BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

ENVIRONMENT

St Modwen Developments
St Modwen Park Phase 4
Witham St Hughs, Lincolnshire

Phase 2 Geo-Environmental Assessment

ENVIRONMENT

St Modwen Developments
St Modwen Park Phase 4
Witham St Hughs, Lincolnshire

Phase 2 Geo-Environmental Assessment

Birmingham
Livery Place, 35 Livery Street, Colmore Business District, Birmingham, B3 2PB
T: 0121 233 3322

Leeds
Whitehall Waterfront, 2 Riverside Way, Leeds
LS1 4EH
T: 0113 233 8000

London
11 Borough High Street
London, SE1 9SE
T: 0207 407 3879

Manchester
11, Portland Street, Manchester M1 3HU
T: 0161 233 4260

Market Harborough
Harborough Innovation Centre, Wellington Way, Airfield Business Park,
Leicester Road, Market Harborough, Leicestershire, LE16 7WB
T: 01858 455020

Nottingham
Waterfront House, Station Street, Nottingham NG2 3DQ
T: 0115 924 1100

April 2020

DOCUMENT ISSUE RECORD

Document Number:	SMP-BWB-ZZ-XX-RP-YE-0002_Ph2Phase 4
BWB Reference:	NTS2656

Revision	Date of Issue	Status	Author:	Checked:	Approved:
P1	April 2020	S2	Jade Allen BSc (Hons)	Imogen Wort BSc MSc	Richard Robinson BSc (Hons) MCIWEM
					

Notice

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY	
Site Address	St Modwen Park, Witham St Hughs, Lincolnshire.
Proposed Development	The proposed development is anticipated to comprise the construction of four industrial units of between 9,461 ft^2 and 94.944 ft^2 with associated loading and parking areas, as well as limited landscaped areas.
Site Setting	The site is located in the centre of the former RAF Swinderby site. At the time of the investigation, the site was covered by concrete and asphalt hardstanding ground associated with historical roadways and building footprints. In the east of the site was a small disused structure and several mature trees and scrubs.
Site Investigation	A ground investigation was undertaken which comprised: • Advancement of six dynamic sampler boreholes to a maximum depth of 4.45m below ground level (bgl). • Advancement of fourteen trial pits to a maximum depth of 3.00m bgl. • Soil and groundwater chemical analysis. • Soil geotechnical analysis. • Four post investigation gas and groundwater monitoring visits.
Ground Conditions Encountered	Ground conditions confirmed the published geology and that previously encountered at the site, comprising Made Ground or Topsoil over deposits of the Balderton Sand and Gravel Member (BSG), with limited hardstanding, Reworked Natural and relic Topsoil. The bedrock geology of the Scunthorpe Mudstone Formation was not encountered as part of this investigation.
Geotechnical Appraisal	For a standard commercial development, it is considered that a shallow spread foundation and a ground bearing floor flab bearing onto the BSG would be suitable at the site. Design Sulphate Classification of DS-2 and an Aggressive Chemical Environment for Concrete Classification of AC-2 would be required to ensure concrete is protected from chemical attack.
Environmental Appraisal	Ground gas monitoring has identified elevated concentrations of carbon dioxide at the site (up to 5.4% v/v), likely associated with small volumes of organic carbon within the BSG and as such the site has been given a classification of CS1 for which ground gas measures are not required. Two marginally elevated concentrations of total petroleum hydrocarbons were reported within TP414 at 0.3m bgl and WS402 at 0.3m bgl. However, these are not considered to pose a significant risk to human health due to speciated analysis undertaken on TP402 reporting all individual hydrocarbon fractions below their respective screening criteria. Five samples submitted for asbestos screening reported no detection of such materials. Marginally elevated concentrations of heavy metals were identified within soil leachate and groundwater; however, these are not considered to pose a significant risk to controlled waters given the sensitivity of the aquifer and distance to a down hydraulic gradient receptors. One exceedance of cyanide was identified within a soil leachate sample (TP414 at 0.3m bgl), due to the absence of significant on-site sources and the localised nature of the impact, it is not considered to pose a significant risk to controlled waters. Additionally, comparing this result to the cyanide concentration in the soil chemical results, no significantly elevated cyanide concentrations were identified.

Waste Assessment	The results of preliminary waste classification indicate that the soils at the site would be classified as non-hazardous.
This summary should be read in conjunction with BWB's full report (ref. SMP-BWB-ZZ-XX-RP-YE-0002_Ph2Phase **4**) and reflects an assessment of the site based on information received by BWB at the time of production.	

CONTENTS

FIGURES

TABLES

DRAWINGS

APPENDICES

1. INTRODUCTION

Instruction

1.1 BWB Consulting (BWB) was instructed by St Modwen Developments (the Client) to carry out a Phase 2 Geo-Environmental Assessment for Phase 4 of St Modwen Park, Witham St Hughs. Details of the project brief are included in BWB proposal reference 200205/R01/01/NTS2656/RC/RTR, dated February 2020.

1.2 The proposed development is anticipated to comprise the construction of four industrial units of between 9,461 ft^2 and 94.944 ft^2 with associated loading and parking areas, as well as limited landscaped areas. A proposed site layout plan (reference 20025 P0003, dated 17th February 2020) is presented as **Appendix 1**.

Previous Reports

1.3 The following geo-environmental reports have previously been completed for the site:

- 'Phase 1 Geo-Environmental Desk Study, Network 46, Swinderby' by BWB Consulting for Fergus Jack and Bryn Williams Joint LPA Receivers of Brightsea UK Ltd, reference NTE2253/01/V2, dated October 2014.
- 'Phase 2 Geo-Environmental Assessment, Network 46, Swinderby' by BWB Consulting for Fergus Jack and Bryn Williams Joint LPA Receivers of Brightsea UK Ltd, reference NTW2253/02/V2, dated October 2014.
- 'Controlled Waters Detailed Quantitative Risk Assessment Report, Network 46, RAF Swinderby' by BWB Consulting for Fergus Jack and Bryn Williams Joint LPA Receivers of Brightsea UK Ltd, reference NTW2253/04/V1, dated February 2015; and
- 'Soil Infiltration Testing, Network 46, Witham St Hughs' by BWB Consulting for St Modwen, reference NTW2253, dated July 2017.

It is assumed that the reader has familiarity with the above report and therefore pertinent information has been included within this report, where appropriate.

Objectives

1.4 Following the completion of previous ground investigations at the site, the objectives of this report are to supplement previous findings to inform planning and design and assess:

- The prevailing ground and groundwater conditions across the site.
- The potential presence and extent of contamination in shallow soil and groundwater beneath the site.
- The significance and magnitude of the observed contamination through comparison of analytical data to appropriate published environmental screening criteria.
- The strength properties of the soil beneath the site to enable foundation design.
- The ground gas regime beneath the site.

1.5 The report has been completed in accordance with BS10175:2011(+A2:2017) 'Investigation of Potentially Contaminated Sites, Code of Practice' and CLR11 'Model Procedures for the Management of Land Contamination'.

1.6 This report presents the information obtained from ground investigation. The report, together with the associated Figures and Appendices, provides a Ground Investigation Report (GIR), as defined in BS EN 1997-1:2004 and BS EN 1997-2:2007.

Scope of Works

1.7 The ground investigation scope of works was completed between 24th February and 9th March 2020 and comprised the following:

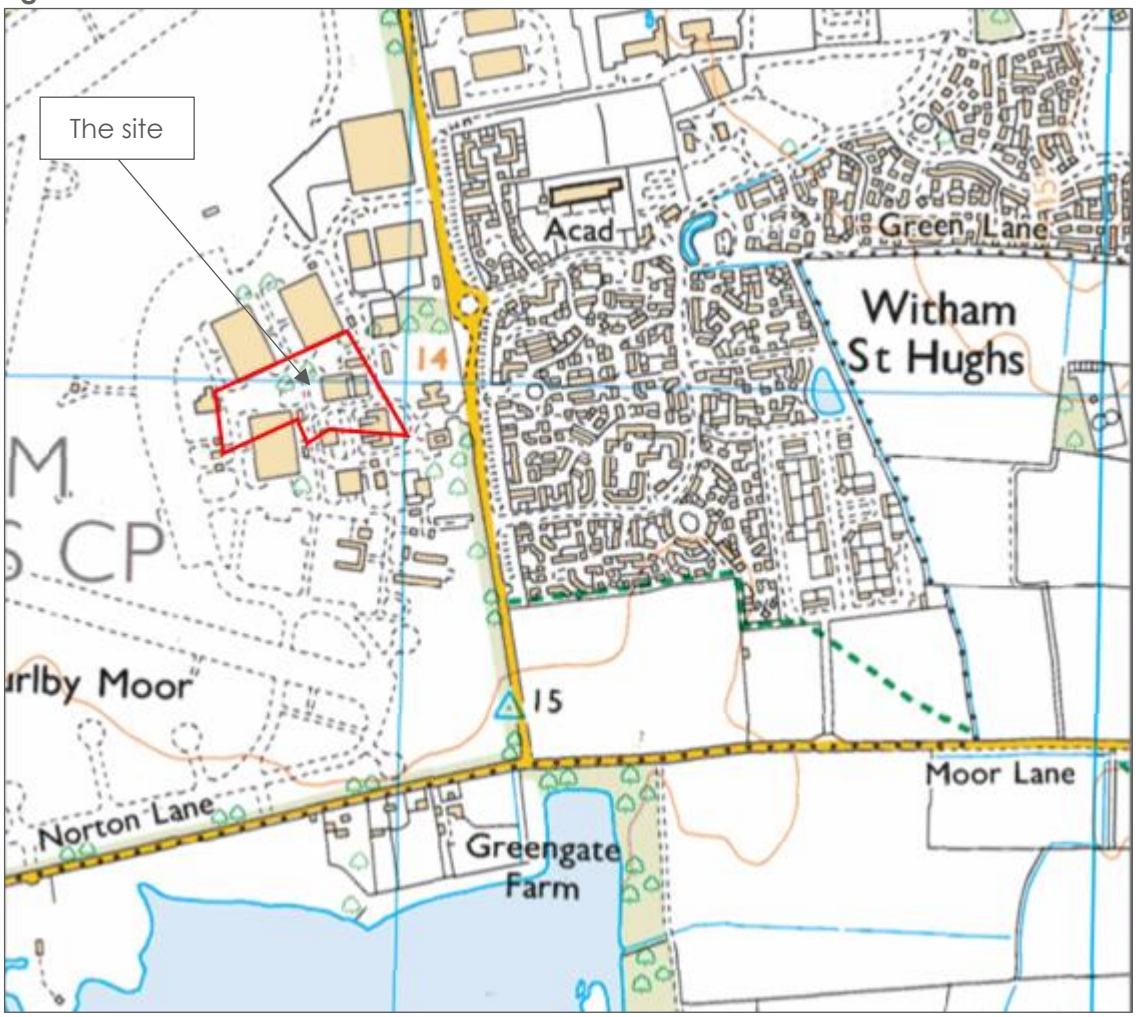
- Non-intrusive survey of excavation locations for underground utilities.
- Fourteen machine excavated trial pits.
- Six dynamic sampler boreholes.
- Four gas and groundwater monitoring visits.
- Chemical analysis of soils and groundwater.
- Geotechnical testing of soil.

2. THE SITE

Site Location

2.1 The site is located at Phase 4, St Modwen Park, in Witham St Hughs, located at approximate National Grid reference 488909, 362002. The location of the site is shown in **Figure 2:1.**

Figure 2:1: Site Location Plan



Site Description

2.2 At the time of the site investigation, the site comprised an irregular shaped plot of land covering approximately 3.2 hectares in the centre of St Modwen Park.

2.3 The majority of the site was covered by concrete and asphalt hardstanding ground associated with historical building footprints and roadways. Areas of soft landscaping were present on site with several mature trees and shrubs located predominantly in the east. A small disused structure was present within the west of the site.

2.4 At the time of the site investigation, hardstanding along the southern boundary and part of the western end of the site was being utilised by Lindum (the contractor on-site) as a site compound and access point to Phase 2 to the north.

Previous Report Summary

'Phase 1 Geo-Environmental Desk Study, Network 46, Swinderby' by BWB Consulting, dated October 2014

2.5 The report comprised a desk study of the wider RAF Swinderby site, of which the subject site is located in the centre.

2.6 The site is indicated to have comprised undeveloped agricultural land until the 1950s, when the airfield at RAF Swinderby was developed. By 1965, several buildings can be seen on site associated with the airfield, although limited mapping is available between the 1950s and 1965, so it is likely the buildings were present prior to 1965. Additionally, by 1975, a tank can be seen in the south eastern corner. No significant changes are noted from 1994 to 2012.

2.7 A UXO report concluded that there was a low to moderate risk of unexploded ordnance and military related contamination at the site.

'Phase 2 Geo-Environmental Assessment, Network 46, Swinderby' by BWB Consulting, dated October 2014

2.8 Following the Phase 1 Desk Study, an intrusive investigation was undertaken across the wider RAF Swinderby site. Three trial pits (TP01, TP06 and TP07), one cable percussive borehole (BH01) and one dynamic sampler borehole (DS02) were undertaken within the subject site.

2.9 Ground conditions in the subject site were found to comprise concrete (overlain by asphalt within BH01) to depths of up to 0.25m below ground level (bgl), over Made Ground to depths between 0.4m and 1.1m bgl. Made Ground was generally described as orange brown sand and/or gravel, with four positions being slightly clayey and two locations being either a grey black or brown colour. Gravels within the Made Ground were generally limestone, flint, quartzite, brick and concrete. One location (TP07) identified Topsoil beneath the Made Ground.

2.10 Superficial deposits of the Balderton Sand and Gravel Member (BSG) were recorded beneath the Made Ground (and Topsoil within TP07), generally described as an orange brown or grey and/or brown sand or/and gravel of quartzite and flint; one position (BH01) identified a clay stratum of the superficial deposits. The bottom depth of the BSG was not proven, with superficial deposits present up to 7.45m bgl.

2.11 Groundwater was encountered at depths of between 2.3m and 3.0m bgl within the BSG. Subsequent monitoring recorded groundwater at depths of between 2.32m and 2.36m bgl within BH01. A slight hydrocarbon odour was noted within BH01 between 2.0m and 2.45m bgl, becoming stronger between 3.0m and 3.45m bgl.

2.12 Chemical testing of soils did not report any exceedances and asbestos was not recorded within any Made Ground soils. One marginal exceedance of naphthalene (0.14µg/l against an EQS screening value of 0.1µg/l) was identified within groundwater obtained from BH01 on the subject site. However, the current EQS guideline concentration for naphthalene is 2µg/l and as such, the previously recorded value would not be considered to be an exceedance. Slightly elevated hydrocarbon concentrations were also recorded at BH01 (EPH C10-C40 concentration of 800µg/l).

2.13 Significantly elevated hydrocarbon concentrations were also identified within groundwater in the south eastern, central and northern parts of the wider site. It was recommended that further investigation and a detailed quantitative risk assessment (DQRA) be undertaken in these areas.

2.14 Ground gas monitoring of BH01 recorded flow rates and methane concentrations as <0.1% v/v on all occasions and carbon dioxide concentrations were recorded between 1.9% v/v and 6.1% v/v.

'Controlled Waters Detailed Quantitative Risk Assessment Report, Network 46, RAF Swinderby' by BWB Consulting, dated February 2015

2.15 A DQRA was undertaken at the site for contamination identified outside of the subject site area. Additional investigation and groundwater sampling highlighted the contamination plumes in the south and south east of the site to be from ongoing sources, although the only the plume in the south east was considered to present a risk of off-site migration of hydrocarbons.

2.16 Modelling suggested that off-site migration of contamination is not currently occurring, but the potential for future migration could not be discounted. It was concluded that the proposed development would have a beneficial effect on the local groundwater quality through source removal and the restriction of groundwater mobility through increased hardstanding at the site.

'Soil Infiltration Testing, Network 46, Witham St Hughs' by BWB Consulting, dated July 2017

2.17 Soil infiltration testing was undertaken across the wider RAF Swinderby site, with one test undertaken in the centre of the subject site area. Permeability was recorded between 5.7 $x10^{-5}$ and 8.4 $x10^{-5}$, representative of soil with a medium permeability and good drainage characteristics.

3. PUBLISHED GROUND CONDITIONS

Published Geology

3.1 British Geological Survey (BGS) mapping for the site indicates that the site is directly underlain by superficial deposits of the Balderton Sand and Gravel Member (BSG) overlying the bedrock geology of the Scunthorpe Mudstone Formation (SMF).

3.2 The BGS Lexicon records the BSG to comprise an orange-brown sandy gravel dominated by rounded quartzite gravels and subordinate subangular flint gravels. The SMF is recorded as grey, variably calcareous and silty mudstone.

3.3 Mapping does not indicate Made Ground to be present on-site.

3.4 Previous limited ground investigation undertaken on the site by BWB confirmed the anticipated sequence of ground conditions indicated by BGS mapping and also recorded Made Ground (including hardstanding) at the surface.

Hydrogeology

3.5 The underlying ground conditions have been classified by the Environment Agency (EA) as follows:

- BSG: Secondary A Aquifer.
- SMF: Unproductive Strata.

3.6 Previous limited ground investigation has recorded groundwater to be present at depths between 2.3m and 3.0m bgl within the BSG. Subsequent monitoring recorded groundwater at depths between 2.32m and 2.36m bgl, with groundwater flow predominantly in a northerly and north-easterly direction.

Hydrology

3.7 The closest mapped surface water feature to the site is a surface drain located approximately 170m to the north.

3.8 Information published by the EA indicates that the site is not at risk of flooding.

4. PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

Introduction

1.1 The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.

1.2 The following section discusses the identified potential on and off-site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors such as human health and/or controlled waters from the data gained from the desk study and previously preliminary ground investigation data. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.

1.3 Three impact potentials exist for any given site; these are:

- The site impacting upon itself.
- The site impacting on its surroundings.
- The surroundings impacting on the site.

1.4 All three impacts need to be considered in a risk assessment.

4.1 A Source, Pathway, Receptor analysis has been undertaken for the site based on the information provided in the preceding sections. This is presented as **Table 4:1** and further information about the risk classification scheme is included within **Appendix 2**.

4.2 Sources (S); These are potential or known sources of contamination that may relate to a former land use or present site feature or process (e.g. fuel storage tanks).

4.3 Pathways (P); A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development.

4.4 Receptors (R); Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

4.5 Under the Construction Design Management (CDM) Regulations 2015, construction and maintenance contractors must undertake their own risk assessments and mitigation to protect their staff, other human receptors and the environment from potential contamination. By law potential risks to human health and the environment from construction activities must appropriately identified and all necessary steps taken to eliminate/manage that risk. Therefore, construction / maintenance workers are excluded as a receptor in the CSM.

Table 4:1 : Preliminary Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
S1: On-site – former RAF Swinderby with associated historical buildings and tank and Made Ground.	**P1:** Ingestion, skin contact and inhalation.	**R1**: Services personnel	Md	Lw	M/L	A ground investigation should be conducted to characterise potential contaminants within the site. This should include suitable chemical analytical testing for the associated contaminants. The ground investigation should also seek to characterise the ground gas regime. Construction workers should adopt appropriate PPE and hygiene precautions.
		R2: Future site users (commercial)				
	P2: Gas migration into buildings through foundation cracks, service entry points.	**R2**: Future site users (commercial)	Sv	Lw	M	
	P3: Direct contact.	**R3:** Water utility pipes	Mi	Lw	L	Should localised or low concentrations of contamination be identified then it is expected that conventional protection measures such as a soil cover system or/or basic gas protection measures would mitigate significant risk.
		R4: Buried structures/ foundations				
	P4: Leaching and permeation and subsequent groundwater flow.	**R5:** Secondary A Aquifer	Md	Li	M	A ground investigation should be conducted to characterise potential contaminants within the soils and groundwater and assess risks to controlled waters receptors.
	P5: Migration of contamination via surface water off-site.	**R5:** Surface waters	Md	Ul	L	Given the distance to the surface water courses and the nature of the surrounding land, it is unlikely that site derived contaminants will have migrated to potential surface water receptors.
S2: Off-site – contaminants associated with the wider RAF Swinderby site including fuels, historical electrical substation, hydraulic fluid, munitions, sewage disposal, over ground and underground fuel storage, hazardous ground gases etc.	**P6:** Migration of contaminated via groundwater on-site.	**R2**: Future site users (commercial)	Md	Lw	M/L	A ground investigation should be conducted to characterise potential contaminants within the site. This should include suitable chemical analytical testing for the associated contaminants. The ground investigation should also seek to characterise the ground gas regime. Construction workers should adopt appropriate PPE and hygiene precautions.

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
						Should localised or low concentrations of contamination be identified then it is expected that conventional protection measures such as a soil cover system or/or basic gas protection measures would mitigate significant risk.

VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

KEY: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Hi = High, Li = Likely, Lw = Low Likelihood, Ul = Unlikely

5. PHASE II ENVIRONMENTAL AND GEOTECHNICAL GROUND INVESTIGATION

5.1 Intrusive ground investigation works were undertaken between 24th February and 9th March 2020 and comprised the following works:

- Clearance of investigation locations by a specialist buried services tracing company.
- Collection of coordinates and elevations of exploratory hole locations.
- Advancement of six boreholes (WS401 to WS406 inclusive) by dynamic sampling drilling techniques, to a maximum depth of 4.45m bgl with completion of standard penetration testing (SPTs) and installation of gas and groundwater monitoring wells.
- The advancement of fourteen machine excavated trial pits (TP401 to TP414 inclusive) to a maximum depth of 3.0m bgl.
- Collection of environmental soil and groundwater water samples (two occasions) for chemical analysis at a UKAS and MCERTS accredited laboratory.
- Collection of bulk and disturbed soil samples for geotechnical analysis at a UKAS accredited laboratory.
- Four post investigation ground gas and groundwater level monitoring visits.

5.2 An exploratory hole location plan is presented as **Drawing 1**. BWB exploratory hole records are presented as **Appendix 3**, the SPT calibration certificate is presented in **Appendix 4**, and the post investigation gas and groundwater monitoring data is presented as **Appendix 5**.

5.3 The site investigation works were carried out in general accordance with BS5930:2015 'Code of Practice for Site Investigations' and BS10175:2011 'Investigation of Potentially Contaminated Sites'.

Chemical Sampling and Analytical Strategy

5.4 Exploratory hole locations were positioned across the site in order to gain a good coverage of the area and an understanding of the ground conditions and groundwater regime across the site.

5.5 WS401, WS402, TP403 and TP404 were all positioned within the vicinity of a historic borehole (BH01) where hydrocarbons were previously encountered.

5.6 Soil samples were retrieved from a variety of depths and strata, where possible, to allow for a range of environmental laboratory testing.

<u>Soil Strategy</u>

5.7 Selected soil samples collected from exploratory hole locations were sent to i2 Analytical Ltd (UKAS and MCERTS accredited) for chemical analysis. The following chemical analytical testing was undertaken.

- Fifteen soil samples tested for a soil suite (BWB Standard Suite) comprising arsenic, barium, beryllium, water soluble boron, cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, water soluble sulphate (2:1 extract), total phenols, total cyanide, free cyanide, complex cyanide, fraction of

organic carbon, pH, Polycyclic Aromatic Hydrocarbons (PAHs) (United States Environment Protection Agency priority 16 compounds) and Total Petroleum Hydrocarbons (TPH) C6-C40;
- Six soil samples tested for TPH speciated to the UK Criteria Working Group (TPHCWG) aliphatic and aromatic compounds.
- Five soil samples submitted for asbestos screening.
- Five soil samples tested for a suite of common leachable contaminants, namely arsenic, barium, beryllium, water soluble boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, water soluble sulphate (2:1 extract), sulphate, total cyanide and pH.

5.8 The results of the soil chemical testing are presented as **Appendix 6**.

5.9 The above soil chemical testing was targeted based on the following rationale presented within **Table 5:1**.

Table 5:1 : Soil Chemical Analytical Strategy

Location	Depth (m bgl)	Stratum	Analysis	Reason
WS401	0.3	Topsoil	BWB standard suite, TPHCWG, asbestos screen	General Topsoil screen
WS402	0.3		BWB standard suite, TPHCWG, asbestos screen, BWB standard leachate suite	
WS405	0.15		BWB standard suite, BWB standard leachate suite, asbestos screen,	
TP407 TP414	0.9 0.3	Made Ground	BWB standard suite, asbestos screen, BWB standard leachate suite	General Made Ground screen
TP405	0.2		BWB standard suite, BWB standard leachate suite	
TP401 TP403 TP404 WS401	2.0 0.9 1.5 2.2	BSG*	BWB standard suite, TPHCWG	General Natural Ground Screen
TP406 TP412 TP414 WS402 WS404	0.9 0.9 1.6 2.5 2.6		BWB standard suite	
*Balderton Sand and Gravel Member				

Groundwater Strategy

5.10 Groundwater samples were obtained using a bailer following the removal of 3 times the well volume of water on two occasions. The groundwater samples were sent to i2 Analytical Ltd (UKAS and MCERTS accredited) for the following suite of groundwater chemical testing:

- Six water samples tested on two occasions for arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, conductivity, soluble sulphate, ammoniacal nitrogen, total phenols, total cyanide, pH, total organic carbon, PAHs (US EPA priority 16 compounds).
- Six water samples tested on two occasions for TPHCWG.
- Six water samples tested on one occasion for VOCs and SVOCs.

5.11 The results of the water chemical testing are presented as **Appendix 7**.

Geotechnical Strategy

5.12 Exploratory hole locations were positioned across the site in order to gain a good coverage of the area and an understanding of the ground conditions across the site.

5.13 In-situ soil strength testing comprising SPTs were undertaken with the dynamic sampler boreholes. SPT 'N' values are included on the exploratory hole logs presented as **Appendix 3**.

5.14 Selected disturbed and bulk samples were collected from the investigation locations and sent to the geotechnical project laboratory (i2 Analytical Ltd), which is UKAS accredited. The following geotechnical testing was undertaken:

- Thirteen samples tested for moisture content.
- Eight samples tested for particle size distribution by pipette.
- Seven samples tested for BRE Suite comprising aqueous sulphate and pH.
- Six CBR (2.5kg) compaction tests.

5.15 The results of the geotechnical testing are included as **Appendix 8**.

Limitations and Uncertainty

5.16 At the time of the site investigation, a number of exploratory holes had to be moved due to the presence of the contractor's compound and access areas.

6. GROUND CONDITIONS ENCOUNTERED

Geological Summary

6.1 The ground conditions recorded confirmed the published geology and that previously encountered at the site, Made Ground or Topsoil over deposits of the Balderton Sand and Gravel Member (BSG), with limited hardstanding, Reworked Natural and relic Topsoil. The bedrock geology of the Scunthorpe Mudstone Formation was not encountered as part of this investigation.

6.2 The recorded ground conditions are summarised in **Table 6:1** below and **Drawing 2** presents a geological cross section through the site. Uncorrected SPT results collected from the borehole locations are presented on the exploratory hole records presented in **Appendix 3**.

Table 6:1 : Summary of Ground Conditions

Stratum	Top Depth (m)		Base Depth (m)		Thickness (m)		SPT N Value	
	Min	Max	Min	Max	Min	Max	Min	Max
Topsoil	0.0	0.0	0.3	1.2	0.3	1.2	NR	
Hardstanding	0.0		0.15		0.15		NR	
Made Ground	0.0	0.15	0.6	1.4	0.45	1.40	NR	
Reworked Natural	0.4		1.8		1.4		7	
Relic Topsoil	1.8		2.0		0.2		NR	
Balderton Sand and Gravel Member	0.3	2.0	>4.45*		>4.05*		6	37
• *Base depth and thickness unproven.								

Geological Descriptions

Topsoil

6.3 Topsoil was encountered within sixteen of the twenty exploratory hole locations at the site at thicknesses between 0.3m and 1.2m. Four of the positions generally consisted of grass over dark brown slightly gravelly clayey sand with gravels of granite, flint, brick and coal and frequent rootlets. Twelve locations encountered grass over dark brown silty sand with quartzite gravels and rootlets; three of these positions also encountered brick inclusions.

6.4 Moisture contents from Topsoil samples were recorded in the range of 15% (within TP402 at 0.2m bgl) and 25% (within TP410 at 0.1m bgl). One compaction test on Topsoil reported a maximum dry density of 1.92 mg/m^3 (within TP402 at 0.2m bgl).

6.5 The depth of topsoil over the site may vary from that encountered at the locations investigated within the scope of this investigation which may result in inaccurate estimations of topsoil quantities on the site.

Hardstanding

6.6 Hardstanding was encountered within one exploratory hole location (TP405) and consisted of a grey concrete with 50% gravel of subangular to rounded fine to coarse quartzite and 20% voids with rebar.

Made Ground

6.7 Made Ground was encountered within four of the exploratory hole locations (TP403, TP405, TP407 and TP414), either at ground level or below the hardstanding, with thicknesses ranging between 0.45m and 1.4m. The Made Ground was generally described as a yellowish brown sandy gravel with a high cobble content; or gravels of quartzite, limestone, brick and concrete were identified, as well as cobbles of concrete brick and limestone.

6.8 Two moisture content tests on samples taken from the Made Ground were recorded as 14% (within TP407 at 0.9m bgl) and 17% (within TP414 at 0.8m bgl). One compaction test on Made Ground reported a maximum dry density of 1.85 mg/m^3 (within TP414 at 0.8m bgl).

6.9 One PSD (particle size distribution) test was undertaken on a sample from the Made Ground, a summary of the result is provided in **Table 6:2** below.

Table 6:2 : PSD Results Summary

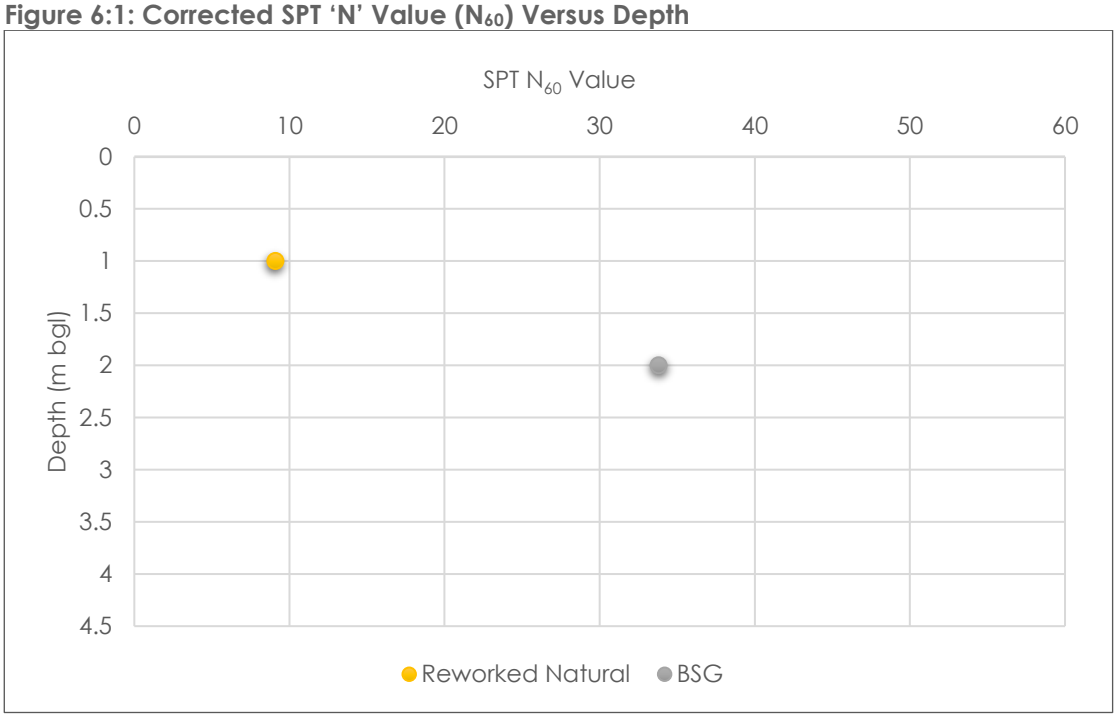
Stratum	Location	Depth (m bgl)	Cobble Content (%)	Gravel Content (%)	Sand Content (%)	Clay/ Silt Content (%)	Earthworks Classification
Made Ground	TP407	0.9	0.0	70.6	21.7	7.7	1A
BSG	TP401	1.4	0.0	20.6	66.3	13.1	1A
	TP403	0.9	0.0	13.4	58.8	27.9	2A&2B
	TP405	2.5	0.0	11.2	78.2	10.6	1A
	TP408	0.8	0.0	24.1	54.7	21.3	2C
	TP409	2.2	0.0	48.6	44.9	6.5	1A
	TP412	0.9	0.0	25.4	64.0	10.6	1A
	TP414	1.6	9.8	37.8	42.7	9.7	1A

Reworked Natural

6.10 One location at the site (WS405) encountered Reworked Natural material with a thickness of 1.4m and was described as a dark orangish brown slightly gravelly clayey fine to coarse sand with occasional roots; the gravels were subrounded to rounded fine to coarse quartzite.

6.11 One SPT N value within the Reworked Natural ground was recorded as 7 blows, with the N60 value recorded as 9 blows. A plot of corrected SPT 'N_{60}' Value Vs Depth is presented as **Figure 6:1** below.

Figure 6:1: Corrected SPT 'N' Value (N_{60}) Versus Depth



Relic Topsoil

6.12 Relic Topsoil was encountered below the Reworked Natural material within one location (WS405) with a thickness of 0.2m and consisted of a dark blackish brown slightly sandy clay with abundant rootlets.

Balderton Sand and Gravel Member

6.13 Deposits of the BSG were recorded within all exploratory hole locations beneath either Topsoil, Relic Topsoil or Made Ground, with thicknesses and base depth unproven to depths greater than 4.45m bgl.

6.14 The BSG was generally described as an orange, yellowish or greyish brown or brownish grey slightly silty or slightly clayey gravelly sand; gravels were recorded as quartzite and flint. The sand was generally encountered overlaying an orangish brown or light brownish grey or greyish brown sand and/or gravel of flint and quartzite.

6.15 One location (WS401) identified a very soft brown and orangish brown slightly gravelly very sandy clay between 1.7m and 2.0m bgl; gravels were flint and quartzite.

6.16 SPT N values within the BSG were recorded in the range of 6 and 37 blows, with N_{60} values recorded in the range 8 and 48 blows. A graph presenting the SPT N_{60} results are presented within **Figure 6:1** above.

6.17 Moisture contents were recorded in the range of 6.8% (within WS405 at 2.5m bgl) and 19% (within TP403 at 0.9m bgl). Compaction testing reported maximum dry densities in the range of 2.02mg/m^3 (within TP407 at 1.7m bgl) and 2.14mg/m^3 (within TP401 at 2.0m bgl).

6.18 Seven PSD tests were undertaken on samples taken from the BSG, a summary of the result is provided in **Table 6:2** above.

Hydrogeology and Hydrology

6.19 A summary of groundwater strikes recorded during the investigation is presented in **Table 6:3** below.

Table 6:3 : Groundwater Strikes Summary

Location	Depth (m bgl)	Stratum	Notes
WS401	2.0	BSG	Groundwater strike.
WS402	2.0		Groundwater encountered.
WS403	2.0		Groundwater encountered.
WS404	1.8		Groundwater encountered.
WS405	2.0		Groundwater encountered.
WS406	2.0		Groundwater strike.
TP401	1.7 - 2.5 2.5		Damp arisings. Groundwater strike.
TP403	1.4 - 2.3 2.3		Damp arisings. Groundwater strike.
TP404	1.2 - 2.5 2.5		Damp arisings. Groundwater strike.
TP405	1.6 - 2.4 2.4		Damp arisings. Groundwater strike.
TP406	0.8 - 2.5 2.5		Damp arisings. Groundwater strike.
TP407	1.4 - 2.5 2.5		Damp arisings. Groundwater strike.
TP408	1.2 - 2.3 2.3		Damp arisings. Groundwater strike.
TP409	1.5 - 2.2 2.2		Damp arisings. Groundwater strike.
TP410	1.5 - 2.3 2.3		Damp arisings. Groundwater strike.
TP411	1.0 - 2.8 2.8		Damp arisings. Groundwater strike.
TP412	1.3 - 2.6 2.6		Damp arisings. Groundwater strike.
TP414	1.4 - 2.6 2.6		Damp arisings. Groundwater strike.

6.20 During the monitoring period, undertaken to date, standing water levels were recorded within all boreholes, varying between 1.98m bgl (within WS405) and 2.28m bgl (within

WS406). Groundwater elevations were noted to vary between 12.60m above Ordnance Datum (AOD) (within WS405) and 12.97m AOD (within WS404).

6.21 The monitoring data has been used to infer the likely groundwater flow profile across the site, which is indicated to flow in a northerly and north-easterly direction, which is similar to the wider site. The inferred groundwater flow profile at the site is presented as **Drawing 3**.

6.22 No surface water monitoring has been undertaken as part of this investigation.

Contamination Observations

6.23 No contamination was noted during the ground investigation, groundwater sampling visit or subsequent gas and groundwater monitoring period. Three photo ionisation detector (PID) (calibrated against isobutylene) tests identified volatile vapour concentrations above detection limit, as presented in **Table 6:4** below.

Table 6:4 : Summary of PID Concentrations

Location	Depth (m bgl)	PID Concentration (ppm)
TP401	2.0	0.2
TP404	0.5	0.1
TP405	1.5	0.1

7. GEOTECHNICAL ASSESSMENT

Introduction

7.1 The proposed development is anticipated to comprise the construction of four industrial units of between 9,461 ft^2 and 94.944 ft^2 with associated loading and parking areas, as well as limited landscaped areas. A proposed site layout plan (reference 20025 P0003, dated 17th February 2020) is presented as **Appendix 1**. No specific loadings for the proposed development have been provided and as such it is considered that structural loading will be typical for the size and type.

7.2 On the basis of the identified shallow geology and its strength characteristic it is anticipated at this time traditional shallow spread foundations will be appropriate for the lightly loaded structures transferring loads on to the shallow Balderton Sand and Gravel Member (BSG). Upon confirmation of the loadings a detailed foundation design should be undertaken.

7.3 For the purpose of this assessment, it is assumed that all hardstanding, Made Ground and Topsoil will be removed prior to development and as such has not been considered within this assessment.

Foundation Solutions

7.4 It is recommended that foundations are not constructed bearing onto Made Ground or Topsoil in order to avoid unpredictable and excessive total and differential settlements.

7.5 For a standard commercial development, it is anticipated that shallow pad foundations bearing on to the dense to very dense BSG at depths from 2.00m bgl will be suitable at the site. Upon receipt of final loadings specific detailed foundation assessment should be undertaken.

7.6 Given the nature of the development and the ground conditions at the site, it is unlikely that ground improvement of the BSG would deliver appreciable increased strength improvements in comparison to a shallow pad foundation.

Floor Slabs

7.7 It is anticipated that a ground bearing floor slab on to the BSG would be adequate for the proposed development at the site.

7.8 Ground floor slab formations should be proof rolled and checked for soft and hard spots by a suitably qualified engineer. Should any such locations be observed the full extent should be removed and replaced with a suitably engineered fill.

Roads and Pavements

7.9 Consideration to road or pavement design did not form part of the scope of this investigation. It is recommended that in-situ CBR tests at formation level should be

carried out to confirm the strength of sub grade and finalise the required pavement construction thickness.

Excavations

Ease and Stability of Excavation

7.10 Based on the ground conditions encountered during the intrusive investigation, conventional plant and equipment is expected to be suitable for shallow excavations.

7.11 Excavations displayed generally poor stability below the depth of the water table (between 2.00m and 2.50m bgl) during the site investigation, although any excavation may become unstable if left open for any significant periods. Where personnel entry is required for inspection; excavations should be sufficiently enlarged, and an assessment of safe temporary angles should be made. Alternatively, temporary shoring should be provided.

Legislation on Personnel Entry to Excavations

7.12 It is recommended that no excavations should be entered without appropriate support and a full risk assessment should be completed prior to entry. Mitigation measures to protect from accumulating ground gases should be implemented.

Groundwater and Drainage

7.13 During the ground investigation, groundwater was y encountered between 1.8m and 2.8m bgl within the BSG. Subsequent monitoring has indicated groundwater to be present between 1.98m and 2.28m bgl.

7.14 The presence of water has the potential to destabilise excavations and where groundwater is encountered during foundation excavations, it may require removal. It is considered that conventional dewatering techniques comprising a sump and submersible pump are likely to provide an adequate form of water abstraction from these areas. However, care must be taken to avoid pumping out fine material (i.e. silt) from granular strata as this could destabilise the localised ground.

7.15 A drainage assessment did not form part of the scope of this investigation. Although previous investigation recorded permeability of the BSG between $5.7x10^{-5}$ and $8.4x10^{-5}$, representative of soil with a medium permeability and good drainage characteristics.

Chemical Attack on Buried Concrete

7.16 Water soluble sulphate concentrations in soils varied from 12mg/l to 970mg/l with soil pH values ranging from 6.7 to 10.6. Total sulphur concentrations ranged from 0.0071% to 0.29%.

7.17 Sulphate concentrations in the groundwater ranged from 2.3mg/l to 141mg/l with groundwater pH values ranging from 6.6 to 10.7.

7.18 In accordance with the recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground' 2005, the conditions of the soils at the site would therefore be classified as Design Sulphate Class DS-2 and ACEC Class AC-2 for soils and groundwater, when considering the most appropriate type of concrete to be used at the site in order to resist chemical attack from elevated sulphate present in the soils (assuming mobile groundwater in non-pyritic soils)

8. GROUND GAS ASSESSMENT

Introduction

8.1 Ground gas assessment has been undertaken to assess the risks associated with ground gases and volatile vapours to new buildings and their occupants. The results obtained to date have been assessed in line with relevant guidance (notably CIRIA C665, BS8485:2015+A1:2019 and Card & Wilson, 2019).

8.2 Based on the desk study and the ground investigation undertaken, it is considered that there are limited potential sources of hazardous ground gas at the site, for which, CIRIA C665 guidance indicates that for a site with low gas generation potential and a low sensitivity development (the proposed commercial land use), a typical monitoring programme may comprise four visits over a period of four weeks.

8.3 BWB have undertaken four visits over a period of four weeks, which considering the low risk nature of the site and the lack of any significant Made Ground, is considered to be sufficient.

Methodology

8.4 The assessment of potential ground gas generation is based on the observation of trends and changes in gas evolution by the direct measurement of ground gases from gas wells. The works included measurement of methane, carbon dioxide, oxygen, hydrogen sulphide, carbon monoxide, gas flows and barometric pressure. A PID survey was undertaken to measure volatile organic compounds within the borehole response zones.

Results

8.5 The minimum and maximum steady state concentrations recorded for borehole flow, oxygen, carbon dioxide and methane are summarised below in **Table 8:1**. The full ground gas monitoring results are presented in **Appendix 5**.

Table 8:1 : Summary of Recorded Ground Gas Results

Borehole ID	Targeted Geology	Steady Flow (l/hr)		Carbon Dioxide (%v/v)		Methane (%v/v)	
		min.	max.	min.	max.	min.	max.
WS401	Balderton Sand & Gravel Member	<0.1	0.2	1.6	2.9	<0.1	<0.1
WS402		<0.1	<0.1	1.7	2.4	<0.1	<0.1
WS403		<0.1	<0.1	1.6	5.4	<0.1	<0.1
WS404		<0.1	<0.1	0.1	0.5	<0.1	<0.1
WS405		<0.1	<0.1	0.7	1.3	<0.1	<0.1
WS406		<0.1	<0.1	<0.1	2.9	<0.1	<0.1

8.6 The atmospheric pressures were recorded as follows:

- Round 1 – 1023mB during the site visit, remaining steady from the preceding 12 hours.

- Round 2 – 1027mB, falling to 1024mB during the site visit and falling from 1029mB over the preceding 12 hours.
- Round 3 – 1027mB, falling to 1026mB during the site visit and falling from 1030mB over the preceding 12 hours.
- Round 4 – 1030mB, falling to 1029mB during the site visit and rising from 1029mB over the preceding 12 hours.

8.7 Hydrogen sulphide and carbon monoxide concentrations were generally not recorded above the limit of detection of the equipment, although negative concentrations of both have been recorded, which is likely associated with the calibration of the equipment used, as negative readings have also been recorded during ambient air calibration.

8.8 PID concentrations were recorded between <0.1ppm (the limit of detection of the equipment) and a maximum of 60.7ppm (within borehole WS401 on 18th March 2020).

Risk Assessment

8.9 CIRIA Report 665 "Assessing Risks Posed by Hazardous Ground Gases to Buildings" presents current best practice on the assessment of ground gases for commercial and residential buildings (with the exception of low rise traditional housing). The report presents a risk based approach based on gas screening levels which depend on both the concentration and emission rate of gas from the ground. Gas screening levels are calculated as follows:

$$Gas\ screening\ value\ (l/hr) = \frac{gas\ concentration\ (\%)\ X\ measured\ borehole\ flow\ rate\ (l/h)}{100}$$

8.10 In terms of the gas screening levels for the site and the typical source generation, the site lies firmly within CS1 – natural soils and minimal levels of typical Made Ground. Typically, recorded concentrations of carbon dioxide were less than 5%, with the exception being within WS403 where a concentration of 5.4% was recorded during the last monitoring visit. This elevated concentration will give rise to the consideration of an increase to a CS2 situation for the site.

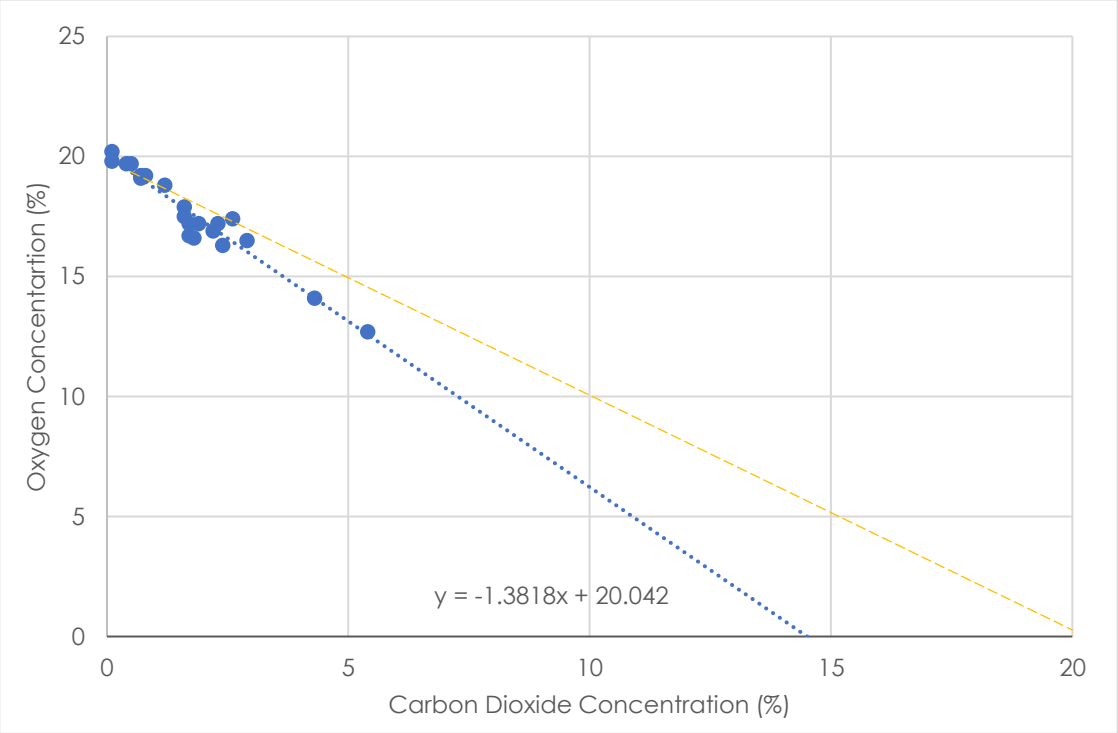
8.11 With reference to Technical Paper 'Risk and Reliability in Gas Protection Design – 20 Years on: Part 1' by Card, Card and Partners, published in Ground Engineering August/September 2019 we consider the following:

8.12 Soils which were laid down in a shallow water environment (e.g. the broad sinuous channel environments where the Balderton Sand and Gravel Member was deposited) may contain small volumes of organic carbon, shell fragments, calcareous nodules and pyrite. When boreholes are drilled into the soils it allows oxygen to be introduced and various chemical and biological processes can take place locally. Microbial respiration takes place wherever organic matter, oxygen and soil moisture are present. The oxygen is consumed at the same rate that carbon dioxide is produced in the same proportion giving a relationship with a slope of -1.

8.13 **Figure 8:1** shows the borehole specific carbon dioxide and oxygen concentrations recorded across the site plotted with a -1 trend line (yellow). The trend recorded is consistent with carbon dioxide being generated through biological respiration, causing

very localised elevated concentrations with no associated flows. Such conditions are widespread across the UK with no known incidents of carbon dioxide emissions into buildings from this natural process.

Figure 8:1: Corrected SPT 'N' Value (N_{60}) Versus Depth



8.14 In the absence of any bulk gas stores and very low rates of flow, no justification for an increase to CS2 has been identified.

Recommendations

8.15 Considering the lack of any significant source of anthropogenic ground gas and the evidence of very localised biological respiration processes it is considered that in accordance with recently published research the site should be classified CS1/Green and therefore ground gas protection measures are not be required for the proposed development. There is therefore considered to be negligible risk from carbon dioxide in the context of the proposed development.

9. CONTAMINANT DISTRIBUTION AND HUMAN HEALTH RISK ASSESSMENT

Introduction

9.1 Contamination data have been compared to Land Quality Management Suitable for Use Levels (LQM S4UL) for a commercial end use. The soil chemical laboratory results are presented as **Appendix 6**, with a summary presented as **Appendix 9**. The criteria includes reference to the LQM.CIEH S4ULs for Human Health Risk Assessment Copyright Land Quality Management Limited reproduced with permission; publication number S4UL3271.

9.2 The screening criteria have been developed with the following assumptions which have been changed from the CLEA default parameter set. Soil type is a sandy loam with an organic matter content of 1%. This is considered to be more representative of shallow Made Ground found on most brownfield sites than the CLEA default of 6% organic matter. The building type for a commercial development is assumed to be a post 1970s office which is representative of new commercial buildings.

Pathways

9.3 The site is to be developed for a commercial end use and therefore the key receptor is considered to an adult female worker and screening criteria for a commercial end use have been adopted.

9.4 Exposure pathways considered in this assessment are presented in **Table 9:1**.

Table 9:1 : Commercial Exposure Pathways

Source	Shallow Soils		Deep Soils
Pathway	Commercial / Industrial with managed landscaped areas	Commercial / Industrial with Hard standing areas	Commercial / Industrial
Ingestion of soil	✓	×	×
Ingestion of site derived household dust	✓	×	×
Ingestion of contaminated vegetables	×	×	×
Ingestion of soil attached to vegetables	×	×	×
Dermal contact with soil	✓	×	×
Dermal contact with site derived household dust	✓	×	×
Inhalation of fugitive soil dust	✓	×	×
Inhalation of fugitive site derived household dust	✓	×	×
Inhalation of vapours outside	✓	✓	✓
Inhalation of vapours inside	✓	✓	✓

Contaminant Distribution and Risk Assessment

9.5 The results of soil chemical analysis within Made Ground and natural soils at the site identified generally low levels of heavy metals, petroleum hydrocarbons and PAHs. When the results were screened against the LQM S4ULS for a commercial development, no exceedances were reported.

9.6 Two elevated concentrations of total petroleum hydrocarbons (TPH) were reported in the centre of the site and the north-eastern corner, at concentrations of 750mg/kg (within TP414 at 0.30m bgl) and 810mg/kg (within WS402 at 0.30m bgl), respectively. Speciated analysis undertaken on the sample from TP402 reported all individual hydrocarbon fractions below their respective screening criteria. As such, these elevated concentrations are not considered to pose a risk to human health.

9.7 No asbestos was detected in the five samples submitted for analysis.

10. CONTROLLED WATERS RISK ASSESSMENT

10.1 The results of soil leachate analysis and groundwater sampling are presented as **Appendix 6** and **Appendix 7**, respectively.

10.2 The controlled waters assessment considers the potential impact of on-site contamination to pertinent controlled waters receptors identified at the site comprising the Secondary A Aquifer beneath the site within the Balderton Sand and Gravel Member (BSG) superficial deposits.

Pathways

10.3 Controlled water risk assessment has been undertaken through assessment of leachable concentrations of contaminants in soil referring to exposure pathways considered and referencing **Table 10:1**.

Table 10:1 : Controlled Water Exposure Pathways

Controlled Waters Exposure Pathway	Receptor
Leaching of soil contamination into recharge infiltration	✓
Vertical migration of impacted pore water through unsaturated zone into underlying aquifer	✓
Horizontal migration of groundwater through aquifer to off-site receptors	✓

10.4 The site is underlain by BSG (Secondary A Aquifer) and the Scunthorpe Mudstone Formation (unproductive strata). Therefore, in the absence of a sensitive potable supply it is considered appropriate to undertake a conservative assessment for freshwater when assessing groundwater quality and soil leachate concentrations.

Soil Leachability

10.5 A summary of the soil leachate concentrations and adopted guideline concentrations are presented within **Appendix 10**. A summary of soil leachate exceedances it presented in **Table 10:2** below.

Table 10:2 : Summary of Soil Leachate Chemical Testing Results

Contaminant	Number of Samples	Range of Concentrations (µg/l)	Generic Screening Level (µg/l)	Number of Exceedances
Arsenic	5	<1.1 – 15	10	1
Chromium	5	2.4 - 22	4.7	3
Copper	5	2.8 - 34	1.0	5
Lead	5	<1.0 – 9.7	1.2	4
Cyanide	5	<10 - 63	1.0	1

10.6 Chemical analysis reported four heavy metals as marginally exceeding their respective guideline concentrations within soil leachate across the site. Given the marginal nature of the exceedances and the distance to the nearest down-hydraulic gradient receptor

(over 500m west of site), these concentrations are not considered to pose a significant risk to controlled waters. Furthermore, given the lack of significant chromium, copper, lead and zinc concentrations identified within the soil at the site and the potential migration pathways including attenuation, dilution and dispersion, the concentrations are not considered to represent a significant risk.

10.7 The majority of cyanide concentrations were reported at the level of detection, with one exceedance reported above the guideline concentration (1.0 µg/l) of 63 µg/l within TP414 at 0.3m bgl; however, comparing this exceedance to the soil sample taken at the same depth and location, no cyanide exceedance was identified. Therefore, given the lack of significantly elevated cyanide concentrations within the soil and the potential migration pathways including attenuation, dilution, and dispersion, it is not considered to represent a significant risk. Additionally, given the anticipated commercial (industrial and distribution) development, the marginally elevated nature of the contaminants and that the majority of the site will be covered by hardstanding, rainwater infiltration rates will be significantly reduced and hence these concentrations are unlikely to pose an unacceptable risk to controlled waters.

Groundwater

10.8 A summary of the groundwater concentrations and adopted guideline concentrations are presented within **Appendix 11**. A summary of groundwater exceedances are presented in **Table 10:3.**

Table 10:3 : Summary of Groundwater Chemical Testing Results

Visit Number	Contaminant	Number of Samples	Range of Concentrations (µg/l)	Generic Screening Level (µg/l)	Number of Exceedances
Visit 1	Cadmium	6	<0.02 – 0.4	0.25	1
	Copper	6	1.0 – 3.6	1.0	4
	Lead	6	<0.2 - 2.0	1.2	1
	Nickel	6	2.7 - 46	4.0	4
	Zinc	6	1.8 - 26	10.9	1
Visit 2	Arsenic	6	0.43 - 12.3	10	1
	Copper	6	0.6 - 9	1.0	5
	Lead	6	<0.2 - 3.8	1.2	1
	Nickel	6	1.9 - 57	4.0	4
	Zinc	6	2.0 - 17	10.9	1

10.9 Chemical analysis reported several heavy metals as exceeding their respective guideline concentrations, all of which are considered to be marginal and are not considered to pose a significant risk to controlled waters.

Summary

10.10 Marginal exceedances of heavy metals were identified within the soil leachate and groundwater testing results.

10.11 Cyanide was identified within the soil leachate results as significantly exceeding its respective screening value; however, given the lack of significant cyanide concentration within the soil and the potential migration pathways including attenuation, dilution and dispersion, it is not considered to represent a significant risk.

11. REVISED ENVIRONMENTAL RISK ASSESSMENT

Introduction

11.1 An updated assessment of identified pollutant linkages has been undertaken following completion of the ground investigation. The preliminary risk assessment presented in **Section 4** has been updated in light of the findings of the ground investigation and the revised conceptual site model developed, as presented in **Table 11:1**.

Sources

- Marginally elevated concentrations of heavy metals and cyanide in soil leachate; and
- Marginally elevated concentrations of heavy metals in groundwater.

Pathways

- Infiltration and vertical/lateral migration into underlying Secondary A Aquifer; and
- Vertical and lateral migration of contaminated groundwater.

Receptors

- Secondary A Aquifer.

Summary of Pollutant Linkages

Marginally elevated concentrations of heavy metals and cyanide within soil leachate to controlled waters

11.2 Exceedances of heavy metals were reported at marginal concentrations, which are not considered to pose a significant risk to controlled waters as a commercial development at the site, mostly covered in hardstanding, similarly to that already present on-site, results in reduced rainwater infiltration rates.

11.3 An elevated concentration of cyanide was identified within TP414 at 0.3m bgl. Taking into account that no exceedances of cyanide were identified within the soil samples, as well as no significant on-site sources and the localised nature of the impact, these concentrations are not considered to pose a significant risk to controlled waters.

Marginally elevated concentrations of heavy metals within groundwater impacting upon the wider groundwater environment

11.4 Exceedances of several heavy metals, including arsenic, cadmium, copper, lead, nickel and zinc, have been recorded within groundwater at the site. These are not expected to pose a significant risk to controlled waters, due to exceedances being marginal.

Table 11:1 : Revised Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
S1: Marginally elevated concentrations of heavy metals and cyanide within soil leachate to controlled waters.	**P1:** Infiltration and vertical/lateral migration into underlying Secondary A Aquifer.	**R1**: Secondary A Aquifer	Mi	Lw	L	Marginally elevated concentrations of heavy metals within soil leachate and groundwater are not considered to pose a significant risk to controlled waters given the low sensitivity of the aquifer and distance to a down hydraulic gradient receptor. An exceedance of cyanide within one soil leachate sample (TP414 at 0.3m bgl) is not considered to pose a significant risk to controlled waters due to the absence of significant on-site sources and the localised nature of the impact. Furthermore, the proposed development of site is anticipated to be overlain by hardstanding therefore reducing rainfall infiltration rates.
S2: Marginally elevated concentrations of heavy metals in groundwater.	**P1:** Infiltration and vertical/lateral migration into underlying Secondary A Aquifer.					
	P2: Vertical and lateral migration of contaminated groundwater.					

VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

KEY: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Hi = High, Li = Likely, Lw = Low Likelihood, Ul = Unlikely

Pollutant Linkage Assessment Summary

Based on the proposed development and the contamination status, no pollutant linkages were identified that represent a risk to human health. The site is considered to pose a **LOW** risk to controlled wates due to hardstanding considered to be covering the majority of the proposed commercial development, which will reduce rainwater infiltration rates and therefore somewhat mitigate the risk to controlled waters.

12. ENVIRONMENT LIABILITY ASSESSMENT/DEVELOPMENT CONSTRAINTS

Statutory Liability

12.1 Under statutory guidance for definition of contaminated land site may be classified into 4 categories. Categories 1 and 2 would meet the definition of contaminated land and categories 3 and 4 would not meet the definition. Sites assessed under planning would normally be expected to fall within Category 4 as a minimum standard, to allow for a suitable factor of safety should standards change in the future.

12.2 It is considered that the site would fall within Category 3 based on the limited identified contamination at the site.

12.3 The contaminated land regime has implications for those who cause or knowingly permit land to be contaminated, or who own or occupy land that is contaminated. Contaminated land is defined in Section 78A(2) of Part IIA of the Environmental Protection Act 1990 as:

a) *Significant harm is being caused or there is a significant possibility of such harm being caused; or*
b) *Pollution of controlled waters is being or is likely to be, caused*."

12.4 Harm is defined in Section 78(4) of the Environmental Protection Act 1990 as:

12.5 "Harm to the health of living organisms or other interference with ecological systems of which them form part and, in the case of man, includes harm to property."

12.6 Once an area of land has been identified as contaminated land, appropriate persons will be identified as being responsible for the cost of cleaning up the land by the enforcing authority. The appropriate person will be liable for all or part of the remediation of the land. Two classes of appropriate person have been identified:

- Class A appropriate persons are those who cause or knowingly permit the pollutants to be in, on or under the land.
- Class B appropriate persons are the owners(s) or occupier(s) of the land.

12.7 Where no Class A appropriate persons can be identified, then Class B appropriate persons may become liable.

12.8 Based on the information available regarding the site, the potential for Statutory Authority action based on "*pollution of controlled water*" or "*significant harm*" as defined by Part IIA of the Environmental Protection Act 1990 is considered to be **LOW**.

Third Party Liability

12.9 Based on the information contained in this report, it is the opinion of BWB that the potential for legal action by surrounding landowners, based on the potential for contamination to migrate off-site, is considered to be **LOW** when considering the limited contamination identified at the site and the nature of the surrounding land uses.

Public Relations

12.10 The likelihood of public relations being tarnished due to contamination issues at the site are considered to be **LOW**.

13. WASTE MANAGEMENT

Waste Classification

13.1 Soil samples have been characterised against hazardous waste criteria using Hazwasteonline. The results of the waste classification are presented in **Appendix 12**. The assessment indicates that the soils analysed are likely to be classified as non-hazardous. The waste classification assessment only applies to those soils that have been tested. If other soils are to be disposed of off-site then further analysis may be required.

13.2 Asbestos has not been found at the site. The presence of visible asbestos containing materials in waste or at concentrations exceeding 0.1% by weight will classify the waste as mixed and require disposal as hazardous waste irrespective of the chemical properties of the waste.

13.3 Should any soils require disposal off-site an assessment of waste classification of the soils for disposal should be made by a competent person. Further chemical analysis may be required to fully characterise waste soils for disposal to landfill or re-use off site. WAC analysis may be required for disposal of soils as inert or hazardous.

14. CONCLUSION AND RECOMMENDATIONS

Conclusions

14.1 The ground investigation has identified ground conditions to generally comprise either Topsoil or Made Ground over the Balderton Sand and Gravel Member (BSG) with limited hardstanding, Reworked Natural and relic Topsoil. The bedrock geology of the Scunthorpe Mudstone Formation was not encountered as part of this investigation.

14.2 Groundwater has been recorded at the site generally between 1.8m and 2.8m bgl within the BSG and monitoring has recorded groundwater levels between 1.98m and 2.28m bgl.

14.3 Ground gas monitoring has identified elevated concentrations of carbon dioxide at the site (up to 5.4% v/v), likely associated with small volumes of organic carbon within the BSG and as such the site has been given a classification of CS1 for which ground gas measures are not required.

14.4 Two marginally elevated concentrations of total petroleum hydrocarbons were reported within TP414 at 0.3m bgl and WS402 at 0.3m bgl. However, these are not considered to pose a significant risk to human health due to speciated analysis undertaken on TP402 reporting all individual hydrocarbon fractions below their respective screening criteria.

14.5 No asbestos was detected in five samples submitted for analysis.

14.6 Marginally elevated concentrations of heavy metals were identified within soil leachate and groundwater; however, these are not considered to pose a significant risk to controlled waters given the low sensitivity of the aquifer and distance to a down hydraulic gradient receptor.

14.7 One exceedance of cyanide was identified within a soil leachate sample (TP414 at 0.3m bgl), due to the absence of significant on-site sources and the localised nature of the impact, it is not considered to pose a significant risk to controlled waters. Additionally, comparing this result to the cyanide concentration in the soil chemical results, no significantly elevated cyanide concentrations were identified.

14.8 The results of preliminary waste classification indicate that the soils at the site would be classified as non-hazardous.

14.9 For a standard commercial development, it is considered that a shallow spread foundation and a ground bearing floor flab bearing onto the BSG would be suitable at the site.

Design Sulphate Classification of DS-2 and an Aggressive Chemical Environment for Concrete Classification of AC-2 for soils and groundwater would be required to ensure concrete is protected from chemical attack (assuming mobile groundwater and non-pyritic soils).

15. REFERENCES

1. British Standards Institution, (BSI), BS 8485:2015, Code of Practice for the characterization and remediation from ground gas in affected developments.

2. British Standards Institution, (BSI), BS 8576:2013, Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs).

3. British Standards Institution, (BSI), BS 10175:2011+A2:2017, Investigation of Contaminated Sites – Code of Practice.

4. British Standards Institution, (BSI), BS5930:2015) Code of practice for ground investigations.

5. British Standards Institution, (BSI), BS EN 1997-1:2004 Incorporating corrigendum February 2009, Eurocode 7 – Geotechnical Design – Part 1: General rules.

6. British Standards Institution, (BSI), BS EN 1997-2:2007 Incorporating corrigendum June 2010, Eurocode 7 – Geotechnical Design – Part 2: Ground Investigation and testing.

7. Building Research Establishment Special Digest 1 *Third Edition*. Concrete in Aggressive Ground (2005).

8. Building Research Establishment (BRE) BR211, Radon; Guidance on Protective Measures for New Buildings (2015).

9. Construction Industry Research and Information Association (CIRIA), Report 132, A Guide to Safe working on Contaminated Sites (1996).

10. Construction Industry Research and Information Association (CIRIA). 2001, C522 Contaminated land risk assessment, A guide to good practice.

11. Construction Industry Research and Information Association (CIRIA). 2007, Report C665, Assessing Risk Posed by on Hazardous Ground Gases to Buildings.

12. Department for Communities and Local Government (DCLG), 2012, National Planning Policy Framework.

13. Department for Environment Food and Rural Affairs (DEFRA), 2012, Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance.

14. Environment Agency report CLR11 'Model Procedures for the Management of Land Contamination'.

15. Environment Agency 2008, Updated technical background to the CLEA model Science Report – SC050021/SR3.

16. Environment Agency 2008, Human health toxicological assessment of contaminants in soil Science Report – SC050021/SR2.

17. Environment Agency 2009, CLEA Software (Version 1.05) Handbook Better Regulation Science Programme Science report: SC050021/SR4.

18. Environment Agency 2008, A review of body weight and height data used within the Contaminated Land Exposure Assessment model (CLEA) Project SC050021/ Technical Review 1.

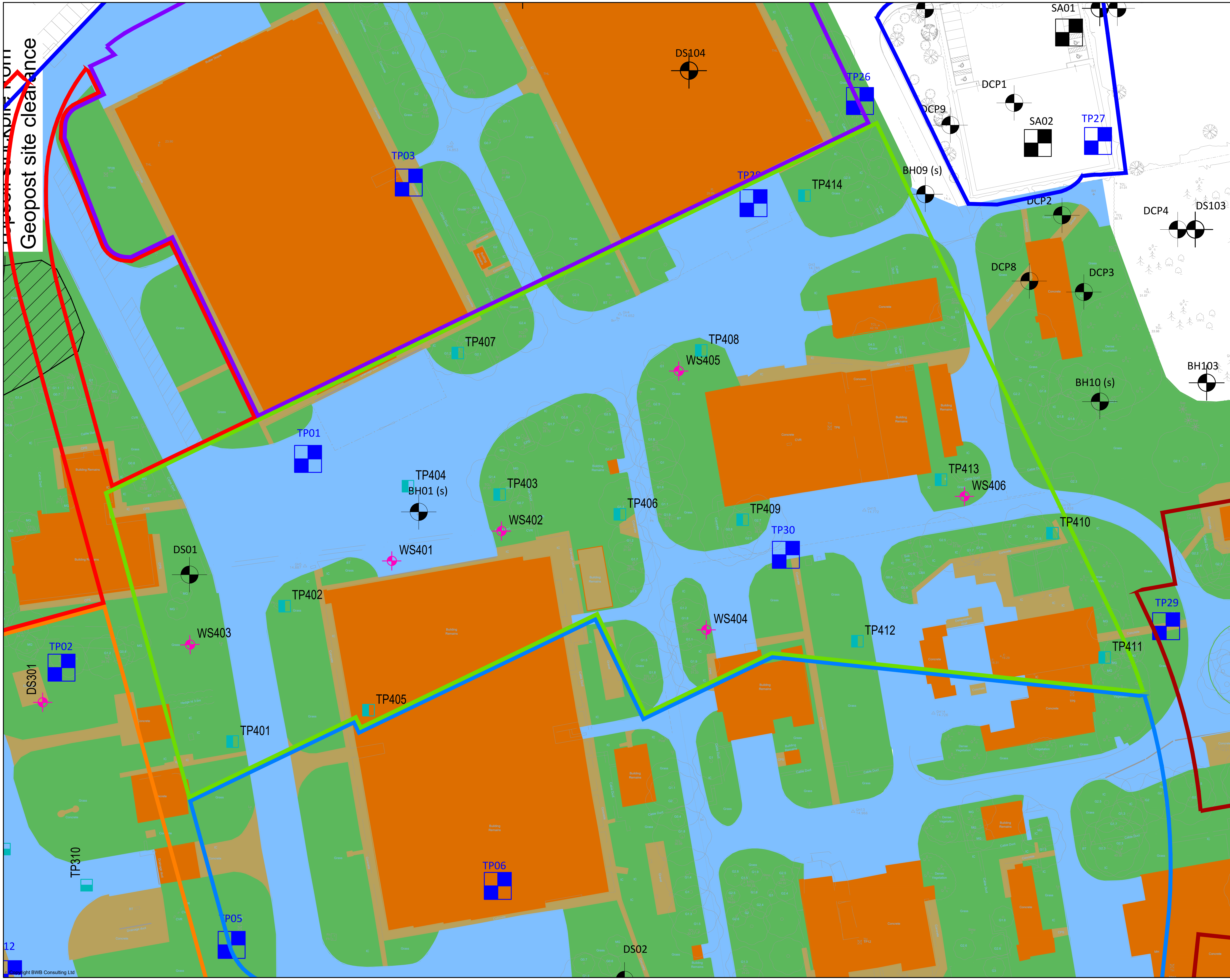
19. Environment Agency, 2006, Remedial Targets Methodology, Hydrogeological Risk Assessment for Land Contamination.

20. Health and Safety Executive (HSE) 'Protection of workers and the general public during the Development of Contaminated Land (1991).

21. NHBC Guidance for the Safe Development of Housing on Land Affected by Contamination, R&D Publication 66: 2008.

DRAWINGS

Drawing 1: Exploratory Hole Location Plan



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Legend

- WS4** Window Sampler Borehole Location
- TP4** Trial Pit Location

Rev	Date	Details of issue / revision	Drw	Rev
P1	26/03/20	PRELIMINARY ISSUE	JA	IW

Issues & Revisions

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

- ☐ Birmingham | 0121 233 3322
- ☐ Leeds | 0113 233 8000
- ☐ London | 020 7234 9122
- ☐ Manchester | 0161 233 4260
- ■ Nottingham | 0115 924 1100

www.bwbconsulting.com

Client

ST.MODWEN

Project Title

ST MODWEN PARK

Drawing Title

PHASE 4 EXPLORATORY HOLE LOCATION PLAN

Drawn:	JA		Reviewed:	IW	
BWB Ref:	NTS2656	Date:	26/03/20	Scale@A3:	NTS

Drawing Status

FINAL

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
SMP-BWB-ZZ-XX-DR-YE-0001	**S1**	**P1**

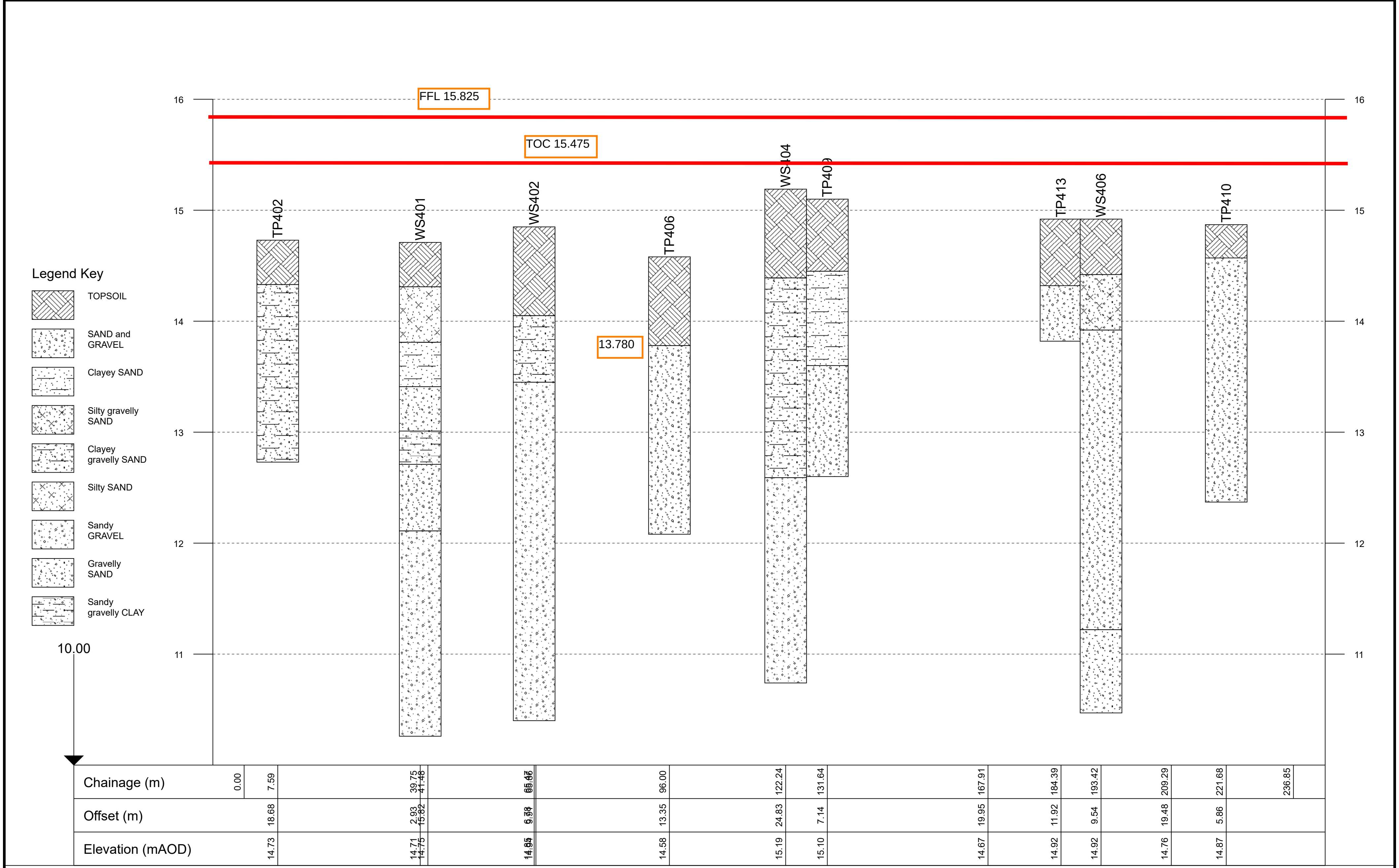
Drawing 2: Geological Cross Section

Project No: NTS2656
Location: Witham St Hughes
Client: St Modwen

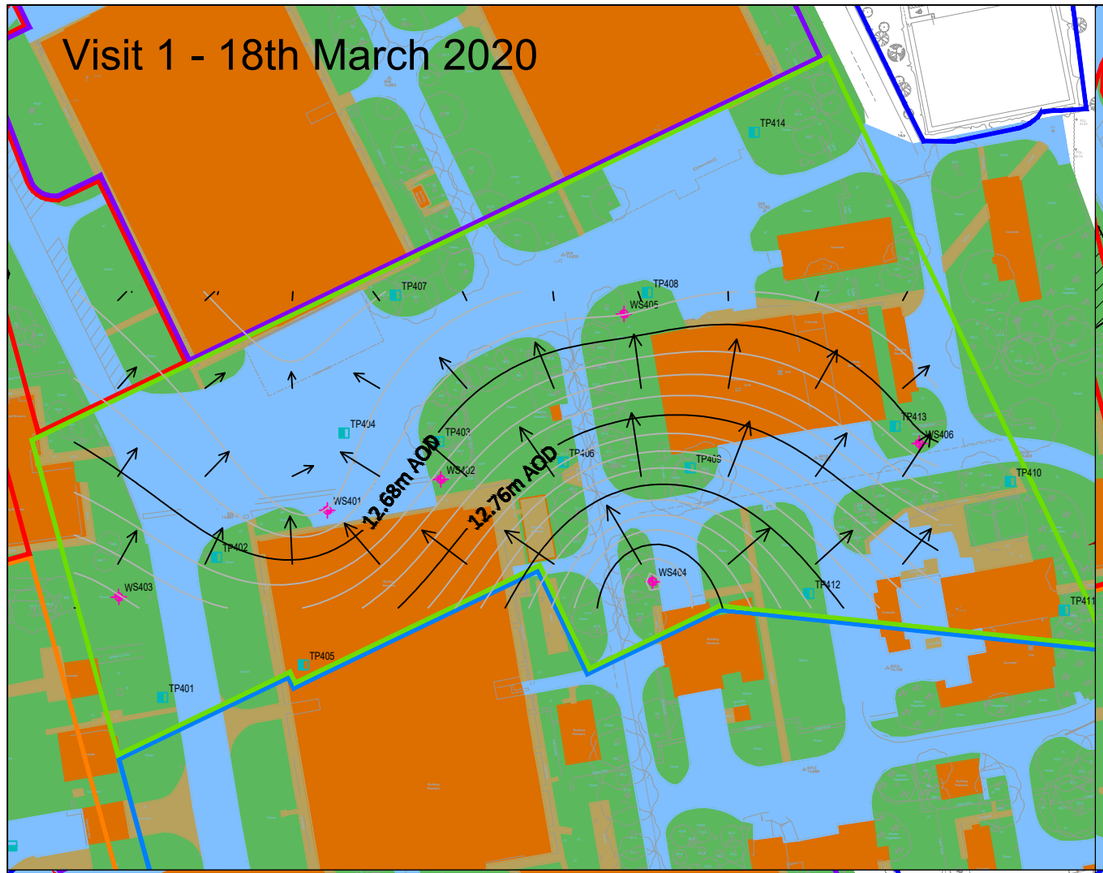
Title: St Modwen Park

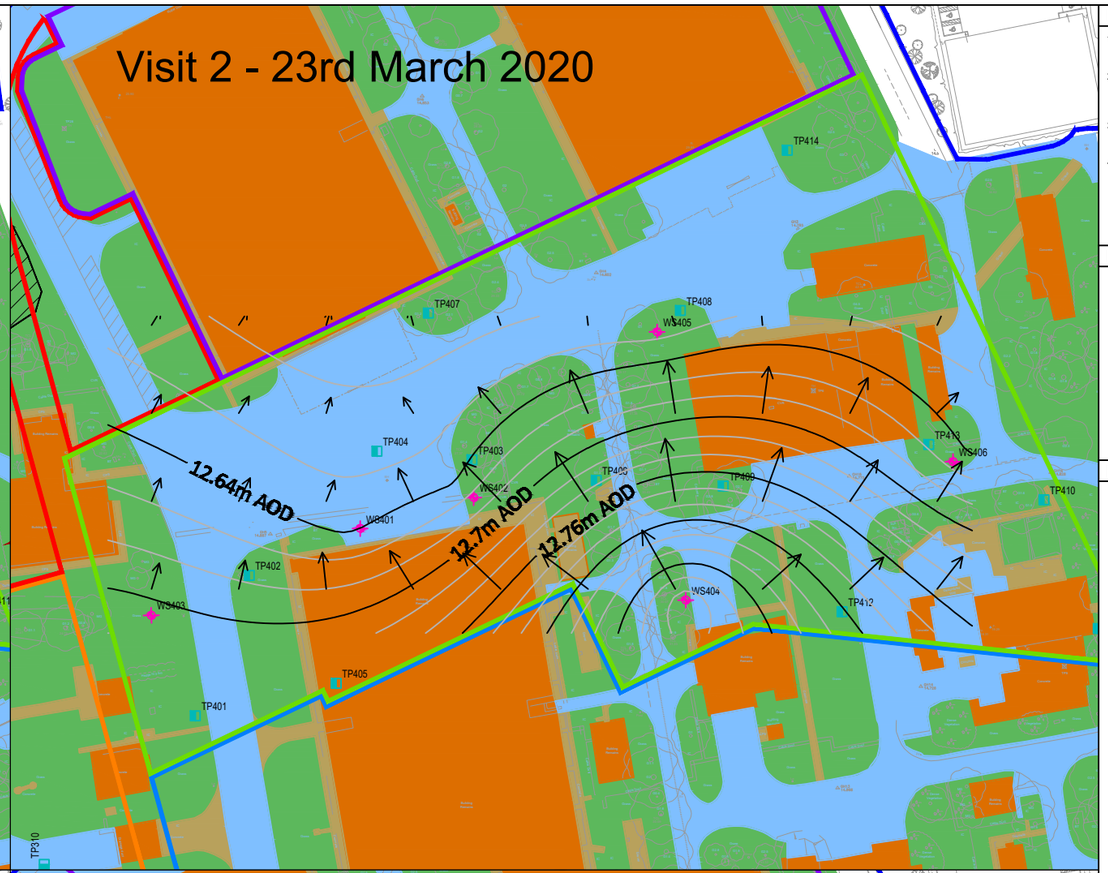
Engineer: IW

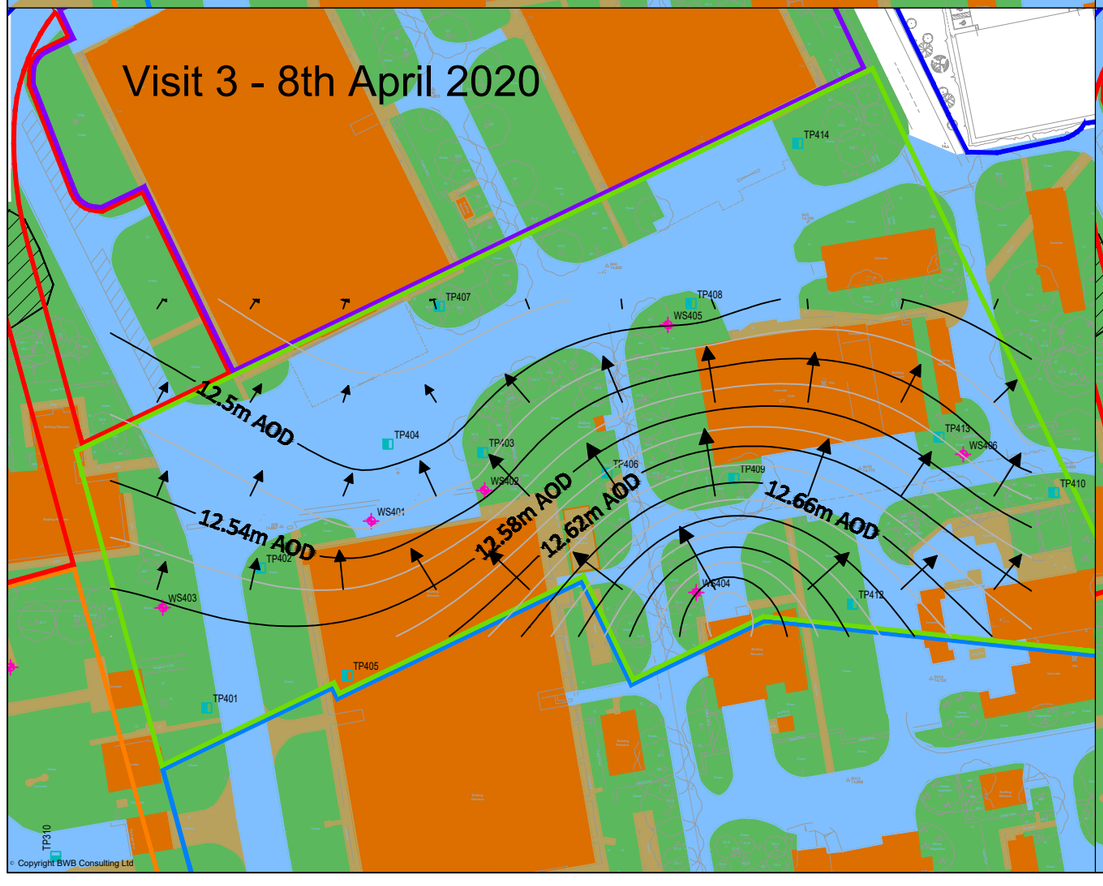
Scale
Vertical: 1:45
Horizontal: 1:1127

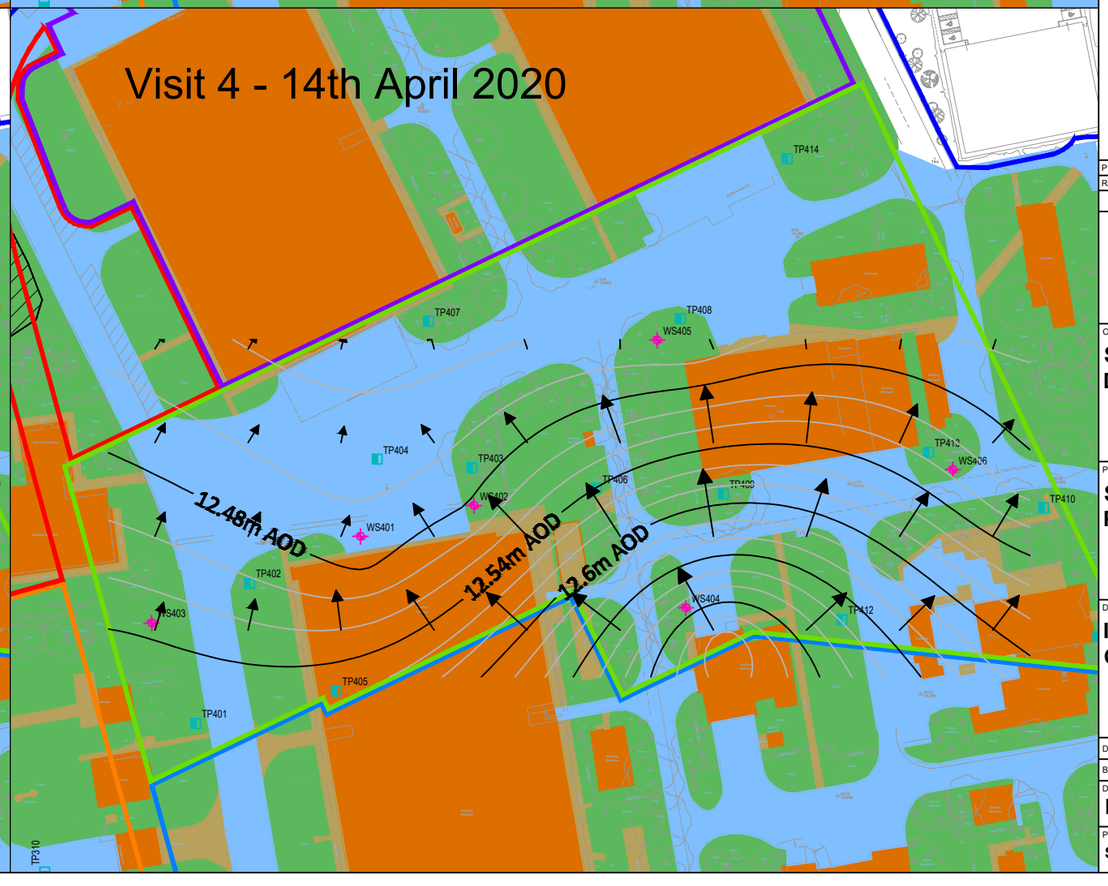


Drawing 3: Inferred Groundwater Profile









Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.

Key Plan

Legend

Rev	Date	Details of issue / revision	Drw	Rev
P1	23.04.20	FINAL	IW	RTR

Issues & Revisions

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

Birmingham | 0121 233 3322
Leeds | 0113 233 8000
London | 020 7234 9122
Manchester | 0161 233 4260
Nottingham | 0115 924 1100
www.bwbconsulting.com

Client
ST MODWEN DEVELOPMENTS

Project Title
ST MODWEN PARK PHASE 4

Drawing Title
INFERRED GROUNDWATER PROFILE

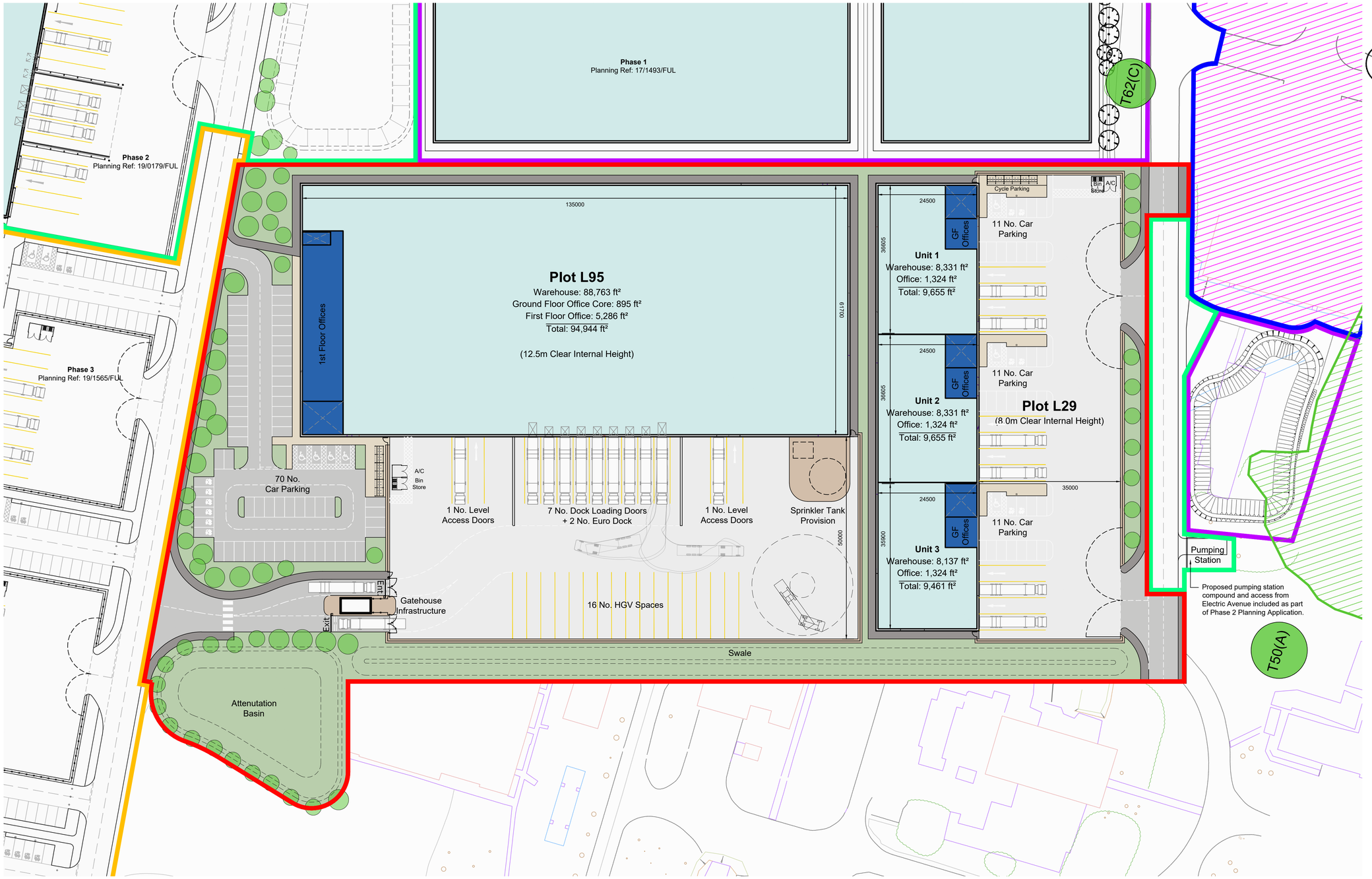
Drawn:	I. WORT	Reviewed:	R. ROBINSON
BWB Ref:	NTS2656	Date:	23.04.20
Scale@A3:	NTS		

Drawing Status
FINAL

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
SMP-BWB-ZZ-XX-DR-YE-0004	S1	P1

APPENDICES

Appendix 1: Proposed Site Layout Plan



Proposed Site Layout
Scale 1:500

- Dimensions are in millimeters, unless stated otherwise.
- Scaling of this drawing is not recommended.
- It is the recipients responsibility to print this document to the correct scale.
- All relevant drawings and specifications should be read in conjunction with this drawing.

SCHEDULE OF ACCOMMODATION - PHASE 4
(Gross Internal Area)

Plot L95
(12.5m Clear Internal Height)

Warehouse Area	-	88,763 sq ft (8,246m²)
1st Floor Office + Core	-	6,181 sq ft (574m²)
Total Area	-	**94,944 sq ft** (8,821m²)
Loading Docks	-	7
Euro Docks	-	2
Level Access	-	2
Car Parking	-	70 - including: 4 accessible 6 EV spaces

Plot L29
(8m Clear Internal Height)

Unit 1		
Warehouse Area	-	8,331sq ft (774m²)
Ground Floor Office	-	1,324 sq ft (123m²)
Unit 2		
Warehouse Area	-	8,331sq ft (774m²)
Ground Floor Office	-	1,324 sq ft (123m²)
Unit 3		
Warehouse Area	-	8,137 sq ft (756m²)
Ground Floor Office	-	1,324 sq ft (123m²)
Total Area	-	**28,770 sq ft** (2,673m²)
Level Access	-	6
Car Parking	-	33 - including: 3 accessible 6 EV spaces

Total Building Area	-	**123,714 sq ft** (11,493 m²)
Site Density	-	**35.8%**

Landscaping

Refer to Landscape Architect's drawings for detail.

Boundaries

- Ownership Boundary
- Phase 1 - Ref: 17/1493/FUL *Works completed*
- Phase 2 - Ref: 19/0179/FUL *Works under construction*
- Phase 3 - Ref: 19/1565/FUL *Awaiting Planning Approval*
- Phase 4 - Application Boundary 7.93 Acres (3.21 Ha.)

10m SCALE 1:500

PLANNING
THIS DRAWING IS FOR PLANNING CONSIDERATION ONLY AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE

rev	amendments	by	ckd	date
A	Initial Issue	JWY	TDA	17.02.20

St. Modwen Park, Lincoln, Phase 4

Proposed Site Layout

ST.MODWEN

umc architects
Newark Beacon, Cafferata Way, Newark, Nottinghamshire NG24 2TN
t: +44 (0)1636 653027 e: info@umcarchitects.com

Drawing Status:	Planning
Drawn / Checked:	JWY / TDA
Date:	17.02.20
Scale:	1:500 A1
Drawing no:	20025 P0003
Revision:	A

Appendix 2: Risk Classification Scheme

BWB RISK ASSESSMENT CLASSIFICATION (REFERENCE CIRIA C552, *CONTAMINATED LAND RISK ASSESSMENT: A GUIDE TO GOOD PRACTICE*, 2001)

CIRIA C552, *Contaminated Land Risk Assessment A Guide to Good Practice*, 2001 sets out a methodology for estimating risk. The methodology for risk evaluation is a qualitative method for interpreting the output for the risk estimation stage of the assessment. It involves the classification of the:

- Magnitude of the potential consequence (severity) of risk occurring; and
- Magnitude of the probability (likelihood) of the risk occurring.

The classification of consequence and probability are replicated in **Table 1** and **Table 2**, respectively.

Table 1: Classification of Consequence

Classification	Definition	Examples
Severe (Sv)	Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution of sensitive water resource. Catastrophic damage to buildings/ property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium (Md)	Chronic damage to Human Health ("significant harm"). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant from site exceeding the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of species within a designated nature reserve.
Mild (Mi)	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor (Mr)	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by measures such as protective clothing etc.). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentration that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

The classification of consequence does not take into account the probability of the consequence being realised. Therefore, there may be more than one consequence for a particular pollutant linkage. Both a severe and medium classification can result in death.

Severe relates to short term (acute) risk while medium relates to long term (chronic) risk. Mild relates to significant harm but to less sensitive receptors. Minor classification relates to harm which is not significant but could have a financial cost.

Table 2: Classification of Probability

Classification	Definition
High likelihood (Hi)	There is a pollutant linkage and an event that either appears very likely in the short term and almost inevitable in the long term, or there is evidence at the receptor of harm or pollution.
Likely (Li)	There is a pollutant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood (Lw)	There is a pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely (Ul)	There is a pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

The classification gives a guide as to the severity and consequence of identified risk when compared with other risk presented on the site. It should be noted that if a risk is identified it cannot be classified as "no risk" but as "very low risk". Differing stakeholders may have a different view on the acceptability of a risk.

Once the consequence and probability have been classified these can be compared using a matrix to identify an overall risk category, as shown in **Table 3**. These categories and the actions required are categorised in **Table 4**.

Table 3: Risk Evaluation Matrix

	Consequence	Severe (Sv)	Medium (Md)	Mild (Mi)	Minor (Mr)
Probability	**High likelihood (Hi)**	Very High Risk (VH)	High Risk (H)	Moderate Risk (M)	Mod/Low Risk (M/L)
	Likely (Li)	High Risk (H)	Moderate Risk (M)	Mod/Low Risk (M/L)	Low Risk (L)
	Low likelihood (Lw)	Moderate Risk (M)	Mod/Low Risk (M/L)	Low Risk (L)	Very Low Risk (VL)
	Unlikely (Ul)	Mod/Low Risk (M/L)	Low Risk (L)	Very Low Risk (VL)	Very Low Risk (VL)

Table 4: Risk Categorisations

Very High Risk (VH)	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk (H)	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
Moderate Risk (M)	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low Risk (L)	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk (VL)	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Reference:

CIRIA C552 *Contaminated land risk assessment. A guide to good practice*. Rudland, D J, Lancefield, R M, Mayell, P N, 2001.

Appendix 3: Exploratory Hole Records

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP401	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 80 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.50m bgl.
Ground Level (m AOD): 14.68		**Eastings & Northings:** 488752E 361906N	Engineer: IW	Checker: CR

Strata					Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		1.20m	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Rootlets present throughout. Rare angular brick cobbles. (Topsoil)							
			1.10m: Plastic pipe.							
		13.48		1.20						
		0.50m	Greyish brown and orangish brown clayey medium and coarse SAND with rare subrounded medium and coarse quartzite gravels. (Balderton Sand and Gravel Member)		B1 ES1	1.40 1.40	1.40 1.40	PID	1.40	0.0ppm
		12.98		1.70						
			Greyish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded fine to coarse quartzite. (Balderton Sand and Gravel Member)							
			2.00m - 2.60m: Becoming orangish brown.		B2 ES2	2.00 2.00	2.00 2.00	PID	2.00	0.2ppm
▼		0.90m								
		12.08	Hole Terminated at 2.60m bgl.	2.60						

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.70m and 2.50m bgl. Groundwater strike at 2.50m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP402	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 150 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits.
Ground Level (m AOD): 14.73		**Eastings & Northings:** 488769E 361940N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.40m	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is angular to subrounded fine to coarse quartzite and rare brick. Roots and rootlets present throughout. Rare whole brick. (Topsoil)			B1	0.20	0.20			
		14.33	Orangish brown and greyish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse quartzite. (Balderton Sand and Gravel Member)		0.40	B2 ES1	0.60 0.60	0.60 0.60	PID	0.60	0.0ppm
		1.60m	*1.40m: Metal obstruction in southern face.*								
		12.73	Hole Terminated at 2.00m bgl.		2.00						

Remarks

Reason for Termination:

Trial pit terminated due to metal obstruction in southern face at 1.40m bgl.

Groundwater Notes:

No groundwater encountered.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP403	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 160 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.30m bgl.
Ground Level (m AOD): 14.94		**Eastings & Northings:** 488827E 361971N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.60m	Yellowish brown sandy GRAVEL with high cobble content. Gravel is angular to subrounded fine to coarse brick, concrete, quartzite and limestone. Sand is medium and coarse. Cobbles are angular to subangular concrete, brick and limestone. Demolition waste. (Made Ground)								
		14.34	Orangish brown and greyish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse quartzite. (Balderton Sand and Gravel Member)		0.60	B1 ES1	0.90 0.90	0.90 0.90	PID	0.90	0.0ppm
		1.90m	*1.90m - 2.50m: Becoming grey.*			ES2	1.70	1.70	PID	1.70	0.0ppm
▼		12.44	Hole Terminated at 2.50m bgl.		2.50						

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.40m and 2.30m bgl. Groundwater strike at 2.30m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP404	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 45 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.50m bgl.
Ground Level (m AOD): 14.75		**Eastings & Northings:** 488802E 361976N	Engineer: IW	Checker: CR

Strata					Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.90m	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. (Topsoil)		B1 ES1	0.50 0.50	0.50 0.50	PID	0.50	0.1ppm
		13.85		0.90						
		0.30m	Greyish brown and orangish brown slightly clayey medium and coarse SAND with rare subrounded coarse quartzite gravels. (Balderton Sand and Gravel Member)							
		13.55		1.20						
▼		1.40m	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member)		B2 ES2	1.50 1.50	1.50 1.50	PID	1.50	0.0ppm
		12.15	Hole Terminated at 2.60m bgl.	2.60						

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.20m and 2.50m bgl. Groundwater strike at 2.50m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park		2.00	
TP405	**Project Number:** NTS2656		0.60 Pit Dimensions (m)	45 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020	Stability: Poor stability within granular deposits below 2.40m bgl.	
Ground Level (m AOD): 14.76		**Eastings & Northings:** 488792E 361901N	Engineer: IW	Checker: CR

Strata					Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.15m	Grey concrete with 50% gravel of subangular to rounded fine to coarse quartzite and 20% voids with rebar.							
		14.61		0.15						
		0.15m	(Made Ground)		ES1	0.20	0.20	PID	0.20	0.0ppm
		14.46	Orangish brown sandy GRAVEL of subrounded to rounded fine to coarse quartzite. Sand is medium and coarse. Moderate cobble content of angular brick. Roots at base.	0.30						
		0.30m	(Made Ground)							
		14.16	Yellowish brown sandy GRAVEL with a high cobble content. Gravel is subangular coarse limestone. Sand is coarse. Cobbles are subangular limestone. Occasional limestone boulders.	0.60						
			(Made Ground)							
			Greyish brown and orangish brown slightly clayey medium and coarse SAND with rare subrounded coarse quartzite gravels. (Balderton Sand and Gravel Member)							
			1.40m - 2.50m: Becoming less clayey and more gravelly below 1.40m.		B1	1.50	1.50	PID	1.50	0.1ppm
		1.90m			ES2	1.50	1.50			
▼		12.26	Hole Terminated at 2.50m bgl.	2.50	B2	2.50	2.50	PID	2.50	0.0ppm
					ES3	2.50	2.50			

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.60m and 2.40m bgl. Groundwater strike at 2.40m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park		2.00	
TP406	**Project Number:** NTS2656		0.60 Pit Dimensions (m)	80 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020	Stability: Poor stability within granular deposits below 2.50m bgl.	
Ground Level (m AOD): 14.58		**Eastings & Northings:** 488857E 361975N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.80m	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. (Topsoil)			ES1	0.50	0.50	PID	0.50	0.0ppm
		13.78	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member)		0.80	B1 ES2	0.90 0.90	0.90 0.90	PID	0.90	0.0ppm
▼		1.70m									
		12.08	Hole Terminated at 2.50m bgl.		2.50	B2	2.50	2.50			

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 0.80m and 2.50m bgl. Groundwater strike at 2.50m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP407	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 135 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.50m bgl.
Ground Level (m AOD): 16.28		**Eastings & Northings:** 488819E 362013N	Engineer: IW	Checker: CR

Strata					Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		1.40m	Yellowish brown sandy GRAVEL with high cobble content. Gravel is angular to subrounded fine to coarse brick, concrete, quartzite and limestone. Sand is medium and coarse. Cobbles are angular to subangular concrete, brick and limestone. Demolition waste. (Made Ground)		B1 ES1	0.90 0.90	0.90 0.90	PID	0.90	0.0ppm
		14.88		1.40						
		1.10m	Orangish brown and greyish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse quartzite. (Balderton Sand and Gravel Member)		B2 ES2	1.70 1.70	1.70 1.70	PID	1.70	0.0ppm
▼		13.78	Hole Terminated at 2.50m bgl.	2.50	B3	2.50	2.50			

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.40m and 2.50m bgl. Groundwater strike at 2.50m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP408	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 45 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.30m bgl.
Ground Level (m AOD): 14.60		**Eastings & Northings:** 488881E 362012N	Engineer: IW	Checker: CR

Strata					Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend / Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		14.00	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. (Topsoil)	0.60						
		13.40 (0.60m)	Orangish brown and greyish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse quartzite. (Balderton Sand and Gravel Member)	1.20	B1 ES1	0.80 0.80	0.80 0.80	PID	0.80	0.0ppm
▼		12.10 (1.30m)	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member)	2.50						
			Hole Terminated at 2.50m bgl.							

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.20m and 2.30m bgl. Groundwater strike at 2.30m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park		2.00
TP409	**Project Number:** NTS2656		0.60 Pit Dimensions (m) 170 Degrees
	Client: St Modwen		
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020	Stability: Poor stability within granular deposits below 2.20m bgl.
Ground Level (m AOD): 15.10	**Eastings & Northings:** 488892E 361970N		Engineer: IW Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.65m 14.45	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is angular to subrounded fine to coarse quartzite and rare brick. Roots and rootlets present throughout. (Topsoil)		0.65						
		0.85m 13.60	Yellowish brown and orangish brown slightly clayey fine to coarse SAND with rare subrounded fine and medium quartzite gravels. (Balderton Sand and Gravel Member)		1.50	B1 ES1	0.80 0.80	0.80 0.80	PID	0.80	0.0ppm
▼		1.00m 12.60	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member)		2.50	B2	2.20	2.20			
			Hole Terminated at 2.50m bgl.								

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.50m and 2.20m bgl. Groundwater strike at 2.20m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP410	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 100 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.30m bgl.
Ground Level (m AOD): 14.87		**Eastings & Northings:** 488983E 361960N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.30m 14.57	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. (Topsoil)		0.30	B1 ES1	0.10 0.10	0.10 0.10	PID	0.10	0.0ppm
			Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member)			B2 ES2	1.00 1.00	1.00 1.00	PID	1.00	0.0ppm
		2.20m									
▼		12.37	Hole Terminated at 2.50m bgl.		2.50						

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.50m and 2.30m bgl. Groundwater strike at 2.30m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park		2.00
TP411	**Project Number:** NTS2656		0.60 Pit Dimensions (m) 90 Degrees
	Client: St Modwen		
	Plant: JCB 3CX	**Start & End Date:** 02/03/2020	Stability: Poor stability within granular deposits below 2.80m bgl.
Ground Level (m AOD): 14.87	**Eastings & Northings:** 488994E 361928N		Engineer: IW Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.35m 14.52	Vegetation covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. (Topsoil)		0.35						
		0.65m 13.87	Orangish brown and yellowish brown slightly clayey fine and medium SAND with rare subrounded fine to coarse quartzite gravels. (Balderton Sand and Gravel Member)		1.00	B1 ES1	0.90 0.90				
▼		2.00m 11.87	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member) Hole Terminated at 3.00m bgl.		3.00	B2 ES2	2.60 2.60				

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.00m and 2.80m bgl. Groundwater strike at 2.80m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP412	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 100 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.60m bgl.
Ground Level (m AOD): 15.00		**Eastings & Northings:** 488919E 361934N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.70m 14.30	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. (Topsoil)		0.70						
		0.60m 13.70	Yellowish brown and orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is subrounded fine and medium quartzite. (Balderton Sand and Gravel Member)		1.30	B1 ES1	0.90 0.90	0.90 0.90	PID	0.90	0.0ppm
▼		1.50m	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. (Balderton Sand and Gravel Member)			B2	1.80	1.80			
		12.20	Hole Terminated at 2.80m bgl.		2.80						

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.30m and 2.60m bgl. Groundwater strike at 2.60m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park		2.00	
TP413	**Project Number:** NTS2656		0.60 Pit Dimensions (m)	80 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020	Stability: Fair.	
Ground Level (m AOD): 14.92		**Eastings & Northings:** 488945E 361977N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
		0.60m	Grass covered dark brown slightly gravelly silty fine and medium SAND. Gravel is subrounded fine to coarse quartzite. Roots and rootlets present throughout. Vertical plastic pipe through centre of trial pit. (Topsoil)								
		14.32			0.60						
		0.50m	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subrounded to rounded medium and coarse quartzite. Vertical plastic pipe through centre of trial pit. (Balderton Sand and Gravel Member)								
		13.82			1.10						
			Hole Terminated at 1.10m bgl.								

Remarks

Reason for Termination:

Trial pit terminated due redundant cables.

Groundwater Notes:

No groundwater encountered.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

TRIAL PIT LOG

Scale: 1:25 Sheet 1 of 1

LOCATION ID:	**Project Name:** St Modwen Park			2.00
TP414	**Project Number:** NTS2656			0.60 Pit Dimensions (m) 135 Degrees
	Client: St Modwen			
	Plant: JCB 3CX	**Start & End Date:** 27/02/2020		Stability: Poor stability within granular deposits below 2.60m bgl.
Ground Level (m AOD): 14.67		**Eastings & Northings:** 488910E 362055N	Engineer: IW	Checker: CR

Strata						Samples			In-Situ Tests		
Groundwater Strike	Backfill	Level (m AOD)	Description	Legend	Depth (m bgl)	Type	From (m)	To (m)	Type	Depth (m)	Result
			Yellowish brown sandy GRAVEL with high cobble content. Gravel is angular to subrounded fine to coarse brick, concrete, quartzite and limestone. Sand is medium and coarse. Cobbles are angular to subangular concrete, brick and limestone. Demolition waste. (Made Ground)			ES1	0.30	0.30	PID	0.30	0.0ppm
			0.60m - 0.80m: Concrete cobbles.								
		1.40m				B1	0.80	0.80			
		13.27	Orangish brown and greyish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse quartzite. (Balderton Sand and Gravel Member)		1.40	B2	1.60	1.60	PID	1.60	0.0ppm
						ES2	1.60	1.60			
		1.30m									
▼		11.97	Hole Terminated at 2.70m bgl.		2.70						

Remarks

Reason for Termination:

Trial pit terminated due to collapse of walls.

Groundwater Notes:

Groundwater encountered as damp arisings between 1.40m and 2.60m bgl. Groundwater strike at 2.60m bgl.

Other Remarks:

1. Trial pit backfilled with arisings on completion. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
WS401	**Project Name:** St Modwen Park			**Ground Level (m AOD):** 14.71	
	Project Number: NTS2656			**Eastings:** 488800.94	
	Client: St Modwen			**Northings:** 361957.29	
Hole Type: WLS	**Rig:** Premier Compact 110	**Start & End Date:** 09/03/2020		**Engineer:** IW	**Checker:** CR

Boring		Strata			Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		[0.40]	Grass covered dark brown silty fine SAND with rare subrounded medium quartzite gravels. Rootlets in top 0.15m. (Topsoil)			ES1	0.30	0.30	PID	0.30	0ppm	
			0.30m: Brick cobble.									
		14.31 [0.50]	Light brownish grey slightly silty fine and medium SAND with rare subrounded medium quartzite gravels. (Balderton Sand and Gravel Member)		0.40	ES2	0.60	0.60	PID	0.60	0ppm	
		13.81 [0.40]	Light brown, dark brown and orangish brown slightly clayey fine and medium SAND with rare subrounded medium quartzite gravels. (Balderton Sand and Gravel Member)		0.90				SPT	1.00	N=6 (1,2/1,2,1,2)	1.00m (NR)
			1.05m - 1.30m: Not dark brown.									
		13.41 [0.40]	Orangish brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine and medium flint and quartzite. (Balderton Sand and Gravel Member)		1.30							
		13.01 [0.30]	Very soft brown and orangish brown slightly gravelly very sandy CLAY. Gravel is subangular to subrounded medium and coarse flint and quartzite. Sand is fine and medium. (Balderton Sand and Gravel Member)		1.70							
▼		12.71 [0.60]	Brown and greyish brown SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint and quartzite. (Balderton Sand and Gravel Member)		2.00				SPT	2.00	N=26 (5,4/6,7,6,7)	2.00m (2.00m bgl)
						ES3	2.20	2.20	PID	2.20	0ppm	
		12.11 [1.85]	Greyish brown sandy GRAVEL of subrounded to rounded fine to coarse quartzite. Sand is fine to coarse. (Balderton Sand and Gravel Member)		2.60							
									SPT	3.00	N=37 (5,6/8,9,10,10)	3.00m (2.00m bgl)
			3.50m - 4.45m: Becoming very sandy.									
									SPT	4.00	N=35 (3,5/8,9,9,9)	4.00m (4.00m bgl)
		10.26	Hole Terminated at 4.45m bgl.		4.45							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Borehole terminated at sufficient depth.

Groundwater Remarks:

Groundwater strike at 2.00m bgl.

Other Remarks:

1. Borehole installed with HPDE pipe, gas tap, bung and flush cover. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
WS402	**Project Name:** St Modwen Park		**Ground Level (m AOD):** 14.85	
	Project Number: NTS2656		**Eastings:** 488826.32	
	Client: St Modwen		**Northings:** 361967.86	
Hole Type: WLS	**Rig:** Premier Compact 110	**Start & End Date:** 02/03/2020	**Engineer:** ZT	**Checker:** IW

Boring		Strata			Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & [Thickness (m)]	Description	Legend / Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		[0.80]	Grass covered dark brown slightly gravelly clayey fine to coarse SAND with frequent rootlets. Gravel is subrounded to rounded fine to coarse flint, quartzite and brick. Glass inclusions. (Topsoil)		ES1	0.30	0.40	PID	0.30	0ppm	
			0.70m - 0.80m: Fragment of coal.								
		14.05 [0.60]	Light orangish brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse quartzite and flint. Occasional pockets of orange sand. (Balderton Sand and Gravel Member)	0.80				SPT	1.00	N=10 (2,2/2,3,2,3)	1.00m (NR)
					ES2	1.20	1.30	PID	1.20	0ppm	
		13.45 [3.05]	Light brown sandy GRAVEL of subrounded to rounded fine to coarse quartzite and flint. Sand is fine to coarse. (Balderton Sand and Gravel Member)	1.40							
			1.40m - 2.00m: Becoming lighter in colour.					SPT	2.00	N=16 (3,3/3,3,5,5)	2.00m (2.00m bgl)
					D1 ES3	2.50 2.50	2.60	PID	2.50	0ppm	
								SPT	3.00	N=22 (3,3/5,6,5,6)	3.00m (2.00m bgl)
					D2 ES4	3.60 3.60	3.70	PID	3.60	0ppm	
								SPT	4.00	N=32 (5,5/8,8,8,8)	4.00m (2.00m bgl)
		10.40	Hole Terminated at 4.45m bgl.	4.45							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Borehole terminated at sufficient depth.

Groundwater Remarks:

Groundwater encountered at 2.00m bgl.

Other Remarks:

1. Borehole installed with 50mm HDPE pipe, gas tap, bung and flush cover. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID				
WS403	**Project Name:** St Modwen Park		**Ground Level (m AOD):** 14.89	
	Project Number: NTS2656		**Eastings:** 488742.35	
	Client: St Modwen		**Northings:** 361930.41	
Hole Type: WLS	**Rig:** Premier Compact 110	**Start & End Date:** 02/03/2020	**Engineer:** ZT	**Checker:** IW

Boring		Strata				Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		[0.70]	Grass covered dark blackish brown slightly gravelly clayey fine to coarse SAND with occasional rootlets. Gravel is subangular to subrounded fine to coarse quartzite, brick and flint. (Topsoil)			ES1	0.20	0.30	PID	0.20	0ppm	
		14.19 [0.70]	Light orangish brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse quartzite and flint. Occasional pockets of orange sand. (Balderton Sand and Gravel Member)		0.70	ES2	0.90	1.00	PID	0.90	0ppm	
									SPT	1.00	N=10 (1,2/2,3,2,3)	1.00m (NR)
		13.49 [3.05]	Light creamish brown sandy GRAVEL of subangular to subrounded fine to coarse quartzite. Sand is fine to coarse. (Balderton Sand and Gravel Member)		1.40	D1	1.60	1.70	PID	1.60	0ppm	
▼						ES3	1.60					
									SPT	2.00	N=12 (3,3/3,3,3,3)	2.00m (2.00m bgl)
			2.70m - 3.00m: Becoming darker in colour.									
			3.00m - 3.30m: Becoming very sandy.						SPT	3.00	N=28 (4,4/6,6,8,8)	3.00m (2.00m bgl)
									SPT	4.00	N=33 (6,6/8,8,8,9)	4.00m (2.00m bgl)
		10.44	Hole Terminated at 4.45m bgl.		4.45							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Borehole terminated at sufficient depth.

Groundwater Remarks:

Groundwater encountered at 2.00m bgl.

Other Remarks:

1. Borehole installed with 50mm HDPE pipe, gas tap, bung and flush cover. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
WS404	**Project Name:** St Modwen Park			**Ground Level (m AOD):** 15.19	
	Project Number: NTS2656			**Eastings:** 488884.12	
	Client: St Modwen			**Northings:** 361938.18	
Hole Type: WLS	**Rig:** Premier Compact 110	**Start & End Date:** 02/03/2020		**Engineer:** ZT	**Checker:** IW

Boring		Strata			Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & [Thickness (m)]	Description	Legend / Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		[0.80]	Dark brown slightly gravelly clayey fine to coarse SAND with frequent rootlets. Gravel is subrounded to rounded fine to coarse flint and quartzite. (Topsoil)		ES1	0.40	0.50	PID	0.40	0ppm	
			0.60m - 0.80m: Becoming more gravelly.								
		14.39 [1.80]	Dark orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse quartzite. (Balderton Sand and Gravel Member)	0.80				SPT	1.00	N=24 (3,5/5,5,6,8)	1.00m (NR)
▼					ES2	1.40	1.50	PID	1.40	0ppm	
								SPT	2.00	N=24 (5,5/6,6,6,6)	2.00m (2.00m bgl)
		12.59 [1.85]	Light brownish grey sandy GRAVEL of subangular to subrounded fine to coarse quartzite and flint. Sand is fine to coarse. (Balderton Sand and Gravel Member)	2.60	D1 ES3	2.60 2.60	2.70	PID	2.60	0ppm	
								SPT	3.00	N=21 (3,4/5,5,5,6)	3.00m (2.00m bgl)
								SPT	4.00	N=32 (3,5/8,8,8,8)	4.00m (2.00m bgl)
		10.74	Hole Terminated at 4.45m bgl.	4.45							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Borehole terminated at sufficient depth.

Groundwater Remarks:

Groundwater encountered at 1.80m bgl.

Other Remarks:

1. Borehole installed with 50mm HDPE pipe, gas tap, bung and flush cover. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
WS405	**Project Name:** St Modwen Park			**Ground Level (m AOD):**	14.62
	Project Number: NTS2656			**Eastings:**	488876.69
	Client: St Modwen			**Northings:**	362007.94
Hole Type: WLS	**Rig:** Premier Compact 110	**Start & End Date:**	02/03/2020	**Engineer:** ZT	**Checker:** IW

Boring		Strata				Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		[0.40]	Grass covered dark brown slightly gravelly clayey fine to coarse SAND with frequent rootlets. Gravel is subangular to subrounded fine to coarse flint, brick, quartzite and coal. (Topsoil)			ES1	0.15	0.25	PID	0.15	0ppm	
		14.22 [1.40]			0.40							
			Dark orangish brown slightly gravelly clayey fine to coarse SAND. Gravel is subrounded to rounded fine to coarse quartzite. Occasional roots. (Reworked Natural)			ES2	0.80	0.90	PID	0.80	0ppm	
									SPT	1.00	N=7 (1,2/2,1,2,2)	1.00m (NR)
		12.82 [0.20]			1.80	ES3	1.80	1.90	PID	1.80	0ppm	
▼			Dark blackish brown slightly sandy CLAY with abundant roots. (Relic Topsoil)									
		12.62 [2.45]	*1.90m - 2.00m: Quartzite cobble.*		2.00				SPT	2.00	N=18 (2,3/3,5,5,5)	2.00m (2.00m bgl)
			Light brownish grey sandy GRAVEL. Gravel is subangular to subrounded fine to coarse quartzite and flint. Sand is fine to coarse. (Balderton Sand and Gravel Member)									
			2.50m - 2.60m: Becoming more sandy.			D1 ES4	2.50 2.50	2.60	PID	2.50	0ppm	
									SPT	3.00	N=31 (5,5/8,8,7,8)	3.00m (2.00m bgl)
									SPT	4.00	N=30 (5,6/7,7,8,8)	4.00m (2.00m bgl)
		10.17	Hole Terminated at 4.45m bgl.		4.45							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Borehole terminated at sufficient depth.

Groundwater Remarks:

Groundwater encountered at 2.00m bgl.

Other Remarks:

1. Borehole installed with 50mm HDPE pipe, gas tap, bung and flush cover. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

BOREHOLE LOG

Scale 1:25 Sheet 1 of 1

LOCATION ID					
WS406	**Project Name:** St Modwen Park			**Ground Level (m AOD):** 14.92	
	Project Number: NTS2656			**Eastings:** 488954.11	
	Client: St Modwen			**Northings:** 361974.93	
Hole Type: WLS	**Rig:** Premier Compact 110	**Start & End Date:** 09/03/2020		**Engineer:** IW	**Checker:** CR

Boring		Strata				Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (Ublows)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		[0.50]	Grass covered dark brown slightly silty fine and medium SAND with rare subrounded fine and medium quartzite gravels. Rootlets present throughout. (Topsoil)			ES1	0.30	0.30				
			0.15m - 0.20m: Rare dark orangish brown mottling.									
		14.42 [0.50]	Dark orangish brown slightly silty gravelly fine to coarse SAND. Gravel is subrounded to rounded fine and medium quartzite. (Balderton Sand and Gravel Member)		0.50	ES2	0.80	0.80				
		13.92 [2.70]	Orangish brown SAND and GRAVEL. Sand is medium and coarse. Gravel is subangular to subrounded fine to coarse flint and quartzite. (Balderton Sand and Gravel Member)		1.00				SPT	1.00	N=28 (3,5/6,8,6,8)	1.00m (NR)
▼			*2.00m - 3.00m: Less than 25% recovery.*						SPT	2.00	N=34 (5,6/8,9,8,9)	2.00m (2.00m bgl)
			3.00m - 3.70m: Gravel becoming fine and medium.						SPT	3.00	N=9 (1,2/2,3,2,2)	3.00m (3.00m bgl)
		11.22 [0.75]	Brown and greyish brown gravelly fine to coarse SAND. Gravel is subrounded to rounded fine quartzite. (Balderton Sand and Gravel Member)		3.70				SPT	4.00	N=33 (5,6/8,8,8,9)	4.00m (4.00m bgl)
		10.47	Hole Terminated at 4.45m bgl.		4.45							

Chiseling		
From (m bgl)	To (m bgl)	Time (hh:mm)

Water Added		
From (m bgl)	To (m bgl)	Volume (l)

Remarks

Reason for Termination:

Borehole terminated at sufficient depth.

Groundwater Remarks:

Groundwater strike at 2.00m bgl.

Other Remarks:

1. Borehole installed with HPDE pipe, gas tap, bung and flush cover. 2. No visual or olfactory evidence of contamination noted.

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

Appendix 4: SPT Calibration Certificate

Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd
5-8 victory parkway
victory road
Derby
DE24 8ZF

Hammer Ref:	110RP.63
Test Date:	13/09/2019
Report Date:	13/09/2019
File Name:	110RP.63.spt
Test Operator:	AP

Instrumented Rod Data

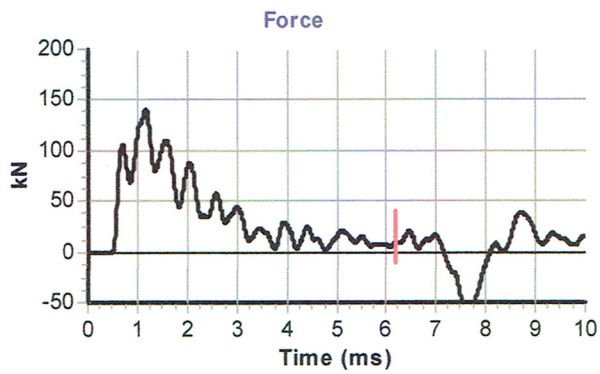
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.9
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	62901
Accelerometer No.2:	62902

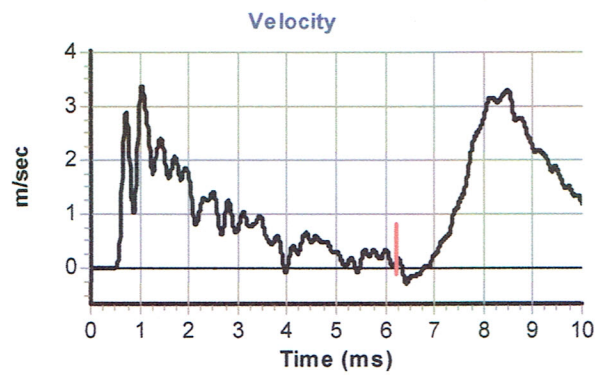
Hammer Information

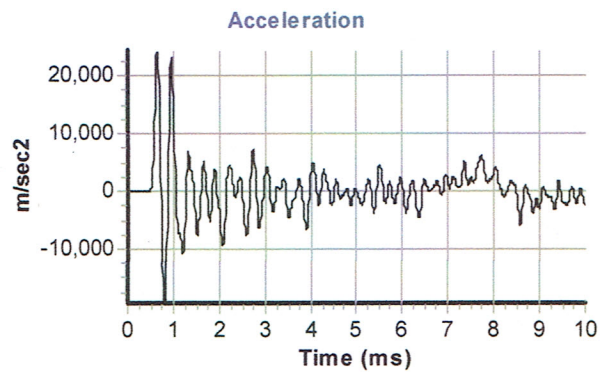
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
String Length L (m):	15.0

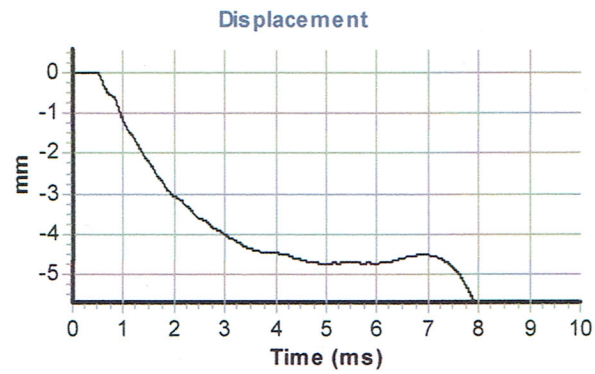
Comments / Location

Sheerwood drillings rig tested at Dynamic samplings yard.





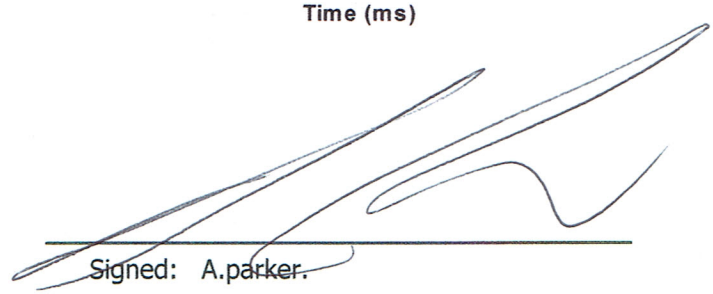




Calculations

Area of Rod A (mm2):	1021
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	370

Energy Ratio E_r (%): **78**



Signed: A.parker.

Title: Associate Director.

The recommended calibration interval is 12 months

Appendix 5: Gas and Groundwater Monitoring Data

BWB GAS AND GROUNDWATER MONITORING

Site:		St Modwen Park Phase 4
Client:		St Modwen
Job No.:		NTS2656
Date:		18th March 2020
Start / End Time:		10.00 / 13.30
Engineer:		IW
Monitoring Equipment:	**Gas Meter ID**	BWB00957
	PID ID	BWB00961
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Weather Conditions	Start	End
(Dry / Raining)	Raining	Raining
Wind Strength (m/s)	6.3	6.3
Wind Direction (from)	SW	SW
Temperature (°C)	12.0	12.0
Barometric Pressure (h Pa / mB)	1023.0	1023.0
App 12 Hour Pressure (h Pa / mB)	1023.0	
12 Hour Pressure Trend	STEADY	
PID - Air	<1	<1
PID - Calibration Gas		

Location Reference	Relative Pressure (Pa)	Flow (l/hr)		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Free-Phase Product Level Top (m)	Groundwater Elevation (m AOD)	Notes
		Peak	Steady	Peak	Steady	Peak	Steady	Min	Steady								
Ambient Air Start (Calibration)	1023		<0.1		<0.1		<0.1		20.2	-25	<1	<1					
Ambient Air Finish (Calibration)	1023		<0.1		<0.1		<0.1		19.9	<1	<1	<1					
WS401	1023		<0.1		<0.1		1.8		16.6	<1	<1	60.7	2.09	3.90		12.62	
WS402	1023	0.2	<0.1		<0.1		1.7		17.2	-25.0	<1	19.5	2.17	3.86		12.68	
WS403	1023	0.5	<0.1		<0.1		1.6		17.5	-25.0	<1	55.5	2.13	3.93		12.76	
WS404	1022	0.1	<0.1		<0.1		0.5		19.7	<1	<1	1.4	2.22	3.90		12.97	Silt on dip tape.
WS405	1023	0.2	<0.1		<0.1		0.7		19.2	<1	<1	0.2	1.98	3.78		12.64	
WS406	1023	0.1	<0.1		<0.1		<0.1		20.2	<1	<1	<0.1	2.25	4.00		12.67	

BWB GAS AND GROUNDWATER MONITORING

Site:		St Modwen Park Phase 4
Client:		St Modwen
Job No.:		NTS2656
Date:		23rd Mach 2020
Start / End Time:		12.45 / 15.45
Engineer:		IW
Monitoring Equipment:	**Gas Meter ID**	BWB00957
	PID ID	BWB00961
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Weather Conditions	**Start**	**End**
(Dry / Raining)	DRY	DRY
Wind Strength (m/s)	6.0	6.0
Wind Direction (from)	SE	SE
Temperature (°C)	10.0	10.0
Barometric Pressure (h Pa / mB)	1027.0	1024.0
App 12 Hour Pressure (h Pa / mB)	1029.0	
12 Hour Pressure Trend	FALLING	
PID - Air	<1	<1
PID - Calibration Gas		

Location Reference	**Relative Pressure (Pa)**	**Flow (l/hr)**		**Methane (%v/v)**		**Carbon Dioxide (%v/v)**		**Oxygen (%v/v)**		**Hydrogen Sulphide (ppm)**	**Carbon Monoxide (ppm)**	**PID (ppm)**	**Depth to water (m)**	**Base of Response Zone (m)**	**Free-Phase Product Level Top (m)**	**Groundwater Elevation (m AOD)**	**Notes**
		Peak	**Steady**	**Peak**	**Steady**	**Peak**	**Steady**	**Min**	**Steady**								
Ambient Air Start (Calibration)	1027		<0.1		<0.1		<0.1		20.0	<1	<1	<1					
Ambient Air Finish (Calibration)	1024		<0.1		<0.1		<0.1		20.1	<1	<1	<1					
WS401	1025.0000		<0.1		<0.1		1.6		17.9	<1	-56	17.6	2.08	3.93		12.63	
WS402	1027.0000		<0.1		<0.1		1.7		16.7	<1	<1	10.0	2.21	3.86		12.64	Silt on dip tape.
WS403	1025.0000		<0.1		<0.1		2.2		16.9	<1	<1	28.6	2.17	3.92		12.72	Silt on dip tape.
WS404	1026.0000		<0.1		<0.1		0.1		19.8	<1	<1	0.3	2.25	3.90		12.94	Silt on dip tape.
WS405	**1027.0000**		<0.1		<0.1		0.8		19.2	<1	<1	0.2	2.02	3.78		12.60	
WS406	**1025.0000**		<0.1		<0.1	1.1	0.7		19.1	<1	<1	10.6	2.28	3.97		12.64	Silt on dip tape.

BWB GAS AND GROUNDWATER MONITORING

Site:		St Modwen Park Phase 4
Client:		St Modwen
Job No.:		NTS2656
Date:		8th April 2020
Start / End Time:		8.00 / 9.00
Engineer:		IW
Monitoring Equipment:	**Gas Meter ID**	BWB00957
	PID ID	BWB00961
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Weather Conditions	**Start**	**End**
(Dry / Raining)	DRY	DRY
Wind Strength (m/s)	1.3	1.3
Wind Direction (from)	NE	NE
Temperature (°C)	11.0	11.0
Barometric Pressure (h Pa / mB)	1027.0	1026.0
App 12 Hour Pressure (h Pa / mB)	1030.0	
12 Hour Pressure Trend	FALLING	
PID - Air	<0.1	<0.1
PID - Calibration Gas		

Location Reference	**Relative Pressure (Pa)**	**Flow (l/hr)**		**Methane (%v/v)**		**Carbon Dioxide (%v/v)**		**Oxygen (%v/v)**		**Hydrogen Sulphide (ppm)**	**Carbon Monoxide (ppm)**	**PID (ppm)**	**Depth to water (m)**	**Base of Response Zone (m)**	**Free-Phase Product Level Top (m)**	**Groundwater Elevation (m AOD)**	**Notes**
		Peak	**Steady**	**Peak**	**Steady**	**Peak**	**Steady**	**Min**	**Steady**								
Ambient Air Start (Calibration)	1027		<0.1		<0.1		<0.1		20.4	-25	<1	<0.1					
Ambient Air Finish (Calibration)	1026		<0.1		<0.1		<0.1		20.1	<1	<1	<0.1					
WS401	1026		<0.1		<0.1		2.3		17.2	<1	<1	5.0	2.20	3.91		12.51	
WS402	1027		<0.1		<0.1		1.9		17.2	<1	<1	3.1	2.33	3.82		12.52	
WS403	1026		<0.1		<0.1	5.0	4.3		14.1	<1	<1	10.3	2.29	3.93		12.60	
WS404	1027		<0.1		<0.1		0.4		19.7	<1	<1	0.1	2.37	3.89		12.82	
WS405	1026		<0.1	0.4	<0.1		1.2		18.8	<1	<1	<0.1	2.14	3.77		12.48	
WS406	1026		<0.1		<0.1		2.6		17.4	<1	<1	3.7	2.40	3.98		12.52	

BWB GAS AND GROUNDWATER MONITORING

Site:		St Modwen Park Phase 4
Client:		St Modwen
Job No.:		NTS2656
Date:		14th April 2020
Start / End Time:		8.25 / 9.05
Engineer:		IW
Monitoring Equipment:	**Gas Meter ID**	BWB00957
	PID ID	BWB00961
	Dip Tape	BWB00945
	Other	

NR = Not Recorded
Dry = No Groundwater

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Weather Conditions	**Start**	**End**
(Dry / Raining)	DRY	DRY
Wind Strength (m/s)	2.2	2.2
Wind Direction (from)	NW	NW
Temperature (°C)	5.0	5.0
Barometric Pressure (h Pa / mB)	1030.0	1029.0
App 12 Hour Pressure (h Pa / mB)	1029.0	
12 Hour Pressure Trend	RISING	
PID - Air	<0.1	<0.1
PID - Calibration Gas		

Location Reference	**Relative Pressure (Pa)**	**Flow (l/hr)**		**Methane (%v/v)**		**Carbon Dioxide (%v/v)**		**Oxygen (%v/v)**		**Hydrogen Sulphide (ppm)**	**Carbon Monoxide (ppm)**	**PID (ppm)**	**Depth to water (m)**	**Base of Response Zone (m)**	**Free-Phase Product Level Top (m)**	**Groundwater Elevation (m AOD)**	**Notes**
		Peak	**Steady**	**Peak**	**Steady**	**Peak**	**Steady**	**Min**	**Steady**								
Ambient Air Start (Calibration)	1030		<0.1		<0.1		<0.1		20.3	<1	<1	<0.1					
Ambient Air Finish (Calibration)	1029		<0.1		<0.1		<0.1		19.9	<1	<1	<0.1					
WS401	1030		0.2		<0.1		2.9		16.5	<1	<1	2.5	2.24	3.85		12.47	
WS402	1030		<0.1		<0.1		2.4		16.3	<1	-25	1.7	2.36	2.87		12.49	
WS403	1031		<0.1	0.8	<0.1		5.4		12.7	-25	<1	5.0	2.33	3.91		12.56	Silt on dip tape.
WS404	1030	3.3	<0.1		<0.1		0.5		19.5	<1	<1	0.8	2.41	3.87		12.78	Silt on dip tape.
WS405	1030		<0.1		<0.1		1.3		19.0	<1	<1	<0.1	2.18	3.77		12.44	Silt on dip tape.
WS406	1030		<0.1		<0.1		2.9		17.1	<1	<1	3.3	2.43	3.95		12.49	Silt on dip tape.

Appendix 6: Soil Chemical Analysis Results

Imogen Wort
BWB Consulting Limited
5th Floor
Waterfront House
Nottingham
NG2 3DQ

e: imogen.wort@bwbconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-90953

Project / Site name:	St Modwen Park Phase 4	**Samples received on:**	05/03/2020
Your job number:	NTS2656	**Samples instructed on:**	05/03/2020
Your order number:	POR030843	**Analysis completed by:**	13/03/2020
Report Issue Number:	1	**Report issued on:**	13/03/2020
Samples Analysed:	5 leachate samples - 13 soil samples		

Signed: Karoline Marek

Karolina Marek
PL Head of Reporting Team

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4

Your Order No: POR030843

Lab Sample Number				1463659	1463660	1463661	1463662	1463663
Sample Reference				TP401	TP403	TP404	TP405	TP406
Sample Number				ES2	ES1	ES2	ES1	ES2
Depth (m)				2.00-2.00	0.90-0.90	1.50-1.50	0.20-0.20	0.90-0.90
Date Sampled				27/02/2020	27/02/2020	27/02/2020	27/02/2020	27/02/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	93	12	7.5	10	6.6
Total mass of sample received	kg	0.001	NONE	0.42	0.53	0.54	1.0	0.55
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.4	8.3	8.3	8.8	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.055	0.025	0.020	0.10	0.045
Total Sulphur	mg/kg	50	MCERTS	290	71	89	190	100
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0015	< 0.0010	0.0014	0.0017	0.0013
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	11	9.9	6.4	14
Barium (aqua regia extractable)	mg/kg	1	MCERTS	55	120	120	100	150
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	0.37	0.48	0.28	0.74
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	< 0.2	< 0.2	0.3	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	13	9.3	11	9.2	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	6.8	2.5	5.6	9.9
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	8.4	13	13	12
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	51	11	9.0	6.9	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.5	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	26	15	18	14	23
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	71	15	16	16	29

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4
Your Order No: POR030843

Lab Sample Number				1463659	1463660	1463661	1463662	1463663
Sample Reference				TP401	TP403	TP404	TP405	TP406
Sample Number				ES2	ES1	ES2	ES1	ES2
Depth (m)				2.00-2.00	0.90-0.90	1.50-1.50	0.20-0.20	0.90-0.90
Date Sampled				27/02/2020	27/02/2020	27/02/2020	27/02/2020	27/02/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	160	< 10	< 10	< 10	< 10
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	6.8	< 1.0	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	18	< 2.0	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	21	< 8.0	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	88	< 8.0	< 8.0	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	130	< 10	< 10	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4
Your Order No: POR030843

Lab Sample Number				1463664	1463665	1463666	1463667	1463668
Sample Reference				TP407	TP412	TP414	TP414	WS402
Sample Number				ES1	ES1	ES1	ES2	ES1
Depth (m)				0.90-0.90	0.90-0.90	0.30-0.30	1.60-1.60	0.30-0.40
Date Sampled				27/02/2020	27/02/2020	27/02/2020	27/02/2020	02/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	10	7.2	9.3	7.6	8.0
Total mass of sample received	kg	0.001	NONE	0.87	0.54	1.1	0.58	1.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.5	6.3	9.2	8.4	7.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	2	< 1	< 1
Complex Cyanide	mg/kg	1	MCERTS	< 1	< 1	2	< 1	< 1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.97	0.012	0.34	0.068	0.017
Total Sulphur	mg/kg	50	MCERTS	2900	75	670	110	180
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0097	0.0049	0.013	0.0023	0.023
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.34	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	4.1	< 0.05	1.9	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	1.2	< 0.05	0.35	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	8.2	< 0.05	7.5	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	7.8	< 0.05	7.5	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.2	< 0.05	4.0	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	3.1	< 0.05	3.4	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	4.9	< 0.05	5.2	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.2	< 0.05	2.1	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.0	< 0.05	5.4	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.4	< 0.05	3.3	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.44	< 0.05	0.61	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	< 0.05	3.9	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	42.6	< 0.80	45.1	< 0.80	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.5	6.9	8.3	6.7	6.3
Barium (aqua regia extractable)	mg/kg	1	MCERTS	260	13	220	78	44
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	0.25	0.46	1.1	0.21
Boron (water soluble)	mg/kg	0.2	MCERTS	2.4	< 0.2	2.5	0.5	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2	0.6	< 0.2	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	8.6	27	13	8.0
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	5.3	15	16	6.5
Lead (aqua regia extractable)	mg/kg	1	MCERTS	81	9.2	500	20	24
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	7.0	13	14	5.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	14	19	18	11
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	15	500	43	26

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4
Your Order No: POR030843

Lab Sample Number				1463664	1463665	1463666	1463667	1463668
Sample Reference				TP407	TP412	TP414	TP414	WS402
Sample Number				ES1	ES1	ES1	ES2	ES1
Depth (m)				0.90-0.90	0.90-0.90	0.30-0.30	1.60-1.60	0.30-0.40
Date Sampled				27/02/2020	27/02/2020	27/02/2020	27/02/2020	02/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	490	< 10	750	< 10	810
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	4.6
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	18
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	630
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	650
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	120
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-	-	120

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4

Your Order No: POR030843

Lab Sample Number				1463669	1463670	1463671		
Sample Reference				WS402	WS404	WS405		
Sample Number				ES3	ES3	ES1		
Depth (m)				2.50-2.60	2.60-2.70	0.15-0.25		
Date Sampled				02/03/2020	02/03/2020	02/03/2020		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	6.5	8.4	13		
Total mass of sample received	kg	0.001	NONE	0.63	0.62	1.0		
Asbestos in Soil	Type	N/A	ISO 17025	-	-	Not-detected		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.4	7.4	7.0		
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Complex Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.019	0.020	0.013		
Total Sulphur	mg/kg	50	MCERTS	100	120	230		
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0033	< 0.0010	0.018		
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05		
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.22	1.0		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.17		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.44	3.6		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.42	3.5		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.21	1.8		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.21	1.7		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.2		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.78		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.0		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.2		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.4		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	1.50	19.6		
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.3	4.9	8.5		
Barium (aqua regia extractable)	mg/kg	1	MCERTS	53	25	210		
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.45	0.34	0.42		
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	< 0.2	0.5		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.3	0.3		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	11	9.5	11		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.1	9.3	9.9		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	13	12	48		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	15	9.3		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.2	< 1.0		
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	17	15	16		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	24	28	42		

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4
Your Order No: POR030843

Lab Sample Number				1463669	1463670	1463671		
Sample Reference				WS402	WS404	WS405		
Sample Number				ES3	ES3	ES1		
Depth (m)				2.50-2.60	2.60-2.70	0.15-0.25		
Date Sampled				02/03/2020	02/03/2020	02/03/2020		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-		
Toluene	µg/kg	1	MCERTS	-	-	-		
Ethylbenzene	µg/kg	1	MCERTS	-	-	-		
p & m-xylene	µg/kg	1	MCERTS	-	-	-		
o-xylene	µg/kg	1	MCERTS	-	-	-		
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-		
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10	75		
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1		
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	-		

Analytical Report Number: 20-90953

Project / Site name: St Modwen Park Phase 4

Your Order No: POR030843

Lab Sample Number				1463672	1463673	1463674	1463675	1463676
Sample Reference				TP405	TP407	TP414	WS402	WS406
Sample Number				ES1	ES1	ES1	ES1	ES1
Depth (m)				0.20-0.20	0.90-0.90	0.30-0.30	0.30-0.40	0.15-0.25
Date Sampled				27/02/2020	27/02/2020	27/02/2020	02/03/2020	02/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.0	10.7	10.2	7.3	7.3
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	63	< 10	< 10
Sulphate as SO_4	mg/l	0.1	ISO 17025	41.5	126	68.1	2.3	2.5
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	1.1	ISO 17025	15	< 1.1	7.0	< 1.1	1.7
Barium (dissolved)	µg/l	0.05	ISO 17025	31	56	28	14	58
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Boron (dissolved)	µg/l	10	ISO 17025	13	27	180	13	32
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	6.9	19	22	4.4	2.4
Copper (dissolved)	µg/l	0.7	ISO 17025	2.8	34	15	13	7.7
Lead (dissolved)	µg/l	1	ISO 17025	6.1	1.5	9.7	2.3	< 1.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	0.3	3.2	0.7	2.9	3.7
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	3.0	48	18	9.7	1.8
Zinc (dissolved)	µg/l	0.4	ISO 17025	5.2	4.4	5.5	7.8	8.5

Analytical Report Number : 20-90953

Project / Site name: St Modwen Park Phase 4

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1463659	TP401	ES2	2.00-2.00	Brown clay and sand with gravel.
1463660	TP403	ES1	0.90-0.90	Light brown clay and sand with gravel.
1463661	TP404	ES2	1.50-1.50	Light brown clay and sand with gravel.
1463662	TP405	ES1	0.20-0.20	Brown clay and sand with vegetation and gravel
1463663	TP406	ES2	0.90-0.90	Brown clay and sand with gravel.
1463664	TP407	ES1	0.90-0.90	Brown clay and sand with gravel and brick.
1463665	TP412	ES1	0.90-0.90	Brown sand with gravel and vegetation.
1463666	TP414	ES1	0.30-0.30	Brown clay and sand with vegetation and gravel
1463667	TP414	ES2	1.60-1.60	Brown clay and sand with vegetation and gravel
1463668	WS402	ES1	0.30-0.40	Brown loam and sand with vegetation and gravel.
1463669	WS402	ES3	2.50-2.60	Brown clay and sand with gravel.
1463670	WS404	ES3	2.60-2.70	Brown sand with gravel.
1463671	WS405	ES1	0.15-0.25	Brown loam and sand with vegetation and gravel.

Analytical Report Number : 20-90953

Project / Site name: St Modwen Park Phase 4

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BS EN 12457-1 (2:1) Leachate Prep	2:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-1.	L043-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

Analytical Report Number : 20-90953

Project / Site name: St Modwen Park Phase 4

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP401	ES2	S	20-90953	1463659	c	Free cyanide in soil	L080-PL	c
TP401	ES2	S	20-90953	1463659	c	Complex Cyanide in soil	L080-PL	c
TP401	ES2	S	20-90953	1463659	c	Total cyanide in soil	L080-PL	c
TP403	ES1	S	20-90953	1463660	c	Free cyanide in soil	L080-PL	c
TP403	ES1	S	20-90953	1463660	c	Complex Cyanide in soil	L080-PL	c
TP403	ES1	S	20-90953	1463660	c	Total cyanide in soil	L080-PL	c
TP404	ES2	S	20-90953	1463661	c	Free cyanide in soil	L080-PL	c
TP404	ES2	S	20-90953	1463661	c	Complex Cyanide in soil	L080-PL	c
TP404	ES2	S	20-90953	1463661	c	Total cyanide in soil	L080-PL	c
TP405	ES1	S	20-90953	1463662	c	Free cyanide in soil	L080-PL	c
TP405	ES1	S	20-90953	1463662	c	Complex Cyanide in soil	L080-PL	c
TP405	ES1	S	20-90953	1463662	c	Total cyanide in soil	L080-PL	c
TP406	ES2	S	20-90953	1463663	c	Free cyanide in soil	L080-PL	c
TP406	ES2	S	20-90953	1463663	c	Complex Cyanide in soil	L080-PL	c
TP406	ES2	S	20-90953	1463663	c	Total cyanide in soil	L080-PL	c
TP407	ES1	S	20-90953	1463664	c	Free cyanide in soil	L080-PL	c
TP407	ES1	S	20-90953	1463664	c	Complex Cyanide in soil	L080-PL	c
TP407	ES1	S	20-90953	1463664	c	Total cyanide in soil	L080-PL	c
TP412	ES1	S	20-90953	1463665	c	Free cyanide in soil	L080-PL	c
TP412	ES1	S	20-90953	1463665	c	Complex Cyanide in soil	L080-PL	c
TP412	ES1	S	20-90953	1463665	c	Total cyanide in soil	L080-PL	c
TP414	ES1	S	20-90953	1463666	c	Free cyanide in soil	L080-PL	c
TP414	ES1	S	20-90953	1463666	c	Complex Cyanide in soil	L080-PL	c
TP414	ES1	S	20-90953	1463666	c	Total cyanide in soil	L080-PL	c
TP414	ES2	S	20-90953	1463667	c	Free cyanide in soil	L080-PL	c
TP414	ES2	S	20-90953	1463667	c	Complex Cyanide in soil	L080-PL	c
TP414	ES2	S	20-90953	1463667	c	Total cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

Imogen Wort
BWB Consulting Limited
5th Floor
Waterfront House
Nottingham
NG2 3DQ

e: imogen.wort@bwbconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-91858

Project / Site name:	St Modwen Park	**Samples received on:**	10/03/2020
Your job number:	NTS2656	**Samples instructed on:**	10/03/2020
Your order number:		**Analysis completed by:**	17/03/2020
Report Issue Number:	1	**Report issued on:**	17/03/2020
Samples Analysed:	2 soil samples		

Signed:

Rachel Bradley

Deputy Quality Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-91858

Project / Site name: St Modwen Park

Lab Sample Number				1468671	1468672			
Sample Reference				DS401	DS401			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.30	2.20			
Date Sampled				09/03/2020	09/03/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	13	5.9			
Total mass of sample received	kg	0.001	NONE	0.92	0.64			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.1	6.6			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Complex Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021	0.067			
Total Sulphur	mg/kg	50	MCERTS	160	380			
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.014	< 0.0010			
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	0.33	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	0.36	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.4	6.6			
Barium (aqua regia extractable)	mg/kg	1	MCERTS	80	46			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.40	0.49			
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.3			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4			
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	17	12			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	6.0	8.7			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	13			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.6	36			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	17	22			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	33	38			

Analytical Report Number: 20-91858

Project / Site name: St Modwen Park

Lab Sample Number				1468671	1468672			
Sample Reference				DS401	DS401			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.30	2.20			
Date Sampled				09/03/2020	09/03/2020			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10			
TPH2 (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10			

Analytical Report Number : 20-91858

Project / Site name: St Modwen Park

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1468671	DS401	None Supplied	0.30	Brown loam and clay with gravel and brick.
1468672	DS401	None Supplied	2.20	Brown sandy gravel.**

**Non MCERTS matrix.

Analytical Report Number : 20-91858

Project / Site name: St Modwen Park

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS

Analytical Report Number : 20-91858

Project / Site name: St Modwen Park

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Appendix 7: Groundwater Chemical Analysis Results

Imogen Wort
BWB Consulting Limited
5th Floor
Waterfront House
Nottingham
NG2 3DQ

e: imogen.wort@bwbconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-93666

Project / Site name:	St Modwen Park, Phase 4	**Samples received on:**	19/03/2020
Your job number:	NTS2656	**Samples instructed on:**	19/03/2020
Your order number:	POR031063	**Analysis completed by:**	26/03/2020
Report Issue Number:	1	**Report issued on:**	26/03/2020
Samples Analysed:	6 water samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477913	1477914	1477915	1477916	1477917
Sample Reference				WS401	WS402	WS403	WS404	WS405
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				18/03/2020	18/03/2020	18/03/2020	18/03/2020	18/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.7	7.2	6.6	7.1	8.0
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	430	530	590	500	420
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	45	ISO 17025	56400	48600	141000	45300	43500
Sulphate as SO_4	mg/l	0.045	ISO 17025	56.4	48.6	141	45.3	43.5
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	410	75	45	92	150
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	13.0	38.9	12.3	11.3	9.45
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.57	0.62	2.90	0.87	0.29
Barium (dissolved)	µg/l	0.06	ISO 17025	110	130	72	140	100
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	49	32	46	35	28
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.07	0.04	0.16	< 0.02	0.08
Calcium (dissolved)	mg/l	0.012	ISO 17025	75	110	91	93	82
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	0.5	0.4	< 0.2	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	1.9	1.0	1.0	1.1	2.1
Lead (dissolved)	µg/l	0.2	ISO 17025	0.9	0.5	0.4	< 0.2	2.0
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	20	3.8	46	5.8	2.7
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	1.3	0.7	< 0.6	0.6
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.2	0.4	< 0.2	< 0.2	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.9	2.1	26	5.6	5.9
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477913	1477914	1477915	1477916	1477917
Sample Reference				WS401	WS402	WS403	WS404	WS405
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				18/03/2020	18/03/2020	18/03/2020	18/03/2020	18/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH2 (C6 - C10)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477913	1477914	1477915	1477916	1477917
Sample Reference				WS401	WS402	WS403	WS404	WS405
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				18/03/2020	18/03/2020	18/03/2020	18/03/2020	18/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477913	1477914	1477915	1477916	1477917
Sample Reference				WS401	WS402	WS403	WS404	WS405
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				18/03/2020	18/03/2020	18/03/2020	18/03/2020	18/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477918				
Sample Reference				WS406				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				18/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.9				
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	610				
Total Cyanide	µg/l	10	ISO 17025	< 10				
Sulphate as SO_4	µg/l	45	ISO 17025	57800				
Sulphate as SO_4	mg/l	0.045	ISO 17025	57.8				
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	240				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	20.4				
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10				
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16				
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.95				
Barium (dissolved)	µg/l	0.06	ISO 17025	54				
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1				
Boron (dissolved)	µg/l	10	ISO 17025	36				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.40				
Calcium (dissolved)	mg/l	0.012	ISO 17025	100				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5				
Copper (dissolved)	µg/l	0.5	ISO 17025	3.6				
Lead (dissolved)	µg/l	0.2	ISO 17025	0.3				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	12				
Selenium (dissolved)	µg/l	0.6	ISO 17025	3.0				
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.2				
Zinc (dissolved)	µg/l	0.5	ISO 17025	1.8				
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
Petroleum Hydrocarbons								

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477918				
Sample Reference				WS406				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				18/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
TPH1 (C10 - C40)	µg/l	10	NONE	< 10				
TPH2 (C6 - C10)	µg/l	10	ISO 17025	< 10				
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10				

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477918				
Sample Reference				WS406				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				18/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0				
Chloroethane	µg/l	1	ISO 17025	< 1.0				
Bromomethane	µg/l	1	ISO 17025	< 1.0				
Vinyl Chloride	µg/l	1	NONE	< 1.0				
Trichlorofluoromethane	µg/l	1	NONE	< 1.0				
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloromethane	µg/l	1	ISO 17025	< 1.0				
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0				
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0				
Benzene	µg/l	1	ISO 17025	< 1.0				
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0				
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Trichloroethene	µg/l	1	ISO 17025	< 1.0				
Dibromomethane	µg/l	1	ISO 17025	< 1.0				
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0				
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0				
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0				
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0				
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0				
Chlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-Xylene	µg/l	1	ISO 17025	< 1.0				
Styrene	µg/l	1	ISO 17025	< 1.0				
Tribromomethane	µg/l	1	ISO 17025	< 1.0				
o-Xylene	µg/l	1	ISO 17025	< 1.0				
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0				
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0				
Bromobenzene	µg/l	1	ISO 17025	< 1.0				
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0				
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0				
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0				
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0				
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Butylbenzene	µg/l	1	ISO 17025	< 1.0				
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0				
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0				
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0				

Analytical Report Number: 20-93666

Project / Site name: St Modwen Park, Phase 4

Your Order No: POR031063

Lab Sample Number				1477918				
Sample Reference				WS406				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				18/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05				
Phenol	µg/l	0.05	NONE	< 0.05				
2-Chlorophenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05				
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05				
2-Methylphenol	µg/l	0.05	NONE	< 0.05				
Hexachloroethane	µg/l	0.05	NONE	< 0.05				
Nitrobenzene	µg/l	0.05	NONE	< 0.05				
4-Methylphenol	µg/l	0.05	NONE	< 0.05				
Isophorone	µg/l	0.05	NONE	< 0.05				
2-Nitrophenol	µg/l	0.05	NONE	< 0.05				
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05				
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05				
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05				
4-Chloroaniline	µg/l	0.05	NONE	< 0.05				
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05				
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05				
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05				
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05				
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05				
Dimethylphthalate	µg/l	0.05	NONE	< 0.05				
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05				
Dibenzofuran	µg/l	0.05	NONE	< 0.05				
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Diethyl phthalate	µg/l	0.05	NONE	< 0.05				
4-Nitroaniline	µg/l	0.05	NONE	< 0.05				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Azobenzene	µg/l	0.05	NONE	< 0.05				
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05				
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Carbazole	µg/l	0.05	NONE	< 0.05				
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05				
Anthraquinone	µg/l	0.05	NONE	< 0.05				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 20-93666

Project / Site name: St Modwen Park, Phase 4

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
TPH2 (Waters)	Determination of hydrocarbons C6-C10 by headspace GC-MS. Accredited Matrices SW, PW. GW.	In-house method based on USEPA8260	L088-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

Analytical Report Number : 20-93666

Project / Site name: St Modwen Park, Phase 4

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Imogen Wort
BWB Consulting Limited
5th Floor
Waterfront House
Nottingham
NG2 3DQ

e: imogen.wort@bwbconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-94384

Project / Site name:	St Modwen Park	**Samples received on:**	24/03/2020
Your job number:	NTS2656	**Samples instructed on:**	24/03/2020
Your order number:	POR031095	**Analysis completed by:**	31/03/2020
Report Issue Number:	1	**Report issued on:**	31/03/2020
Samples Analysed:	6 water samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-94384

Project / Site name: St Modwen Park

Your Order No: POR031095

Lab Sample Number				1482061	1482062	1482063	1482064	1482065
Sample Reference				WS401	WS402	WS403	WS404	WS405
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/03/2020	23/03/2020	23/03/2020	23/03/2020	23/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.8	7.2	6.5	7.2	7.8
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	410	510	600	500	500
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	45	ISO 17025	79400	63800	187000	69800	73600
Sulphate as SO_4	mg/l	0.045	ISO 17025	79.4	63.8	187	69.8	73.6
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	720	100	550	120	280
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	12.6	32.2	21.1	7.92	5.44
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16

Analytical Report Number: 20-94384

Project / Site name: St Modwen Park

Your Order No: POR031095

Lab Sample Number				1482061	1482062	1482063	1482064	1482065
Sample Reference				WS401	WS402	WS403	WS404	WS405
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				23/03/2020	23/03/2020	23/03/2020	23/03/2020	23/03/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.81	0.94	12.3	4.64	0.43
Barium (dissolved)	µg/l	0.06	ISO 17025	140	170	100	200	120
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	0.2	< 0.1	< 0.1
Boron (dissolved)	µg/l	10	ISO 17025	59	31	50	37	28
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	0.10	0.10	< 0.02	0.07
Calcium (dissolved)	mg/l	0.012	ISO 17025	73	100	95	90	99
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.4	1.9	< 0.2	0.4
Copper (dissolved)	µg/l	0.5	ISO 17025	0.6	1.7	9.0	3.1	1.3
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.0	3.8	< 0.2	1.0
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	27	2.3	57	6.5	1.9
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	0.8	< 0.6	< 0.6	< 0.6
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.6	2.9	< 0.2	0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	5.1	3.2	17	2.4	6.8
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH2 (C6 - C10)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 20-94384

Project / Site name: St Modwen Park

Your Order No: POR031095

Lab Sample Number				1482066				
Sample Reference				WS406				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.0				
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	560				
Total Cyanide	µg/l	10	ISO 17025	< 10				
Sulphate as SO_4	µg/l	45	ISO 17025	68300				
Sulphate as SO_4	mg/l	0.045	ISO 17025	68.3				
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	180				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	26.9				
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10				
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01				
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01				
Fluorene	µg/l	0.01	ISO 17025	< 0.01				
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01				
Anthracene	µg/l	0.01	ISO 17025	< 0.01				
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Pyrene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Chrysene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01				
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01				
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16				

Analytical Report Number: 20-94384

Project / Site name: St Modwen Park

Your Order No: POR031095

Lab Sample Number				1482066				
Sample Reference				WS406				
Sample Number				None Supplied				
Depth (m)				None Supplied				
Date Sampled				23/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.50				
Barium (dissolved)	µg/l	0.06	ISO 17025	58				
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1				
Boron (dissolved)	µg/l	10	ISO 17025	36				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.25				
Calcium (dissolved)	mg/l	0.012	ISO 17025	91				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.8				
Copper (dissolved)	µg/l	0.5	ISO 17025	4.9				
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	16				
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.5				
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.6				
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.0				
Monoaromatics & Oxygenates								
Benzene	µg/l	1	ISO 17025	< 1.0				
Toluene	µg/l	1	ISO 17025	< 1.0				
Ethylbenzene	µg/l	1	ISO 17025	< 1.0				
p & m-xylene	µg/l	1	ISO 17025	< 1.0				
o-xylene	µg/l	1	ISO 17025	< 1.0				
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0				
Petroleum Hydrocarbons								
TPH1 (C10 - C40)	µg/l	10	NONE	< 10				
TPH2 (C6 - C10)	µg/l	10	ISO 17025	< 10				
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0				
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10				
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10				

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 20-94384

Project / Site name: St Modwen Park

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
TPH2 (Waters)	Determination of hydrocarbons C6-C10 by headspace GC-MS. Accredited Matrices SW, PW. GW.	In-house method based on USEPA8260	L088-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Appendix 8: Geotechnical Laboratory Testing Results

SUMMARY REPORT

Summary of Moisture Content Test Results

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

Client: BWB Consulting Limited

Client Address: 5th Floor, Waterfront House, Nottingham, NG2 3DQ

Contact: Imogen Wort

Site Address: NTS2656 St Modwen Park Phase 4

Client Reference: NTS2656
Job Number: 20-90956
Date Sampled: 26/02 - 27/02/2020
Date Received: 03/03/2020
Date Tested: 10/03/2020
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC											
		Reference	Depth Top m	Depth Base m	Type			%											
1463713	TP401	B1	1.40	1.40	B	Light brown slightly clayey gravelly SAND		13											
1463715	TP402	B1	0.20	0.20	B	Dark brown slightly gravelly slightly clayey SAND		15											
1463716	TP403	B1	0.90	0.90	B	Brown gravelly clayey SAND		19											
1463717	TP404	B1	0.50	0.50	B	Black very sandy CLAY		16											
1463720	TP407	B1	0.90	0.90	B	Dark brown slightly clayey sandy GRAVEL with bricks		14											
1463721	TP407	B2	1.70	1.70	B	Orangish brown slightly clayey gravelly SAND		9.0											
1463723	TP408	B1	0.80	0.80	B	Brown gravelly clayey SAND		11											
1463725	TP410	B1	0.10	0.10	B	Dark brown TOPSOIL with rootlets		25											
1463726	TP412	B1	0.90	0.90	B	Brown slightly clayey gravelly SAND		14											
1463727	TP414	B1	0.80	0.80	B	Grey gravelly SAND		17											

Comments: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 099.14

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

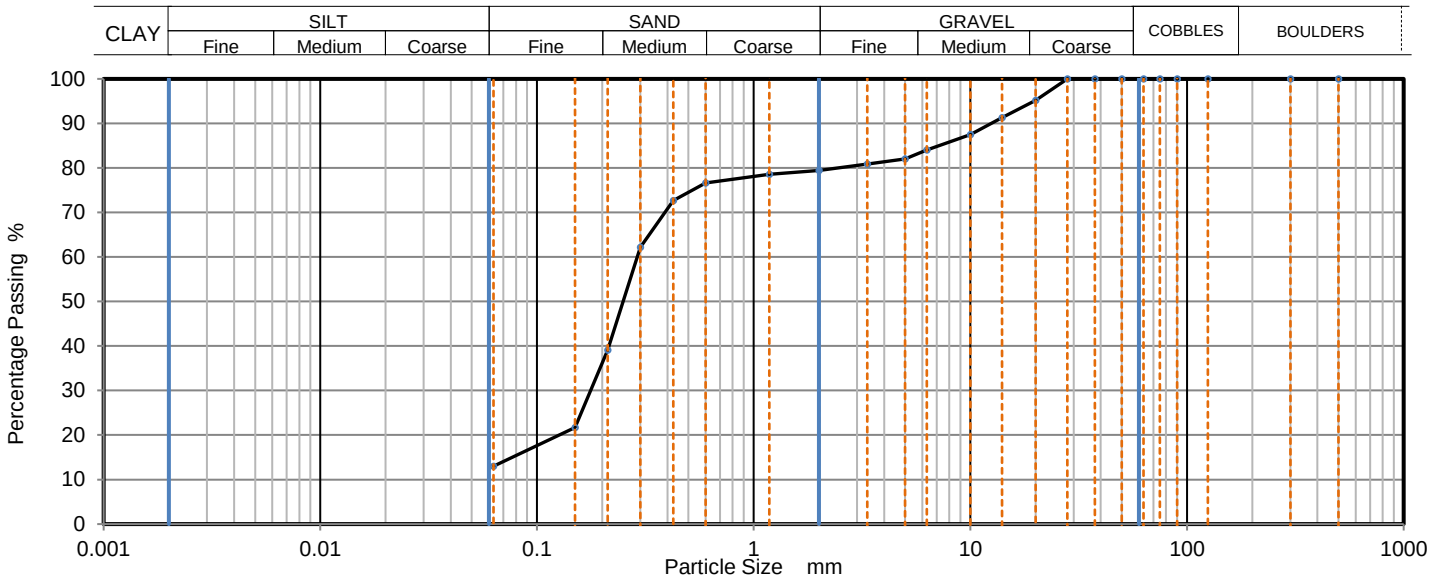
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	10/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463713	Depth Top [m]:	1.40
Hole No.:	TP401	Depth Base [m]:	1.40
Sample Reference:	B1	Sample Type:	B
Sample Description:	Light brown slightly clayey gravelly SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	91		
10	88		
6.3	84		
5	82		
3.35	81		
2	79		
1.18	79		
0.6	77		
0.425	73		
0.3	62		
0.212	39		
0.15	22		
0.063	13.1		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	20.60
Sand	66.30
Fines <0.063mm	13.10

Grading Analysis		
D100	mm	28
D60	mm	0.29
D30	mm	0.177
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

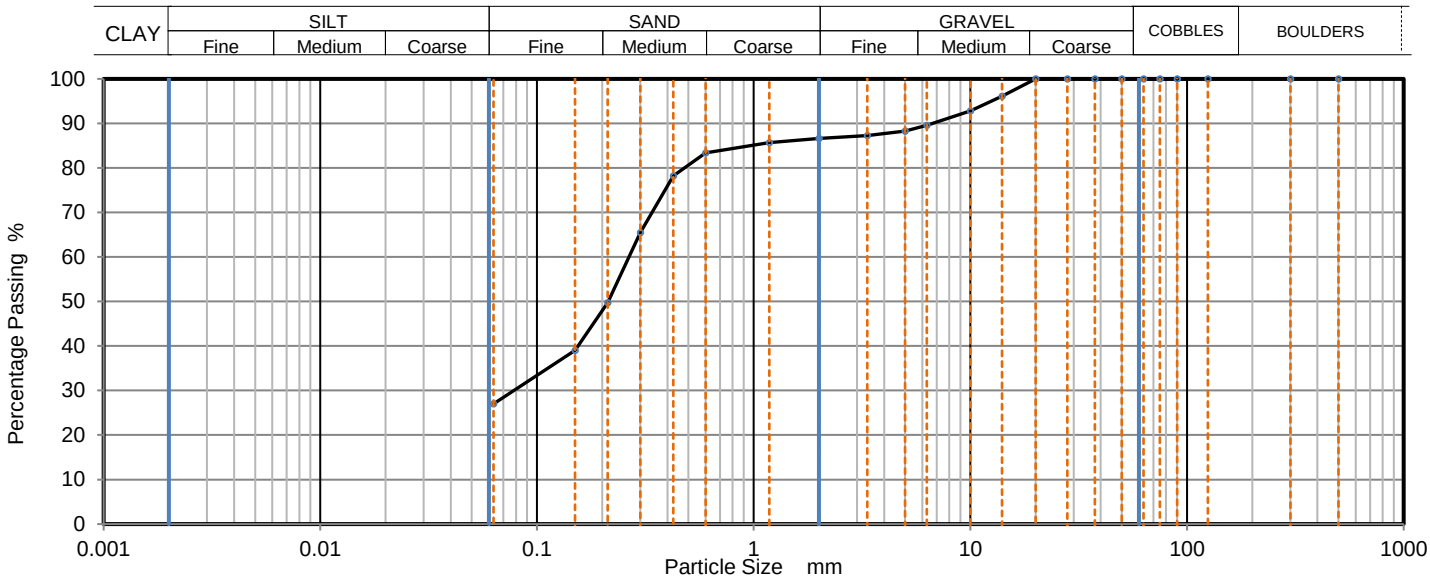
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	10/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463716	Depth Top [m]:	0.90
Hole No.:	TP403	Depth Base [m]:	0.90
Sample Reference:	B1	Sample Type:	B
Sample Description:	Brown gravelly clayey SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	93		
6.3	90		
5	88		
3.35	87		
2	87		
1.18	86		
0.6	83		
0.425	78		
0.3	66		
0.212	50		
0.15	39		
0.063	27.9		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	13.40
Sand	58.80
Fines <0.063mm	27.90

Grading Analysis		
D100	mm	20
D60	mm	0.266
D30	mm	0.0744
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

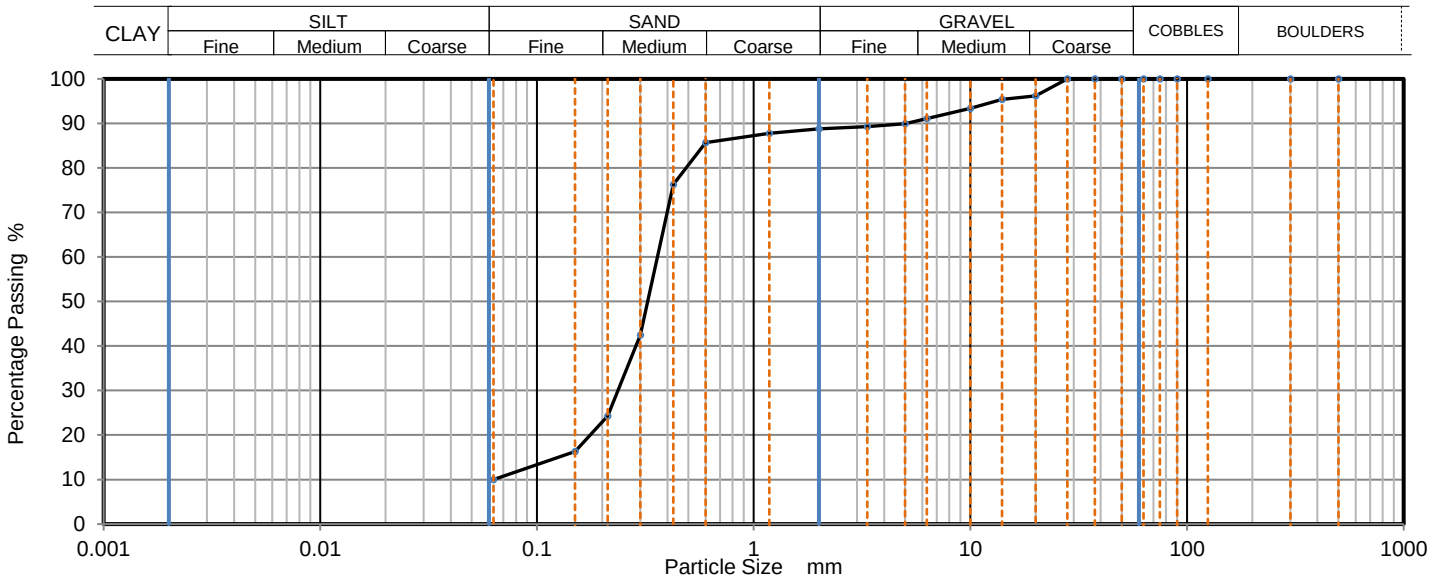
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	10/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463719	Depth Top [m]:	2.50
Hole No.:	TP405	Depth Base [m]:	2.50
Sample Reference:	B2	Sample Type:	B
Sample Description:	Grey clayey gravelly SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	96		
14	95		
10	93		
6.3	91		
5	90		
3.35	89		
2	89		
1.18	88		
0.6	86		
0.425	76		
0.3	43		
0.212	24		
0.15	16		
0.063	10.6		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	11.20
Sand	78.20
Fines <0.063mm	10.60

Grading Analysis		
D100	mm	28
D60	mm	0.359
D30	mm	0.237
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

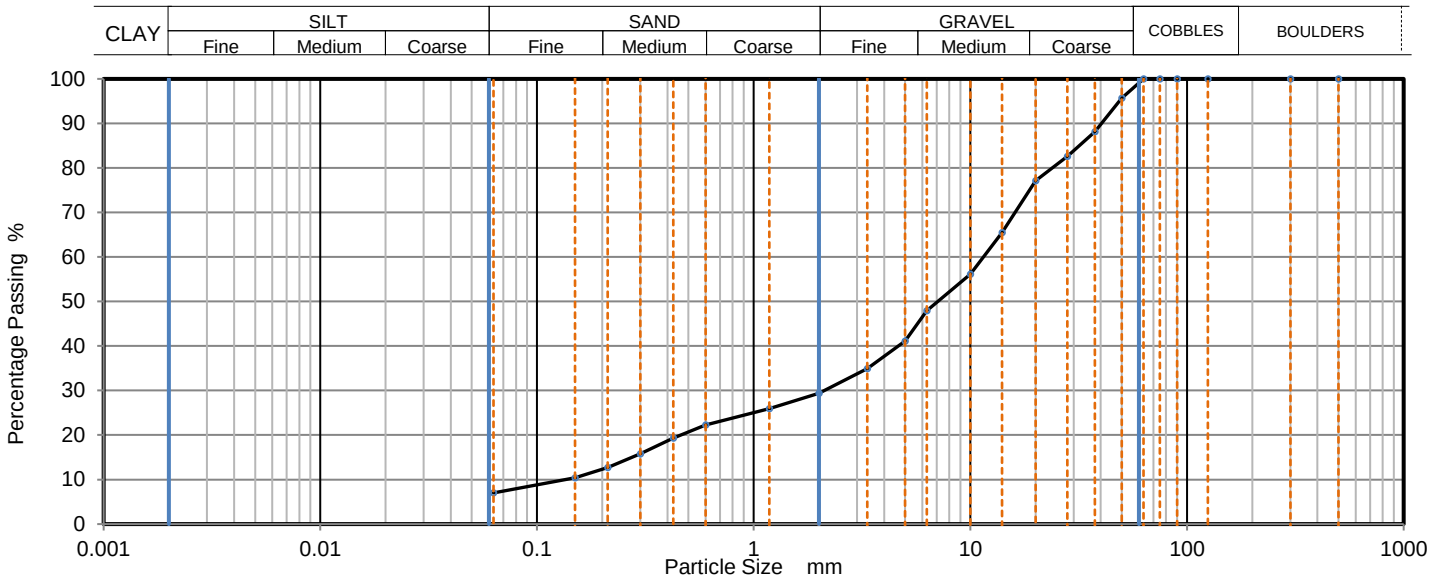
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	10/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463720	Depth Top [m]:	0.90
Hole No.:	TP407	Depth Base [m]:	0.90
Sample Reference:	B1	Sample Type:	B
Sample Description:	Dark brown slightly clayey sandy GRAVEL with bricks		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	96		
37.5	88		
28	83		
20	77		
14	66		
10	56		
6.3	48		
5	41		
3.35	35		
2	29		
1.18	26		
0.6	22		
0.425	19		
0.3	16		
0.212	13		
0.15	10		
0.063	7.7		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	70.60
Sand	21.70
Fines <0.063mm	7.70

Grading Analysis		
D100	mm	63
D60	mm	11.5
D30	mm	2.11
D10	mm	0.13
Uniformity Coefficient		88
Curvature Coefficient		3

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

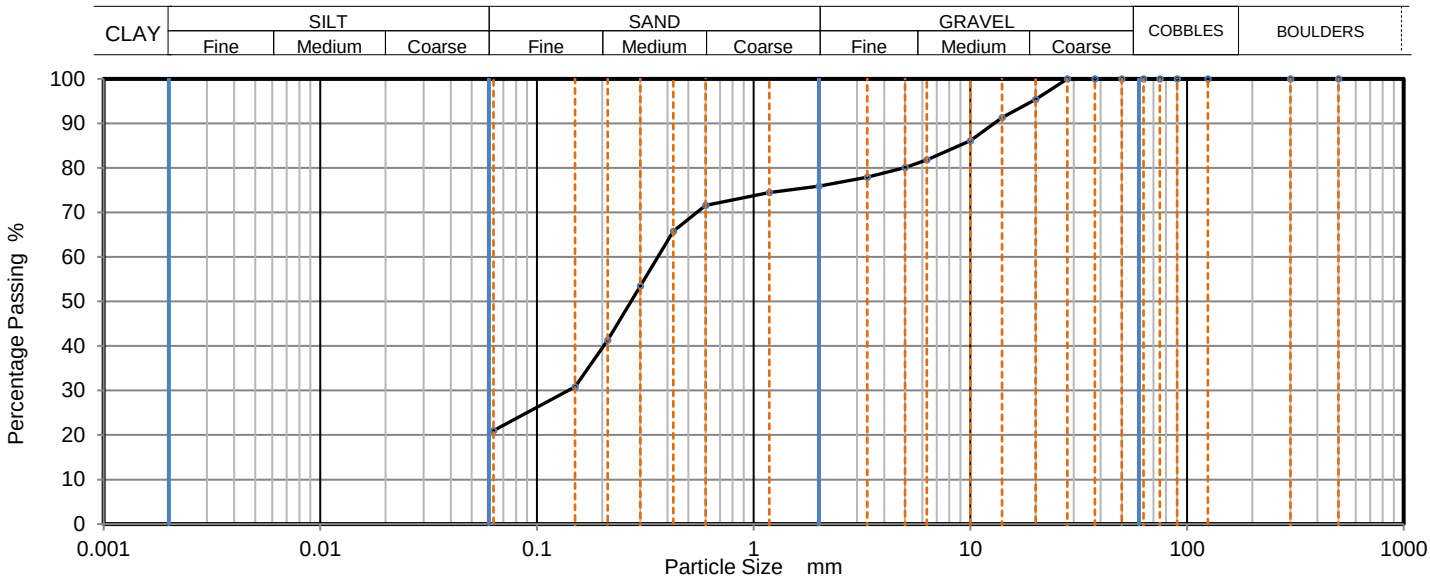
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	10/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463723	Depth Top [m]:	0.80
Hole No.:	TP408	Depth Base [m]:	0.80
Sample Reference:	B1	Sample Type:	B
Sample Description:	Brown gravelly clayey SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	95		
14	91		
10	86		
6.3	82		
5	80		
3.35	78		
2	76		
1.18	75		
0.6	72		
0.425	66		
0.3	54		
0.212	41		
0.15	31		
0.063	21.3		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	24.10
Sand	54.70
Fines <0.063mm	21.30

Grading Analysis		
D100	mm	28
D60	mm	0.361
D30	mm	0.139
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

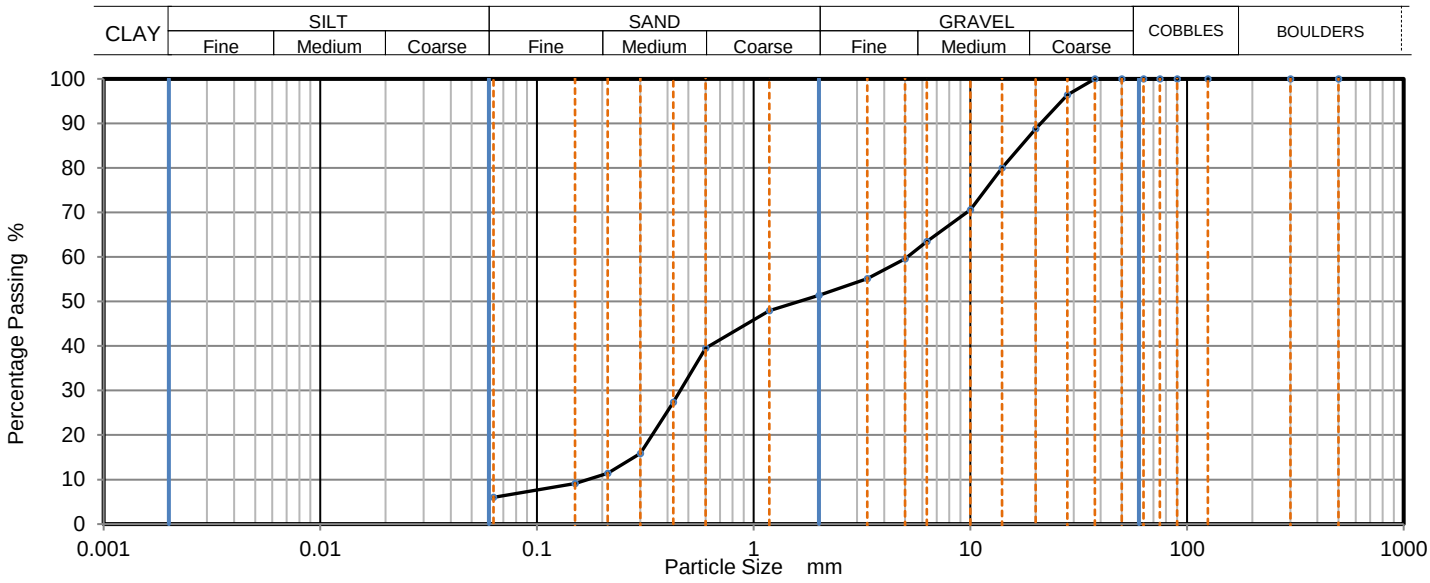
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	12/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463724	Depth Top [m]:	2.20
Hole No.:	TP409	Depth Base [m]:	2.20
Sample Reference:	B2	Sample Type:	B
Sample Description:	Brown slightly clayey very sandy GRAVEL		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	96		
20	89		
14	80		
10	71		
6.3	64		
5	60		
3.35	55		
2	51		
1.18	48		
0.6	40		
0.425	27		
0.3	16		
0.212	11		
0.15	9		
0.063	6.5		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	48.60
Sand	44.90
Fines <0.063mm	6.50

Grading Analysis		
D100	mm	37.5
D60	mm	5.12
D30	mm	0.458
D10	mm	0.172
Uniformity Coefficient		30
Curvature Coefficient		0.24

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

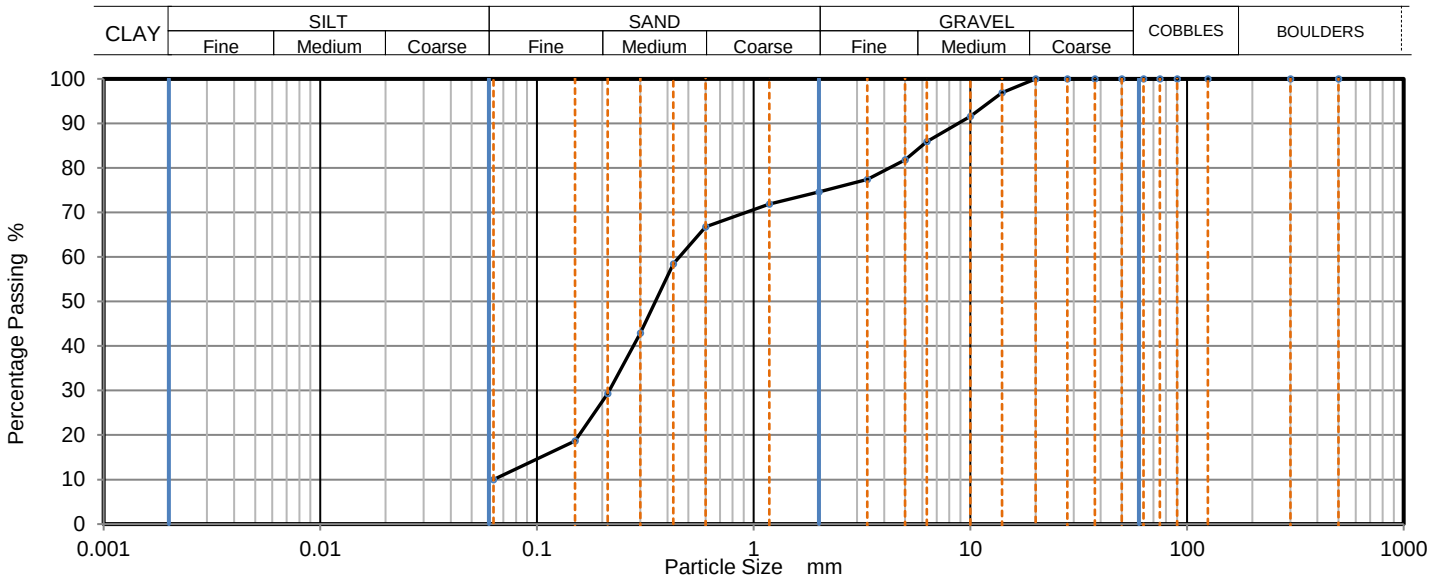
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	12/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463726	Depth Top [m]:	0.90
Hole No.:	TP412	Depth Base [m]:	0.90
Sample Reference:	B1	Sample Type:	B
Sample Description:	Brown slightly clayey gravelly SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	92		
6.3	86		
5	82		
3.35	77		
2	75		
1.18	72		
0.6	67		
0.425	58		
0.3	43		
0.212	29		
0.15	19		
0.063	10.6		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	25.40
Sand	64.00
Fines <0.063mm	10.60

Grading Analysis		
D100	mm	20
D60	mm	0.454
D30	mm	0.216
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

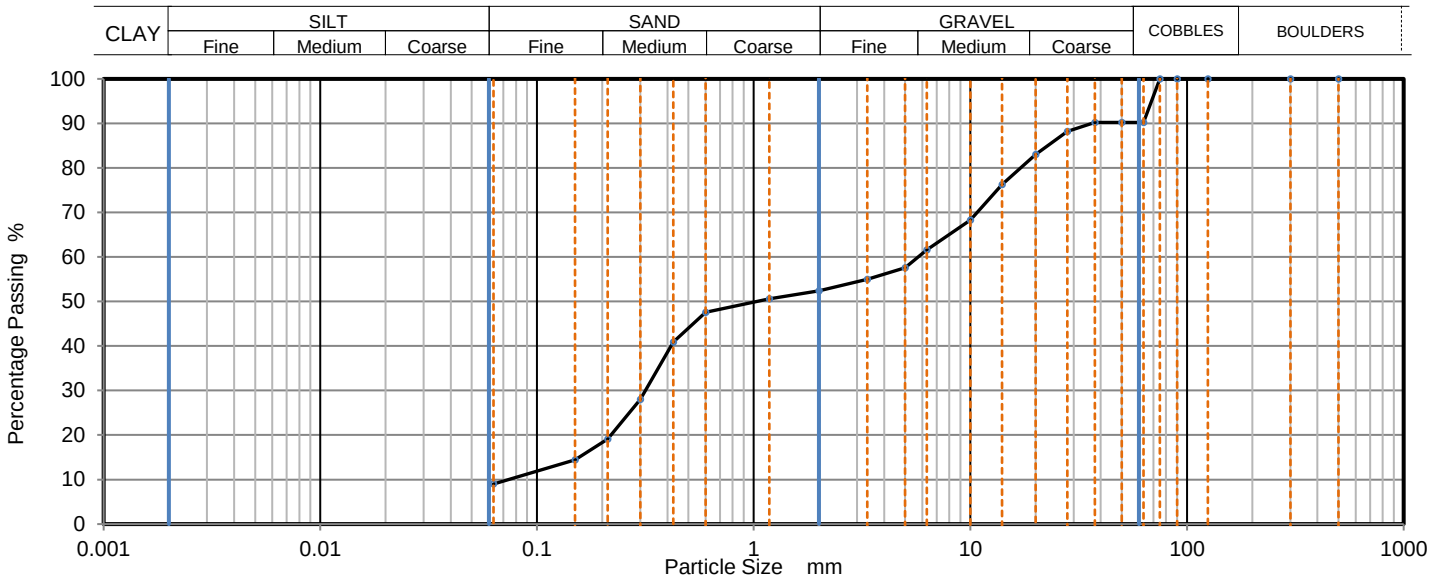
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	10/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463728	Depth Top [m]:	1.60
Hole No.:	TP414	Depth Base [m]:	1.60
Sample Reference:	B2	Sample Type:	B
Sample Description:	Brown slightly clayey very gravelly SAND with cobbles		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
125	100		
90	100		
75	100		
63	90		
50	90		
37.5	90		
28	88		
20	83		
14	76		
10	68		
6.3	62		
5	58		
3.35	55		
2	52		
1.18	51		
0.6	48		
0.425	41		
0.3	28		
0.212	19		
0.15	14		
0.063	9.7		

Sample Proportions	% dry mass
Very coarse	9.80
Gravel	37.80
Sand	42.70
Fines <0.063mm	9.70

Grading Analysis		
D100	mm	75
D60	mm	5.74
D30	mm	0.317
D10	mm	0.0664
Uniformity Coefficient		86
Curvature Coefficient		0.26

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 100.16

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Light Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

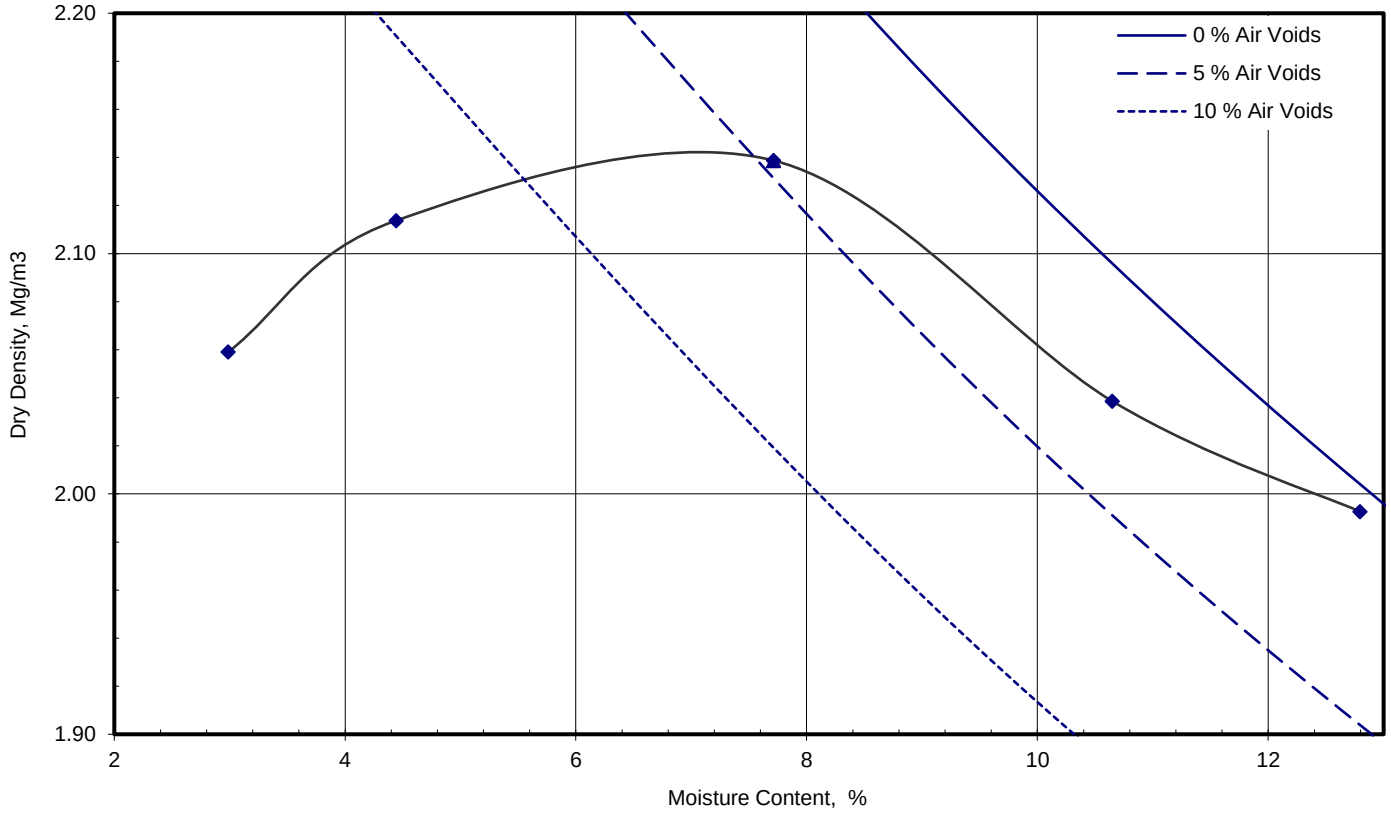
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	18/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463714	Depth Top [m]:	2.00
Hole No.:	TP401	Depth Base [m]:	2.00
Sample Reference:	B2	Sample Type:	B
Sample Description:	Brown gravelly SAND		



Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	23
Particle Density - Assumed	Mg/m³	2.70
As received Moisture Content	%	11
Maximum Dry Density	Mg/m³	**2.14**

Optimum Moisture Content	%	**7.7**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 109.18

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Light Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

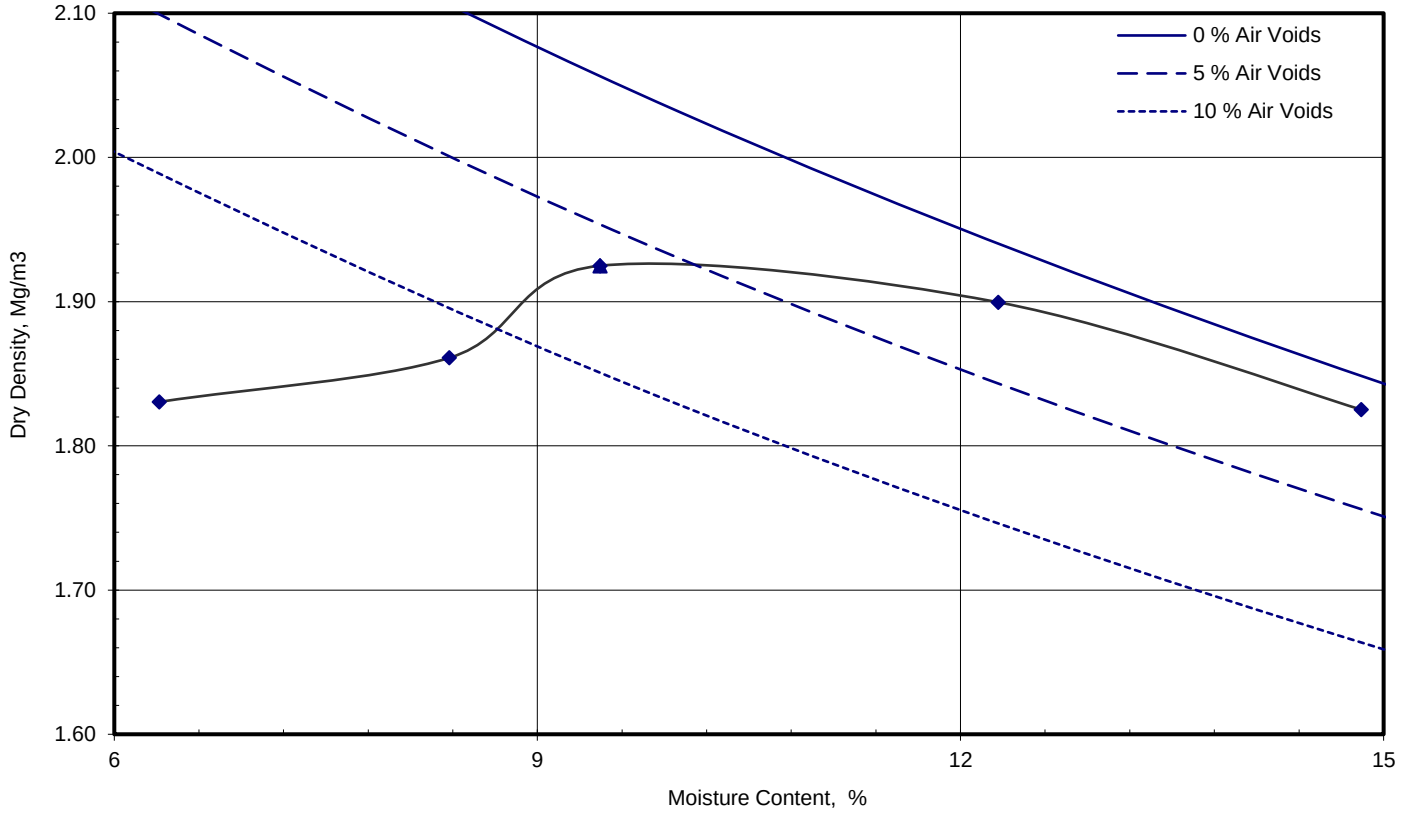
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	18/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463715	Depth Top [m]:	0.20
Hole No.:	TP402	Depth Base [m]:	0.20
Sample Reference:	B1	Sample Type:	B
Sample Description:	Dark brown slightly gravelly slightly clayey SAND		



Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	7
Particle Density - Assumed	Mg/m³	2.55
As received Moisture Content	%	15
Maximum Dry Density	Mg/m³	**1.92**

Optimum Moisture Content	%	**9.4**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 109.18

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Light Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

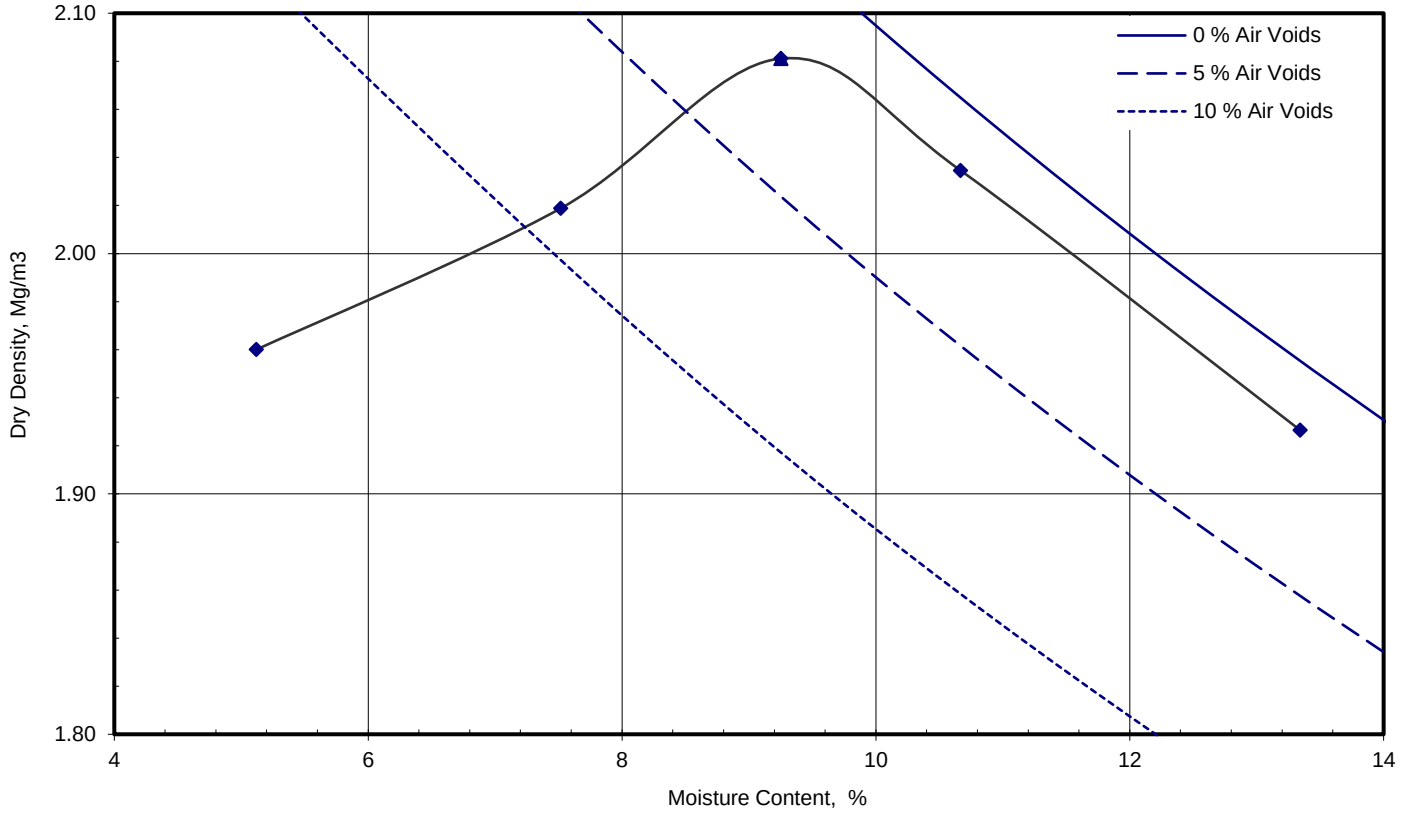
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	18/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463718	Depth Top [m]:	1.50
Hole No.:	TP404	Depth Base [m]:	1.50
Sample Reference:	B2	Sample Type:	B
Sample Description:	Brown gravelly clayey SAND		



Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	9.3
Maximum Dry Density	Mg/m³	**2.08**

Optimum Moisture Content	%	**9.3**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 109.18

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Light Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

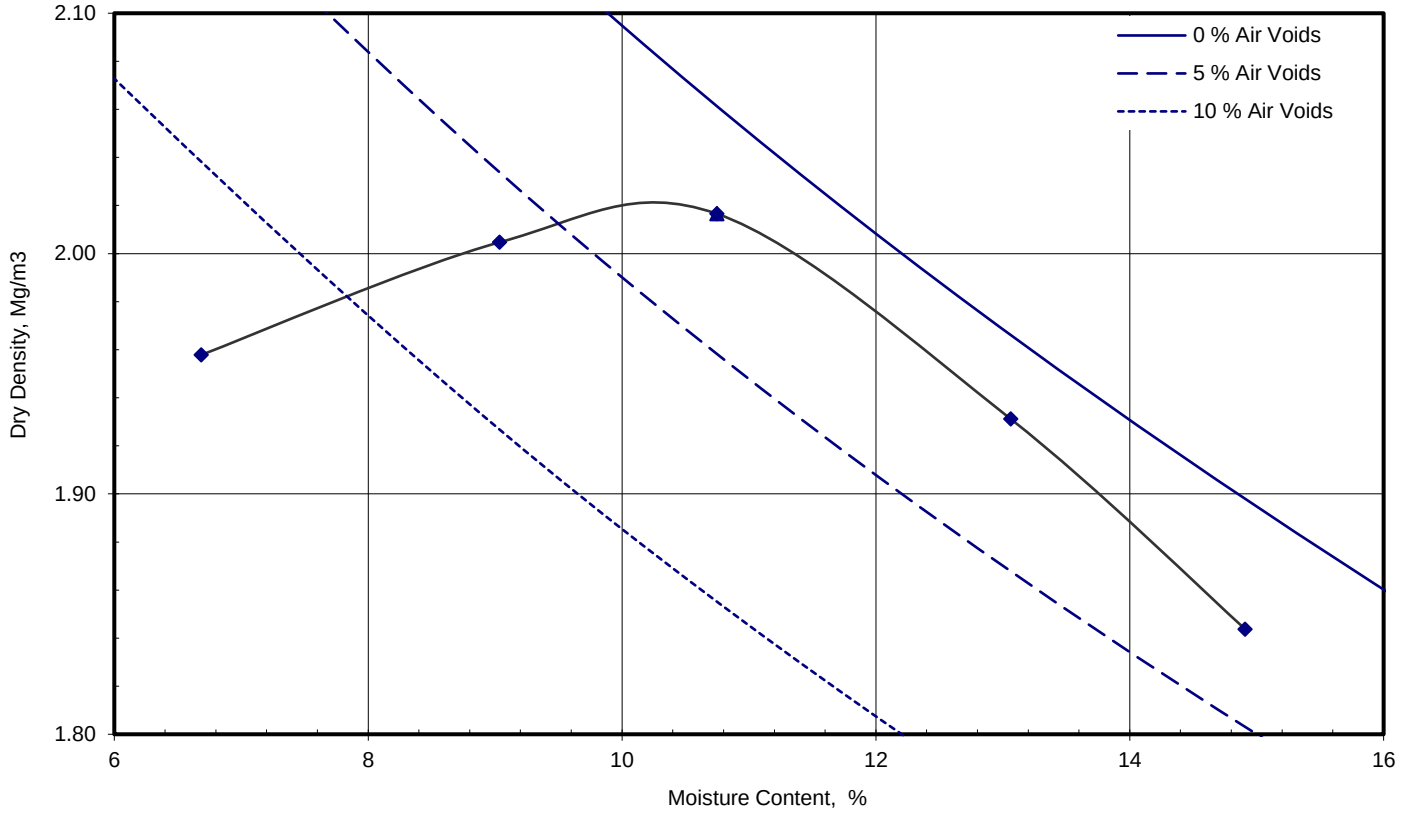
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	18/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463721	Depth Top [m]:	1.70
Hole No.:	TP407	Depth Base [m]:	1.70
Sample Reference:	B2	Sample Type:	B
Sample Description:	Orangish brown slightly clayey gravelly SAND		



Preparation		Material used was natural
Mould Type		1 Litre
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	1
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	9.0
Maximum Dry Density	Mg/m³	**2.02**

Optimum Moisture Content	%	**11**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.3 using 2.5kg [light] Rammer

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 109.18

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Light Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

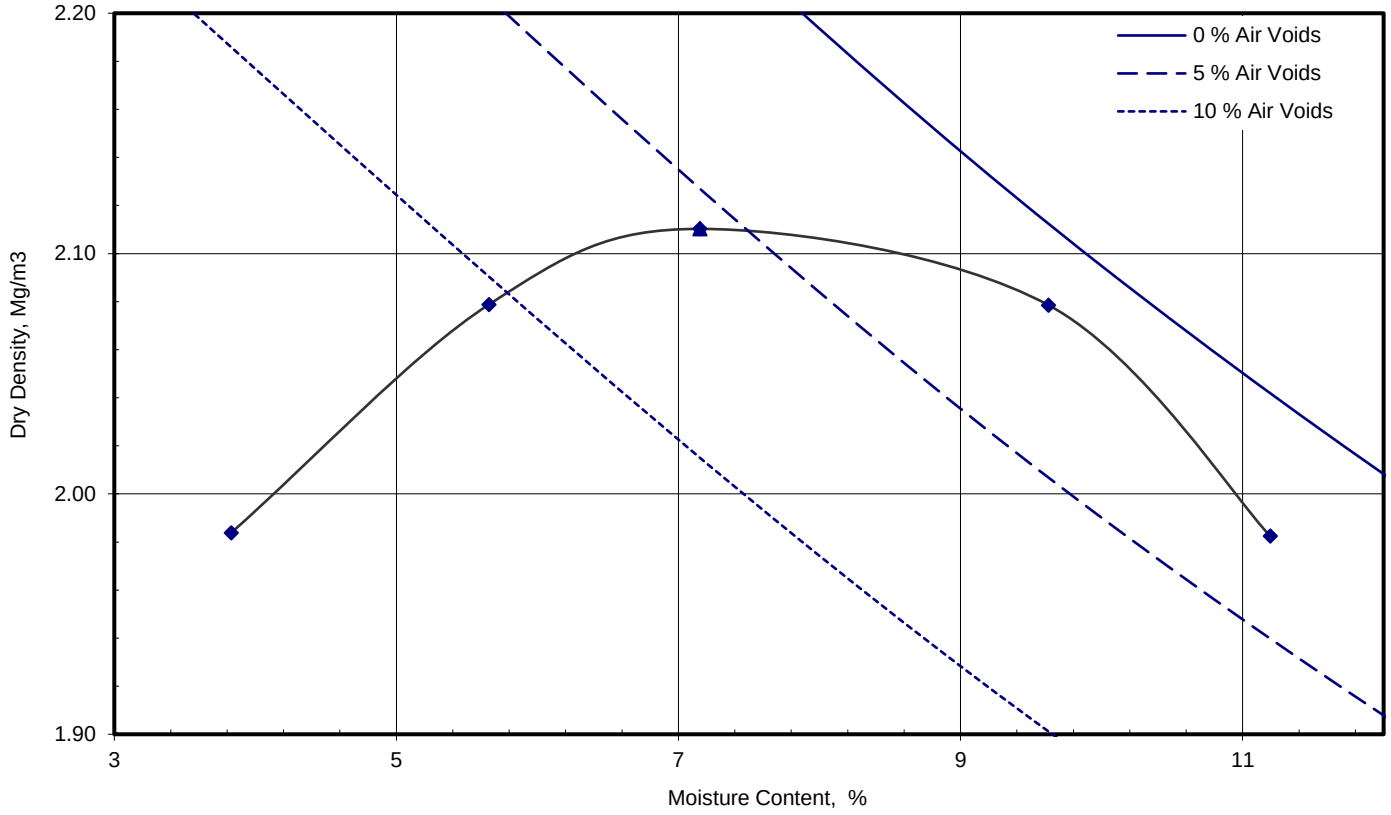
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	18/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463722	Depth Top [m]:	2.50
Hole No.:	TP407	Depth Base [m]:	2.50
Sample Reference:	B3	Sample Type:	B
Sample Description:	Brown gravelly SAND		



Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	1
Material Retained on 20.0 mm Sieve	%	12
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	9.6
Maximum Dry Density	Mg/m³	**2.11**

Optimum Moisture Content	%	**7.2**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 109.18

TEST CERTIFICATE

Dry Density / Moisture Content

Relationship Light Compaction

Tested in Accordance with:
BS 1377-4: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

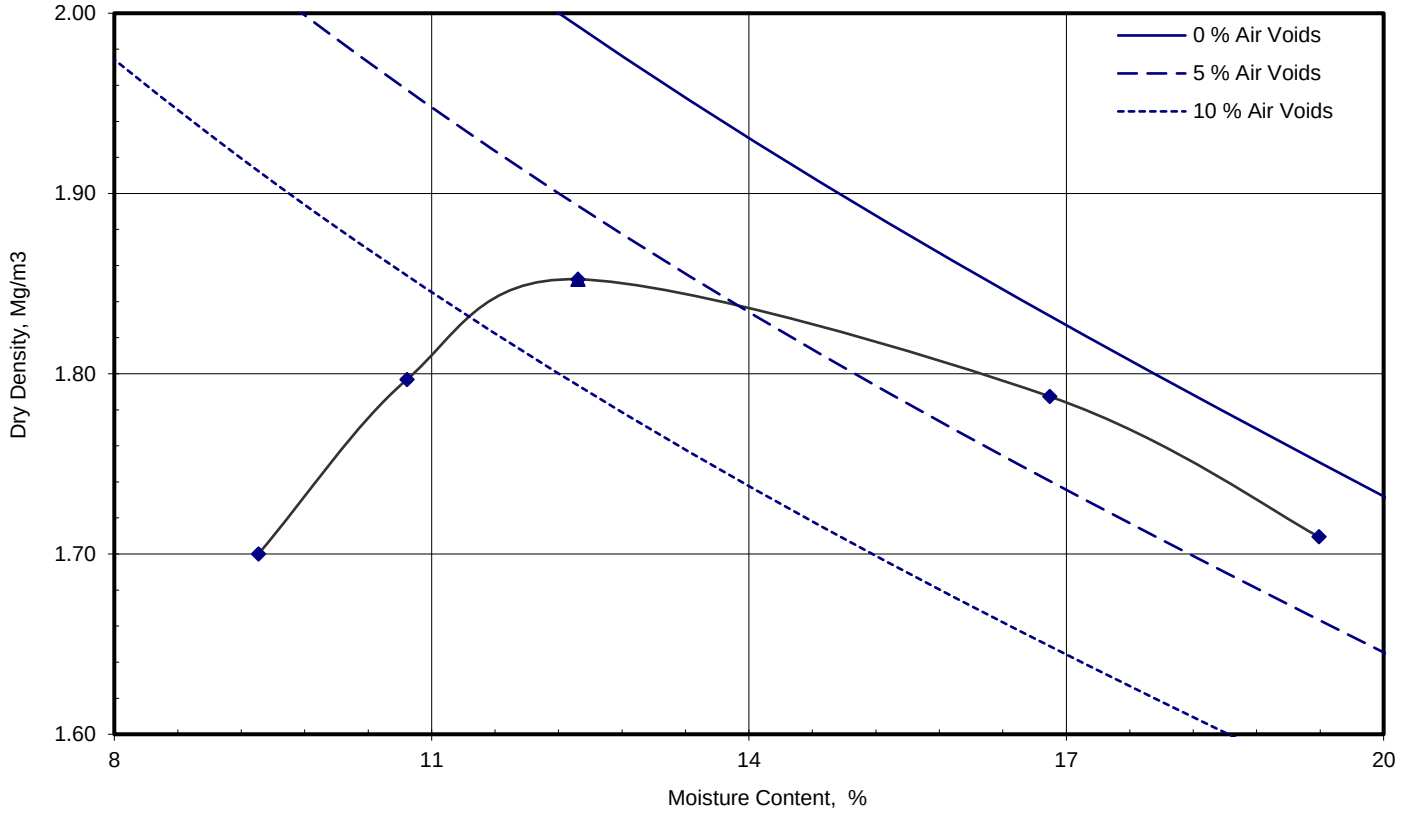
4041

Client:	BWB Consulting Limited	Client Reference:	NTS2656
Client Address:	5th Floor, Waterfront House, Nottingham, NG2 3DQ	Job Number:	20-90956
		Date Sampled:	27/02/2020
		Date Received:	03/03/2020
Contact:	Imogen Wort	Date Tested:	18/03/2020
Site Address:	NTS2656 St Modwen Park Phase 4	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	1463727	Depth Top [m]:	0.80
Hole No.:	TP414	Depth Base [m]:	0.80
Sample Reference:	B1	Sample Type:	B
Sample Description:	Grey gravelly SAND		



Preparation		Material used was natural
Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	4
Material Retained on 20.0 mm Sieve	%	17
Particle Density - Assumed	Mg/m³	2.65
As received Moisture Content	%	17
Maximum Dry Density	Mg/m³	**1.85**

Optimum Moisture Content	%	**12**

Note: Tested in Accordance with BS 1377-4: 1990: Clause 3.4 using 2.5kg [light] Rammer

Remarks: Re-issue 1: Site name amended as per client request

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 27/03/2020

GF 109.18

SUMMARY REPORT

Summary of Moisture Content Test Results

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

Client: BWB Consulting Limited

Client Address: 5th Floor, Waterfront House, Nottingham, NG2 3DQ

Contact: Imogen Wort

Site Address: Network 46

Client Reference: NTS2656
Job Number: 20-92075
Date Sampled: 02/03/2020
Date Received: 03/03/2020
Date Tested: 20/03/2020
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC											
		Reference	Depth Top m	Depth Base m	Type			%											
1469565	WS402	D2	3.60	3.70	D	Brown slightly gravelly SAND		13											
1469566	WS403	D1	1.60	1.70	D	Brown gravelly SAND		9.2											
1469567	WS405	D1	2.50	2.60	D	Brown sandy GRAVEL		6.8											

Comments:

Signed:

Szczepan Bielatowicz
PL Deputy of Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Date Reported: 25/03/2020

GF 099.14

Imogen Wort
BWB Consulting Limited
5th Floor
Waterfront House
Nottingham
NG2 3DQ

e: imogen.wort@bwbconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-91618

Project / Site name:	Network 46	**Samples received on:**	03/03/2020
Your job number:	NTS2656	**Samples instructed on:**	05/03/2020
Your order number:	POR030838	**Analysis completed by:**	18/03/2020
Report Issue Number:	1	**Report issued on:**	18/03/2020
Samples Analysed:	6 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska

Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-91618

Project / Site name: Network 46

Your Order No: POR030838

Lab Sample Number				1467295	1467296	1467297	1467298	1467299
Sample Reference				TP402	TP404	TP406	TP407	TP409
Sample Number				2	2	1	1	2
Depth (m)				0.60-0.60	1.50-1.50	0.90-0.90	0.90-0.90	2.20-2.20
Date Sampled				27/02/2020	27/02/2020	27/02/2020	27/02/2020	27/02/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	0.1	0.1	0.1	0.1	0.1
Moisture Content	%	N/A	NONE	4.2	7.4	5.3	6.9	10
Total mass of sample received	kg	0.001	NONE	2.0	1.1	2.0	1.8	1.0
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.5	7.7	8.0	10.6	8.3
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	67	64	140	1200	93
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.034	0.032	0.071	0.61	0.047
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	33.7	32.1	70.9	615	46.6

Analytical Report Number: 20-91618

Project / Site name: Network 46
Your Order No: POR030838

Lab Sample Number				1467300				
Sample Reference				TP414				
Sample Number				1				
Depth (m)				0.80-0.80				
Date Sampled				27/02/2020				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	0.1				
Moisture Content	%	N/A	NONE	10				
Total mass of sample received	kg	0.001	NONE	1.9				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	10.4				
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	1200				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.59				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	587				

Analytical Report Number : 20-91618

Project / Site name: Network 46

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1467295	TP402	2	0.60-0.60	Brown sand with gravel.
1467296	TP404	2	1.50-1.50	Brown sand with gravel.
1467297	TP406	1	0.90-0.90	Brown sand with gravel.
1467298	TP407	1	0.90-0.90	Brown clay and sand with rubble and gravel
1467299	TP409	2	2.20-2.20	Brown clay and sand with gravel.
1467300	TP414	1	0.80-0.80	Brown clay and sand with gravel and brick.

Analytical Report Number : 20-91618

Project / Site name: Network 46

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

The results included within the report are representative of the samples submitted for analysis.

Imogen Wort
BWB Consulting Limited
5th Floor
Waterfront House
Nottingham
NG2 3DQ

e: imogen.wort@bwbconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 20-92201

Project / Site name:	Network 46	**Samples received on:**	03/03/2020
Your job number:	NTS2656	**Samples instructed on:**	10/03/2020
Your order number:	POR030838	**Analysis completed by:**	23/03/2020
Report Issue Number:	1	**Report issued on:**	23/03/2020
Samples Analysed:	1 soil sample		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-92201

Project / Site name: Network 46
Your Order No: POR030838

Lab Sample Number				1470215				
Sample Reference				WS402				
Sample Number				D2				
Depth (m)				3.60-3.70				
Date Sampled				02/03/2020				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	10				
Total mass of sample received	kg	0.001	NONE	0.50				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.031				

Analytical Report Number : 20-92201

Project / Site name: Network 46

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1470215	WS402	D2	3.60-3.70	Brown sand with gravel.

Analytical Report Number : 20-92201

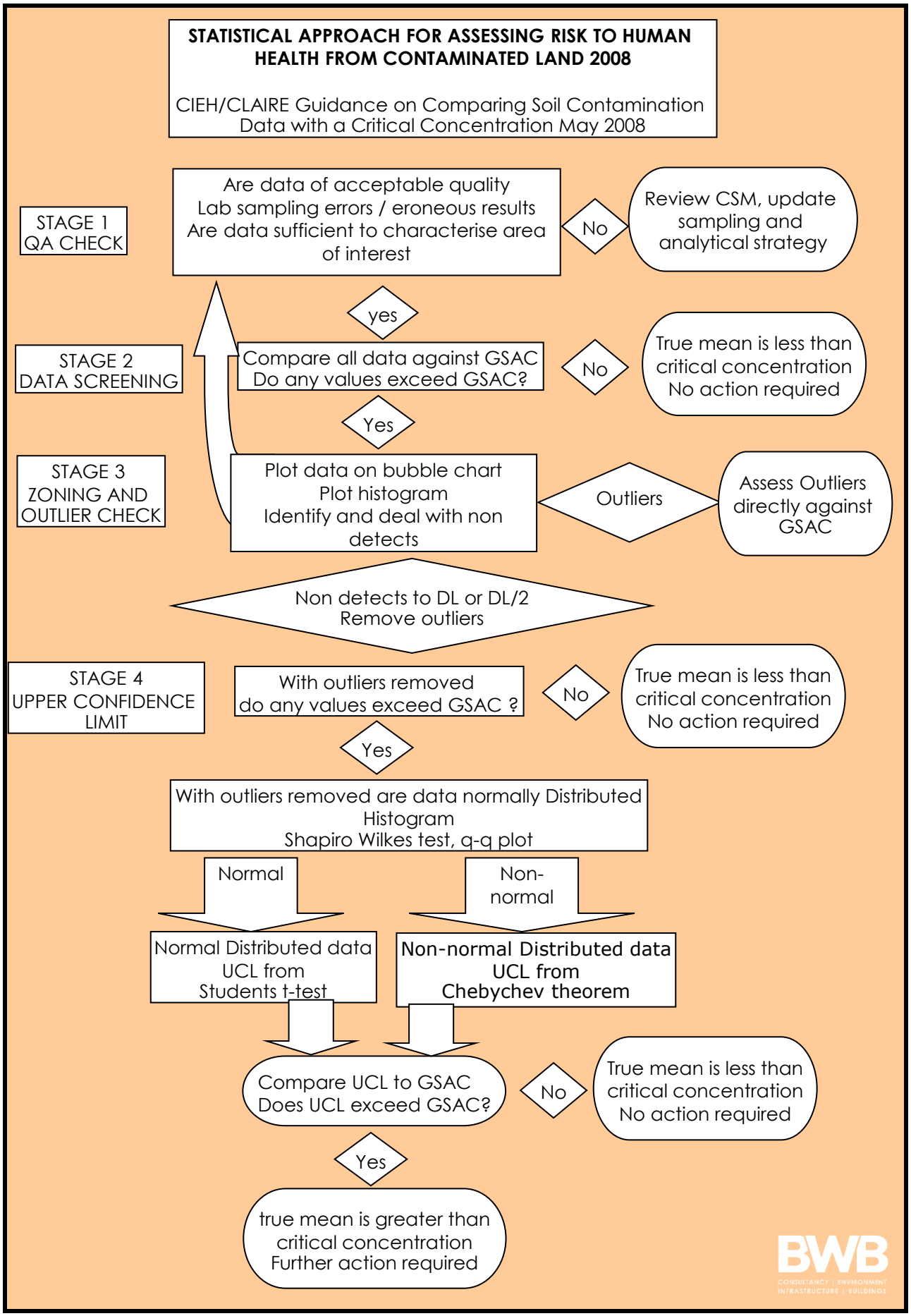
Project / Site name: Network 46

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Appendix 9: Soil Chemical Results Summary


STATISTICAL APPROACH FOR ASSESSING RISK TO HUMAN HEALTH FROM CONTAMINATED LAND 2008
CIEH/CLAIRE Guidance on Comparing Soil Contamination Data with a Critical Concentration May 2008
STAGE 1 QA CHECK
Are data of acceptable quality
Lab sampling errors / eroneous results
Are data sufficient to characterise area of interest
No
Review CSM, update sampling and analytical strategy
yes
STAGE 2 DATA SCREENING
Compare all data against GSAC
Do any values exceed GSAC?
No
True mean is less than critical concentration
No action required
Yes
STAGE 3 ZONING AND OUTLIER CHECK
Plot data on bubble chart
Plot histogram
Identify and deal with non detects
Outliers
Assess Outliers directly against GSAC
Non detects to DL or DL/2
Remove outliers
STAGE 4 UPPER CONFIDENCE LIMIT
With outliers removed
do any values exceed GSAC ?
No
True mean is less than critical concentration
No action required
Yes
With outliers removed are data normally Distributed
Histogram
Shapiro Wilkes test, q-q plot
Normal
Non-normal
Normal Distributed data
UCL from
Students t-test
Non-normal Distributed data
UCL from
Chebychev theorem
Compare UCL to GSAC
Does UCL exceed GSAC?
No
True mean is less than critical concentration
No action required
Yes
true mean is greater than critical concentration
Further action required
BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

Human Health Generic QRA Worksheet

St Modwen Park Phase 4	NTS2565
All Data.	

GSAC Hierarcy

Define CSM – Is site represented by a standard land use?

Residential with / without homegrown produce
Commercial / Industrial
Public Open Space - Residential (S4UL/C4SL only)
Public Open Space - Park (S4UL/C4SL only)

GSAC Type (BWB, LQM S4UL, C4SL, Bespoke)	LQM_CIEH_S4UL
Key Receptor/CSM (Residential/Commercial/POS)	S4UL Commercial
Organic Matter % (If unknown use 1%)	1

Generic Assessment Criteria St Modwen Park Phase 4 NTS2565	S4UL Commercial mg/kg	BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS Source
Arsenic	6.40E+02	LQM_CIEH_S4UL
Barium	2.21E+04	LQM_CIEH_S4UL
Beryllium	1.20E+01	LQM_CIEH_S4UL
Boron	2.40E+05	LQM_CIEH_S4UL
Cadmium	1.90E+02	LQM_CIEH_S4UL
Chromium VI	3.30E+01	LQM_CIEH_S4UL
Chromium III	8.60E+03	LQM_CIEH_S4UL
Copper	6.80E+04	LQM_CIEH_S4UL
Lead*	2.33E+03	DEFRA_C4SL
Inorganic Mercury	1.10E+03	LQM_CIEH_S4UL
Nickel	9.80E+02	LQM_CIEH_S4UL
Selenium	1.20E+04	LQM_CIEH_S4UL
Vanadium	9.00E+03	LQM_CIEH_S4UL
Zinc	7.30E+05	LQM_CIEH_S4UL
Cyanide (Free)	4.30E+01	BWB
Cyanide (Complex)	2.13E+02	BWB
Phenols (Total)	4.40E+02	LQM_CIEH_S4UL
Benzene	2.70E+01	LQM_CIEH_S4UL
Toluene	5.60E+04	LQM_CIEH_S4UL
Ethyl benzene	5.70E+03	LQM_CIEH_S4UL
Total Xylene	5.90E+03	LQM_CIEH_S4UL
TPH (EC5-6) aliphatic	3.20E+03	LQM_CIEH_S4UL
TPH (>EC6-8) aliphatic	7.80E+03	LQM_CIEH_S4UL
TPH (>EC8-10) aliphatic	2.00E+03	LQM_CIEH_S4UL
TPH (>EC10-12) aliphatic	9.70E+03	LQM_CIEH_S4UL
TPH (>EC12-16) aliphatic	5.90E+04	LQM_CIEH_S4UL
TPH (>EC16-21) aliphatic	1.60E+06	LQM_CIEH_S4UL
TPH (>EC21-35) aliphatic	1.60E+06	LQM_CIEH_S4UL
TPH (>EC35-44) aliphatic	1.60E+06	LQM_CIEH_S4UL
TPH (>EC6-7) aromatic (benzene)	2.60E+04	LQM_CIEH_S4UL
TPH (>EC7-8) aromatic (toluene)	5.60E+04	LQM_CIEH_S4UL
TPH (>EC8-10) aromatic	3.50E+03	LQM_CIEH_S4UL
TPH (>EC10-12) aromatic	1.60E+04	LQM_CIEH_S4UL
TPH (>EC12-16) aromatic	3.60E+04	LQM_CIEH_S4UL
TPH (>EC16-21) aromatic	2.80E+04	LQM_CIEH_S4UL
TPH (>EC21-35) aromatic	2.80E+04	LQM_CIEH_S4UL
TPH (>EC35-44) aromatic	2.80E+04	LQM_CIEH_S4UL
Total TPH	5.00E+02	LQM_CIEH_S4UL

Generic Assessment Criteria St Modwen Park Phase 4 NTS2565	S4UL Commercial mg/kg	Source
Naphthalene	1.90E+02	LQM_CIEH_S4UL
Acenaphthylene	8.30E+04	LQM_CIEH_S4UL
Acenaphthene	8.40E+04	LQM_CIEH_S4UL
Fluorene	6.30E+04	LQM_CIEH_S4UL
Phenanthrene	2.20E+04	LQM_CIEH_S4UL
Anthracene	5.20E+05	LQM_CIEH_S4UL
Fluoranthene	2.30E+04	LQM_CIEH_S4UL
Pyrene	5.40E+04	LQM_CIEH_S4UL
Benzo(a)anthracene	1.70E+02	LQM_CIEH_S4UL
Chrysene	3.50E+02	LQM_CIEH_S4UL
Benzo(b)fluoranthene	4.40E+01	LQM_CIEH_S4UL
Benzo(k)fluoranthene	1.20E+03	LQM_CIEH_S4UL
Benzo(a)pyrene	3.50E+01	LQM_CIEH_S4UL
Indeno(1,2,3-c,d)pyrene	5.00E+02	LQM_CIEH_S4UL
Dibenzo(a,h)anthracene	3.50E+00	LQM_CIEH_S4UL
Benzo(g,hi)perylene	3.90E+03	LQM_CIEH_S4UL
Coal Tar (B(a)P as surrogate marker	1.50E+01	LQM_CIEH_S4UL

Location	Sample depth	Strata Type	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium VI	Chromium III	Copper	Lead	Inorganic Mercury	Nickel	Selenium	Vanadium
Detection Limit			1	1	0.06	0.2	0.2	4	1	1	1	0.3	1	1	1
GSAC			6.40E+02	2.21E+04	1.20E+01	2.40E+05	1.90E+02	3.30E+01	8.60E+03	6.80E+04	2.33E+03	1.10E+03	9.80E+02	1.20E+04	9.00E+03
TP401	2.00	BGS	11	55	1	0.2	0.7	4	13	14	15	0.3	51	2.5	26
TP403	0.90	BGS	11	120	0.37	0.2	0.2	4	9.3	6.8	8.4	0.3	11	1	15
TP404	1.50	BGS	9.9	120	0.48	0.2	0.2	4	11	2.5	13	0.3	9	1	18
TP405	0.20	MG	6.4	100	0.28	0.3	0.2	4	9.2	5.6	13	0.3	6.9	1	14
TP406	0.90	BGS	14	150	0.74	0.2	0.2	4	12	9.9	12	0.3	14	1	23
TP407	0.90	MG	7.5	260	1.6	2.4	0.4	4	29	20	81	0.3	12	1	29
TP412	0.90	BGS	6.9	13	0.25	0.2	0.2	4	8.6	5.3	9.2	0.3	7	1	14
TP414	0.30	MG	8.3	220	0.46	2.5	0.6	4	27	15	500	0.3	13	1	19
TP414	1.60	BGS	6.7	78	1.1	0.5	0.2	4	13	16	20	0.3	14	1	18
WS402	0.30-0.40	TS	6.3	44	0.21	0.2	0.3	4	8	6.5	24	0.3	5.1	1	11
WS402	2.50-2.60	BGS	6.3	53	0.45	0.2	0.7	4	11	7.1	13	0.3	11	1	17
WS404	2.60-2.70	BGS	4.9	25	0.34	0.2	0.3	4	9.5	9.3	12	0.3	15	2.2	15
WS405	0.15-0.25	TS	8.5	210	0.42	0.5	0.3	4	11	9.9	48	0.3	9.3	1	16
WS401	0.30	TS	5.4	80	0.4	0.3	0.2	4	17	6	24	0.3	9.6	1	17
WS401	2.20	BGS	6.6	46	0.49	0.3	0.4	4	12	8.7	13	0.3	36	1	22

Location	Sample depth	Zinc	Cyanide (Free)	Cyanide (Complex)	Phenols (Total)	Benzene	Toluene	Ethyl benzene	Total Xylene
Detection Limit		1	1	1	1	0.001	0.001	0.001	0.001
GSAC		7.30E+05	4.30E+01	2.13E+02	4.40E+02	2.70E+01	5.60E+04	5.70E+03	5.90E+03
TP401	2.00	71	1	1	1	0.001	0.001	0.001	0.002
TP403	0.90	15	1	1	1	0.001	0.001	0.001	0.002
TP404	1.50	16	1	1	1	0.001	0.001	0.001	0.002
TP405	0.20	16	1	1	1				
TP406	0.90	29	1	1	1				
TP407	0.90	140	1	1	1				
TP412	0.90	15	1	1	1				
TP414	0.30	500	1	2	1				
TP414	1.60	43	1	1	1				
WS402	0.30-0.40	26	1	1	1	0.001	0.001	0.001	0.002
WS402	2.50-2.60	24	1	1	1				
WS404	2.60-2.70	28	1	1	1				
WS405	0.15-0.25	42	1	1	1				
WS401	0.30	33	1	1	1	0.001	0.001	0.001	0.002
WS401	2.20	38	1	1	1	0.001	0.001	0.001	0.002

Location	Sample depth	TPH (EC5-6) aliphatic	TPH (>EC6-8) aliphatic	TPH (>EC8-10) aliphatic	TPH (>EC10-12) aliphatic	TPH (>EC12-16) aliphatic	TPH (>EC16-21) aliphatic	TPH (>EC21-35) aliphatic	TPH (>EC35-44) aliphatic	TPH (>EC6-7) aromatic (benzene)	TPH (>EC7-8) aromatic (toluene)	TPH (>EC8-10) aromatic	TPH (>EC10-12) aromatic	TPH (>EC12-16) aromatic	TPH (>EC16-21) aromatic	TPH (>EC21-35) aromatic	TPH (>EC35-44) aromatic	Total TPH
Detection Limit		0.001	0.001	0.001	1	2	8	8		0.001	0.001	0.001	1	2	10	10		10
GSAC		3.20E+03	7.80E+03	2.00E+03	9.70E+03	5.90E+04	1.60E+06	1.60E+06	1.60E+06	2.60E+04	5.60E+04	3.50E+03	1.60E+04	3.60E+04	2.80E+04	2.80E+04	2.80E+04	5.00E+02
TP401	2.00	0.001	0.001	0.001	6.8	18	21	88		0.001	0.001	0.001	1	2	10	10		160
TP403	0.90	0.001	0.001	0.001	1	2	8	8		0.001	0.001	0.001	1	2	10	10		10
TP404	1.50	0.001	0.001	0.001	1	2	8	8		0.001	0.001	0.001	1	2	10	10		10
TP405	0.20																	10
TP406	0.90																	10
TP407	0.90																	490
TP412	0.90																	10
TP414	0.30																	***750***
TP414	1.60																	10
WS402	0.30-0.40	0.001	0.001	0.001	1	4.6	18	630		0.001	0.001	0.001	1	2	10	120		***810***
WS402	2.50-2.60																	10
WS404	2.60-2.70																	10
WS405	0.15-0.25																	75
WS401	0.30	0.001	0.001	0.001	1	2	8	8		0.001	0.001	0.001	1	2	10	10		10
WS401	2.20	0.001	0.001	0.001	1	2	8	8		0.001	0.001	0.001	1	2	10	10		10

Location	Sample depth	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,hi)perylene	Benzo(a)pyrene (as surrogate marker)
Detection Limit		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
GSAC		1.90E+02	8.30E+04	8.40E+04	6.30E+04	2.20E+04	5.20E+05	2.30E+04	5.40E+04	1.70E+02	3.50E+02	4.40E+01	1.20E+03	3.50E+01	5.00E+02	3.50E+00	3.90E+03	1.50E+01
TP401	2.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP403	0.90	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP404	1.50	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP405	0.20	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP406	0.90	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP407	0.90	0.05	0.05	0.34	0.05	4.1	1.2	8.2	7.8	4.2	3.1	4.9	2.2	3	1.4	0.44	1.7	3
TP412	0.90	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
TP414	0.30	0.05	0.05	0.05	0.05	1.9	0.35	7.5	7.5	4	3.4	5.2	2.1	5.4	3.3	0.61	3.9	5.4
TP414	1.60	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
WS402	0.30-0.40	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
WS402	2.50-2.60	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
WS404	2.60-2.70	0.05	0.05	0.05	0.05	0.22	0.05	0.44	0.42	0.21	0.21	0.05	0.05	0.05	0.05	0.05	0.05	0.05
WS405	0.15-0.25	0.05	0.05	0.05	0.05	1	0.17	3.6	3.5	1.8	1.7	2.2	0.78	2	1.2	0.25	1.4	2
WS401	0.30	0.05	0.05	0.05	0.05	0.05	0.05	0.33	0.36	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
WS401	2.20	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Determinand	Number of tests	Range (mg/kg)	S4UL Commercial GSAC (m	Detection Limit (mg/kg)	Min	Max	No. of Exceedances	No. Non detects	< or not
Arsenic	15	4.9 to 14	6.40E+02	1	4.9	14	0	0	
Barium	15	13 to 260	2.21E+04	1	13	260	0	0	
Beryllium	15	0.21 to 1.6	1.20E+01	0.06	0.21	1.6	0	0	
Boron	15	<0.2 to 2.5	2.40E+05	0.2	0.2	2.5	0	8	<
Cadmium	15	<0.2 to 0.7	1.90E+02	0.2	0.2	0.7	0	7	<
Chromium VI	15	<4 to 4	3.30E+01	4	4	4	0	15	<
Chromium III	15	8 to 29	8.60E+03	1	8	29	0	0	
Copper	15	2.5 to 20	6.80E+04	1	2.5	20	0	0	
Lead*	15	8.4 to 500	2.33E+03	1	8.4	500	0	0	
Inorganic Mercury	15	<0.3 to 0.3	1.10E+03	0.3	0.3	0.3	0	15	<
Nickel	15	5.1 to 51	9.80E+02	1	5.1	51	0	0	
Selenium	15	<1 to 2.5	1.20E+04	1	1	2.5	0	13	<
Vanadium	15	11 to 29	9.00E+03	1	11	29	0	0	
Zinc	15	15 to 500	7.30E+05	1	15	500	0	0	
Cyanide (Free)	15	<1 to 1	4.30E+01	1	1	1	0	15	<
Cyanide (Complex)	15	<1 to 2	2.13E+02	1	1	2	0	14	<
Phenols (Total)	15	<1 to 1	4.40E+02	1	1	1	0	15	<
Benzene	6	<0.001 to 0.001	2.70E+01	0.001	0.001	0.001	0	6	<
Toluene	6	<0.001 to 0.001	5.60E+04	0.001	0.001	0.001	0	6	<
Ethyl benzene	6	<0.001 to 0.001	5.70E+03	0.001	0.001	0.001	0	6	<
Total Xylene	6	0.002 to 0.002	5.90E+03	0.001	0.002	0.002	0	0	
TPH (EC5-6) aliphatic	6	<0.001 to 0.001	3.20E+03	0.001	0.001	0.001	0	6	<
TPH (>EC6-8) aliphatic	6	<0.001 to 0.001	7.80E+03	0.001	0.001	0.001	0	6	<
TPH (>EC8-10) aliphatic	6	<0.001 to 0.001	2.00E+03	0.001	0.001	0.001	0	6	<
TPH (>EC10-12) aliphatic	6	<1 to 6.8	9.70E+03	1	1	6.8	0	5	<
TPH (>EC12-16) aliphatic	6	<2 to 18	5.90E+04	2	2	18	0	4	<
TPH (>EC16-21) aliphatic	6	<8 to 21	1.60E+06	8	8	21	0	4	<
TPH (>EC21-35) aliphatic	6	<8 to 630	1.60E+06	8	8	630	0	4	<
TPH (>EC35-44) aliphatic	0	<0 to 0	1.60E+06		0	0	0	200	<
TPH (>EC6-7) aromatic (benzene)	6	<0.001 to 0.001	2.60E+04	0.001	0.001	0.001	0	6	<
TPH (>EC7-8) aromatic (toluene)	6	<0.001 to 0.001	5.60E+04	0.001	0.001	0.001	0	6	<
TPH (>EC8-10) aromatic	6	<0.001 to 0.001	3.50E+03	0.001	0.001	0.001	0	6	<
TPH (>EC10-12) aromatic	6	<1 to 1	1.60E+04	1	1	1	0	6	<
TPH (>EC12-16) aromatic	6	<2 to 2	3.60E+04	2	2	2	0	6	<
TPH (>EC16-21) aromatic	6	<10 to 10	2.80E+04	10	10	10	0	6	<
TPH (>EC21-35) aromatic	6	<10 to 120	2.80E+04	10	10	120	0	5	<
TPH (>EC35-44) aromatic	0	<0 to 0	2.80E+04		0	0	0	200	<
Total TPH	15	<10 to 810	5.00E+02	10	10	810	2	10	<
Naphthalene	15	<0.05 to 0.05	1.90E+02	0.05	0.05	0.05	0	15	<
Acenaphthylene	15	<0.05 to 0.05	8.30E+04	0.05	0.05	0.05	0	15	<
Acenaphthene	15	<0.05 to 0.34	8.40E+04	0.05	0.05	0.34	0	14	<
Fluorene	15	<0.05 to 0.05	6.30E+04	0.05	0.05	0.05	0	15	<
Phenanthrene	15	<0.05 to 4.1	2.20E+04	0.05	0.05	4.1	0	11	<
Anthracene	15	<0.05 to 1.2	5.20E+05	0.05	0.05	1.2	0	12	<
Fluoranthene	15	<0.05 to 8.2	2.30E+04	0.05	0.05	8.2	0	10	<
Pyrene	15	<0.05 to 7.8	5.40E+04	0.05	0.05	7.8	0	10	<
Benzo(a)anthracene	15	<0.05 to 4.2	1.70E+02	0.05	0.05	4.2	0	11	<
Chrysene	15	<0.05 to 3.4	3.50E+02	0.05	0.05	3.4	0	11	<
Benzo(b)fluoranthene	15	<0.05 to 5.2	4.40E+01	0.05	0.05	5.2	0	12	<
Benzo(k)fluoranthene	15	<0.05 to 2.2	1.20E+03	0.05	0.05	2.2	0	12	<
Benzo(a)pyrene	15	<0.05 to 5.4	3.50E+01	0.05	0.05	5.4	0	12	<
Indeno(1,2,3-c,d)pyrene	15	<0.05 to 3.3	5.00E+02	0.05	0.05	3.3	0	12	<
Dibenzo(a,h)anthracene	15	<0.05 to 0.61	3.50E+00	0.05	0.05	0.61	0	12	<
Benzo(g,hi)perylene	15	<0.05 to 3.9	3.90E+03	0.05	0.05	3.9	0	12	<
Coal Tar (B(a)P as surrogate mark	15	<0.05 to 5.4	1.50E+01	0.05	0.05	5.4	0	12	<

Appendix 10: Soil Leachate Chemical Results Summary

*EQS Standard: Phenol and Benzene annual average of 300µg/l; Toluene 500µg/l for Freshwater, 400µg/l for Saltwater; 1,1,1-TCA 1,000µg/l.

Project Name:	St Modwen Park, Phase 4
Project Number:	NTS2656
Assessment for:	Soil Leachate Assessment
Laboratory:	i2
Receptor:	Conservative Guideline
Receptor Water Hardness:	>200

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

100 = Assessment Criteria Exceedance)

50 = M-BAT Bioavailability Assessment Required

	Contaminant	Units	Detection Limit	Guideline Concentration	Source	Number of Samples	Min	Max	No of Exceedences	TP405	TP407	TP414	WS402	WS406	
										0.2	0.9	0.3	0.3	0.15	
Heavy Metals	Arsenic	µg/l	1.1	10	UK DWS	5	<1.1	15.00	1	15.00	< 1.1	7.00	< 1.1	1.70	
	Barium	mg/l	0.05	100	SW ADW	5	0.01	0.06	0	0.03	0.06	0.03	0.01	0.06	
	Beryllium	µg/l	0.2	None Available		5	<0.2	<0.2	0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
	Cadmium	µg/l	0.08	0.25	EQS Freshwater	5	<0.08	<0.08	0	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	
	Chromium III	µg/l	0.4	4.7	WHO (Health)	5	2.40	22.00	3	6.90	19.00	22.00	4.40	2.40	
	Copper	µg/l	0.7	1	EQS Freshwater	5	2.80	34.00	5	2.80	34.00	15.00	13.00	7.70	
	Lead	µg/l	1	1.2	EQS Freshwater	5	<1.0	9.70	4	6.10	1.50	9.70	2.30	< 1.0	
	Mercury	µg/l	0.5	0.07	EQS Freshwater	5	<0.5	<0.5	0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
	Nickel	µg/l	0.3	4	EQS Freshwater	5	0.30	3.70	0	0.30	3.20	0.70	2.90	3.70	
	Selenium	µg/l	4	10	UK DWS	5	<4.0	<4.0	0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	
	Vanadium	µg/l	1.7	None Available		5	1.80	48.00	0	3.00	48.00	18.00	9.70	1.80	
	Zinc	µg/l	0.4	10.9	EQS Freshwater	5	4.40	8.50	0	5.20	4.40	5.50	7.80	8.50	
	Sulphate	mg/l	0.1	250	EQS Saltwater	5	2.30	126.00	0	41.50	126.00	68.10	2.30	2.50	
	Boron	mg/l	10	300	UK DWS	5	0.01	0.18	0	0.01	0.03	0.18	0.01	0.03	
	pH					5	7.30	10.70	0	8.00	10.70	10.20	7.30	7.30	
Inorganics	Cyanide (total)	µg/l	10	1	EQS Freshwater	5	<10	<10	1	< 10	< 10	63.00	< 10	< 10	

Appendix 11: Groundwater Chemical Results Summary

*EQS Standard: Phenol and Benzene annual average of 300µg/l; Toluene 500µg/l for Freshwater, 400µg/l for Saltwater; 1,1,1-TCA 1,000µg/l.

Project Name:	St Modwen Park, Phase 4
Project Number:	NTS2656
Assessment for:	Water Assessment
Laboratory:	i2
Receptor:	Conservative Guideline
Receptor Water Hardness:	>200

BWB CONSULTANCY | ENVIRONMENT INFRASTRUCTURE | BUILDINGS

100 = Assessment Criteria Exceedance)

50 = M-BAT Bioavailability Assessment Required

	Contaminant	Units	Detection Limit	Guideline Concentration	Source	Number of Samples	Min	Max	No of Exceedences	WS401	WS402	WS403	WS404	WS405	WS406
Heavy Metals	Arsenic	µg/l	0.15	10	UK DWS	6	0.29	2.90	0	2.57	0.62	2.90	0.87	0.29	0.95
	Barium	mg/l	0.06	100	SW ADW	6	0.05	0.14	0	0.11	0.13	0.07	0.14	0.10	0.05
	Beryllium	µg/l	0.1	None Available		6	<0.1	<0.1	0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Cadmium	µg/l	0.02	0.25	EQS Freshwater	6	<0.02	0.40	1	0.07	0.04	0.16	< 0.02	0.08	**0.40**
	Chromium III	µg/l	0.2	4.7	WHO (Health)	6	<0.2	0.50	0	0.40	0.50	0.40	< 0.2	0.30	0.50
	Chromium VI	µg/l	5	3.4	EQS Freshwater	6	<5.0	<5.0	0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Copper	µg/l	0.5	1	EQS Freshwater	6	1.00	3.60	**4**	**1.90**	1.00	1.00	**1.10**	**2.10**	**3.60**
	Lead	µg/l	0.2	1.2	EQS Freshwater	6	<0.2	2.00	1	0.90	0.50	0.40	< 0.2	**2.00**	0.30
	Mercury	µg/l	0.05	0.07	EQS Freshwater	6	<0.05	<0.05	0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Nickel	µg/l	0.5	4	EQS Freshwater	6	2.70	46.00	**4**	**20.00**	3.80	**46.00**	**5.80**	2.70	**12.00**
	Selenium	µg/l	0.6	10	UK DWS	6	<0.6	3.00	0	< 0.6	1.30	0.70	< 0.6	0.60	3.00
	Vanadium	µg/l	0.2	None Available		6	<0.2	0.40	0	0.20	0.40	< 0.2	< 0.2	< 0.2	0.20
	Zinc	µg/l	0.5	10.9	EQS Freshwater	6	1.80	26.00	**1**	4.90	2.10	**26.00**	5.60	5.90	1.80
	Sulphate	mg/l	45	250	EQS Saltwater	6	43.50	141.00	0	56.40	48.60	141.00	45.30	43.50	57.80
	Boron	mg/l	10	300	UK DWS	6	0.03	0.05	0	0.05	0.03	0.05	0.04	0.03	0.04
	pH					6	6.60	8.00	0	6.70	7.20	6.60	7.10	8.00	6.90
Inorganics	Cyanide (total)	µg/l	10	1	EQS Freshwater	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Phenol*	µg/l	10	0.5	WHO (Health)	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
BTEX	Benzene*	µg/l	1	1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Ethylbenzene	µg/l	1	300	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Toluene*	µg/l	1	74	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Petroleum Hydrocarbons	Aliphatic C5-C6	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aliphatic C6-C8	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aliphatic C8-C10	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aliphatic C10-C12	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C12-C16	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C16-C21	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C21-C35	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC5-EC7	µg/l	1	1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aromatic EC7-EC8	µg/l	1	74	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aromatic EC8-EC10	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aromatic EC10-EC12	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC12-EC16	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC16-EC21	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC21-EC35	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10

	Contaminant	Units	Detection Limit	Guideline Concentration	Source	Number of Samples	Min	Max	No of Exceedances	WS401	WS402	WS403	WS404	WS405	WS406
Polycyclic Aromatic Hydrocarbons	Acenaphthene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Acenaphthylene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Anthracene	µg/l	0.01	0.1	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(a)anthracene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(a)pyrene	µg/l	0.01	0.00017	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(b)fluoranthene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(k)fluoranthene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(g,h,i)perylene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Chrysene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Dibenzo(a,h)anthracene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Fluoranthene	µg/l	0.01	0.0063	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Fluorene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Indeno(1,2,3-c,d)pyrene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Naphthalene	µg/l	0.01	2	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Phenanthrene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Pyrene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Total PAH	µg/l	0.16	0.1	WHO (Health)	6	<0.16	<0.16	0	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
VOCs	Tetrachloroethane (PCA)	µg/l	1	140	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,1,1-Trichloroethane (1,1,1-TCA)	µg/l	1	100	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,1,2-Trichloroethane (1,1,2-TCA)	µg/l	1	400	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,1-Dichloroethene (1,1-DCE)	µg/l	1	30	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-dibromo-3-chloropropane	µg/l	1	0.1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-dichlorobenzene	µg/l	1	1000	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-Dichloroethane (1,2-DCA)	µg/l	1	3	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2-dichloropropane	µg/l	1	0.1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,4-dichlorobenzene	µg/l	1	300	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Benzene	µg/l	1	1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	cis-1,2-dichloroethylene (Cis-DCE)	µg/l	1	50	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	cis-1,3-dichloropropene	µg/l	1	0.1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Ethylbenzene	µg/l	1	300	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Hexachlorobutadiene	µg/l	1	0.6	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Styrene	µg/l	1	20	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Tetrachloroethene (PCE)	µg/l	1	10	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Toluene	µg/l	1	74	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Trans-1,2-dichloroethylene (Trans-DCE)	µg/l	1	50	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Trans-1,3-dichloropropene	µg/l	1	0.1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Trichloroethene (TCE)	µg/l	1	10	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Vinyl Chloride	µg/l	1	0.5	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Dichloromethane	µg/l	1	20	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	1,2,4-Trichlorobenzene	µg/l	1	0.4	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SVOCs	2,4,6-Trichlorophenol	µg/l	0.05	200	UK DWS	6	<0.05	<0.05	0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	2,4-Dichlorophenol	µg/l	0.05	4.2	EQS Freshwater	6	<0.05	<0.05	0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Hexachlorobenzene	µg/l	0.05	0.05	EQS Freshwater	6	<0.05	<0.05	0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Phenol	µg/l	0.05	0.5	WHO (Health)	6	<0.05	<0.05	0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

*EQS Standard: Phenol and Benzene annual average of 300µg/l; Toluene 500µg/l for Freshwater, 400µg/l for Saltwater; 1,1,1-TCA 1,000µg/l.

Project Name:	St Modwen Park, Phase 4
Project Number:	NTS2656
Assessment for:	Water Assessment
Laboratory:	i2
Receptor:	Conservative Guideline
Receptor Water Hardness:	>200

BWB
CONSULTANCY | ENVIRONMENT
INFRASTRUCTURE | BUILDINGS

100 = Assessment Criteria Exceedance)
50 = M-BAT Bioavailability Assessment Required

	Contaminant	Units	Detection Limit	Guideline Concentration	Source	Number of Samples	Min	Max	No of Exceedences	WS401	WS402	WS403	WS404	WS405	WS406
Heavy Metals	Arsenic	µg/l	0.15	10	UK DWS	6	0.43	12.30	1	2.81	0.94	12.30	4.64	0.43	1.50
	Barium	mg/l	0.06	100	SW ADW	6	0.06	0.20	0	0.14	0.17	0.10	0.20	0.12	0.06
	Beryllium	µg/l	0.1	None Available		6	<0.1	0.20	0	< 0.1	< 0.1	0.20	< 0.1	< 0.1	< 0.1
	Cadmium	µg/l	0.02	0.25	EQS Freshwater	6	<0.02	0.25	0	0.03	0.10	0.10	< 0.02	0.07	0.25
	Chromium III	µg/l	0.2	4.7	WHO (Health)	6	<0.2	1.90	0	< 0.2	0.40	1.90	< 0.2	0.40	0.80
	Chromium VI	µg/l	5	3.4	EQS Freshwater	6	<5.0	<5.0	0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Copper	µg/l	0.5	1	EQS Freshwater	6	0.60	9.00	5	0.60	1.70	9.00	3.10	1.30	4.90
	Lead	µg/l	0.2	1.2	EQS Freshwater	6	<0.2	3.80	1	< 0.2	1.00	3.80	< 0.2	1.00	0.50
	Mercury	µg/l	0.05	0.07	EQS Freshwater	6	<0.05	<0.05	0	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Nickel	µg/l	0.5	4	EQS Freshwater	6	1.90	57.00	4	27.00	2.30	57.00	6.50	1.90	16.00
	Selenium	µg/l	0.6	10	UK DWS	6	<0.6	2.50	0	< 0.6	0.80	< 0.6	< 0.6	< 0.6	2.50
	Vanadium	µg/l	0.2	None Available		6	<0.2	2.90	0	< 0.2	0.60	2.90	< 0.2	0.20	0.60
	Zinc	µg/l	0.5	10.9	EQS Freshwater	6	2.00	17.00	1	5.10	3.20	17.00	2.40	6.80	2.00
	Sulphate	mg/l	45	250	EQS Saltwater	6	63.80	187.00	0	79.40	63.80	187.00	69.80	73.60	68.30
	Boron	mg/l	10	300	UK DWS	6	0.03	0.06	0	0.06	0.03	0.05	0.04	0.03	0.04
	pH					6	6.50	7.80	0	6.80	7.20	6.50	7.20	7.80	7.00
Inorganics	Cyanide (total)	µg/l	10	1	EQS Freshwater	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Phenol*	µg/l	10	0.5	WHO (Health)	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
BTEX	Benzene*	µg/l	1	1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Ethylbenzene	µg/l	1	300	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Toluene*	µg/l	1	74	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Petroleum Hydrocarbons	Aliphatic C5-C6	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aliphatic C6-C8	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aliphatic C8-C10	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aliphatic C10-C12	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C12-C16	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C16-C21	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aliphatic C21-C35	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC5-EC7	µg/l	1	1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aromatic EC7-EC8	µg/l	1	74	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aromatic EC8-EC10	µg/l	1	10	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Aromatic EC10-EC12	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC12-EC16	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC16-EC21	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10
	Aromatic EC21-EC35	µg/l	10	10	UK DWS	6	<10	<10	0	< 10	< 10	< 10	< 10	< 10	< 10

	Contaminant	Units	Detection Limit	Guideline Concentration	Source	Number of Samples	Min	Max	No of Exceedances	WS401	WS402	WS403	WS404	WS405	WS406
Polycyclic Aromatic Hydrocarbons	Acenaphthene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Acenaphthylene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Anthracene	µg/l	0.01	0.1	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(a)anthracene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(a)pyrene	µg/l	0.01	0.00017	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(b)fluoranthene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(k)fluoranthene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Benzo(g,h,i)perylene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Chrysene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Dibenzo(a,h)anthracene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Fluoranthene	µg/l	0.01	0.0063	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Fluorene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Indeno(1,2,3-c,d)pyrene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Naphthalene	µg/l	0.01	2	EQS Freshwater	6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Phenanthrene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Pyrene	µg/l	0.01	None Available		6	<0.01	<0.01	0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
	Total PAH	µg/l	0.16	0.1	WHO (Health)	6	<0.16	<0.16	0	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
VOCs	Benzene	µg/l	1	1	WHO (Health)	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Ethylbenzene	µg/l	1	300	UK DWS	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	Toluene	µg/l	1	74	EQS Freshwater	6	<1.0	<1.0	0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Appendix 12: Hazwaste Assessment

Waste Classification Report

UTYRK-2YX42-HB4VM

Job name

NTS2656 SMP Lincoln Phase 4

Description/Comments

Project

NTS2656 SMP Lincoln Phase 4

Site

NTS2656 SMP Lincoln Phase 4

Related Documents

#	Name	Description
None		

Waste Stream Template

BWB Contaminated Land Suite WM3

Classified by

Name:
Richard Robinson
Date:
31 Mar 2020 15:41 GMT
Telephone:
0115 924 1100

Company:
BWB Consulting Ltd
5th Floor
Waterfront House, Station Street
Nottingham
NG2 3DQ

HazWasteOnline™ Training Record:

Course	Date
Hazardous Waste Classification	07 Dec 2016
Advanced Hazardous Waste Classification	08 Dec 2016

Report

Created by: Richard Robinson
Created date: 31 Mar 2020 15:41 GMT

Job summary

Classification of sample: TP401

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP401
Sample Depth:
2.00-2.00 m
Moisture content:
93%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 93% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1	mg/kg	2.775	2.775	mg/kg	0.000278 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.2	mg/kg	13.43	2.686	mg/kg	0.000269 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.7	mg/kg	1.285	0.9	mg/kg	0.00007 %		
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		13	mg/kg	1.462	19	mg/kg	0.0019 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14	mg/kg	1.126	15.762	mg/kg	0.00158 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15	mg/kg		15	mg/kg	0.0015 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		**<LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		51	mg/kg	1.579	80.554	mg/kg	0.00806 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.5	mg/kg	2.554	6.384	mg/kg	0.000638 %		
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		71	mg/kg	2.469	175.32	mg/kg	0.0175 %		
12	pH			PH		7.4	pH		7.4	pH	7.4 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
14		TPH (C6 to C40) petroleum group				160	mg/kg		160	mg/kg	0.016 %		
				TPH									
15		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
16		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
20		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
21		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
22		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
23		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
24		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
25		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
26		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
28		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
29		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
30		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
31		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
32		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
33		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
34		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
35		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0501 %		

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No significant volatile / calorific materials present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.016%)

Classification of sample: TP403

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP403
Sample Depth:
0.90-0.90 m
Moisture content:
12%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 12% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	14.524 mg/kg	0.00145 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.37 mg/kg	2.775	1.027 mg/kg	0.000103 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		9.3 mg/kg	1.462	13.592 mg/kg	0.00136 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6.8 mg/kg	1.126	7.656 mg/kg	0.000766 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	8.4 mg/kg		8.4 mg/kg	0.00084 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		11 mg/kg	1.579	17.374 mg/kg	0.00174 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		15 mg/kg	2.469	37.039 mg/kg	0.0037 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
16		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
19		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
23		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
27		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
28		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
29		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
31		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
32		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
33		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
34		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
35		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0123 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP404

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP404
Sample Depth:
1.50-1.50 m
Moisture content:
7.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.9 mg/kg	1.32	13.071 mg/kg	0.00131 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.48 mg/kg	2.775	1.332 mg/kg	0.000133 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		2.5 mg/kg	1.126	2.815 mg/kg	0.000281 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		13 mg/kg	0.0013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		9 mg/kg	1.579	14.215 mg/kg	0.00142 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		16 mg/kg	2.469	39.509 mg/kg	0.00395 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				8.3	pH		8.3	pH	8.3 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
18		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
19		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
23		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
27		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
28		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
29		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
31		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
32		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
33		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
34		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
35		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0124 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP405

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP405
Sample Depth:
0.20-0.20 m
Moisture content:
10%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.4 mg/kg	1.32	8.45 mg/kg	0.000845 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.28 mg/kg	2.775	0.777 mg/kg	0.0000777 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3 mg/kg	13.43	4.029 mg/kg	0.000403 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		9.2 mg/kg	1.462	13.446 mg/kg	0.00134 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5.6 mg/kg	1.126	6.305 mg/kg	0.00063 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		13 mg/kg	0.0013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		6.9 mg/kg	1.579	10.899 mg/kg	0.00109 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		16 mg/kg	2.469	39.509 mg/kg	0.00395 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				8.8	pH		8.8	pH	8.8 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0113 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP406

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP406
Sample Depth:
0.90-0.90 m
Moisture content:
6.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.74 mg/kg	2.775	2.054 mg/kg	0.000205 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.9 mg/kg	1.126	11.146 mg/kg	0.00111 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		12 mg/kg	0.0012 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14 mg/kg	1.579	22.113 mg/kg	0.00221 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		29 mg/kg	2.469	71.61 mg/kg	0.00716 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0174 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP407

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP407
Sample Depth:
0.90-0.90 m
Moisture content:
10%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 10% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.5	mg/kg	1.32	9.902	mg/kg	0.00099 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.6	mg/kg	2.775	4.441	mg/kg	0.000444 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.4	mg/kg	13.43	32.232	mg/kg	0.00322 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.4	mg/kg	1.285	0.514	mg/kg	0.00004 %		
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		29	mg/kg	1.462	42.385	mg/kg	0.00424 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		20	mg/kg	1.126	22.518	mg/kg	0.00225 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	81	mg/kg		81	mg/kg	0.0081 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		12	mg/kg	1.579	18.954	mg/kg	0.0019 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		140	mg/kg	2.469	345.701	mg/kg	0.0346 %		
12	pH			PH		9.5	pH		9.5	pH	9.5 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
14		TPH (C6 to C40) petroleum group				490	mg/kg		490	mg/kg	0.049 %		
				TPH									
15		acenaphthene				0.34	mg/kg		0.34	mg/kg	0.000034 %		
			201-469-6	83-32-9									
16		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
17		anthracene				1.2	mg/kg		1.2	mg/kg	0.00012 %		
			204-371-1	120-12-7									
18		benzo[a]anthracene				4.2	mg/kg		4.2	mg/kg	0.00042 %		
		601-033-00-9	200-280-6	56-55-3									
19		benzo[a]pyrene; benzo[def]chrysene				3	mg/kg		3	mg/kg	0.0003 %		
		601-032-00-3	200-028-5	50-32-8									
20		benzo[b]fluoranthene				4.9	mg/kg		4.9	mg/kg	0.00049 %		
		601-034-00-4	205-911-9	205-99-2									
21		benzo[ghi]perylene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
			205-883-8	191-24-2									
22		benzo[k]fluoranthene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
		601-036-00-5	205-916-6	207-08-9									
23		chrysene				3.1	mg/kg		3.1	mg/kg	0.00031 %		
		601-048-00-0	205-923-4	218-01-9									
24		dibenz[a,h]anthracene				0.44	mg/kg		0.44	mg/kg	0.000044 %		
		601-041-00-2	200-181-8	53-70-3									
25		fluoranthene				8.2	mg/kg		8.2	mg/kg	0.00082 %		
			205-912-4	206-44-0									
26		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
27		indeno[123-cd]pyrene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			205-893-2	193-39-5									
28		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
29		phenanthrene				4.1	mg/kg		4.1	mg/kg	0.00041 %		
			201-581-5	85-01-8									
30		pyrene				7.8	mg/kg		7.8	mg/kg	0.00078 %		
			204-927-3	129-00-0									
31		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.11 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No significant volatile / calorific materials present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.049%)

Classification of sample: TP412

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP412
Sample Depth:
0.90-0.90 m
Moisture content:
7.2%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.2% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.9 mg/kg	1.32	9.11 mg/kg	0.000911 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.25 mg/kg	2.775	0.694 mg/kg	0.0000694 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		<LOD
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		8.6 mg/kg	1.462	12.569 mg/kg	0.00126 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		5.3 mg/kg	1.126	5.967 mg/kg	0.000597 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	9.2 mg/kg		9.2 mg/kg	0.00092 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		7 mg/kg	1.579	11.056 mg/kg	0.00111 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		15 mg/kg	2.469	37.039 mg/kg	0.0037 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				6.3	pH		6.3	pH	6.3 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0105 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP414

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP414
Sample Depth:
0.30-0.30 m
Moisture content:
9.3%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 9.3% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.3 mg/kg	1.32	10.959 mg/kg	0.0011 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.46 mg/kg	2.775	1.277 mg/kg	0.000128 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.5 mg/kg	13.43	33.575 mg/kg	0.00336 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.6 mg/kg	1.285	0.771 mg/kg	0.00006 %		
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15 mg/kg	1.126	16.888 mg/kg	0.00169 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	500 mg/kg		500 mg/kg	0.05 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		13 mg/kg	1.579	20.533 mg/kg	0.00205 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		500 mg/kg	2.469	1234.648 mg/kg	0.123 %		
12	pH			PH		9.2 pH		9.2 pH	9.2 pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				2	mg/kg	1.884	3.768	mg/kg	0.000377 %		
		006-007-00-5											
14		TPH (C6 to C40) petroleum group				750	mg/kg		750	mg/kg	0.075 %		
				TPH									
15		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
16		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
17		anthracene				0.35	mg/kg		0.35	mg/kg	0.000035 %		
			204-371-1	120-12-7									
18		benzo[a]anthracene				4	mg/kg		4	mg/kg	0.0004 %		
		601-033-00-9	200-280-6	56-55-3									
19		benzo[a]pyrene; benzo[def]chrysene				5.4	mg/kg		5.4	mg/kg	0.00054 %		
		601-032-00-3	200-028-5	50-32-8									
20		benzo[b]fluoranthene				5.2	mg/kg		5.2	mg/kg	0.00052 %		
		601-034-00-4	205-911-9	205-99-2									
21		benzo[ghi]perylene				3.9	mg/kg		3.9	mg/kg	0.00039 %		
			205-883-8	191-24-2									
22		benzo[k]fluoranthene				2.1	mg/kg		2.1	mg/kg	0.00021 %		
		601-036-00-5	205-916-6	207-08-9									
23		chrysene				3.4	mg/kg		3.4	mg/kg	0.00034 %		
		601-048-00-0	205-923-4	218-01-9									
24		dibenz[a,h]anthracene				0.61	mg/kg		0.61	mg/kg	0.000061 %		
		601-041-00-2	200-181-8	53-70-3									
25		fluoranthene				7.5	mg/kg		7.5	mg/kg	0.00075 %		
			205-912-4	206-44-0									
26		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
27		indeno[123-cd]pyrene				3.3	mg/kg		3.3	mg/kg	0.00033 %		
			205-893-2	193-39-5									
28		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
29		phenanthrene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			201-581-5	85-01-8									
30		pyrene				7.5	mg/kg		7.5	mg/kg	0.00075 %		
			204-927-3	129-00-0									
31		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.266 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No significant volatile / calorific materials present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.075%)

Classification of sample: TP414[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP414[2]
Sample Depth:
1.60-1.60 m
Moisture content:
7.6%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 7.6% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.7 mg/kg	1.32	8.846 mg/kg	0.000885 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1 mg/kg	2.775	3.053 mg/kg	0.000305 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5 mg/kg	13.43	6.715 mg/kg	0.000672 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		13 mg/kg	1.462	19 mg/kg	0.0019 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		16 mg/kg	1.126	18.014 mg/kg	0.0018 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	20 mg/kg		20 mg/kg	0.002 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14 mg/kg	1.579	22.113 mg/kg	0.00221 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		43 mg/kg	2.469	106.18 mg/kg	0.0106 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				8.4	pH		8.4	pH	8.4 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0221 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS402

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS402
Sample Depth:
0.30-0.40 m
Moisture content:
8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.3 mg/kg	1.32	8.318 mg/kg	0.000832 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.21 mg/kg	2.775	0.583 mg/kg	0.0000583 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.2 mg/kg	13.43	2.686 mg/kg	0.000269 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.285	0.386 mg/kg	0.00003 %		
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		8 mg/kg	1.462	11.692 mg/kg	0.00117 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6.5 mg/kg	1.126	7.318 mg/kg	0.000732 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	24 mg/kg		24 mg/kg	0.0024 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		5.1 mg/kg	1.579	8.055 mg/kg	0.000806 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		26 mg/kg	2.469	64.202 mg/kg	0.00642 %		
12	pH			PH		7 pH		7 pH	7pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
14		TPH (C6 to C40) petroleum group				810	mg/kg		810	mg/kg	0.081 %		
				TPH									
15		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
16		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
17		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
18		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
20		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
21		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
22		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
23		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
24		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
25		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
26		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
27		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
28		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
29		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
30		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
31		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
32		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
33		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
34		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
35		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0948 %		

Key	
	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No significant volatile / calorific materials present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.081%)

Classification of sample: WS402[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS402[2]
Sample Depth:
2.50-2.60 m
Moisture content:
6.5%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.5% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.3 mg/kg	1.32	8.318 mg/kg	0.000832 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.45 mg/kg	2.775	1.249 mg/kg	0.000125 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.2 mg/kg	13.43	2.686 mg/kg	0.000269 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.7 mg/kg	1.285	0.9 mg/kg	0.00007 %		
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.1 mg/kg	1.126	7.994 mg/kg	0.000799 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		13 mg/kg	0.0013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		**<LOD**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		11 mg/kg	1.579	17.374 mg/kg	0.00174 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		**<LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		24 mg/kg	2.469	59.263 mg/kg	0.00593 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				7.4	pH		7.4	pH	7.4 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
17		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
18		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
19		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
20		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
21		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
22		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
23		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
25		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
26		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
27		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
28		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
29		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
30		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
31		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
32		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0143 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS404

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS404
Sample Depth:
2.60-2.70 m
Moisture content:
8.4%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 8.4% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.9 mg/kg	1.32	6.47 mg/kg	0.000647 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.34 mg/kg	2.775	0.944 mg/kg	0.0000944 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.2 mg/kg	13.43	<2.686 mg/kg	<0.000269 %		**<LOD**
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.285	0.386 mg/kg	0.00003 %		
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		9.5 mg/kg	1.462	13.885 mg/kg	0.00139 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.3 mg/kg	1.126	10.471 mg/kg	0.00105 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12 mg/kg		12 mg/kg	0.0012 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		**<LOD**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15 mg/kg	1.579	23.692 mg/kg	0.00237 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				2.2 mg/kg	2.554	5.618 mg/kg	0.000562 %		
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		28 mg/kg	2.469	69.14 mg/kg	0.00691 %		

#		Determinand	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number / EC Number / CAS Number									
13		pH PH		7.4	pH		7.4	pH	7.4 pH		
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex } 006-007-00-5		<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
15		TPH (C6 to C40) petroleum group TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
16		acenaphthene 201-469-6 / 83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
17		acenaphthylene 205-917-1 / 208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
18		anthracene 204-371-1 / 120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
19		benzo[a]anthracene 601-033-00-9 / 200-280-6 / 56-55-3		0.21	mg/kg		0.21	mg/kg	0.000021 %		
20		benzo[a]pyrene; benzo[def]chrysene 601-032-00-3 / 200-028-5 / 50-32-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
21		benzo[b]fluoranthene 601-034-00-4 / 205-911-9 / 205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
22		benzo[ghi]perylene 205-883-8 / 191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
23		benzo[k]fluoranthene 601-036-00-5 / 205-916-6 / 207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
24		chrysene 601-048-00-0 / 205-923-4 / 218-01-9		0.21	mg/kg		0.21	mg/kg	0.000021 %		
25		dibenz[a,h]anthracene 601-041-00-2 / 200-181-8 / 53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
26		fluoranthene 205-912-4 / 206-44-0		0.44	mg/kg		0.44	mg/kg	0.000044 %		
27		fluorene 201-695-5 / 86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
28		indeno[123-cd]pyrene 205-893-2 / 193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
29		naphthalene 601-052-00-2 / 202-049-5 / 91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
30		phenanthrene 201-581-5 / 85-01-8		0.22	mg/kg		0.22	mg/kg	0.000022 %		
31		pyrene 204-927-3 / 129-00-0		0.42	mg/kg		0.42	mg/kg	0.000042 %		
32		phenol 604-001-00-2 / 203-632-7 / 108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
								Total:	0.0161 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS405

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS405
Sample Depth:
0.15-0.25 m
Moisture content:
13%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.5 mg/kg	1.32	11.223 mg/kg	0.00112 %		
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.42 mg/kg	2.775	1.166 mg/kg	0.000117 %		
3	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.5 mg/kg	13.43	6.715 mg/kg	0.000672 %		
4	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.3 mg/kg	1.285	0.386 mg/kg	0.00003 %		
5	chromium { chromium(III) oxide }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %		
6	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.9 mg/kg	1.126	11.146 mg/kg	0.00111 %		
7	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	48 mg/kg		48 mg/kg	0.0048 %		
8	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
9	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		9.3 mg/kg	1.579	14.689 mg/kg	0.00147 %		
10	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
11	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		42 mg/kg	2.469	103.71 mg/kg	0.0104 %		
12	pH			PH		7 pH		7 pH	7pH		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
14		TPH (C6 to C40) petroleum group				75	mg/kg		75	mg/kg	0.0075 %		
				TPH									
15		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
16		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
17		anthracene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			204-371-1	120-12-7									
18		benzo[a]anthracene				1.8	mg/kg		1.8	mg/kg	0.00018 %		
		601-033-00-9	200-280-6	56-55-3									
19		benzo[a]pyrene; benzo[def]chrysene				2	mg/kg		2	mg/kg	0.0002 %		
		601-032-00-3	200-028-5	50-32-8									
20		benzo[b]fluoranthene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
		601-034-00-4	205-911-9	205-99-2									
21		benzo[ghi]perylene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
			205-883-8	191-24-2									
22		benzo[k]fluoranthene				0.78	mg/kg		0.78	mg/kg	0.000078 %		
		601-036-00-5	205-916-6	207-08-9									
23		chrysene				1.7	mg/kg		1.7	mg/kg	0.00017 %		
		601-048-00-0	205-923-4	218-01-9									
24		dibenz[a,h]anthracene				0.25	mg/kg		0.25	mg/kg	0.000025 %		
		601-041-00-2	200-181-8	53-70-3									
25		fluoranthene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
			205-912-4	206-44-0									
26		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
27		indeno[123-cd]pyrene				1.2	mg/kg		1.2	mg/kg	0.00012 %		
			205-893-2	193-39-5									
28		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
29		phenanthrene				1	mg/kg		1	mg/kg	0.0001 %		
			201-581-5	85-01-8									
30		pyrene				3.5	mg/kg		3.5	mg/kg	0.00035 %		
			204-927-3	129-00-0									
31		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0314 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because No significant volatile / calorific materials present.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0075%)

Classification of sample: DS401

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
DS401
Sample Depth:
0.30 m
Moisture content:
13%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		5.4 mg/kg	1.32	7.13 mg/kg	0.000713 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.4 mg/kg	2.775	1.11 mg/kg	0.000111 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3 mg/kg	13.43	4.029 mg/kg	0.000403 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		17 mg/kg	1.462	24.846 mg/kg	0.00248 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		6 mg/kg	1.126	6.755 mg/kg	0.000676 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	24 mg/kg		24 mg/kg	0.0024 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		9.6 mg/kg	1.579	15.163 mg/kg	0.00152 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		33 mg/kg	2.469	81.487 mg/kg	0.00815 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				6.1	pH		6.1	pH	6.1 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
16		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
18		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
19		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
22		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
23		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
24		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
26		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
27		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
28		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
29		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
30		fluoranthene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			205-912-4	206-44-0									
31		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
32		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
33		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
34		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
35		pyrene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			204-927-3	129-00-0									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0186 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: DS401[2]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
DS401[2]
Sample Depth:
2.20 m
Moisture content:
5.9%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.9% No Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	confirm TPH has NOT arisen from diesel or petrol					☑					
2	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.6 mg/kg	1.32	8.714 mg/kg	0.000871 %		
3	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.49 mg/kg	2.775	1.36 mg/kg	0.000136 %		
4	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.3 mg/kg	13.43	4.029 mg/kg	0.000403 %		
5	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.4 mg/kg	1.285	0.514 mg/kg	0.00004 %		
6	chromium { chromium(III) oxide }		215-160-9	1308-38-9		12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8.7 mg/kg	1.126	9.795 mg/kg	0.00098 %		
8	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	13 mg/kg		13 mg/kg	0.0013 %		
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		**<LOD**
10	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		36 mg/kg	1.579	56.862 mg/kg	0.00569 %		
11	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		**<LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		38 mg/kg	2.469	93.833 mg/kg	0.00938 %		

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
13		pH				6.6	pH		6.6	pH	6.6 pH		
				PH									
14		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
		006-007-00-5											
15		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
16		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
17		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
18		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
19		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
20		acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
21		acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
22		anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
23		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
24		benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
25		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
26		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
27		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
28		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
29		dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
30		fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
31		fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
32		indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-893-2	193-39-5									
33		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
34		phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
35		pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
36		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
										Total:	0.0226 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

- **confirm TPH has NOT arisen from diesel or petrol**

Description/Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **boron tribromide/trichloride/trifluoride (combined)** (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43
Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06 Aug 2015
Hazard Statements: Skin Corr. 1B H314 , Skin Corr. 1A H314 , Acute Tox. 2 H300 , Acute Tox. 2 H330 , EUH014

- **chromium(III) oxide** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

- **lead compounds with the exception of those specified elsewhere in this Annex**

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: Lead REACH Consortium considers some lead compounds Carcinogenic category 2B
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Aquatic Chronic 2 H411 , Repr. 2 H361d , Carc. 1B H350 , Muta. 1B H340 , STOT RE 2 H373 , Asp. Tox. 1 H304 , Flam. Liq. 3 H226

- **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Description/Comments:
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

beryllium {beryllium oxide}

Worst case species based on risk phrases

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(III) oxide}

All chromium VI concentrations below lab LoD (4mg/kg).

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

All chromium VI concentrations below lab LoD (4mg/kg).

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on risk phrases

zinc {zinc sulphate}

All chromium VI concentrations below lab LoD (4mg/kg).

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2020.88.4220.8373 (28 Mar 2020)
HazWasteOnline Database: 2020.88.4220.8373 (28 Mar 2020)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

www.bwbconsulting.com