
Ammoniacal Nitrogen (s) HACH9c mg/kg N N 1 2 < < <<		AN5a	N/A	Y	Y	N/A	8.6	86	86
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $		AN45d		N	Ν	1	<1	<1	<1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		AN48		N	N	0.1	<0.10	<0.10	
Asbestos ASB001 % Y N/A 0.001 ND ND ND PAH (total) M GCM501 mg/kg Y Y 0.1 25.2 30.9 20.9 Naphthalene (PAH) M GCM501 mg/kg Y Y 0.1 0.2 0.2 0.2 Acenaphthylene M GCM501 mg/kg Y N 0.1 <0.1									
PAH (USEPA16) mg/kg Y 1 25.2 30.9 20.9 PAH (Utal) M GCM501 mg/kg Y Y 0.1 0.2 0.2 0.2 Acenaphthene (PAH) M GCM501 mg/kg Y N 0.1 -0.1 -0.1 -0.1 Acenaphthene M GCM501 mg/kg Y N 0.1 -0.1 -0.1 -0.1 Acenaphthene M GCM501 mg/kg Y N 0.1 -0.6 0.5 0.3 Fluorene M GCM501 mg/kg Y Y 0.1 0.6 0.5 0.3 Fluorene M GCM501 mg/kg Y Y 0.1 1.2 1.1 0.9 Fluoranthene M GCM501 mg/kg Y Y 0.1 1.2 1.1 0.9 Fluoranthene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Chrysene M GCM501 mg/kg Y									
PAH (total) M GCM501 mg/kg Y Y 1 25.2 30.9 20.9 Napithalene (PAH) M GCM501 mg/kg Y Y 0.1 0.2 0.2 0.2 Acenaphtyhene M GCM501 mg/kg Y Y 0.1 0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1		102001	70	·		0.001			110
Naphthalene (PAH) M GCM501 mg/kg Y Y 0.1 0.2 0.2 0.2 Acenaphthylene M GCM501a mg/kg Y N 0.1 <0.1		GCM501	ma/ka	Y	Y	1	25.2	30.9	20.9
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	()	GCM501		Y	Y	0.1	0.2	0.2	0.2
Acenaphthene M GCM501 mg/kg Y Y 0.1 0.6 0.5 0.3 Fluorene M GCM501 mg/kg Y Y 0.1 0.6 0.5 0.3 Fluorene M GCM501 mg/kg Y Y 0.1 0.6 0.5 0.3 Phenanthrene M GCM501 mg/kg Y Y 0.1 3.3 2.9 2.7 Anthracene M GCM501 mg/kg Y Y 0.1 1.2 1.1 0.9 Fluoranthene M GCM501 mg/kg Y Y 0.1 3.6 4.8 3.3 Benz(a)anthracene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Chrysene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(k)fluoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(k)fluoranthene M GCM5	Acenaphthylene M	GCM501a		Y	N	0.1	<0.1	<0.1	<0.1
Fluorene M GCM501 mg/kg Y Y 0.1 0.6 0.5 0.3 Phenanthrene M GCM501 mg/kg Y Y 0.1 0.6 0.5 0.3 Anthracene M GCM501 mg/kg Y Y 0.1 1.2 1.1 0.9 Fluoranthene M GCM501 mg/kg Y Y 0.1 4.7 5.5 3.4 Pyrene M GCM501 mg/kg Y Y 0.1 4.7 5.5 3.4 Benz(a)lanthracene M GCM501 mg/kg Y Y 0.1 3.6 4.8 3.3 Benz(a)litoranthene M GCM501 mg/kg Y Y 0.1 2.1 2.8 1.6 Benzo(b)litoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(a)pyrene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(a)pyrene M <t< td=""><td>Acenaphthene M</td><td>GCM501</td><td></td><td>Y</td><td>Y</td><td>0.1</td><td>0.6</td><td>0.5</td><td>0.3</td></t<>	Acenaphthene M	GCM501		Y	Y	0.1	0.6	0.5	0.3
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Anthracene M GCM501 mg/kg Y Y 0.1 1.2 1.1 0.9 Fluoranthene M GCM501 mg/kg Y Y 0.1 1.7 5.5 3.4 Pyrene M GCM501 mg/kg Y Y 0.1 3.6 4.8 3.3 Benz(a)anthracene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Chrysne M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(b)fluoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.4 Benzo(k)fluoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(k)fluoranthene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(1.2.3-Cdpyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthrac									
Fluoranthene M GCM501 mg/kg Y Y 0.1 4.7 5.5 3.4 Pyrene M GCM501 mg/kg Y Y 0.1 3.6 4.8 3.3 Benz(a)anthracene M GCM501 mg/kg Y Y 0.1 3.6 4.8 3.3 Benz(a)anthracene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Chrysene M GCM501 mg/kg Y Y 0.1 2.1 2.8 1.6 Benzo(b)fluoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(a)pyrene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(a)pyrene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(12.3-cdpyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene		GCM501		Y	Y	0.1	1.2	1.1	0.9
Pyrene M GCM501 mg/kg Y Y 0.1 3.6 4.8 3.3 Benz(a)anthracene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Chrysene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.8 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(12.3-col/pyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dib					Ŷ				
Benz(a)anthracene M GCM501 mg/kg Y Y 0.1 2.3 2.7 1.6 Chrysene M GCM501 mg/kg Y Y 0.1 2.1 2.8 1.6 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(b)Itoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(ck)fluoranthene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(1.22cd)pyrene M GCM501 mg/kg Y N 0.1 1.7 2.7 1.6 Indeno(1.22cd)pyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene M GCM501 mg/kg Y Y 0.1 0.5 0.6 0.5 <td></td> <td>GCM501</td> <td></td> <td>Y</td> <td>Y</td> <td>0.1</td> <td>3.6</td> <td>4.8</td> <td>3.3</td>		GCM501		Y	Y	0.1	3.6	4.8	3.3
Chrysene M GCM501 mg/kg Y Y 0.1 2.1 2.8 1.6 Benzo(b)fluoranthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(b)fluoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(a)pyrene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(12,3-cdpyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene M GCM501 mg/kg Y N 0.1 0.5 0.6 0.5	,								
Benzo(b)/Ilovanthene M GCM501 mg/kg Y Y 0.1 1.3 2.1 1.3 Benzo(k)/Ilovanthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(k)/Ilovanthene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(12,3-cd)pyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene M GCM501 mg/kg Y V 0.1 0.5 0.6 0.5	.,								
Benzo(k)fluoranthene M GCM501 mg/kg Y Y 0.1 1.4 2.1 1.4 Benzo(a)pyrene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(1,2,3-cd)pyrene M GCM501 mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene M GCM501 mg/kg Y Y 0.1 0.5 0.6 0.5	,								
Benzo(a)pyrene M GCM501 mg/kg Y Y 0.1 1.7 2.7 1.6 Indeno(1,2,3-cd)pyrene M GCM501a mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene M GCM501 mg/kg Y Y 0.1 0.5 0.6 0.5									
Indeno(1,2,3-cd)pyrene м GCM501a mg/kg Y N 0.1 0.8 1.2 0.8 Dibenz(a,h)anthracene м GCM501 mg/kg Y Y 0.1 0.5 0.6 0.5	()								
Dibenz(a,h)anthracene M GCM501 mg/kg Y Y 0.1 0.5 0.6 0.5									
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Benzo(dbi)pervlene GCM501 mg/kg V V 0.1 1.0 1.2 0.0	Benzo(ghi)perylene M	GCM501	mg/kg	Ý	Y	0.1	1.0	1.2	0.9

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 17/10/11 Date Reported: 26 October, 2011 Date Received: 12 October, 2011 Sample Type: Solid, Leachate

			Client	Lab sample ref: Client sample ref: Sample matrix:		C127983 BH04 0.50m S	C127985 BH05 0.50m S	C127987 BH06 0.50m S
Determinand	Method	Units	ISO17025	MCERTS	LOD			
PCB Congeners			-	-	-			
PCB 28 M	GCMS	µg/kg	Ν	Ν	1	2.1	<1	<1
PCB 52 M	GCMS	µg/kg	N	Ν	1	<1	2.4	<1
PCB 101 M	GCMS	µg/kg	N	Ν	1	<1	<1	2.0
PCB 118 M	GCMS	µg/kg	N	Ν	1	<1	<1	<1
PCB 153 M	GCMS	µg/kg	N	Ν	1	<1	<1	2.6
PCB 138 M	GCMS	µg/kg	N	Ν	1	<1	<1	<1
PCB 180 M	GCMS	µg/kg	N	Ν	1	<1	<1	<1
TPH Banded(Ali/Aro)								
>C7-C8 Aromatic M	AN15a-1	mg/kg	N	Ν	1	<1.00	<1.00	<1.00
>C6-C8 Aliphatic M	AN15a-1	mg/kg	N	Ν	1	<1.00	<1.00	<1.00
C5-C6 Aliphatic M	AN15a-1	mg/kg	N	Ν	1	<1.00	<1.00	<1.00
C5-C7 Aromatic M	AN15a-1	mg/kg	N	Ν	1	<1.00	<1.00	<1.00
>C8-C10 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C8-C10 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C10-C12 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C10-C12 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C12-C16 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C12-C16 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C16-C21 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C16-C21 Aromatic M	AN34A	mg/kg	N	Ν	10	22	<10	<10
>C21-C36 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	15
>C21-C36 Aromatic M	AN34A	mg/kg	N	Ν	10	112	18	<10

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 17/10/11 Date Reported: 26 October, 2011 Date Received: 12 October, 2011 Sample Type: Solid, Leachate

Certificate No:	11/2461/C/C1
File No:	11/2461/C
Client Ref:	RIT 136713

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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
2-Chlorophenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
1,2-Dichlorobenzene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.	
Bis(2-chloroisopropyl)ether M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0	
2-Methylphenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	
N-nitrosodi-n-propylamine M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	
Hexachloroethane M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
Nitrober M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
2-Nitrophenol AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
2,4-Dimethylphenol AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Bis(2-chloroethoxy)methane M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
2,4-Dichlorophenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
1,2,4-Trichlorobenzene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Naphthalene (SVOC) M AN42 mg/kg Y N 0.1 0.7 2.6 0.9	
4-Chloro-3-Methylphenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
2,4,5/2,4,6-Trichlorophenol M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	
2-chloronaphthalene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Acenaphthylene (SVOC) M AN42 mg/kg Y N 0.1 0.2 0.5 0.2	
Dimethyl phthalate M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	
2,6-dinitrotoluene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Acenaphthene (SVOC) M AN42 mg/kg Y N 0.1 1.9 3.1 1.6	
2,4-dinitrotoluene M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	
4-Nitrophenol M AN42b mg/kg N N 2 <2 <2 <2.0	
Fluorene (SVOC) M AN42 mg/kg Y N 0.1 1.4 2.7 1.3	
Diethylphthalate M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
4-chlorophenyl-phenylether M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
N-nitrosodiphenylamine M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
4-Bromophenyl-phenyl ether M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
Hexachlorobenzene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	
Phenanthrene (SVOC) M AN42 mg/kg Y N 0.1 9.3 13.4 7.8 Anthracene (SVOC) M AN42 mg/kg Y N 0.1 3.0 4.2 3.0	
Di-n-butylphthalate M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1 <0.1	
Fluoranthene (SVOC) M AN42 mg/kg Y N 0.1 19.3 21.6 10.9	
Pyrene (SVOC) M AN42 mg/kg Y N 0.1 15.2 16.6 10.1	
Chrysene (SVOC) M AN42 mg/kg Y N 0.1 8.0 9.1 5.8	
Bis(2-ethylhexyl) phthalate M AN42a mg/kg N N 0.1 0.7 0.7 <0.1	
Di-n-octyl phthalate M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	
Benzo(a)pyrene (SVOC) A AN42 mg/kg Y N 0.1 8.7 9.2 4.6	
Indeno(1,2,3-cd)pyrene (SVOC) A AN42a mg/kg N N 0.1 3.4 3.1 1.7	
1,2 Benzanthracene M AN42a mg/kg N N 0.1 8.7 10.1 5.7	
1,2:5,6 - Dibenzanthracene (SVOC) AN42-1 mg/kg N N 0.1 1.0 0.9 0.5	
2,3,4,6-Tetrachlorophenol M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	
2,6-Dichlorophenol _M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Azobenzene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Benzo(b/k)fluoranthere (SVOC) M AN42 mg/kg Y N 0.1 13.8 11.8 7.4	
Benzo(g,h,i)perylene (SVOC) M AN42a mg/kg N N 0.1 3.9 3.8 2.6	
Butyl benzyl phthalate M AN42a mg/kg N N 0.1 <0.1 3.2 <0.1	
Hexachloro-1,3-butadiene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
Hexachlorocyclopentadiene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	

voc

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 17/10/1 Date Reported: 26 October, 2011 Date Received: 12 October, 2011 Sample Type: Solid, Leach

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Certificate No: 11/2461/C/C1 File No: 11/2461/C

Client Ref: RIT 136713

 Lab sample ref:
 C127983
 C127985
 C127987

 Client sample ref:
 BH04 0.50m
 BH05 0.50m
 BH06 0.50m

 Sample matrix:
 S
 S
 S
 7025 MCERTS IS01 9 Method Units Determinand Vinyl chloride M AN15a µg/kg Y Ν 10 <10 <10 <10 Y Y Bromomethane M AN15a µq/kq N N N N N 10 <10 <10 <10 Trichlorofluoromethane M AN15a µg/kg 10 10 <10 <10 <10 1,1-Dichloroethane M AN15a <10 <10 <10 µg/kg 2,2-Dichloropropane M Bromochloromethane M AN15a µg/kg 10 10 <10 <10 <10 AN15a <10 <10 <10 µg/kg Chloroform M 1,1,1-Trichloroethane M AN15a µg/kg Y Y N N 10 10 <10 <10 <10 <10 AN15a <10 <10 µg/kg Carbon tetrachloride M AN15a µg/kg N N 10 10 <10 <10 <10 1,1-Dichloropropene M AN15a <10 <10 µg/kg <10 Benzene M 1,2-Dichloroethane M µg/kg µg/kg AN15a Y Ν 10 10 <10 <10 <10 AN15a N <10 <10 <10 Trichloroethylene M AN15a µg/kg N N 10 10 <10 <10 <10 1,2-Dichloropropane M AN15a <10 <10 <10 µg/kg Dibromomethane M AN15a µg/kg Ν 10 <10 <10 <10 Bromodichloromethane M AN15a N 10 µg/kg <10 <10 <10 Ν cis-1,3-Dichloropropene M AN15a µg/kg 10 <10 <10 <10 AN15a Toluene M trans-1,3-Dichloropropene M µg/kg N N 10 10 <10 <10 <10 AN15a ua/ka <10 <10 <10 1,1,2-Trichloroethane M AN15a Y Y N N 10 <10 <10 <10 µg/kg Tetrachloroethylene M AN15a µg/kg 10 <10 <10 <10 1,3-Dichloropropane M AN15a µg/kg Ν 10 <10 <10 <10 N N N 1,2-Dibromoethane M AN15a µg/kg Y Y 10 <10 <10 <10 Chlorobenzene M AN15a µg/kg 10 <10 <10 <10 Ethylbenzene M AN15a 10 ua/ka <10 <10 <10 m,p-xylene M AN15a µg/kg 10 <10 <10 <10 N N N Y Y o-Xylene M AN15a 10 µq/kq <10 <10 <10 Styrene M AN15a µg/kg 10 10 <10 <10 <10 Bromoform N AN15a <10 <10 <10 µg/kg iso-Propylbenzene M <10 <10 AN15a µg/kg N N 10 10 <10 <10 AN15a <10 Bromobenzene M <10 µg/kg µg/kg µg/kg <10 <10 1,2,3-Trichloropropane AN15a Y N N 10 10 <10 <10 AN15a <10 <10 n-Propylbenzene M 2-Chlorotoluene M AN15a µg/kg N N 10 10 <10 <10 <10 Υ 1,3,5-Trimethylbenzene M AN15a <10 <10 <10 µg/kg 4-Chlorotoluene M AN15a µg/kg µg/kg Y Ν 10 <10 <10 <10 tert-Butylbenzene M N N 10 AN15a <10 <10 <10 1.2.4-Trimethylbenzene AN15a µg/kg 10 <10 <10 <10 sec-Butylbenzene M AN15a N 10 µg/kg <10 <10 <10 1.3-Dichlorobenzene (VOC) Ν AN15a µg/kg Y 10 <10 <10 <10 1,4-Dichlorobenzene (VOC) M AN15a N 10 <10 µg/kg <10 <10 Ν n-Butylbenzene M AN15a µg/kg 10 <10 <10 <10 1,2-Dichlorobenzene (VOC) M AN15a µg/kg Ν 10 <10 <10 <10 1.2-Dibromo-3-chloro-propane AN15a µg/kg Y Y N N 10 10 <10 <10 <10 1,2,4-Trichlorobenzene (VOC) AN15a µg/kg <10 <10 <10 Hexachlorobutadiene M AN15a ua/ka N N 10 <10 <10 <10 1,2,3-Trichlorobenzene M AN15a 10 <10 <10 <10 µg/kg 1,1,2,2 -Tetrachloroethane N N N AN15a µg/kg Y Y 10 <10 <10 <10 1,1-Dichloroethylene M 4-isopropyltoluene M AN15a µg/kg 10 <10 <10 <10 AN15a 10 µg/kg <10 <10 <10 Chlorodibromomethane AN15a µg/kg Y N N 10 <10 <10 <10 Cis - 1,2 -dichloroethylene M Y Y AN15a µq/kq 10 <10 <10 <10

Nextes 1. All analyses performed on the sample dried at <30°C, except analyses suffixed with 1M'. 2. Analyses suffixed 1M were performed on the sample as received and corrected for % moist. 3. All results are expressed as dby weight. 4. MCERTS accreditation applicable to Sample Matrix 'S' only. 5. Natural stones (pebbles, gravels etc.) which do not pass a 2mm sieve are excluded from dried analyses

6. Tests marked * indicate subcontracted analyses.

7. ND denotes None Detected

Naphthalene (VOC) M

trans-1,2-Dichloroethylene M

AN15a

AN15a

µg/kg

µg/kg

N N 10

10

re at <30°C' where appli

<10

<10

Approved by:

1

C McGinty

Inorganics Head of Section

<10

<10

<10

<10

ND denotes None Detected.
 ND elondes None Detected.
 The laboratory has tested the material/items supplied by the client as sampled in accordance with the client's own require 9. ^Sample Description key: 1. - Sand, 2. Loam, 3. Clay, 4. Sandiloam mix, 5. Sandiclay mix, 6. Clayloam mix, 7. Other. suffaced with: A - Stones, B - Construction rubble, C - Visible hydrocarbons
 Leachate preparation is not included in our UKAS accreditation.
 Dates of testing for all parameters are available upon request.

Signed for, and on behalf of Exova (UK) Ltd.

Prepared by:

Julie MCElery

J McEleny Laboratory Manager







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Certificate No: 11/3111/C/C1 File No: 11/3111/C Client Ref: RIT136713

Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

Determinand Metal (Lachate) Method Units Separation Separation Separation Asenic leachable AN47e µg/l Y N 0.55 7.86 NR 6.41 NR 4.97 Boron leachable AN47e µg/l Y N 1 106 NR 158 NR 6.05 Corpor leachable AN47a µg/l Y N 0.05 4.055 NR 6.005 NR 6.055 NR 6.068 NR 6.17 NR 4.85 Moted AN47c µg/l Y N 1 c1.00 NR c1.00 NR c1.00		5	Sample matri	Clien Da	t sam ate sa	mpled:	C131357 WS14 0.20m 14/12/11 O	C131358 WS15 1.00m 14/12/11 S	C131359 WS17 0.50m 14/12/11 S	C131360 WS18 1.00m 14/12/11 O	C131361 WS19 1.00m 14/12/11 S
Arsenic leachable AN47c µg1 Y N 0.25 7.86 NR 6.41 NR 4.97 Boron leachable AN47c µg1 Y N 1 106 NR 4.05 Cadmum leachable AN47a µg1 Y N 0.05 1.17 NR 6.05 NR <0.05 Corpore leachable AN47a µg1 Y N 0.05 1.03 NR 7.04 NR 5.75 Lead leachable AN47a µg1 Y N 0.05 1.03 NR 0.069 NR 0.117 Nickel leachable AN47b µg1 Y N 0.1 1.00 NR <1.00 NR <1.00 NR <1.00 NR <1.00 NR <1.00 NR <1.00 NR <1.0 NR <1.0 <td< th=""><th></th><th>Method</th><th>Units</th><th>ISO17025</th><th>MCERTS</th><th>гор</th><th></th><th></th><th></th><th></th><th></th></td<>		Method	Units	ISO17025	MCERTS	гор					
Boron leachable AN47c µg/l Y N 1 106 NR 158 NR 87 Cadmium leachable AN47a µg/l Y N 0.05 ~0.05 NR ~0.069 NR ~0.17 NR 0.061 NR ~0.061 ~0.7 NR ~0.61 NR ~0.61 NR ~0.7 Cadmium facture soluble) AN03 mg/kg Y N 1 ~10 NR ~0.6 NR ~0.7 Cadmium facadmiks <		41147		v		0.05	7.00	ND		ND	4.07
Cadmium leachable AN47a µg/l Y N 0.05 <0.05 NR <0.05 NR <0.05 Chromium leachable AN47a µg/l Y N 0.05 1.17 NR 0.07 NR 1.35 Copper leachable AN47a µg/l Y N 0.05 1.03 NR 5.06 NR 5.45 Mercury leachable AN47a µg/l Y N 0.05 1.03 NR 0.065 NR 0.41 Nickel leachable AN47b µg/l Y N 0.15 0.138 NR 0.065 NR 0.47 Sciencianchable AN47c µg/l Y N 0.1 1.05 NR 0.66 NR 0.10 Zinc leachable AN47a µg/l Y N 1 <1.0			10								
Chromium leachable AN47a µg/l Y N 0.05 1.17 NR 0.87 NR 1.35 Copper leachable AN47a µg/l Y N 0.05 4.15 NR 7.04 NR 5.75 Lead leachable Subcontract* µg/l N N 0.05 0.133 NR 0.069 NR 0.117 Nickel leachable AN47b µg/l N N 0.015 0.138 NR 0.069 NR 0.117 Nickel leachable AN47c µg/l Y N 1. 1.05 NR 4.00 NR <1.00											
Copper leachable AN47a µg/l Y N 0.05 4.15 NR 7.04 NR 5.75 Lead leachable AN47a µg/l Y N 0.05 1.03 NR 0.069 NR 0.117 Nickel leachable Subcontract µg/l Y N 0.05 0.138 NR 0.065 NR 0.117 Nickel leachable AN47b µg/l Y N 0.1 1.05 NR 0.65 NR 0.47 Selenium leachable AN47g µg/l Y N 1 <1.00			10								
Lead leachable AN47a µg/l Y N 0.05 1.03 NR 5.06 NR 5.45 Mercury leachable Subcontract* µg/l N N 0.015 0.133 NR 0.069 NR 0.117 Nickel leachable AN47b µg/l Y N 0.115 0.138 NR 0.069 NR 0.117 Selenium leachable AN47c µg/l Y N 1 <1.00			10								
Mercury leachable Subcontract* μg/l N N 0.015 0.138 NR 0.069 NR 0.117 Nickel leachable AN47b μg/l Y N 0.1 1.05 NR 0.665 NR 0.47 Selenium leachable AN47c μg/l Y N 0.5 39.7 NR 38.8 NR 33.6 Matesia (soil) Arsenic AN80 mg/kg Y N 0.1 0.9 NR 0.6 NR 0.7 Cadmium AN8a mg/kg Y N 0.1 0.9 NR 0.6 NR 0.7 Cadmium AN8a mg/kg Y N 1 <1.0											
Nickel leachable AN47b µg/l Y N 0.1 1.05 NR 0.65 NR 0.47 Selenium leachable AN47c µg/l Y N 1 <1.00											
Selenium leachable AN47c μg/l Y N 1 <1.00 NR <1.01 NR	,		10								
Zinc leachable AN47g µg/l Y N 0.5 39.7 NR 38.8 NR 33.6 Metals (soil) Arsenic AN8b mg/kg Y N 0.1 0.9 NR 6.7 NR 4.8 Boron (water soluble) AN03 mg/kg Y N 0.1 0.9 NR 0.6 NR 0.7 Cadmium AN8a mg/kg Y N 1 <1.0 NR											
Metals (soil) Ansenic AN8b mg/kg Y Y 2 14.4 NR 6.7 NR 4.8 Boron (water soluble) AN03 mg/kg Y N 0.1 0.9 NR 0.6 NR 0.7 Cadmium AN8a mg/kg Y N 1 -1.0 NR <1.0											
Arsenic AN8b mg/kg Y Y 2 14.4 NR 6.7 NR 4.8 Boron (water soluble) AN03 mg/kg Y N 0.1 0.9 NR 0.6 NR 0.7 Cadmium AN8a mg/kg Y N 1 c1.0 NR c1.0 NR c1.0 NR c1.0 Copper Chromium (total) AN8b mg/kg Y Y 2 27.7 NR 38.5 NR 24.6 Copper AN8b mg/kg Y Y 2 29.5 NR 76.1 NR c1.0 Nickel AN8b mg/kg Y N 1 c1.0 NR c1.0 NR c1.0 NR c1.0 NR c1.0 NR c1.0 NR c1.0 State c1.0 c1.1 c1.0 NR c1.0 C.1 c0.1 c0.1 c0.1 c0.1 c0.1 c0.1		AN47g	µg/I	Y	N	0.5	39.7	NR	38.8	NR	33.6
Boron (water soluble) AN03 mg/kg Y N 0.1 0.9 NR 0.6 NR 0.7 Cadmium AN8a mg/kg Y N 1 -1.0 NR 47.3 NR 140.4 Lead AN8b mg/kg Y Y 2 29.5 NR 76.1 NR -29.6 Nickel AN8b mg/kg Y N 1 -1.0 NR 4.2 NR -1.0 NR 4.2 NR -1.0 NR -1.0 NR -1.0 NR -1.0 NR -1.0 NR -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 <td></td> <td></td> <td>_</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td>			_			-					
Cadmium ANS mg/kg Y N 1 1.0 NR 1.0 NR											
Chromium (total) AN8b mg/kg Y Y 2 27.7 NR 38.5 NR 24.6 Copper AN8b mg/kg Y Y 2 91.1 NR 47.3 NR 140.4 Lead AN8b mg/kg Y Y 2 29.5 NR 76.1 NR 296.4 Mercury AN8a mg/kg Y Y 2 29.5 NR 76.1 NR 41.0 Nickel AN8a mg/kg Y Y 2 46.0 NR 42.1 NR 42.0 Sample Prep(C) E N 1 41.0 1 40.1 26.1 23.1 22.7 30.5 21.7 Moisture Content @ <30°C	(0 0								••••
Copper AN8b mg/kg Y Y 2 91.1 NR 47.3 NR 140.4 Lead AN8b mg/kg Y Y 2 29.5 NR 76.1 NR 296.4 Mercury AN8a mg/kg Y Y 2 29.5 NR 76.1 NR 296.4 Mercury AN8a mg/kg Y Y 2 46.0 NR 22.1 NR 23.0 Selenium AN8b mg/kg Y Y 2 167.7 NR 109.6 NR 124.0 Sample Prep(C) EMR % N N/A 0.1 <0.1											
Lead AN8b mg/kg Y Y 2 29.5 NR 76.1 NR 296.4 Mercury AN8a mg/kg Y N 1 <1.0	()										
Mercury AN8a mg/kg Y N 1 <1.0 NR <1.0 Sample frequence NR <1.0 Sample frequence NR <1.0 NR <1.0 NR <1.0 Sample frequence NR <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0 <1.0											
Nickel AN8b mg/kg Y Y 2 46.0 NR 22.1 NR 23.0 Selenium AN8a mg/kg Y N 1 <1.0			0 0								
Selenium AN8a mg/kg Y N 1 <1.0 NR 4.2 NR <1.0 Zinc AN8b mg/kg Y Y Y 2 167.7 NR 109.6 NR 124.0 Sample Prep(C) EMR K N N/A 0.1 <0.1			0 0								
Zinc AN8b mg/kg Y Y 2 167.7 NR 109.6 NR 124.0 Sample Prep(C) EMR M N V/A 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	Nickel		mg/kg				46.0				
Sample Prep(C) EMR % N N/A 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>											
EMR % N N/A 0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <td></td> <td>AN8b</td> <td>mg/kg</td> <td>Y</td> <td>Y</td> <td>2</td> <td>167.7</td> <td>NR</td> <td>109.6</td> <td>NR</td> <td>124.0</td>		AN8b	mg/kg	Y	Y	2	167.7	NR	109.6	NR	124.0
% Stones Stones % N N/A 0.1 26.1 23.1 22.7 30.5 21.7 Moisture Content @ <30°C											
Moisture Content @ <30°C AN1 % Y N/A 0.1 18.3 12.9 13.4 19.0 11.8 Sample Description MCERTS ver3. N/A N N/A N/A 7A 1A 1A 7A 1A pH AN5a Y Y 8.5 9.1 9.3 7.5 10 Ammoniacal Nitrogen (s) HACH9c mg/kg N N 1 2 NR 1 NR 1 Ammoniacal Nitrogen leachable HACH9b mg/k N N/A 0.2 <0.2		EMR		Ν							
Sample Description MCERTS ver3. N/A N N/A N/A 7A 1A 1A 7A 1A pH AN5a Y Y 8.5 9.1 9.3 7.5 10 Ammoniacal Nitrogen (s) HACH9c mg/kg N N 1 2 NR 1 NR 1 Ammoniacal Nitrogen leachable HACH9b mg/k N N 0.2 c0.2 NR 0.12 0.32 0.12 Suphate (water soluble) Hach 15 g/l N N/A 0.1 0.13 0.10 0.12 0.32 0.12 Cyanide (free) Machable Subcontract* mg/kg N N 1 NR NR	% Stones						26.1	23.1	22.7		21.7
pH AN5a Y Y 8.5 9.1 9.3 7.5 10 Ammoniacal Nitrogen (s) HACH9c mg/k N N 1 2 NR 1 NR 1 Ammoniacal Nitrogen (s) HACH9c mg/k N N 2 NR 1 NR 1 Ammoniacal Nitrogen (sachable HACH9b mg/k Y N/A 0.2 c0.2 NR c0.2 NR c0.2 NR c0.2 0.12 0.32 0.12 Cyaride (free) M AN45i mg/kg N N 1 c1 NR c1	Moisture Content @ <30°C			Y	N/A		18.3	12.9	13.4	19.0	11.8
Ammoniacal Nitrogen (s) HACH9c mg/kg N N 1 2 NR 1 NR 1 Ammoniacal Nitrogen leachable HACH9b mg/l-N Y N/A 0.2 <0.2	Sample Description	MCERTS ver3	. N/A	N	N/A	N/A	7A	1A	1A	7A	1A
Ammoniacal Nitrogen leachable HACH9b mg/F.N Y N/A 0.2	рН			Y							
Sulphate (water soluble) Hach 15 g/l N N/A 0.1 0.13 0.10 0.12 0.32 0.12 Cyanide (free) M AN45i mg/kg N N 1 <1	Ammoniacal Nitrogen (s)		0 0								
Cyanide (free) M AN45i mg/kg N N 1 <1 NR <1 <1< NR <1< <10 NR <0.01 NR<	Ammoniacal Nitrogen leachable		0	Y				NR			
Cyanide (free) leachable Subcontract* mg/l N N/A 0.01 NR <0.01 NR <0.03 NR <0.01 NR <t< td=""><td></td><td></td><td>•</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>			•								
Phenols (screen) M AN45d mg/kg N N 1 <1 NR <1 Phenols (screen) leachable AN45c mg/l< Y N/A 0.03 <0.03 NR <0.01 NR <0.01 <td></td>											
Fraction of Organic Carbon (FOC) AN48 % N N/A 0.1 <0.10 NR <0.10 NR <0.10 Chromium (VI) AN7 mg/kg N N 1 <1.0											
Fraction of Organic Carbon (FOC) AN48 % N N/A 0.1 <0.10 NR <0.10 NR <0.10 Chromium (VI) AN7 mg/kg N N 1 <1.0	Phenols (screen) leachable	AN45c	mg/l	Y	N/A	0.03	< 0.03	NR	< 0.03	NR	< 0.03
Chromium (VI) AN7 mg/kg N N 1 <1.0 NR <1.0 NR <1.0 Chromium (VI) HACH 4 mg/l N N 0.01 NR <0.01		AN48	%	Ν	N/A	0.1	<0.10	NR	<0.10	NR	<0.10
Chromium (VI) leachable HACH 4 mg/ N N 0.01 0.01 NR <0.01 NR <0.01		AN7	mg/kg	Ν	Ν	1	<1.0	NR	<1.0	NR	<1.0
Asbestos ASB001 Y N/A 0.001 ND NR ND NR ND	Chromium (VI) leachable	HACH 4	mg/l	Ν	Ν	0.01	0.01	NR	<0.01	NR	<0.01
	Asbestos	ASB001		Y	N/A	0.001	ND	NR	ND	NR	ND

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

		Sample matri	Clien Da	t samj ate sa	ple ref: ple ref: mpled: nage);	C131357 WS14 0.20m 14/12/11 O	C131359 WS17 0.50m 14/12/11 S	C131361 WS19 1.00m 14/12/11 S
			SO17025	NCERTS		-	-	-
Determinand	Method	Units	ISO	MC	LoD			
BTEX leachable		. 0			-	-	-	-
Benzene leachable	AN15	µg/l	Y	N	5	<5	<5	<5
Toluene leachable Ethylbenzene leachable	AN15 AN15	μg/l μg/l	Y Y	N N	5 5	<5 <5	<5 <5	<5 <5
m,p-Xylene leachable	AN15 AN15	μg/I	Y	N	5	<5	<5	<5
o-Xvlene leachable	AN15	μg/I	Ý	N	5	<5	<5	<5
PAH (USEPA16)		-9.			-			
PAH (total) M	GCM501	mg/kg	Y	Y	1	<1	127	33.7
Naphthalene (PAH) M	GCM501	mg/kg	Y	Υ	0.1	<0.1	0.5	<0.1
Acenaphthylene M	GCM501a	mg/kg	Y	Ν	0.1	<0.1	1.5	<0.1
Acenaphthene M	GCM501	mg/kg	Y	Y	0.1	<0.1	0.7	0.3
Fluorene M	GCM501	mg/kg	Y	Y	0.1	<0.1	3.5	0.1
Phenanthrene M	GCM501	mg/kg	Y	Y	0.1	0.1	23.3	3.1
Anthracene M	GCM501	mg/kg	Y	Y	0.1	<0.1	6.8	1.4
Fluoranthene M	GCM501	mg/kg	Y	Y	0.1	<0.1	22.4	5.4
Pyrene M Benz(a)anthracene M	GCM501 GCM501	mg/kg mg/kg	Y Y	Y Y	0.1 0.1	<0.1 <0.1	22.9 10.4	5.6 3.7
Chrysene M	GCM501 GCM501	mg/kg	Y	Y	0.1	<0.1	8.8	3.2
Benzo(b)fluoranthene M	GCM501	mg/kg	Ý	Ý	0.1	<0.1	6.8	2.6
Benzo(k)fluoranthene M	GCM501	mg/kg	Ŷ	Ŷ	0.1	<0.1	5.2	1.7
Benzo(a)pyrene M	GCM501	mg/kg	Ý	Ŷ	0.1	<0.1	7.3	2.6
Indeno(1,2,3-cd)pyrene M	GCM501a	mg/kg	Ŷ	N	0.1	<0.1	3.0	1.1
Dibenz(a,h)anthracene M	GCM501	mg/kg	Ŷ	Y	0.1	<0.1	1.6	0.7
Benzo(ghi)perylene M	GCM501	mg/kg	Y	Y	0.1	<0.1	3.0	2.2
PAH(USEPA16) leachable								
Naphthalene leachable	GCM502	µg/l	Y	Ν	0.02	< 0.02	< 0.02	0.12
Acenaphthylene leachable	GCM502	µg/l	Y	Ν	0.02	<0.02	0.15	0.04
Acenaphthene leachable	GCM502	µg/l	Y	Ν	0.02	<0.02	0.06	0.66
Fluorene leachable	GCM502	µg/l	Y	Ν	0.02	<0.02	0.32	0.22
Phenanthrene leachable	GCM502	µg/l	Y	Ν	0.02	<0.02	1.14	0.61
Anthracene leachable	GCM502	µg/l	Y	Ν	0.02	<0.02	0.73	0.47
Fluoranthene leachable	GCM502	µg/l	Y	Ν	0.02	<0.02	3.69	2.70
Pyrene leachable	GCM502	µg/l	Y	N	0.02	<0.02	3.64	2.34
Benzo(a)anthracene leachable	GCM502	µg/l	Y	N	0.02	<0.02	1.11	0.84
Chrysene leachable	GCM502	µg/l	Y	N	0.02	< 0.02	1.09	0.85
Benzo(b)fluoranthene leachable Benzo(k)fluoranthene leachable	GCM502 GCM502	µg/l	Y Y	N N	0.02 0.02	<0.02 <0.02	0.55 0.51	0.48 0.37
Benzo(k)huoranthene leachable Benzo(a)pyrene leachable	GCM502 GCM502	μg/l μg/l	Y	N	0.02	<0.02	0.51	0.37
Indeno(1,2,3-cd)pyrene leachable	GCM502 GCM502	μg/I	Y	N	0.02	<0.02	0.88	0.47
Dibenzo(a,h)anthracene leachable	GCM502	μg/i μg/i	Ý	N	0.02	<0.02	0.23	0.14
Benzo(ghi)perylene leachable	GCM502	µg/l	Ŷ	N	0.02	0.02	0.50	0.40
PCB Congeners	0011002	19.			0.02	0.02	0.00	0.10
PCB 28 M	GCMS	µg/kg	Ν	Ν	1	<1	<1	<1
PCB 52 M	GCMS	µg/kg	Ν	Ν	1	<1	<1	<1
PCB 101 M	GCMS	µg/kg	Ν	Ν	1	<1	<1	<1
PCB 118 M	GCMS	µg/kg	Ν	Ν	1	<1	<1	<1
PCB 153 M	GCMS	µg/kg	Ν	Ν	1	<1	<1	<1
PCB 138 M	GCMS	µg/kg	Ν	Ν	1	<1	<1	<1
PCB 180 M	GCMS	µg/kg	N	Ν	1	<1	<1	<1
PCB Congeners leachable	GCMS		N	N	1	<1	<1	<1
PCB 28 leachable M PCB 52 leachable M	GCMS	µg/l	N N	N N	1	<1 <1	<1 <1	<1 <1
PCB 52 leachable M PCB 101 leachable M	GCMS	μg/l μg/l	N	N	1	<1 <1	<1 <1	<1 <1
PCB 118 leachable M	GCMS	μg/I	N	N	1	<1	<1	<1
PCB 153 leachable M	GCMS	µg/i µg/i	N	N	1	<1	<1	<1
PCB 138 leachable M	GCMS	μg/i μg/i	N	N	1	<1	<1	<1
PCB 180 leachable M	GCMS	μg/l	N	N	1	<1	<1	<1
		15						

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

Determinand Method Units SI YOC	
Phenol _M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
Bis(2-chloroethyl)ether A AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
1,3-Dichlorobenzene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
2-Chlorophenol A AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
1,4-Dichlorobenzene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
1,2-Dichlorobenzene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
Bis(2-chloroisopropyl)ether M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
2-Methylphenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
N-nitrosodi-n-propylamine M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
Hexachloroethane M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
4-Methylphenol _M AN42 mg/kg Y N 0.1 <0.1 <0.1 0.	1
Nitrobenzene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
2-Nitrophenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
2,4-Dimethylphenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 0.	1
Bis(2-chloroethoxy)methane M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
2,4-Dichlorophenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
1,2,4-Trichlorobenzene (SVOC) $_{M}$ AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
Naphthalene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 0.2 1.	7
4-Chloro-3-Methylphenol _M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
2,4,5/2,4,6-Trichlorophenol M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	.1
2-chloronaphthalene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
Acenaphthylene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
Dimethyl phthalate M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
2,6-dinitrotoluene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
Acenaphthene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 0.2 2.	3
2,4-dinitrotoluene M AN42a mg/kg N N 0.1 <0.1 <0.1 1.	5
4-Nitrophenol M AN42b mg/kg N N 2 <2 <2 <	2
Fluorene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 0.1 1.	6
Diethylphthalate M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
4-chlorophenyl-phenylether M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
N-nitrosodiphenylamine M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
4-Bromophenyl-phenyl ether M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1
Hexachlorobenzene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
Pentachlorophenol M AN42c mg/kg N N 0.5 <0.5 <0.5 <0.5	.5
Phenanthrene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 1.6 16	.1
Anthracene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 0.6 4.	2
Di-n-butylphthalate M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	.1
Fluoranthene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 3.6 21	
Pyrene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 3.6 16	.8
Chrysene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 1.8 8.	0
Bis(2-ethylhexyl) phthalate M AN42a mg/kg N N 0.1 <0.1 0.2 <0	
Di-n-octyl phthalate M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1 <0.1	
Benzo(a)pyrene (SVOC) M AN42 mg/kg Y N 0.1 <0.1 2.3 8.	7
Indeno(1,2,3-cd)pyrene (SVOC) M AN42a mg/kg N N 0.1 <0.1 1.3 5.	
1,2 Benzanthracene M AN42a mg/kg N N 0.1 <0.1 2.1 9.	6
1,2:5,6 - Dibenzanthracene (SVOC) (w) AN42-1 mg/kg N N 0.1 <0.1 0.4 1.	
2,3,4,6-Tetrachlorophenol M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	
2,6-Dichlorophenol M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
Azobenzene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	
Benzo(b/k)fluoranthere (SVOC) M AN42 mg/kg Y N 0.1 <0.1 3.6 14	
Benzo(g,h,i)perylene (SVOC) M AN42a mg/kg N N 0.1 <0.1 2.1 5.	-
Butyl benzyl phthalate M AN42a mg/kg N N 0.1 <0.1 <0.1 <0.1	
Hexachloro-1,3-butadiene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1 <0.1	
Hexachlorocyclopentadiene M AN42 mg/kg Y N 0.1 <0.1 <0.1 <0.1	.1



Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

	Lab sample ref: Client sample ref: V Date sampled: Sample matrix (see notes page):				C131357 WS14 0.20m 14/12/11 O	C131359 WS17 0.50m 14/12/11 S	C131361 WS19 1.00m 14/12/11 S
Determinand Method	Units	ISO17025	MCERTS	LOD			
TPH Banded(Ali/Aro) >C7-C8 Aromatic M AN15a-	l mg/kg	N	N	1	<1.00	<1.00	<1.00
>C6-C8 Aliphatic M AN15a-		N	N	1	<1.00	<1.00	<1.00
C5-C6 Aliphatic M AN15a-		N	N	1	<1.00	<1.00	<1.00
C5-C7 Aromatic M AN15a-	0 0	N	N	1	<1.00	<1.00	<1.00
>C8-C10 Aliphatic M AN34A	mg/kg	N	N	10	<10	<10	<10
>C8-C10 Aromatic M AN34A	0 0	N	N	10	<10	<10	<10
>C10-C12 Aliphatic M AN34A	5 5	N	N	10	<10	<10	<10
>C10-C12 Aromatic M AN34A	mg/kg	N	N	10	<10	<10	<10
>C12-C16 Aliphatic M AN34A	mg/kg	N	N	10	<10	<10	<10
>C12-C16 Aromatic M AN34A	mg/kg	N	N	10	<10	<10	<10
>C16-C21 Aliphatic M AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C16-C21 Aromatic M AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C21-C36 Aliphatic M AN34A	mg/kg	N	Ν	10	<10	<10	<10
>C21-C36 Aromatic M AN34A	mg/kg	N	Ν	10	<10	31	43
TPH Banded(Ali/Aro) leachable	0.0						
>C6-C8 Aliphatic Leachable AN15-1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C7-C8 Aromatic Leachable AN15-1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
C5-C6 Aliphatic Leachable AN15-1	mg/l	N	Ν	0.01	<0.01	< 0.01	<0.01
C5-C7 Aromatic Leachable AN15-1	mg/l	N	Ν	0.01	<0.01	< 0.01	<0.01
>C8-C10 Aliphatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C8-C10 Aromatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C10-C12 Aliphatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C10-C12 Aromatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C12-C16 Aliphatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C12-C16 Aromatic Leachable AN34A/	1 mg/l	Ν	Ν	0.01	<0.01	<0.01	<0.01
>C16-C21 Aliphatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C16-C21 Aromatic Leachable AN34A/	1 mg/l	N	Ν	0.01	<0.01	<0.01	<0.01
>C21-C36 Aliphatic Leachable AN34A/	1 mg/l	Ν	Ν	0.01	<0.01	<0.01	<0.01
>C21-C36 Aromatic Leachable AN34A/	1 mg/l	Ν	Ν	0.01	<0.01	<0.01	<0.01

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

	Sample mate	Lab sample ref: Client sample ref: V Date sampled: Sample matrix (see notes page):		C131357 WS14 0.20m 14/12/11 O	C131359 WS17 0.50m 14/12/11 S	C131361 WS19 1.00m 14/12/11 S	
Determinand Meth	od Units	ISO17025	MCERTS	LOD			
Vinyl chloride M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Bromomethane M AN1	10 0	Y	Ν	10	<10	<10	<10
Trichlorofluoromethane M AN1	10 0	Y	Ν	10	<10	<10	<10
1,1-Dichloroethane M AN1		Y	Ν	10	<10	<10	<10
2,2-Dichloropropane M AN1		Y	Ν	10	<10	<10	<10
Bromochloromethane M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Chloroform M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,1,1-Trichloroethane M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Carbon tetrachloride M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,1-Dichloropropene M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Benzene M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,2-Dichloroethane M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Trichloroethylene M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,2-Dichloropropane M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Dibromomethane M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Bromodichloromethane M AN1	10 0	Y	Ν	10	<10	<10	<10
cis-1,3-Dichloropropene M AN1	10 0	Y	Ν	10	<10	<10	<10
Toluene M AN1	10 0	Y	Ν	10	<10	<10	<10
trans-1,3-Dichloropropene M AN1	10 0	Y	Ν	10	<10	<10	<10
1,1,2-Trichloroethane M AN1		Y	Ν	10	<10	<10	<10
Tetrachloroethylene M AN1	15 5	Y	N	10	<10	<10	<10
1,3-Dichloropropane M AN1	15 5	Y	N	10	<10	<10	<10
1,2-Dibromoethane M AN1	10 0	Y	N	10	<10	<10	<10
Chlorobenzene M AN1		Y	N	10	<10	<10	<10
Ethylbenzene M AN1	10 0	Y	N	10	<10	<10	<10
m,p-xylene M AN1	10 0	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10
o-Xylene M AN1	10 0						
Styrene M AN1 Bromoform AN1	10 0	Y Y	N	10 10	<10 <10	<10	<10 <10
Bromoform M AN1 iso-Propylbenzene M AN1		Y	N N	10	<10	<10 <10	<10
Bromobenzene M AN1	15 5	Y	N	10	<10	<10	<10
1,2,3-Trichloropropane M AN1	10 0	Ý	N	10	<10	<10	<10
n-Propylbenzene M AN1	10 0	Ý	N	10	<10	<10	<10
2-Chlorotoluene M AN1	10 0	Ý	N	10	<10	<10	<10
1,3,5-Trimethylbenzene M AN1	10 0	Ý	N	10	<10	<10	<10
4-Chlorotoluene M AN1	10 0	Ŷ	N	10	<10	<10	<10
tert-Butylbenzene M AN1	15 5	Ŷ	N	10	<10	<10	<10
1,2,4-Trimethylbenzene M AN1	10 0	Y	Ν	10	<10	<10	<10
sec-Butylbenzene M AN1		Y	Ν	10	<10	<10	<10
1,3-Dichlorobenzene (VOC) M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,4-Dichlorobenzene (VOC) M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
n-Butylbenzene M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,2-Dichlorobenzene (VOC) M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,2-Dibromo-3-chloro-propane M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,2,4-Trichlorobenzene (VOC) M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
Hexachlorobutadiene M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10
1,2,3-Trichlorobenzene M AN1		Y	Ν	10	<10	<10	<10
1,1,2,2 -Tetrachloroethane M AN1	15 5	Y	Ν	10	<10	<10	<10
1,1-Dichloroethylene M AN1	10 0	Y	Ν	10	<10	<10	<10
4-isopropyltoluene M AN1	10 0	Y	Ν	10	<10	<10	<10
Chlorodibromomethane M AN1	15 5	Y	Ν	10	<10	<10	<10
Cis - 1,2 -dichloroethylene M AN1	10 0	Y	Ν	10	<10	<10	<10
Naphthalene (VOC) M AN1	10 0	Y	N	10	<10	<10	<10
trans-1,2-Dichloroethylene M AN1	5a µg/kg	Y	Ν	10	<10	<10	<10



Client:	BAM Ritchies
	Glasgow Road, Kilsyth, Glasgow, G65 9BL
Site:	Gourock Pierhead - Job No 4618
Date Tested:	22/12/11
Date Reported:	20 January, 2012
Date Received:	22 December, 2011
Sample Type:	Solid

			Lab sample ref: Client sample ref:		C131362 WS21 0.50m	C131363 WS23A 0.50m	C131364 WS24 2.0- 3.0m	C131365 WS25 0.50m	C131366 WS26 0.20m	
					mpled:	14/12/11 S	14/12/11 S	14/12/11 S	14/12/11 S	14/12/11 S
	30	ample matri	x (see	notes	page):	3	5	3	3	5
Determinand	Method	Units	SO17025	MCERTS	ГОД					
Metals (Leachate)	Method	Units		~	-					
Arsenic leachable	AN47e	µg/l	Y	Ν	0.25	7.62	2.14	NR	1.02	8.22
Boron leachable	AN47c	µg/l	Y	Ν	1	153	99	NR	163	117
Cadmium leachable	AN47a	µg/l	Y	Ν	0.05	< 0.05	< 0.05	NR	0.13	< 0.05
Chromium leachable	AN47a	µg/l	Y	Ν	0.05	1.32	0.52	NR	2.58	1.67
Copper leachable	AN47a	µg/l	Y	Ν	0.05	4.48	6.94	NR	12.41	13.57
Lead leachable	AN47a	µg/l	Y	Ν	0.05	2.73	2.04	NR	4.11	6.35
Mercury leachable	Subcontract*	µg/l	Y	Ν	0.015	0.116	0.065	NR	0.098	0.077
Nickel leachable	AN47b	µg/l	Y	Ν	0.1	0.72	0.97	NR	0.69	0.97
Selenium leachable	AN47c	µg/l	Y	Ν	1	1.17	<1.00	NR	<1.00	<1.00
Zinc leachable	AN47g	µg/l	Y	Ν	0.5	28.1	170.0	NR	78.8	36.6
Metals (soil)										
Arsenic	AN8b	mg/kg	Y	Y	2	4.0	4.6	NR	8.0	5.4
Boron (water soluble)	AN03	mg/kg	Y	Ν	0.1	0.3	0.7	NR	0.4	1.0
Cadmium	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0	NR	2.2	<1.0
Chromium (total)	AN8b	mg/kg	Y	Y	2	33.0	17.2	NR	21.8	20.3
Copper	AN8b	mg/kg	Y	Y	2	66.5	77.8	NR	1364.9	47.5
Lead	AN8b	mg/kg	Y	Y	2	80.6	146.3	NR	227.1	140.8
Mercury	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0	NR	<1.0	<1.0
Nickel	AN8b	mg/kg	Y	Y	2	38.0	30.9	NR	33.4	28.7
Selenium	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0	NR	<1.0	<1.0
Zinc	AN8b	mg/kg	Y	Y	2	112.5	186.3	NR	184.4	113.1
Sample Prep(C)										
EMR	EMR	%	N	N/A	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
% Stones	Stones	%	N	N/A	0.1	17.8	38.7	41.4	34.8	30.2
Moisture Content @ <30°C	AN1	%	Y	N/A	0.1	13.5	14.0	14.2	13.4	12.5
Sample Description	MCERTS ver3.	N/A	N	N/A	N/A	1A	1A	1A	1A	1A
Misc										
pH	AN5a	units	Y	Y	N/A	9.2	8.9	8.1	8.0	11
Ammoniacal Nitrogen (s)	HACH9c	mg/kg	N	N	1	2	<1	NR	2	2
Ammoniacal Nitrogen leachable	HACH9b	mg/l-N	Y	N/A	0.2	<0.2	<0.2	NR	<0.2	<0.2
Sulphate (water soluble)	Hach 15 AN45i	g/l mg/kg	N N	N/A N	0.1 1	0.07 <1	0.11 <1	0.06 NR	0.07 <1	0.27 <1
Cyanide (free) M		mg/kg								
Cyanide (free) leachable Phenols (screen) M	Subcontract* AN45d	mg/l mg/kg	N N	N/A N	0.01 1	<0.01 <1	<0.01 1	NR NR	<0.01 <1	<0.01 <1
Phenols (screen) leachable	AN45c	mg/l	Y	N/A	0.03	< 0.03	<0.03	NR	< 0.03	<0.03
Fraction of Organic Carbon (FOC)	AN48	%	Ν	N/A	0.1	<0.10	<0.10	NR	<0.10	<0.10
Chromium (VI)	AN7	mg/kg	Ν	Ν	1	<1.0	<1.0	NR	<1.0	<1.0
Chromium (VI) leachable	HACH 4	mg/l	Ν	Ν	0.01	<0.01	<0.01	NR	<0.01	<0.01
Asbestos	ASB001	%	Y	N/A	0.001	ND	ND	NR	ND	ND



Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

			Lab sample ref: Client sample ref: V		C131362 WS21 0.50m	C131363 WS23A 0.50m	C131365 WS25 0.50m	C131366 WS26 0.20m	
	s	ample matr			mpled: page):	14/12/11 S	14/12/11 S	14/12/11 S	14/12/11 S
Determinand	Method	Units	ISO17025	MCERTS	LOD				
BTEX leachable			v		-	-	-	-	-
Benzene leachable Toluene leachable	AN15 AN15	µg/l µg/l	Y Y	N N	5 5	<5 <5	<5 <5	<5 <5	<5 <5
Ethylbenzene leachable	AN15 AN15	μg/I μg/I	Y	N	5 5	<5 <5	<5 <5	<5 <5	<5
m,p-Xylene leachable	AN15	µg/l	Ý	N	5	<5	<5	<5	<5
o-Xylene leachable	AN15	μg/l	Ý	N	5	<5	<5	<5	<5
PAH (USEPA16)		15							
PAH (total) M	GCM501	mg/kg	Y	Υ	1	24.3	4.4	40.5	27.8
Naphthalene (PAH) M	GCM501	mg/kg	Y	Υ	0.1	1.5	0.1	0.1	0.7
Acenaphthylene M	GCM501a	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	0.1
Acenaphthene M	GCM501	mg/kg	Y	Y	0.1	0.2	<0.1	<0.1	9.3
Fluorene M	GCM501	mg/kg	Y	Y	0.1	0.2	<0.1	<0.1	5.8
Phenanthrene M	GCM501	mg/kg	Y	Y	0.1	2.2	0.7	1.8	3.8
Anthracene M	GCM501	mg/kg	Y	Y	0.1	0.7	0.2	0.5	0.8
Fluoranthene M	GCM501	mg/kg	Y	Y	0.1	3.7	0.7	7.2	1.9
Pyrene M	GCM501	mg/kg	Y	Y	0.1	3.4	0.7	6.2	1.5
Benz(a)anthracene M	GCM501	mg/kg	Y	Y	0.1	2.1	0.3	3.7	0.6
Chrysene M Bonzo(b)(luoronthono	GCM501	mg/kg	Y Y	Y Y	0.1	2.0	0.3	3.1	0.7
Benzo(b)fluoranthene M Benzo(k)fluoranthene M	GCM501 GCM501	mg/kg	Y	r Y	0.1 0.1	2.1 1.5	0.3 0.2	4.0 3.1	0.6 0.5
Benzo(a)pyrene M	GCM501 GCM501	mg/kg mg/kg	Y	Y	0.1	1.5	0.2	3.1	0.5
Indeno(1,2,3-cd)pyrene M	GCM501a	mg/kg	Y	N	0.1	1.0	0.2	2.9	0.5
Dibenz(a,h)anthracene M	GCM501	mg/kg	Ý	Y	0.1	0.7	<0.2	1.0	0.2
Benzo(ghi)perylene M	GCM501	mg/kg	Ŷ	Ŷ	0.1	1.2	0.2	2.8	0.5
PAH(USEPA16) leachable	0011001				0.1		0.2	2.0	0.0
Naphthalene leachable	GCM502	µg/l	Y	N	0.02	0.35	<0.02	<0.02	0.05
Acenaphthylene leachable	GCM502	µg/l	Ŷ	N	0.02	0.05	< 0.02	0.04	<0.02
Acenaphthene leachable	GCM502	µg/l	Y	Ν	0.02	0.15	< 0.02	0.02	0.06
Fluorene leachable	GCM502	µg/l	Y	Ν	0.02	0.12	<0.02	0.03	0.04
Phenanthrene leachable	GCM502	µg/l	Y	Ν	0.02	0.99	< 0.02	0.41	0.19
Anthracene leachable	GCM502	µg/l	Y	Ν	0.02	0.34	0.03	0.15	0.11
Fluoranthene leachable	GCM502	µg/l	Y	Ν	0.02	2.43	0.02	1.97	0.75
Pyrene leachable	GCM502	µg/l	Y	Ν	0.02	0.32	0.03	1.76	0.73
Benzo(a)anthracene leachable	GCM502	µg/l	Y	Ν	0.02	0.82	<0.02	0.55	0.27
Chrysene leachable	GCM502	µg/l	Y	Ν	0.02	0.86	<0.02	0.54	0.28
Benzo(b)fluoranthene leachable	GCM502	µg/l	Y	N	0.02	0.63	<0.02	0.38	0.19
Benzo(k)fluoranthene leachable	GCM502	µg/l	Y	N	0.02	0.66	<0.02	0.35	0.18
Benzo(a)pyrene leachable	GCM502 GCM502	µg/l	Y Y	N N	0.02	0.71 0.44	<0.02 <0.02	0.38 0.25	0.20
Indeno(1,2,3-cd)pyrene leachable Dibenzo(a,h)anthracene leachable	GCM502 GCM502	µg/l	Y	N	0.02	0.44	<0.02	0.25	0.12
Benzo(ghi)perylene leachable	GCM502 GCM502	μg/l μg/l	Ý	N	0.02	0.25	< 0.02	0.43	0.19
PCB Congeners	0010002	P9/1			0.02	0.07	<0.02	0.40	0.15
PCB 28 M	GCMS	µq/kq	N	Ν	1	5.1	<1	<1	<1
PCB 52 M	GCMS	µg/kg	N	Ν	1	2.9	1.7	<1	<1
PCB 101 M	GCMS	µg/kg	N	Ν	1	<1	<1	<1	<1
PCB 118 M	GCMS	µg/kg	N	Ν	1	<1	<1	<1	<1
PCB 153 M	GCMS	µg/kg	N	Ν	1	19.0	11.6	<1	<1
PCB 138 M	GCMS	µg/kg	Ν	Ν	1	18.8	12.1	<1	<1
PCB 180 M	GCMS	µg/kg	Ν	Ν	1	30.9	15.8	<1	<1
PCB Congeners leachable PCB 28 leachable M	GCMS	µg/l	N	N	1	<1	<1	<1	<1
PCB 52 leachable M	GCMS	µg/l	Ν	Ν	1	3.7	<1	<1	<1
PCB 101 leachable M	GCMS	µg/l	Ν	Ν	1	8.8	<1	<1	<1
PCB 118 leachable M	GCMS	µg/l	Ν	Ν	1	<1	<1	<1	<1
PCB 153 leachable M	GCMS	µg/l	Ν	Ν	1	34.9	<1	<1	<1
PCB 138 leachable M	GCMS	µg/l	Ν	Ν	1	35.4	7.7	<1	<1
PCB 180 leachable M	GCMS	µg/I	N	Ν	1	58.2	10.7	<1	<1



Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

					ole ref: ole ref:	C131362 WS21 0.50m	C131363 WS23A 0.50m	C131365 WS25 0.50m	C131366 WS26 0.20m
		Sample matrix			npled: page):	14/12/11 S	14/12/11 S	14/12/11 S	14/12/11 S
		•	-						
			SO17025	MCERTS	0				
Determinand	Method	Units	ISO	МС	LOD				
SVOC	1110		v						
Phenol M Big(2 chloroothyl)othor	AN42	mg/kg	Y	N N	0.1	<0.1	<0.1	<0.1	<0.1 <0.1
Bis(2-chloroethyl)ether M 1,3-Dichlorobenzene (SVOC) M	AN42 AN42	mg/kg mg/kg	Y Y	N	0.1 0.1	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1
2-Chlorophenol M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1
1,4-Dichlorobenzene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1
1,2-Dichlorobenzene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroisopropyl)ether M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1
2-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
N-nitrosodi-n-propylamine M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Hexachloroethane M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
4-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Nitrobenzene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
2-Nitrophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dimethylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Bis(2-chloroethoxy)methane M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-Trichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	1.4	<0.1	0.2	<0.1
4-Chloro-3-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
2,4,5/2,4,6-Trichlorophenol M	AN42a	mg/kg	N	Ν	0.1	<0.1	<0.1	<0.1	<0.1
2-chloronaphthalene M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene (SVOC) M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1
Dimethyl phthalate M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1
2,6-dinitrotoluene M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene (SVOC) M	AN42	mg/kg	Y	N	0.1	0.2	<0.1	0.1	<0.1
2,4-dinitrotoluene M	AN42a	mg/kg	N	N	0.1	0.1	<0.1	<0.1	<0.1
4-Nitrophenol M Fluorene (SVOC) M	AN42b AN42	mg/kg	N Y	N N	2 0.1	<2 0.1	<2 <0.1	<2 <0.1	<2 <0.1
Diethylphthalate M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1 <0.1
4-chlorophenyl-phenylether M	AN42 AN42	mg/kg	Y	N	0.1	<0.1	<0.1	<0.1	<0.1
N-nitrosodiphenylamine M	AN42 AN42	mg/kg mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1
4-Bromophenyl-phenyl ether M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobenzene M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1	<0.1	<0.1
Pentachlorophenol M	AN42c	mg/kg	N	N	0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene (SVOC) M	AN42	mg/kg	Y	N	0.1	1.7	0.3	2.3	0.5
Anthracene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.6	<0.1	0.6	0.1
Di-n-butylphthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	3.2	0.3	5.4	0.7
Pyrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	2.8	0.3	4.6	0.6
Chrysene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	1.6	0.1	2.3	0.3
Bis(2-ethylhexyl) phthalate M	AN42a	mg/kg	Ν	Ν	0.1	0.2	0.1	0.2	0.2
Di-n-octyl phthalate M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	2.1	0.2	2.9	0.3
Indeno(1,2,3-cd)pyrene (SVOC) M	AN42a	mg/kg	Ν	Ν	0.1	1.4	<0.1	2.3	0.2
1,2 Benzanthracene M	AN42a	mg/kg	Ν	Ν	0.1	1.7	0.2	2.4	0.2
1,2:5,6 - Dibenzanthracene (SVOC) (w)	AN42-1	mg/kg	Ν	Ν	0.1	0.3	<0.1	0.6	<0.1
2,3,4,6-Tetrachlorophenol M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	<0.1	<0.1	<0.1
2,6-Dichlorophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Azobenzene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)fluoranthere (SVOC) M	AN42	mg/kg	Y	N	0.1	3.5	<0.1	5.2	0.5
Benzo(g,h,i)perylene (SVOC) M	AN42a	mg/kg	N	N	0.1	1.5	<0.1	2.7	0.2
Butyl benzyl phthalate M	AN42a	mg/kg	N	N	0.1	<0.1	<0.1	<0.1	<0.1
Hexachloro-1,3-butadiene M Hexachlorocyclopentadiene M	AN42	mg/kg	Y Y	N	0.1	<0.1	<0.1	<0.1	<0.1
nexaciliolocyclopentadiene M	AN42	mg/kg	Ť	Ν	0.1	<0.1	<0.1	<0.1	<0.1



Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

		Sample matri	Client Da	samı ite saı	npled:	C131362 WS21 0.50m 14/12/11 S	C131363 WS23A 0.50m 14/12/11 S	C131365 WS25 0.50m 14/12/11 S	C131366 WS26 0.20m 14/12/11 S
Determinand	Method	Units	SO17025	MCERTS	LOD				
TPH Banded(Ali/Aro)	wethod	Units		2	-				
>C7-C8 Aromatic M	AN15a-1	mg/kg	Ν	Ν	1	<1	<1	<1	<1
>C6-C8 Aliphatic M	AN15a-1 AN15a-1	mg/kg	N	N	1	<1	<1	<1	<1
C5-C6 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1	<1	<1	<1
C5-C7 Aromatic M	AN15a-1	mg/kg	N	N	1	<1	<1	<1	<1
>C8-C10 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10
>C8-C10 Aromatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10
>C10-C12 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10
>C10-C12 Aromatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10
>C12-C16 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10	<10	<10
>C12-C16 Aromatic	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10
>C16-C21 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	<10	<10	<10
>C16-C21 Aromatic	AN34A	mg/kg	N	Ν	10	13	<10	<10	<10
>C21-C36 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	41	37	<10
>C21-C36 Aromatic M	AN34A	mg/kg	N	Ν	10	104	21	48	14
TPH Banded(Ali/Aro) leachable		0.0							
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	< 0.01	< 0.01	<0.01
>C7-C8 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	< 0.01	< 0.01	< 0.01	<0.01
C5-C6 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
C5-C7 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	< 0.01	< 0.01	<0.01
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	<0.01	<0.01	<0.01	<0.01
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	<0.01	<0.01	0.21	<0.01
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	<0.01	<0.01	0.02	<0.01



Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

					le ref: le ref:	C131362 WS21 0.50m	C131363 WS23A 0.50m	C131365 WS25 0.50m	C131366 WS26 0.20m
		Sample matrix			npled: page):	14/12/11 S	14/12/11 S	14/12/11 S	14/12/11 S
Determinand VOC	Method	Units	ISO17025	MCERTS	ГОР				
Vinyl chloride M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
Bromomethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Trichlorofluoromethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,1-Dichloroethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
2,2-Dichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Bromochloromethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
Chloroform M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
1,1,1-Trichloroethane M Carbon tetrachloride M	AN15a AN15a	μg/kg μg/kg	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10
1,1-Dichloropropene M	AN15a AN15a	µg/kg	Ý	N	10	<10	<10	<10	<10
Benzene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10
1,2-Dichloroethane M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10
Trichloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,2-Dichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Dibromomethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Bromodichloromethane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
cis-1,3-Dichloropropene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Toluene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
trans-1,3-Dichloropropene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
1,1,2-Trichloroethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
Tetrachloroethylene M 1,3-Dichloropropane M	AN15a AN15a	µg/kg	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10
1,2-Dibromoethane M	AN15a AN15a	μg/kg μg/kg	Y	N	10	<10	<10	<10	<10
Chlorobenzene M	AN15a AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10
Ethylbenzene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10
m,p-xylene M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10
o-Xylene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Styrene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Bromoform M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
iso-Propylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Bromobenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,2,3-Trichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
n-Propylbenzene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
2-Chlorotoluene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
1,3,5-Trimethylbenzene M 4-Chlorotoluene M	AN15a AN15a	µg/kg	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10
tert-Butylbenzene M	AN15a AN15a	µg/kg µg/kg	Y	N	10	<10	<10	<10	<10
1,2,4-Trimethylbenzene M	AN15a AN15a	µg/kg µg/kg	Y	N	10	<10	<10	<10	<10
sec-Butylbenzene M	AN15a AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10
1,3-Dichlorobenzene (VOC) M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10
1,4-Dichlorobenzene (VOC) M	AN15a	µg/kg	Ŷ	N	10	<10	<10	<10	<10
n-Butylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,2-Dichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,2-Dibromo-3-chloro-propane M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,2,4-Trichlorobenzene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
Hexachlorobutadiene M	AN15a	µg/kg	Y	Ν	10	<10	<10	<10	<10
1,2,3-Trichlorobenzene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
1,1,2,2 -Tetrachloroethane M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
1,1-Dichloroethylene M	AN15a	µg/kg	Y	N	10	<10	<10	<10	<10
4-isopropyltoluene M Chlorodibromomethane M	AN15a AN15a	µg/kg	Y Y	N N	10 10	<10 <10	<10 <10	<10 <10	<10 <10
Chlorodibromomethane M Cis - 1,2 -dichloroethylene M	AN15a AN15a	µg/kg	Y Y	N	10	<10 <10	<10 <10	<10 <10	<10 <10
Naphthalene (VOC) M	AN15a AN15a	µg/kg µg/kg	Y	N	10	<10	<10 <10	<10 <10	<10
trans-1,2-Dichloroethylene M	AN15a AN15a	µg/kg µg/kg	Ý	N	10	<10	<10	<10	<10
,		68	•						

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Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid

Exova

		Sample matri	Client Da	ite sai	C131367 WS27 1.00m 14/12/11 O	C131368 WS29 0.20m 14/12/11 O	
Determinand	Method	Units	ISO17025	MCERTS	гор		
Metals (Leachate)							
Arsenic leachable	AN47e	µg/l	Y	Ν	0.25	0.59	1.21
Boron leachable	AN47c	µg/l	Y	Ν	1	167	96
Cadmium leachable	AN47a	µg/l	Y	Ν	0.05	< 0.05	< 0.05
Chromium leachable	AN47a	µg/l	Y	Ν	0.05	0.52	0.33
Copper leachable	AN47a	µg/l	Y	Ν	0.05	4.17	10.68
Lead leachable	AN47a	µg/l	Y	Ν	0.05	0.80	1.50
Mercury leachable	Subcontract*	µg/l	Y	Ν	0.015	0.030	< 0.015
Nickel leachable	AN47b	µg/l	Y	Ν	0.1	0.82	1.08
Selenium leachable	AN47c	µg/l	Y	Ν	1	<1.00	<1.00
Zinc leachable	AN47g	µg/l	Y	Ν	0.5	142.9	143.2
Metals (soil)							
Arsenic	AN8b	mg/kg	Y	Y	2	7.6	8.7
Boron (water soluble)	AN03	mg/kg	Y	Ν	0.1	1.0	0.7
Cadmium	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0
Chromium (total)	AN8b	mg/kg	Y	Y	2	19.5	59.6
Copper	AN8b	mg/kg	Y	Y	2	89.8	29.4
Lead	AN8b	mg/kg	Y	Y	2	75.7	28.2
Mercury	AN8a	mg/kg	Y	Ν	1	<1.0	<1.0
Nickel	AN8b	mg/kg	Y	Y	2	51.4	13.3
Selenium	AN8a	mg/kg	Y	Ν	1	<1.0	13.5
Zinc	AN8b	mg/kg	Y	Y	2	124.5	50.5
Sample Prep(C)		0.0					
EMR	EMR	%	N	N/A	0.1	<0.1	<0.1
% Stones	Stones	%	N	N/A	0.1	21.0	26.9
Moisture Content @ <30°C	AN1	%	Y	N/A	0.1	17.8	11.1
Sample Description	MCERTS ver3	3. N/A	N	N/A	N/A	7A	7A
Misc							
pH	AN5a	units	Y	Y	N/A	7.9	8.3
Ammoniacal Nitrogen (s)	HACH9c	mg/kg	N	Ν	1	<1	2
Ammoniacal Nitrogen leachable	HACH9b	mg/l-N	Y	N/A	0.2	<0.2	0.4
Sulphate (water soluble)	Hach 15	g/l	N	N/A	0.1	0.07	0.10
Cyanide (free) M	AN45i	mg/kg	N	Ν	1	<1	<1
Cyanide (free) leachable	Subcontract*	mg/l	Y	N/A	0.01	<0.01	<0.01
Phenols (screen) M	AN45d	mg/kg	Ν	Ν	1	<1	<1
Phenols (screen) leachable	AN45c	mg/l	Y	N/A	0.03	< 0.03	< 0.03
Fraction of Organic Carbon (FOC)	AN48	%	Ν	N/A	0.1	0.11	<0.10
Chromium (VI)	AN7	mg/kg	Ν	N	1	<1.0	<1.0
Chromium (VI) leachable	HACH 4	mg/l	Ν	Ν	0.01	<0.01	<0.01
Asbestos	ASB001	%	Y	N/A	0.001	ND	ND

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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid



		Sample matri	Lab sample ref: Client sample ref: Date sampled: rix (see notes page):			C131367 WS27 1.00m 14/12/11 O	C131368 WS29 0.20m 14/12/11 O
Determinand BTEX leachable	Method	Units	ISO17025	MCERTS	LOD		
Benzene leachable	AN15	µg/l	Y	Ν	5	<5	<5
Toluene leachable	AN15	µg/l	Y	Ν	5	<5	<5
Ethylbenzene leachable	AN15	µg/l	Y	Ν	5	<5	<5
m,p-Xylene leachable	AN15	µg/l	Y	Ν	5	<5	<5
o-Xylene leachable	AN15	µg/l	Y	Ν	5	<5	<5
PAH (USEPA16)							
PAH (total) M	GCM501	mg/kg	Y	Y	1	7.2	320
Naphthalene (PAH) M	GCM501	mg/kg	Y	Y	0.1	0.4	7.2
Acenaphthylene M	GCM501a	mg/kg	Y	Ν	0.1	<0.1	0.7
Acenaphthene M	GCM501	mg/kg	Y	Y	0.1	<0.1	8.3
Fluorene M	GCM501	mg/kg	Y	Y	0.1	<0.1	6.5
Phenanthrene M	GCM501	mg/kg	Y	Y	0.1	1.0	47.0
Anthracene M	GCM501	mg/kg	Y	Y	0.1	0.2	15.1
Fluoranthene M	GCM501	mg/kg	Y	Y	0.1	1.2	61.6
Pyrene M	GCM501	mg/kg	Y	Y	0.1	1.1	52.4
Benz(a)anthracene M	GCM501	mg/kg	Y	Y	0.1	0.6	26.1
Chrysene M	GCM501	mg/kg	Y	Y	0.1	0.6	19.9
Benzo(b)fluoranthene M	GCM501	mg/kg	Y	Y	0.1	0.6	20.0
Benzo(k)fluoranthene M	GCM501	mg/kg	Y	Y	0.1	0.5	13.9
Benzo(a)pyrene M	GCM501	mg/kg	Y	Y	0.1	0.5	17.5
Indeno(1,2,3-cd)pyrene M	GCM501a	0 0	Y	N	0.1	0.2	9.7
Dibenz(a,h)anthracene M	GCM501	mg/kg	Y	Y	0.1	0.1	3.8
Benzo(ghi)perylene M	GCM501	mg/kg	Y	Y	0.1	0.4	9.0
PAH(USEPA16) leachable							
Naphthalene leachable	GCM502	µg/l	Y	N	0.02	<0.02	0.02
Acenaphthylene leachable	GCM502	µg/l	Y	N	0.02	<0.02	0.24
Acenaphthene leachable	GCM502	µg/l	Y	N	0.02	<0.02	5.41
Fluorene leachable	GCM502	µg/l	Y	N N	0.02	< 0.02	1.26
Phenanthrene leachable Anthracene leachable	GCM502 GCM502	µg/l	Y Y	N N	0.02	0.09	0.97 4 22
Fluoranthene leachable	GCM502 GCM502	µg/l	Y Y	N N	0.02	0.04	4.22
	GCM502 GCM502	µg/l	Y	N	0.02	0.19	15.5
Pyrene leachable Benzo(a)anthracene leachable	GCM502 GCM502	μg/l μg/l	Y	N	0.02	0.18	6.95
Chrysene leachable	GCM502 GCM502	µg/i µg/i	Y	N	0.02	0.05	1.87
Benzo(b)fluoranthene leachable	GCM502	μg/i	Ý	N	0.02	0.04	0.75
Benzo(k)fluoranthene leachable	GCM502	µg/l	Ý	N	0.02	0.04	0.84
Benzo(a)pyrene leachable	GCM502	µg/l	Ý	N	0.02	0.05	0.96
Indeno(1,2,3-cd)pyrene leachable	GCM502	μg/l	Ŷ	N	0.02	0.03	0.51
Dibenzo(a,h)anthracene leachable	GCM502	μg/l	Ŷ	N	0.02	<0.02	0.25
Benzo(ghi)perylene leachable	GCM502	µg/l	Y	Ν	0.02	0.06	0.66
PCB Congeners		15					
PCB 28 M	GCMS	µg/kg	N	Ν	1	10.6	<1
PCB 52 M	GCMS	µg/kg	N	Ν	1	13.3	<1
PCB 101 M	GCMS	µg/kg	N	Ν	1	25.8	<1
PCB 118 M	GCMS	µg/kg	Ν	Ν	1	<1	<1
PCB 153 M	GCMS	µg/kg	N	Ν	1	75.2	<1
PCB 138 M	GCMS	µg/kg	N	Ν	1	72.5	<1
PCB 180 M	GCMS	µg/kg	Ν	Ν	1	98.1	<1
PCB Congeners leachable	0.0115						
PCB 28 leachable M	GCMS	µg/l	N	N	1	<1	<1
PCB 52 leachable M	GCMS	µg/l	N	N	1	6.8	<1
PCB 101 leachable M	GCMS	µg/l	N	N	1	16.4	<1
PCB 118 leachable M	GCMS GCMS	µg/l	N N	N N	1 1	<1 62.2	<1
PCB 153 leachable M PCB 138 leachable		µg/l					<1
PCB 138 leachable M PCB 180 leachable M	GCMS GCMS	μg/l μg/l	N N	N N	1 1	58.4 98.3	<1 <1
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Test Certificate

Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid



		Sample matriz	Lab sample ref: Client sample ref: Date sampled: matrix (see notes page):			C131367 WS27 1.00m 14/12/11 O	C131368 WS29 0.20m 14/12/11 O
Determinand	Method	Units	ISO17025	MCERTS	LOD		
Phenol M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1
Bis(2-chloroethyl)ether M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1
1,3-Dichlorobenzene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1
2-Chlorophenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
1,4-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
1,2-Dichlorobenzene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
Bis(2-chloroisopropyl)ether M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
2-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
N-nitrosodi-n-propylamine M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
Hexachloroethane M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
4-Methylphenol M	AN42	mg/kg	Y	N	0.1	<0.1	0.6
Nitrobenzene M	AN42	mg/kg	Y	N	0.1	<0.1	<0.1
2-Nitrophenol M 2,4-Dimethylphenol M	AN42 AN42	mg/kg	Y Y	N N	0.1 0.1	<0.1 <0.1	<0.1 0.6
Bis(2-chloroethoxy)methane M	AN42 AN42	mg/kg mg/kg	Y	N	0.1	<0.1	<0.0
2,4-Dichlorophenol M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	<0.1
1,2,4-Trichlorobenzene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1
Naphthalene (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	<0.1	13.3
4-Chloro-3-Methylphenol M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
2,4,5/2,4,6-Trichlorophenol M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	<0.1
2-chloronaphthalene M	AN42	mg/kg	Y	Ν	0.1	<0.1	0.2
Acenaphthylene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	0.4
Dimethyl phthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
2,6-dinitrotoluene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
Acenaphthene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	8.3
2,4-dinitrotoluene M	AN42a	mg/kg	N	N	0.1	<0.1	4.5
4-Nitrophenol M	AN42b	mg/kg	N	N	2	<2	<2
Fluorene (SVOC) M Diethylphthalate M	AN42 AN42	mg/kg	Y Y	N N	0.1 0.1	<0.1 <0.1	5.2 <0.1
4-chlorophenyl-phenylether M	AN42 AN42	mg/kg mg/kg	Y	N	0.1	<0.1	<0.1
N-nitrosodiphenylamine M	AN42 AN42	mg/kg	Ý	N	0.1	<0.1	1.8
4-Bromophenyl-phenyl ether M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1
Hexachlorobenzene M	AN42	mg/kg	Ŷ	N	0.1	<0.1	<0.1
Pentachlorophenol M	AN42c	mg/kg	N	N	0.5	<0.5	<0.5
Phenanthrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.2	37.2
Anthracene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	<0.1	13.7
Di-n-butylphthalate M	AN42	mg/kg	Y	Ν	0.1	<0.1	0.1
Fluoranthene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.4	67.8
Pyrene (SVOC) M	AN42	mg/kg	Y	Ν	0.1	0.2	55.2
Chrysene (SVOC) M	AN42	mg/kg	Y	N	0.1	0.2	18.4
Bis(2-ethylhexyl) phthalate M	AN42a	mg/kg	N	N	0.1	0.2	0.3
Di-n-octyl phthalate M	AN42a	mg/kg	N	N	0.1	<0.1	< 0.1
Benzo(a)pyrene (SVOC) M	AN42	mg/kg	Y	N	0.1	<0.1	15.9
Indeno(1,2,3-cd)pyrene (SVOC) M 1,2 Benzanthracene M	AN42a AN42a	mg/kg mg/kg	N N	N N	0.1 0.1	<0.1 0.1	7.9 23.1
1,2:5,6 - Dibenzanthracene (SVOC) (w)	AN42a AN42-1		N	N	0.1	<0.1	20.1
2,3,4,6-Tetrachlorophenol M	AN42-1 AN42a	mg/kg mg/kg	N	N	0.1	<0.1	2.0 <0.1
2,6-Dichlorophenol M	AN42a AN42	mg/kg	Y	N	0.1	<0.1	<0.1
Azobenzene M	AN42	mg/kg	Ŷ	N	0.1	<0.1	0.4
Benzo(b/k)fluoranthere (SVOC) M	AN42	mg/kg	Ŷ	N	0.1	0.4	27.3
Benzo(g,h,i)perylene (SVOC) M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	8.1
Butyl benzyl phthalate M	AN42a	mg/kg	Ν	Ν	0.1	<0.1	<0.1
Hexachloro-1,3-butadiene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1
Hexachlorocyclopentadiene M	AN42	mg/kg	Y	Ν	0.1	<0.1	<0.1

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Client: BAM Ritchies Glasgow Road, Kilsyth, Glasgow, G65 9BL Site: Gourock Pierhead - Job No 4618 Date Tested: 22/12/11 Date Reported: 20 January, 2012 Date Received: 22 December, 2011 Sample Type: Solid



		Sample matri	Da	C131367 WS27 1.00m 14/12/11 O	C131368 WS29 0.20m 14/12/11 O		
Determinand	Method	Units	SO17025	MCERTS	LOD		
	Method	Units	<u>0</u>	Σ	Ľ.		
TPH Banded(Ali/Aro) >C7-C8 Aromatic M	AN15a-1	mg/kg	N	N	1	<1	<1
>C6-C8 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1	<1
C5-C6 Aliphatic M	AN15a-1	mg/kg	N	N	1	<1	<1
C5-C7 Aromatic M	AN15a-1	mg/kg	N	N	1	<1	<1
>C8-C10 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10
>C8-C10 Aromatic M	AN34A	mg/kg	N	N	10	<10	<10
>C10-C12 Aliphatic M	AN34A	mg/kg	N	N	10	<10	<10
>C10-C12 Aromatic M	AN34A	mg/kg	N	N	10	<10	<10
>C12-C16 Aliphatic M	AN34A	mg/kg	N	N	10	<10	87
>C12-C16 Aromatic M	AN34A	mg/kg	N	N	10	<10	60
>C16-C21 Aliphatic M	AN34A	mg/kg	N	Ν	10	<10	173
>C16-C21 Aromatic M	AN34A	mg/kg	N	Ν	10	<10	300
>C21-C36 Aliphatic M	AN34A	mg/kg	N	Ν	10	50	45
>C21-C36 Aromatic M	AN34A	mg/kg	N	Ν	10	18	537
TPH Banded(Ali/Aro) leachable							
>C6-C8 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	< 0.01
>C7-C8 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	< 0.01
C5-C6 Aliphatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	<0.01
C5-C7 Aromatic Leachable	AN15-1	mg/l	N	Ν	0.01	<0.01	<0.01
>C8-C10 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01
>C8-C10 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01
>C10-C12 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01
>C10-C12 Aromatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	<0.01
>C12-C16 Aliphatic Leachable	AN34A/1	mg/l	N	Ν	0.01	<0.01	0.01
>C12-C16 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	<0.01	0.02
>C16-C21 Aliphatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	<0.01	0.03
>C16-C21 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	<0.01	0.08
>C21-C36 Aliphatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	0.01	<0.01
>C21-C36 Aromatic Leachable	AN34A/1	mg/l	Ν	Ν	0.01	0.01	0.06

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Test Certificate

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Certificate No: 11/3111/C/C1 File No: 11/3111/C Client Ref: RIT136713

		Sample matri	Client Da	samp te san	npled:	C131367 WS27 1.00m 14/12/11 S	C131368 WS29 0.20m 14/12/11 S
Determinand VOC	Method	Units	ISO17025	MCERTS	LOD		
Vinyl chloride M	AN15a	µq/kq	Y	Ν	10	<10	<10
Bromomethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Trichlorofluoromethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,1-Dichloroethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
2,2-Dichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Bromochloromethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Chloroform M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,1,1-Trichloroethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Carbon tetrachloride M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,1-Dichloropropene M	AN15a	µg/kg	Y	Ν	10	<10	<10
Benzene M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,2-Dichloroethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Trichloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,2-Dichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Dibromomethane M	AN15a	µg/kg	Y	N	10	<10	<10
Bromodichloromethane M	AN15a	µg/kg	Y	N	10	<10	<10
cis-1,3-Dichloropropene M	AN15a	µg/kg	Y	N	10	<10	<10
Toluene M	AN15a	µg/kg	Y Y	N N	10 10	<10	<10
trans-1,3-Dichloropropene M 1,1,2-Trichloroethane M	AN15a AN15a	µg/kg	Y Y	N	10	<10 <10	<10 <10
Tetrachloroethylene M		µg/kg		N		<10	
1,3-Dichloropropane M	AN15a AN15a	μg/kg μg/kg	Y Y	N	10 10	<10 <10	<10 <10
1,2-Dibromoethane M	AN15a AN15a	µg/kg	Ý	N	10	<10	<10
Chlorobenzene M	AN15a AN15a	µg/kg	Ý	N	10	<10	<10
	AN15a	µg/kg	Ý	N	10	<10	<10
m,p-xylene M	AN15a	µg/kg	Ŷ	N	10	<10	<10
o-Xylene M	AN15a	µg/kg	Ŷ	N	10	<10	<10
Styrene M	AN15a	µg/kg	Y	Ν	10	<10	<10
Bromoform M	AN15a	µg/kg	Y	Ν	10	<10	<10
iso-Propylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10
Bromobenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,2,3-Trichloropropane M	AN15a	µg/kg	Y	Ν	10	<10	<10
n-Propylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10
2-Chlorotoluene M	AN15a	µg/kg	Y	Ν	10	<10	<10
1,3,5-Trimethylbenzene M	AN15a	µg/kg	Y	Ν	10	<10	<10
4-Chlorotoluene M	AN15a	µg/kg	Y	N	10	<10	<10
tert-Butylbenzene M	AN15a	µg/kg	Y	N	10	<10	<10
1,2,4-Trimethylbenzene M	AN15a	µg/kg	Y	N N	10	<10	<10
sec-Butylbenzene M 1,3-Dichlorobenzene (VOC) M	AN15a AN15a	µg/kg	Y Y	N	10 10	<10 <10	<10 <10
1,4-Dichlorobenzene (VOC) M	AN15a AN15a	µg/kg µg/kg	Y	N	10	<10	<10 <10
n-Butylbenzene M	AN15a AN15a	µg/kg	Ý	N	10	<10	<10
1,2-Dichlorobenzene (VOC) M	AN15a AN15a	µg/kg µg/kg	Ý	N	10	<10	<10
1,2-Dibromo-3-chloro-propane	AN15a	µg/kg	Ý	N	10	<10	<10
1,2,4-Trichlorobenzene (VOC) M	AN15a	µg/kg	Ŷ	N	10	<10	<10
Hexachlorobutadiene M	AN15a	µg/kg	Ŷ	N	10	<10	<10
1,2,3-Trichlorobenzene M	AN15a	µg/kg	Ŷ	N	10	<10	<10
1,1,2,2 -Tetrachloroethane M	AN15a	µg/kg	Ŷ	N	10	<10	<10
1,1-Dichloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10
4-isopropyltoluene M	AN15a	µg/kg	Y	Ν	10	<10	<10
Chlorodibromomethane M	AN15a	µg/kg	Y	Ν	10	<10	<10
Cis - 1,2 -dichloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10
Naphthalene (VOC) M	AN15a	µg/kg	Y	Ν	10	<10	<10
trans-1,2-Dichloroethylene M	AN15a	µg/kg	Y	Ν	10	<10	<10

Notes

All analyses performed on the sample dried at <30°C, except analyses suffixed with 'M'.

1. All analyses performed on the sample dired at -30°C, except analyses suffixed with 'M'.
2. Analyses suffixed 'M' were performed on the sample as received and corrected for '% moisture at -30°C' where applicable.
3. All results are expressed as dry weight.
4. MCERTS accreditation applicable to Sample Matrix 'S' only.
5. Natural stores (pebbles, gravele scl), which do not pass a 2mm sieve are excluded from dried analyses.
6. Tests marked 'Indicate subcontracted analyses.
7. ND denotes None Detected.
8. The laboratory has tested the material/items supplied by the client as sampled in accordance with the client's own requirements.
9. %Sample Description key: 1. - Sand, 2. Lean, 3. Clay, 4. Sand/lean mix, 5. Sand/clay mix, 6. Clay/oam mix, 7. Other.
suffixed with. - A Stores, B. - Construction rubition, C. - Visible Hydrocarbons
10. Leachate preparation is not included in our UKAS accreditation.
11. Dates of testing for all parameters are available upon request.

Signed for, and on behalf of Exova (UK) Ltd.



C McGinty Inorganics Head of Section

The contents of this document are governed by the terms and conditions overleaf. Registered Office: Exova (UK) Ltd. Lochend Industrial Estate, Newbridge, Midiothian, EH28 8PL United Kingdom. Reg No. SC 70429

J McEleny Laboratory Manager

Approved by:





APPENDIX 7.0 ROCK CORE PHOTOGRAPHS





BH04 6.20—9.20m



BH04 9.20—12.20m





BH05 5.70—8.70m



BH05 8.70—11.70m





BH06 6.30—9.30m



BH06 9.30—12.30m



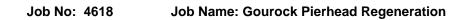




TP10 Spoil



TP10 Topsoil







TP11 Excavation



TP11 Spoil







TP11 Topsoil



TP12 Excavation







TP12 Excavation



TP12 Spoil







TP12 Topsoil



TP13 Excavation





TP13 Spoil

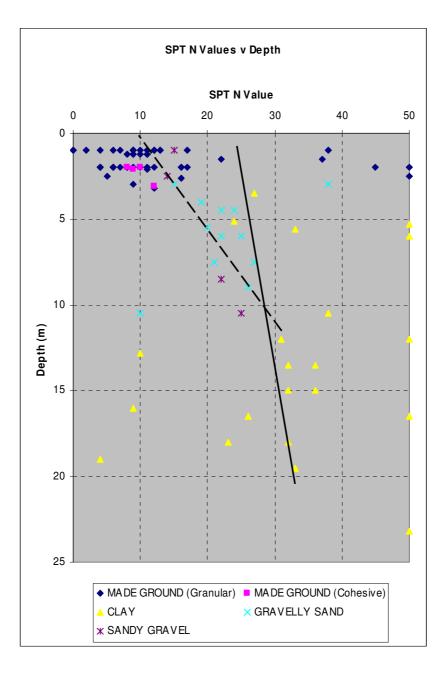


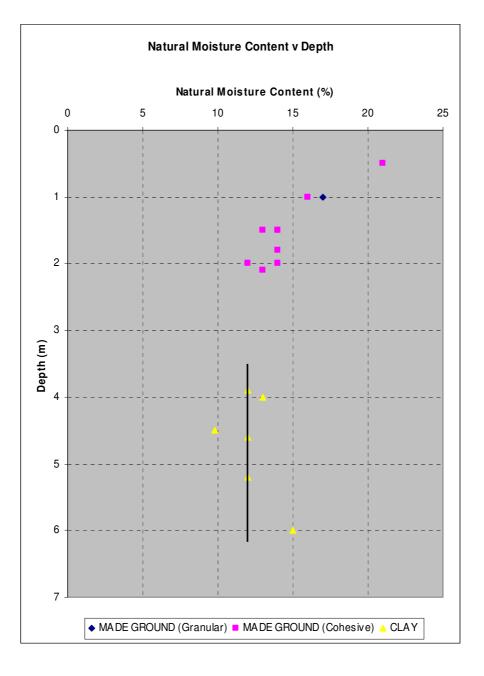
TP13 Topsoil

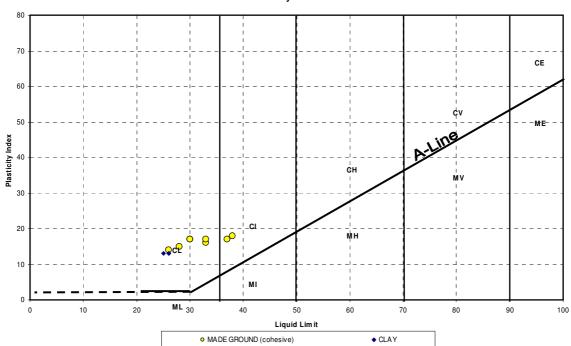
Appendix 3

Graphs of Laboratory and In-situ Test Results

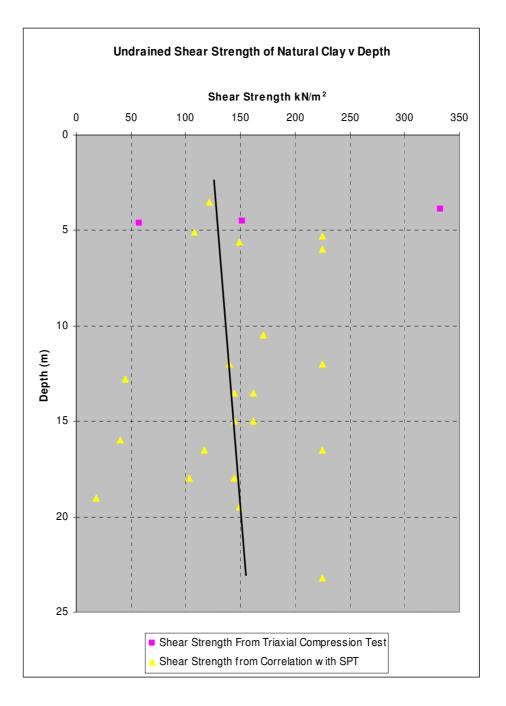
SPT N Values v Depth Natural Moisture Content v Depth Plasticity Chart Undrained Shear Strength of Natural Clay v Depth Uniaxial Compressive Strength v Depth

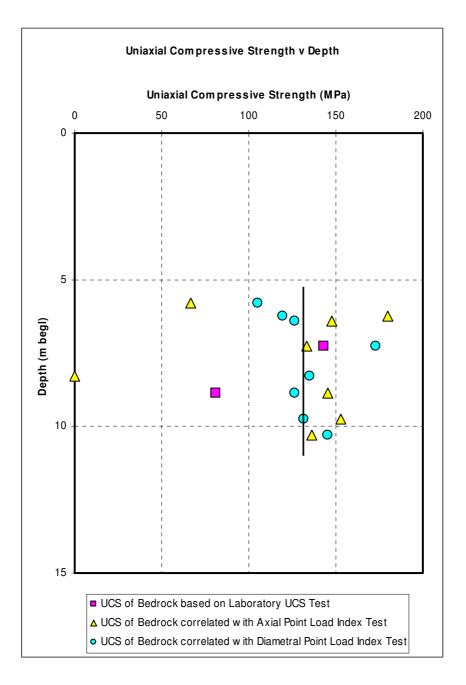






Plasticity Chart





Appendix 4

Principles of Environmental Risk Assessment

Principles of Environmental Risk Assessment

The Environmental Protection Act 1990, Part II A Contaminated Land (Section 57 of the Environment Act 1995) and the Contaminated Land (Scotland) Regulations 2005 provide a basis on which to determine the risks and liabilities presented by a contaminated site. Contaminated Land is defined within Annex 3, Chapter A Part 1- Scope of Chapter and in all those Sections mentioned as:

"Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that-

- (a) Significant harm is being caused or there is significant possibility of such harm being caused; or
- (b) Significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused."

Section 57 of the Environment Act 1995 requires that any site identified as being "contaminated" by the Local Authority will be registered by them and remediation will be required to render the site fit for use.

The presence of contamination is not the sole factor for deciding whether a site is contaminated. Relevant parties should identify site-specific risks and provide objective, cost-effective methods to manage the contamination in a manner which satisfies the proposed end-use.

A risk-based approach, which takes both technical and non-technical aspects into consideration when making decisions on contamination resulting from past, present or future human activities, is advocated. The assessment of environmental risks generally relies on the identification of three principal elements forming a 'pollutant linkage':

- Source: the contaminant
- Pathway: the route through which the contaminant can migrate, and
- Receptor: any human, animal, plant, water environment or property that may be adversely affected (harmed) by the contaminant

In the absence of any one of these elements, on any given site, there is no risk. Where all three elements are present, risk assessment is required to determine the significance of the harm or pollution that is being or may be caused. As outlined above, the terms of the Contaminated Land regime specify that remediation need only be implemented where a site is causing, or there is a significant possibility that it will cause, significant harm, or that significant pollution of the water environment is being, or there is a significant possibility of such pollution being caused.

Development of contaminated land is usually addressed through the application of planning and development legislation and guidance (i.e. Planning Guidance Note PPG23 in England and Advice Note 33 in Scotland). The suitable for use approach is seen as the most appropriate basis to deal with contaminated land, taking account of environmental, social and economic objectives. The assessment is made in the context of the proposed land use (e.g. residential, commercial, industrial and public open-space).

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