ABERMULE BUSINESS PARK

Geo-Environmental and Geotechnical Assessment Report

MAY 2019

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Abermule Business Park

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Report No	10026414-ARC-00-XX-RP-ZZ-0003-02	
Date	MAY 2019	

VERSION CONTROL

Version	Date	Author	Checker	Approver	Changes
01	17/05/19	RS	AW	GF	First Issue
02	28/08/20	AW	GF	GF	Minor clarification updates following SLR review of SCR

This report dated 17 May 2019 has been prepared for Powys County Council (the “Client”) in accordance with the terms and conditions of appointment dated 09 October 2018 (the “Appointment”) between the Client and **Arcadis (UK) Limited** (“Arcadis”) for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

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1 INTRODUCTION

1.1 Appointment

Arcadis Consulting (UK) Limited (Arcadis) was instructed on 10th October 2018 by Powys County Council (PCC) 'the Client' to undertake an intrusive site investigation to support proposals (both feasibility and planning) for a proposed Business Park development associated with Maesderwen Farm at Abermule Village on A483 and B4386 road junction Powys, Wales (the 'Site').

The scope of the intrusive ground investigation was determined by Arcadis based upon the conclusions detailed within the Arcadis desk study report (Ref 1) and the proposed development plans. The work was agreed and formally instructed by PCC on 9th October 2018. The scope of the intrusive ground investigation comprised Six cable percussive boreholes, four machine excavated trial pits for Environment and WAC, hand excavated trial pits, sixteen trial pits with *in situ* soakaway tests was based on the proposed commercial end use of the site. Soil and groundwater samples were taken during the ground investigation to better characterise the potential risk levels, associated with both contamination and geotechnical constraints, and establish a land quality baseline for the site to support the planning process. Ground conditions were recorded in accordance with Eurocode 7 (Ref 2).

1.2 Proposed Development

The proposed development comprises a waste bulking facility to the southwestern section of the site with surface water compensation and business units to the north-eastern section of the site. Infrastructure (services and road) has previously been installed onsite to accommodate a business park by the Welsh Government.
A proposed development plan has been provided by PCC and is presented in Appendix A.

1.3 Previous Reports

A Phase 1 desk study was completed by Arcadis in December 2017 to the full reference for which is as follows:

- Arcadis Consulting, Abermule Business Park, Phase 1 Geo-Environmental Desk Study, December 2017, 0001-UA006590-26-UP32R-01 (Ref 1).

The desk study identified potential sources of contamination on site and in close proximity of the site, hence a targeted intrusive ground investigation was recommended to better understand potential risk levels and establish a land quality baseline for the site including general ground conditions and geotechnical parameters to inform development proposals.

1.4 Limitations

This report has been prepared for PCC in accordance with the terms and conditions of appointment, dated 23rd November 2018. Arcadis cannot accept any responsibility for any use of or reliance on the contents of this report by any third party. The copyright of this document shall remain the property of Arcadis.

This report has been compiled from a number of sources, which Arcadis believes to be trustworthy. However, Arcadis is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time of writing. Additional information may become available in the future which may have a bearing on the conclusions of this report and for which Arcadis cannot be held responsible.

Ground investigations by nature only reveal a small percentage of the ground conditions present beneath the site. The possibility of significant variation in ground conditions existing between sampling locations cannot be discounted. Soil borne gas and groundwater conditions are based on observations made at the time of the investigation and during subsequent monitoring visits and may be subject to significant variation due to atmospheric, seasonal or other effects.

Arcadis do not accept liability for any use of the information presented in this report unless it is signed by the author, checker and approver and marked as final.

2 SITE SETTING

2.1 Site Location and Description

The site is located approximately 0.6km to the south west of Abermule village. The National Grid Reference coordinates for the approximate centre of the Site is 315663, 294153 and the nearest postcode is SY15 6NU which is associated with Maesderwen Farm. The site covers an area of approximately 2.09 Ha. The site lies immediately south of the A483 and B4386 with the junction of the two roads forming the western and northern boundary of the site.

A site location plan and existing site layout plan are presented in Appendix A (as supplied by PCC).

The majority of the site and the surrounding area comprises farmland. The topography of the Site is generally flat, low lying land within the floodplain of the River Severn (to the north of the site). During the walkover completed for the Desk Study, it was considered suitable to separate the site into five areas as follows:

1. Livestock grazing field in the north-eastern end of the Site.
2. A roadway (roughly 'L' shaped) enabling access to an electrical substation, with associated services (identified by manhole covers and secure above ground units), potential underground unidentified tanks beneath a compound along the south-eastern boundary.
3. One large field towards the centre south-eastern of the Site.
4. Former roadway used for storage of farm equipment, soil stockpile and hay bales along the north-western boundary of the Site.
5. One small field in the south-west of the Site.

At the time of the visit there were sheep in the north-eastern field and the other fields were empty of livestock. The fields are fenced off with barbed wire/ wire connected by wooden fence posts, with saplings/ young trees growing around the circumference of the fencing. In both fields there was an odour of animal faeces and evidence of a geotextile underlying the topsoil being held in place by wooden stakes resting on the surrounding fencing, potentially used as a former plastic fence to stop the migration of newts during construction works of the road.

The L-shaped roadway runs along the southern boundary of the Site approximately 140.0-160.0m orientated north-east to south-west. Near to the junction of the road there is a rectangular double gated compound with four lockable bollards blocking the entrance. The compound contains two electrical substation metering units/telephone exchange box, one above ground double skinned plastic tank (containing flammable and harmful material), concrete pipes/materials and potentially two underground storage tanks (marked by circular scarring). The contents of the tanks onsite were not identified due to restriction of access to compound. Crossing the compound in a north-west to south-east orientation are concrete bollards to prevent vehicle access onto the underground storage tank area. Approximately 5.0-7.0m south-west of the gated compound is an electrical substation, constructed of brick with two vents on each wall (two sets of vents at the base of the hut and 1 set of vents at the top).

Along the roadway On-Site and within 2.0m of the road in the adjacent field, there are a large number of manhole covers for various services. These appear to include BT communications and possibly water, gas and electricity, as well as surface water drains. There are street lamps along either side of the road. There are no overhead cables across the Site.

Along the north-western part of the Site in the central field is a broken tarmac road orientated north east-south west, which is an abandoned section of a road. This is now used for storage by the farmer, including; a mound which appears to comprise of soil with turf cover which has been disturbed at the south-western side of the mound, a pile which appears to comprise of concrete, gravel and soil, haylage/hay bales protected by a small electrified fence, tractor tyres and metal farm machinery/livestock feeders/chicken coops.

In the far south-west of the Site there is a small field separated by an open gate and a row of deciduous trees across the Site orientated north-west to south-east. In the south-western section of the Site is a gated area which leads onto a footpath that passes below a railway bridge.

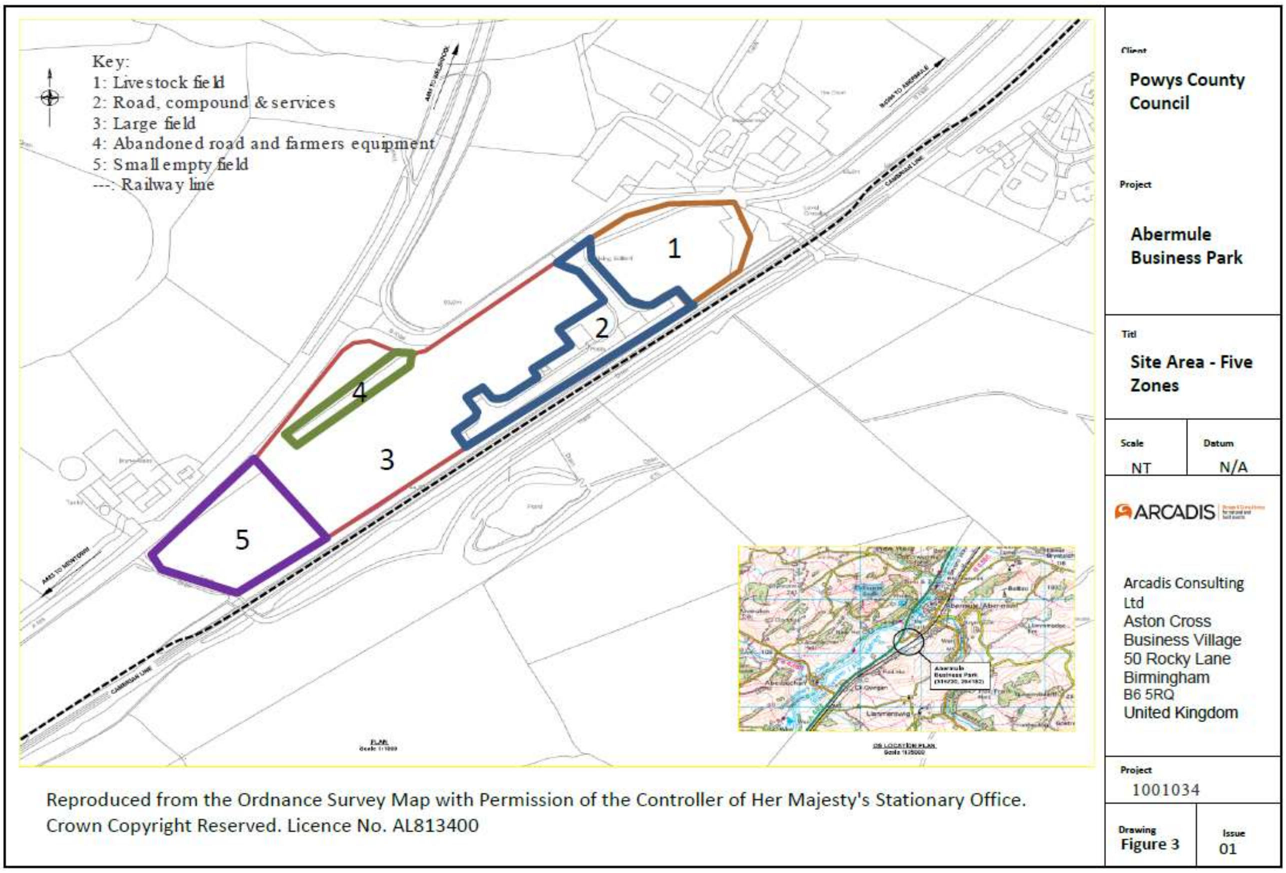
The A483 and B4386 are immediately north west of the Site boundary, with fields/farmland to the west and north west, with horses and other livestock. Approximately 5m to the north of the Site is a series of farm buildings associated with Maesderwen Farm, with relatively new metal barns to store farm machinery and older brick buildings converted into stables and conjoined paddocks. An additional set of farm buildings is located approximately 5m to the north-west of the Site associated with Bryn-y-Meas Farm.

Just beyond the property boundary of the southern boundary of the Site is a railway track with associated pylons on an embankment. Between the raised railway and the Site boundary is a row of mature deciduous trees. Just beyond the property boundary to the north-east of the Site is a cluster of deciduous trees with a drainage channel, orientated north-west to south-east. A gated path is adjacent to the trees which leads to a compound containing farm machinery, and a railway bridge into fields with livestock (cows and sheep).

Abermule Business Park North-east (approximately 360-440m) of the Site, and adjacent to the B4386 is an area of land used for commercial purposes including storage of locked shipping containers and vehicles. Adjacent to this is an area of residential properties. A full description of the site setting and historical use is provided in the Arcadis Phase 1 Desk Study (Ref 1).

Figure 1 shows the site boundary and the layout of the site (as extracted from the Phase 1 Desk Study).

Figure 1 – Current Site Layout



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3 Desk Study Review

3.1 Summary of Pertinent Information

Table 3.1 summarises the pertinent information from the Phase 1 Desk Study Report (Ref 1).

Table 3.1 - Summary of Environmental Data

Geology	• **Made Ground** – Anticipated to be present associated with abandoned roadway and use of the Site by the farmer to store rusted farm equipment to the north. • **Superficial Deposits** – Alluvial Fan deposits (clay and silt). • **Bedrock** – Nantglyn Flags Formation (Mudstone, Siltstone and Sandstone). • **Faults** – One inferred fault line at rock head approximately 250m south east of the site, and down-throwing to the east.
Mining	• No productive Coal Measures or active mines or quarries are noted within 2km of the site boundary. • Recorded mineral sites within 1.0km of the Site boundary is an open cast mine for clay and shale 632m to the north and are now ceased.
Hydrogeology	• **Superficial Deposits** – Secondary Undifferentiated aquifer. • **Bedrock** – Secondary B aquifer. • One groundwater abstraction licence is recorded within 500m of the site, approximately 360m south west of the Site, used for farming and domestic, with Powys County Council being the licence holder. • Groundwater flow is anticipated to flow towards the west and south west, consistent with the catchment and flow direction of the River Severn. This assessment supersedes the flow direction detailed within the Phase 1 Desk Study for the Site.
Hydrology	• The nearest mapped natural surface water features are immediately to the east and to the west and approximately 14m south east of the Site boundary (assumed to be field drains). Two ponds are located approximately 70m south and approximately 20m north west of the Site. The River Severn is located approximately 200m north of the Site at its closest point and flows to the south west. The Mule river is approximately 500m east, and there are unnamed streams located approximately 200m to the north west and approximately 20 - 250m southeast of the Site. Several mapped streams/drains appear to be culverted. Surface water courses near to the Site are likely to drain north and Westwards towards the River Severn. • The nearest discharge consent is approximately 300m south east of the Site and is for discharge of sewage to the surface water course which runs past the eastern boundary of the Site. • The Site is located within an area that is susceptible to extreme flooding from rivers without defences (Zone 2). A high risk, 30-year return area is located in the southwest. A medium risk, 100-year return is located in the centre and north-east of the Site.
Unexploded Ordnance	• The site is within an area denoted as “low” bomb risk area.
Site History	*Onsite* • The site was an open agricultural field with an unnamed road in the north west of the site. (1884-1964). • The road in the north west is no longer in use and there is no other significant change on the site. (1983-1984). • The site is labelled as Abermule Business Park with access road from B4386 running in a south-eastern direction across site and along the south-eastern boundary of the site, with a couple of small structures along the access road. (2017-present).

	Offsite - From 1884 to 1885 mapping; Approximately 3m from the site there is Cambrian Railway which runs in a north-east to south-west orientation. An Unnamed road to Abermule is present to the north of the site. A Reservoir is located approximately 80m south on the other side of railway. A drain is marked running west into the reservoir, then along bottom of the railway embankment and then northwards along eastern boundary of site. Another drain originate from railway embankment runs along western boundary of site. Three ponds are located approximately 60m and 250m north west, 230m east of the site. The River Severn is approximately 250m north of the site and in the north east there is series of farm related building called as The Court. - From 1903 to 1964, the two ponds recorded approximately 60m northwest and 230m east of the site are no longer and are likely to have been infilled. A set of 3 buildings of unknown use are approximately 60m north-west of the site. - From 1983 to 1984, two farms are recorded to the northwest (Brn-y-maes) and north east (Maesderwen) of the Site. Approximately 2-5m to the north of the site the junction of the A483 and B4386 has been reconfigured. - In 2000, the Maesderwen farm has been expanded to include a large commercial building where there were previously smaller farm buildings and approximately 220-250m east is predominantly residential property and an associated area for commercial use and former reservoir south of the site has been partially or fully infilled and appears vegetated. - By 2006, the Bryn-y-maes farm has a cylindrical structure on site and no further significant changes were noted.
Radon	- The site is located within a medium probability radon area (5% to 10% of homes are estimated to be at or above the action level).
Potential for Collapsible or Compressible Ground and Landslides	- There is a very low potential for compressible ground stability hazards and a very low to moderate potential for compressible ground stability hazards on-site. - On-site there is a very low potential of landslides, however off-site within 250m there are six potential areas of land sliding with a low to high risk.
Ecologically Sensitive Areas	- The site is not located within a designated Environmentally Sensitive Area. However, ancient woodland has been identified located approximately 413m to the northwest and 453m to the north of the Site.

3.2 Preliminary Conceptual Site Model

3.2.1 Potential Sources

Based on the information obtained from Desk Study report (Ref 1), potential sources of contamination were identified both on and offsite and required investigation. These potential sources are presented in Table 3.2.

Table 3.2 - Onsite and offsite potential sources of contamination

Potential Contaminant Sources	Potential Contaminants
Onsite	
Made Ground associated with abandoned roadway and use of the Site by the farmer to store farm equipment.	TPHs (Total Petroleum Hydrocarbons) Metals – arsenic, aluminum, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc Fly ash, slag, clinker associated with railway activities PAHs (Polycyclic Aromatic Hydrocarbons)

Potential Contaminant Sources	Potential Contaminants
	Asbestos
Spills from filling/removal of contaminating liquids associated with potential underground tanks in compound area and electrical substation.	TPHs Metals – arsenic, aluminum, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc PCBs (Polychlorinated biphenyls)
Radon (naturally occurring)	Radon gas
Offsite	
Maesderwen and Bryn-y-maes Farms	Organics – TPHs and PAHs Metals Nitrates, Bacteria and Coliforms from livestock
Railway line	Organics – TPHs and PAHs Metals Fly ash, slag, clinker associated with railway activities

3.2.2 Potential Receptors

The potential receptors detailed below take into consideration the future land use for the Site. The Site is proposed to occupy a waste disposal unit and commercial business units, as proposed by Powys County Council.

Humans

- Future Site visitors, staff of business units.
- Maintenance workers and contractors following development.
- The risk to construction workers during development would be governed by Health and Safety Legislation and mitigated by the appropriate use of Personal Protective Equipment (PPE) and mitigation measures. The risk to construction workers has, therefore, not been considered in this assessment.

Controlled Waters

- Surface water: Reservoir and associated drainage around the Site <50m north-east, south-east, south and north-west of the Site. River Severn approximately 230-250m north-east.
- Groundwater beneath the Site: Superficial deposits is a secondary undifferentiated aquifer and the bedrock is a secondary B aquifer.

Buildings

- Building foundations.
- Underground services such as water supply, drainage, gas, electricity and telecommunications.

3.2.3 **Potential Pathways**

Potential exposure pathways are the routes that link the receptor to the contamination. The potential pathways for this Site are considered to be those listed within Table 3.3.

Table 3.3 - Identified Potential Contaminant Pathways

Receptor	Pathways
Human Beings	Accidental ingestion of contaminants within soil, water and dust. Indoor and outdoor inhalation of dust, vapours and ground gases. Dermal contact with contaminants within soil, water and dust.
Controlled Waters (groundwater and surface water)	Leaching of contaminants from unsaturated zone into underlying groundwater. Vertical migration of soluble contaminants through the unsaturated zone into groundwater beneath the site. Horizontal migration of contaminants via groundwater aquifers to surface waters.
Infrastructure	Direct contact with aggressive ground conditions for building/structures/ services. Gas accumulation in confined and poorly ventilated spaces.

3.3 Potential Contaminant Linkages

This study has identified potential sources of contamination from onsite (although limited) and offsite sources of contamination which could impact site end users, controlled waters and foundations. Potential contaminant linkages for the site are presented in Table 3.4.

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Table 3.4 - Potential Contaminant Linkages

Potential Contaminant Source	Potential Pathway	Receptor	Likelihood of Potentially Linkage
On-Site Made Ground from roadway abandonment and rubble mounds. TPHs (Total Petroleum Hydrocarbons) Metals – arsenic, aluminium, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc. Fly ash, slag, clinker associated with railway activities PAHs (Polycyclic aromatic hydrocarbon) Asbestos	Dermal contact with contaminants in soil, water and dust Inhalation of dusts, vapours or hazardous ground gas	**Human Health** Site users and visitors including children Maintenance workers/contractors	**Low Likelihood** The proposed development will predominantly be hardstanding; therefore, it is unlikely that a pathway will be present.
	Leaching of contaminants from Made Ground and vertical migration into groundwater	**Groundwater** Underlying Secondary B aquifer and Secondary Undifferentiated aquifer	**Low Likelihood** The underlying superficial deposits are likely to comprise a clay component which would provide some protection to the underlying aquifers from the vertical migration of contaminants. The potential sources of contaminants are in localised locations onsite therefore this reduces the potential for widespread contamination.
	Direct contact of buildings, services or foundations with contaminants in the soil and shallow groundwater.	**Buildings/Underground Services** Utilities, foundations and confined spaces	**Unlikely** The presence of Made Ground On-Site was localised and the Site history reflects the Site has mostly been greenfield; therefore, it is unlikely that building foundations and services will come in direct contact with the contaminants.
On-Site Spills/leaks from underground and above Ground storage tanks in compound area and electrical substation. TPHs Metals – arsenic, aluminium, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc.	Leaching of contaminants from Made Ground and vertical migration into groundwater	**Groundwater** Underlying Secondary B aquifer and Secondary Undifferentiated aquifer	**Low Likelihood** Given the structures appear to be relatively new, within the past 10 years, it is unlikely that the integrity of the tanks and substation has been compromised. Providing maintenance is continued and the structures were construct to specification there is a low likelihood of leaks.
	Dermal contact with contaminants in soil, water and dust Inhalation of dusts, vapours or hazardous ground gas	**Human Health** Site users and visitors including children – Asphyxiation Maintenance workers/contractors	
	Migration and accumulation of ground gas which may lead to	**Explosion**	

Potential Contaminant Source	Potential Pathway	Receptor	Likelihood of Potentially Linkage
PCBs (Polychlorinated biphenyl)	an explosive risk within confined spaces of buildings or services.	Buildings and underground services.	
On-Site and Off-Site Underlying Geology Radon gas	Inhalation of dusts, vapours or hazardous ground gas	**Human Health – Asphyxiation** Site users and visitors including children Maintenance workers/contractors	**Likely** BRE guidance indicates that there are elevated concentrations of naturally produced radon gas in this area and basic protection measures are required in all new buildings.
	Migration and accumulation of ground gas which may lead to an explosive risk within confined spaces of buildings or services	**Buildings/Underground Services – Explosion** Utilities, foundations and confined spaces	
Off-Site Maesderwen and Bryn-y-maes farms TPHs and PAHs Metals – arsenic, aluminium, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc. Nitrates, Bacteria and Coliforms from livestock	Leaching of contaminants and vertical migration into groundwater	**Groundwater/ surface water** Underlying Secondary B aquifer and Secondary Undifferentiated aquifer Migration into drainage water/streams/River Severn	**Likely** Due to the topography of the Site and the surrounding valley groundwater will be present, probably at modest depth. The Site is in an area of flood risk; however, the underlying superficial deposits are likely to comprise a clay component which would provide some protection to the underlying aquifers from the vertical migration of contaminants.
Off-Site Historic and modern-day railway line/ Made Ground TPHs and PAHs	Migration and accumulation of ground gas which may lead to an explosive risk within confined spaces of buildings or services	**Buildings/Underground Services – Explosion** Utilities, foundations and confined Spaces **Human Health**	**Low Likelihood** Whilst off site sources of potential contamination exist, it is considered none are likely to present a severe impact.

Potential Contaminant Source	Potential Pathway	Receptor	Likelihood of Potentially Linkage
Metals – arsenic, aluminium, cadmium, chromium, copper, iron, lead, mercury, nickel, zinc. Fly ash, slag, clinker associated with railway activities	Inhalation of dusts, vapours or hazardous ground gas inhalation vapours	Site users and visitors including children Maintenance workers/contractors	
	Horizontal and vertical migration of contaminants in groundwater	**Groundwater** Underlying Secondary B aquifer and Secondary Undifferentiated aquifer	**Low Likelihood** Due to the topography of the Site and the surrounding valley it is likely that groundwater will be mobile, and if contamination has occurred up-gradient, it is possible this could migrate to impact the site. However the underlying superficial deposits are likely to comprise a clay component which would tend to provide attenuation and retardation of migration of contaminants.
	Direct contact of buildings, services or foundations from contaminants.	**Buildings/Underground Services** Utilities, foundations and confined spaces	**Low Likelihood** The underlying superficial deposits are likely to comprise a clay component which would provide some protection. Leachate and groundwater are less likely to migrate beneath the Site and come into contact with the buildings and services.

4 SITE INVESTIGATION

4.1 General

Ground investigation works were carried between the 7th and 22nd January 2019 with monitoring being completed on 22nd and 30th January 2019, 7th and 14th February 2019.

The scope of the ground investigation, including the location, scheduled depth and type of exploratory hole undertaken was determined by Arcadis Consulting (UK) Ltd and is summarised in Table 4.1.

The ground investigation methods were undertaken in general accordance with the principles set out in BS EN 1997-2:2007 (Ref 2) and with the general practice described in BS5930:2015 (Ref 3). The geo-environmental aspects of the ground investigation complied with the general requirements of BS 10175+A1:2017 (Ref 4).

Table 4.1 - Initial ground investigation scope

Location ID	Hole Type	Scheduled Maximum Depth (m)	Requirements
BH101 to BH106	CP	2no. BH to 5m and 4no. BH to 10m	Determine thickness of engineering soils; collect representative samples of strata and undertake in situ tests, install groundwater/ground gas installations for subsequent monitoring.
SA1 to SA16	TP/SA	1.2m	Determine nature of shallow soils; collect representative samples and undertake soakaway tests. These will provide further site coverage to inform baseline land quality.
CBR1 to CBR44	CBR	0.8m	Provide in situ CBR values of formation level.
HTP1 to HTP8	HTP	0.2m	Determine the extent of asbestos-impacted material within stockpiles on-site and inform waste disposal / re-use options.
TP101 to TP104	TP	1.0m	Inform waste disposal options for surplus material.

Notes
CP = Cable Percussive, SA = Soak Away, TP = Trial Pit, HTP = Hand excavated Trial Pit, CBR = Californian Bearing Ratio test

The investigation works were carried out under the supervision of a suitably experienced Arcadis ground engineer who undertook the logging and reporting of the exploratory holes and *in situ* testing.

Based on the anticipated ground conditions on site (Alluvial Fan deposits- varying composition of sand, silt and clay overlying the Nantglyn Flags Formation – mudstone, siltstone and sandstone), ground conditions beneath the site have the potential to be highly variable hence the proposed investigation should enable sufficient coverage of the site to inform both the land quality baseline assessment and a allow for a better understanding of the ground model. Deeper boreholes would inform foundation design, while the pits would allow for completion of soak away testing. Further site coverage has been achieved through the CBR tests.

In addition, there are a number of stockpiles of material along the north western boundary of the site (along the former road). Asbestos has been identified in these stockpiles by another Consultant (Middlemarch Environmental). The results of the Middlemarch testing are discussed within Section 7.3.3. Consequently additional samples were collected of stockpiled material to test against standard soil chemical suites (including asbestos), to be able to classify the material and to inform whether the material in the fly tipped stockpiles has hazardous properties and may require disposal as hazardous waste.

Borehole installations have been included to enable the collection of groundwater samples to establish whether any on-site contamination could have leached to the underlying Secondary Undifferentiated aquifer.

Due to the potential source of ground gas from onsite storage tanks in the compound area, and the former reservoir located to the south of the site, ground gas monitoring has been included to confirm the anticipated ground gas regime. Four visits were completed at weekly intervals (at least one of which should be undertaken at a time of low or falling atmospheric pressure to capture potential worst-case scenario conditions).

The investigation works were carried out under the supervision of a suitably experienced ground engineer who undertook the logging and reporting of the exploratory holes and *in situ* testing.

4.2 Exploratory Holes

4.2.1 Exploratory Hole Locations

The co-ordinates and elevations of the exploratory hole locations were obtained by the Arcadis supervising engineer using a Trimble VRS NOW GPRS system; allowing an accuracy of +/-50 mm.

Drawing 10026414-ARC-XX-XX-DR-ZZ-0001-P1-Exploratory Hole Plan presented in Appendix B displays the as-constructed exploratory hole locations while the co-ordinates and elevation of the ground surface at each exploratory hole location are given on the individual logs.

4.2.2 Investigation Methodology

The following methods and techniques were undertaken to construct the exploratory holes at the site. The completed scope of investigation is summarised in Table 4.2.

Details of the methods of investigation and associated standards adopted and a key to the notation and symbols used on the logs are presented in Appendix C; the exploratory hole records are presented in Appendix D.

Table 4.2 - Summary of completed exploratory holes

Location ID	Hole Type	Start Date	End Date	Final depth (m)	Comment	Termination Reason
BH101	CP	10-Jan-19	11-Jan-19	10.03	N/A	Target depth achieved
BH102	CP	8-Jan-19	9-Jan-19	5.10	Borehole commenced in 150mm casing. Due to coarse fractions and dense ground conditions 200mm casing was used to drill borehole.	Terminated due to refusal in coarse Gravel.
BH103	CP	14-Jan-19	15-Jan-19	10.00	N/A	Target depth achieved
BH104	CP	15-Jan-19	15-Jan-19	10.00	N/A	Target depth achieved
BH105	CP	16-Jan-19	16-Jan-19	6.15	N/A	Terminated due to refusal in Mudstone
BH106	CP	7-Jan-19	7-Jan-19	3.50	N/A	Terminated due to refusal in Mudstone
HTP01 – HTP08	IP	15-Jan-19	15-Jan-19	0.20	N/A	N/A
SA01	TP	11-Jan-19	11-Jan-19	1.00	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.
SA02	TP	10-Jan-19	10-Jan-19	1.00	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.
SA03	TP	11-Jan-19	11-Jan-19	0.90	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.
SA04	TP	10-Jan-19	10-Jan-19	0.80	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.
SA05	TP	10-Jan-19	10-Jan-19	0.75	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.
SA06	TP	10-Jan-19	10-Jan-19	0.70	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.
SA07	TP	9-Jan-19	9-Jan-19	0.95	Soakaway infiltration test undertaken.	Pit terminated on engineer’s instruction.

Location ID	Hole Type	Start Date	End Date	Final depth (m)	Comment	Termination Reason
SA08	TP	10-Jan-19	10-Jan-19	1.00	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA09	TP	9-Jan-19	9-Jan-19	1.10	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA10	TP	9-Jan-19	9-Jan-19	1.20	Soakaway infiltration test undertaken.	Target depth achieved
SA11	TP	9-Jan-19	9-Jan-19	1.00	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA12	TP	7-Jan-19	7-Jan-19	0.80	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA13	TP	7-Jan-19	7-Jan-19	0.80	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA14	TP	8-Jan-19	8-Jan-19	1.00	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA15	TP	8-Jan-19	8-Jan-19	1.10	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
SA16	TP	8-Jan-19	8-Jan-19	1.10	Soakaway infiltration test undertaken.	Pit terminated on engineer's instruction.
TP101 – TP104	TP	14-Jan-19	14-Jan-19	1.00	N/A	Terminated on engineer's instruction.

Notes
CP = cable percussive borehole, IP = inspection pit TP = machine excavated trial pit, HTP = hand dug trial pit, SA = soakaway test

4.2.3 Cable Percussive Boring

Cable percussive boring was completed using trailer mounted Dando 3000 boring rig equipped with 200mm casing and tools to undertake two boreholes up to 5m bgl and four boreholes up to 10m bgl, however due to presence of bedrock and dense gravel some of the positions refused at a shallow depth.

Hand dug pits were undertaken in each borehole to 1.2m for service clearance purposes.

Samples of the material recovered in borehole were taken to enable representative laboratory testing. Generally small disturbed samples were taken at each change in stratum and at 0.5 m intervals thereafter in clay soils; and bulk samples were taken at 1 m intervals where the sand and gravel content of the soil was significant.

Where specified by Arcadis Consulting (UK) Ltd, open drive tube samples were taken using thin-walled sampling apparatus from the relatively undisturbed material throughout at 1.5m intervals the borehole.

Standard penetration tests (SPT) were generally undertaken at 1.0 m intervals until the termination depth of the hole.

4.2.4 **Hand Dug Pitting**

Hand Dug Trial Pits (HTPs) were undertaken to quantify the amount of asbestos-impacted material within stockpiles on-site and inform waste disposal / re-use options. Pits were entirely logged from the surface and arisings.

Samples of the material recovered in the trial pits were taken to enable representative laboratory testing. Generally small disturbed samples were taken at each change in stratum and at 0.5 m intervals thereafter in clay soils; and bulk samples were taken at 1 m intervals where the sand and gravel content of the soil was assessed as significant.

Photographic records of the hand excavated trial pits elevation and arisings were taken and are presented with the associated trial pits log.

4.2.5 **Trial Pitting**

Trial pits were undertaken using a tracked 8-ton 360 mechanical excavator; pits were entirely logged from the surface and arisings.

Samples of the material recovered in the trial pits were taken to enable representative laboratory testing. Generally small disturbed samples were taken at each change in stratum and at 0.5 m intervals thereafter in clay soils; and bulk samples were taken at 1 m intervals where the sand and gravel content of the soil was assessed as significant.

Photographic records of the trial pit elevation and arisings were taken and are presented with the associated trial pit log.

4.3 *In Situ* Testing

4.3.1 **General**

In situ testing was carried out within the relevant exploratory holes or at a specified test location. Where tests were undertaken within or associated with a specific borehole or trial pit, the test data is presented on the relevant exploratory hole log or as additional sheets to that log. As such, the location details will be the same as the associated hole and its position will be the same as the exploratory hole with which it is associated.

Where *in situ* tests were carried at standalone locations not directly associated with other exploratory holes, the tests results are presented as individual records and as such the as-constructed locations are given on the test records and their positions are shown on drawing 10026414-ARC-XX-XX-DR-ZZ-0001-P1-Exploratory Hole Plan in Appendix B.

4.3.2 **Penetration Testing**

4.3.2.1 Standard Penetration Tests

Standard penetration tests (SPT) were carried out as required in the investigation scope and in accordance with the methods given in the standard procedures presented within Appendix C. Generally, tests were undertaken at regular intervals throughout the borehole to provide a profile of the soil's resistance with depth and a disturbed soil samples was recovered from the SPT split-spoon tool or a disturbed sample was taken over the range of the test interval.

The N-values as determined in the field are presented on the borehole logs as uncorrected values that do not consider the energy losses or efficiency of the automatic trip hammer used to drive the test tool into the ground. The calibration certification for the test devices used in the investigation is presented in Appendix E and a summary of the SPT equipment used at each location is presented in Table 4.3.

Table 4.3 - Test Hammer Calibrations

Location ID	SPT Hammer Reference	Energy Efficiency Ratio, E_r %	Comment
BH101 to BH106	62	77	Calibration due December 2019

4.3.2.2 California Bearing Ratio Tests

California Bearing Ratio (CBR) tests were carried out in accordance with the methods given in the standard procedures presented in Appendix C. The tests were carried out by GEO Site & Testing Services Ltd of Llanelli and the results of the tests are provided in Appendix G. Hand inspection pits were initially dug with the CBR tests undertaken at approximately 0.046-0.80m bgl and testing to be undertaken by using 4 wheel drive vehicle as kentledge. Logs detailing the ground conditions within the pits are included in Appendix D.

4.3.3 **Hydraulic Tests**

4.3.3.1 Soakaway Tests

The soil infiltration rate was determined by conducting a soakaway tests in accordance with the methodology described in BRE 365 (Ref 5). The tests were conducted in trial pits dug to the anticipated soakaway depth. Summary information of the tests is presented in Table 4.4 while detailed test sheets are presented in Appendix D.

Table 4.4 - Summary of trial pit soakage tests

Location ID	Depth of pit (m)	Time to empty (minutes)	Soil Infiltration Rate *f* ms^{-1}	Comment/limitations
SA01	1.00	180	$1.77x10^{-5}$	1 cycle completed due to time constraints.
SA02	1.00	70	$1.13x10^{-6}$	25% effective depth not achieved.
SA03	0.90	75	$4.67x10^{-5}$	75% and 25% effective depth achieved.
	0.80	90	$4.53x10^{-5}$	
SA04	0.80	120	$7.94x10^{-7}$	75% and 25% effective depth not achieved.
SA05	0.75	150	$3.10x10^{-7}$	75% and 25% effective depth not achieved.
SA06	0.70	130	$5.30x10^{-7}$	75% and 25% effective depth not achieved.
SA07	0.95	55	$5.15x10^{-5}$	1 cycle completed due to time constraints.
SA08	1.00	240	$6.63x10^{-8}$	75% and 25% effective depth not achieved.
SA09	1.10	120	$2.57x10^{-5}$	75% and 25% effective depth achieved.
	1.10	40	$2.92x10^{-5}$	
SA10	1.20	180	$5.57x10^{-6}$	25% effective depth not achieved.
SA11	1.00	240	$2.34x10^{-6}$	25% effective depth not achieved.
SA12	0.80	55	$1.16x10^{-5}$	1 cycle completed due to time constraints.
SA13	0.80	60	$3.19x10^{-5}$	75% and 25% effective depth achieved.
	0.80	90	$1.66x10^{-6}$	25% effective depth not achieved.
SA14	1.00	180	$8.00x10^{-7}$	25% effective depth not achieved.
SA15	1.10	15	$2.59x10^{-4}$	75% and 25% effective depth achieved for 3 tests.
	1.10	20	$1.53x10^{-4}$	
	1.10	30	$1.31x10^{-4}$	
SA16	1.10	15	$2.43x10^{-4}$	75% and 25% effective depth achieved for 3 tests.
	1.10	30	$8.36x10^{-5}$	
	1.10	45	$5.17x10^{-5}$	

4.3.4 VOC Head Space Screening

The presence of Volatile Organic Compounds (VOC) within the ground was determined using a photoionization detector (PID) to detect the 'headspace' vapours emitted by the compounds. The method is applicable to a wide range of compounds that have sufficiently high volatility to be liberated from the soil or water matrix in normal temperature and pressure ranges.

The headspace test was undertaken on the freshly extracted soil sample at environmental sample depths by placing a small amount of material into a screw-top glass jar so that the jar was not more than half-full. The jar opening was covered with an aluminium foil sheet and the lid screwed on to form an air-tight seal. The sample and jar were then shaken for about 15 seconds to break-up and disperse the soil before resting the sample for about 5 minutes.

To assess the headspace vapour, the jar lid was removed and the PID probe was inserted through the foil into the headspace area. The PID reading recorded was the highest response observed in the first 10 seconds. The screening results are presented on the relevant exploratory holes logs within Appendix D.

The testing was undertaken using a PID with a 10.6eV lamp. The PID instrument was calibrated daily using fresh air calibration techniques.

4.4 Installations and Post-fieldwork Monitoring

4.4.1 Installations

Installations to enable long term monitoring of the site were made in those boreholes selected by Arcadis Consulting (UK) Ltd and the details are summarised in Table 4.5 and are also provided on the relevant borehole logs.

Table 4.5 - Summary of exploratory hole installations

Location ID	Installation Type	Response Zone Top m bgl	Response Zone Base m bgl	Geology	Comment/limitations
BH101	GMSP50	6.50	10.00	Alluvial Fan - Gravel of mudstone and siltstone	Gas/groundwater installations installed. Flush cover set in 0.50 concrete.
BH102	GMSP50	3.00	5.00	Alluvial Fan - Gravel of mudstone and siltstone	
BH103	GMSP50	3.50	10.00	Alluvial Fan - Gravels of mudstone, sandstone siltstone and quartzite	
BH104	GMSP50	8.00	10.00	Mudstone	
BH105	GMSP50	2.00	5.50	Alluvial Fan -Gravels of mudstone, siltstone and quartzite	

Location ID	Installation Type	Response Zone Top m bgl	Response Zone Base m bgl	Geology	Comment/limitations
BH106	GMSP50	1.00	3.50	Alluvial Fan -Gravels of siltstone, mudstone and quartz	

Notes: GMSP50 = HDPE 50mm gas monitoring standpipe

The response zones target both the superficial Alluvial Fan and underlying bedrock Nantglyn Flags (Mudstone) Formations in order to capture monitoring of both ground water and ground gas within the superficial deposits and bedrock.

4.4.2 Post-fieldwork Monitoring

Post-field work monitoring was undertaken on separate visits on the 22nd January 2019 and 30th January 2019, 7th February 2019 and 14th February 2019. Four visits to the site were made to record land gas emissions and groundwater levels. During the second monitoring visit, after completion of the land gas emission monitoring, the well was purged by removing three well volumes of groundwater and in situ groundwater monitoring and sampling was undertaken. Where installations were purged dry, monitoring and sampling was conducted on groundwater recovered following recharging of groundwater in installations. Parameters measured during in situ monitoring were pH, dissolved oxygen, conductivity and redox potential.

The results of the groundwater and ground gas monitoring are presented within Appendix F.

4.5 Laboratory Testing

Geotechnical and geo-environmental chemical testing was undertaken on selected samples obtained from the exploratory holes. The testing was scheduled by the geotechnical and/or geo-environmental engineer and the testing was undertaken by an Arcadis approved testing laboratory.

4.5.1 Geotechnical Laboratory Testing

The geotechnical tests detailed in Table 4.6 were carried out in accordance with BS1377:1990: Parts 1 to 8 (Ref 6); or other methods as listed Table 4.6. The complete results of the geotechnical laboratory testing are presented in Appendix G.

Table 4.6 - Summary of geotechnical test data

Test	Method	No of Determinations	Comment
Moisture content	BS1377 Pt2-3.2	12	Classification of soils
4-point liquid and plastic limit	BS 1377 Pt2-4.3 & 5.3	12	Classification of soils
Particle Density (Gas Jar)	BS 1377 Pt2-8.2	2	Classification of soils
Particle Size Distribution - Wet sieving	BS1377 Pt2-9.2	14	Classification of soils
Particle Size Distribution – Sedimentation (pipette)	BS1377 Pt2-9.4	1	Classification of soils
Organic Matter Content	BS1377 Pt-3	1	Organic analysis of soil
BRE Full Suite	BR279	9	Chemical analysis of soil
Dry density and moisture content relationship	BS 1377:1990 Pt4-3.3	7	Classification of soils

4.5.2 **Geo-Environmental Laboratory Testing**

Geo-environmental tests were undertaken on soil and groundwater samples collected during the site investigation. Testing was carried out for the contaminants detailed in Table 4.7 and Table 4.8. The results of the chemical laboratory testing are presented in Appendix H. Details of the test methodology is presented with the test results.

Table 4.7 - Summary of geo-environmental test data – Soils

Test type	Method	No of Determinations
Asbestos Identification	Polarised light microscopy	34
pH	Automated electrometric measurement	34
Cyanide Free & Total	Calorimetry	34
Metals and inorganics, including As, B, Cr III, CR VI, Cd, Cu, Pb, Hg, Ni, Se, Zn), pH, Cyanide Free & Total, water soluble SO4	Induced Coupled Plasma Optical Emission Spectroscopy (ICP-OES)	34
Speciated Polycyclic Aromatic Hydrocarbon compounds (PAH)	Gas Chromatography –Mass Spectrometry (GC-MS)	34
Total Petroleum Hydrocarbon (TPH) Criteria Working Croup (CWG)	Gas Chromatography – Flame Ionisation Detector (GC-FID)	27
Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX)	GC-MS USEPA8260	27
Total Phenols	Calorimetry	34

Table 4.8 - Summary of geo-environmental test data – Groundwater

Test type	Method	No of Determinations
Metals and inorganics (As, B, Ca, Cd, Cr, Cu, Pb, Mg, Hg, Ni, Se, Zn), pH, Cyanide Free & Total, Alkalinity, Sulphate	ICP-OES & ICP-OS	6
pH	Automated electrometric measurement	6
Cyanide Free & Total	Calorimetry	6
Speciated Polycyclic Aromatic Hydrocarbon compounds (PAH)	GC-MS/USEPA 8270	6
Phenols by HPLC	In house method based on Blue Book Method.	6
BTEX	GC-MS In-house method based on USEPA8260	6
TPH CWG	In-house method by GC-MS	6

5 GROUND CONDITIONS

5.1 Introduction

The ground conditions encountered were generally consistent with the published geology identified in the Desk Study (Ref 1). A covering of Made Ground was found in the southwest of site (all the HTPs) consisting of both cohesive and granular material. Alluvial fan deposits were recorded, consisting of almost equal amounts of silt, clay, sand and gravel with a cobble content. The basal unit encountered during the investigation was weathered sandstone and mudstone of the Nantglyn Flags Formation.

The full engineering logs are presented in Appendix D.

A summary of the encountered geological strata is provided in Table 5.1. These are based upon engineering log descriptions from both boreholes and trial pits undertaken.

Table 5.1 - Summary of ground conditions encountered

Stratum	General Description	Depth range of stratum (m)	Thickness range of stratum (m)
Made Ground (Granular)	Black and brown clayey sandy angular GRAVEL of igneous lithologies. (Bitumen Seal). Identified only in HTP03.	Ground Level to 0.20	0.20
Made Ground (Cohesive)	Soft to firm brown and dark brown slightly sandy gravelly CLAY with occasional plastic and wood fragments. Gravel is subangular fine to coarse of sandstone, mudstone, limestone, brick and concrete. Encountered in all hand excavated trial pits except in HTP03. Also recovered as grass over Soft to firm greyish brown slightly sandy gravelly CLAY with few pieces of plastic & glass bottles, roots, metal cans. Gravel is sub-angular fine to coarse of mudstone and siltstone in SA10 and SA16.	Ground Level to 0.40	0.20 to 0.40
Superficial Deposits – Alluvial Fan (Cohesive)	Grass over soft dark greyish and greenish brown slightly sandy gravelly SILT. Gravel is sub-angular to sub-rounded fine to coarse gravel of siltstone. Encountered within BH101, BH102 and BH106, the same stratum was also recovered with roots and gravel of mudstone and siltstone in SA01-SA04, SA06, SA08, SA12, SA13 and SA14. Grass over soft to firm greyish and orangish brown slightly sandy gravelly CLAY with many roots. Gravel is sub-angular to sub-rounded fine to coarse gravel of sandstone, mudstone and siltstone in BH103, BH104 and BH105, and within all soakaways except SA13, and within all Trial Pits.	Ground level to 4.00	0.40 to 4.00

Stratum	General Description	Depth range of stratum (m)	Thickness range of stratum (m)
Superficial Deposits - Alluvial Fan (Granular)	Medium dense to very dense brown and grey sandy clayey sub-angular to sub-rounded fine to coarse GRAVEL of sandstone, siltstone, mudstone, quartzite and quartz with medium to low cobble content of sandstone and siltstone. in all borehole locations, SA07, SA09, SA10, SA15 and SA16, and all trial pits except TP103. Also recovered as brown gravelly to very gravelly fine to coarse SAND with gravel of sub-angular to sub-rounded fine to coarse of mudstone, siltstone, limestone and quartzite in SA01-SA03.	0.40 to 10.00	0.30 to 6.00
Bedrock (Nantglyn Flags Formation)	Weak dark grey MUDSTONE - Recovered as: very dense black slightly silty very sandy fine to coarse angular GRAVEL of mudstone. Identified in BH104, BH105 and BH106.	3.00 to 10.00 (base not proven)	Extent not proven

5.2 Groundwater Conditions

Table 5.2 presents the groundwater strikes recorded during drilling.

Table 5.2 - Summary of groundwater strikes during site investigation

Exploratory Position	Depth of Groundwater Strike (m bgl)	Geology
BH101	4.00 rising to 3.20	Superficial Deposits – Alluvial Fan (Granular)
	7.00 rising to 3.70	
BH103	5.00 rising to 4.80	Superficial Deposits – Alluvial Fan (Granular)
BH104	5.00 rising to 3.00	Superficial Deposits – Alluvial Fan (Granular)
	8.50 rising to 3.50	Bedrock (Mudstone)
BH105	5.10 rising to 3.20	Superficial Deposits – Alluvial Fan (Granular)
BH106	3.00 rising to 2.20	Superficial Deposits – Alluvial Fan (Granular)

5.2.1 Monitoring of Ground Gas and Groundwater Levels

Post-field work monitoring was undertaken on four visits, the 22nd January 2019, 30th January 2019, 7th February and 14th February 2019. The groundwater levels are summarised in Table 5.3 and the maximum steady state gas results are summarised in Table 5.4 over all three monitoring rounds. The full results are shown in Appendix F.

Table 5.3 - Summary of groundwater depths from post fieldwork monitoring

Exploratory Position	Response Zone (m bgl)	Geology of Response Zone	Monitored Groundwater Level (m bgl)			
			22/01/19	30/01/19	07/02/19	14/02/19
BH101	6.50 - 10.00	Superficial Gravels (Alluvial Fan Deposits underlain by bedrock)	4.04	3.97	3.95	3.91
BH102	3.00 - 5.00	Superficial Gravels (Alluvial Fan Deposits underlain by bedrock)	4.00	3.92	3.92	3.20
BH103	3.50 - 10.00	Superficial Cohesive (Alluvial Fan Deposits underlain by bedrock)	4.09	3.99	3.96	3.34
BH104	8.00 - 10.00	Weak dark grey Mudstone	Unable to Open	4.30	4.26	3.66
BH105	2.00 - 5.50	Superficial Gravels (Alluvial Fan Deposits underlain by bedrock)		4.07	4.05	3.45
BH106	1.00 - 3.50	Superficial Gravels (Alluvial Fan Deposits underlain by bedrock)	2.65	2.71	2.73	3.56

Table 5.4 - Summary of ground gas monitoring results (maximum steady state) from all four post fieldwork monitoring rounds

Exploratory Position	Flow (l/hr)	Atmospheric Pressure Range (mbar)	CH_4 (%v/v)	CO_2 (%v/v)
BH101	0	982 to 1019	0.1	0.2
BH102	0	983 to 1019	0.1	5.6
BH103	0	982 to 1019	0.1	3.2
BH104	0	984 to 1018	0.1	2.0
BH105	0	981 to 1018	0.1	2.3
BH106	0	983 to 1018	0.1	4.7

5.3 Visual and Olfactory Evidence of Contamination

Other than the made ground and the presence of non-natural materials recorded, no visual or olfactory evidence of contamination was identified during the site investigation.

5.4 Geotechnical Parameters

Geotechnical parameters for each principal stratum type encountered within the exploratory holes are summarized in the Tables 5.5, 5.6 and 5.7. These are based on test results or correlation of site observations with published data. It is important that the accompanying notes are read in detail together with the application of an experienced precautionary approach when using this data to help inform the design and construction process.

Geotechnical laboratory results are presented in Appendix G.

Table 5.5 - Summary of geotechnical properties in superficial cohesive deposits

Test	**No. of results**	**Min**	**Max**
Initial Moisture Content %	11	4.8	28
Liquid Limit %	11	26	50
Plastic Limit %	11	17	32
Plasticity Index %	11	5	18
Modified Plasticity index %	11	3.2	14.76
SPT N values	4	11	32

Table 5.6 - Summary of geotechnical properties in superficial granular deposits

Test	No. of results	Values
Initial Moisture Content %	1	11
Liquid Limit %	1	33
Plastic Limit %	1	16
Plasticity Index %	1	17
Modified Plasticity index %	1	7.1
SPT N Values	17	17 to >50

Table 5.7 - Summary of geotechnical properties in bedrock

Test	No. of results	Min	Max
SPT N values	3	50	>50

5.4.1 **Standard Penetration Test (SPT) Results**

5.4.1.1 Superficial Deposits – Alluvial Fan (Cohesive)

SPT tests were undertaken within the cohesive superficial deposits. SPTs were undertaken to maximum depth of 2m in the cohesive material.

SPT N values recorded within the cohesive superficial deposits ranged from 11 to 32 and were representative of stiff to very stiff consistencies.

5.4.1.2 Superficial Deposits – Alluvial Fan (Granular)

In Granular superficial deposits SPTs were undertaken maximum depth of 9.50m and SPT N values recorded between 17 and >50. This is indicative of medium dense to very dense granular deposits. It should be stated that it is not clear if SPT N values >50 are a true representation of ground conditions onsite or the results of cobbles present and therefore should be used with caution.

5.4.1.3 Bedrock

the SPT N values recorded at 6m and 8m depth are 50 and >50 respectively which itself is indicative of bedrock (weathered mudstone). Chiselling was also undertaken in hard strata (in BH102 where boulders are encountered) to assist in confirming the presence of bedrock deposits. The chiselling details are presented on the exploratory logs in Appendix D.

5.4.2 **Atterberg Limits**

Atterberg tests undertaken on cohesive superficial deposit samples recorded results indicative of low to high plasticity soils. The modified plasticity index ranged from 3.2 to 14.76%, and according to NHBC Chapter 4.2 (Ref 7), is representative of low volume change potential soils.

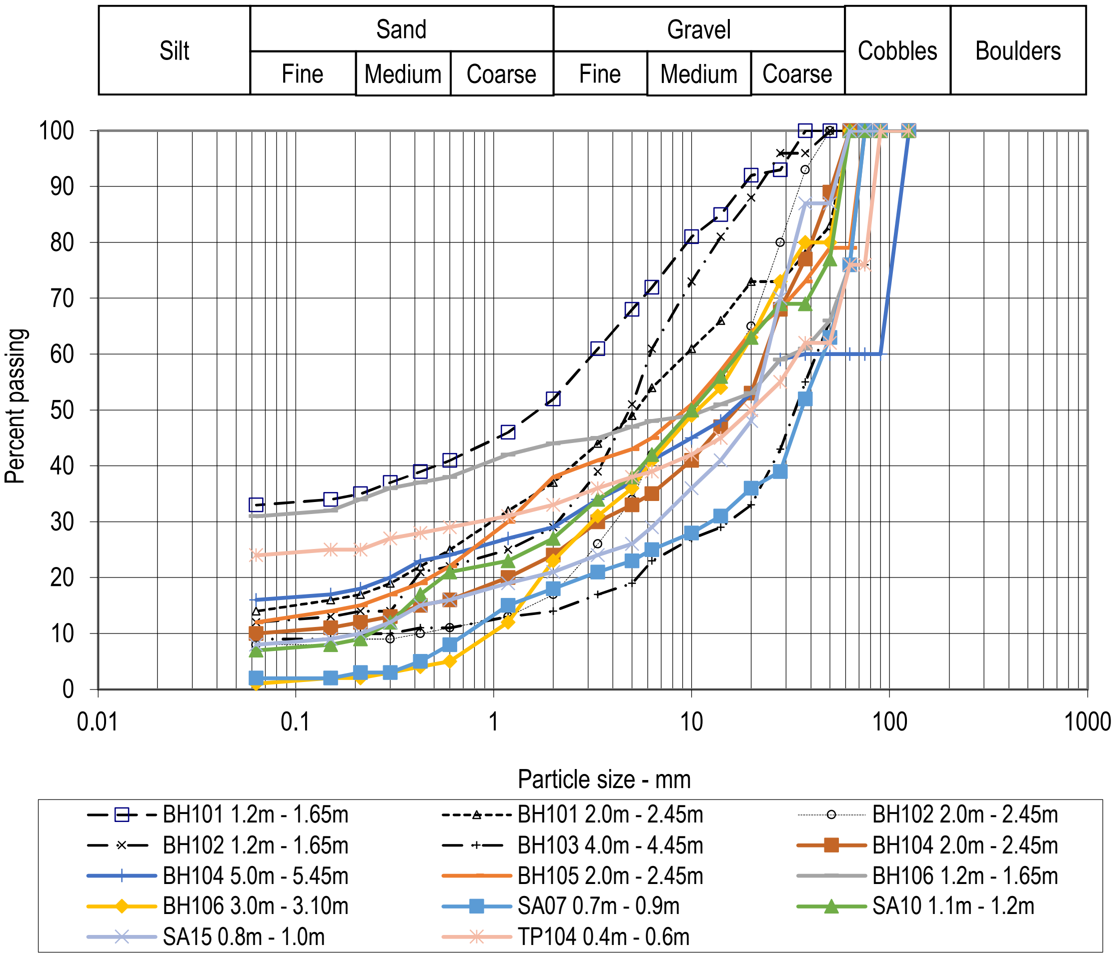
5.4.3 **Particle Size Distribution (PSD) By Wet Sieve Method**

5.4.3.1 Granular Superficial Deposits

Fourteen PSD tests were undertaken on granular superficial deposits at positions outlined in Figure 5.1. Tests were undertaken ranging from 0.40m to 5.45m bgl. PSD results are included within the geotechnical laboratory report (Appendix G).

The results of the PSD samples generally confirm the exploratory holes logs and the ground conditions outlined in Section 4.1. The fourteen test results are fairly consistent, with the main constituent being very sandy gravels (up to 83% in BH102) although with quite variable equal amounts of fine material (up to 33% in BH101 and less than 5% SA7 and BH106). Very coarse material (>63mm) (i.e. cobbles) was identified in BH104. This variation in fine material is extremely important to soakage performance.

Figure 5.1 – PSD chart for granular superficial deposits



5.4.4 **Particle Size Distribution (PSD) By Pipette**

One PSD test was carried out using sedimentation analysis (by pipette) with the sample obtained from BH103 (3.00m to 3.45m). The test result recorded a very clayey/silty very sandy Gravel, where 49% of particles were less than 0.02mm diameter.

5.4.5 **Particle Density (Gas Jar)**

Particle density tests were carried out within two samples. The results recorded density as 2.62 Mg/m3 in TP101 (0.60 – 0.80m) and 2.63 Mg/m3 in TP104 (0.40 – 0.60m).

5.4.6 **CBR Results**

Forty-Four California Bearing Ratio (CBR) tests were undertaken on site between 0.046m and 0.8m within cohesive superficial deposits, described as brown fine to coarse gravelly silty CLAY. CBR results ranged from 3.5% to 11.2%.

5.4.7 **Compaction Tests**

Seven Dry Density/Moisture content tests were undertaken on Alluvial Fan deposits (granular and cohesive) comprising silty clay and sandy gravel, positions outlined in Figure 5.1. Tests were undertaken on four boreholes (BH101, BH102, BH103 and BH104) at a depth of between 0.50m to 2.45m and in one soakaway trial pit (SA 15) at a depth of 0.30m to 1.00m. Results are included within the geotechnical laboratory report (Appendix G).

The results of the Compaction test indicates that the maximum dry density ranges from 1.82 to 2.19 mg/m^3 and the Optimum Moisture content ranges from 8 to 13%.

5.4.8 **BRE Full Suite**

Nine samples were tested for the BRE full suite (BRE BR279) and were analysed for parameters pH, water & acid soluble sulphate, total sulphur, magnesium, chloride and nitrate. The results indicated that pH ranged from 6.64 to 8.01, acid soluble sulphate ranged from 0.25 to 0.31%, SO_4 aqueous extract sulphate from <0.01 to 0.04g/l, Total sulphur 0.11 to 0.13% and the nitrate value was between 10 and 50mg/l. Magnesium concentration was recorded to be below 1g/l and chloride was below method limit of detection. Results indicated moderate values for all the parameters and are attached in Appendix G with the geotechnical results.

5.4.9 **Organic Matter Content**

One test was carried out for organic matter content from a sample obtained from BH103 (1.20m-1.65m), which indicated a result of 1.9%.

6 PRELIMINARY GEOTECHNICAL ASSESSMENT

6.1 General

At the time of writing it is understood that the proposed development will comprise a waste bulking facility to the southwestern section of the site and business units to the north-eastern section of the site. Infrastructure (services and road) has previously been installed onsite to accommodate a business park by the Welsh Government. A proposed development layout plan has been provided but no information regarding structural loadings have been provided at this stage.

It is assumed that the site levels will remain unchanged for the assessment. The following assessment and recommendations will need to be reviewed when design details are available.

6.2 Ground Floor Slabs

In accordance with NHBC guidance 5.1 "substructure and ground bearing floors", shrinkable soil, expansive materials or other unstable soils may require suspended floor construction. Shrinkable soils are classified as those containing more than 35% fine particles (silt and clay) and have a modified Plasticity Index of 10% or greater (see Chapters 4.2 'Building near trees' (each section) and 5.2 'Suspended ground floors' (each section)).

The modified plasticity index for site soils varies between 3 and 15%, thus do (marginally) meet the criteria of "shrinkable soil". Parts of the site are underlain by variable Made Ground (fill) and this is likely to have poor and variable load bearing characteristics. Depending on where buildings are to be located, and their structural from and loadings, if fill exceeds 600mm and/or shrinkable clays underly the floor area, suspended ground floor may be required. Plot specific testing should be considered to better inform this decision.

6.3 Foundations

The ground conditions beneath the site generally comprise limited made ground over variable superficial deposits comprising various amounts of silty clay, gravelly sand and sandy gravel overlying siltstone, mudstone and sandstone bedrock. Whilst the granular materials are relatively dense and suitable to support up to moderate loadings (likely to be sufficient for two to three storey business units) there are some soft clays present, and these would be unsuitable, except perhaps for very simple light weight small structures.

The proposed development is to be two business units and a recycling bulking facility.

Made Ground soils are not considered to be a suitable founding stratum. The underlying Alluvium Fan Deposits and Bedrock of Nantglyn Flags Formation Member recorded a number of SPT N-Value values ranging from 11 to >50 at depths ranging from 1.20m bgl to 10.00m bgl. The superficial deposits are noted to be laterally variable, and as such a consistent founding stratum should be targeted. The chosen foundation solution should target the underlying Gravel within the Alluvial Fan Deposits or the Nantglyn Flags Formation Member at depth.

A number of foundation solutions are deemed viable for the subject site including traditional strip, trench fill or pad footings, or where unsuitable materials are too thick, or loads higher, vibro-stone columns or mini-piles. This is primarily due to the variation within the shallow deposits (i.e. less than 2m bgl), and the variation in depth that the Gravels within the Alluvial Fan deposits were encountered across the development area. In general trench or strip foundations are not economical at depth of greater than 2mbgl. The chosen foundation solution should avoid transition between cohesive and granular, to minimise risk of differential settlement.

Ground improvement techniques may be viable at the subject site through the use of vibrostone/concrete columns, ideally where the underlying competent strata is the granular Alluvial Fan deposits. The subsequent foundations should be ’rafted strips’ – to avoid any differential settlement.

If a piled foundation solution is chosen, then Detailed pile designs (in terms of pile type, depths, and method of installation) would be dependent upon the required working loads and should be undertaken in conjunction with a reputable, specialist, piling contractor; ideally with local experience.

Once site layouts are known, and building types and structure form are decided, it would be prudent to undertake plot specific trial holes, to determine the most economical form of foundation and ground floor slab combination.

6.4 Chemical Attack on Construction Materials

With reference to guidance outlined within BRE document SD1 “Concrete in aggressive ground” (2005) (Ref 10), the test results returned for sulphate and pH values across the site correspond to a Design Sulphate Class (DS) of DS-1 and an Aggressive Chemical Environment for Concrete Class (AC) of AC-1.

6.5 Excavations

It is likely that the majority of the overlying Made Ground and superficial cohesive deposits could be excavated using a conventional backhoe excavator. Due to the presence of variable superficial deposits in places, some temporary support or battering back may be required for deeper excavations. Groundwater entry will likely occur and hence dewatering methods will be required for deeper excavations.

6.6 Groundwater

During the site investigation groundwater was encountered in all the deeper borehole locations except in BH102. The groundwater strikes were all encountered in the granular superficial Deposits and mudstone between 3.20m and 7.00m bgl. The post field work monitoring identified groundwater depth in the boreholes ranging from 2.71m to 4.30m bgl, within the granular superficial deposits and bedrock. Therefore, it is anticipated that significant groundwater ingress into shallow excavations is unlikely. However, following wet periods for example, shallow groundwater is more likely to be encountered, and dewatering methods such as sump pumping of groundwater ingress and other such methods may be required.

6.7 Obstructions

No evidence of buried structures or services was encountered during the site investigation. However, storage tanks and electricity substations currently occupy the site in the central area. It is anticipated that obstructions such as historic foundations, may require removal where they may influence future development including foundations, pavements and services as they may act as a hard spot creating differential settlement issues. Should any soft spots be found as a result of buried structures being removed then it is recommended that these be replaced with a suitable well compacted type 1 granular fill and proof rolled.

6.8 Pavement and Road Design

Based upon current design plans it is understood that the proposed developments within the site include internal roads for the site to be developed as business park.

The results of CBR undertaken on site between 0.046m and 0.8m within cohesive superficial deposits, ranged from 3.1% to 11.2%. Based upon these results and due to the variability of the Made Ground a design CBR of 3-5% should be achievable. However, similar conditions will need to be confirmed throughout site. If the formation is within areas recorded with soft to firm clays a lower CBR value of 2% may be assumed for preliminary design.

It is recommended that further testing be undertaken during earthworks at the proposed formation level (and specifically in superficial deposits if the Made Ground material is fully removed).

Cohesive material will be frost susceptible and this will need to be considered in pavement designs. Shallow/perched groundwater may also act as a constraint on pavement design. Areas of loose / soft spots and hard spots should be excavated and replaced with suitable materials.

6.9 Disposal and Re-Use of Materials

Pavement and services construction are likely to generate a significant volume of excess arisings. Early consideration should be given to how this material will be managed, re-used or disposed of. Any material proposed for re-use must be proven to be suitable for its intended use both geotechnically and geo-environmentally.

Excavated soils which are not re-used onsite will need to be disposed of offsite to an appropriately licenced waste disposal or treatment facility. Material identified as waste will need to be assessed to determine its waste classification and Waste Acceptance Criteria (WAC) testing undertaken to determine the potential waste disposal options.

Appropriate testing including compaction testing should be carried out to confirm the materials engineering suitability of the re-used material. Materials should be re-use in accordance with an engineering specification and compliance supported with verification testing.

Made Ground has been identified in all the hand dug trial pits in the north west of the site. Made Ground should be handled, managed and stored separately form natural inert arisings. Material which appears to be ‘clean’ should be segregated from material which appears to be contaminated. Arisings should not be used elsewhere on site as engineering fill unless they can be proven to be suitable for its intended use and not present a risk to controlled waters and human health. Refer to Chapter 9 for further information regarding the stockpiles along the northern part of the site.

6.10 Drainage

Sixteen Soakaways were completed across the site. The tests were undertaken in the cohesive and granular superficial deposits up to 1.2m in depth. No results appropriate to design are available for SA04, SA 05, SA06, SA 08 (undertaken within cohesive clays encountered at these locations) as the water level did not achieve the 75% and 25% effective depth mark. Therefore, this is indicative of very poor drainage conditions.

The effective depth was achieved in the other SAs (the majority of them are within granular Alluvial Fan deposits), however due to time constraints only one test cycle could be undertaken for most of them.

The soil infiltration rate for SAs ranged from 8 x 10^{-7} to 2.59 x 10^{-4} and may be described as having low to medium soakage potential, indicative of poor to good drainage conditions.

Based upon this information and taking due note of the variability of the superficial deposits, it may be possible for drainage systems to be implemented within the gravels. However, as demonstrated within the variation of results obtained, parts of the site would not be appropriate, especially in areas where a thickness of cohesive strata is present nor where relatively dense granular deposits have a higher proportion of fines. As a guide, greater than approximately 8 to 10% fines within an otherwise granular material significantly reduces the material’s permeability and soakage potential.

Therefore, it is considered that Sustainable Urban Drainage Systems (SUDS) is tentatively suitable for the proposed development, providing locations are able to target the more permeable gravels within the Alluvial Fan deposits. Further close spaced testing is likely to be required, and discussions held with NRW and Local Authority drainage team.

7 GENERIC QUANTITATIVE RISK ASSESSMENT

7.1 Basis of Assessment

As part of the intrusive investigation, thirty-four soil samples, comprising eight Made Ground and twenty-six natural soil samples were collected for geo-environmental testing, targeting areas where sources of contamination were identified during the desk study report (Ref 1), including BH104 targeting the potential USTs within the gated compound, as well as to provide a general site coverage. Geo-environmental testing was undertaken to understand the prevailing chemical regime and to determine whether potential risks would be introduced to site users and the water environment due to the proposed works.

The exploratory hole location plan is presented in Appendix B and the chemical testing results are presented in Appendix H.

7.2 Soil Screening Values (SSVs)

In accordance with current UK guidance and legislation, the analytical data has been compared to Generic Assessment Criteria (GAC) calculated using the CLEA (v1.6) model and using the exposure assumptions and toxicological input parameters prescribed in the Environment Agency Contaminated Land Reports (EA CLRs) for a Tier 1 screening assessment.

The soil screening values have been taken from LQM / CIEH Suitable for Use Levels (S4ULs) for Human Health Risk Assessment (Ref 11). In the absence of a S4UL for Lead, the Category 4 Screening Level (C4SL) has been adopted (Ref 12).

Considering the proposed development (i.e. covered in hardstanding), it is considered appropriate to adopt the screening criteria for a “Commercial/Industrial” end use for the initial screening process.

Screening criteria for 1%, 2.5% and 6% soil organic matter (SOM) have been developed to take account of the variation in organic content of the different soil types. Criteria relating to a SOM content of 1% have been adopted for this assessment based on soil organic matter tests undertaken on two soil samples which yielded results of 0.5% and 0.6% within the natural superficial deposits.

7.3 Human Health Risk Assessment

7.3.1 **Asbestos**

Eight samples of Made Ground and twenty-six samples of natural soils were screened for the presence of asbestos fibres. Asbestos was not detected in any of these samples.

7.3.2 **Chemical Testing**

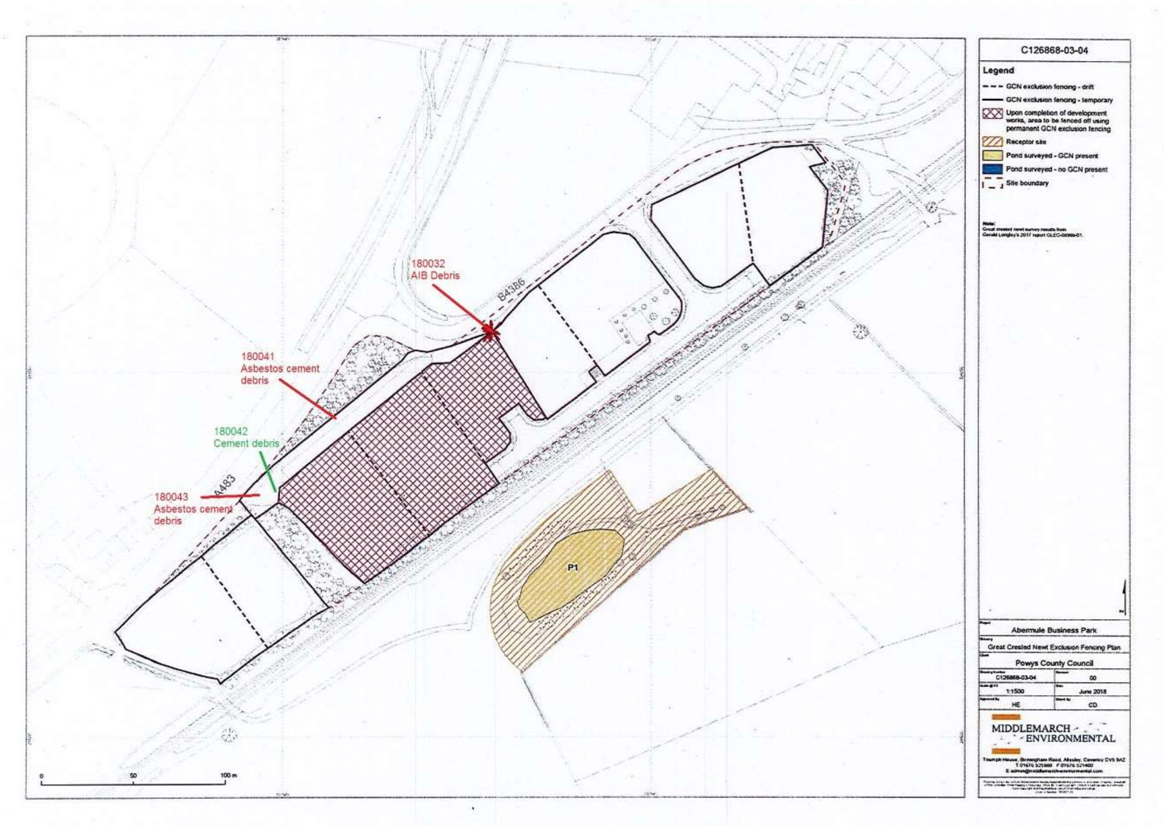
Chemical testing was undertaken on 26 samples of natural soils and 8 samples of Made Ground for Metals, Inorganic Compounds, Polycyclic Aromatic Hydrocarbons (PAH), Monoaromatics and Petroleum Hydrocarbons. No exceedances were identified against the relevant screening criteria.

7.3.3 Middlemarch Ecological Works - Asbestos Find/Testing

During ecological works undertaken at the subject site (the erection of the newt fencing), the ecological contractor encountered suspected pieces of ACM (Asbestos Containing Material). A further area of stockpiled material was also identified.

Consequently 4 samples were obtained from suspect material and were analysed for the presence of Asbestos. The lab data and sampling locations have been provided to Arcadis by PCC for the purpose of this assessment. The sample locations are detailed within the Middlemarch Location Plan in Figure 7.1.

Figure 7.1 – Middlemarch Sample Locations



Of the 4 samples, 3 positive detections were made and are detailed below;

- Sample ID: 180032 (Debris in soil under fencing line) – Chrysotile/Amosite Board.
- Sample ID: 180041 (Debris in spoil heap) – Chrysotile Cement.
- Sample ID: 180042(Debris in spoil heap) – Cement – No asbestos detected.
- Sample ID: 180043 (Debris in Spoil heap) – Chrysotile Cement.

Two Material Risk Assessment Reports have also been provided to Arcadis for review for samples 180041 & 180043. The material in both cases was classified as Low Risk within the Material Risk Assessment.

Both reports concluded; *"It is likely that this material has been placed on the site from elsewhere and therefore would not necessarily be found at depth. It would be advisable to undertake further ground investigations in the area to quantify the levels present in the spoil heap and whether there has been any migration into the ground below. Ground investigations for asbestos contamination should be designed, undertaken & evaluated by competent specialists who have an appropriate level of geo-environmental & asbestos qualifications, skills & experience"*, and recommended that the material should be ultimately *"Removed under controlled conditions" & "An assessment needs to be undertaken by a competent person in line with HSE Asbestos Essentials Task Manual Sheet A0 each time works are required."*

It should be noted that Arcadis has not been provided with the Material Risk Assessment for sample 180032 – which is likely to report higher risk material, as Chrysotile/Amosite Board tends to be more friable and ready to release fibres.

The Lab Reports and the Material Risk Assessment Reports as provided by PCC are also included within Appendix H.

Arcadis consequently undertook 8no hand dug pits (HTP01-HTP08) to de-lineate the asbestos findings of Middlemarch. No visual identifications of asbestos were made during the hand pitting investigation, and laboratory testing of 8 samples did not indicate the presence of asbestos.

Therefore, the previously identified asbestos within samples 180032, 180041 and 180043 appears to be localised, and asbestos does not appear to widespread throughout the stockpiled material. Although the sampling frequency is considered moderate there is still potential for asbestos to be present within the Stockpiles which was not identified.

As per the recommendations within the Material Risk Assessments, it would be prudent to remove and dispose of the impacted stockpiles to an appropriate waste disposal facility in accordance with current legislation duty of care requirements. As part of these works, it is recommended that appropriate health and safety and necessary mitigation measures are implemented to reduce any risks associated with materials potentially containing asbestos.

During the excavation of the stockpiles, a competent person, appointed by the Principal Contractor, will inspect the excavated arising for visible signs of asbestos. Should asbestos be observed during any excavations, quantification testing would be required to determine whether presence of asbestos at visible concentrations would classify the soil as hazardous for the purposes of off-site disposal.

It should be noted that the asbestos was only encountered during excavation works, and the site in its current undisturbed condition poses no significant risk to site operatives or the wider public from asbestos fibres. All detections of asbestos were located below ground level, and as such no contamination pathway between the source and receptor is present. Only once ground is broken during enabling and construction works would a feasible inhalation pathway be present.

7.4 Controlled Waters Risk Assessment

7.4.1 Water Quality Standards

One round of groundwater sampling was undertaken on 30th January 2019 from the deep standpipes installed from BH101 to BH106.

To assess the risk to controlled waters, the chemical testing results have been compared against appropriate Water Quality Standards (WQS). The WQS comprise Environmental Quality Standards (EQS) from the Water Framework Directive (Ref 13) which are considered to be protective of surface waters, and UK Drinking Water Standards (DWS) from the Water Supply Water Quality Regulations (Ref 14) which are considered to be protective of the underlying Secondary B Aquifer.

The EQS for copper, zinc and nickel are based on bioavailability. Site specific Predicted No Effect Concentrations (PNEC) have been calculated for copper, zinc and nickel based on the minimum measured concentration of calcium (88mg/l), minimum pH of 6.8 pH units and dissolved organic carbon of 1.29mg/l as a conservative (worst case) approach. The approach used is set out in the Water Framework Directive UK Technical Advisory Group guidance, Metal Bioavailability Assessment Tool (Ref 15).

There are no standard guideline values for TPH in groundwater in the UK. In the absence of a specific standard, 10 µg/l is considered to be a reasonable point of reference at which TPH could be of interest (former UK Drinking Water Standard).

The nearest surface water features are Reservoir and associated drainage around the Site <50m north-east, south-east, south and north-west of the Site and a significant surface water feature is the River Severn located 250m north east from site.

Based on the topography of the Site within a valley and the location of surface water features, it is considered that the direction of hydraulic gradient is likely to be south-east and north-west towards the depression of the valley. Also, one groundwater abstraction licence approximately 360.0m south west of the Site.

The groundwater chemical data is presented in Appendix H.

7.4.2 Groundwater Testing

Groundwater sampling was undertaken on the 30th January 2019 from all six boreholes. All samples collected was scheduled and screened against appropriate Environmental Quality Standards (EQS) and Drinking Water Quality (DWS).

7.4.2.1 Polycyclic Aromatic Hydrocarbons (PAHs) & Phenols

Six groundwater samples were tested for PAHs and phenols. The concentrations of PAHs and phenols were returned below the laboratory limit of detection in all samples analysed. These are therefore not considered to be contaminants of concern, based on one round of analysis.

7.4.2.2 Metals

Six groundwater samples were analysed for heavy metals. Exceedances recorded against the WQS have been tabulated within Table 7.1.

Table 7.1 – Exceedances of WQS in groundwater samples

Determinant	EQS (µg/l)	DWS (µg/l)	Number of exceedances	Locations	Samples exceeding EQS/ DWS
Copper	1	2000	6	BH101 (2.8 µg/l) BH102 (2.8 µg/l) BH103 (3.2 µg/l) BH104 (2.9 µg/l) BH105 (2.7 µg/l) BH106 (3.3 µg/l)	EQS
Nickel	4	20	2	BH102 (12.0 µg/l) BH106 (4.1µg/l)	EQS

A number of marginal groundwater exceedance for heavy metals were recorded against the stringent EQS criteria, including Copper and Nickel. The conservative Predicted No Effect Concentration (PNEC) calculated for copper is 3.96 µg/l, and for Nickel is 12.59 ug/l, therefore when considering the bioavailability of the metals, no exceedances are recorded.

7.4.2.3 BTEX and Total Petroleum Hydrocarbons

Six groundwater samples were tested for BTEX and TPHCWG. The concentrations were all returned below the laboratory limit of detection in all samples analysed. These are therefore not considered to be contaminants of concern, based on one round of analysis.

7.5 Ground Gas Risk Assessment

Four rounds of ground gas monitoring data undertaken on the 22nd and 31st January 2019, 7th and 14th February 2019 by Arcadis.

Concentrations of methane (CH4), carbon dioxide (CO2) and oxygen (O2) in % v/v and gas flow in litres per hour (l/h), and hydrogen sulphide (H2S) and Carbon Monoxide (CO) in parts per million (ppm) were taken during the visit. The groundwater levels were also measured.

Atmospheric pressure can impact ground gas flow. According to CIRIA C665 Assessing the risks posed by hazardous ground gases to buildings (Ref 16) "*at falling pressure increased emission rates occur as the gas increases in volume. Rising pressure causes air to flow into the ground, diluting soil gas concentrations. The rate of change in barometric pressure is also important. A swift drop over a small range has the potential to release a greater concentration of gas than a gradual drop over a greater pressure range*".

Atmospheric pressure data for the monitoring period was obtained from the Met Office Weather Observation Data website (Ref 19). The data was obtained from a monitoring station at Woodhouse Station, Harmon, located approximately 25 km south west of the site. Atmospheric pressure graphs corresponding to the monitoring rounds are shown in Appendix F.

A summary of the atmospheric pressure conditions for each monitoring round is as follows.

- 22nd January 2019: Medium and falling atmospheric pressure (1005 – 995 mb)
- 30th January 2019: Low and falling atmospheric pressure (995 – 992 mb)
- 7th February 2019: Low and rising atmospheric pressure (995 – 1005 mb)
- 14th February 2019: High and falling atmospheric pressure (1029 – 1026 mb)

7.5.1 General

Hydrocarbon vapour was assessed via Photo Ionisation Detection (PID) analysis of the soils during the site investigation and were recorded between <1 ppm. These levels are not at a level which is considered to pose a significant risk.

During the monitoring visits zero or very low negative rates of flow were measured in the monitoring wells. For the purposes of the assessment a flow rate of 0.1 l/h has been used where flow rates were recorded as zero. The exploratory holes encountered little or no putrescible materials within the Made Ground.

7.5.2 Gas Monitoring Results

Concentrations of carbon dioxide up to 5.60% v/v were recorded and a maximum concentration of methane of 0.80% v/v was recorded.

7.5.3 Ground Gas Assessment

A ground gas risk assessment has been undertaken to evaluate the risk posed to potential receptors of the proposed commercial development.

BS 8485(2019) +A1 guidance (*Assessing risk posed by hazardous gases to buildings*) (Ref. 17) has been used to inform the ground gas assessment.

The Q_{hg} is calculated using the following equation:
Q_{hg} = borehole flow rate (l/h) x gas concentration (%v)/100

The following parameters have been used in the equation:
CH_4 (max recorded concentration) = 0.8 % v/v
CO_2 (max recorded concentration) = 5.6 % v/v
Flow Rate (max steady flow rate) 0.1 l/hr

Q_{hg} CH_4: 0.8/100 x 0.1 = 0.0008 – **CS1 Low risk**
Q_{hg} CO_2: 5.6/100 x 0.1 = 0.0056 – **CS1 Low Risk**

With reference to BS8485 *Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings* (Ref. 17), the calculated Q_{hg} fall into the CS1 'very low risk' category.

Arcadis notes that 2 of the 6 monitoring wells (BH101 and BH106) were flooded (with groundwater above the level of the slotted response zone) during the post fieldwork monitoring period. Arcadis believes that the data obtained from the other wells during the monitoring period provides a sufficient dataset for the purpose of the proposed development, combined with the absence of significant ground gas sources (e.g. landfill material), and therefore the conclusions of the ground gas risk assessment detailed below are consistent with the CSM i.e. no ground gas source.

No elevated concentrations of Methane were recorded at the site above the CS1/CS2 threshold of 1.0%v/v.

Elevated concentrations of Carbon Dioxide were recorded at the site above the CS1/CS2 threshold of 5%v/v during a single monitoring visit on 14/02/2019 during a period of falling atmospheric pressure (although it should be noted that no elevated flow rates have been recorded at the site).

With reference to BS 8485 *Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings* (Ref. 17), if a carbon dioxide concentration greater than 5% v/v is encountered, consideration should be given to assigning a CS2 classification. In this instance, there is not considered to be source of ground gas such as landfill or waste on site, the 5% limit for carbon dioxide was only exceeded in one borehole (BH102) and the steady measured gas flow was low. Therefore, a **CS1- very low risk** is considered to be more appropriate.

No protective measures are therefore considered to be required for carbon dioxide and methane.

7.5.4 **Radon**

The site is located within a medium probability radon area (5 to 10% of homes are estimated to be at or above the action level). It is recommended that the level of protection required is confirmed with the Local Authority Building Control Department, and that will depend on the design of any structures and buildings including the inherent ventilation, it is likely that basic redon protection measures will be required. The BRE211 (2015) guidance document includes guidance on how the measures should be designed and what factors should be considered. It is recommended that a radon assessment is undertaken within the site to provide site specific information, which could potentially reduce the risk to the proposed development.

8 ENVIRONMENTAL RISK ASSESSMENT

Based on the assessment of soil, groundwater and gas monitoring data, the potential contaminant linkages identified in the Phase 1 Desk Study have been updated in accordance with CIRIA Guidance C552 (Ref 18), identifying the 'contaminant linkages' (contaminant source-pathway-receptor relationships) that may be present at the site based upon the laboratory analysis and monitoring completed.

8.1 Methodology

Risk assessment is the process of collating known information on a hazard or set of hazards (to determine the potential severity of any impact) along with details on the likelihood of impact on detailed receptors. Risks are generally managed by isolating the sensitive receptor or by intercepting or interrupting the exposure pathway, thus no pollutant linkages are formed and there is no risk. The following risk assessment focuses on the potential contaminants identified on the site in the context of the proposed development of the site.

CIRIA guidance C552 (Ref 18) states that the designation of risk is based upon a consideration of both:

- The likelihood of an event (probability) (considers both the presence of the hazard and the receptor and the integrity of the pathway).
- The severity of the potential consequence (considers both the potential severity of the hazard and the sensitivity of the receptor).

Under such a classification system the following categorisation of risk has been developed and the terminology adopted presented in Table 8.1.

Table 8.1 - Summary of risk likelihood classification categories

Term	Description
Very High Risk	There is a high probability that significant harm could arise to a designated receptor from an identified hazard at the site without appropriate remedial action or there is evidence that significant harm to a designated receptor is already occurring.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remedial action. Remediation works may be necessary in the short-term and are likely over the longer term.
Moderate Risk	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 such harm would be relatively mild. Some remediation work may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely, at worst, that this harm if realised would normally be mild. Any subsequent remediation works are likely to be relatively limited.
Very Low Risk	It is a low possibility that harm could arise to a receptor, but it is likely at worst, that this harm if realised would normally be mild or minor.

*Further risk assessment information is attached in Appendix J

8.2 Contaminant Sources

The following determinants have been identified as contaminants of concern:

- **Radon** - The site is located within a medium probability radon area (5% to 10% of homes are estimated to be at or above the action level).
- **Sulphates** - Design Sulphate Class (DS) of DS-1 and an Aggressive Chemical Environment for Concrete Class (AC) of AC- 1.
- **Asbestos** - Asbestos was detected within 3 sampling locations during the Middlemarch ecological works, within stockpiles located adjacent to the northwest boundary.

8.3 Summary of Potential Contaminant Sources

Following the preliminary CSM originally developed in the desk study report for the site (Ref 1) and based on the results of the ground investigation the conceptual site model can now be refined as detailed in Table 8.2.

8.4 Contaminant Linkages – Conceptual Model

The conceptual site model has been derived from the sources identified from the site investigation and assessment and the identified receptors and pathways.

Table 8.2 provides an assessment of each identified contaminant linkage (CL) to establish the potential risk to the sensitive receptors. The proposed development to commercial dwellings has been taken into consideration and the risk assessment has been developed based on this specific redevelopment and land use scenario.

Table 8.2 – Contaminant Linkages

PL No.	Source	Receptor	Pathway	Hazard Severity	Likelihood	Potential Risk and Mitigated Risk	Mitigation/ remedial action or further assessment
PL1	Radon	Human health site end users	Accumulation of ground gas in some areas	**Medium**	**Low likelihood** Radon reduced to unlikely with mitigation with basic protection as detailed in BRE211.	**Low** Reduced to very low risk with mitigation that is likely to be inherent in the design and form of the buildings itself.	Discussions should be held with the Powys County Council Building Control and Contaminated Land Officers. Further site-specific radon assessment may reduce the risk further.
PL2	Sulphates and pH in soils	Buildings, foundations and buried service structures	Direct contact	**Mild**	**Low likelihood** Reduced to very low with mitigation	**Low** Reduced to very low with mitigation.	Appropriate design of concrete to DS-1 and AC-1.
PL3	Asbestos in stockpiles	Human Beings Site users	Inhalation of airborne fibres	**Severe**	**Low likelihood** The risk from asbestos exposure is considered to only apply during the construction phase. The site in its current condition poses no significant risk to site operatives or the wider public from asbestos fibres. All detections of asbestos were made during ecological excavation works.	**Low/Very Low**	Enabling and construction works within the affected areas will be completed according to an Asbestos Management Plan, to ensure minimal risk to site operatives, members of the public and future site users. Impacted stockpiles are to be removed to an appropriate waste disposal facility. No pollutant linkage will remain once this is done.

8.5 Summary of Contaminant Linkages

Contaminant linkages have been assessed for the site as detailed in Table 8.2.

Asbestos has been detected within the 3 samples obtained during the Middlemarch ecological works from stockpiles along the north-western boundary area onsite, with the site in its current state the risk from the inhalation of asbestos fibres is low, a credible exposure pathway becomes viable when construction and enabling works commence. After offsite removal the contamination pathway (inhalation) between the source and the receptor will be severed.

The chosen Principal Contractor should assess the asbestos risk to the construction workers and future operational staff. As per the Material Risk Assessments provided to Arcadis, it would be prudent to remove and dispose of impacted stockpiles to an appropriate waste disposal facility in accordance with current legislation duty of care requirements. As part of these construction works to manage the risk to site users, visitors and the wider public, appropriate health and safety and necessary mitigation measures will be implemented to reduce any risks associated with materials potentially containing asbestos, this may include selective removal or hand picking of significant pieces of asbestos for offsite disposal.

Sulphates and pH in the ground are considered likely to present a low risk to buildings providing appropriate design of concrete of AC-1 and design sulphate class DS-1.

The site is located within a medium probability radon area (5 to 10% of homes are estimated to be at or above the action level). It is recommended that the level of protection required is confirmed with the Local Authority Building Control Department, and that will depend on the design of any structures and buildings including the inherent ventilation, it is likely that basic redon protection measures will be required. The BRE211 (2015) guidance document includes guidance on how the measures should be designed and what factors should be considered. It is recommended that a radon assessment is undertaken within the site to provide site specific information, which could potentially reduce the risk to the proposed development.

9 WASTE ASSESSMENT

9.1 HazWaste Online

EU Directives, UK Government policy and regulations require that construction waste to landfill is minimised. Where possible (of benefit to the planned development) all excavation arisings as a result of the proposed development should be re-used onsite as either engineering fill or landscaping fill. To comply with current legislation and regulations any re-use of excavated materials within the site could be undertaken via either of two routes – Environmental Permitting (formerly Waste Exemptions); or in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice. Whichever route is chosen soils must be proved certain to be used and demonstrated to be "suitable for use" in the area to be deposited. A Materials Management Plan (or method statement) should be produced during the design phase for the scheme.

Should the excavated material not be required or be physically or chemically unsuitable for use as backfill or as other engineering fill within the site, the excess material would be Waste and will need to be removed off site. If only disposal to landfill was an option, further Waste Acceptance Criteria (WAC) testing and separation of waste for off-site disposal may be required to ensure accurate classification of material to reduce wastes sent to non-hazardous and hazardous landfill. Natural excavated arisings would be classified as inert if segregated from Made Ground materials. Inert waste would be the least expensive for disposal and the material could be more easily reused.

Arisings should be stored in an appropriate manner to prevent leaching of contaminants from the material and with suspected inert, non-hazardous and hazardous material stored separately where appropriate to avoid cross contamination.

Under European Council Directive (91/689/EC), known as the Hazardous Waste Directive, a list of all wastes, hazardous or otherwise has been compiled known as the European Waste Catalogue (EWC, 1994, Commission Decision 94/3/EC). A revised EWC was released in 2002 under Commission Decision 2000/532/EC. This commission decision has been amended in turn by Commission Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC. The EWC is a catalogue of all wastes, grouped according to generic industry, process or waste type. It differentiates between non-hazardous and hazardous.

9.1.1 Stockpile Samples

The chemical testing results from the 8 stockpile samples represented by HTP01 to HTP08 (Made Ground) were screened using HazWaste online software to determine whether the stockpiles represented by these samples would be suitable for disposal at a non-hazardous or inert landfill site. It is understood that the samples analysed are representative of the whole stockpiles.

The List of Wastes Code used in the assessment was 17.05.04; soils and stones other than those mentioned in 17.05.03 (for non-hazardous material), whilst the code for hazardous material would be 17.05.03.

The initial screen of the results indicated that 3 of the samples could be potentially hazardous due to the concentration of sum TPH C6-C40 (16 – 35 mg/kg) which exceeded the concentration threshold for HP3

Flammable. However, this classification has been revised to non-hazardous with regard to TPH as the concentration of sum TPH required to be flammable in soil is >1000 mg/kg and no evidence of free phase hydrocarbon product was identified on the exploratory hole logs. Where a substance has a HP3 classification, it is assumed that enough material is present for ignition to occur, i.e. that the chemical is in its raw from, not within the soil matrix. In the case of soils, ignition is unlikely at concentrations <1000 mg/kg. However, this would need to be confirmed by the operator of the landfill where the waste is intended to be taken.

The 8 samples were therefore classified as non-hazardous based on the determinants analysed.

Waste Acceptance Criteria (WAC) testing should be undertaken on arisings represented by samples of non-hazardous waste to inform the potential disposal options; either at a non-hazardous or inert landfill site.

It should be noted that the landfill operator may undertake a visual inspection of the arisings at the site entrance and may require further testing prior to acceptance of the waste should the visual appearance of the waste differ from the written description of the waste (included on the exploratory hole logs within Appendix D).

It should be noted that the Arcadis testing did not identify the presence of Asbestos. Asbestos has been identified onsite during the Middlemarch ecological works, and its presence may lead to a potentially hazardous classification.

9.1.2 Borehole and Trial Pit Samples

8 samples of natural soil from Trial pits TP101 – TP104 in the south western part of the site were screened using HazWaste Online software to determine whether any excavated materials would be likely to be classified as hazardous or non-hazardous waste, if they were to require offsite disposal as waste.

The List of Wastes Code used in the assessment was 17.05.04; soils and stones other than those mentioned in 17.05.03 (for non-hazardous material), whilst the code for hazardous material would be 17.05.03.

The initial screen of the results indicated that 2 of the samples (TP102 0.0-0.2 m bgl and TP103 0.0-0.3 m bgl) could be potentially hazardous due to the concentration of sum TPH C6-C40 (11 – 14mg/kg) which exceeded the concentration threshold for HP3 Flammable. However, this classification has been revised to non-hazardous with regard to TPH as the concentration required to be flammable in soil is >1000 mg/kg and no evidence of free phase hydrocarbon product was identified on the exploratory hole logs.

The 8 samples were therefore classified as non-hazardous based on the determinants analysed. WAC testing should be undertaken on arisings represented by samples of non-hazardous waste to inform the potential disposal options; either at a non-hazardous or inert landfill site.

In order to secure disposal at a landfill site, a waste management facility may require testing of the actual material that is to be disposed of offsite prior to acceptance. There is no obligation on a landfill operator to accept the waste.

The results of the hazwaste assessment are attached as Appendix I.

9.2 Estimated Waste Volumes

Table 9.1 presents the estimated volumes of the stockpiles situated along the northern boundary of the site. The piles have been assessed as 4 piles for the purposes of the calculations as shown on Figure 9.1 below. The volume calculations do not take account of bulking upon excavation. There are other piles of waste that have not been sampled nor estimates of their volumes made (Plate 1).

Figure 9.1 - Locations of Stockpiles

Table 9.1 - Estimated Waste Volumes

ID	Length (m)	Width (m)	Height (m)	Estimate of Volume (m^3)	Approx. Shape	Description	Associated Samples
1	15	2	0.5	23.55	half cylinder (narrower at one end and wider at the other)	fill material, which includes roadstone and concrete slabs (Plates 2 and 3)	HTP05, 07 and 08
2	30	3	1.2	105.98	half cylinder	predominantly what looks like natural CLAY (Plates 4 and 5)	HTP01 & HTP02
3	15	3	1.2	52.99	half cylinder	mix of clay with old bitumen seal, roadstone and brick (Plates 6 and 7)	HTP03 & HTP04
4	5	5	1.5	12.50	square based pyramid	topsoil mixed with burnt plastic, glass, roadstone, metal and lots of other stuff (Plates 8 and 9)	HTP06

Plate 1	Plate 2	Plate 3
		
Plate 4	**Plate 5**	**Plate 6**
		
Plate 7	**Plate 8**	**Plate 9**
		

10 CONCLUSIONS AND RECOMMENDATIONS

A ground investigation was undertaken to target potential areas of concern highlighted within the Arcadis Desk Study Report (Ref 1). The purpose of this report is to interpret the ground investigation data and to assess the nature and extent of any contamination on the existing site, in order to determine the potential risk to the site / users. This is in support of the planning condition for business units and a recycling bulking facility at Abermule Business Park.

10.1 Geo-Environmental Conclusions

No evidence of widespread significant contamination was identified, and specific remedial actions are not considered to be necessary to the entire site. The primary concern relates to 3 asbestos identifications made during the Middlemarch ecological works.

- ***Soil Samples*** - Samples recovered from Made Ground and Natural superficial deposits did not show any elevations against their respective screening values for the commercial/industrial end-use.
- **Asbestos** - Asbestos has been identified within Made Ground Deposits within the stockpiles and poses a potential risk to construction workers and other site users during the construction phase. It is proposed to remove the impacted stockpiles to an appropriate waste disposal facility. Once removed offsite the contamination pathway is severed and no further remedial action will be required.

  An Asbestos Management Plan will be developed by the chosen Principal Contractor and their Specialist Sub-Contractor(s) thus enabling the construction work to be completed to with the minimum risk to workers health. The Plan will include mitigation measures to ensure minimal risk to site operatives, members of the public and future site users. The agreed remediation activity will be undertaken by a specialist contractor under the overall supervision of the chosen Principal Contractor. Documentary evidence of any asbestos removed will be provided in the form of contemporaneous records, including proof of appropriate off-site disposal. The documentary evidence will again be presented within A Remediation Verification report.
- ***Ground Gas*** – Based on the calculated GSVs for the ground gas monitoring data, the site is classified as CS1. No special measures are deemed necessary for the proposed development.
- ***Radon*** - The site is located within a medium probability radon area (5% to 10% of homes are estimated to be at or above the action level). It is recommended that the level of protection required is confirmed with the Local Authority Building Control Department, it is likely that basic protection measures will be required. It is recommended that a radon assessment is undertaken within the site to provide site specific information, which could potentially reduce the risk to the proposed development.
- ***Groundwater*** - No groundwater contaminants of concern were recorded within the samples.
- ***Waste*** - 8 Stockpile samples (Made Ground) and 8 Borehole and Trial pit samples (natural soil samples) were screened for hazwaste online. All samples tested were consistent with a classification

of non-hazardous – it should be noted that Arcadis testing did not identify asbestos – the presence of asbestos may lead to a potentially hazardous classification.

10.2 Geotechnical Conclusions

- ***Ground Conditions*** - Ground conditions across the site were variable comprising limited Made Ground of both cohesive and granular deposits to the north west of the site up to 0.40m thick overlying variable amount of sandy gravelly silt and sandy gravelly clay to a depth of 4m and sandy clayey gravel and gravelly sand to a depth of 10m. Bedrock (Nantglyn Flags Formation) is recovered as weak dark grey mudstone in tow boreholes.
- ***Groundwater*** - Groundwater strikes in the boreholes were noted at 3m and 8.5m within the granular superficial deposit and bedrock. The post fieldwork monitoring of the groundwater levels was consistent with the readings taken during the site investigation. The levels ranged from 2.71m to 4.30m over all three monitoring rounds. Higher groundwater can be anticipated, particularly after wet periods and flood events.
- ***Excavations*** - It is likely that the majority of the overlying Made Ground and superficial cohesive deposits could be excavated using a conventional backhoe excavator. Due to the presence of variable superficial deposits in places, some temporary support or battering back may be required for deep excavations. Groundwater entry will likely occur and hence dewatering methods will be required for deeper excavations.
- ***Foundations*** - Made Ground soils are not considered to be a suitable founding stratum. The underlying Alluvium Fan Deposits and Bedrock of Nantglyn Flags Formation Member recorded a number of SPT N-Value values ranging from 11 to >50 at depths ranging from 1.20m bgl to 10.00m bgl. The superficial deposits are noted to be laterally variable, and as such a consistent founding stratum should be targeted. The chosen foundation solution should target the underlying Gravel within the Alluvial Fan Deposits or the Nantglyn Flags Formation Member at depth.

  A number of foundation solutions are deemed viable, including traditional foundations, vibro-stone columns or mini piles for higher loadings, or to overcome constraints due to the variation in depth that the Gravel within the Alluvial Fan deposits are encountered across the development area.

  Plot specific investigation, based on final layout and building types is recommended to aid selection of the appropriate foundation and ground slab configuration.
- ***Concrete Classification*** - Below ground concrete should be designed to meet the specifications of DS-1, AC-1.
- ***Soakaway Testing*** - Soakage conditions are highly variable. Clay and clayey granular deposits recoded very poor soakage and are unsuitable. Based upon the test data it may be possible for drainage systems to be implemented within the gravels. However, as shown parts of the site would

not be acceptable in the more impermeable cohesive deposits present. Further testing is recommended , and discussions held with NRW and the Local Authority drainage team. Additional testing has been undertaken and will be reported as an addendum.

11 REFERENCES

1.) Arcadis Consulting, Abermule Business Park. Phase 1 Geo-Environmental Desk Study, December 2017. 0001-UA006590-26-UP32R-01.

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

3.) BS 5930. 2015. Code of practice for ground investigations. British Standards Institution.

4.) BS 10175+A2. 2017. Investigation of potentially contaminated sites – Code of practice. British Standards Institution.

5.) Building Research Establishment. 2016. Soakaway Design. BRE Digest DG365. BRE, Watford.

6.) BS 1377. 1990. Method of test for soils for civil engineering purposes. Published in 9 Parts. British Standards Institution.

7.) NHBC Standards, 2011. Part 4 – Foundations.

8.) Stroud and Butler 1975. The Standard Penetration Test and the Engineering Properties of Glacial Materials, 1975 Conf. of the Midlands Geotechnical Society.

9.) Peck, Hansen and Thornburn, Foundation Engineering, Wiley, 2nd ed., 1974.

10.) BRE Special Digest, 2005. Concrete in aggressive ground, Special Digest 1:2005, 3rd Edition, The Concrete Centre, BRE Construction Division.

11.) Land Quality Management/ Chartered Institute of Environmental Health S4ULs for Human Health Risk Assessment, Land Quality Press, Nottingham. “Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3223. All rights reserved.

12.) Contaminated Land: Applications in Real Environments (CL:AIRE), 2014. Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination - SP1010.

13.) The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

14.) The Water Supply (Water Quality) Regulations 2016. SI 2016/614.

15.) Water Framework Directive UK Technical Advisory Group, River and Lake Assessment Method, Specific Pollutants (Metals) Metal Bioavailability Assessment Tool (M-BAT). July 2014.

16.) CIRIA C665. Assessing the risks posed by hazardous ground gases to buildings. 2005.

17.) British Standard BS8485:2019+A1. Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

18.) CIRIA C552 – Contaminated Land Risk Assessment – A guide to good practice. 2001.

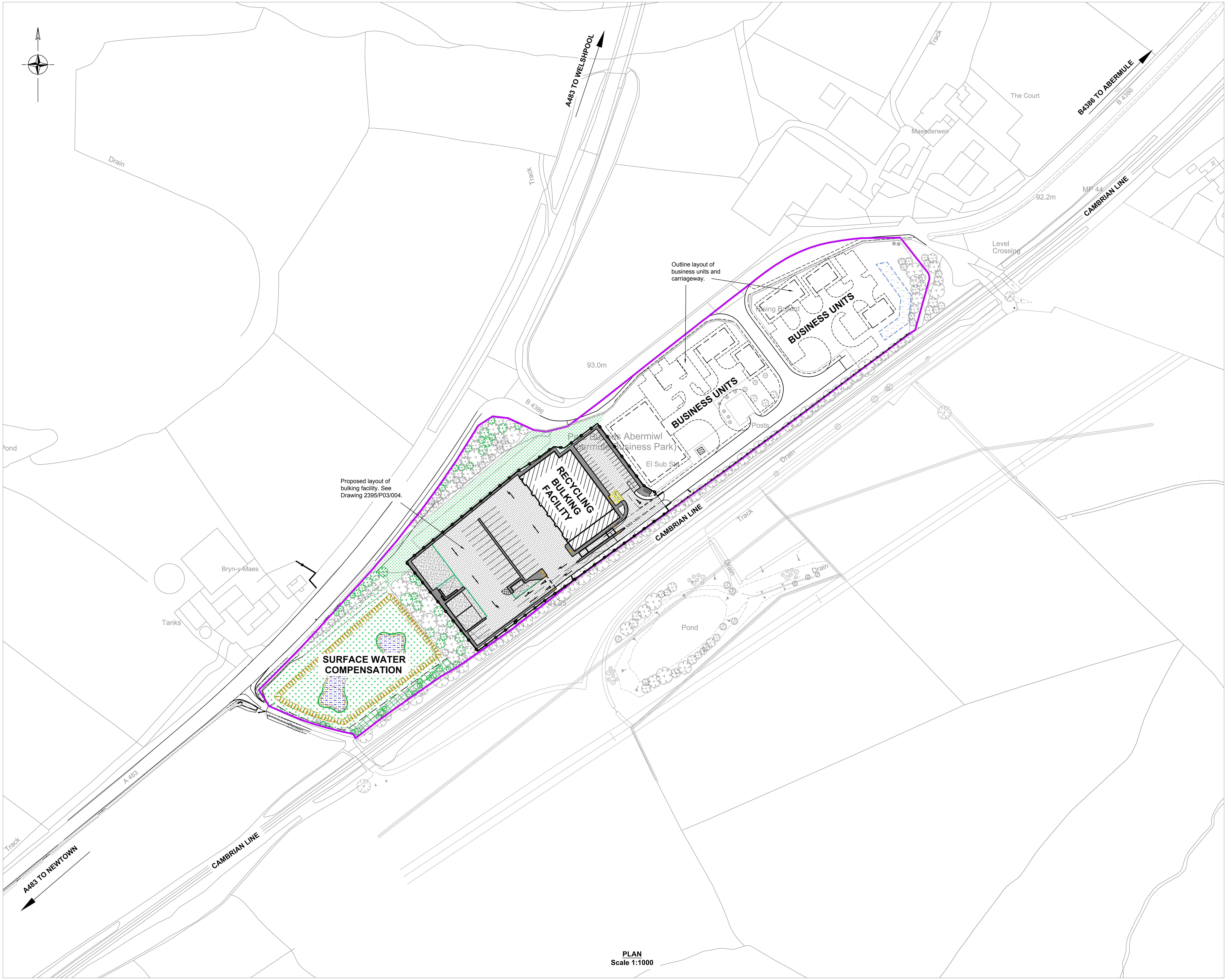
19.) The Met Office Weather Observation Data. Surface Pressure Data [online]. Available at: https://wow.metoffice.gov.uk Accessed March 2019.

APPENDIX A

Proposed Development Plan

Site Location Plan

Existing Site Layout



PLAN
Scale 1:1000

Notes

1) Development to be in accordance with Abermule Business Park Development, Phasing Plan.

ISSUED FOR PLANNING

KEY

━ Business Park Boundary.

Rev	Date	Description	By	Chkd
A	31/05/18	Additional palisade fence adjacent to railway. Addition of Note Re phasing plan.	LMC	DB

Amendments

Engineering Design Services

CSCC•CWIC

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Mid: County Hall, Spa Road East, Llandrindod Wells, Powys, LD1 5LG
South: Neuadd Brycheiniog, Cambrian Way, Brecon, Powys, LD3 7HR

Project
Abermule Business Park Development.

Drawing Title
Proposed Site Layout - Business Park.

By LMC
Checked DB
Date 13/03/18
Scale at A1 1:1000

Project Number H2395
Drawing Number 2395/P03/003
Revision A

ACS REGISTRARS Quality Assurance ISO 9001 UKAS MANAGEMENT SYSTEMS 229
ACS REGISTRARS Health & Safety OHSAS 18001 UKAS MANAGEMENT SYSTEMS 229

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Last saved : - 05/06/2018

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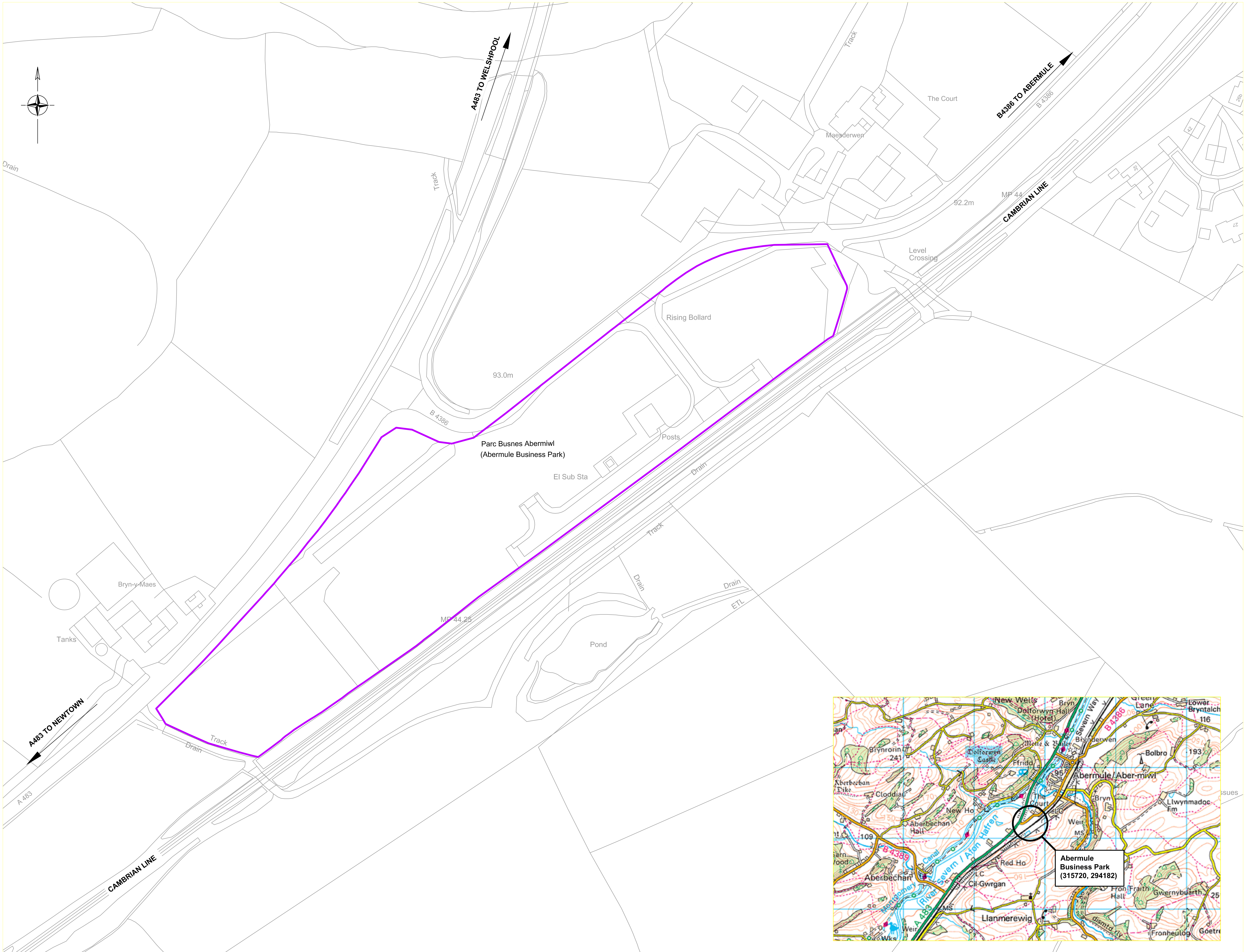

PLAN
Scale 1:1000

OS LOCATION PLAN
Scale 1:25000

Notes

KEY

▬	Survey Boundary.

Amendments

Rev	Date	Description	By	Chkd
B	04/10/17	Inclusion of additional area within overall survey boundary. Addition of grid reference.	LMC	SK
A	25/04/17	Extended survey area added.	LMC	DB

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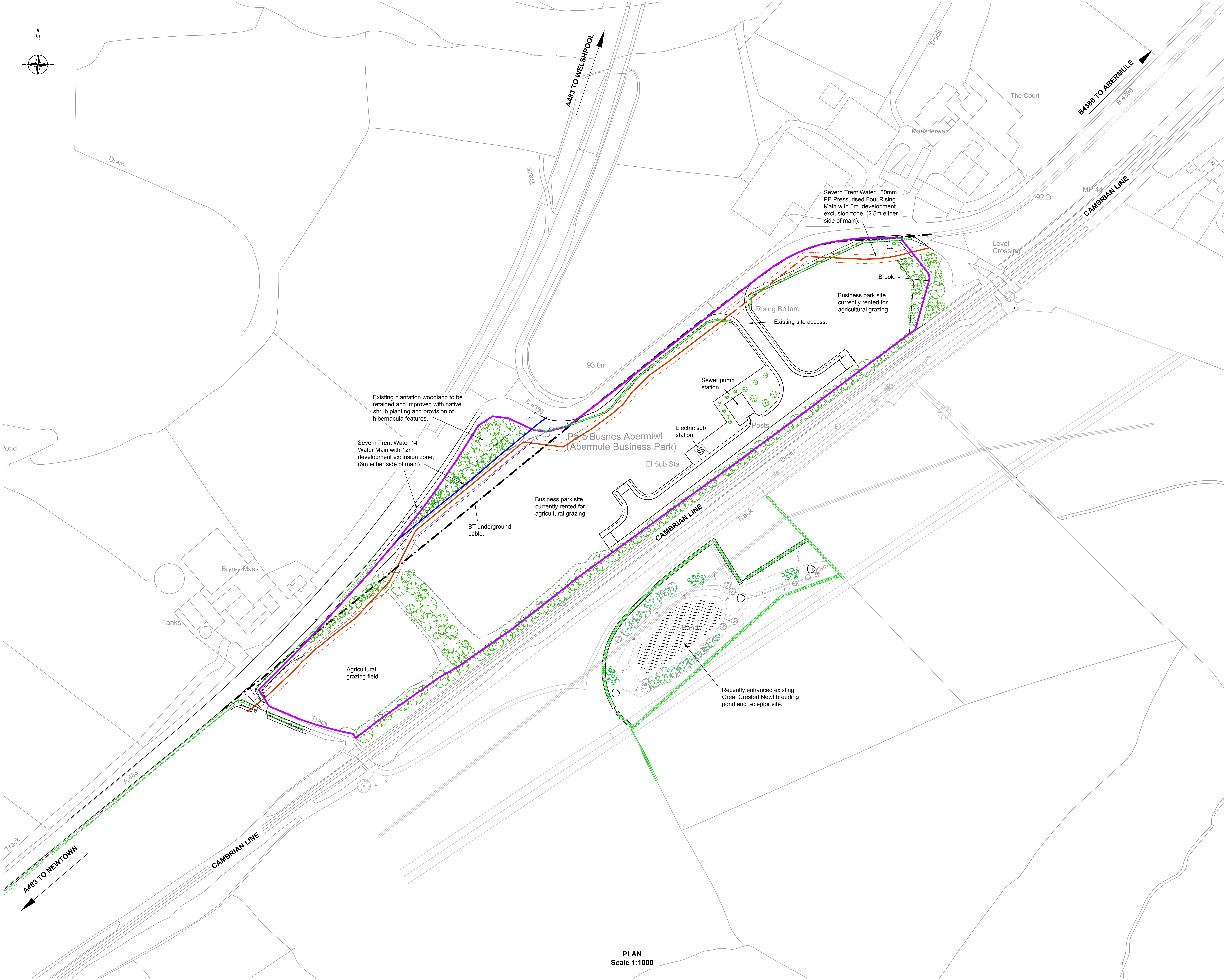
Project
Abermule Business Park Development - Newtown Bulk Recycling Facility.

Drawing Title
Survey Boundary and Location Plan.

By LMC
Checked DB
Scale at A1 1:1000
Date 08/03/17

Project Number H2395
Drawing Number 2395/M01/001
Revision B

Drawing Filename : - 2395-M01 - Survey Boundary and Location Plan Rev B.dwg
Last saved : - 04/10/2017



Severn Trent Water 160mm PE Pressurised Foul Rising Main with 5m development exclusion zone, (2.5m either side of main).

Business park site currently rented for agricultural grazing.

Existing plantation woodland to be retained and improved with native shrub planting and provision of hibernacula features.

Severn Trent Water 14" Water Main with 12m development exclusion zone, (6m either side of main).

Business park site currently rented for agricultural grazing.

Recently enhanced existing Great Crested Newt breeding pond and receptor site.

PLAN
Scale 1:1000

Notes

ISSUED FOR PLANNING

KEY

▬	Business Park Boundary.
▬	14" Water Main (STW).
-·-·	Development Exclusion Zone, Water Main.
▬	Foul Rising Main (STW).
-·-·	Development Exclusion Zone, Rising Main.
-·-·	Underground Cable (BT).

Rev	Date	Description	By	Chkd

Amendments

Engineering Design Services

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South: Neuadd Brycheiniog, Cambrian Way, Brecon, Powys, LD3 7HR

Project
Abermule Business Park Development.

Drawing Title
Existing Site Layout.

By LMC
Checked DB
Date 13/03/18
Scale at A1 1:1000

Project Number H2395
Drawing Number 2395/P03/002
Revision

ACS REGISTRARS Quality Assurance ISO 9001 UKAS MANAGEMENT SYSTEMS 229
ACS REGISTRARS Health & Safety OHSAS 18001 UKAS MANAGEMENT SYSTEMS 229

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Last saved : - 26/04/2018

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APPENDIX B

Exploratory Hole Location Plan

Existing Rising Main
Site Boundary
☐ SA Percolation Test Location
○ CBR CBR Test Location
⊕ BH Borehole
▨ TP Trial Pit
▨ HTP Hand Dug Trial Pit

No.	Revision/Issue	Drawn	Checked	Date
1	DRAFT	MS	GF	07/03/2019

Powys County Hall
Spa Road East
Llandrindod Wells
Powys
LD1 5LG
http://www.powys.gov.uk/

Project

ABERMULE BUSINESS PARK

Drawing Title

EXPLORATORY HOLE PLAN

Date
07/03/2019

Scale
1:500

Sheet
1

Drawing No. 10026414-ARC-XX-XX-DR-ZZ-P1-EHP

APPENDIX C

Standard Procedures

C0 General Principles

This ground investigation was undertaken in general accordance with the principles of BS EN 1997-1 [1] and BS EN 1997-2 [2] and the advice given in BS5930:2015 [8], which, provides complimentary guidance on the application of the primary standards. Where the requirements of the ground investigation specification differ from these primary standards, the investigation methodology was adapted as required and specific notes regarding methods and techniques employed were made in the appropriate report sections.

C1 Buried Services

Service clearance was undertaken in accordance with Arcadis' *Safety, Health and Environment (SHE) Standard – Avoidance of Sub-Surface Hazards and Structures Standard.* This document details the methods and safe working practices used to undertake excavations safely. Prior to breaking ground, services plans were consulted, and the area scanned using a Cable Avoidance Tool (CAT) with detected signals marked on the ground. For all investigation positions, other than for machine excavated trial pits, hand excavated inspection pits are completed to 1.20 m bgl prior to the use of drilling and boring plant.

C2 Sampling Requirements

The selection of sample types and sampling techniques has been chosen to take account of the soil fabric, size and quality of sample required based on whether the soils mass properties or the intact material properties of the ground are to be determined in subsequent laboratory tests. BS EN ISO 22475-1 [4] describes three generic sample groups that are:

a. Sampling by drilling. Generally, a disturbed sample recovered from the drilling tool or digging equipment, typically meeting Class 3 to Class 5 requirements, with the recovered material being stored in bulk bags or sealed jar or tub containers.
b. Sampling by sampler. Typically referred to as open tube or drive sampling in which a tube with a sharp cutting edge is driven into the ground either by static thrust or dynamically driven to give a relatively undisturbed sample of Class 1 or Class 2 but may result in a Class 3 sample.
c. Block sampling. Cylindrical large diameter samples or cuboid hand-cut samples usually relatively undisturbed Class 1 and Class 2.

The open-tube sampling equipment used on the site was of a type and design that conformed to BS EN ISO 22475-1. For the purpose of this ground investigation block sampling was not required.

Generally, samples were assessed on site and any unexpected deterioration in sample quality was reported to the ground engineer by the lead drilling technician.

Sufficient and representative samples were taken to allow the geo-mechanical properties of the ground to be adequately characterised and to enable the sequence of soil strata to be described by an engineering geologist or geotechnical engineer.

Where samples have been taken for chemical tests the drilling method attempted to adopt dry drilling over the sampling range that generally was achieved by the use of drill casing to separate and isolate the upper soil layers and exclude groundwater. Cross-contamination was further reduced by regular cleaning of sampling tools. Sample integrity was maintained by sealing samples immediately on collection and storing the samples in a temperature controlled cool box. Samples were despatched from the site at the end of the shift on which they were collected or as required in the project specification. Details of best practice storage, preservation and decontamination measures undertaken are presented in the following table:

Task	Soil	Groundwater	Ground Gas
Storage	Glass jars and vials supplied by the laboratory were used for the collection of soil samples to be analysed for volatile compounds. Plastic one-litre tubs were used to collect soil samples for metals analysis.	Glass vials supplied by the laboratory were used for the collection of samples to be analysed for volatile compounds. Samples to be analysed for lower volatility compounds were stored in laboratory prepared glass bottles.	1.4L Canisters supplied by the laboratory.
Preservation	Filling of sample containers as far as practicable to minimise headspace and low storage temperature to minimise the potential for volatilisation and biodegradation of petroleum hydrocarbon compounds prior to analysis.		Not required.
Decontamination	Disposable gloves were worn and changed between sample collection to prevent cross-contamination.	Groundwater samples were collected using dedicated disposable tubing / bailers, that were changed between monitoring well locations in order to prevent cross-contamination.	Disposable gloves were worn and changed between sample collection to prevent cross contamination.
Transport	Samples stored in dedicated sample boxes provided by the laboratory. Sample details and analytical requests were recorded on the laboratory chain of custody form included with samples, prior to dispatching to laboratory for analysis. Samples were dispatched to the laboratory on the day of sampling.		

C3 Sample Description

Sample description was undertaken by the Arcadis site geologist in accordance with BS 5930: 2015. The descriptions of the individual samples were used to identify the sequence of strata at the exploratory hole location and from which representative exploratory hole logs were drawn.

C4 *In Situ* Testing

In situ geotechnical tests were undertaken taking account of the investigation scope and requirement to attain the appropriate parameters required in the geotechnical design. The tests were undertaken in accordance with the requirements of the relevant parts of BS EN ISO 22476 [5, 6, 7] and other methods as follows:

Dynamic probing

Dynamic probes were undertaken in general accordance with BS EN ISO 22476-2, BS EN 1997-2 and the national annex to BS EN 1997. The tests were generally made using the super-heavy DPSH-B configuration of the apparatus, however, it should be noted that the basis for selection of the type of dynamic probe should be a consideration of the driving energy in relation to the type of ground conditions anticipated at the site.

Where adequate correlation with borehole data is available an interpretation of the estimated soil type may be made, however, it should be noted that probing can give unreliable results in mixed soils.

Standard penetration testing

Standard penetration tests were carried out in accordance with BS EN ISO 22476-3, BS EN 1997-2 and the national Annex to BS EN 1997-2. The test records are presented on the borehole logs as blow counts for each increment with the N-value as the total number of blows of the four main test increments.

Where the N-value exceeds a total of 50 blows, the test reports the penetration in millimetres for the last test increment recorded, and the N value is indicated as greater than 50,

e.g. 4,5/12,14,18, 6 for 10 mm

indicates that the seating blows (4 and 5) were completed and that the test terminated in the 4th increment after penetrating 10 mm.

Where the seating blows exceeded 25 blows for less than 150 mm; the test was stopped, and the rods remarked after which, the main drive was continued. The test is then reported as the number of blows in each seating drive for the recorded penetration with the results of the main drive given as above,

e.g. 14/11 for 45 mm/12,14,16, 8 for 10 mm.

In certain circumstances where groundwater in-flow may affect the test, particularly in fine sand or silt, low SPT blow counts may be recorded. Where the SPT blow count was very low, N values of 5 or less, the test was, at the discretion of the site engineer, continued for a further 300 mm, recording blows for each 75 mm increment. **This is not** a standard penetration test value, it does however give an indication of potential disturbance to the ground.

California Bearing Ratio

In situ California Bearing Ratio (CBR) tests were carried out in general accordance with the requirements of BS 1977-9:1990, 4.3 [10]. The CBR is a strength test that is generally concerned with pavement design and the control of pavement sub grade construction, as such it is a test that is most suited to soils with a maximum particle size not exceeding 20 mm.

TRL Dynamic cone penetrometer

The TRL DCP is a device developed by the TRL to assess the California Bearing Ratio of road sub-base by correlation. As such the device was developed for use in a limited range of soil types. The test has no formal standard the test methodology and its use are discussed in TRL report PR IN 277-04 [11].

C5 Data Transfer Format

The data collated during the ground investigation has been organised and managed using the “AGS data format” that allows data transfer between different disciplines and organisations in accordance with BS 8574 [9].

C6 References

1. BS EN 1997-1. 2004. Eurocode 7: Geotechnical Design. Part 1 General Rules. British Standards Institution, 2013 (revised text).
2. BS EN 1997-2. 2007. Eurocode 7: Geotechnical Design. Part 2 Ground Investigation and testing. British Standards Institution, 2010 (revised text).
3. BS EN ISO 22282-1:2012. Geotechnical investigation and testing – Geohydraulic testing. Part 1: General Rules. British Standards Institution.
4. BS EN ISO 22475-1. Geotechnical investigation and testing – Sampling methods and groundwater measurements – Part 1 Technical principles for execution.
5. BS EN ISO 22476-1:2015. Geotechnical investigation and testing – Field testing – Part 1: Electrical cone and piezocone test. British Standards Institution
6. BS EN ISO 22476-2. Geotechnical investigation and testing – Field testing – Part 2: Dynamic Probing. British Standards Institution
7. BS EN ISO 22476-3 2005. Geotechnical investigation and testing – Field testing – Part 3: Standard penetration test. British Standards Institution
8. BS 5930: 2015. Code of practice for ground investigation. British Standards Institution.
9. BS 8574. Code of practice for the management of geotechnical data for ground engineering projects.
10. BS 1377-9. 1990. Methods of test for soils for civil engineering purposes. Part 9: In-situ tests. British Standards Institution.
11. TRL. 2004. Dynamic cone penetrometer tests and analysis. TRL Technical Report PR IN 277-04. Transport Research Laboratory, Crowthorne, England.

APPENDIX D

Exploratory Hole Logs

Soakaway Results

ARCADIS Percussive Borehole Log

BH101

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.03**	**10/01/2019**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315670.18**	**294168.74**	**11/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			PROGRESS	
Depth	Type/ No.	Depth	Type/ No.	Results	Date Time	Casing Water
0.00 - 0.50 0.00 - 0.50	B2 ES1				10/01/2019 08:00	
0.50 - 1.20 0.50 - 1.20	B4 ES3	0.50	PID	<1ppm		
1.20 - 1.65 1.20 - 1.65	B6 D5	1.20 1.20	SPT(S) PID	N=32 (5,5/8,9,8,7) <1ppm		
2.00 - 2.45 2.00 - 2.45	B8 D7	2.00	SPT(S)	N=47 (4,9/9,12,14,12)		
3.00 - 3.45 3.00 - 3.45	B10 D9	3.00	SPT(S)	N=32 (7,7/9,8,7,8)		
4.00 - 4.45 4.00 - 4.45	B12 D11	4.00	SPT(S)	N=28 (3,6/3,11,7,7)		
5.00 - 5.45 5.00 - 5.45	B14 D13	5.00	SPT(S)	N=22 (4,7/5,2,3,12)		
6.00 - 6.45 6.00 - 6.45	B16 D15	6.00	SPT(S)	N=47 (7,7/11,11,10,15)		
7.00 - 7.45 7.00 - 7.45	B18 D17	7.00	SPT(S)	N=41 (4,9/9,11,10,11)		
8.50 - 8.95 8.50 - 8.95	B20 D19	8.50	SPT(S)	N=46 (9,9/14,12,8,12)		
		10.00	SPT(S)	N>50 (25 for 1mm/50 for 2mm)	11/01/2019 10:00	

STRATA Description	Depth (Thickness)	Level
Grass over soft dark greyish brown slightly sandy gravelly SILT. Gravel is subangular to subrounded fine to coarse of siltstone.	(0.50) 0.50	91.53
Dark purplish brown and dark greenish grey very clayey sandy subrounded fine to coarse GRAVEL of mudstone, siltstone and quartz.	(1.10) 1.60	90.43
Dense dark purplish brown and grey very sandy clayey subangular to subrounded fine to coarse GRAVEL of mudstone and siltstone with low cobble content. Cobbles are subangular to subrounded of siltstone. Below 4.00m becomes slightly clayey. Between 5.00 and 5.45m medium dense. Between 7.45 and 8.95m medium cobble content. Below 9.50m becomes dark grey and black.	(8.43) 10.03	82.00

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit				10/01/2019 11:00	4.00	20	3.20	4.00		200	10.00	200	10.00	1.20	10.00	
1.20	10.03	Cable Percussion				10/01/2019 15:00	7.00	20	3.70	7.00								

Remarks

Terminated on engineers instruction.

Termination Depth:
10.03m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 3000	**Arcadis Consulting (UK) Ltd**	**BR**	**CP**

ARCADIS Percussive Borehole Log

BH102

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.00**	**08/01/2019**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315704.47**	**294160.82**	**09/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	PROGRESS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Date Time	Casing Water	Description	Legend			
0.00 - 0.50	ES1					08/01/2019 10:00		Grass over dark greyish brown soft slightly sandy gravelly SILT. Gravel is subangular elongate fine to coarse of siltstone.		(0.50)		
0.50 0.50 - 1.20	B2 ES3	0.50	PID	<1ppm				Dense grey and brown sandy clayey angular to subangular fine to coarse GRAVEL of mudstone and siltstone. With low cobble content of subrounded siltstone.		0.50	91.50	
1.20 - 1.65 1.20 - 1.65	B5 D4	1.20 1.20	SPT(S) PID	N=33 (7,7/7,7,9,10) <1ppm								
2.00 - 2.45 2.00 - 2.45	B7 D6	2.00	SPT(S)	N=72 (7,12/14,17,18,23)								
								Driller notes boulders below 2.70m.		(4.60)		
3.00 - 3.45 3.00 - 3.45	B9 D8	3.00	SPT(S)	N>50 (14,11/36,21,0 for 0mm)								
4.00 - 4.45 4.00 - 4.45	B11 D10	4.00	SPT(S)	N>50 (14,19/25,21,0 for 0mm)								
5.00 - 5.03	D12	5.00	SPT(S)	N>50 (25 for 10mm/50 for 25mm)		09/01/2019 14:00				5.10	86.90	

DRILLING TECHNIQUE

From	To	Type
0.00	1.20	Inspection Pit
1.20	5.10	Cable Percussion

CHISELLING

Hard Strata From	Hard Strata To	Duration
5.00	5.10	00:45

WATER OBSERVATIONS

Date/Time	Strike At	Time Elapsed	Rise To	Casing	Sealed

HOLE/CASING DIAMETER

Hole Dia.	Depth	Casing Dia.	Depth
200	5.00	200	5.10

WATER ADDED

From	To	Volume (ltr)
1.20	5.10	

Remarks

Borehole commenced in 150mm casing. Due to coarse fractions and dense ground conditions 200mm casing was used to drill borehole.
Terminated on engineers instruction.

Termination Depth:
5.10m

AGS Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 3000	**Arcadis Consulting (UK) Ltd**	**BR**	**CP**

ARCADIS Percussive Borehole Log

BH103

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **91.99**	Start Date **14/01/2019**	Scale **1:50**
Client **Powys County Council**	Easting (OS mE) **315731.18**	Northing (OS mN) **294219.53**	End Date **15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	PROGRESS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Date Time	Casing Water	Description	Legend			
0.00 - 0.50 0.00 - 0.50	B2 ES1					14/01/2019 09:00		Grass over soft grey slightly sandy slightly gravelly CLAY with many roots. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.		(0.50)		
0.50 - 1.20 0.50 - 1.20	B4 ES3	0.50	PID	<1ppm				Soft orange bedded grey sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone.		0.50	91.49	
								Below 1.00m laminations of sand and gravel.				
1.20 - 1.65 1.20 - 1.65	B6 D5	1.20 1.20	SPT(S) PID	N=11 (1,1/1,2,3,5) <1ppm						(1.50)		
2.00 - 2.45 2.00 - 2.45	B8 D7	2.00	SPT(S)	N=32 (4,5/7,7,9,9)				Firm greyish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, siltstone and sandstone.		2.00	89.99	
3.00 - 3.45 3.00 - 3.45	B10 D9	3.00	SPT(S)	N=37 (3,6/10,7,10,10)						(2.00)		
4.00 - 4.45 4.00 - 4.45	B12 D11	4.00	SPT(S)	N=30 (5,5/7,8,8,7)				Medium dense to dense grey sandy clayey subangular to subrounded fine to coarse GRAVEL of mudstone, sandstone, siltstone, and quartzite with low cobble content. Cobbles are subrounded of siltstone.		4.00	87.99	
					▼ ▽							
5.00 - 5.45 5.00 - 5.45	B14 D13	5.00	SPT(S)	N=30 (6,6/7,6,8,9)								
6.50 - 6.95 6.50 - 6.95	B16 D15	6.50	SPT(S)	N=27 (4,4/6,8,5,8)								
										(6.00)		
8.00 - 8.45 8.00 - 8.45	B18 D17	8.00	SPT(S)	N=23 (2,3/5,6,6,6)								
9.50 - 9.95 9.50 - 9.95	B20 D19	9.50	SPT(S)	N=33 (8,11/12,7,7,7)				Below 9.50m becomes slightly clayey.				
						14/01/2019 16:00	10.00			10.00	81.99	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 10.00	Inspection Pit Cable Percussion				14/01/2019 12:00	5.00	20	4.80	5.00		200	10.00	200	10.00	1.20	10.00	

Remarks

Terminated on engineers instruction.

Termination Depth: 10.00m

AGS Arcadis Cymru House St Mellons Business Park Cardiff CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 3000	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS Percussive Borehole Log

BH104

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.38**	**15/01/2019**	**1:50**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315793.61**	**294250.23**	**15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	PROGRESS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Date Time	Casing Water	Description	Legend			
0.00 - 0.50 0.00 - 0.50	B2 ES1					15/01/2019 08:00		Grass over soft grey slightly sandy slightly gravelly CLAY with many roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.		(0.40) 0.40	91.98	
0.50 - 1.20 0.50 - 1.20	B4 ES3	0.50	PID	<1ppm				Firm orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone.		(1.20) 1.60	90.78	
1.20 - 1.65 1.20 - 1.65	B6 D5	1.20 1.20	SPT(S) PID	N=24 (4,4/5,6,6,7) <1ppm								
2.00 - 2.45 2.00 - 2.45	B8 D7	2.00	SPT(S)	N=30 (5,7/7,8,7,8)				Medium dense to dense brownish grey sandy clayey subangular to subrounded fine to coarse GRAVEL of mudstone, limestone, siltstone and quartzite with medium cobble content. Cobbles are rounded to subrounded of siltstone and mudstone.				
3.00 - 3.45 3.00 - 3.45	B10 D9	3.00	SPT(S)	N=54 (5,11/16,10,14,14)	▼							
					▼							
4.00 - 4.45 4.00 - 4.45	B12 D11	4.00	SPT(S)	N=26 (6,6/5,6,7,8)								
5.00 - 5.45 5.00 - 5.45	B14 D13	5.00	SPT(S)	N=17 (4,4/3,4,5,5)	▽							
6.50 - 6.95 6.50 - 6.95	B16 D15	6.50	SPT(S)	N=21 (3,4/4,6,5,6)						(6.40) 8.00	84.38	
8.00 - 8.45 8.00 - 8.45	B18 D17	8.00	SPT(S)	N=50 (9,11/16,16,10,8)				Weak dark grey MUDSTONE recovered as: very dense dark grey slightly sandy angular to subangular fine to coarse GRAVEL of mudstone.				
					▽							
9.50 - 9.95 9.50 - 9.95	B20 D19											
						15/01/2019 16:00	10.00			(2.00) 10.00	82.38	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00	1.20	Inspection Pit				15/01/2019 11:30	5.00	20	3.00	5.00	6.00	200	10.00	200	10.00	1.60	10.00	
1.20	10.00	Cable Percussion				15/01/2019 15:30	9.00	20	3.50	8.50								

Remarks

Terminated on engineers instruction.

Termination Depth:

10.00m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 3000	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS Percussive Borehole Log

BH105

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.00**	Start Date **16/01/2019**	Scale **1:50**
Client **Powys County Council**	Easting (OS mE) **315820.62**	Northing (OS mN) **294284.79**	End Date **16/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	PROGRESS		STRATA			
Depth	Type/ No.	Depth	Type/ No.	Results		Date Time	Casing Water	Description	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.30 0.00 - 0.30	B2 ES1					16/01/2019 08:00		Grass over soft grey slightly sandy slightly gravelly CLAY with many roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.	(0.30) 0.30	91.70	
		0.30	PID	<1ppm				Soft to firm orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone.	(1.10)		
0.50 - 1.20 0.50 - 1.20	B4 ES3										
1.20 - 1.65 1.20 - 1.65	B6 D5	1.20 1.20	SPT(S) PID	N=25 (3,3/4,7,6,8) <1ppm					1.40	90.60	
								Medium dense to dense brownish grey very sandy clayey subangular to subrounded fine to coarse GRAVEL of mudstone, siltstone and quartzite with low cobble content. Cobbles are subrounded of siltstone and mudstone.			
2.00 - 2.45 2.00 - 2.45	B8 D7	2.00	SPT(S)	N=47 (10,9/10,14,11,12)							
3.00 - 3.45 3.00 - 3.45	B10 D9	3.00	SPT(S)	N=39 (8,12/8,7,12,12)	▼						
4.00 - 4.45 4.00 - 4.45	B12 D11	4.00	SPT(S)	N=36 (8,6/6,11,10,9)					(4.10)		
5.00 - 5.45 5.00 - 5.45	B14 D13	5.00	SPT(S)	N=30 (14,14/9,9,5,7)	▽						
									5.50	86.50	
								Weak dark grey MUDSTONE recovered as: very dense dark grey slightly sandy angular to subangular fine to coarse GRAVEL of mudstone.	(0.65)		
6.00 - 6.15	D15	6.00	SPT(S)	N>50 (25 for 70mm/44,6 for 5mm)							
						16/01/2019 14:00	6.00		6.15	85.85	

DRILLING TECHNIQUE		
From	To	Type
0.00 1.20	1.20 6.15	Inspection Pit Cable Percussion

CHISELLING		
Hard Strata From	Hard Strata To	Duration

WATER OBSERVATIONS					
Date/Time	Strike At	Time Elapsed	Rise To	Casing	Sealed
16/01/2019 12:30	5.10	20	3.20	5.00	

HOLE/CASING DIAMETER			
Hole Dia.	Depth	Casing Dia.	Depth
200	6.10	200	6.00

WATER ADDED		
From	To	Volume (ltr)
1.40	6.15	

Remarks

Terminated on engineers instruction.

Termination Depth:
6.15m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Dando 3000	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS Percussive Borehole Log

BH106

Project
Abermule Business Park
Client
Powys County Council

Project No.
10026414
Easting (OS mE)
315879.34

Ground Level (mAOD)
92.09
Northing (OS mN)
294283.66

Start Date
07/01/2019
End Date
07/01/2019

Scale
1:50

Sheet 1 of 1

SAMPLES		TESTS			Water Strikes	PROGRESS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Date Time	Casing Water	Description	Legend			
0.00 - 1.20	B3					07/01/2019 10:00		Grass over soft dark greenish brown very gravelly slightly sandy SILT. Gravel is subrounded fine to coarse of siltstone.				
0.10 - 0.20	ES1	0.20	PID	<1ppm						(0.40)		
										0.40	91.69	
0.60 - 0.80	ES2							Dense becoming very dense greyish brown very silty sandy subangular to subrounded fine to coarse GRAVEL of siltstone, mudstone and quartz.				
		0.80	PID	<1ppm								
1.20 - 1.65	B5	1.20	SPT(S)	N=37 (4,7/7,10,10,10)								
1.20 - 1.65	D4											
										(2.60)		
2.00 - 2.45	B7	2.00	SPT(S)	N=60 (6,14/14,14,14,18)								
2.00 - 2.45	D6				▼							
3.00 - 3.10	D8	3.00	SPT(S)	N>50 (25 for 25mm/50 for 50mm)	▽					3.00	89.09	
								Weak dark grey MUDSTONE recovered as: very dense black slightly silty very sandy fine to coarse angular GRAVEL of mudstone.		(0.50)		
						07/01/2019 15:00				3.50	88.59	

DRILLING TECHNIQUE			CHISELLING			WATER OBSERVATIONS						HOLE/CASING DIAMETER				WATER ADDED		
From	To	Type	Hard Strata From	Hard Strata To	Duration	Date/Time	Strike At	Time Elapsed	Rise To	Casing	Sealed	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Volume (ltr)
0.00 1.20	1.20 3.10	Inspection Pit Cable Percussion				07/01/2019 14:00	3.00	20	2.20	3.00		150	3.50	150	3.00	1.20	3.50	

Remarks
Terminated on engineers instruction.

Termination Depth:
3.50m

AGS Arcadis Cymru House St Mellons Business Park Cardiff CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Dando 3000

Contractor
Arcadis Consulting (UK) Ltd

Logged By
BR

Checked By
CP

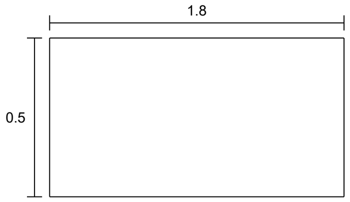
ARCADIS Trial Pit Log

SA01

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.12**	Start Date **11/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315624.75**	Northing (OS mN) **294149.13**	End Date **11/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.10 0.00 - 0.10	D2 ES1	0.10	PID	<1ppm		Grass over soft greyish brown slightly sandy slightly gravelly SILT with many roots. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.	▨	(0.10) 0.10	92.02	▨
0.30 - 0.50 0.30 - 0.50 0.30 - 0.50	B5 D4 ES3	0.50	PID	<1ppm		Firm orangish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded of siltstone and mudstone.	▨	(0.50) 0.60	91.52	▨
0.60 - 0.90	B6					Brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of mudstone, siltstone and quartzite.	▨	(0.30) 0.90	91.22	▨
						Firm brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone and siltstone.	▨	(0.10) 1.00	91.12	▨

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.00m

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS Trial Pit Log

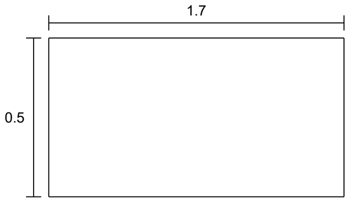
SA02

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.09**	Start Date **10/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315637.41**	Northing (OS mN) **294133.42**	End Date **10/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes
Depth	Type/ No.	Depth	Type/ No.	Results	
0.00 - 0.20	D2				
0.00 - 0.20	ES1				
		0.20	PID	<1ppm	
0.30 - 0.50	B5				
0.30 - 0.50	D4				
0.30 - 0.50	ES3				
		0.50	PID	<1ppm	
0.70 - 0.90	B6				
0.70 - 0.90	D8				
0.70 - 0.90	ES7				
		0.90	PID	<1ppm	

STRATA				
Description	Legend	Depth (Thickness)	Level	Install/ Backfill
Grass over soft greyish brown slightly sandy slightly gravelly SILT with many roots. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.20) 0.20	91.89	
Soft to firm grey bedded orange sandy slightly gravelly CLAY. Gravel is subangular to subrounded of siltstone and mudstone.		(0.40) 0.60	91.49	
Brown very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of mudstone, siltstone, limestone, quartzite.		(0.35) 0.95	91.14	
Firm brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, and siltstone.		1.00	91.09	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.00m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

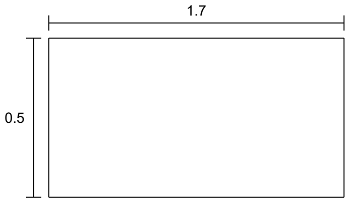
ARCADIS Trial Pit Log

SA03

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.08**	Start Date **11/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315640.74**	Northing (OS mN) **294148.25**	End Date **11/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.20	D2					Grass over soft greyish brown slightly sandy slightly gravelly SILT with many roots. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.20)		
0.00 - 0.20	ES1									
		0.20	PID	<1ppm		Brown very clayey sandy subangular to subrounded fine to coarse GRAVEL of mudstone, siltstone and sandstone.		0.20	91.88	
0.30 - 0.50	B5							(0.30)		
0.30 - 0.50	D4									
0.30 - 0.50	ES3									
		0.50	PID	<1ppm		Brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.		0.50	91.58	
0.60 - 0.80	B6							(0.30)		
						Firm brown sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of mudstone, and siltstone.		0.80 (0.10)	91.28	
								0.90	91.18	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

0.90m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Tracked 8T Excavator

Contractor
Arcadis Consulting (UK) Ltd

Logged By
KA

Checked By
CP

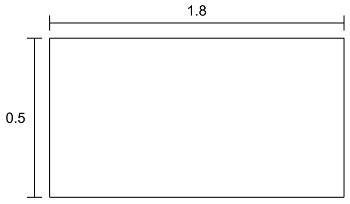
ARCADIS Trial Pit Log

SA04

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.02**	Start Date **10/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315662.68**	Northing (OS mN) **294152.51**	End Date **10/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.20 0.00 - 0.20	D2 ES1					Grass over soft greyish brown slightly sandy slightly gravelly SILT with many roots. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.20) 0.20	91.82	
		0.20	PID	<1ppm		Soft to firm grey bedded orange sandy slightly gravelly CLAY. Gravel is subangular to subrounded of siltstone and mudstone.		(0.60) 0.80	91.22	
0.40 - 0.60 0.40 - 0.60 0.40 - 0.60	B5 D4 ES3									
		0.60	PID	<1ppm						

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:
0.80m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

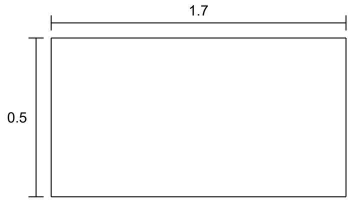
ARCADIS Trial Pit Log

SA05

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**91.93**	**10/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315651.13**	**294168.98**	**10/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.30 0.00 - 0.30 0.00 - 0.30	B3 D2 ES1					Grass over soft greyish brown slightly sandy slightly gravelly CLAY with many roots. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.30)		
		0.30	PID	<1ppm				0.30	91.63	
0.50 - 0.70 0.50 - 0.70 0.50 - 0.70	B6 D5 ES4					Soft to firm orangish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.45)		
		0.70	PID	<1ppm						
								0.75	91.18	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

0.75m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS Trial Pit Log

SA06

Project
Abermule Business Park
Client
Powys County Council

Project No.
10026414
Easting (OS mE)
315712.15

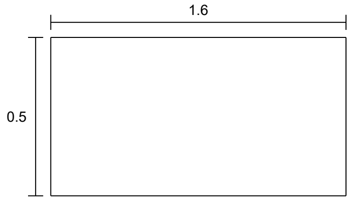
Ground Level (mAOD)
91.81
Northing (OS mN)
294193.97

Start Date
10/01/2019
End Date
10/01/2019

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	D2					Grass over soft greyish brown slightly sandy slightly gravelly SILT with many roots. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.20)		
0.00 - 0.20	ES1									
		0.20	PID	<1ppm		Firm orangish brown and yellowish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		0.20	91.61	
0.40 - 0.60	B5							(0.50)		
0.40 - 0.60	D4									
0.40 - 0.60	ES3									
		0.60	PID	<1ppm						
								0.70	91.11	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:
0.70m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Tracked 8T Excavator

Contractor
Arcadis Consulting (UK) Ltd

Logged By
KA

Checked By
CP

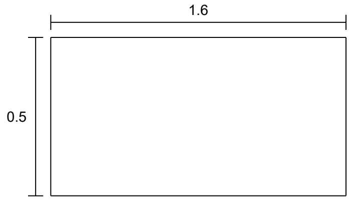
Trial Pit Log

SA07

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.15**	**09/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315750.15**	**294218.77**	**09/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	D2					Grass over soft greyish brown slightly sandy gravelly CLAY with many roots.		(0.20) 0.20	91.95	
0.00 - 0.20	ES1									
		0.20	PID	<1ppm						
0.30 - 0.50	B5					Firm orangish brown sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded of siltstone and mudstone. Cobbles are subangular of siltstone.		(0.50) 0.70	91.45	
0.30 - 0.50	D4									
0.30 - 0.50	ES3									
		0.50	PID	<1ppm						
0.70 - 0.90	B6					Brown sandy slightly silty subangular to subrounded fine to coarse GRAVEL of siltstone, mudstone, sandstone, limestone and quartzite with medium cobble content. Cobbles are subangular to subrounded of siltstone and mudstone.		(0.25) 0.95	91.20	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

0.95m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

**Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).**

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

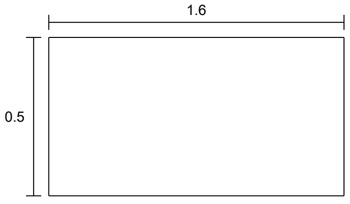
ARCADIS Trial Pit Log

SA08

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.18**	**10/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315738.76**	**294235.63**	**10/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20 0.00 - 0.20 0.00 - 0.20	B3 D2 ES1	0.20	PID	<1ppm		Grass over soft greyish brown slightly sandy slightly gravelly SILT with many roots.Gravel is subangular to subrounded fine to coarse of mudstone and siltstone.		(0.30) 0.30	91.88	
0.50 - 0.70 0.50 - 0.70 0.50 - 0.70	B6 D5 ES4	0.70	PID	<1ppm		Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone.		(0.70) 1.00	91.18	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.00m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

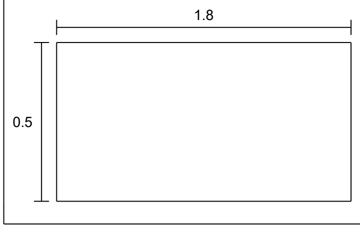
ARCADIS Trial Pit Log

SA09

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.34**	Start Date **09/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315756.98**	Northing (OS mN) **294236.24**	End Date **09/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	
0.00 - 0.20	B3					Grass over soft greyish brown slightly sandy gravelly CLAY with many roots.		(0.30)		
0.00 - 0.20	D2									
0.00 - 0.20	ES1									
		0.20	PID	<1ppm						
0.30 - 0.50	D5							0.30	92.04	
0.30 - 0.50	ES4					Firm orangish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone. Cobbles are subangular of siltstone.				
0.30 - 0.60	B6									
		0.50	PID	<1ppm				(0.60)		
0.90 - 1.10	B7							0.90	91.44	
						Brown very sandy subangular to subrounded fine to coarse GRAVEL of siltstone, mudstone, sandstone, limestone, quartzite with medium cobble content. Cobbles are subangular to subrounded of siltstone, limestone and mudstone.		(0.20)		
								1.10	91.24	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.10m

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

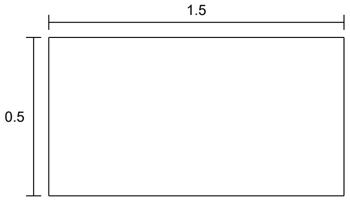
ARCADIS Trial Pit Log

SA10

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.41**	**09/01/2019**	**1:25**
Client	**Easting (OS mE)**	**Northing (OS mN)**	**End Date**	
Powys County Council	**315776.01**	**294238.61**	**09/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	B3					MADE GROUND: Grass over firm greyish brown slightly sandy gravelly CLAY with few pieces of plastic and glass bottles. Gravel is subangular fine to coarse of siltstone and mudstone,		(0.20)		
0.00 - 0.20	D2									
0.00 - 0.20	ES1									
		0.20	PID	<1ppm				0.20	92.21	
						Firm orangish brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, siltstone, sandstone and quartzite.				
0.40 - 0.60	B6									
0.40 - 0.60	D5									
0.40 - 0.60	ES4									
		0.60	PID	<1ppm				(0.90)		
1.10 - 1.20	B7					Brown very sandy silty subangular to subrounded fine to coarse GRAVEL of siltstone, mudstone, sandstone, limestone, quartzite with low cobble content. Cobbles are subangular to subrounded of siltstone and mudstone.		1.10	91.31	
								(0.10)		
								1.20	91.21	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.20m

AGS Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

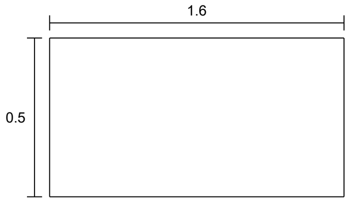
ARCADIS Trial Pit Log

SA11

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.18**	**09/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315763.84**	**294251.89**	**09/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.30 0.00 - 0.30 0.00 - 0.30	B3 D2 ES1	0.30	PID	<1ppm		Grass over soft greyish brown slightly sandy gravelly CLAY with many roots and rootlets. Gravel is subangular fine to coarse of siltstone and mudstone.		(0.30) 0.30	91.88	
0.50 - 0.70 0.50 - 0.70 0.50 - 0.70	B6 D5 ES4	0.70	PID	<1ppm		Firm orangish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone. Cobbles are subangular of siltstone.		(0.70) 1.00	91.18	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.00m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS Trial Pit Log

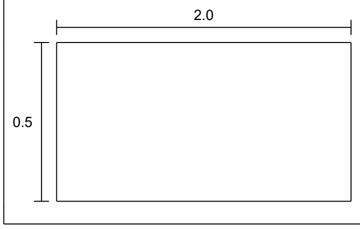
SA12

Project
Abermule Business Park
Client
Powys County Council

Project No.	Ground Level (mAOD)	Start Date	Scale
10026414	**92.06**	**07/01/2019**	**1:25**
Easting (OS mE)	Northing (OS mN)	End Date	
315821.99	**294270.88**	**07/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	ES1					Grass over soft grey sandy slightly gravelly SILT with many roots.				
0.20 - 0.30	D2	0.20	PID	<1ppm				(0.30)		
								0.30	91.76	
						Firm orangish brown sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded of siltstone and mudstone. Cobbles are subangular of mudstone.				
0.50 - 0.70 0.50 - 0.70 0.50 - 0.70	B5 D4 ES3							(0.50)		
		0.70	PID	<1ppm						
								0.80	91.26	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

0.80m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

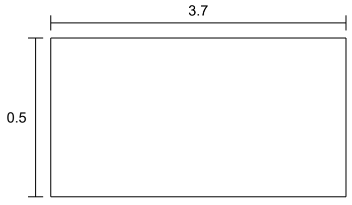
ARCADIS Trial Pit Log

SA13

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.01**	Start Date **07/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315834.10**	Northing (OS mN) **294292.49**	End Date **07/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20 0.00 - 0.20	D2 ES1					Grass over soft greyish brown slightly sandy gravelly SILT with many roots.		(0.20)		
		0.20	PID	<1ppm				0.20	91.81	
						Firm brown sandy slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of siltstone.		(0.60)		
0.60 - 0.80 0.60 - 0.80 0.60 - 0.80	B4 D5 ES3									
		0.80	PID	<1ppm				0.80	91.21	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

0.80m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

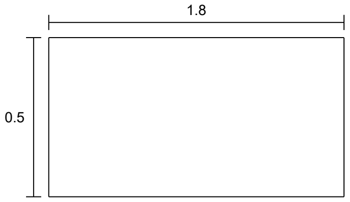
ARCADIS Trial Pit Log

SA14

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.30**	**08/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315835.74**	**294267.67**	**08/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.10 - 0.30 0.10 - 0.30	D2 ES1	0.30	PID	<1ppm		Grass over soft greyish brown slightly sandy gravelly SILT with many roots.		(0.35) 0.35	91.95	
0.40 - 0.60 0.40 - 0.60 0.40 - 0.60	B5 D4 ES3	0.60	PID	<1ppm		Firm orangish brown sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of siltstone and mudstone. Cobbles are subangular of mudstone. Medium cobble content below 0.95m.		(0.65) 1.00	91.30	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:
1.00m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

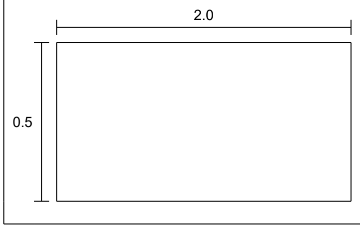
ARCADIS Trial Pit Log

SA15

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.32**	**08/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315853.10**	**294260.61**	**08/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20 0.00 - 0.20 0.00 - 0.20	B3 D2 ES1	0.20	PID	<1ppm		Grass over soft to firm greyish brown slightly sandy gravelly CLAY with few roots and rootlets. Gravel is subangular fine to coarse of siltstone.		(0.30) 0.30	92.02	
0.30 - 0.50 0.30 - 0.50 0.30 - 0.50	B6 D5 ES4	0.50	PID	<1ppm		Firm brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone.		(0.35) 0.65	91.67	
0.80 - 1.00	B7					Brown sandy silty subangular to rounded fine to coarse GRAVEL of mudstone, siltstone, quartzite and sandstone, with medium cobble content. Cobbles are subrounded of mudstone, and siltstone.		(0.45) 1.10	91.22	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.10m

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

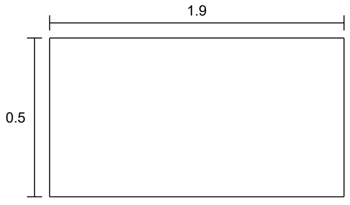
ARCADIS Trial Pit Log

SA16

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.42**	Start Date **08/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315835.34**	Northing (OS mN) **294248.99**	End Date **08/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20 0.00 - 0.20 0.00 - 0.20	B5 D2 ES1	0.20	PID	<1ppm		MADE GROUND: Grass over soft to firm greyish brown slightly sandy gravelly CLAY with few roots. Includes few metal cans, plastic bottles and plastic fragments. Gravel is subangular fine to coarse of siltstone.	▨	(0.40) 0.40	92.02	▤
0.40 - 0.60 0.40 - 0.60 0.40 - 0.60	B6 D4 ES3	0.60	PID	<1ppm		Firm brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of siltstone.	░	(0.30) 0.70	91.72	▤
0.70 - 0.90	B7					Brown very sandy subangular to rounded fine to coarse GRAVEL of mudstone, siltstone, quartzite and sandstone, with medium cobble content. Cobbles are subrounded of mudstone and siltstone.	⁘	(0.40) 1.10	91.32	▤

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Soakway infiltration test undertaken. Pit terminated on engineers instruction.

Termination Depth:

1.10m

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

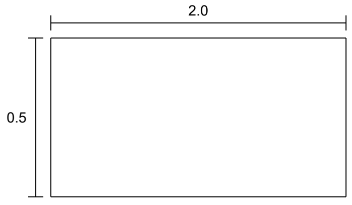
ARCADIS Trial Pit Log

TP101

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**91.82**	**14/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315543.92**	**294055.33**	**14/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20 0.00 - 0.20	D2 ES1					Grass over soft to firm grey sandy slightly gravelly CLAY with many roots and rootlets. Gravel is subangular fine to coarse of mudstone and sandstone.		(0.20)		
0.20 - 0.40 0.20 - 0.40 0.20 - 0.40	B5 D4 ES3	0.20	PID	<1ppm		Firm orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.		0.20	91.62	
		0.40	PID	<1ppm				(0.40)		
0.60 - 0.80 0.60 - 0.80	D7 ES6					Grey and brown very sandy subangular to subrounded fine to coarse GRAVEL of mudstone and sandstone with low cobble content. Cobbles are subangular to subrounded mudstone.		0.60	91.22	
		0.80	PID	<1ppm				(0.40)		
								1.00	90.82	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Terminated on engineers instruction.

Termination Depth:

1.00m

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

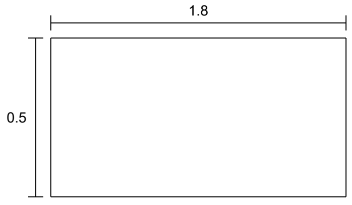
ARCADIS Trial Pit Log

TP102

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**91.67**	**14/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315564.28**	**294052.13**	**14/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20 0.00 - 0.20	D2 ES1					Grass over soft to firm grey sandy slightly gravelly CLAY with many roots. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone and sandstone.		(0.20) 0.20	91.47	
0.20 - 0.60 0.20 - 0.60 0.20 - 0.60	B5 D4 ES3	0.20	PID	<1ppm		Firm orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.		(0.40) 0.60	91.07	
0.60 - 0.80 0.60 - 0.80	B7 ES6	0.60 0.80	PID PID	<1ppm <1ppm		Brown very sandy subangular to subrounded fine to coarse GRAVEL of mudstone and sandstone with low cobble content. Cobbles are subangular to subrounded of mudstone.		(0.40) 1.00	90.67	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Terminated on engineers instruction.

Termination Depth:

1.00m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

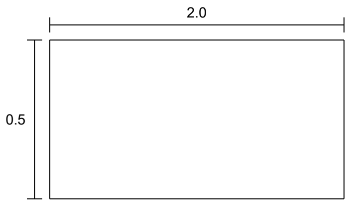
ARCADIS Trial Pit Log

TP103

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **91.58**	Start Date **14/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315574.59**	Northing (OS mN) **294081.75**	End Date **14/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.30	D2					Grass over soft to firm greyish brown sandy slightly gravelly CLAY with many roots and rootlets. Gravel is subangular fine to coarse of mudstone and sandstone.		(0.30)		
0.00 - 0.30	ES1									
		0.30	PID	<1ppm				0.30	91.28	
0.40 - 0.60	B5					Firm orangish brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mudstone, sandstone and siltstone.		(0.70)		
0.40 - 0.60	D4									
0.40 - 0.60	ES3									
		0.60	PID	<1ppm						
								1.00	90.58	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Terminated on engineers instruction.

Termination Depth:
1.00m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

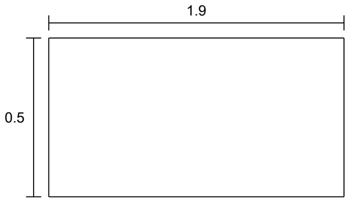
ARCADIS Trial Pit Log

TP104

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **91.60**	Start Date **14/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315590.50**	Northing (OS mN) **294078.23**	End Date **14/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	D2					Grass over soft to firm greyish brown sandy slightly gravelly CLAY with many roots. Gravel is subangular fine to coarse of mudstone and sandstone.		(0.20)		
0.00 - 0.20	ES1									
		0.20	PID	<1ppm				0.20	91.40	
						Brown in places light brown very clayey sandy subangular to subrounded fine to coarse GRAVEL of sandstone, siltstone and mudstone with low cobble and boulder content. Cobbles and boulders are subangular of mudstone.				
0.40 - 0.60	B5									
0.40 - 0.60	D4									
0.40 - 0.60	ES3									
		0.60	PID	<1ppm				(0.80)		
								1.00	90.60	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Terminated on engineers instruction.

Termination Depth:

1.00m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Tracked 8T Excavator	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

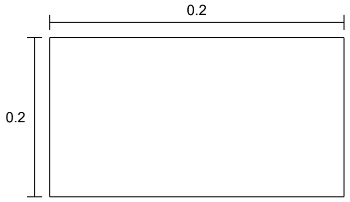
Inspection Pit Log

HTP01

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **93.75**	Start Date **15/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315660.28**	Northing (OS mN) **294193.35**	End Date **15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.20	ES1					MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse of sandstone and mudstone.	▨	(0.20) 0.20	93.55	▥

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:
0.20m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Insulated Hand Tools	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

ARCADIS

Inspection Pit Log

HTP02

Project
Abermule Business Park
Client
Powys County Council

Project No.
10026414
Easting (OS mE)
315649.63

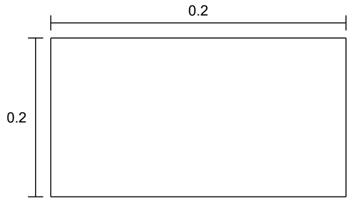
Ground Level (mAOD)
93.74
Northing (OS mN)
294183.41

Start Date
15/01/2019
End Date
15/01/2019

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	ES1					MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse of sandstone and mudstone.	▨	(0.20) 0.20	93.54	▥

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:
0.20m

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Contractor
Arcadis Consulting (UK) Ltd

Logged By
KA

Checked By
CP

ARCADIS Inspection Pit Log

HTP03

Project
Abermule Business Park
Client
Powys County Council

Project No.
10026414
Easting (OS mE)
315647.54

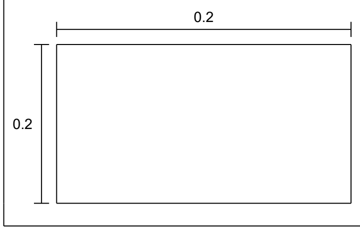
Ground Level (mAOD)
93.57
Northing (OS mN)
294188.68

Start Date
15/01/2019
End Date
15/01/2019

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	ES1					MADE GROUND: Black and brown clayey sandy angular GRAVEL of igneous lithologies (bitumen seal).	▨	(0.20) 0.20	93.36	▥

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:
0.20m

Arcadis Cymru House
St Mellons
Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Contractor
Arcadis Consulting (UK) Ltd

Logged By
KA

Checked By
CP

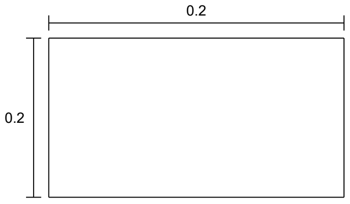
ARCADIS Inspection Pit Log

HTP04

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **93.60**	Start Date **15/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315639.63**	Northing (OS mN) **294181.74**	End Date **15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.20	ES1					MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse of sandstone, limestone, concrete and brick.	▨	(0.20) 0.20	93.40	▥

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:
0.20m

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Insulated Hand Tools	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

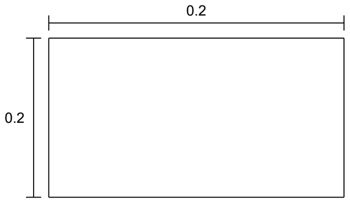
Inspection Pit Log

HTP05

Project	Project No.	Ground Level (mAOD)	Start Date	Scale
Abermule Business Park	**10026414**	**92.97**	**15/01/2019**	**1:25**
Client	Easting (OS mE)	Northing (OS mN)	End Date	
Powys County Council	**315632.20**	**294178.63**	**15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	ES1					MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Gravel is subangular fine to coarse of sandstone, limestone, concrete and brick.	▨	(0.20) 0.20	92.77	▤

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:

0.20m

Arcadis Cymru House
St Mellons
Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Insulated Hand Tools	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

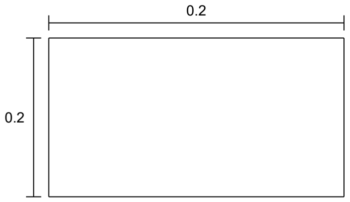
ARCADIS Inspection Pit Log

HTP06

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **93.22**	Start Date **15/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315617.13**	Northing (OS mN) **294160.10**	End Date **15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.20	ES1					MADE GROUND: Soft brown sandy slightly gravelly CLAY with occasional plastic and wood fragments. Gravel is subangular fine to coarse of sandstone, limestone, concrete and brick.	▨	(0.20) 0.20	93.02	≡

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:
0.20m

AGS Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Insulated Hand Tools	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

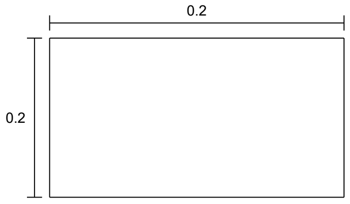
ARCADIS Inspection Pit Log

HTP07

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.88**	Start Date **15/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315610.44**	Northing (OS mN) **294163.74**	End Date **15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend			
0.00 - 0.20	ES1					MADE GROUND: Soft dark brown sandy slightly gravelly CLAY with occasional plastic and wood fragments. Gravel is subangular fine to coarse of sandstone, limestone, concrete and brick.	▨	(0.20) 0.20	92.68	

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:
0.20m

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Insulated Hand Tools	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

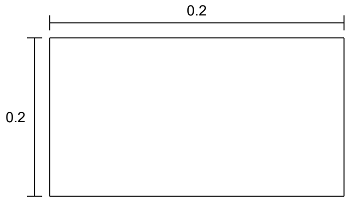
Inspection Pit Log

HTP08

Project **Abermule Business Park**	Project No. **10026414**	Ground Level (mAOD) **92.92**	Start Date **15/01/2019**	Scale **1:25**
Client **Powys County Council**	Easting (OS mE) **315604.19**	Northing (OS mN) **294154.77**	End Date **15/01/2019**	**Sheet 1 of 1**

SAMPLES		TESTS			Water Strikes	STRATA				
Depth	Type/ No.	Depth	Type/ No.	Results		Description	Legend	Depth (Thickness)	Level	Install/ Backfill
0.00 - 0.20	ES1					MADE GROUND: Soft dark brown sandy slightly gravelly CLAY with occasional plastic and wood fragments. Gravel is subangular fine to coarse of sandstone, limestone, concrete and brick.	▨	(0.20) 0.20	92.72	▥

PLAN DETAILS



Long Axis Orientation:

Shoring / Support: None

Stability: Stable

Groundwater (description):

Remarks

Termination Depth:

0.20m

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff, CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Contractor	Logged By	Checked By
Insulated Hand Tools	**Arcadis Consulting (UK) Ltd**	**KA**	**CP**

Trial Pit Photograph Sheet

SA01

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315624.75

Ground Level (mAOD)
92.12

Northing (OS mN)
294149.13

Start Date
11/01/19

End Date
11/01/19

PROJECT NAME: ABERMULE
PROJECT ID: 10026414
CLIENT: POWYS CC
DEPTH (m): 0.00 TO: 1.00
BOREHOLE ID: SA01
DATE: 11/1/19

SA01 0.00 – 1.00mbgl

PROJECT NAME: ABERMULE
PROJECT ID: 10026414
CLIENT: POWYS CC
DEPTH (m): 0.00 TO: 1.00
BOREHOLE ID: SA01
DATE: 11/1/19

SA01 0.00 – 1.00mbgl

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA01

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.12**	**11/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315624.75**	**294149.13**	**11/01/19**

SA01 0.00 – 1.00mbgl

SA01 0.00 – 1.00mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA01

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.12**	**11/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315624.75**	**294149.13**	**11/01/19**

SA01 Reinstatement

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Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

ARCADIS

Trial Pit Photograph Sheet

SA02

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.09**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315637.41**	**294133.42**	**10/01/19**

SA02 0.00 – 1.00mbgl

SA02 0.00 – 1.00mbgl

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA02

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.09**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315637.41**	**294133.42**	**10/01/19**

SA02 0.00 – 1.00mbgl

SA02 0.00 – 1.00mbgl

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA02

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.09**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315637.41**	**294133.42**	**10/01/19**

SA02 Reinstatement

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA03

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.08**	**11/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315640.74**	**294148.25**	**11/01/19**

SA03 0.00 – 0.90mbgl

SA03 0.00 – 0.90mbgl

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA03

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.08**	**11/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315640.74**	**294148.25**	**11/01/19**

SA03 0.00 – 0.90mbgl

SA03 0.00 – 0.90mbgl

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA03

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.08**	**11/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315640.74**	**294148.25**	**11/01/19**

SA03 Reinstatement

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA04

Project
Abermule Business Park
Client
Powys County Council

Job No
10026414
Easting (OS mE)
315662.68

Ground Level (mAOD)
92.02
Northing (OS mN)
294152.51

Start Date
10/01/19
End Date
10/01/19

SA04 0.00 – 0.80mbgl

SA04 0.00 – 0.80mbgl

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA04

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315662.68

Ground Level (mAOD)
92.02

Northing (OS mN)
294152.51

Start Date
10/01/19

End Date
10/01/19

SA04 0.00 – 0.80mbgl

SA04 0.00 – 0.80mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA04

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.02**	**10/01/19**
Client	**Easting (OS mE)**	**Northing (OS mN)**	**End Date**
Powys County Council	**315662.68**	**294152.51**	**10/01/19**

SA04 Reinstatement

Intentionally Left Blank

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

ARCADIS

Trial Pit Photograph Sheet

SA05

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.93**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315651.13**	**294168.98**	**10/01/19**

PROJECT NAME: ABERMULE
PROJECT ID: 10026414
CLIENT: POWYS CC
DEPTH (m): 0 00 TO: 0.75
BOREHOLE ID: SA05
DATE: 10/1/19

SA05 0.00 – 0.75mbgl

PROJECT NAME: ABERMULE
PROJECT ID: 10026414
CLIENT: POWYS CC
DEPTH (m): 0 00 TO: 0.75
BOREHOLE ID: SA05
DATE: 10/1/19

SA05 0.00 – 0.75mbgl

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA05

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.93**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315651.13**	**294168.98**	**10/01/19**

SA05 0.00 – 0.75mbgl

SA05 0.00 – 0.75mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA05

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.93**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315651.13**	**294168.98**	**10/01/19**

SA05 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA06

Project: **Abermule Business Park**
Client: **Powys County Council**
Job No: **10026414**
Easting (OS mE): **315712.15**
Ground Level (mAOD): **91.81**
Northing (OS mN): **294193.97**
Start Date: **10/01/19**
End Date: **10/01/19**

SA06 0.00 – 0.70mbgl

SA06 0.00 – 0.70mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used: **8T Excavator**

Logged By: **KA**

Checked By: **AW**

Trial Pit Photograph Sheet

SA06

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.81**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315712.15**	**294193.97**	**10/01/19**

SA06 0.00 – 0.70mbgl

SA06 0.00 – 0.70mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA06

Project **Abermule Business Park**	Job No **10026414**	Ground Level (mAOD) **91.81**	Start Date **10/01/19**
Client **Powys County Council**	Easting (OS mE) **315712.15**	Northing (OS mN) **294193.97**	End Date **10/01/19**

SA06 Reinstatement

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA07

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.15**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315750.15**	**294218.77**	**09/01/19**

SA07 0.00 – 0.95mbgl

SA07 0.00 – 0.95mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA07

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.15**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315750.15**	**294218.77**	**09/01/19**

SA07 0.00 – 0.95mbgl

SA07 0.00 – 0.95mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA07

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.15**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315750.15**	**294218.77**	**09/01/19**

SA07 Reinstatement

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA08

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.18**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315738.76**	**294235.63**	**10/01/19**

SA08 0.00 – 1.00mbgl

SA08 0.00 – 1.00mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA08

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.18**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315738.76**	**294235.63**	**10/01/19**

SA08 0.00 – 1.00mbgl

SA08 0.00 – 1.00mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA08

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.18**	**10/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315738.76**	**294235.63**	**10/01/19**

SA08 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA09

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.34**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315756.98**	**294236.24**	**09/01/19**

SA09 0.00 – 1.10mbgl

SA09 0.00 – 1.10mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By	Checked By
KA	**AW**

Trial Pit Photograph Sheet

SA09

Project
Abermule Business Park
Client
Powys County Council

Job No
10026414
Easting (OS mE)
315756.98

Ground Level (mAOD)
92.34
Northing (OS mN)
294236.24

Start Date
09/01/19
End Date
09/01/19

SA09 0.00 – 1.10mbgl

SA09 0.00 – 1.10mbgl

AGS
Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA09

Project
Abermule Business Park

Job No
10026414

Ground Level (mAOD)
92.34

Start Date
09/01/19

Client
Powys County Council

Easting (OS mE)
315756.98

Northing (OS mN)
294236.24

End Date
09/01/19

SA09 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA10

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.41**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315776.01**	**294238.61**	**09/01/19**

SA10 0.00 – 1.20mbgl

SA10 0.00 – 1.20mbgl

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA10

Project
Abermule Business Park
Client
Powys County Council

Job No
10026414
Easting (OS mE)
315776.01

Ground Level (mAOD)
92.41
Northing (OS mN)
294238.61

Start Date
09/01/19
End Date
09/01/19

SA10 0.00 – 1.20mbgl

SA10 0.00 – 1.20mbgl

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA10

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.41**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315776.01**	**294238.61**	**09/01/19**

SA10 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA11

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.18**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315763.84**	**294251.89**	**09/01/19**

SA11 0.00 – 1.00mbgl

SA11 0.00 – 1.00mbgl

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

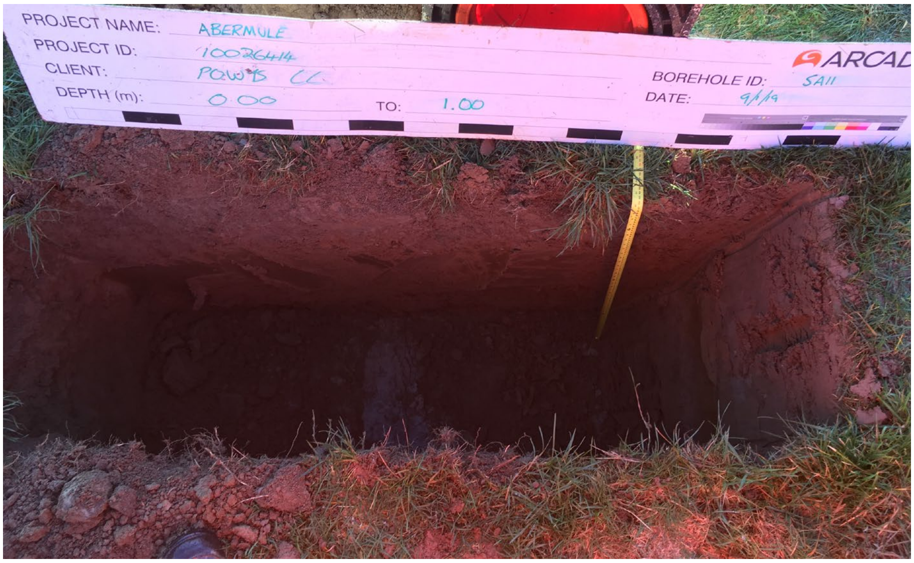
Checked By
AW

Trial Pit Photograph Sheet

SA11

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.18**	**09/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315763.84**	**294251.89**	**09/01/19**

SA11 0.00 – 1.00mbgl



PROJECT NAME: ABERMULE
PROJECT ID: 10026414
CLIENT: POWYS CC
DEPTH (m): 0.00 TO: 1.00
BOREHOLE ID: SA11
DATE: 9/1/19

SA11 0.00 – 1.00mbgl

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA11

Project
Abermule Business Park
Client
Powys County Council

Job No
10026414
Easting (OS mE)
315763.84

Ground Level (mAOD)
92.18
Northing (OS mN)
294251.89

Start Date
09/01/19
End Date
09/01/19

SA11 Reinstatement

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA12

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.06**	**07/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315821.99**	**294270.88**	**07/01/19**

SA12 0.00 – 0.80mbgl

SA12 0.00 – 0.80mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

ARCADIS

Trial Pit Photograph Sheet

SA12

Project **Abermule Business Park**	Job No **10026414**	Ground Level (mAOD) **92.06**	Start Date **07/01/19**
Client **Powys County Council**	Easting (OS mE) **315821.99**	Northing (OS mN) **294270.88**	End Date **07/01/19**

SA12 0.00 – 0.80mbgl

SA12 0.00 – 0.80mbgl

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used **8T Excavator**	Logged By **KA**	Checked By **AW**

Trial Pit Photograph Sheet

SA12

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.06**	**07/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315821.99**	**294270.88**	**07/01/19**

SA12 0.00 – 0.80mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA13

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315834.10

Ground Level (mAOD)
92.01

Northing (OS mN)
294292.49

Start Date
07/01/19

End Date
07/01/19

SA13 0.00 – 0.80mbgl

SA13 0.00 – 0.80mbgl

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA13

Project **Abermule Business Park**	Job No **10026414**	Ground Level (mAOD) **92.01**	Start Date **07/01/19**
Client **Powys County Council**	Easting (OS mE) **315834.10**	Northing (OS mN) **294292.49**	End Date **07/01/19**

SA13 0.00 – 0.80mbgl

SA13 0.00 – 0.80mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA13

Project **Abermule Business Park**	Job No **10026414**	Ground Level (mAOD) **92.01**	Start Date **07/01/19**
Client **Powys County Council**	Easting (OS mE) **315834.10**	Northing (OS mN) **294292.49**	End Date **07/01/19**

SA13 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used **8T Excavator**	Logged By **KA**	Checked By **AW**

ARCADIS Trial Pit Photograph Sheet

SA14

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.30**	**08/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315835.74**	**294267.67**	**08/01/19**

SA14 0.00 – 1.00mbgl

SA14 0.00 – 1.00mbgl

AGS
Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

ARCADIS

Trial Pit Photograph Sheet

SA14

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.30**	**08/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315835.74**	**294267.67**	**08/01/19**

SA14 0.00 – 1.00mbgl

SA14 0.00 – 1.00mbgl

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

ARCADIS **Trial Pit Photograph Sheet** **SA14**

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.30**	**08/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315835.74**	**294267.67**	**08/01/19**

SA14 Reinstatement

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA15

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.32**	**08/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315853.10**	**294260.61**	**08/01/19**

SA15 0.00 – 1.10mbgl

SA15 0.00 – 1.10mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA15

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.32**	**08/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315853.10**	**294260.61**	**08/01/19**

SA15 0.00 – 1.10mbgl

SA15 0.00 – 1.10mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA15

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.32**	**08/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315853.10**	**294260.61**	**08/01/19**

SA15 Reinstatement

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

SA16

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315835.34

Ground Level (mAOD)
92.42

Northing (OS mN)
294248.99

Start Date
08/01/19

End Date
08/01/19

SA16 0.00 – 1.10mbgl

SA16 0.00 – 1.10mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA16

Project
Abermule Business Park
Client
Powys County Council

Job No
10026414
Easting (OS mE)
315835.34

Ground Level (mAOD)
92.42
Northing (OS mN)
294248.99

Start Date
08/01/19
End Date
08/01/19

SA16 0.00 – 1.10mbgl

SA16 0.00 – 1.10mbgl

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

SA16

Project
Abermule Business Park
Client
Powys County Council

Job No
10026414
Easting (OS mE)
315835.34

Ground Level (mAOD)
92.42
Northing (OS mN)
294248.99

Start Date
08/01/19
End Date
08/01/19

SA16 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

ARCADIS Trial Pit Photograph Sheet

TP101

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.822**	**14/01/19**

Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315543.921**	**294055.333**	**14/01/19**

TP101 0.00 – 1.00mbgl

TP101 0.00 – 1.00mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

TP101

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.822**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315543.921**	**294055.333**	**14/01/19**

TP101 0.00 – 1.00mbgl

TP101 0.00 – 1.00mbgl

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

TP101

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.822**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315543.921**	**294055.333**	**14/01/19**

TP101 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

TP102

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315564.28

Ground Level (mAOD)
91.67

Northing (OS mN)
294052.13

Start Date
14/01/19

End Date
14/01/19

TP102 0.00 – 1.00mbgl

TP102 0.00 – 1.00mbgl

AGS
Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

TP102

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.67**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315564.28**	**294052.13**	**14/01/19**

TP102 0.00 – 1.00mbgl

TP102 0.00 – 1.00mbgl

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

TP102

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.67**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315564.28**	**294052.13**	**14/01/19**

TP102 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

TP103

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.58**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315574.59**	**294081.75**	**14/01/19**

TP103 0.00 – 1.00mbgl

TP103 0.00 – 1.00mbgl

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

TP103

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.58**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315574.59**	**294081.75**	**14/01/19**

TP103 0.00 – 1.00mbgl

TP103 0.00 – 1.00mbgl

AGS

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

TP103

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.58**	**14/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315574.59**	**294081.75**	**14/01/19**

TP103 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

TP104

Project **Abermule Business Park**	Job No **10026414**	Ground Level (mAOD) **91.60**	Start Date **14/01/19**
Client **Powys County Council**	Easting (OS mE) **315590.50**	Northing (OS mN) **294078.23**	End Date **14/01/19**

TP104 0.00 – 1.00mbgl

TP104 0.00 – 1.00mbgl

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Photograph Sheet

TP104

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315590.50

Ground Level (mAOD)
91.60

Northing (OS mN)
294078.23

Start Date
14/01/19

End Date
14/01/19

TP104 0.00 – 1.00mbgl

TP104 0.00 – 1.00mbgl

AGS

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
8T Excavator

Logged By
KA

Checked By
AW

Trial Pit Photograph Sheet

TP104

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**91.60**	**14/01/19**

Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315590.50**	**294078.23**	**14/01/19**

TP104 Reinstatement

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
8T Excavator	**KA**	**AW**

Trial Pit Location Sheet

HTP01

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315660.283

Ground Level (mAOD)
93.747

Northing (OS mN)
294193.35

Start Date
15/01/19

End Date
15/01/19

HTP01 Location

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Logged By
KA

Checked By
AW

Trial Pit Location Sheet

HTP02

Project **Abermule Business Park**	Job No **10026414**	Ground Level (mAOD) **93.738**	Start Date **15/01/19**
Client **Powys County Council**	Easting (OS mE) **315649.63**	Northing (OS mN) **294183.406**	End Date **15/01/19**

HTP02 Location

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
Insulated Hand Tools	**KA**	**AW**

Trial Pit Location Sheet

HTP03

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**93.565**	**15/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315647.541**	**294188.684**	**15/01/19**

HTP03 Location

Intentionally Left Blank

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Logged By
KA

Checked By
AW

Trial Pit Location Sheet

HTP04

Project
Abermule Business Park

Job No
10026414

Ground Level (mAOD)
93.597

Start Date
15/01/19

Client
Powys County Council

Easting (OS mE)
315639.63

Northing (OS mN)
294181.737

End Date
15/01/19

HTP04 Location

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Logged By
KA

Checked By
AW

Trial Pit Location Sheet

HTP05

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.967**	**15/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315632.196**	**294178.628**	**15/01/19**

HTP05 Location

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Logged By
KA

Checked By
AW

Trial Pit Location Sheet

HTP06

Project
Abermule Business Park

Client
Powys County Council

Job No
10026414

Easting (OS mE)
315617.128

Ground Level (mAOD)
93.215

Northing (OS mN)
294160.098

Start Date
15/01/19

End Date
15/01/19

HTP06 Location

Intentionally Left Blank

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Logged By
KA

Checked By
AW

Trial Pit Location Sheet

HTP07

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.878**	**15/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315610.438**	**294163.74**	**15/01/19**

HTP07 Location

Intentionally Left Blank

Arcadis Cymru House
St Mellons Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used	Logged By	Checked By
Insulated Hand Tools	**KA**	**AW**

Trial Pit Location Sheet

HTP08

Project	Job No	Ground Level (mAOD)	Start Date
Abermule Business Park	**10026414**	**92.915**	**15/01/19**
Client	Easting (OS mE)	Northing (OS mN)	End Date
Powys County Council	**315604.188**	**294154.771**	**15/01/19**

HTP08 Location

Intentionally Left Blank

Arcadis Cymru House
St Mellons
Business Park
Cardiff
CF3 0EY

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm), Thickness (m), Level (mOD).

Equipment Used
Insulated Hand Tools

Logged By
KA

Checked By
AW

Trial Pit Soakaway Test

ARCADIS Design & Consultancy for natural and built assets

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA01

Trial Pit Details

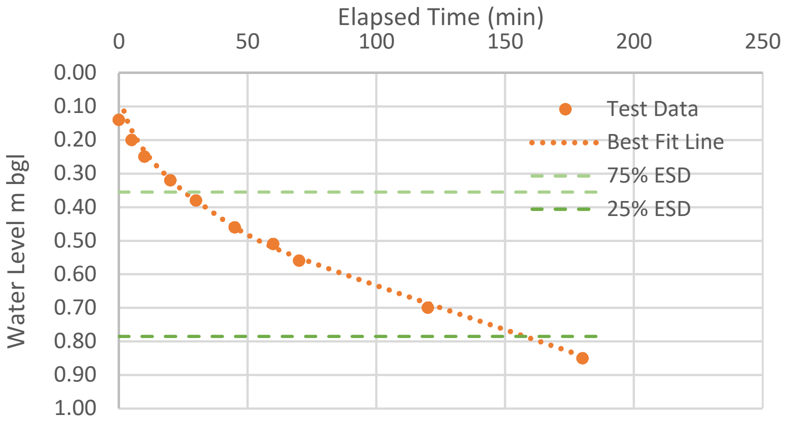
	Test 1	Test 2	Test 3
Depth	1.00		
Width	0.50		
Length	1.80		

Ground Level	92.12	mAOD
Coordinates	315624.75	mE
	294149.13	mN

Date Excavated	11/01/2019
Date Tested	11/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.14	75% esd (mbgl)	0.36
5	0.20	50% esd (mbgl)	0.57
10	0.25	25% esd (mbgl)	0.79
20	0.32	A_{s50} (m^2)	2.88
30	0.38	V_{p75-25} (m^3)	0.39
45	0.46	t_{75} (min)	2.6E+01
60	0.51	t_{25}(min)	1.5E+02
70	0.56	Data Fit R^2	0.995
120	0.70		
180	0.85		

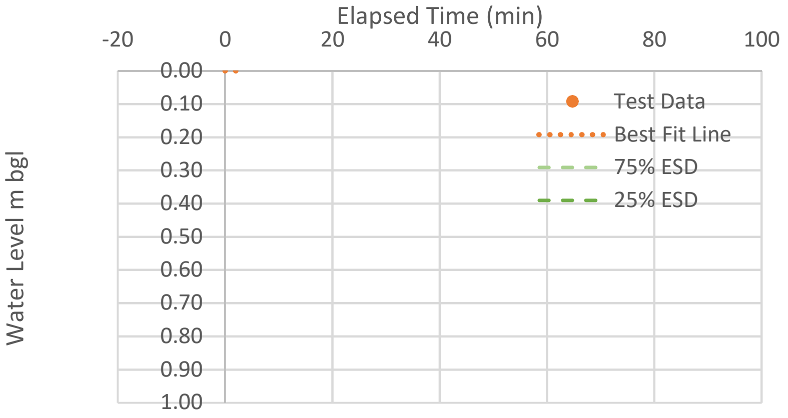


Infiltration rate f (ms^{-1}) **1.77E-05**

Total effective storage depth (esd) (m) 0.86

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
7		50% esd (mbgl)	
15		25% esd (mbgl)	
25		A_{s50} (m^2)	
30		V_{p75-25} (m^3)	
40		t_{75} (min)	
45		t_{25}(min)	
60		Data Fit R^2	
90			

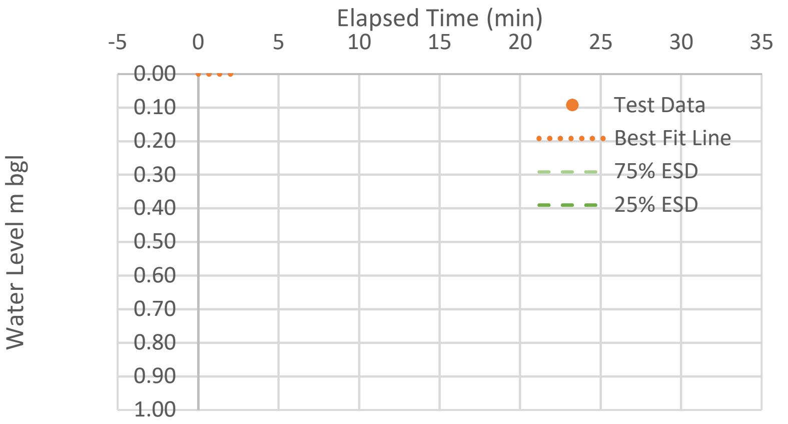


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA02

Trial Pit Details

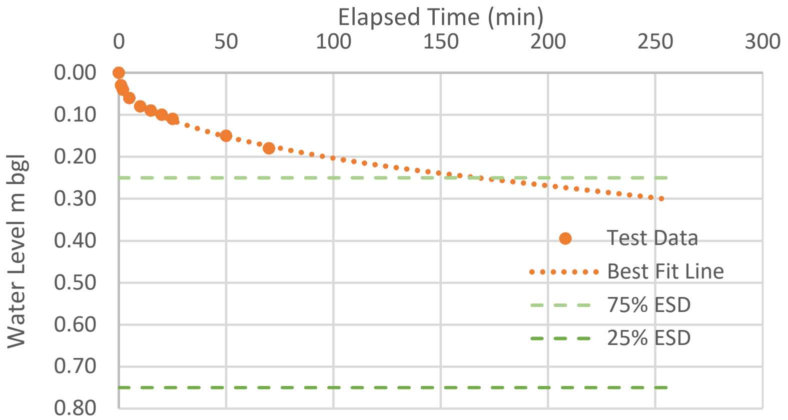
	Test 1	Test 2	Test 3
Depth	1.00		
Width	0.50		
Length	1.70		

Ground Level	92.09	mAOD
Coordinates	315637.41	mE
	294133.42	mN

Date Excavated	10/01/2019
Date Tested	10/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.00	75% esd (mbgl)	0.25
1	0.03	50% esd (mbgl)	0.50
2	0.04	25% esd (mbgl)	0.75
5	0.06	A_{s50} (m^2)	3.05
10	0.08	V_{p75-25} (m^3)	0.43
15	0.09	t_{75} (min)	1.6E+02
20	0.10	t_{25}(min)	2.2E+03
25	0.11	Data Fit R^2	0.998
50	0.15		
70	0.18		

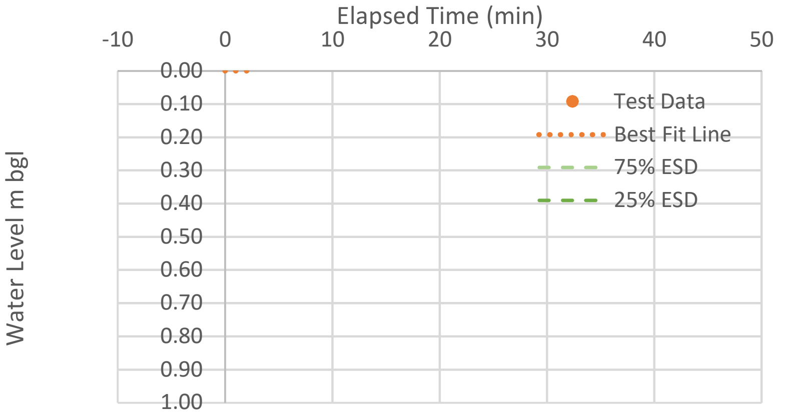


Infiltration rate f (ms^{-1}) **1.13E-06**

Total effective storage depth (esd) (m) 1.00

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
5		25% esd (mbgl)	
10		A_{s50} (m^2)	
15		V_{p75-25} (m^3)	
20		t_{75} (min)	
25		t_{25}(min)	
30		Data Fit R^2	
35			
40			

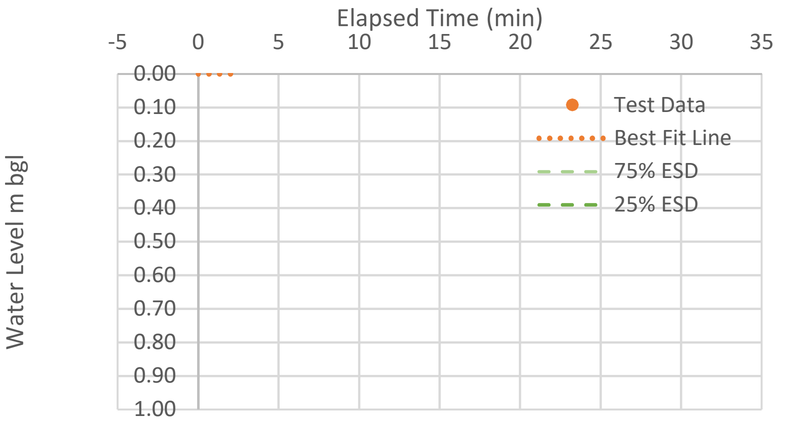


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

ARCADIS Design & Consultancy for natural and built assets

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA03

Trial Pit Details

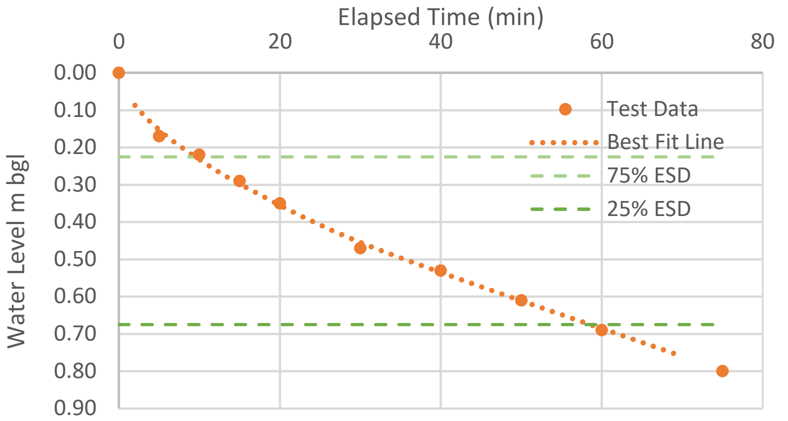
	Test 1	Test 2	Test 3
Depth	0.90	0.80	
Width	0.50	0.50	
Length	1.70	1.70	

Ground Level	92.08	mAOD
Coordinates	315640.74	mE
	294148.25	mN

Date Excavated	11/01/2019
Date Tested	11/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.00	75% esd (mbgl)	0.23
5	0.17	50% esd (mbgl)	0.45
10	0.22	25% esd (mbgl)	0.68
15	0.29	A_{s50} (m^2)	2.83
20	0.35	V_{p75-25} (m^3)	0.38
30	0.47	t_{75} (min)	9.5E+00
40	0.53	t_{25}(min)	5.8E+01
50	0.61	Data Fit R^2	0.993
60	0.69		
75	0.80		

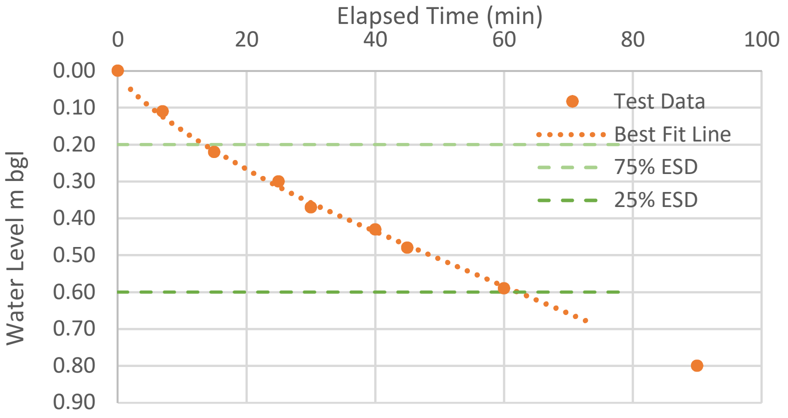


Infiltration rate f (ms^{-1}) **4.67E-05**

Total effective storage depth (esd) (m) 0.90

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0	0.00	75% esd (mbgl)	0.20
7	0.11	50% esd (mbgl)	0.40
15	0.22	25% esd (mbgl)	0.60
25	0.30	A_{s50} (m^2)	2.61
30	0.37	V_{p75-25} (m^3)	0.34
40	0.43	t_{75} (min)	1.3E+01
45	0.48	t_{25}(min)	6.1E+01
60	0.59	Data Fit R^2	0.996
90	0.80		

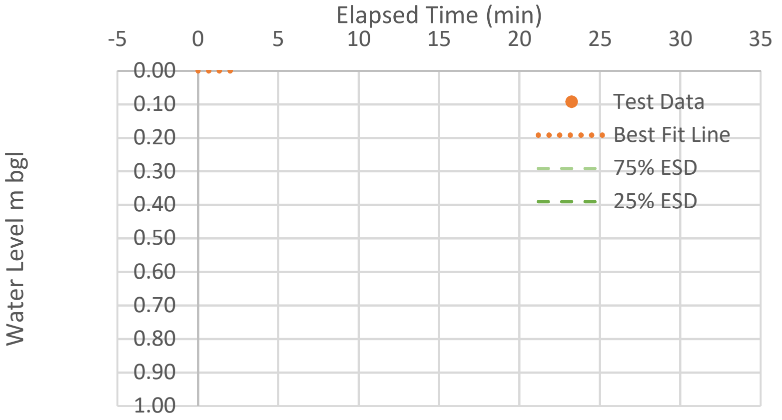


Infiltration rate f (ms^{-1}) **4.53E-05**

Total effective storage depth (esd) (m) 0.80

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC. Trial pit collapsing following	Logged KA	Checked 0

Trial Pit Soakaway Test

ARCADIS Design & Consultancy for natural and built assets

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA04

Trial Pit Details

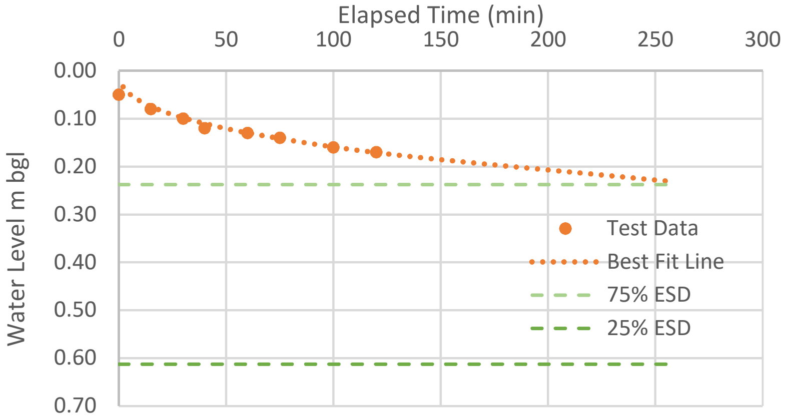
	Test 1	Test 2	Test 3
Depth	0.80		
Width	0.50		
Length	1.80		

Ground Level	92.02	mAOD
Coordinates	315662.68	mE
	294152.51	mN

Date Excavated	10/01/2019
Date Tested	10/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.05	75% esd (mbgl)	0.24
15	0.08	50% esd (mbgl)	0.43
30	0.10	25% esd (mbgl)	0.61
40	0.12	A_{s50} (m^2)	2.63
60	0.13	V_{p75-25} (m^3)	0.34
75	0.14	t_{75} (min)	2.8E+02
100	0.16	t_{25}(min)	3.0E+03
120	0.17	Data Fit R^2	0.990

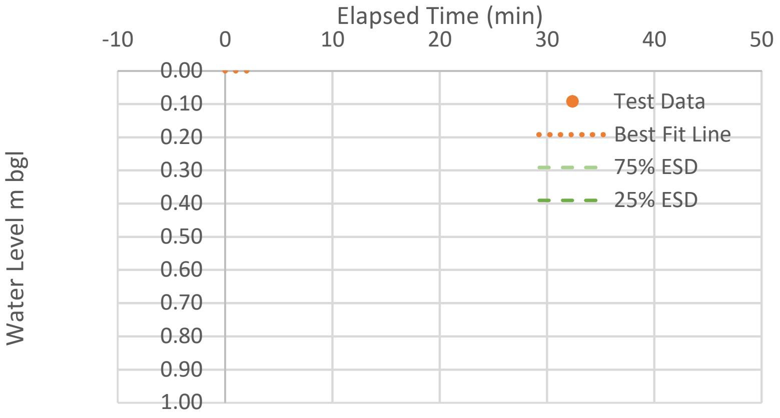


Infiltration rate f (ms^{-1}) **7.94E-07**

Total effective storage depth (esd) (m) 0.75

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
5		25% esd (mbgl)	
10		A_{s50} (m^2)	
15		V_{p75-25} (m^3)	
20		t_{75} (min)	
25		t_{25}(min)	
30		Data Fit R^2	
35			
40			

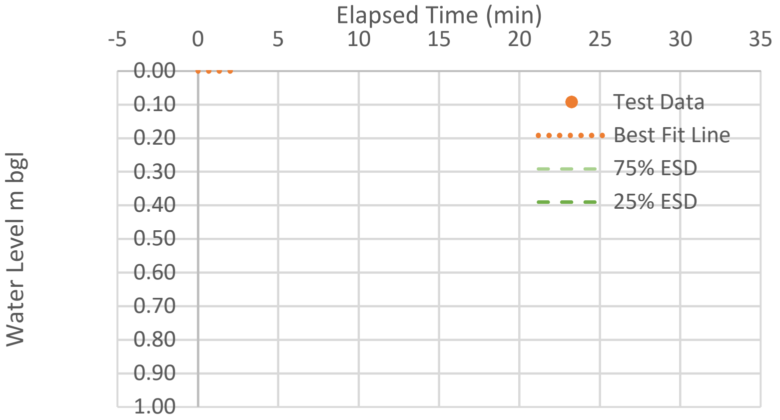


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA05

Trial Pit Details

	Test 1	Test 2	Test 3
Depth	0.75		
Width	0.50		
Length	1.70		

Ground Level	91.93	mAOD
Coordinates	315651.13	mE
	294168.98	mN

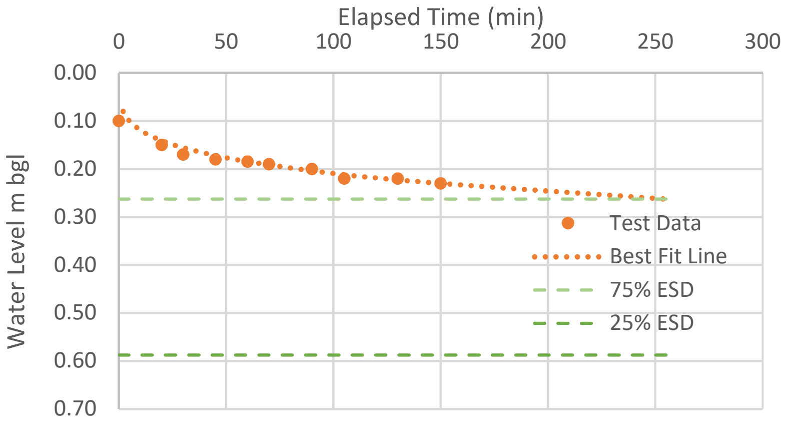
Date Excavated	10/01/2019
Date Tested	10/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.10	75% esd (mbgl)	0.26
20	0.15	50% esd (mbgl)	0.43
30	0.17	25% esd (mbgl)	0.59
45	0.18	A_{s50} (m^2)	2.28
60	0.19	V_{p75-25} (m^3)	0.28
70	0.19	t_{75} (min)	2.5E+02
90	0.20	t_{25}(min)	6.8E+03
105	0.22	Data Fit R^2	0.969
130	0.22		
150	0.23		

Infiltration rate f (ms^{-1}) **3.10E-07**

Total effective storage depth (esd) (m) 0.65

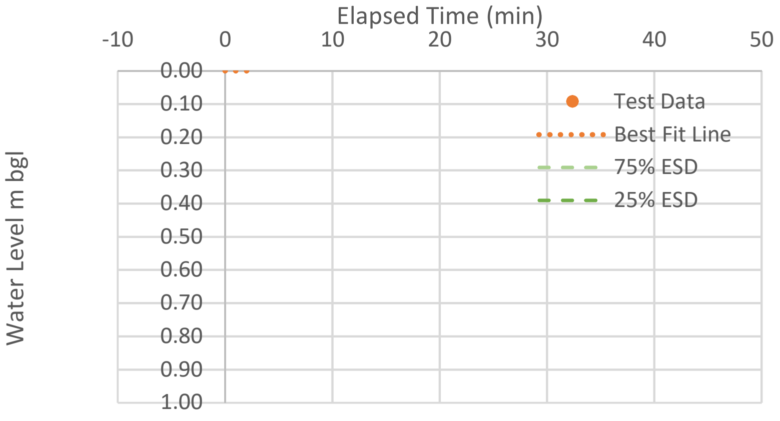


Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
5		25% esd (mbgl)	
10		A_{s50} (m^2)	
15		V_{p75-25} (m^3)	
20		t_{75} (min)	
25		t_{25}(min)	
30		Data Fit R^2	
35			
40			

Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

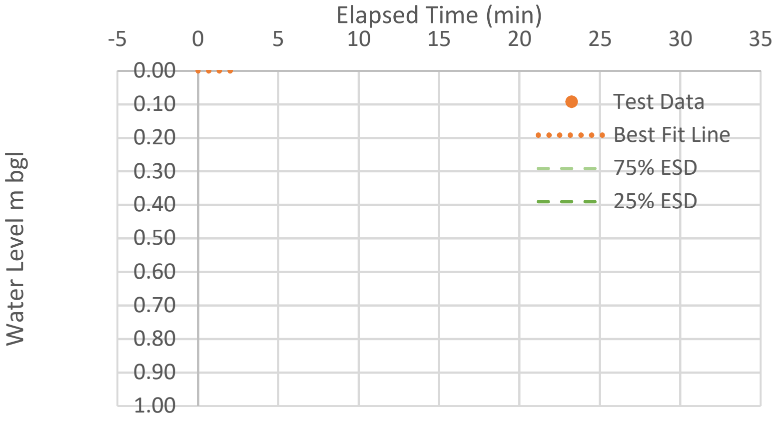


Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			

Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00



Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

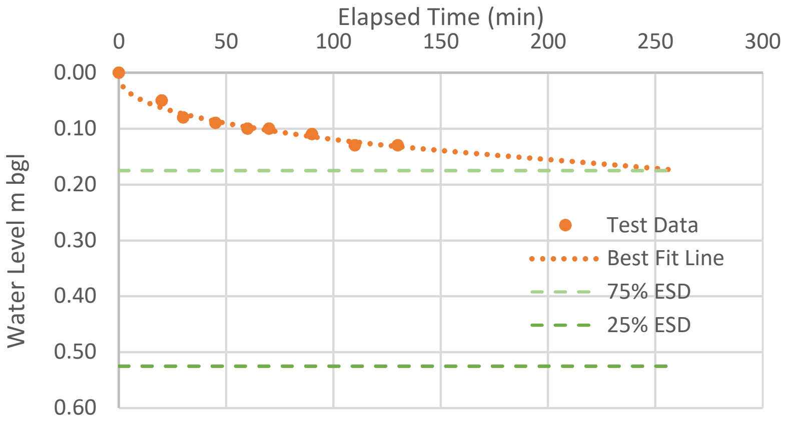
Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA06

Trial Pit Details

	Test 1	Test 2	Test 3				
Depth	0.70			Ground Level	91.81 mAOD	Date Excavated	10/01/2019
Width	0.50			Coordinates	315712.15 mE	Date Tested	10/01/2019
Length	1.60				294193.97 mN		

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.00	75% esd (mbgl)	0.18
20	0.05	50% esd (mbgl)	0.35
30	0.08	25% esd (mbgl)	0.53
45	0.09	A_{s50} (m^2)	2.27
60	0.10	V_{p75-25} (m^3)	0.28
70	0.10	t_{75} (min)	2.6E+02
90	0.11	t_{25}(min)	4.1E+03
110	0.13	Data Fit R^2	0.920
130	0.13		

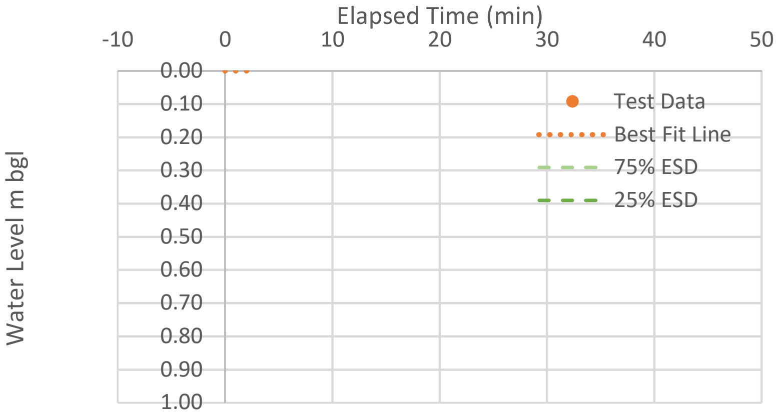


Infiltration rate f (ms^{-1}) **5.30E-07**

Total effective storage depth (esd) (m) 0.70

Test 2

Time min	Depth to Water m bgl	Test Parameters
0		75% esd (mbgl)
2		50% esd (mbgl)
5		25% esd (mbgl)
10		A_{s50} (m^2)
15		V_{p75-25} (m^3)
20		t_{75} (min)
25		t_{25}(min)
30		Data Fit R^2
35		
40		

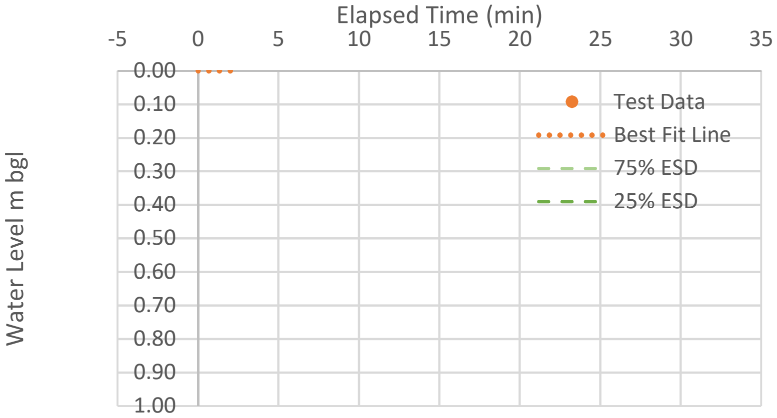


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters
0		75% esd (mbgl)
2		50% esd (mbgl)
4		25% esd (mbgl)
6		A_{s50} (m^2)
8		V_{p75-25} (m^3)
10		t_{75} (min)
15		t_{25}(min)
20		Data Fit R^2
25		
30		



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

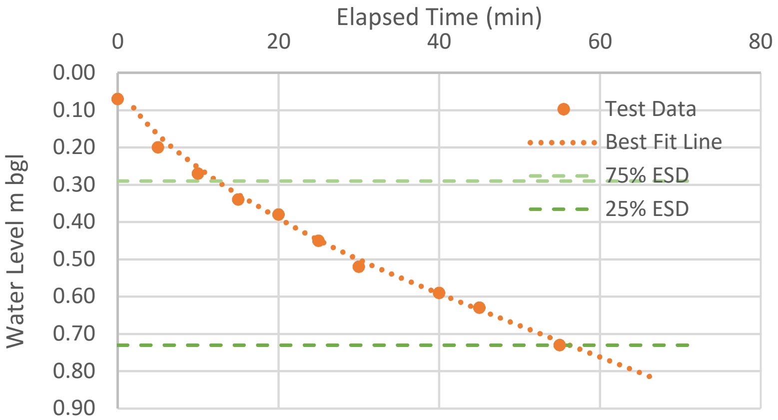
Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA07

Trial Pit Details

	Test 1	Test 2	Test 3				
Depth	0.95			Ground Level	92.15 mAOD	Date Excavated	09/01/2019
Width	0.50			Coordinates	315750.15 mE	Date Tested	09/01/2019
Length	1.60				294218.77 mN		

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.07	75% esd (mbgl)	0.29
5	0.20	50% esd (mbgl)	0.51
10	0.27	25% esd (mbgl)	0.73
15	0.34	A_{s50} (m^2)	2.65
20	0.38	V_{p75-25} (m^3)	0.35
25	0.45	t_{75} (min)	1.2E+01
30	0.52	t_{25}(min)	5.5E+01
40	0.59	Data Fit R^2	0.993
45	0.63		
55	0.73		

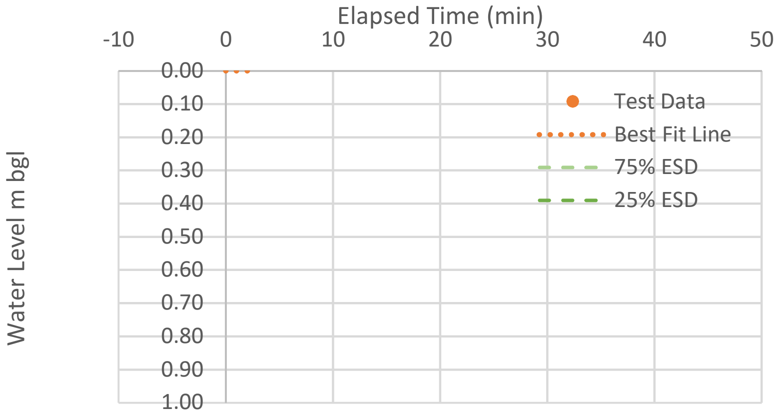


Infiltration rate f (ms^{-1}) **5.15E-05**

Total effective storage depth (esd) (m) 0.88

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
5		25% esd (mbgl)	
10		A_{s50} (m^2)	
15		V_{p75-25} (m^3)	
20		t_{75} (min)	
25		t_{25}(min)	
30		Data Fit R^2	
35			
40			

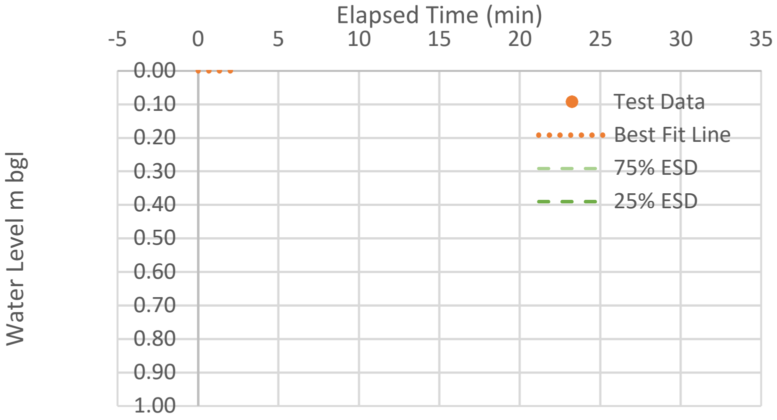


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA08

Trial Pit Details

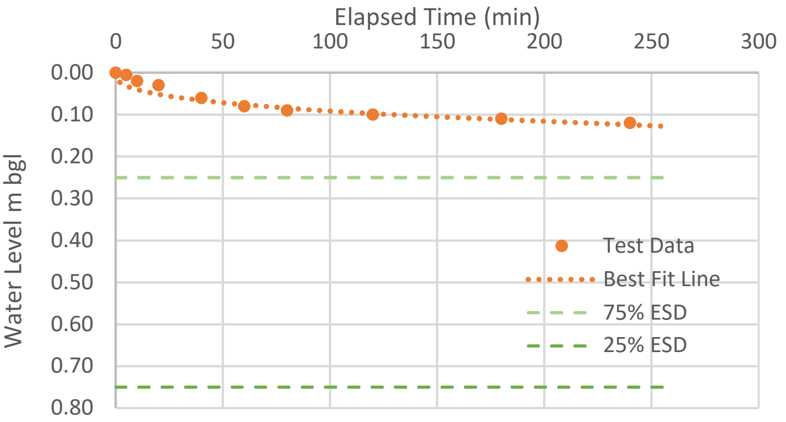
	Test 1	Test 2	Test 3
Depth	1.00		
Width	0.50		
Length	1.60		

Ground Level	92.18	mAOD
Coordinates	315738.76	mE
	294235.63	mN

Date Excavated	10/01/2019
Date Tested	10/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.00	75% esd (mbgl)	0.25
5	0.01	50% esd (mbgl)	0.50
10	0.02	25% esd (mbgl)	0.75
20	0.03	A_{s50} (m^2)	2.90
40	0.06	V_{p75-25} (m^3)	0.40
60	0.08	t_{75} (min)	1.7E+03
80	0.09	t_{25}(min)	3.6E+04
120	0.10	Data Fit R^2	0.905
180	0.11		
240	0.12		

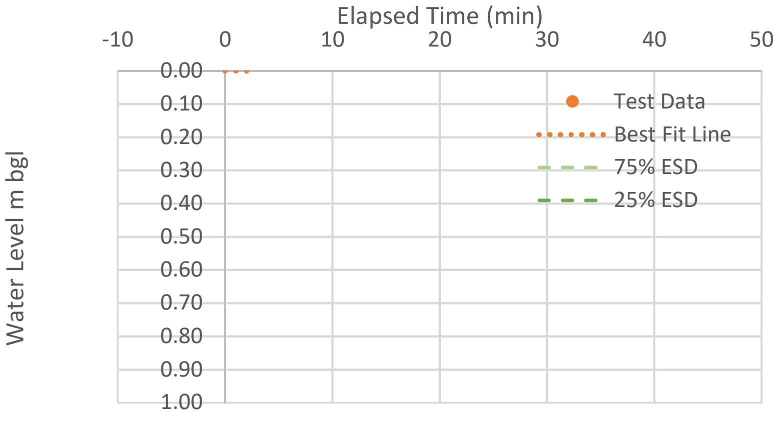


Infiltration rate f (ms^{-1}) **6.63E-08**

Total effective storage depth (esd) (m) 1.00

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
5		25% esd (mbgl)	
10		A_{s50} (m^2)	
15		V_{p75-25} (m^3)	
20		t_{75} (min)	
25		t_{25}(min)	
30		Data Fit R^2	
35			
40			

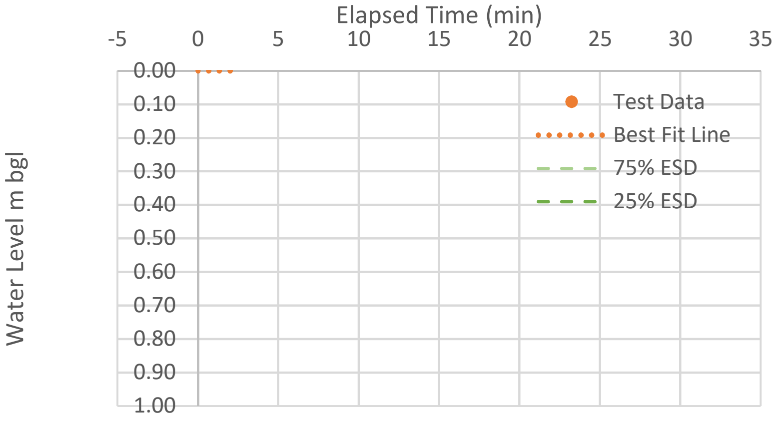


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

ARCADIS Design & Consultancy for natural and built assets

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA09

Trial Pit Details

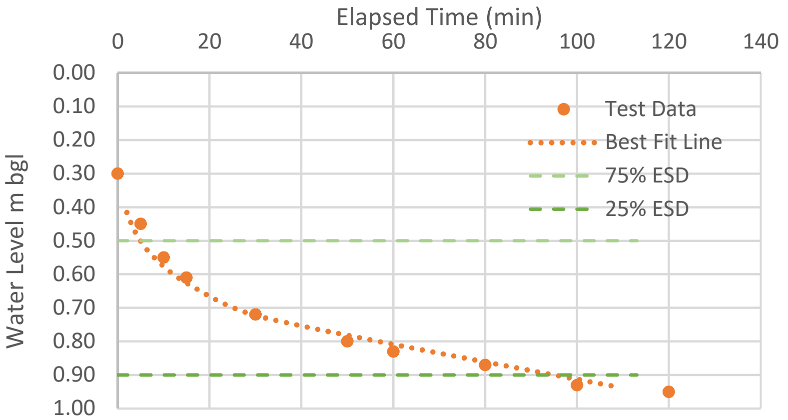
	Test 1	Test 2	Test 3
Depth	1.10	1.10	
Width	0.50	0.50	
Length	1.80	1.80	

Ground Level	92.34	mAOD
Coordinates	315756.98	mE
	294236.24	mN

Date Excavated	09/01/2019
Date Tested	09/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.30	75% esd (mbgl)	0.50
5	0.45	50% esd (mbgl)	0.70
10	0.55	25% esd (mbgl)	0.90
15	0.61	A_{s50} (m^2)	2.74
30	0.72	V_{p75-25} (m^3)	0.36
50	0.80	t_{75} (min)	5.0E+00
60	0.83	t_{25}(min)	9.0E+01
80	0.87	Data Fit R^2	0.995
100	0.93		
120	0.95		

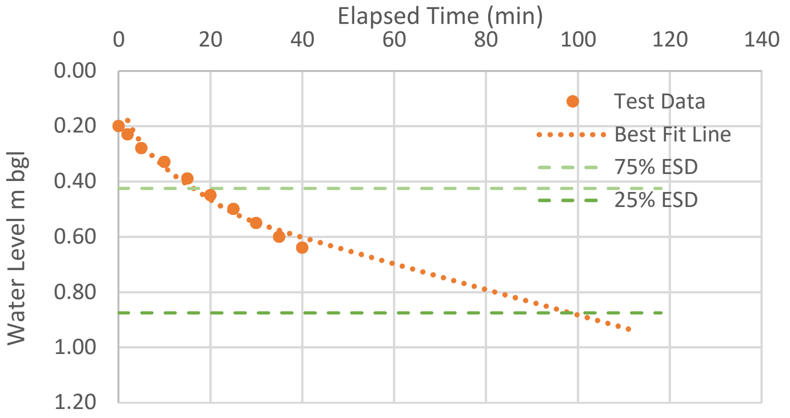


Infiltration rate f (ms^{-1}) **2.57E-05**

Total effective storage depth (esd) (m) 0.80

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0	0.20	75% esd (mbgl)	0.43
2	0.23	50% esd (mbgl)	0.65
5	0.28	25% esd (mbgl)	0.88
10	0.33	A_{s50} (m^2)	2.97
15	0.39	V_{p75-25} (m^3)	0.41
20	0.45	t_{75} (min)	1.6E+01
25	0.50	t_{25}(min)	9.4E+01
30	0.55	Data Fit R^2	0.977
35	0.60		
40	0.64		

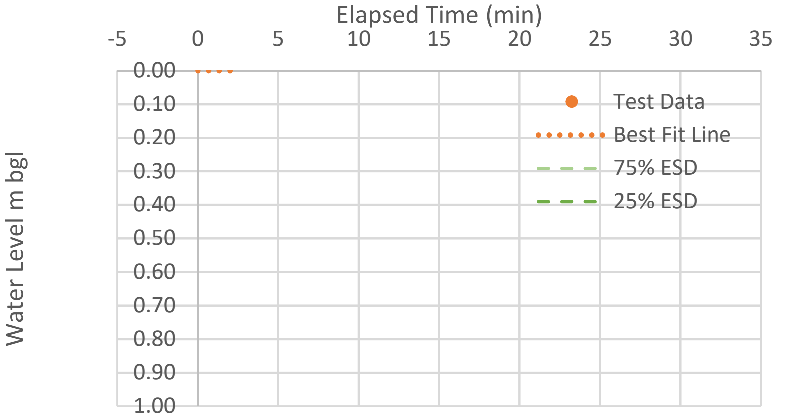


Infiltration rate f (ms^{-1}) **2.92E-05**

Total effective storage depth (esd) (m) 0.90

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA10

Trial Pit Details

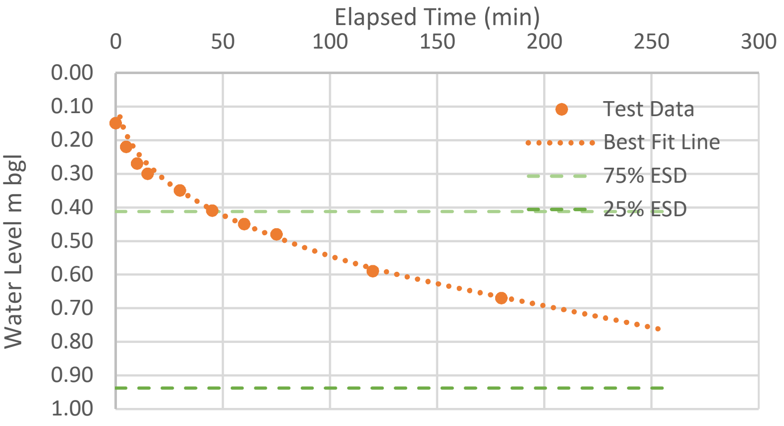
	Test 1	Test 2	Test 3
Depth	1.20		
Width	0.50		
Length	1.50		

Ground Level	92.41	mAOD
Coordinates	315776.01	mE
	294238.61	mN

Date Excavated	09/01/2019
Date Tested	09/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.15	75% esd (mbgl)	0.41
5	0.22	50% esd (mbgl)	0.68
10	0.27	25% esd (mbgl)	0.94
15	0.30	A_{s50} (m^2)	2.85
30	0.35	V_{p75-25} (m^3)	0.39
45	0.41	t_{75} (min)	4.7E+01
60	0.45	t_{25}(min)	4.5E+02
75	0.48	Data Fit R^2	0.991
120	0.59		
180	0.67		

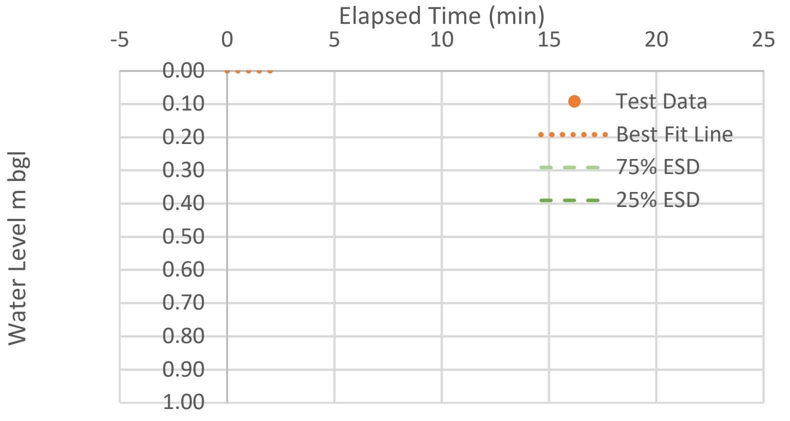


Infiltration rate f (ms^{-1}) **5.75E-06**

Total effective storage depth (esd) (m) 1.05

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
1		50% esd (mbgl)	
2		25% esd (mbgl)	
4		A_{s50} (m^2)	
5		V_{p75-25} (m^3)	
7		t_{75} (min)	
9		t_{25}(min)	
10		Data Fit R^2	
15			
20			

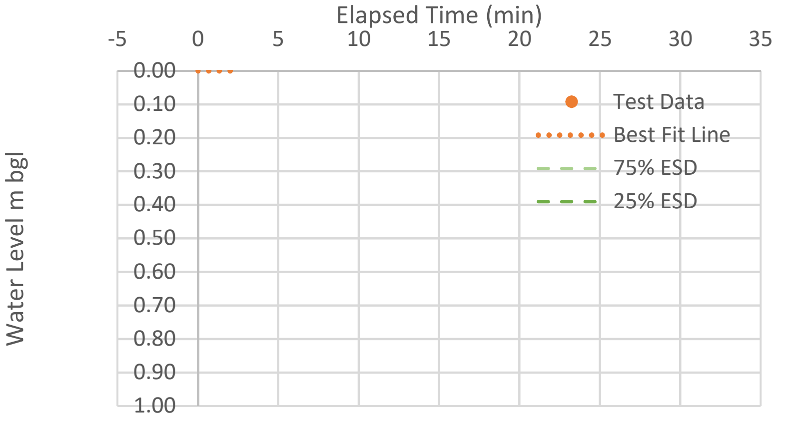


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

ARCADIS Design & Consultancy for natural and built assets

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA11

Trial Pit Details

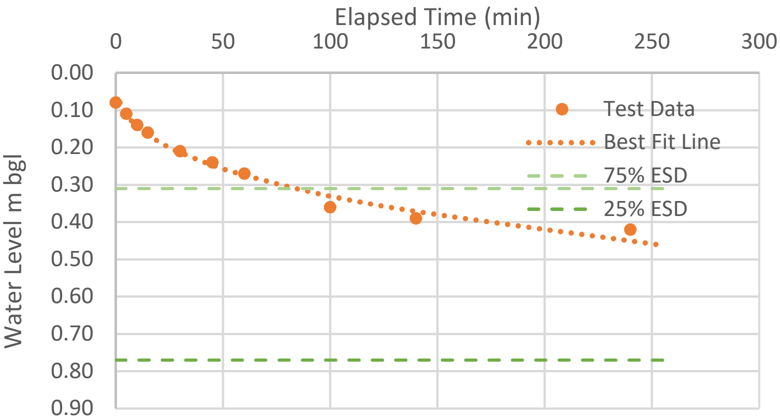
	Test 1	Test 2	Test 3
Depth	1.00		
Width	0.50		
Length	1.60		

Ground Level	92.18	mAOD
Coordinates	315763.84	mE
	294251.89	mN

Date Excavated	09/01/2019
Date Tested	09/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.08	75% esd (mbgl)	0.31
5	0.11	50% esd (mbgl)	0.54
10	0.14	25% esd (mbgl)	0.77
15	0.16	A_{s50} (m^2)	2.73
30	0.21	V_{p75-25} (m^3)	0.37
45	0.24	t_{75} (min)	8.4E+01
60	0.27	t_{25}(min)	1.0E+03
100	0.36	Data Fit R^2	0.990
140	0.39		
240	0.42		

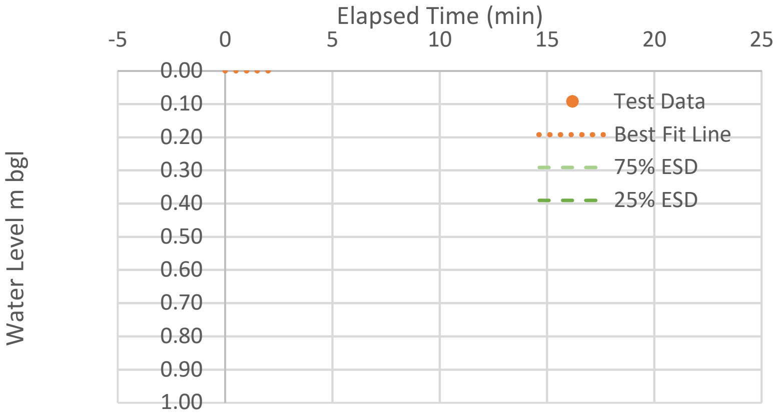


Infiltration rate f (ms^{-1}) **2.34E-06**

Total effective storage depth (esd) (m) 0.92

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
1		50% esd (mbgl)	
2		25% esd (mbgl)	
4		A_{s50} (m^2)	
5		V_{p75-25} (m^3)	
7		t_{75} (min)	
9		t_{25}(min)	
10		Data Fit R^2	
15			
20			

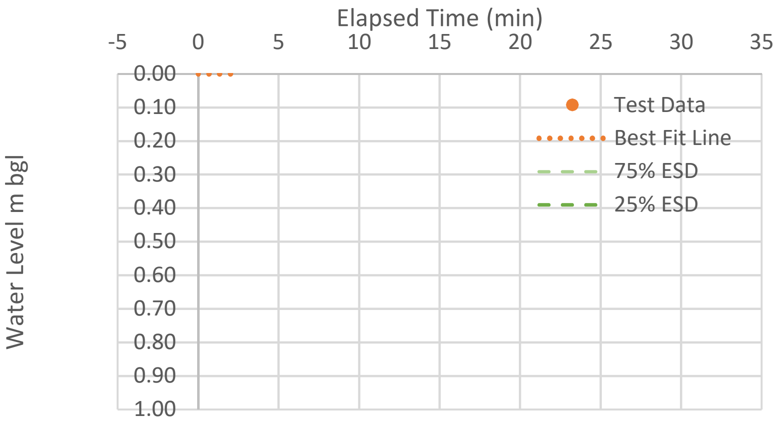


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
2		50% esd (mbgl)	
4		25% esd (mbgl)	
6		A_{s50} (m^2)	
8		V_{p75-25} (m^3)	
10		t_{75} (min)	
15		t_{25}(min)	
20		Data Fit R^2	
25			
30			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by	Notes:	Logged	Checked
Arcadis Consulting (UK) Ltd	Water gravity fed through 2" pipe from IBC.	KA	0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA12

Trial Pit Details

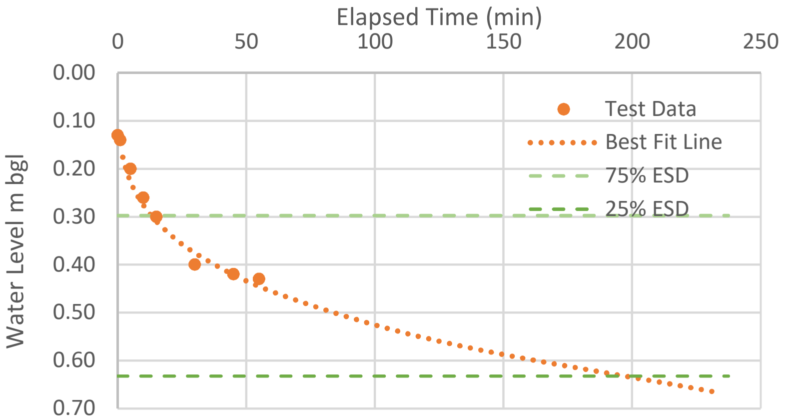
	Test 1	Test 2	Test 3
Depth	0.80		
Width	0.50		
Length	2.00		

Ground Level	92.06	mAOD
Coordinates	315821.993	mE
	294270.884	mN

Date Excavated	07/01/2019
Date Tested	07/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.13	75% esd (mbgl)	0.30
1	0.14	50% esd (mbgl)	0.47
5	0.20	25% esd (mbgl)	0.63
10	0.26	A_{s50} (m^2)	2.68
15	0.30	V_{p75-25} (m^3)	0.34
30	0.40	t_{75} (min)	1.3E+01
45	0.42	t_{25}(min)	1.9E+02
55	0.43	Data Fit R^2	0.985

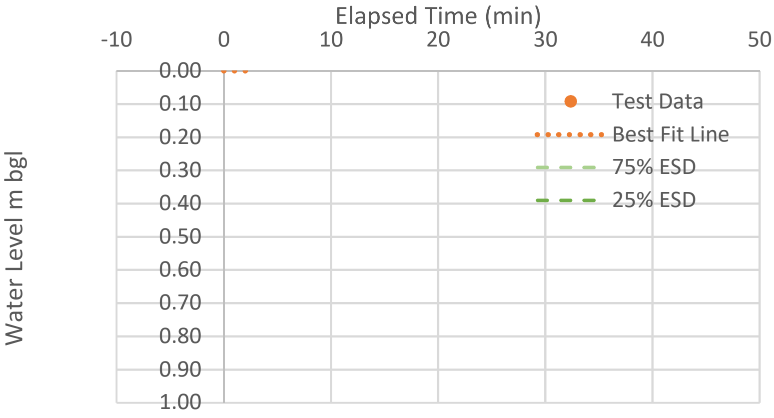


Infiltration rate f (ms^{-1}) **1.16E-05**

Total effective storage depth (esd) (m) 0.67

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
1		50% esd (mbgl)	
2		25% esd (mbgl)	
5		A_{s50} (m^2)	
10		V_{p75-25} (m^3)	
15		t_{75} (min)	
30		t_{25}(min)	
45		Data Fit R^2	

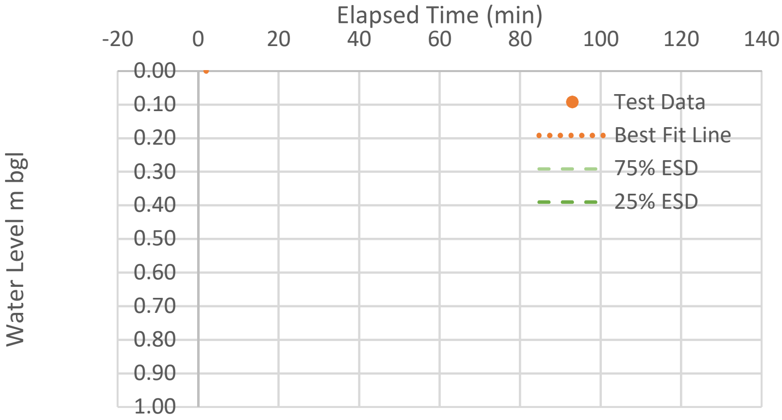


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
2		75% esd (mbgl)	
3		50% esd (mbgl)	
4		25% esd (mbgl)	
8		A_{s50} (m^2)	
16		V_{p75-25} (m^3)	
30		t_{75} (min)	
60		t_{25}(min)	
90		Data Fit R^2	
120			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

ARCADIS Design & Consultancy for natural and built assets

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA13

Trial Pit Details

	Test 1	Test 2	Test 3
Depth	0.80	0.80	
Width	0.50	0.50	
Length	3.70	3.70	

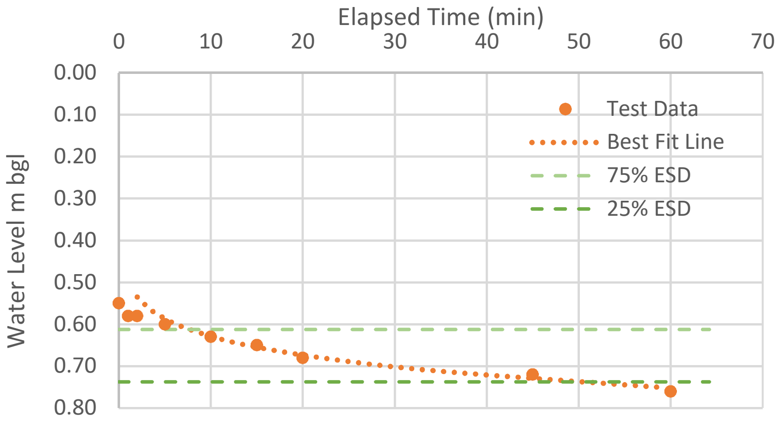
Ground Level	92.01	mAOD
Coordinates	315834.1	mE
	294292.49	mN

Date Excavated	07/01/2019
Date Tested	07/01/2019

Test 1

Time min	Depth to Water m bgl
0	0.55
1	0.58
2	0.58
5	0.60
10	0.63
15	0.65
20	0.68
45	0.72
60	0.76

Test Parameters	
75% esd (mbgl)	0.61
50% esd (mbgl)	0.68
25% esd (mbgl)	0.74
A_{s50} (m^2)	2.90
V_{p75-25} (m^3)	0.23
t_{75} (min)	7.7E+00
t_{25}(min)	4.9E+01
Data Fit R^2	0.918



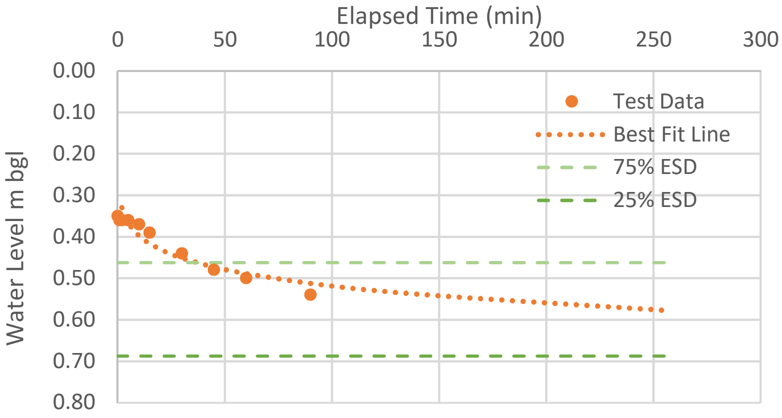
Infiltration rate f (ms^{-1}) **3.19E-05**

Total effective storage depth (esd) (m) 0.25

Test 2

Time min	Depth to Water m bgl
0	0.35
1	0.36
2	0.36
5	0.36
10	0.37
15	0.39
30	0.44
45	0.48
60	0.50
90	0.54

Test Parameters	
75% esd (mbgl)	0.46
50% esd (mbgl)	0.58
25% esd (mbgl)	0.69
A_{s50} (m^2)	3.74
V_{p75-25} (m^3)	0.42
t_{75} (min)	3.7E+01
t_{25}(min)	1.2E+03
Data Fit R^2	0.881



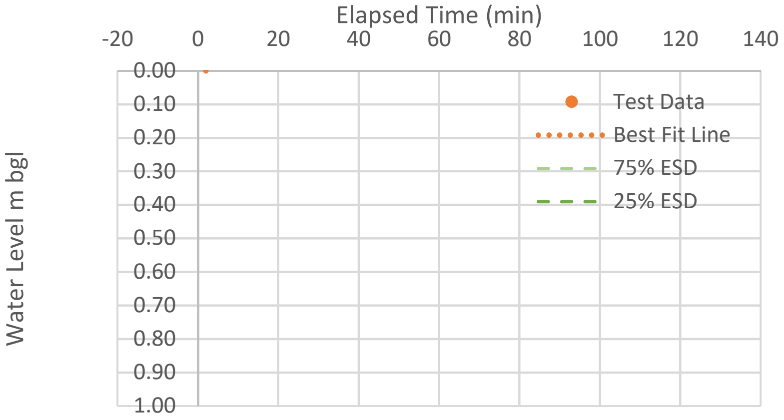
Infiltration rate f (ms^{-1}) **1.66E-06**

Total effective storage depth (esd) (m) 0.45

Test 3

Time min	Depth to Water m bgl
2	
3	
4	
8	
16	
30	
60	
90	
120	

Test Parameters	
75% esd (mbgl)	
50% esd (mbgl)	
25% esd (mbgl)	
A_{s50} (m^2)	
V_{p75-25} (m^3)	
t_{75} (min)	
t_{25}(min)	
Data Fit R^2	



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

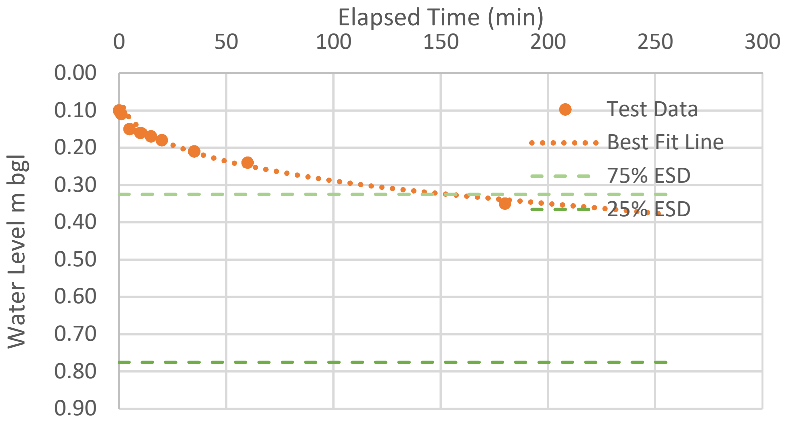
Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA14

Trial Pit Details

	Test 1	Test 2	Test 3				
Depth	1.00			Ground Level	92.30 mAOD	Date Excavated	08/01/2019
Width	0.50			Coordinates	315835.74 mE	Date Tested	08/01/2019
Length	1.80				294267.672 mN		

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.10	75% esd (mbgl)	0.33
1	0.11	50% esd (mbgl)	0.55
5	0.15	25% esd (mbgl)	0.78
10	0.16	A_{s50} (m^2)	2.97
15	0.17	V_{p75-25} (m^3)	0.41
20	0.18	t_{75} (min)	1.5E+02
35	0.21	t_{25}(min)	3.0E+03
60	0.24	Data Fit R^2	0.957
180	0.35		

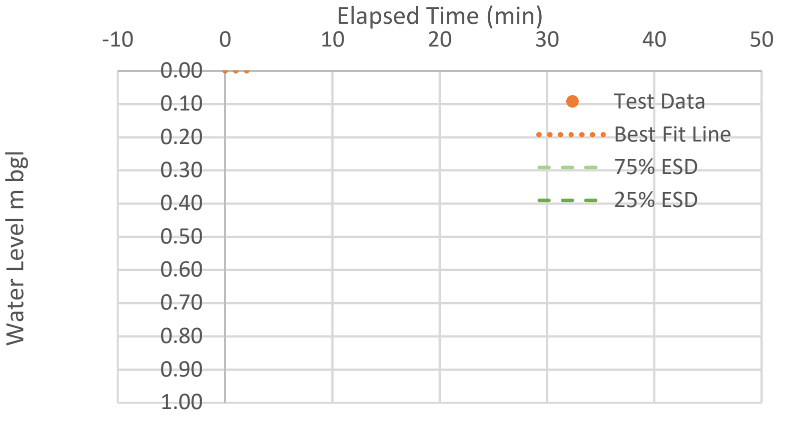


Infiltration rate f (ms^{-1}) **8.0E-07**

Total effective storage depth (esd) (m) 0.90

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0		75% esd (mbgl)	
1		50% esd (mbgl)	
2		25% esd (mbgl)	
5		A_{s50} (m^2)	
10		V_{p75-25} (m^3)	
15		t_{75} (min)	
30		t_{25}(min)	
45		Data Fit R^2	

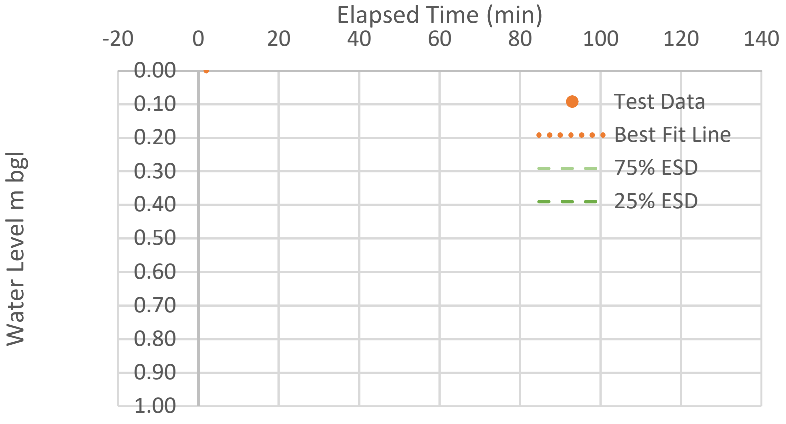


Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m)

Test 3

Time min	Depth to Water m bgl	Test Parameters	
2		75% esd (mbgl)	
3		50% esd (mbgl)	
4		25% esd (mbgl)	
8		A_{s50} (m^2)	
16		V_{p75-25} (m^3)	
30		t_{75} (min)	
60		t_{25}(min)	
90		Data Fit R^2	
120			



Infiltration rate f (ms^{-1}) **NO VALID DATA**

Total effective storage depth (esd) (m) 0.00

Carried out by Arcadis Consulting (UK) Ltd	Notes: Gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

ARCADIS Design & Consultancy for natural and built assets

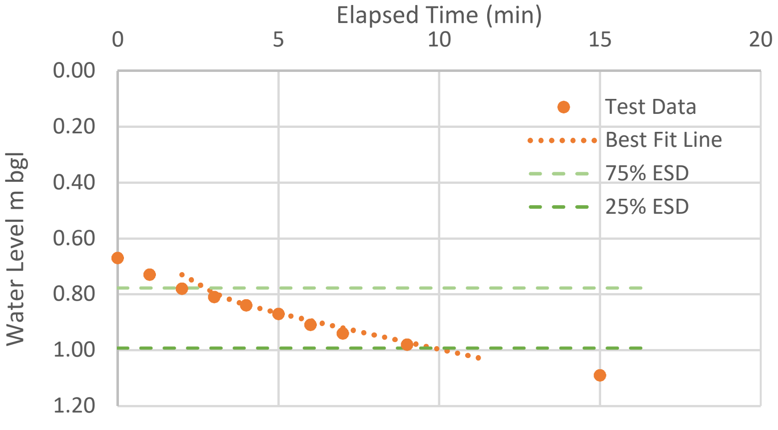
Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA15

Trial Pit Details

	Test 1	Test 2	Test 3				
				Ground Level	92.32 mAOD	Date Excavated	08/01/2019
Depth	1.10	1.10	1.10	Coordinates	315853.1 mE	Date Tested	08/01/2019
Width	0.50	0.50	0.50		294260.61 mN		
Length	2.00	2.00	2.00				

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.67	75% esd (mbgl)	0.78
1	0.73	50% esd (mbgl)	0.89
2	0.78	25% esd (mbgl)	0.99
3	0.81	A_{s50} (m^2)	2.08
4	0.84	V_{p75-25} (m^3)	0.22
5	0.87	t_{75} (min)	2.7E+00
6	0.91	t_{25}(min)	9.4E+00
7	0.94	Data Fit R^2	0.961
9	0.98		
15	1.09		

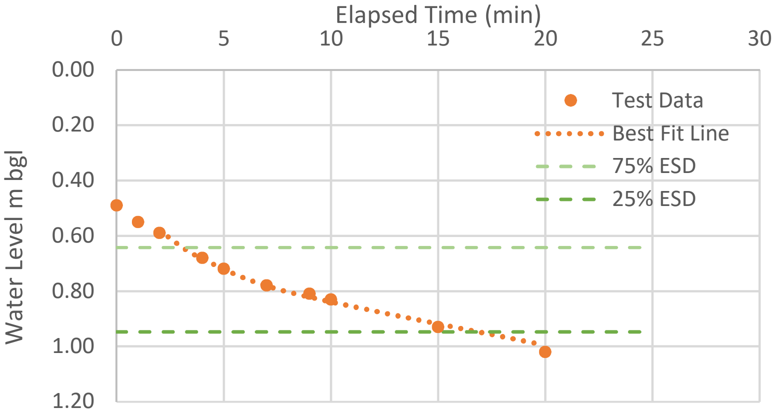


Infiltration rate f (ms^{-1}) 2.59E-04

Total effective storage depth (esd) (m) 0.43

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0	0.49	75% esd (mbgl)	0.64
1	0.55	50% esd (mbgl)	0.80
2	0.59	25% esd (mbgl)	0.95
4	0.68	A_{s50} (m^2)	2.53
5	0.72	V_{p75-25} (m^3)	0.31
7	0.78	t_{75} (min)	3.1E+00
9	0.81	t_{25}(min)	1.6E+01
10	0.83	Data Fit R^2	0.992
15	0.93		
20	1.02		

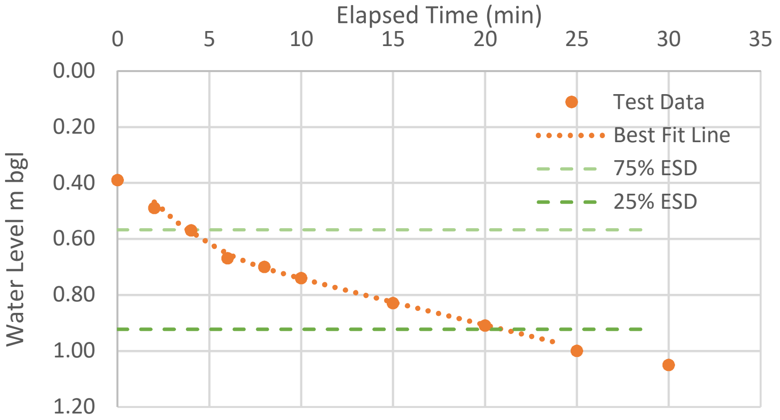


Infiltration rate f (ms^{-1}) 1.53E-04

Total effective storage depth (esd) (m) 0.61

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0	0.39	75% esd (mbgl)	0.57
2	0.49	50% esd (mbgl)	0.75
4	0.57	25% esd (mbgl)	0.92
6	0.67	A_{s50} (m^2)	2.78
8	0.70	V_{p75-25} (m^3)	0.36
10	0.74	t_{75} (min)	3.8E+00
15	0.83	t_{25}(min)	2.0E+01
20	0.91	Data Fit R^2	0.992
25	1.00		
30	1.05		



Infiltration rate f (ms^{-1}) 1.31E-04

Total effective storage depth (esd) (m) 0.71

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

Trial Pit Soakaway Test

Based on BRE DG 365:2016

Project	Abermule Business Park	Status	LOCATION ID
Project ID	10026414	PRELIMINARY	SA16

Trial Pit Details

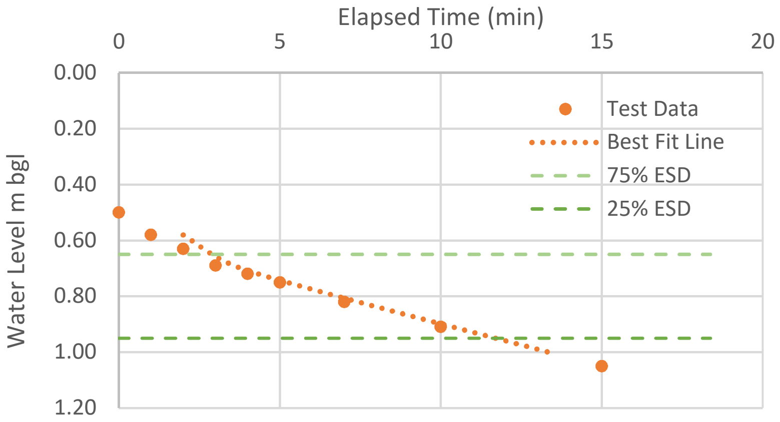
	Test 1	Test 2	Test 3
Depth	1.10	1.10	1.10
Width	0.50	0.50	0.50
Length	1.90	1.90	1.90

Ground Level	92.42	mAOD
Coordinates	315835.34	mE
	294248.99	mN

Date Excavated	08/01/2019
Date Tested	08/01/2019

Test 1

Time min	Depth to Water m bgl	Test Parameters	
0	0.50	75% esd (mbgl)	0.65
1	0.58	50% esd (mbgl)	0.80
2	0.63	25% esd (mbgl)	0.95
3	0.69	A_{s50} (m^2)	2.39
4	0.72	V_{p75-25} (m^3)	0.29
5	0.75	t_{75} (min)	3.0E+00
7	0.82	t_{25}(min)	1.1E+01
10	0.91	Data Fit R^2	0.963
15	1.05		

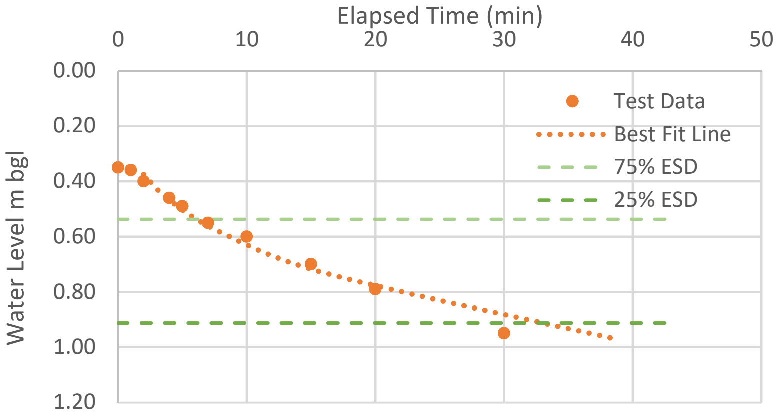


Infiltration rate f (ms^{-1}) **2.43E-04**

Total effective storage depth (esd) (m) 0.60

Test 2

Time min	Depth to Water m bgl	Test Parameters	
0	0.35	75% esd (mbgl)	0.54
1	0.36	50% esd (mbgl)	0.73
2	0.40	25% esd (mbgl)	0.91
4	0.46	A_{s50} (m^2)	2.75
5	0.49	V_{p75-25} (m^3)	0.36
7	0.55	t_{75} (min)	6.1E+00
10	0.60	t_{25}(min)	3.2E+01
15	0.70	Data Fit R^2	0.980
20	0.79		
30	0.95		

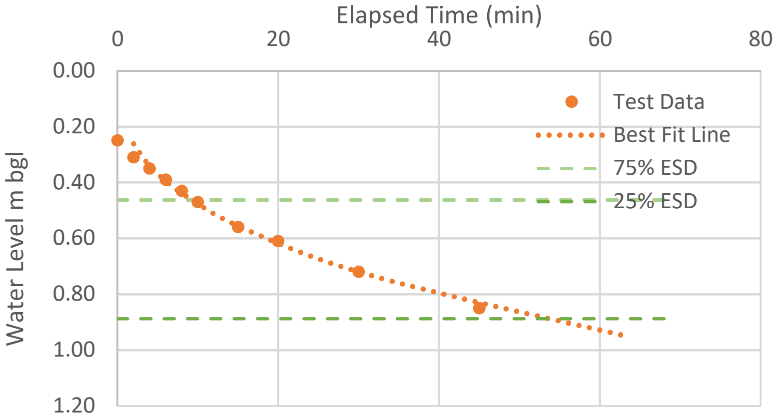


Infiltration rate f (ms^{-1}) **8.36E-05**

Total effective storage depth (esd) (m) 0.75

Test 3

Time min	Depth to Water m bgl	Test Parameters	
0	0.25	75% esd (mbgl)	0.46
2	0.31	50% esd (mbgl)	0.68
4	0.35	25% esd (mbgl)	0.89
6	0.39	A_{s50} (m^2)	2.99
8	0.43	V_{p75-25} (m^3)	0.40
10	0.47	t_{75} (min)	9.2E+00
15	0.56	t_{25}(min)	5.3E+01
20	0.61	Data Fit R^2	0.997
30	0.72		
45	0.85		



Infiltration rate f (ms^{-1}) **5.17E-05**

Total effective storage depth (esd) (m) 0.85

Carried out by Arcadis Consulting (UK) Ltd	Notes: Water gravity fed through 2" pipe from IBC.	Logged KA	Checked 0

APPENDIX E

Certification of Field Apparatus

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

James Fisher Testing Services Ltd
40A Hardwick Grange
Ruby House
Woolston
Warrington
WA1 4RF

SPT Hammer Ref: 62...
Test Date: 21/12/2018
Report Date: 18/01/2019
File Name: 62.spt
Test Operator: JS

Instrumented Rod Data

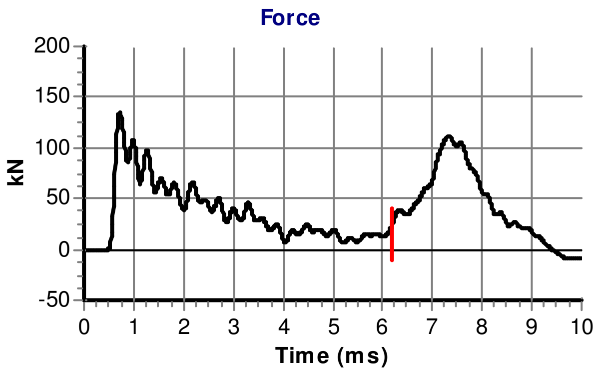
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.5
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 8965
Accelerometer No.2: 8966

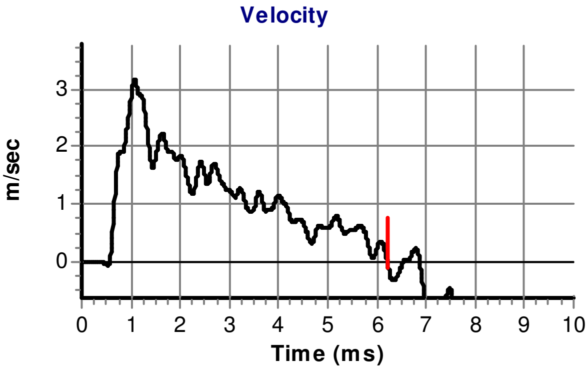
SPT Hammer Information

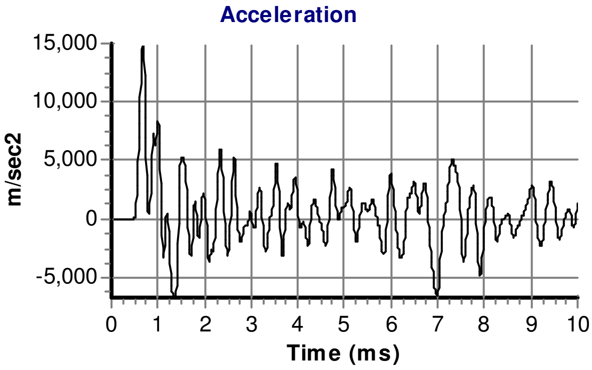
Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.5

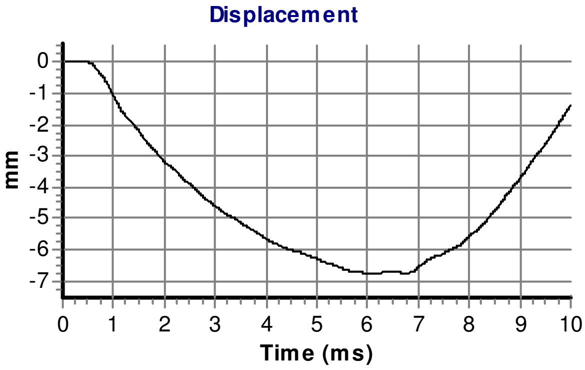
Comments / Location

Client: PB Drilling
Location: JFTS Warrington Laboratory









Calculations

Area of Rod A (mm2): 970
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 365

Energy Ratio E_r (%): 77

Signed: Iain Revenhorst
Title: Senior Technician

APPENDIX F

Monitoring Data

ARCADIS

Project:	Abermule			**Weather:**	Mainly sunny with occasional light rain
Job Number:	10026414	**Date:**	22/01/2019	**Engineer:**	RB

Monitoring Point Reference	Date/ Time	Atmos. Pressure (mbar)	Temp. (°c)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	LEL (%)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)				Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
BH101	22/01/2019 14:03	988	3	Peak:	Peak:	Initial	0.00	0.00	0.00	0.00	0.00	0.00				4.04	9.34	2.51 Pa before tap opened
					0.0	30	0.00	0.00	0.20	20.20	0.00	1.00						
						60	0.00	0.00	0.20	20.40	0.00	0.00						
						90	0.00	0.00	0.20	20.70	0.00	0.00						
				Steady:	Steady:	120	0.00	0.00	0.20	20.90	0.00	0.00						
						150	0.00	0.00	0.20	21.00	0.00	0.00						
					0.0	180	0.00	0.00	0.20	21.10	0.00	0.00						
BH102	22/01/2019 10:00	991	3	Peak:	Peak:	Initial	0.00	0.00	0.00	0.00	0.00	0.00				4.00	4.99	Flow 1.9 then zeroed
						30	0.10	1.00	4.10	12.00	0.00	0.00						
					0.0	60	0.10	1.00	4.10	10.50	0.00	0.00						
						90	0.10	1.00	4.10	10.30	0.00	0.00						
				Steady:	Steady: 0.0	120	0.10	1.00	4.10	10.20	0.00	0.00						
						150	0.10	1.00	4.10	10.10	0.00	0.00						
						180	0.10	1.00	4.20	10.00	0.00	0.00						
BH103	22/01/2019 15:45	988	3	Peak:	Peak:	Initial	0.00	0.00	0.00	0.00	0.00	0.00				4.09	8.90	1.69 Pa before tap opeened
						30	0.00	0.00	3.20	19.10	0.00	1.00						
					0.0	60	0.00	0.00	3.30	18.60	0.00	0.00						
						90	0.00	0.00	3.30	18.50	0.00	0.00						
				Steady:	Steady:	120	0.00	0.00	3.30	18.50	0.00	0.00						
						150	0.00	0.00	3.30	18.50	0.00	0.00						
					0.0	180	0.00	0.00	3.30	18.50	0.00	0.00						
BH104	22/01/2019 15:45	Borehole could not be accessed																
BH105	22/01/2019 15:45	Borehole could not be accessed																
BH106	22-01-2019 15:45:00 PM	987		Peak:	Peak:	Initial	0.00	0.00	0.00	0.00	0.00	0.00				2.65	3.59	4.85 Pa before tap opened
						30	0.00	0.00	4.60	16.80	0.00	0.00						
					0.0	60	0.00	0.00	4.70	16.30	0.00	0.00						
						90	0.00	0.00	4.70	16.20	0.00	0.00						
				Steady:	Steady:	120	0.00	0.00	4.70	16.20	0.00	0.00						
					0.0	150	0.00	0.00	4.70	16.20	0.00	0.00						
						180	0.00	0.00	4.70	16.20	0.00	0.00						

Notes:

Previous weather conditions, Atmosphic pressure trend and rate, flooding, soil moisture, water draw in tube, wind direction/strength, condition of monitoring point, missing/open tap, datum level, vegetation stress, odours, bubbles, etc.

Ambient Concentration	
CH4	**0.1%**
CO2	**0.1%**
O2	**21.60%**
H2S	**0%**
CO	**0%**

QA Checklist:	
Weather conditions logged for previous 24 hrs	x
Gas monitor calibrated	x
All filters in place	x
Flow reading stable and zeroed	x

Instrument Details:	Serial No.	Hyder/other ref.
Landfill Gas Analyser		Hired from Shaw City
PID		
Dip meter/ interface probe		

Project:	Abermule			**Weather:**	Snowy
Job Number:	10026414	**Date:**	30/01/2019	**Engineer:**	JB

Monitoring Point Reference	Date/ Time	Atmos. Pressure (mbar)	Temp. (°c)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	LEL (%)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)				Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
BH101	30/10/2019 00:00	982	-2	Peak: Steady:	Peak: 0 Steady: 0.0	Initial	0.00	0.00	0.90	18.50	0.00	0.00				3.97	9.31	
						15	0.00	0.00	0.00	19.20	0.00	10.00						
						30	0.00	0.00	0.00	19.20	0.00	10.00						
						45	0.00	0.00	0.00	19.50	0.00	10.00						
						60	0.00	0.00	0.00	19.50	0.00	10.00						
						120	0.00	0.00	0.00	19.70	0.00	10.00						
						240	0.00	0.00	0.00	19.60	0.00	10.00						
						360	0.00	0.00	0.00	19.70	0.00	10.00						
BH102	30/01/2019 00:00	983	-2	Peak: Steady:	Peak: 0.00 Steady: 0.00	Initial	0.00	0.00	0.30	19.40	0.00	0.00				3.92	4.96	
						15	0.00	0.00	4.40	8.80	0.00	0.00						
						30	0.00	0.00	4.50	7.40	0.00	10.00						
						45	0.00	0.00	4.50	7.20	0.00	10.00						
						60	0.00	0.00	4.50	7.20	0.00	10.00						
						120	0.00	0.00	4.50	7.10	0.00	10.00						
						240	0.00	0.00	4.50	7.20	0.00	10.00						
						360	0.00	0.00	4.50	7.10	0.00	10.00						
BH103	30/01/2019 00:00	982	-2	Peak: Steady:	Peak: 0 Steady: 0	Initial	0.00	0.00	0.20	19.50	0.00	0.00				3.99	8.93	
						15	0.00	0.00	0.90	18.80	0.00	10.00						
						30	0.00	0.00	0.90	18.60	0.00	10.00						
						45	0.00	0.00	0.90	18.50	0.00	10.00						
						60	0.00	0.00	0.90	18.50	0.00	10.00						
						120	0.00	0.00	0.40	18.30	0.00	10.00						
						240	0.00	0.00	0.90	18.20	0.00	10.00						
						360	0.00	0.00	1.00	18.30	0.00	10.00						
BH104	30/01/2019 00:00	984	-2	Peak: Steady:	Peak: -4.4 Steady: -1.6	Initial	0.80	18.30	2.00	17.50	0.00	0.00				4.30	9.15	
						15	0.00	0.00	0.50	19.20	0.00	10.00						
						30	0.00	0.00	0.40	19.50	0.00	10.00						
						45	0.00	0.00	0.40	19.30	0.00	10.00						
						60	0.00	0.00	0.40	19.40	0.00	10.00						
						120	0.00	0.00	0.40	19.00	0.00	10.00						
						240	0.00	0.00	0.40	18.90	0.00	10.00						
						360	0.00	0.00	0.40	19.10	0.00	10.00						
BH105	30/01/2019 00:00	981	-2	Peak: Steady:	Peak: 0 Steady: 0	Initial	0.30	8.40	1.90	17.40	0.00	10.00				4.07	5.52	
						15.00	0.00	0.00	1.90	16.90	0.00	10.00						
						30.00	0.00	0.00	1.90	16.80	0.00	10.00						
						45.00	0.00	0.00	2.00	16.70	0.00	10.00						
						60.00	0.00	0.00	2.00	16.70	0.00	10.00						
						120.00	0.00	0.00	2.00	16.50	0.00	10.00						
						240.00	0.00	0.00	2.00	16.40	0.00	10.00						
						360.00	0.00	0.00	2.00	16.40	0.00	10.00						
BH106	30/01/2019 00:00	983	-2	Peak: Steady:	Peak: 0 Steady: 0	Initial	0.00	0.00	0.00	19.90	0.00	0.00				2.71	3.51	
						15.00	0.00	0.00	3.40	17.40	0.00	10.00						
						30.00	0.00	0.00	2.50	16.60	0.00	10.00						
						45.00	0.00	0.00	2.50	16.60	0.00	10.00						
						60.00	0.00	0.00	2.50	16.60	0.00	10.00						
						120.00	0.00	0.00	2.50	16.50	0.00	10.00						
						240.00	0.00	0.00	2.50	16.50	0.00	10.00						
						360.00	0.00	0.00	2.50	16.50	0.00	10.00						

Notes:

Gas concentrations 0% unless otherwise specified.

Previous weather conditions, Atmosphic pressure trend and rate, flooding, soil moisture, water draw in tube, wind direction/strength, condition of monitoring point, missing/open tap, datum level, vegetation stress, odours, bubbles, etc.

Ambient Concentration	
CH4	**0%**
CO2	**0%**
O2	**0.00%**
H2S	**0%**
CO	**0%**

QA Checklist:	
Weather conditions logged for previous 24 hrs	x
Gas monitor calibrated	x
All filters in place	x
Flow reading stable and zeroed	x

Instrument Details:	Serial No.	Hyder/other ref.
Landfill Gas Analyser		Hired from Shaw City
PID		
Dip meter/ interface probe		

ARCADIS

Project:	Abermule			**Weather:**	Mainly sunny with occasional light rain
Job Number:	10026414	**Date:**	07/02/2019	**Engineer:**	RF

Monitoring Point Reference	Date/ Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	LEL (%)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)				Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
BH101	07/02/2019 11:45	993	6	Peak:	Peak:	Initial	0.10	1.00	0.10	21.50	0.00	0.00				3.95	9.48	No rain
						30	0.10	1.00	0.10	21.50	0.00	0.00						
					-0.1	60	0.10	1.00	0.10	21.60	0.00	0.00						
						90	0.10	1.00	0.10	21.60	0.00	0.00						
				Steady:	Steady:	120	0.10	1.00	0.10	21.60	0.00	0.00						
						150	0.10	1.00	0.10	21.60	0.00	0.00						
					0.0	180	0.10	1.00	0.10	21.70	0.00	0.00						
BH102	07/02/2019 12:30	993	6	Peak:	Peak:	Initial	0.10	1.00	1.60	18.30	0.00	0.00				3.92	4.96	No rain
						30	0.10	1.00	1.70	17.10	0.00	0.00						
					0.0	60	0.10	1.00	1.80	16.90	0.00	0.00						
						90	0.10	1.00	1.90	16.70	0.00	0.00						
				Steady:	Steady: 0.0	120	0.10	1.00	2.20	16.10	0.00	0.00						
						150	0.10	1.00	2.50	15.70	0.00	0.00						
						180	0.10	1.00	2.60	15.50	0.00	0.00						
BH103	07/02/2019 13:00	993	6	Peak:	Peak:	Initial	0.10	1.00	0.60	19.20	0.00	1.00				3.96	9.10	Light rain at time of recording
						30	0.10	1.00	2.70	18.90	0.00	1.00						
					0.0	60	0.10	1.00	2.90	18.90	0.00	0.00						
						90	0.10	1.00	2.90	18.40	0.00	0.00						
				Steady:	Steady:	120	0.10	1.00	3.00	18.30	0.00	0.00						
						150	0.10	1.00	3.10	18.30	0.00	0.00						
					0.0	180	0.10	1.00	3.10	18.30	0.00	0.00						
BH104	07/02/2019 13:20	993	7	Peak:	Peak:	Initial	0.10	1.00	0.20	21.10	0.00	1.00				4.26	9.29	Light rain at time of recording. Top of well above bund was flooded so water had to be removed prior to monitoring.
						30	0.10	1.00	0.10	21.30	0.00	0.00						
					0.0	60	0.10	1.00	0.10	21.40	0.00	0.00						
						90	0.10	1.00	0.10	21.50	0.00	0.00						
				Steady:	Steady:	120	0.10	1.00	0.10	21.50	0.00	0.00						
						150	0.10	1.00	0.10	21.50	0.00	0.00						
					0.0	180	0.10	1.00	0.10	21.50	0.00	0.00						
BH105	07/02/2019 14:00	993	7	No rain. Bund was loose so no gas recordings were taken.												4.05	5.55	
BH106	07/02/2019 14:20	994	7	Peak:	Peak:	Initial	0.10	1.00	2.20	20.40	0.00	0.00				2.73	3.59	No rain.
						30	0.10	1.00	2.20	19.90	0.00	0.00						
					0.0	60	0.10	1.00	2.30	19.90	0.00	0.00						
						90	0.10	1.00	2.30	19.80	0.00	0.00						
				Steady:	Steady:	120	0.10	1.00	2.30	19.80	0.00	0.00						
					-0.0	150	0.10	1.00	2.40	19.80	0.00	0.00						
						180	0.10	1.00	2.40	19.90	0.00	0.00						

Notes:

Ambient Concentration	
CH4	**0.1%**
CO2	**0.1%**
O2	**21.60%**
H2S	**0%**
CO	**0%**

Previous weather conditions, Atmosphic pressure trend and rate, flooding, soil moisture, water draw in tube, wind direction/strength, condition of monitoring point, missing/open tap, datum level, vegetation stress, odours, bubbles, etc.

Project:	**Abermule**			**Weather:**	**Sunny**
Job Number:	**10026414**	**Date:**	14/02/2019	**Engineer:**	**RF**

Monitoring Point Reference	Date/ Time	Atmos. Pressure (mbar)	Temp. (°C)	Well Pressure (Pa)	Flow Rate (l/h)	Time (sec)	CH4 (% v/v)	LEL (%)	CO2 (% v/v)	O2 (% v/v)	H2S (ppm)	CO (ppm)				Depth to Water (m)	Depth to base (m)	Comments (all readings from GL, note datum height if different)
BH101	14-02-19 11.15	1019	9	Peak: Steady:	Peak: -0.0 Steady: +0.0	Initial	0.10	1.00	0.20	21.10	0.00	0.00				3.91	8.30	
						30	0.10	1.00	0.20	21.40	0.00	0.00						
						60	0.10	2.00	0.10	21.50	0.00	0.00						
						90	0.10	2.00	0.10	21.60	0.00	0.00						
						120	0.10	2.00	0.10	21.60	0.00	0.00						
						150	0.10	2.00	0.10	21.70	0.00	0.00						
						180	0.10	2.00	0.10	21.70	0.00	0.00						
BH102	14-02-19 11.30	1019	9	Peak: Steady:	Peak: +0.1 Steady: -0.1	Initial	0.10	2.00	0.70	16.70	0.00	0.00				3.20	4.96	
						30	0.10	2.00	5.60	7.90	0.00	0.00						
						60	0.10	2.00	5.60	7.90	0.00	0.00						
						90	0.10	2.00	5.60	7.90	0.00	0.00						
						120	0.10	2.00	5.60	7.90	0.00	0.00						
						150	0.10	2.00	5.60	7.90	0.00	0.00						
						180	0.10	2.00	5.60	7.90	0.00	0.00						
BH103	14-02-19 11.55	1019	9	Peak: Steady:	Peak: +0.0 Steady: +0.0	Initial	0.10	1.00	0.40	21.50	0.00	0.00				3.34	8.92	
						30	0.10	1.00	3.20	18.00	0.00	0.00						
						60	0.10	1.00	3.20	17.90	0.00	0.00						
						90	0.10	1.00	3.20	17.90	0.00	0.00						
						120	0.10	1.00	3.20	17.90	0.00	0.00						
						150	0.10	1.00	3.20	17.90	0.00	0.00						
						180	0.10	1.00	3.20	17.80	0.00	0.00						
BH104	14-02-19 12.20	1018	10	Peak: Steady:	Peak: -0.0 Steady: -0.0	Initial	0.10	1.00	0.30	21.10	0.00	4.00				3.66	9.15	
						30	0.10	1.00	0.00	20.90	0.00	3.00						
						60	0.10	1.00	0.00	20.90	0.00	3.00						
						90	0.10	1.00	0.00	20.90	0.00	3.00						
						120	0.10	1.00	0.00	20.90	0.00	3.00						
						150	0.10	1.00	0.10	20.90	0.00	3.00						
						180	0.10	1.00	0.10	20.90	0.00	3.00						
BH105	14-02-19 13.00	1018	11	Peak: Steady:	Peak: +0.0 Steady: -0.0	Initial	0.10	1.00	0.30	21.50	0.00	1.00				3.45	5.52	
						30	0.10	1.00	2.20	18.30	0.00	0.00						
						60	0.10	1.00	2.20	18.20	0.00	0.00						
						90	0.10	2.00	2.20	18.20	0.00	0.00						
						120	0.10	2.00	2.30	18.20	0.00	0.00						
						150	0.10	2.00	2.30	18.20	0.00	0.00						
						180	0.10	2.00	2.30	18.20	0.00	0.00						
BH106	14-02-19 13.15	1018	11	Peak: Steady:	Peak: -0.0 Steady: -0.0	Initial	0.10	1.00	2.40	19.00	0.00	0.00				2.40	3.56	
						30	0.10	1.00	2.50	18.20	0.00	0.00						
						60	0.10	1.00	2.50	18.20	0.00	0.00						
						90	0.10	2.00	2.50	18.10	0.00	0.00						
						120	0.10	1.00	2.50	18.10	0.00	0.00						
						150	0.10	1.00	2.50	18.10	0.00	0.00						
						180	0.10	1.00	2.50	18.10	0.00	0.00						

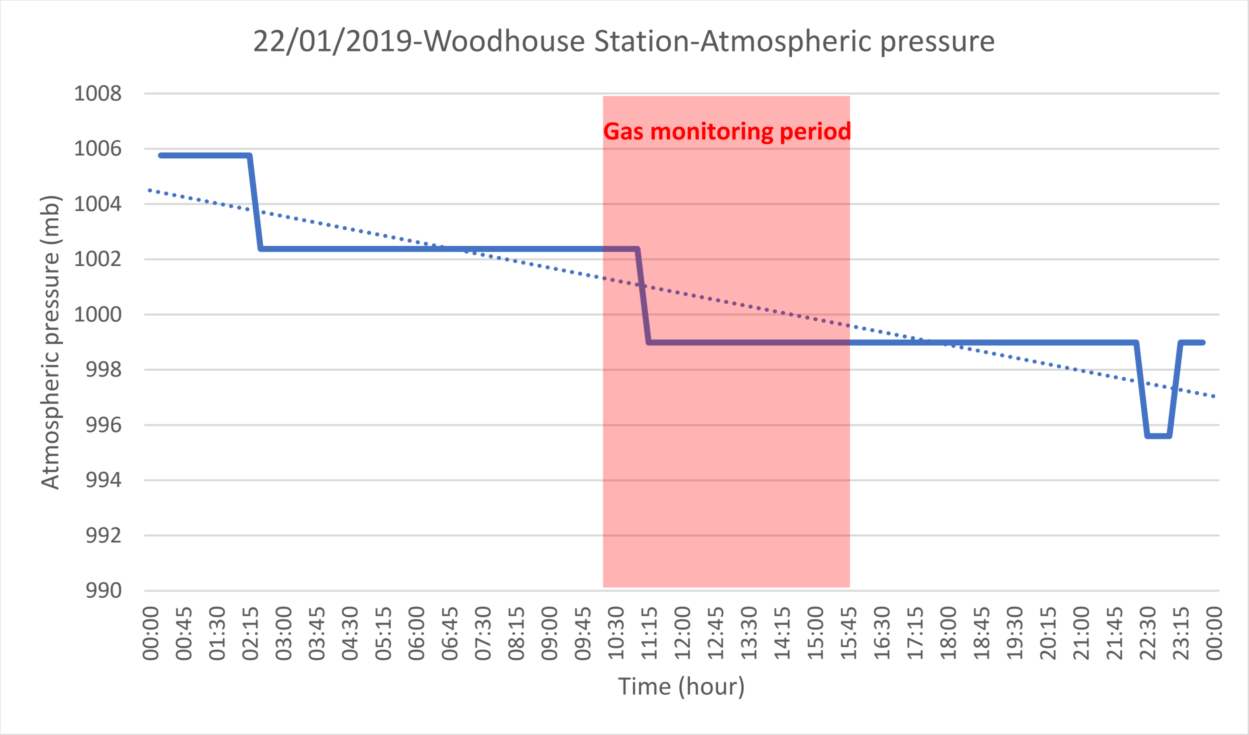
Notes:

Previous weather conditions, Atmosphic pressure trend and rate, flooding, soil moisture, water draw in tube, wind direction/strength, condition of monitoring point, missing/open tap, datum level, vegetation stress, odours, bubbles, etc.

Ambient Concentration	
CH4	**0.1%**
CO2	**0.1%**
O2	**21.50%**
H2S	**0%**
CO	**0%**

QA Checklist:	
Weather conditions logged for previous 24 hrs	x
Gas monitor calibrated	x
All filters in place	x
Flow reading stable and zeroed	x

Instrument Details:	Serial No.	Hyder/other ref.
Landfill Gas Analyser		Hired from Shaw City
PID		
Dip meter/ interface probe		


22/01/2019-Woodhouse Station-Atmospheric pressure
Gas monitoring period
Atmospheric pressure (mb)
1008
1006
1004
1002
1000
998
996
994
992
990
00:00
00:45
01:30
02:15
03:00
03:45
04:30
05:15
06:00
06:45
07:30
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09:00
09:45
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15:00
15:45
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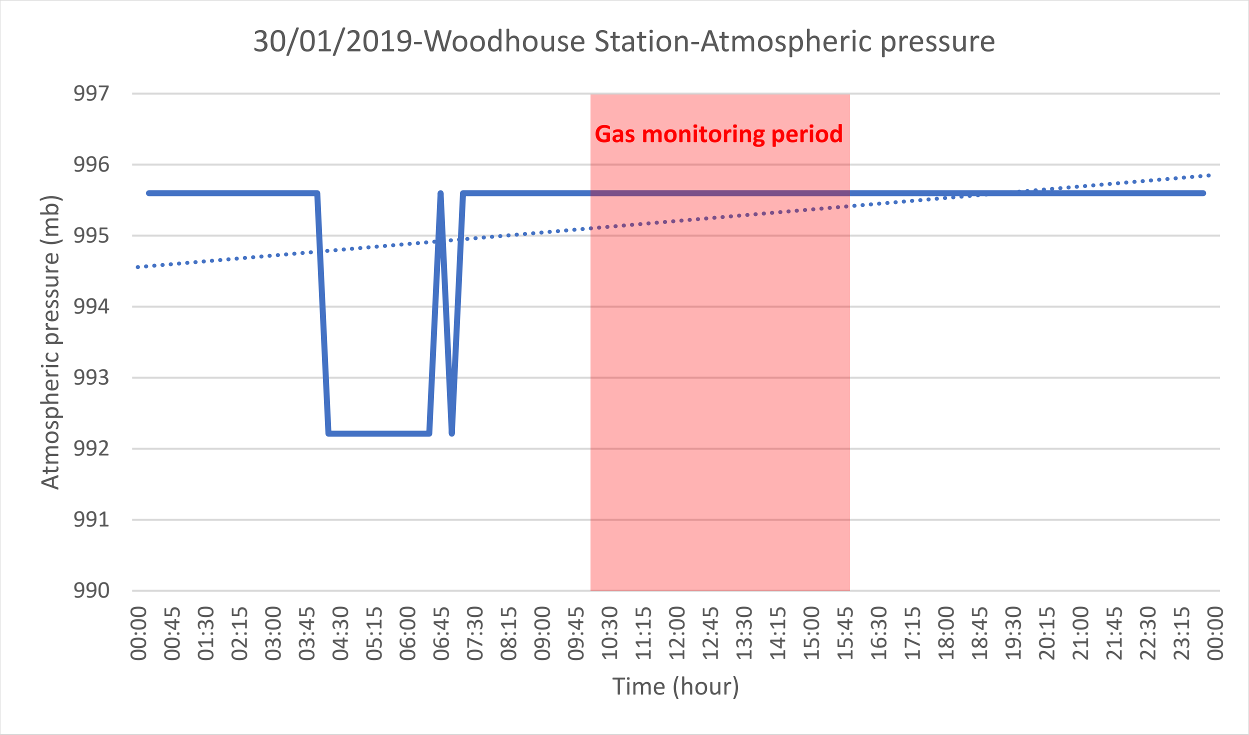
21:00
21:45
22:30
23:15
00:00
Time (hour)


30/01/2019-Woodhouse Station-Atmospheric pressure
Gas monitoring period
Atmospheric pressure (mb)
997
996
995
994
993
992
991
990
00:00
00:45
01:30
02:15
03:00
03:45
04:30
05:15
06:00
06:45
07:30
08:15
09:00
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15:00
15:45
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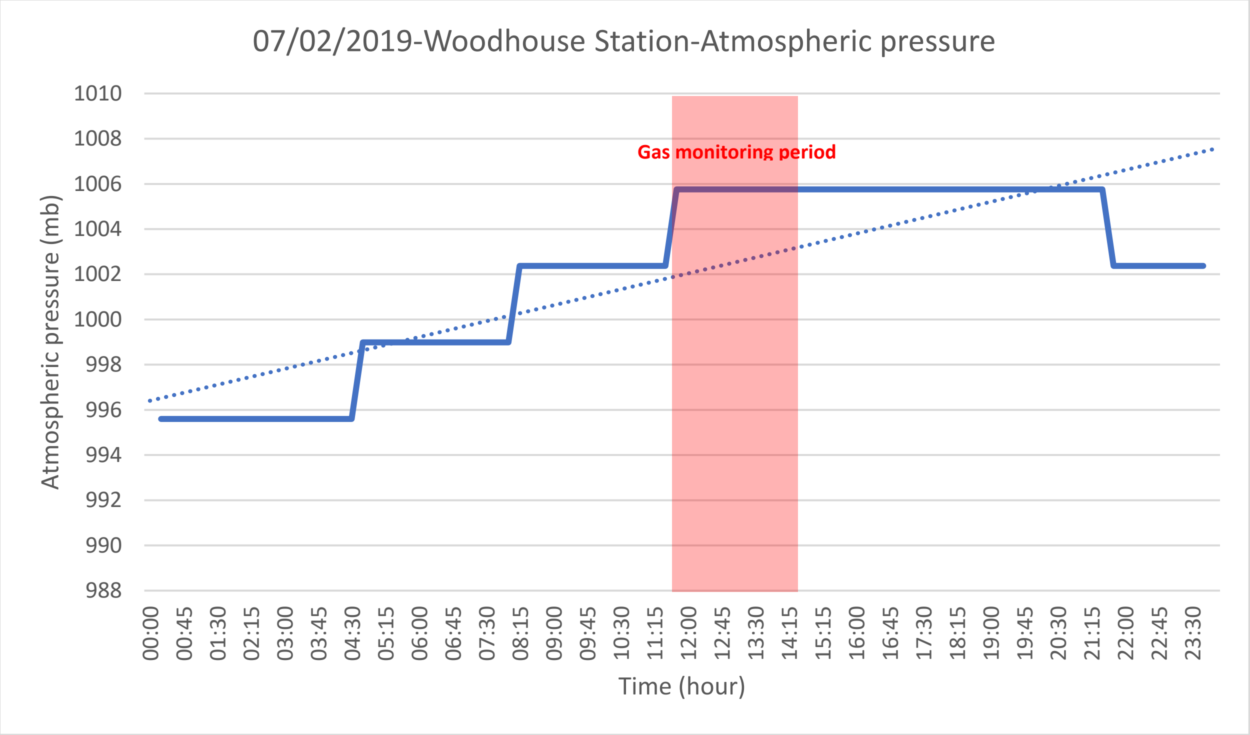
23:15
00:00
Time (hour)


07/02/2019-Woodhouse Station-Atmospheric pressure
Atmospheric pressure (mb)
1010
1008
1006
1004
1002
1000
998
996
994
992
990
988
Gas monitoring period
00:00
00:45
01:30
02:15
03:00
03:45
04:30
05:15
06:00
06:45
07:30
08:15
09:00
09:45
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12:00
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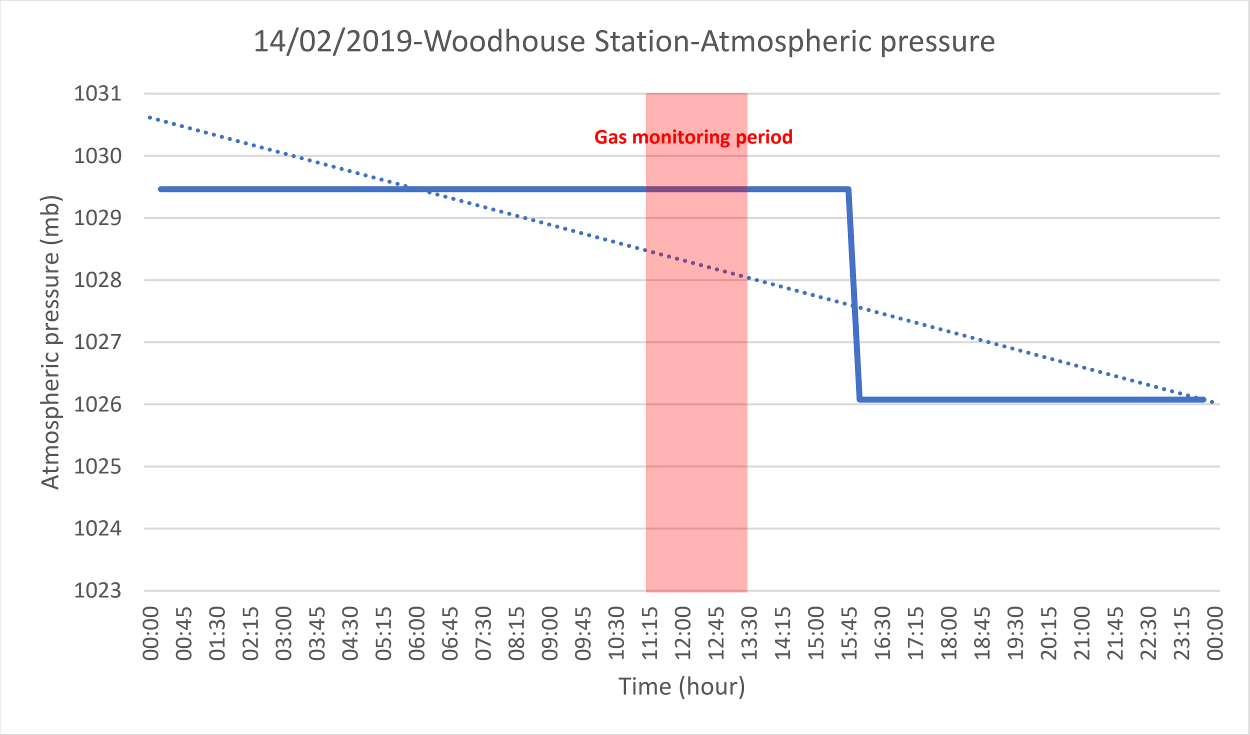
13:30
14:15
15:15
16:00
16:45
17:30
18:15
19:00
19:45
20:30
21:15
22:00
22:45
23:30
Time (hour)


14/02/2019-Woodhouse Station-Atmospheric pressure
Atmospheric pressure (mb)
1031
1030
1029
1028
1027
1026
1025
1024
1023
Gas monitoring period
00:00
00:45
01:30
02:15
03:00
03:45
04:30
05:15
06:00
06:45
07:30
08:15
09:00
09:45
10:30
11:15
12:00
12:45
13:30
14:15
15:00
15:45
16:30
17:15
18:00
18:45
19:30
20:15
21:00
21:45
22:30
23:15
00:00
Time (hour)

APPENDIX G

Geotechnical Laboratory Results

UKAS TESTING
2788

Laboratory Report

GSTL
GEO Site & Testing Services Ltd

Contract Number: 41505

Client Ref:
Report Date: **10-01-2019**
Client PO: **14018549**

Client **Arcadis**
Hyder Site Investigation Services
5th Floor
401 Faraday Street
Birchwood Park
Warrington
WA3 6GA

Contract Title: **Abermule CBR testing 4 days on site**
For the attention of: **Karl Addison**

Date Received: **06-11-2018**
Date Commenced: **06-11-2018**
Date Completed: **10-01-2019**

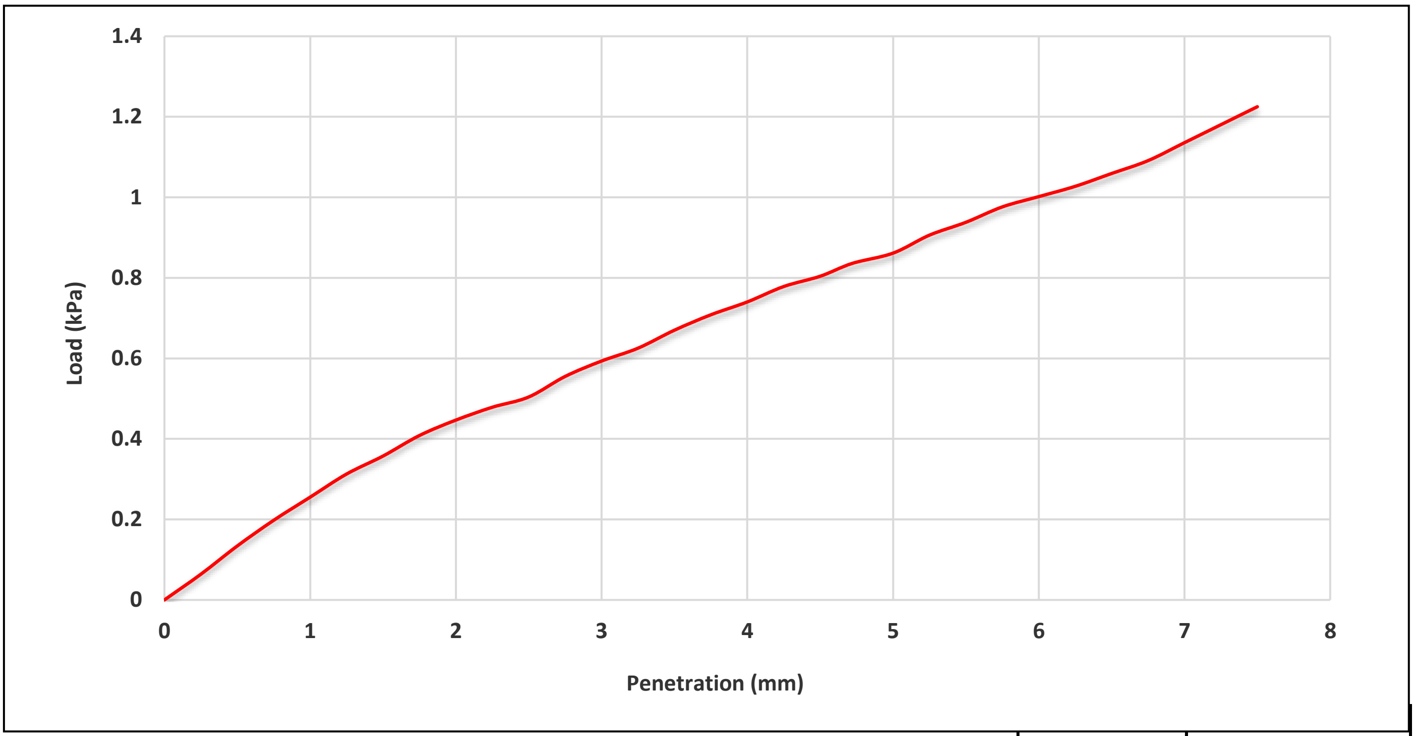
Test Description	Qty
Day Rate: CBRS BS 1377:1990 - Part 9 Cl 4.3 - * UKAS includes mob & B&B	4
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:
Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant)
Wayne Honey (Administrative/Quality Assistant)

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 1**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.3

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

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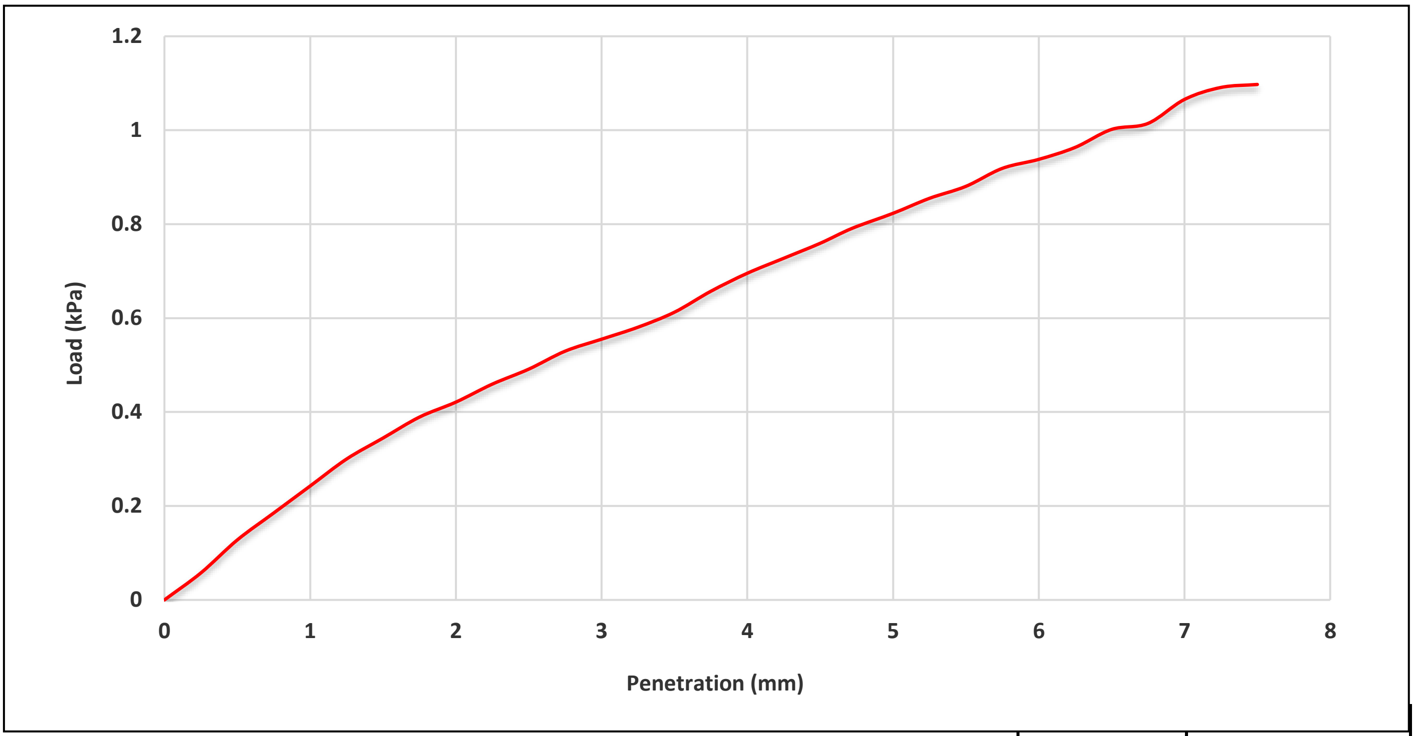
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 2**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.1

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

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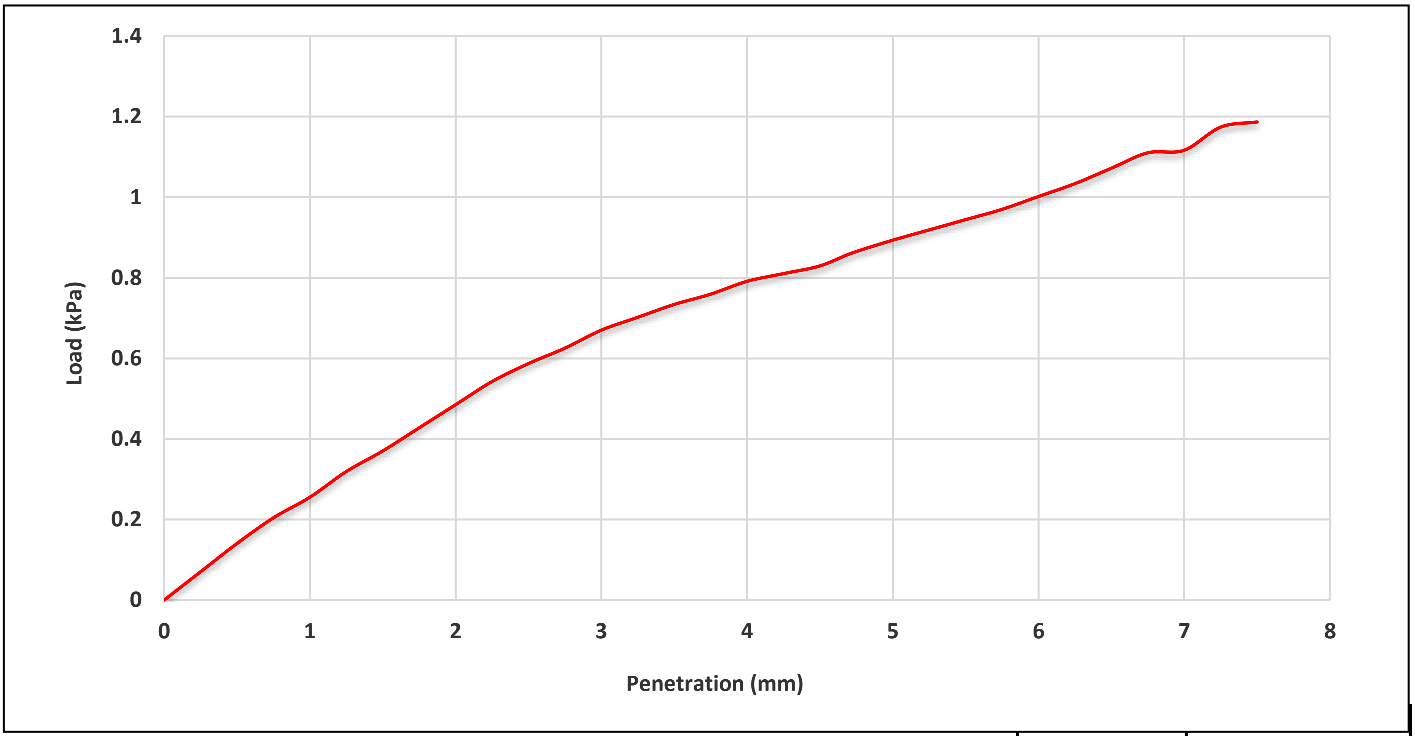
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 3**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.5**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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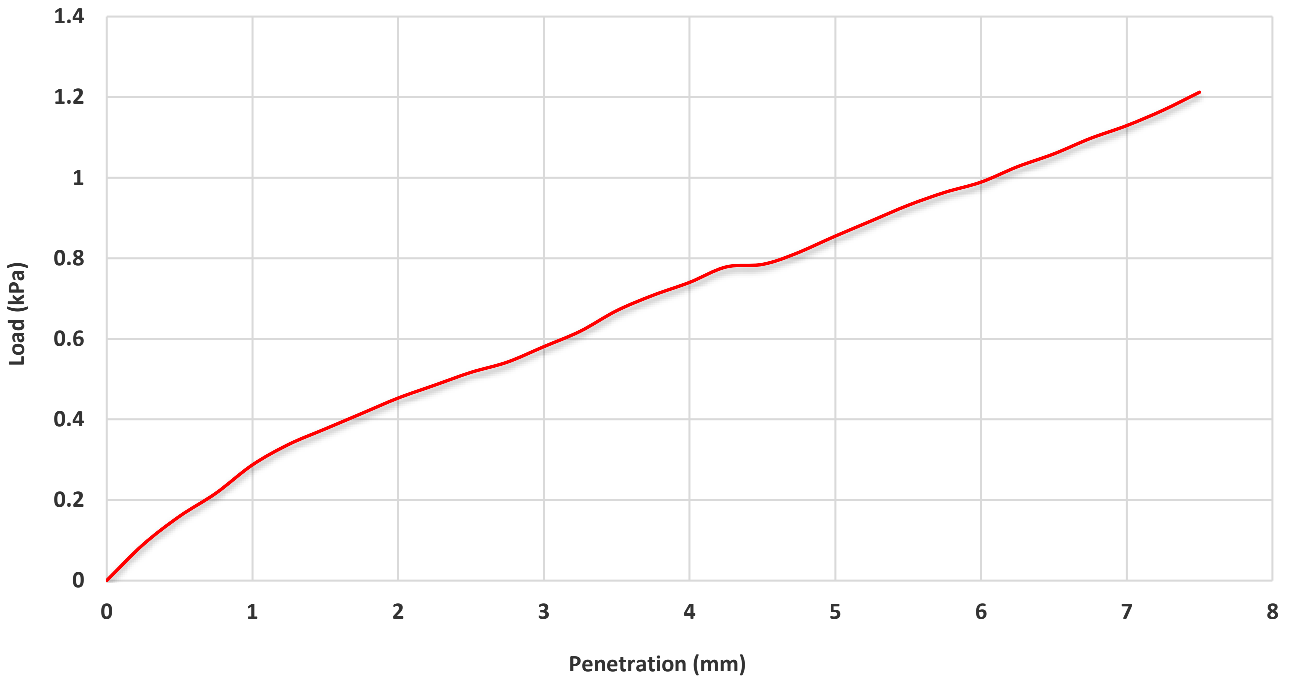
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	41505
		Client Reference	14018549
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 4**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.3

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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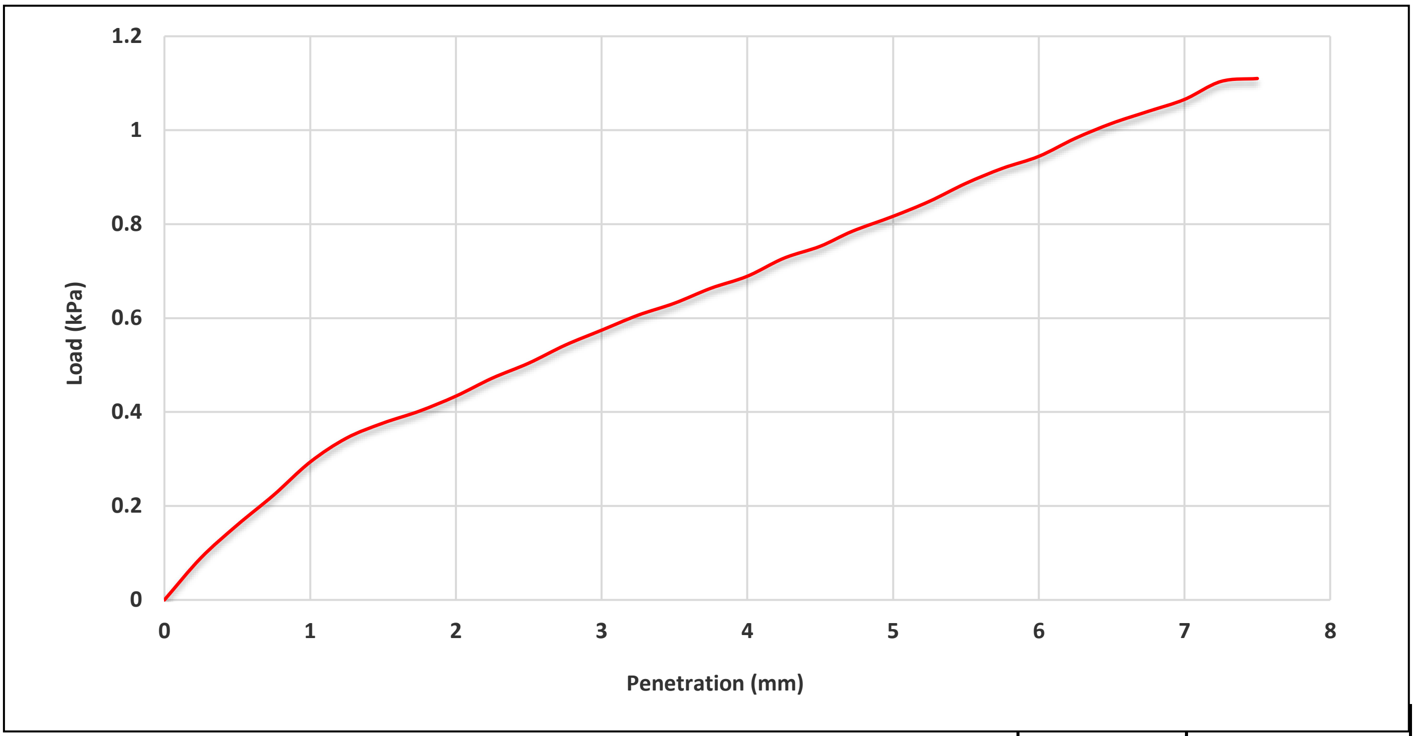
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 5**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.1**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

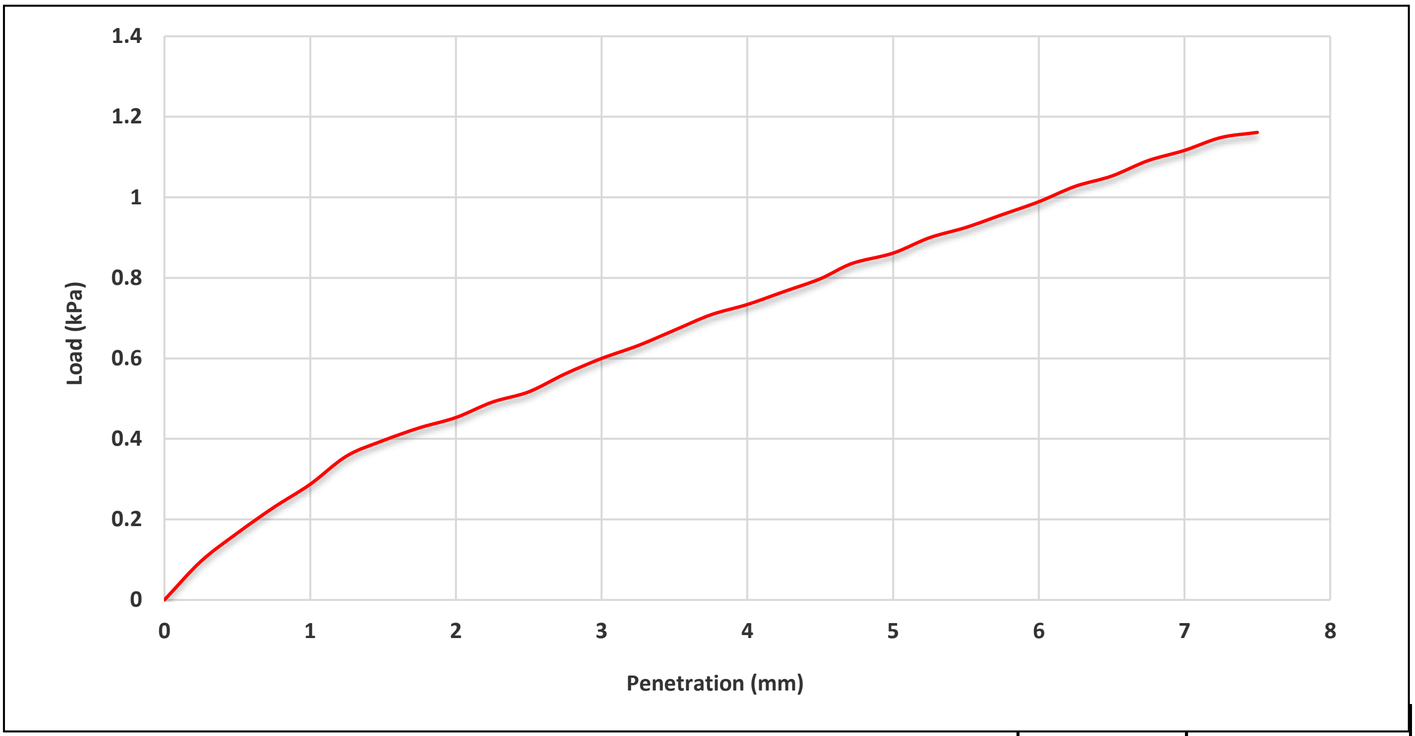
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 6**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.3**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**22**

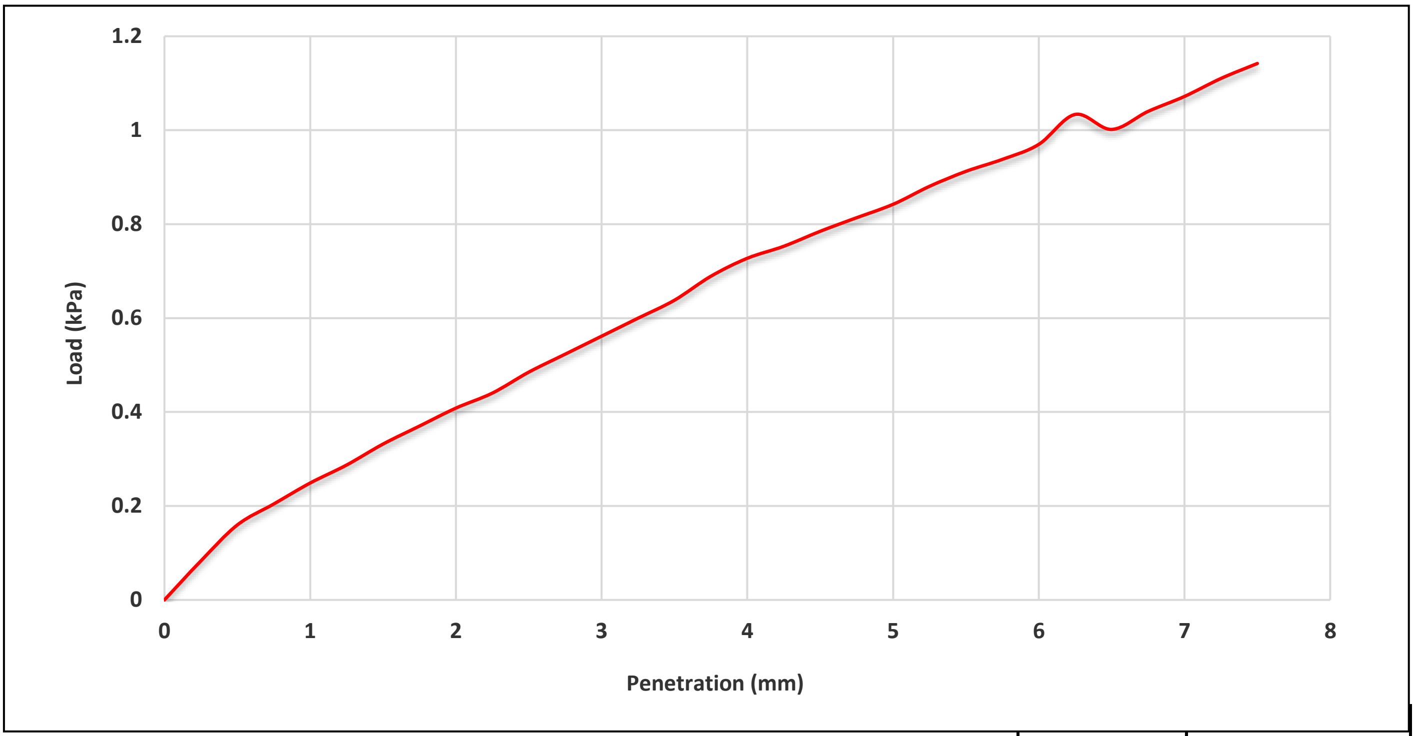
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 7**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.2**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

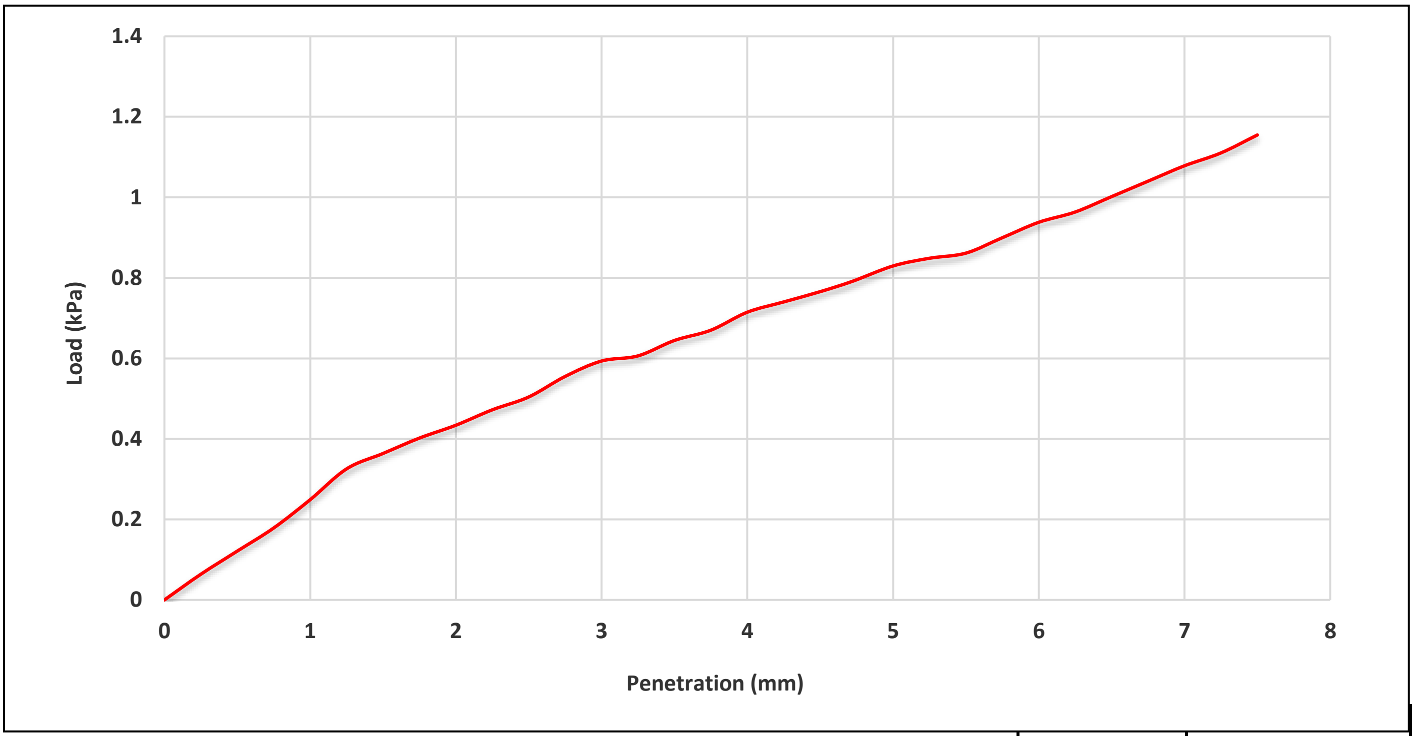
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 8**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.1**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

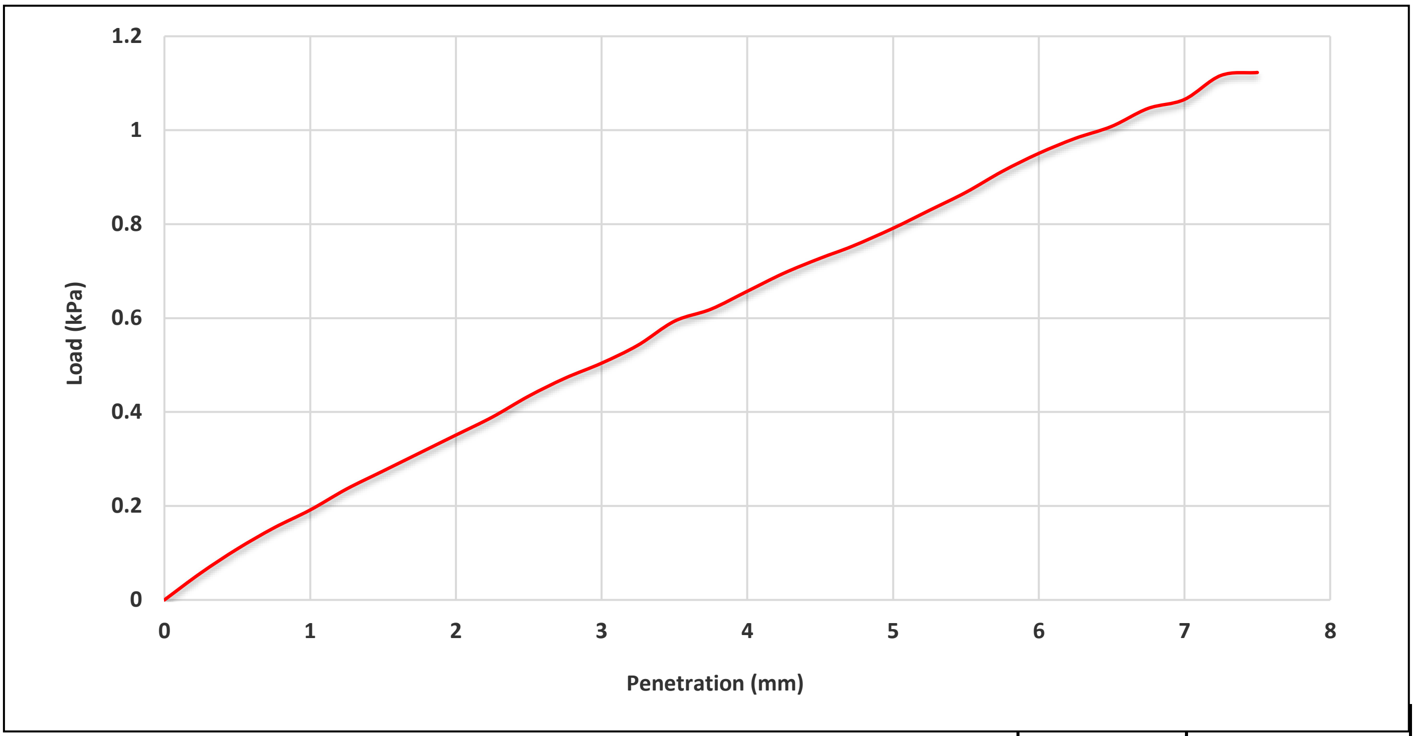
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 9**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.0**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

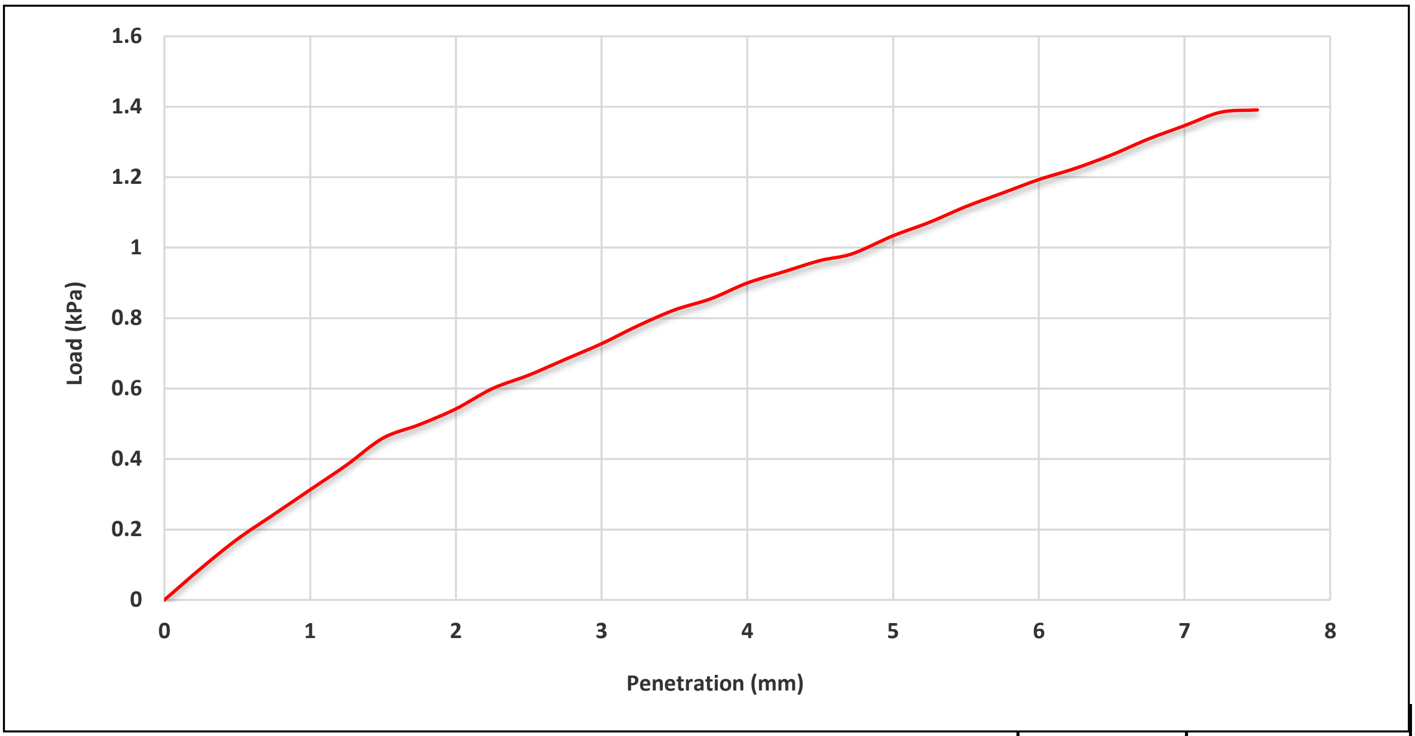
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 10**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**5.2**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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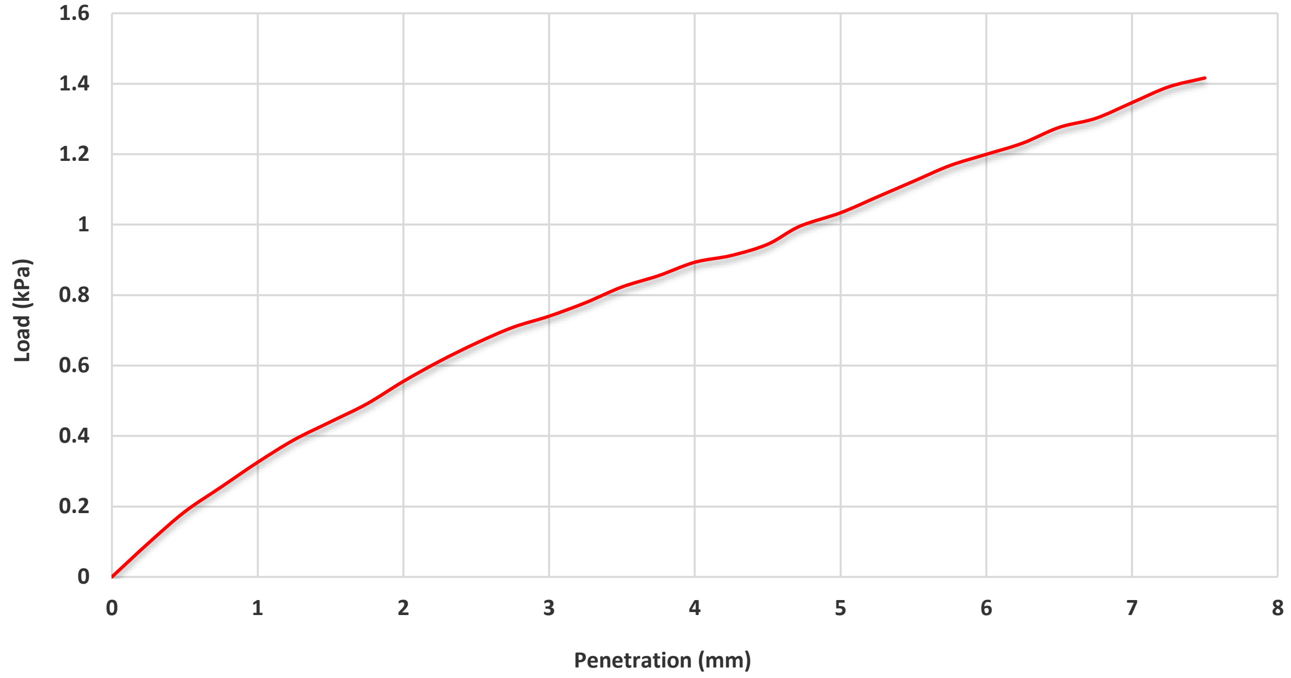
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 11**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	5.2

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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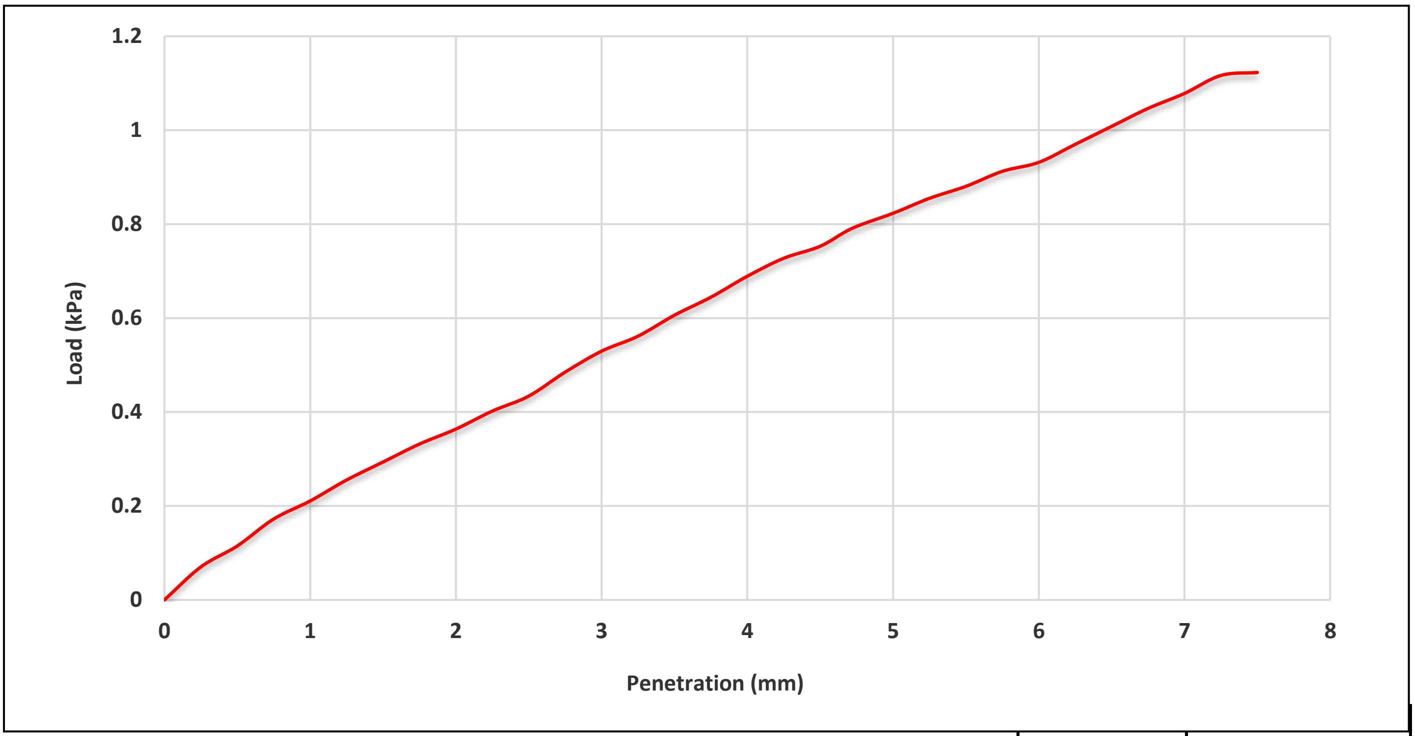
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 12**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.1

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

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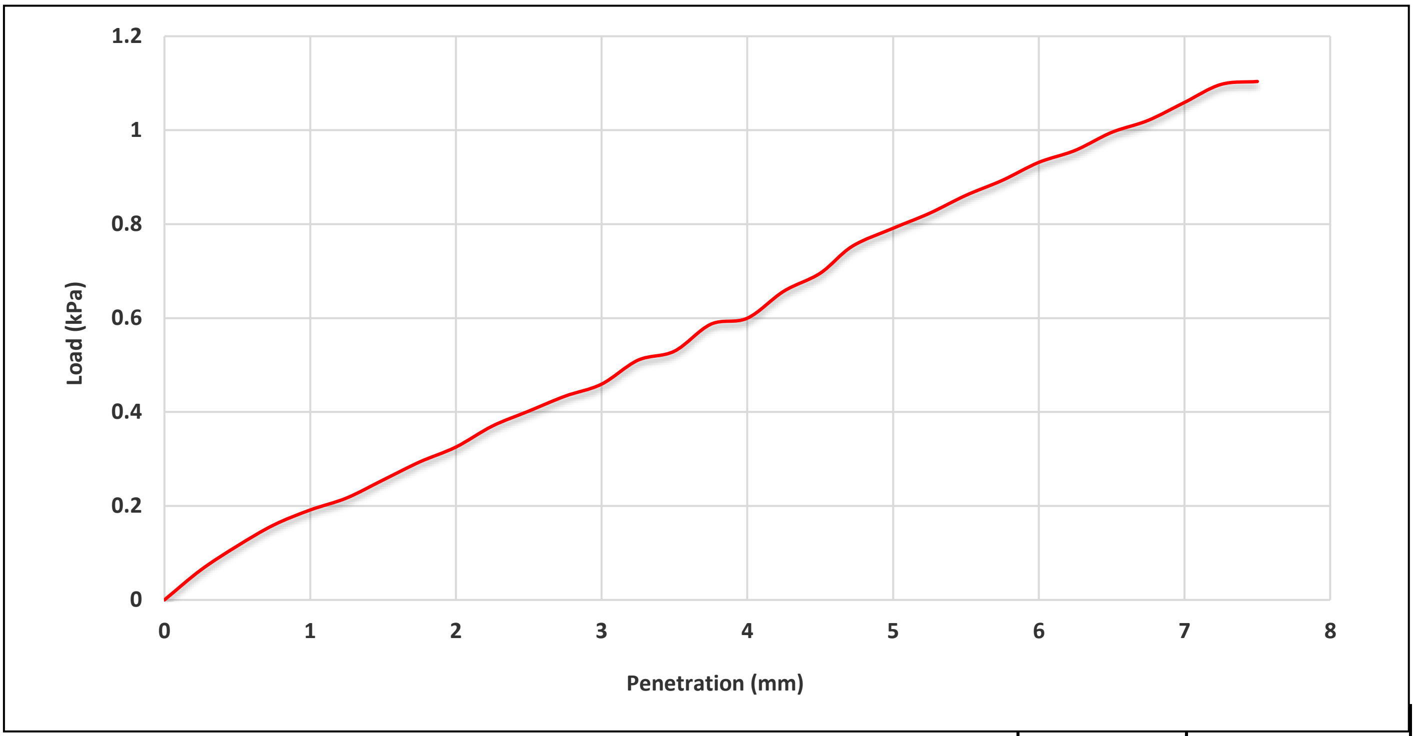
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 13**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.0

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

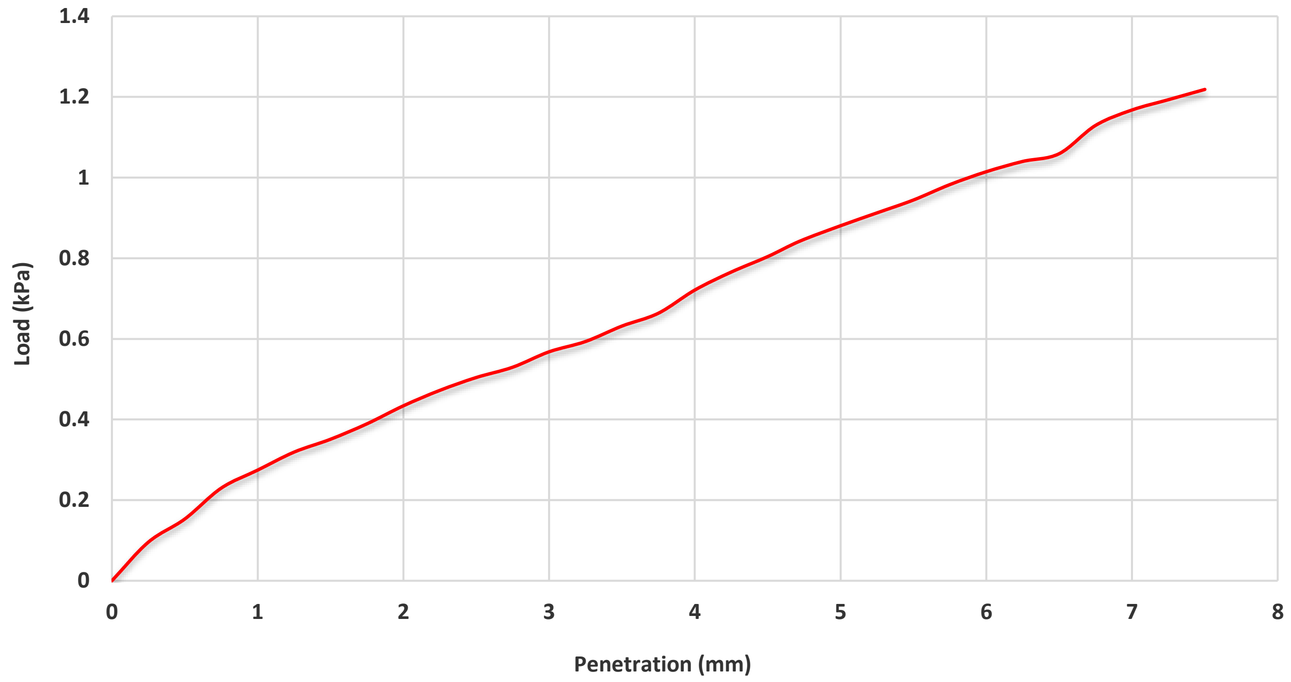
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**08/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 14**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.4**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**22**

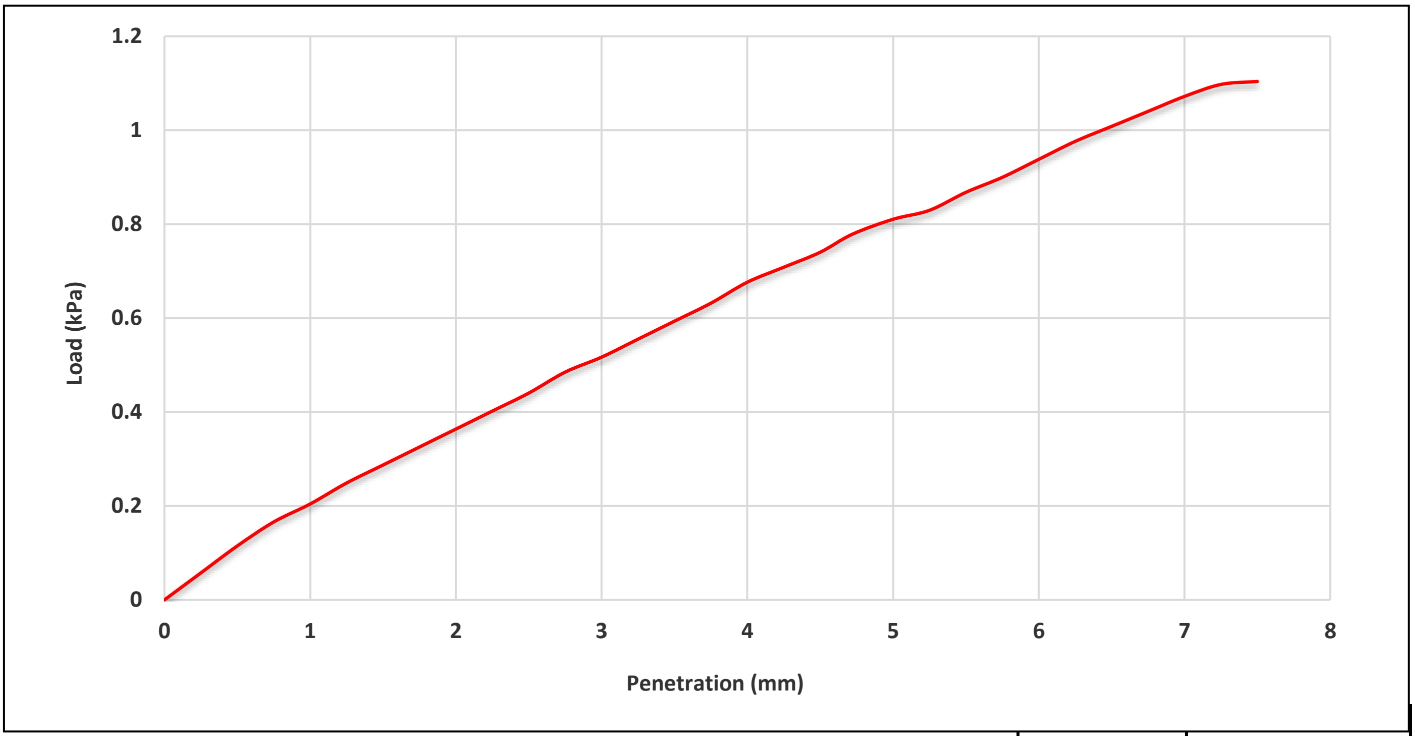
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**08/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 15**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.1

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

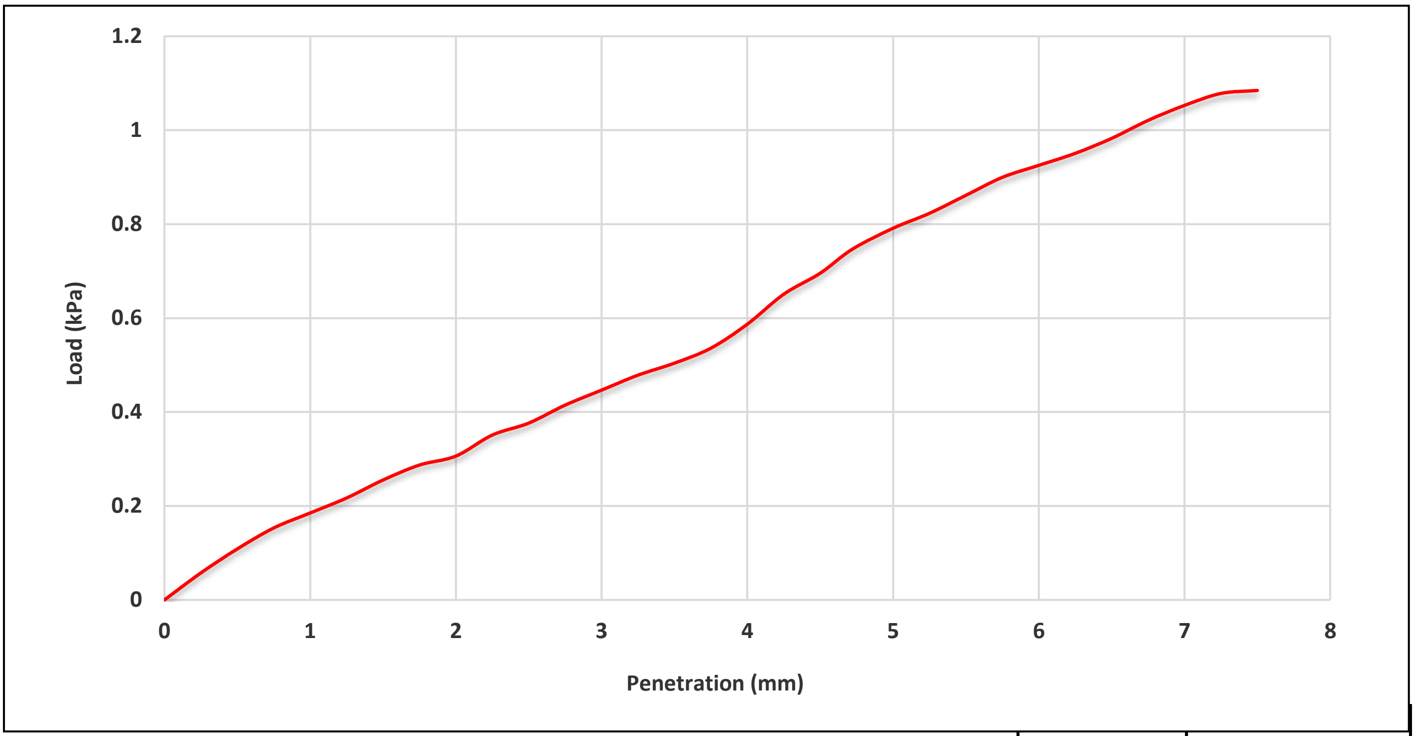
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**08/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 16**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.0**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

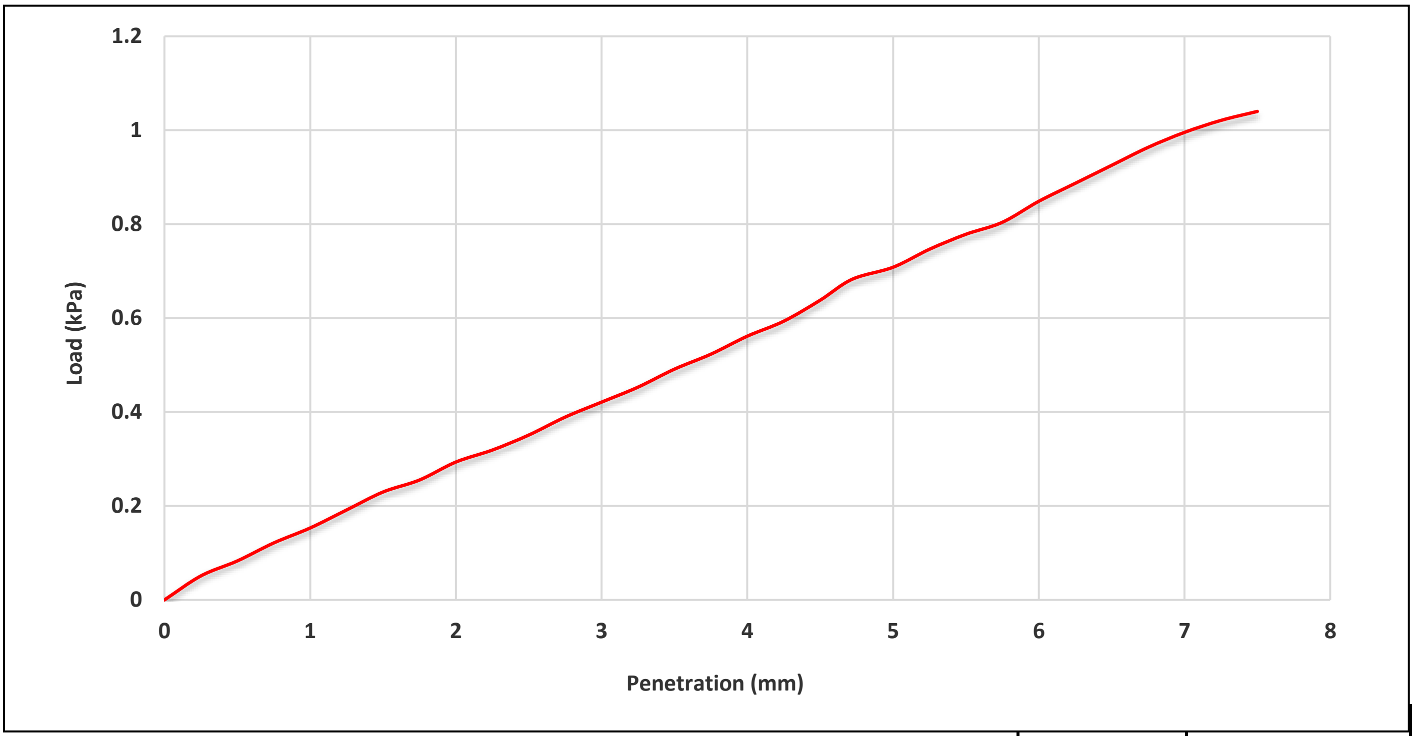
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**09/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 17**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	3.5

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**26**

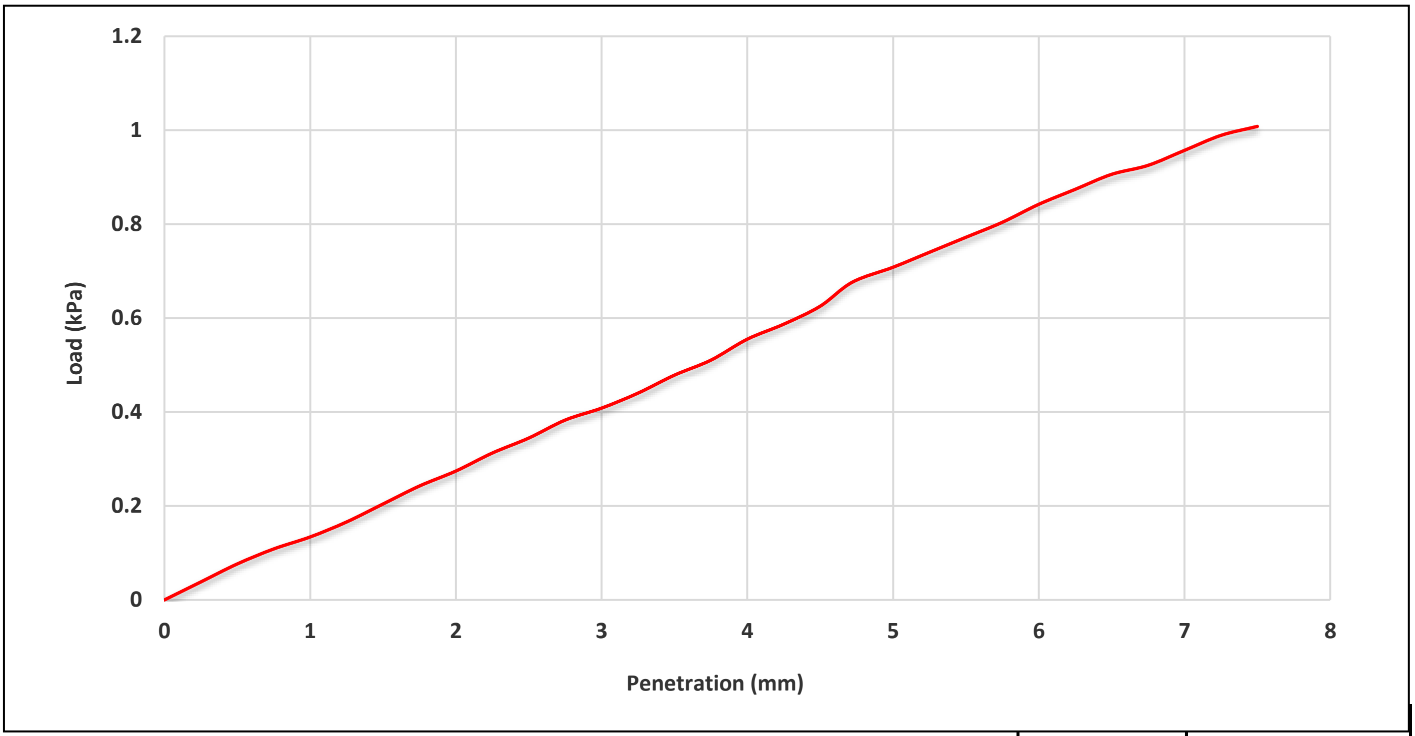
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans
Cearan Bryan	Date	11/01/2019	D P Evans

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**09/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 18**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	3.5

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

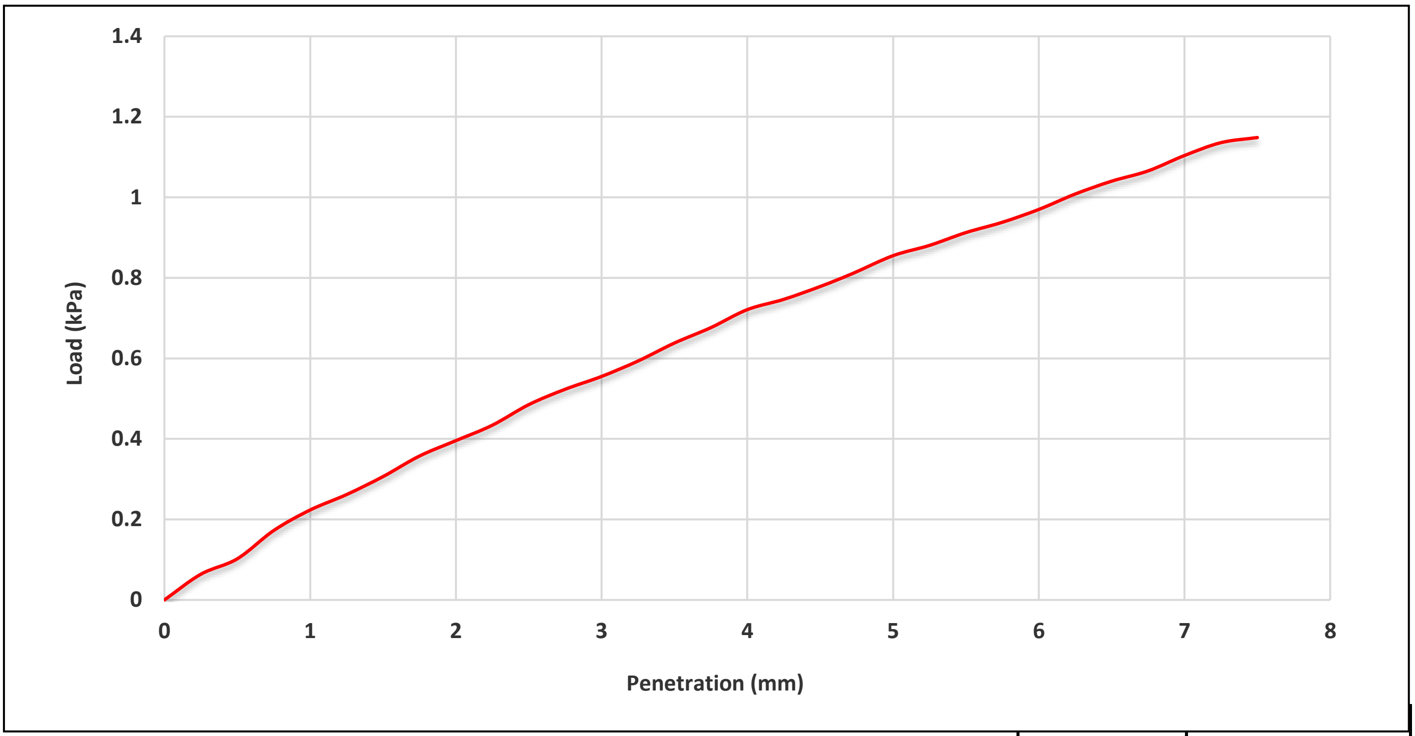
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS
TESTING
2788

	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**09/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 19**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.3

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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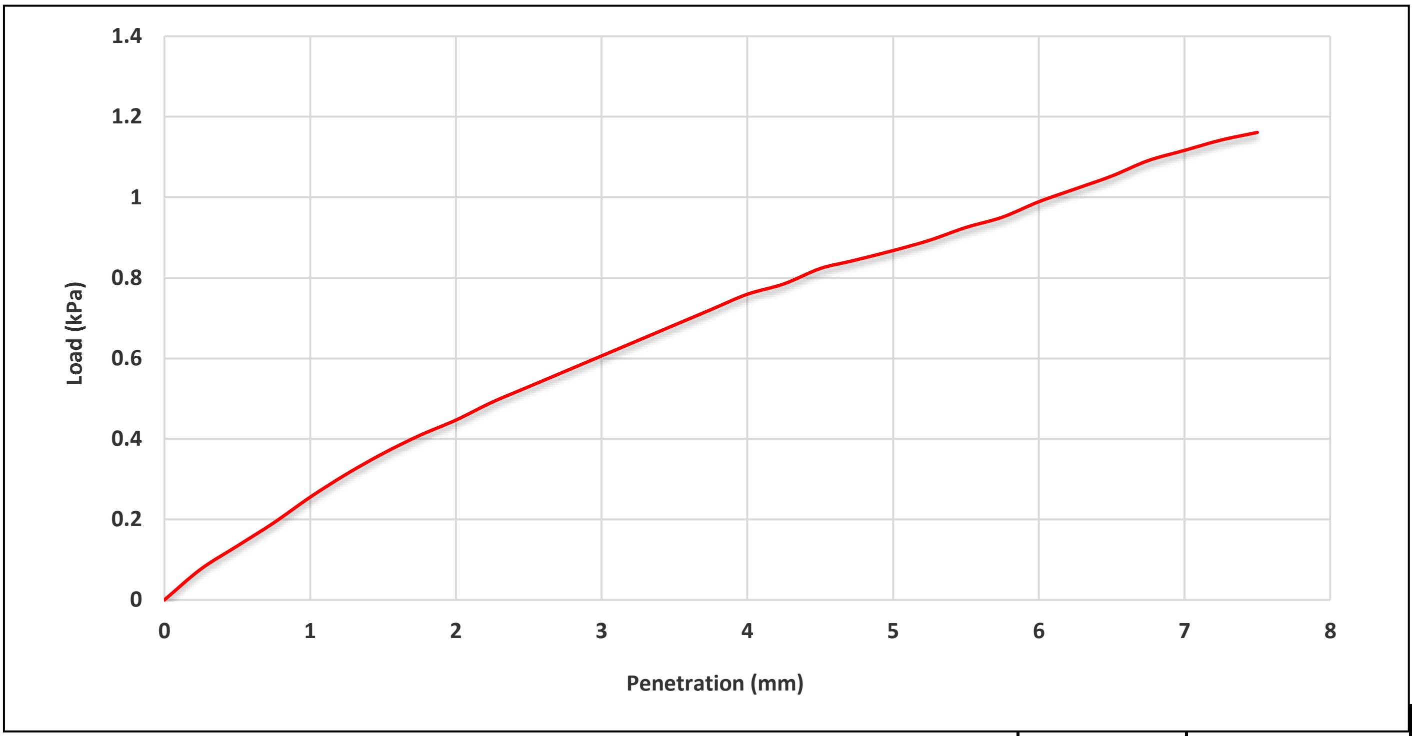
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**09/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 20**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.3

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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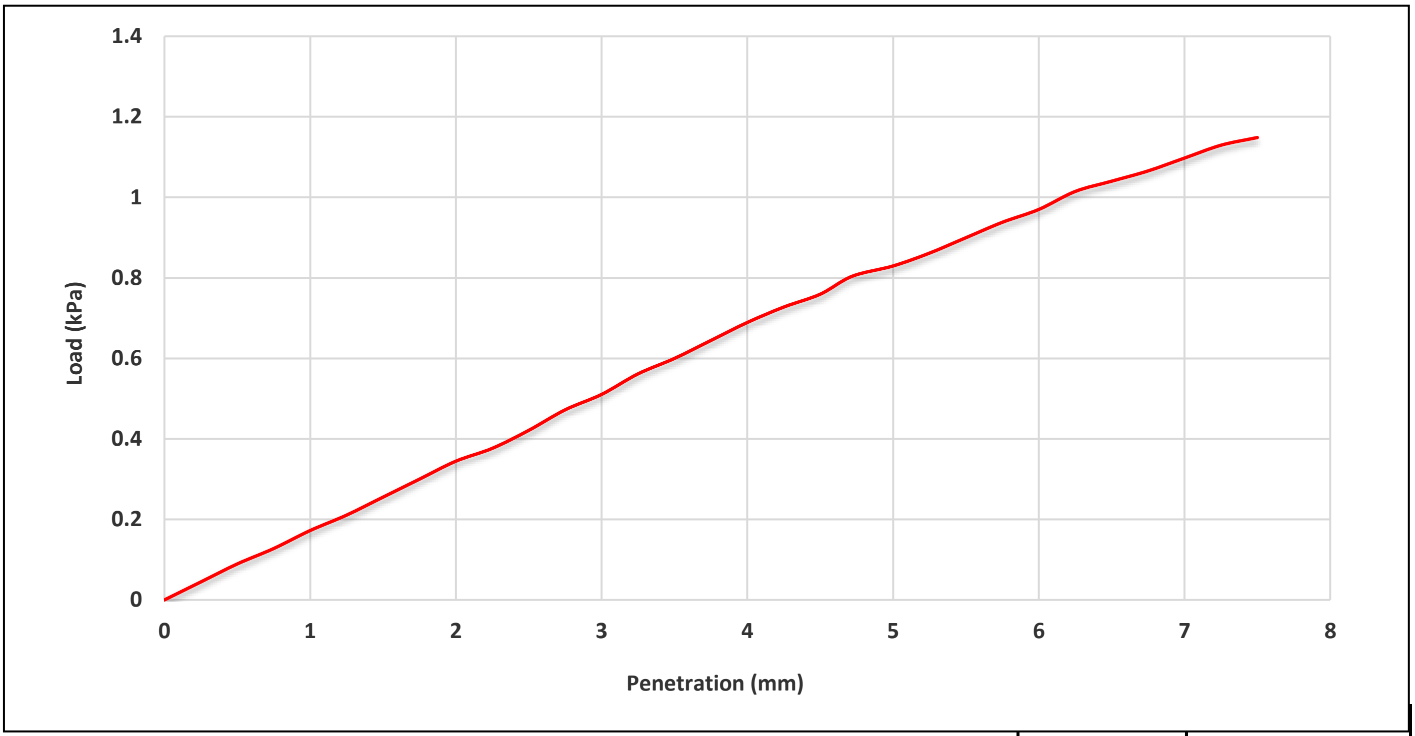
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**09/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 22**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.1

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**22**

Remarks:

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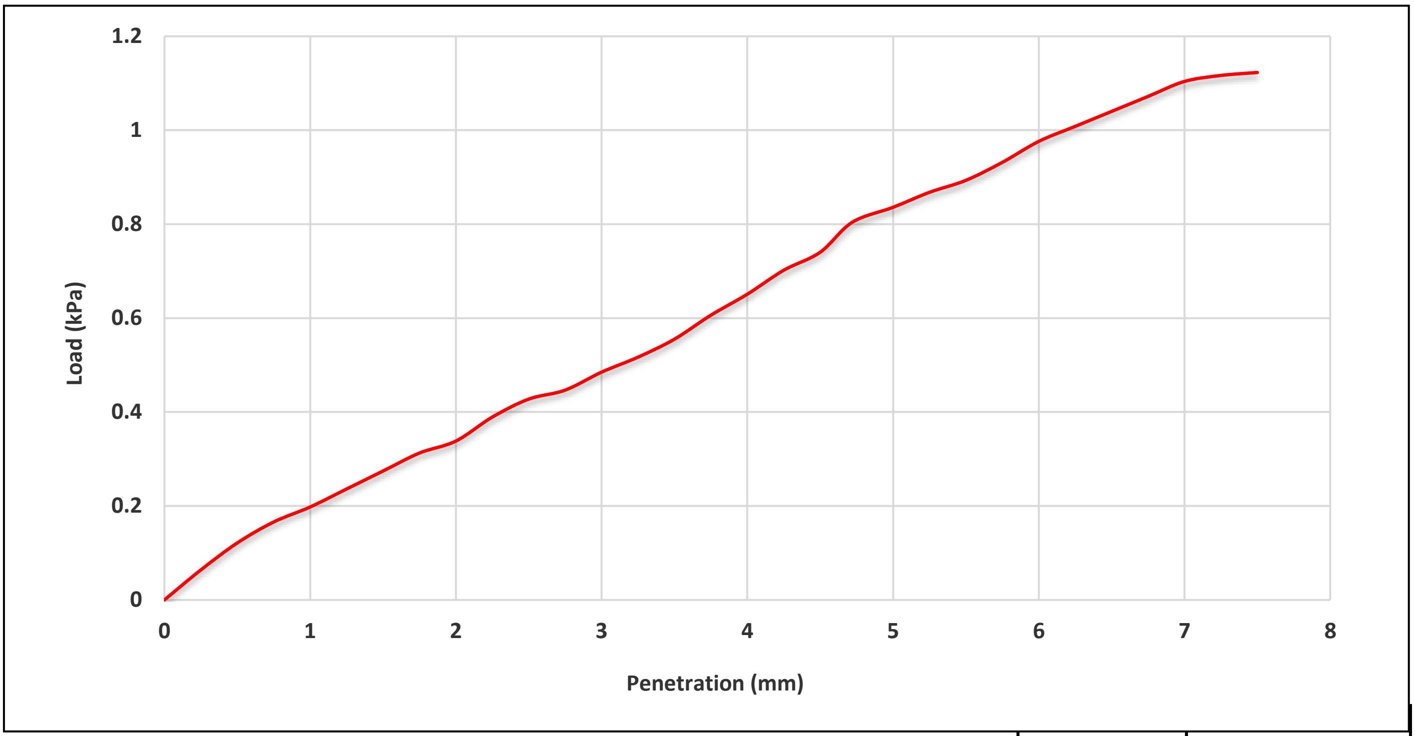
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 23**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.2**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**24**

Remarks:

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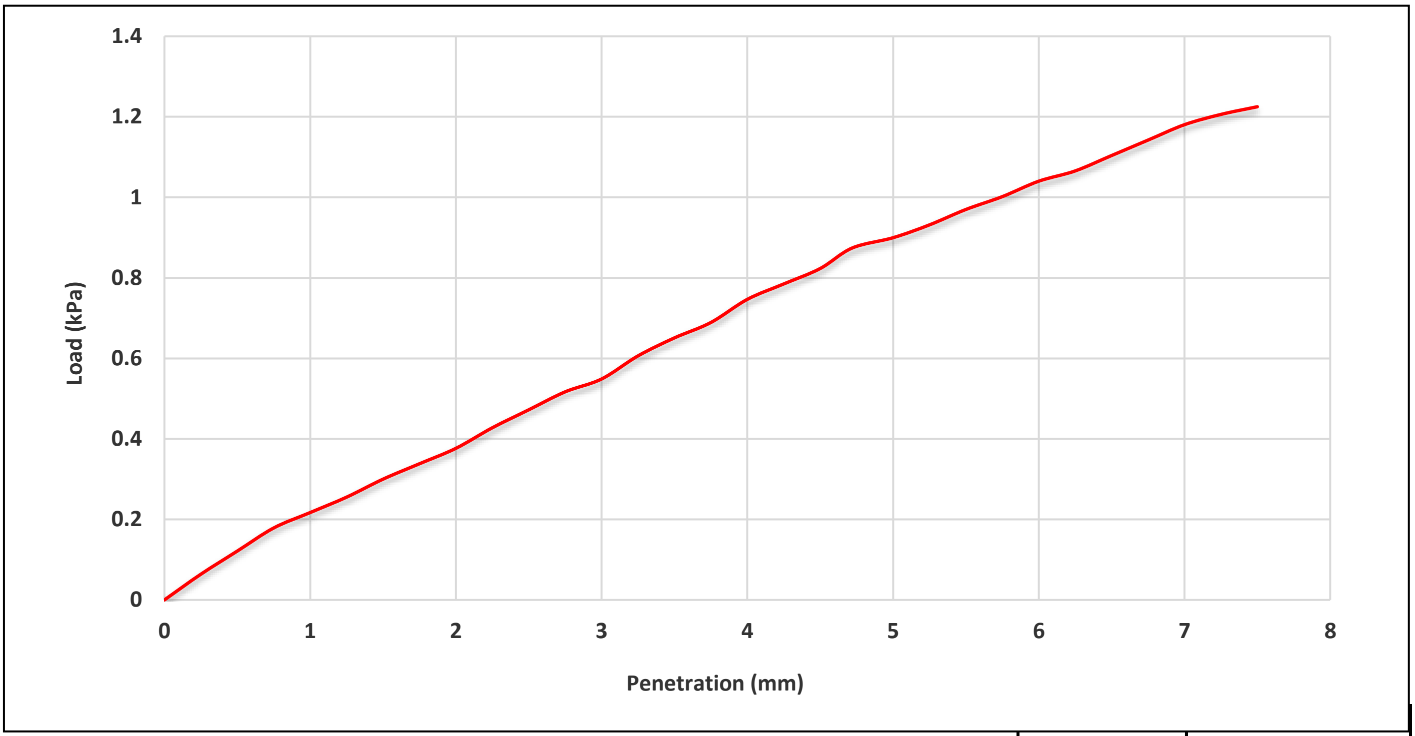
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	41505
		Client Reference	14018549
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 24**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.30**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.5

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**24**

Remarks:

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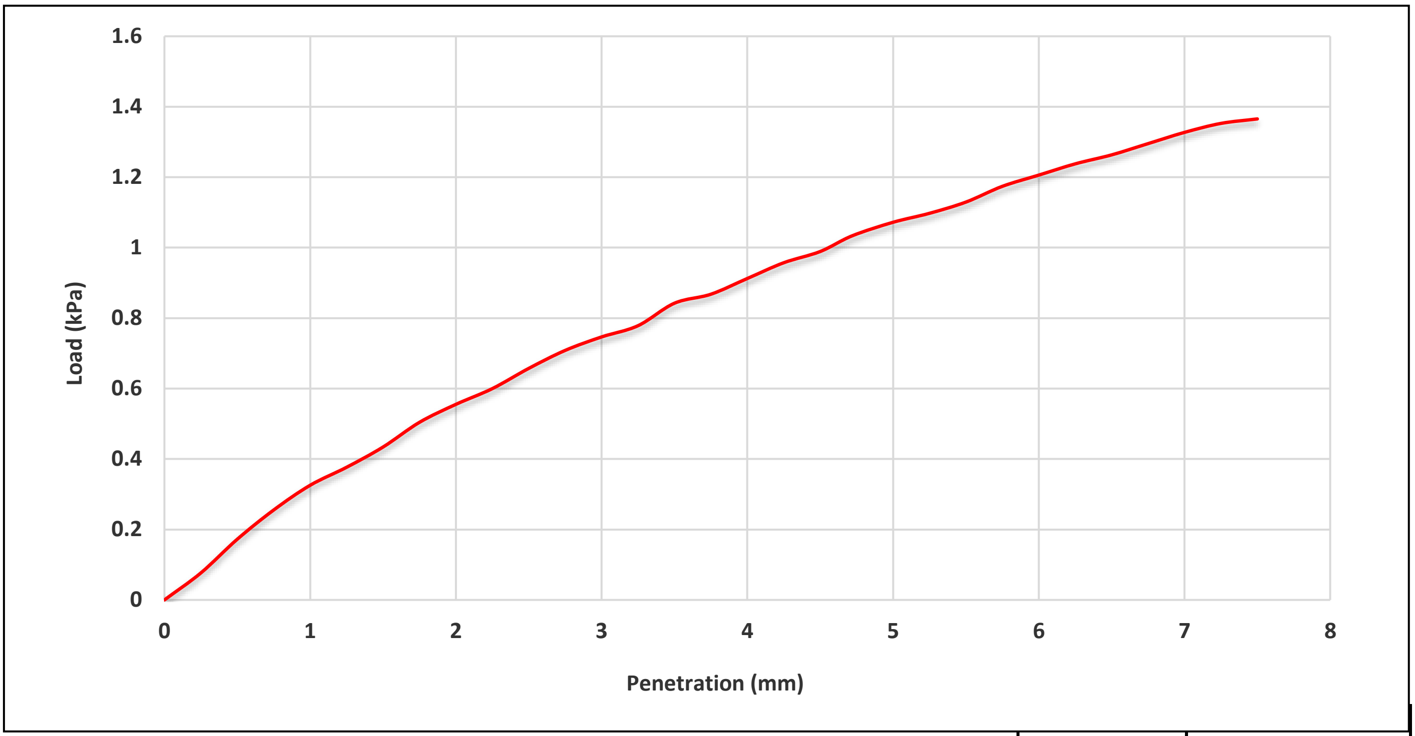
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 25**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.80**
Soil Description	Brown fine to medium gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**5.4**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**18**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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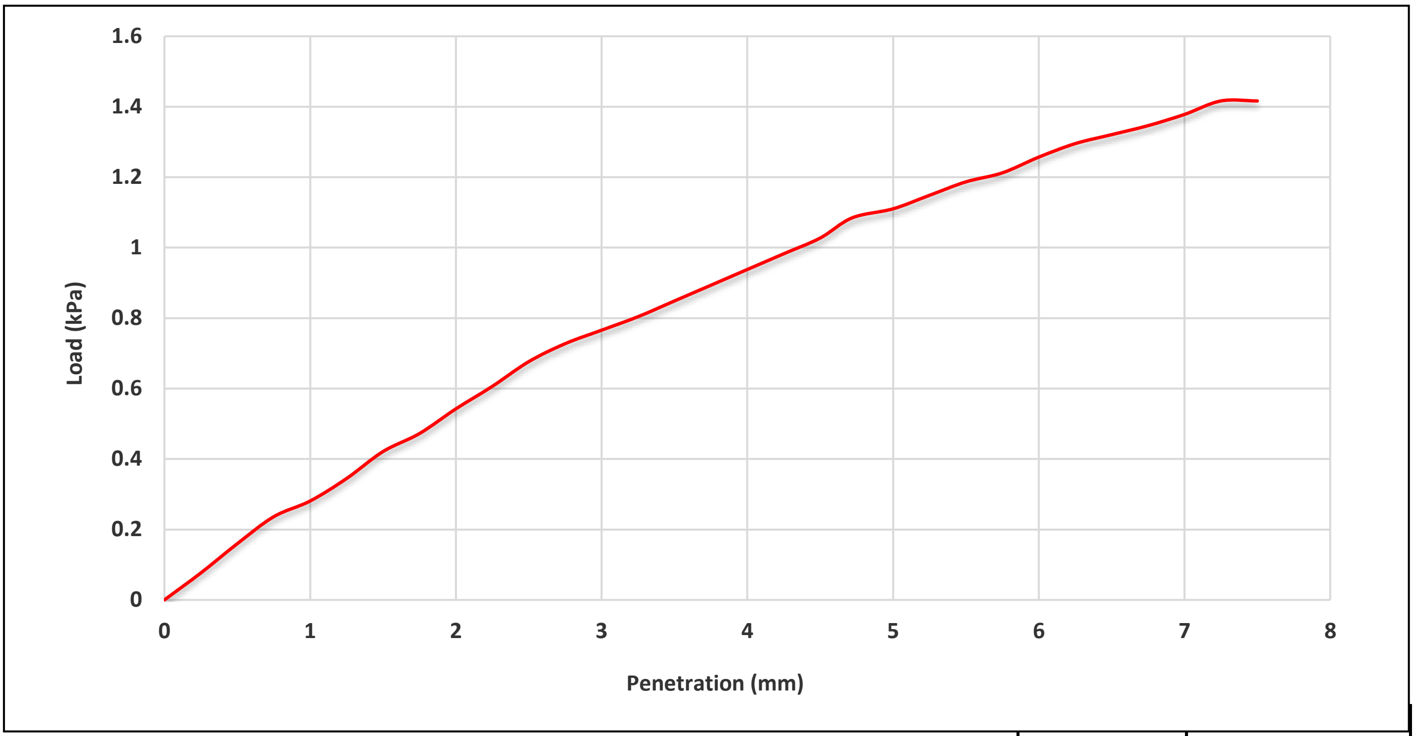
GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 26**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.60**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	5.6

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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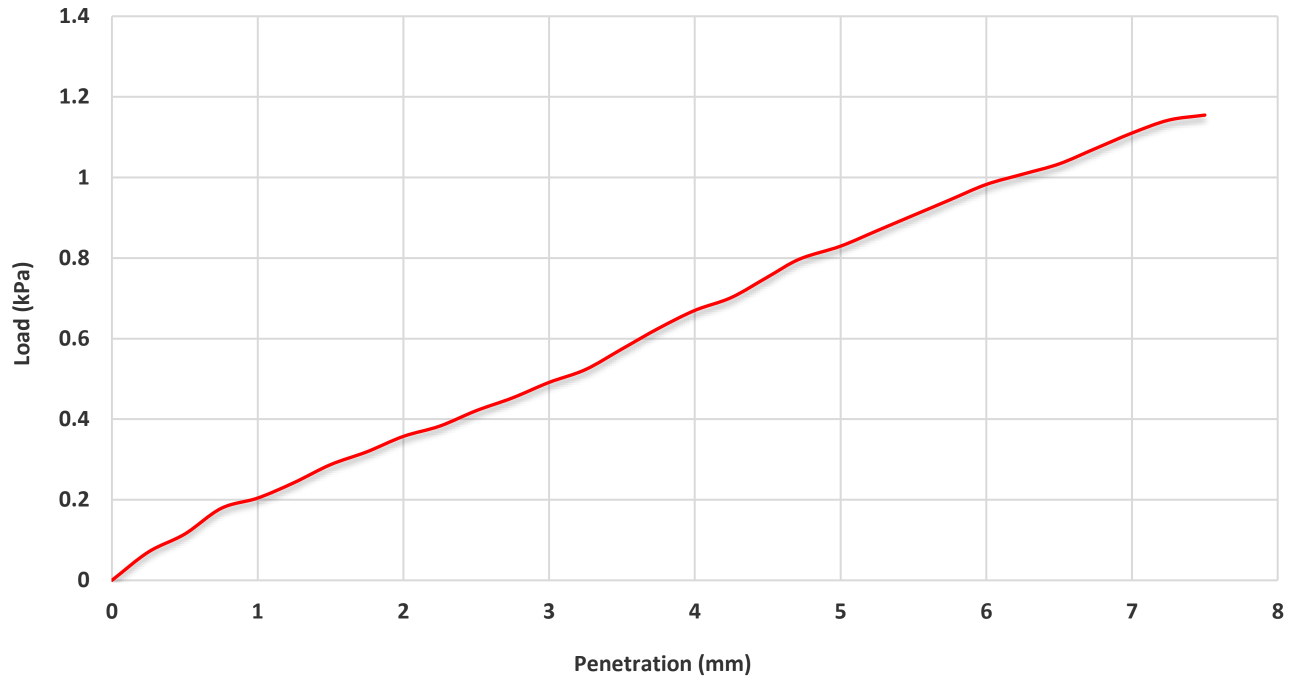
GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 27**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.1

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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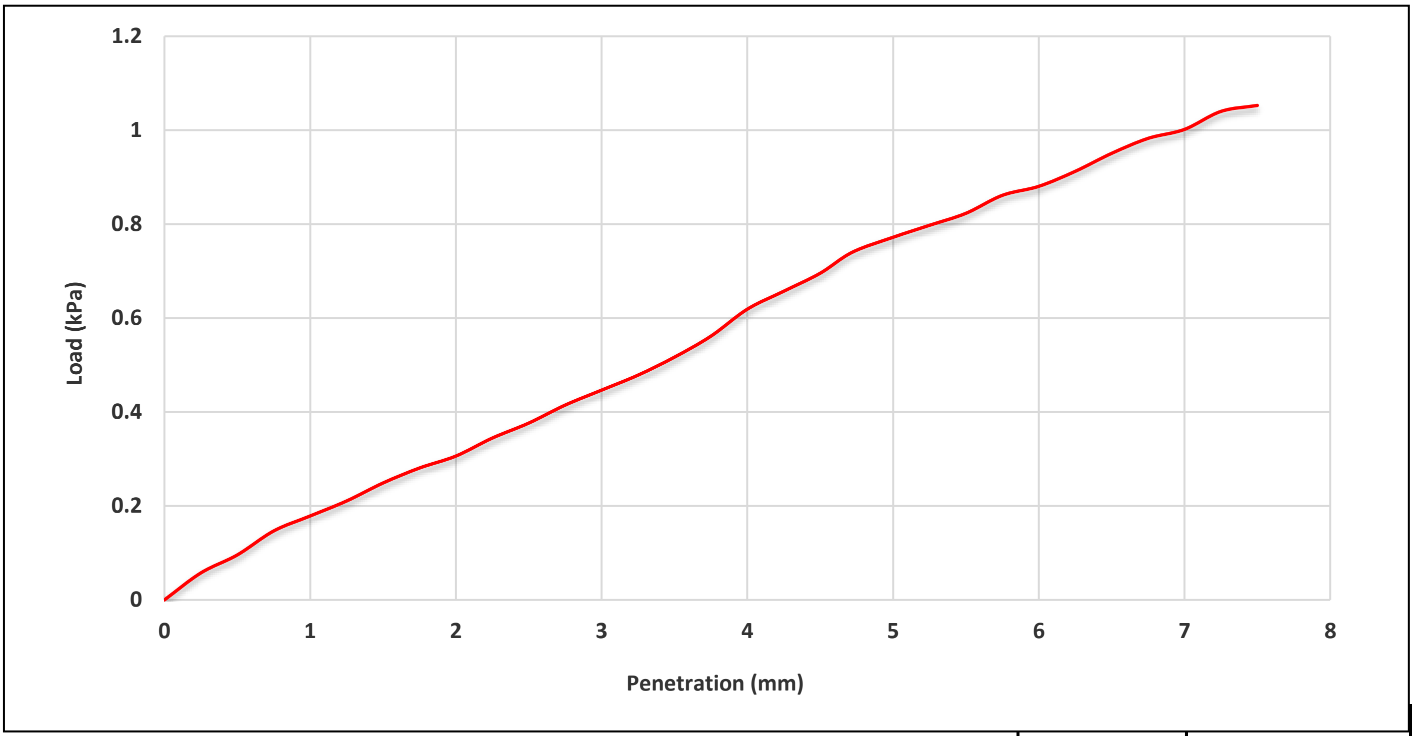
GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 28**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**3.9**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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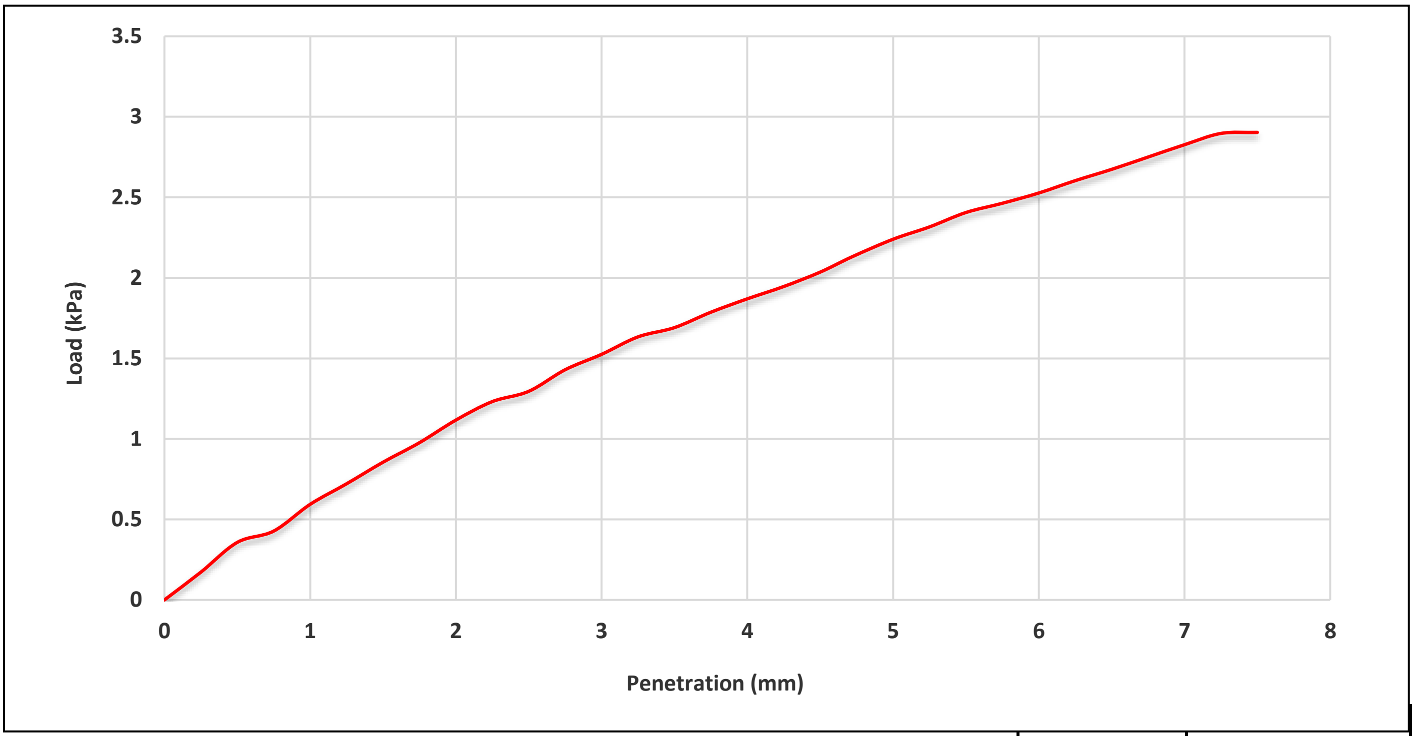
GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 29**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.30**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**11.2**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**14**

Remarks:

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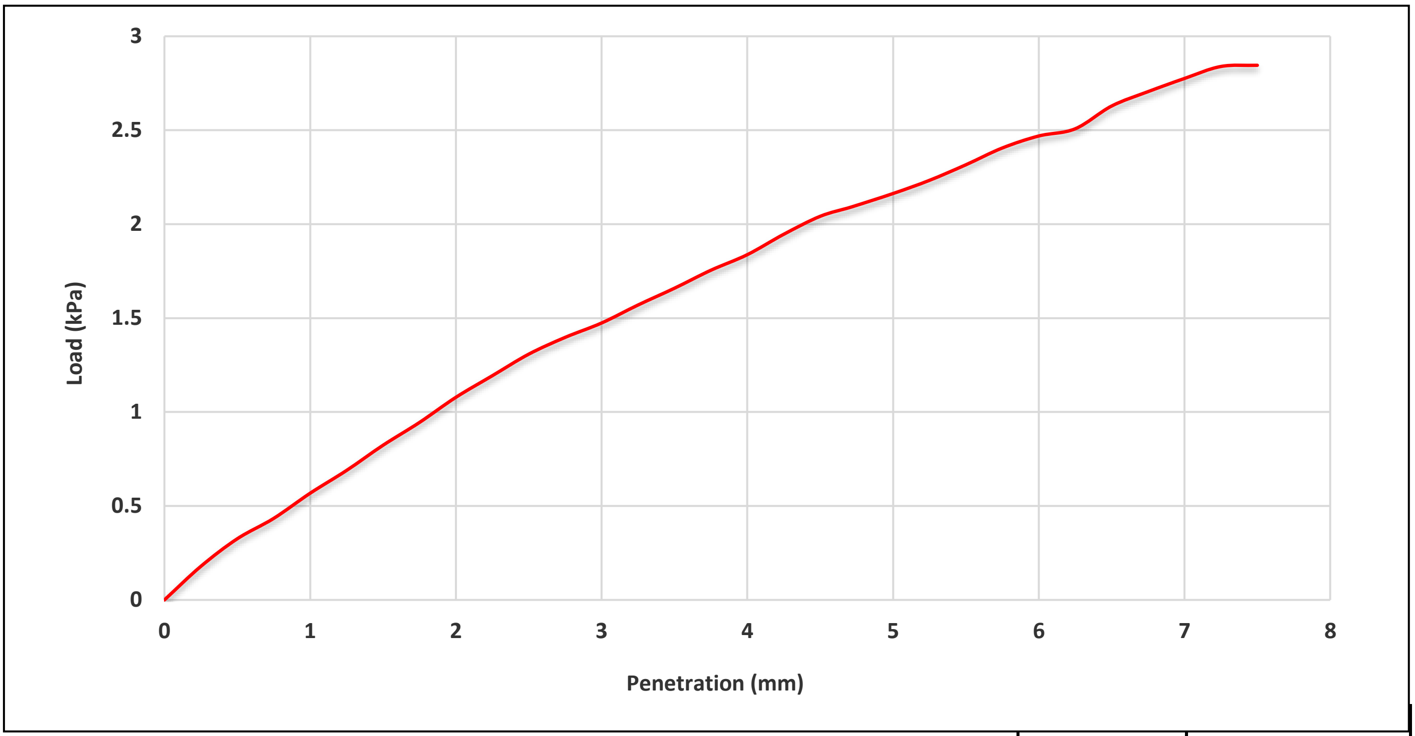
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**10/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 30**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.78**
Soil Description	Brown fine to coarse gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**10.8**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**14**

Remarks:

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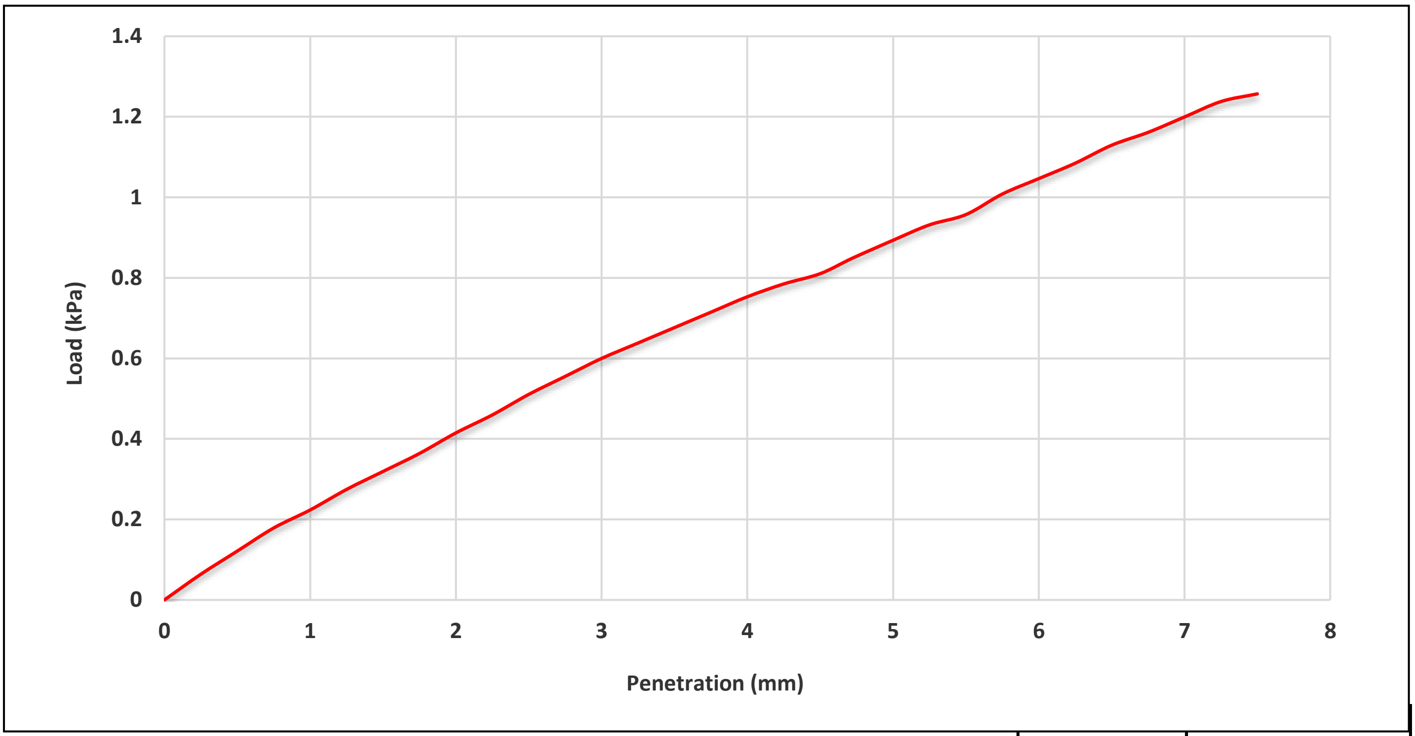
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL

Determination of the Insitu California Bearing Ratio
BS 1377: Part 9: 1990 Clause 4.3

		Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 31**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.15**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.5**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

Remarks:

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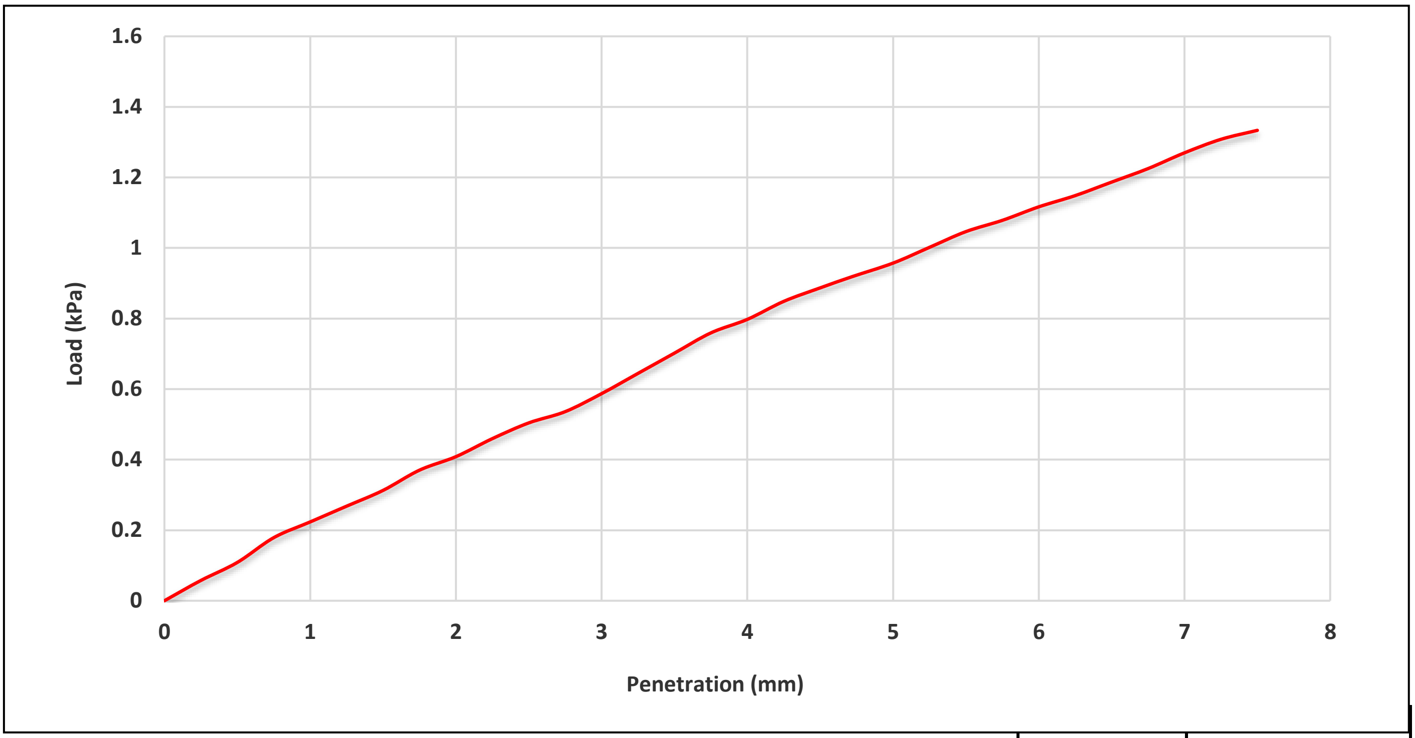
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 32**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.195**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.8

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**18**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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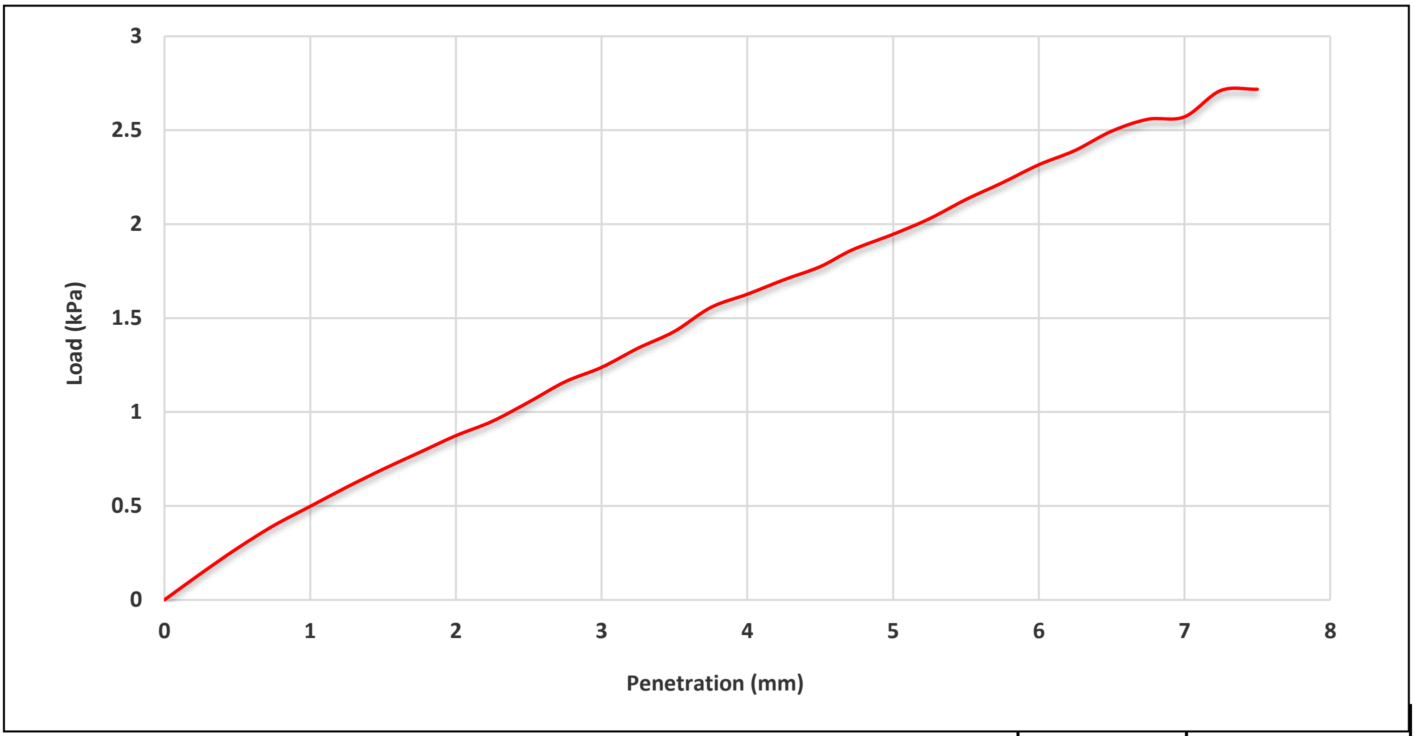
GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 33**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.40**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**9.7**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**16**

Remarks:

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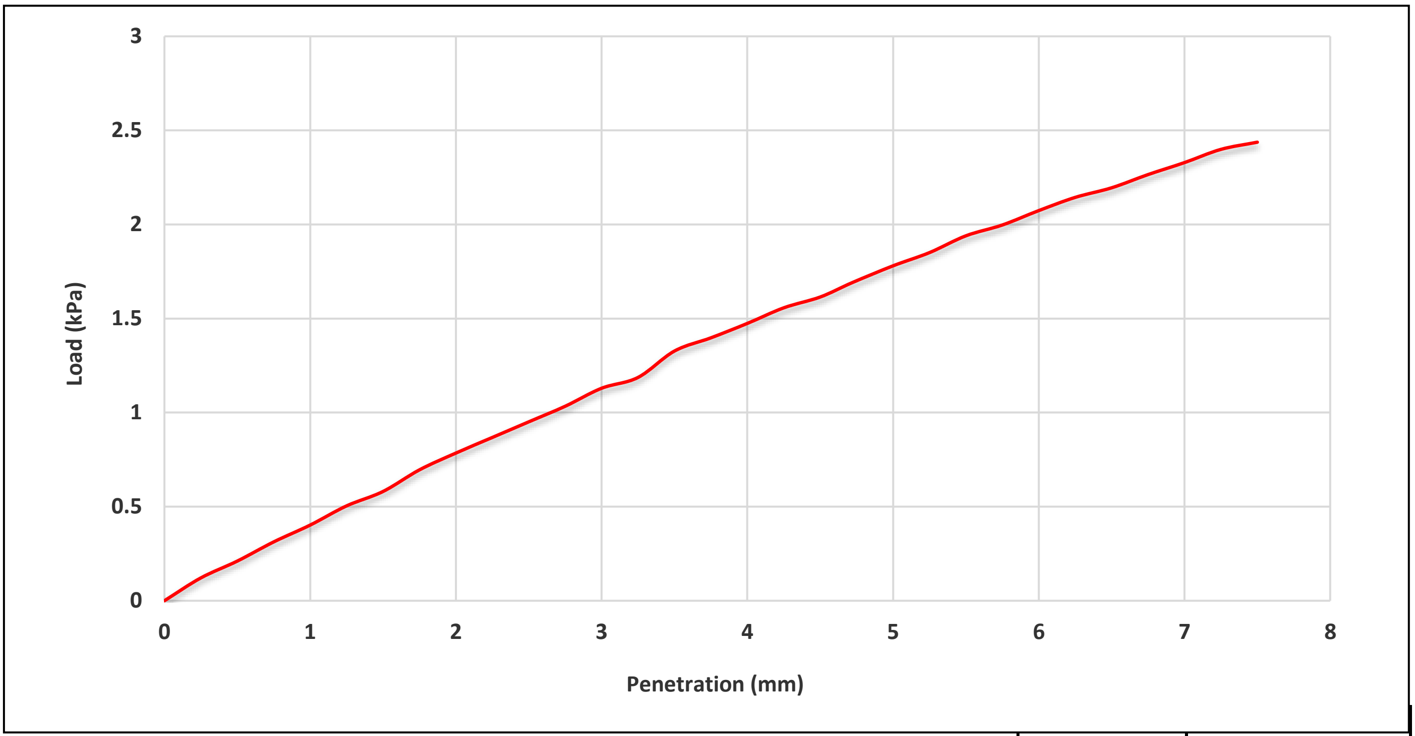
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number Client Reference	**41505** **14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 34**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.38**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	8.9

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**18**

Remarks:

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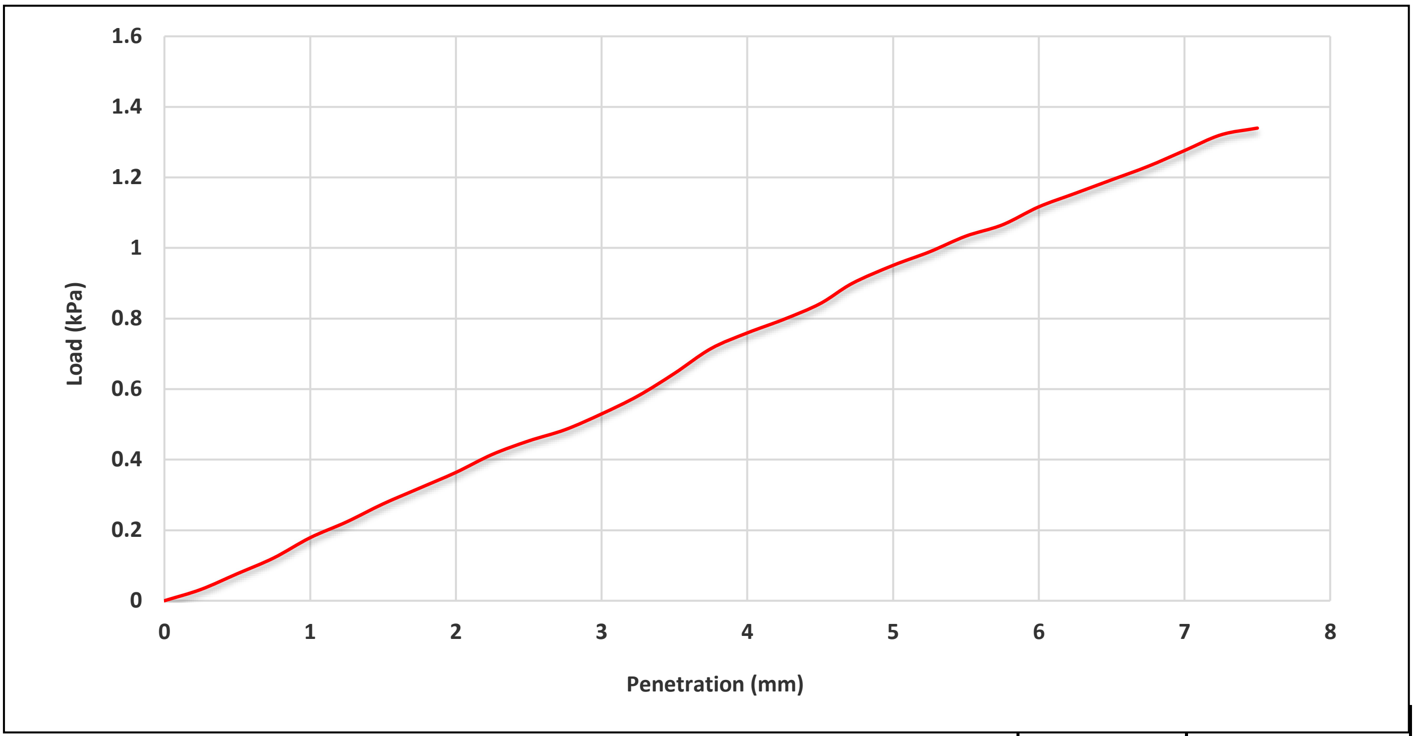
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 35**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.193**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.8

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**29**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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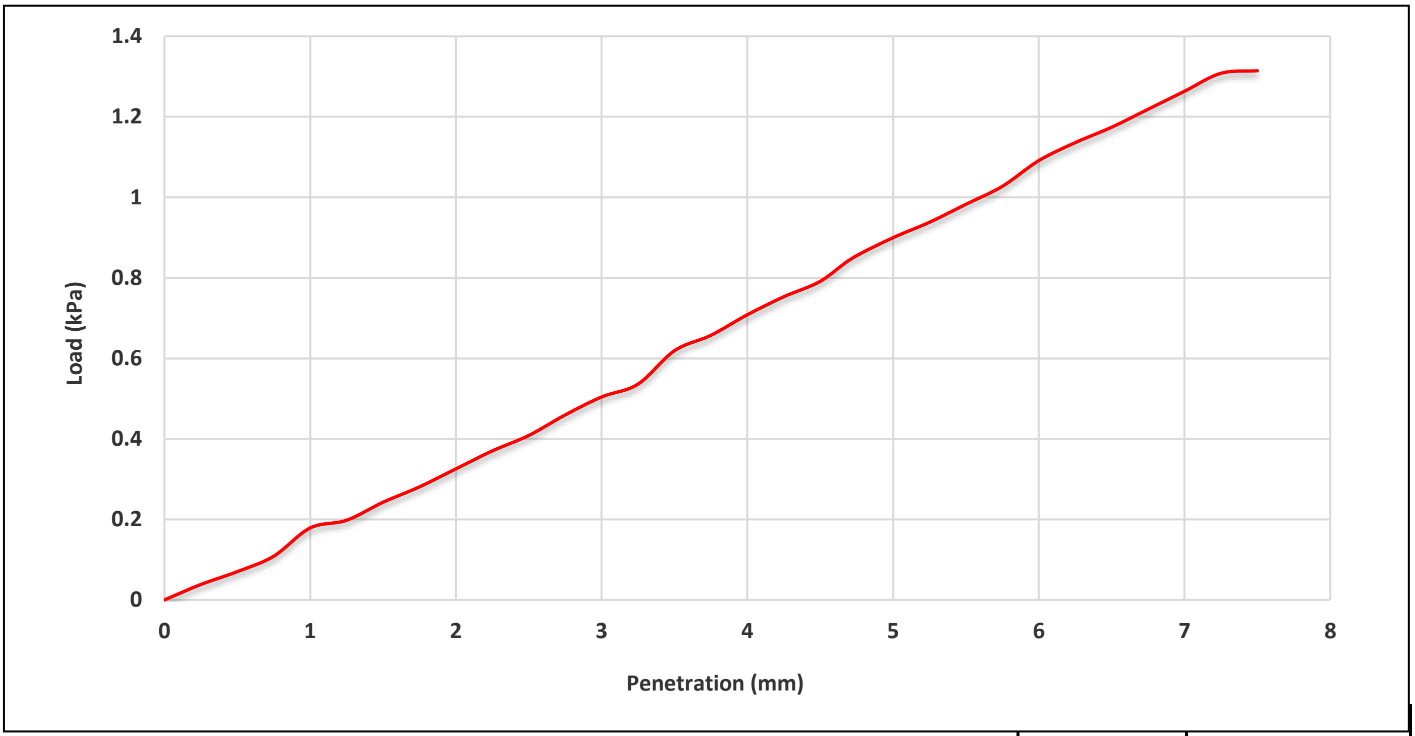
GSTL	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number Client Reference	41505 14018549
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 36**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.15**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.5

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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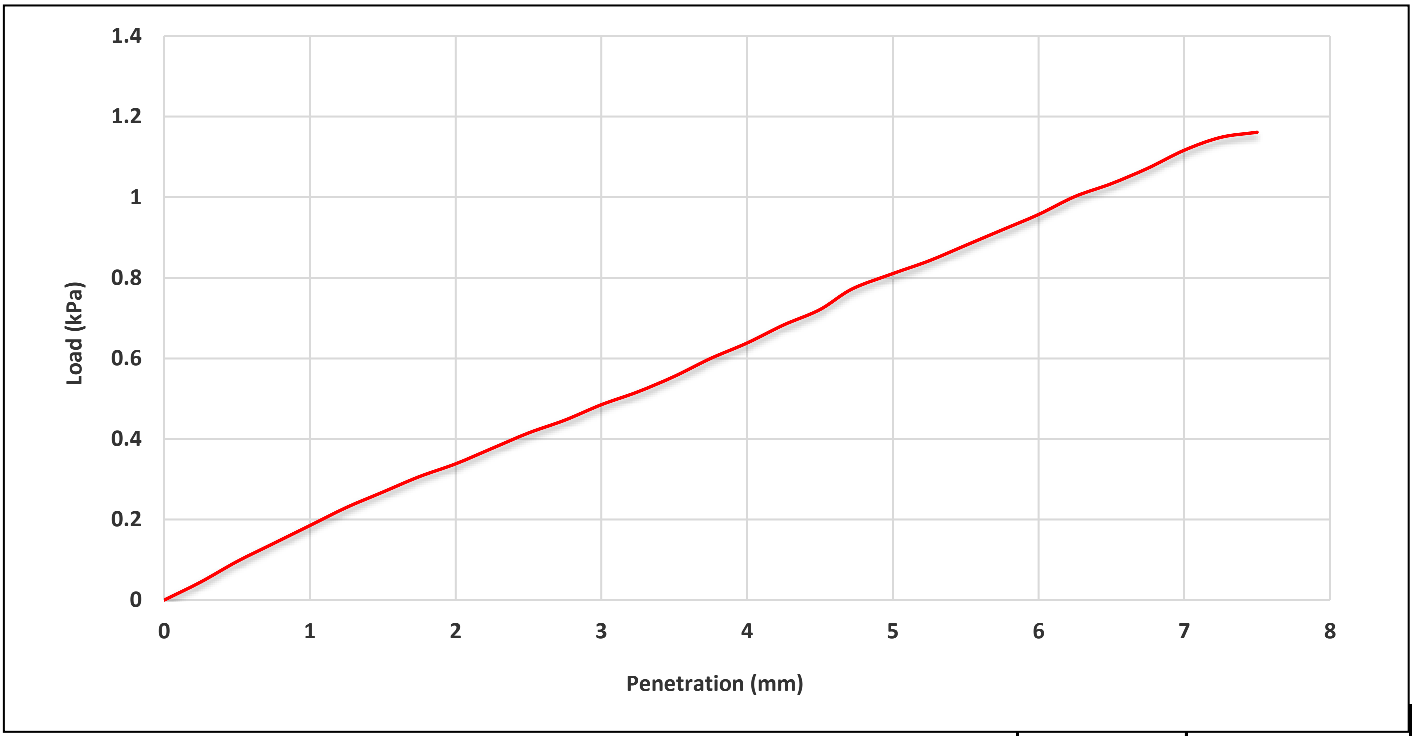
GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 37**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.15**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.1**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**27**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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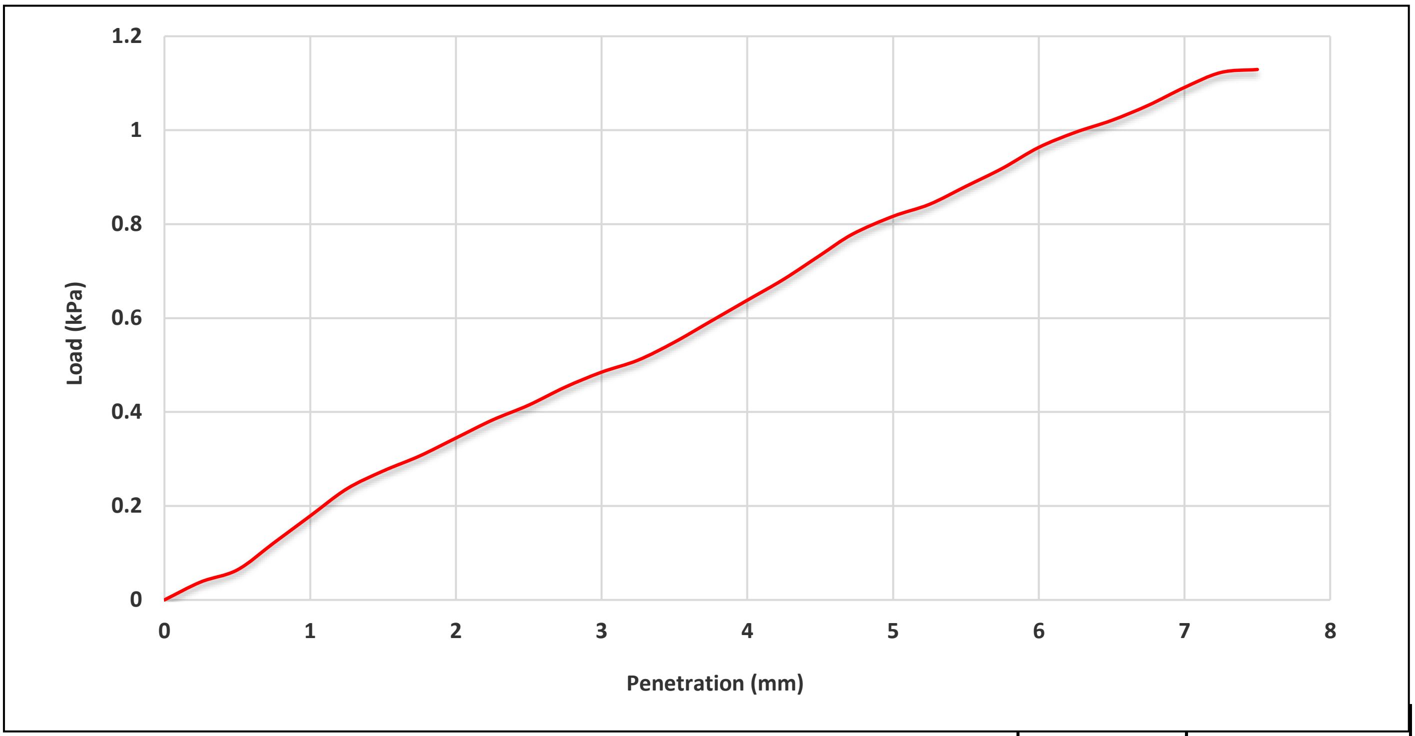
GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 38**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.15**
Soil Description	Brown silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.1**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**26**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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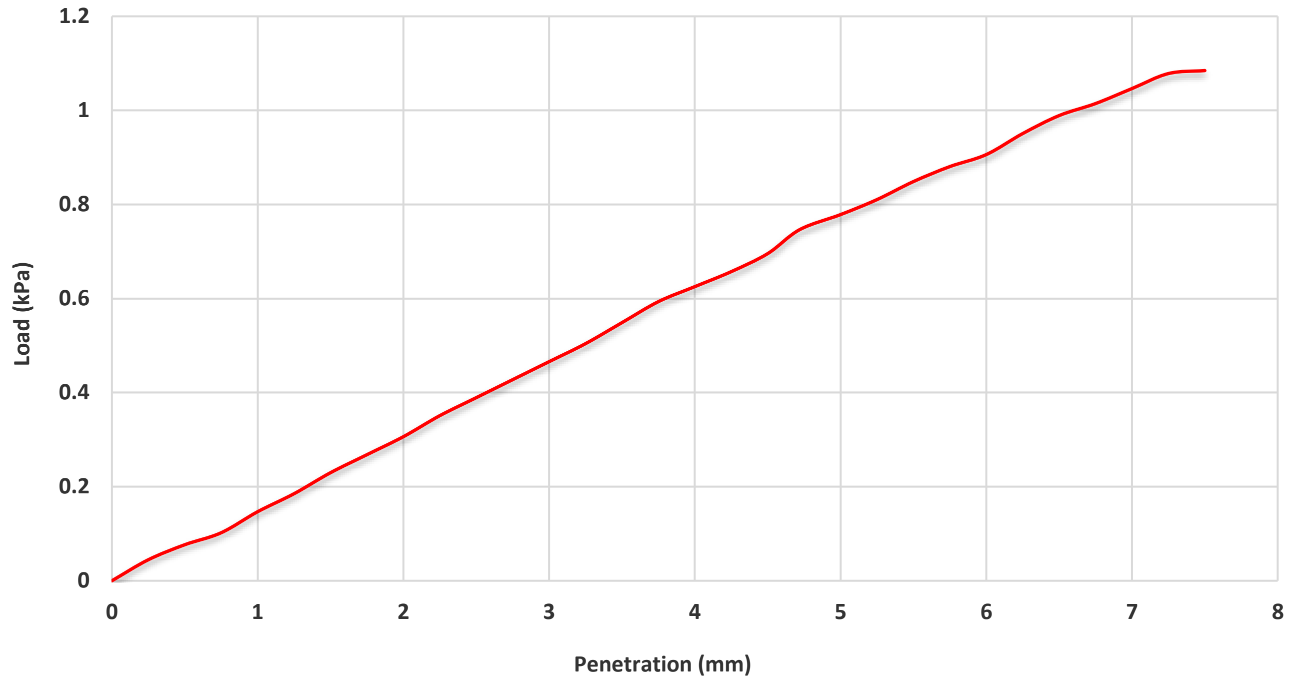
GSTL	**Determination of the Insitu California Bearing Ratio** **BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 39**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.163**
Soil Description	Brown silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	3.9

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

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Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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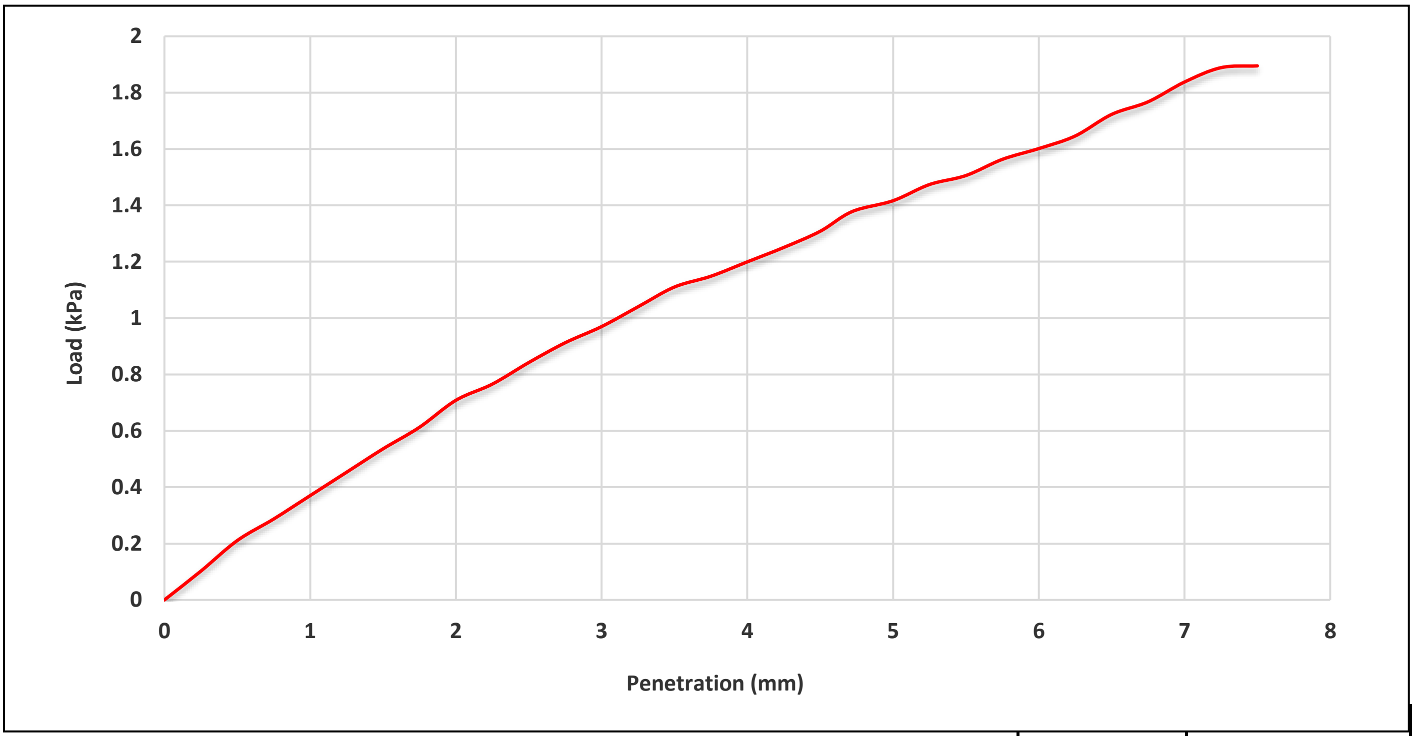
GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 40**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.20**
Soil Description	Brown silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	7.1

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**21**

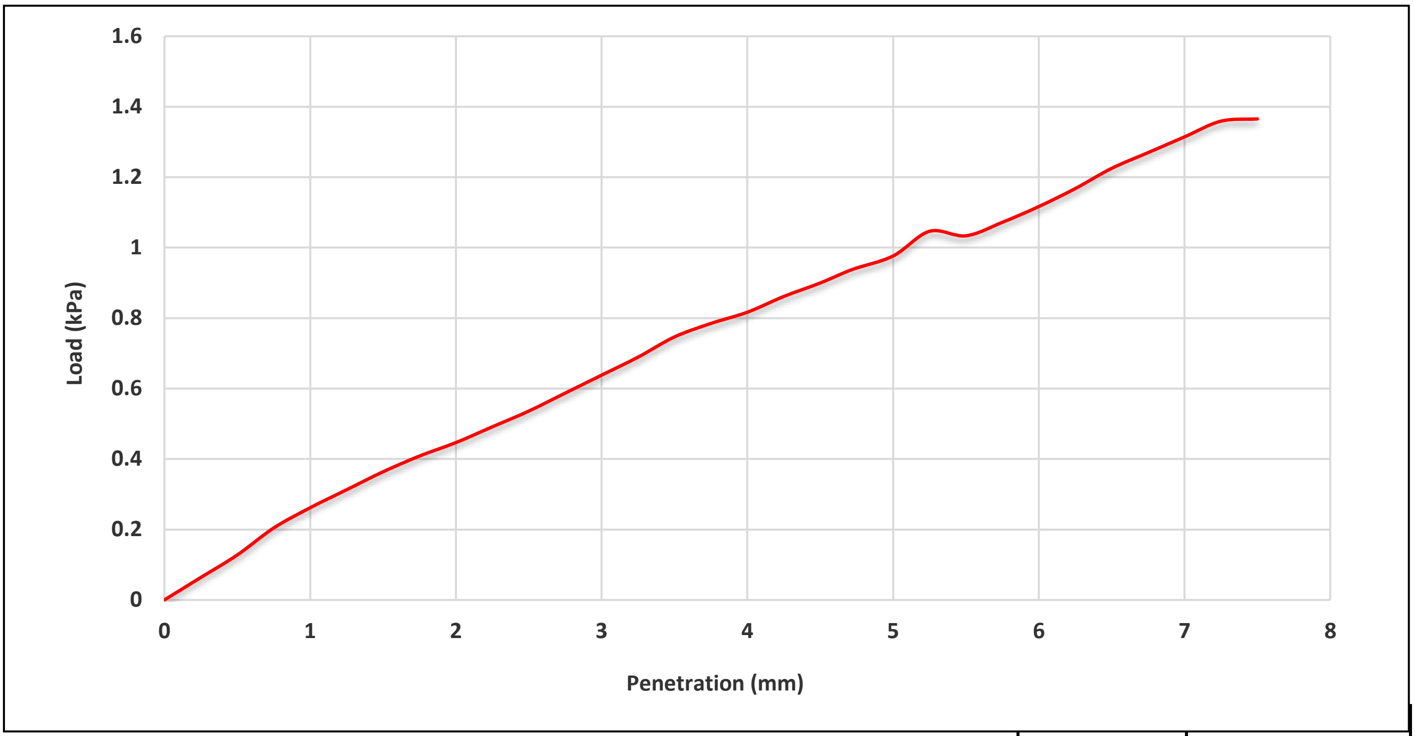
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 41**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.046**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**4.9**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

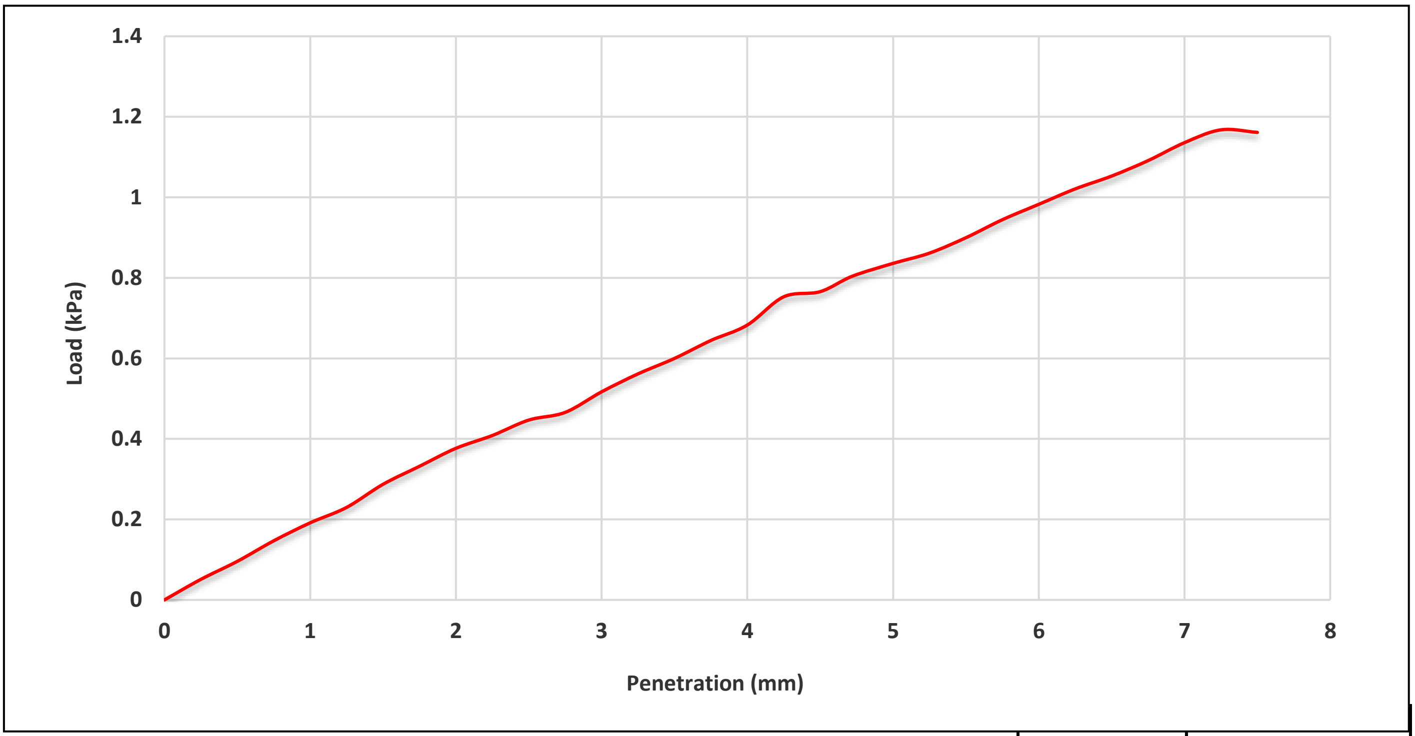
Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL

Determination of the Insitu California Bearing Ratio
BS 1377: Part 9: 1990 Clause 4.3

		Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 42**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.170**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	4.2

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**25**

Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

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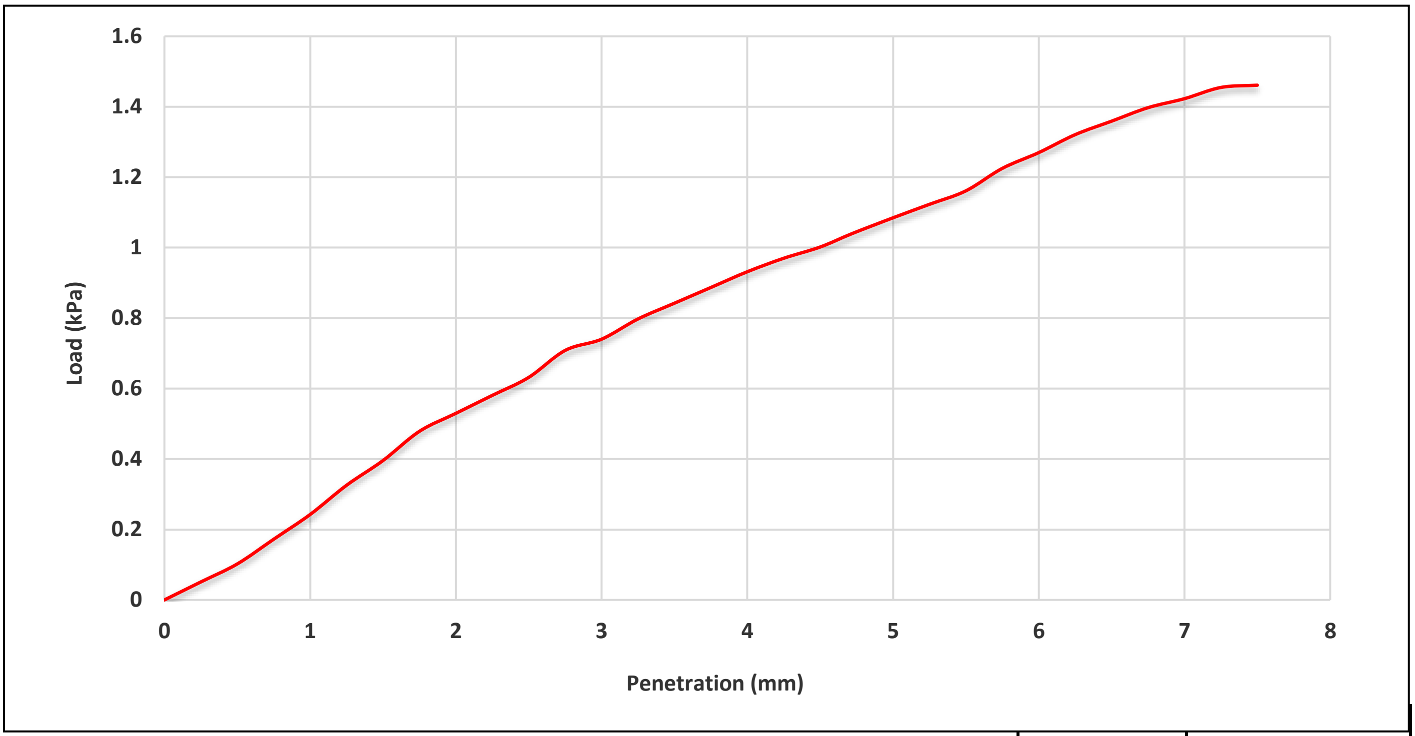
	Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 43**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	**5.4**

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**23**

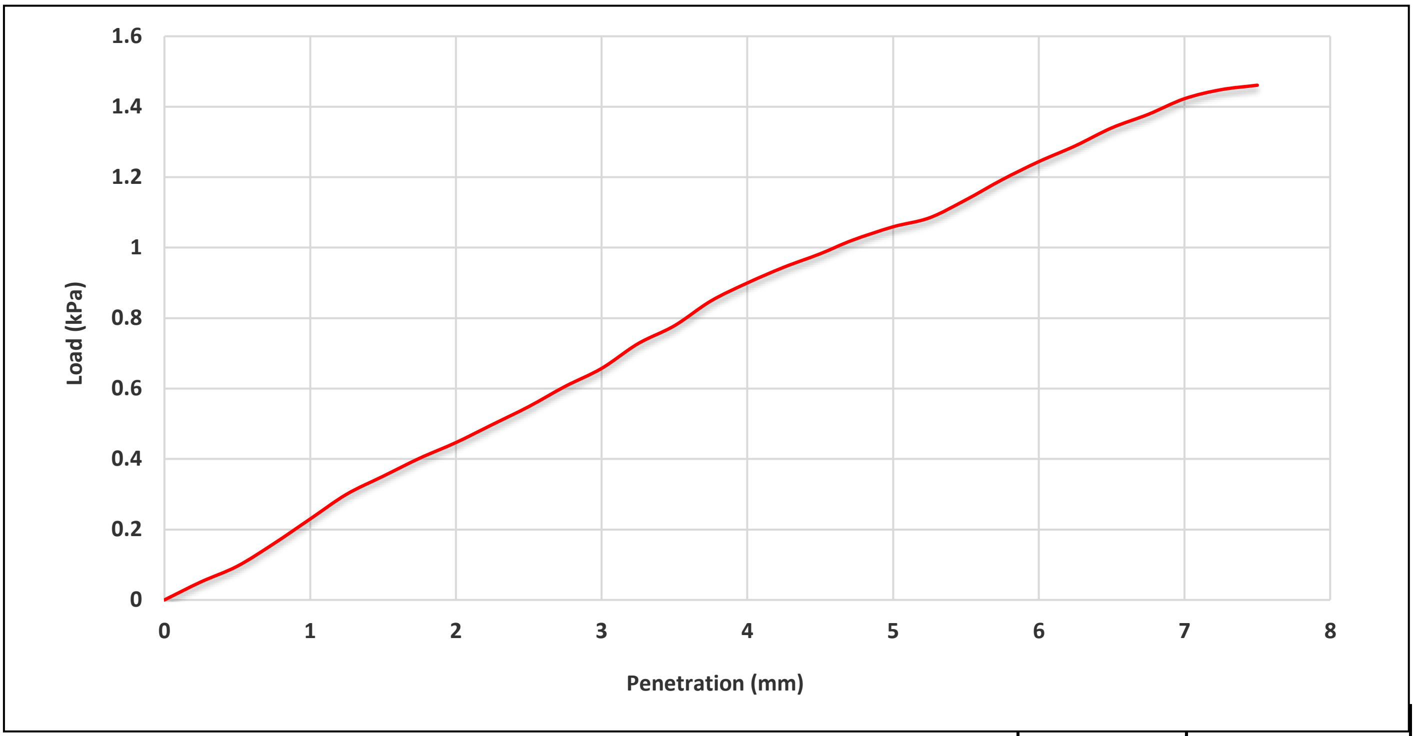
Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

GSTL	**Determination of the Insitu California Bearing Ratio BS 1377: Part 9: 1990 Clause 4.3**	Contract Number	**41505**
		Client Reference	**14018549**
Client	**Arcadis**	Test Date	**07/01/2018**
Site Location	**Abermule CBR testing 4 days on site**	Test Location	**CBR 44**
Sampling Method	BS 1377-1:1990 General requirements and sample preparation	Test Depth (m)	**0.150**
Soil Description	Brown fine gravelly silty CLAY.	Kentledge Type	**Back of 4x4**



C.B.R Value %	5.3

Weather Conditions	**Sunny**
Surcharge (kg)	**9**
Material Above 20mm (est.)	**N/A**
Moisture Content (%)	**24**

Remarks:

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory.

Test Operator	Checked and Authorised by		Paul Evans	D P Evans
Cearan Bryan	Date	11/01/2019		

UKAS TESTING 2788

UKAS TESTING 2788

Laboratory Report

GSTL
GEO Site & Testing Services Ltd

Contract Number: 42716

Client Ref: **10026414**
Client PO: **14020727**
Report Date: **18-02-2019**

Client **Arcadis**
Fortran Rd
St Mellons
Cardiff
CF3 0EY

Contract Title: **Abermule Business Park**
For the attention of: **Ross Scammell**

Date Received: **31-01-2019**
Date Commenced: **31-01-2019**
Date Completed: **18-02-2019**

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	12
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	12
Particle Density (Gas Jar) BS 1377:1990 - Part 2 : 8.2 - * UKAS	2
PSD Wet Sieve method BS 1377:1990 - Part 2 : 9.2 - * UKAS	14
PSD: Sedimentation by pipette carried out separately BS 1377:1990 - Part 2 : 9.4 - * UKAS	1
Organic Matter Content-dichromate method BS 1377:1990 - Part 3 : 3 - @ Non Accredited Test	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:
Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager) - Paul Evans (Quality/Technical Manager)
Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant) - Wayne Honey (Administrative/Quality Assistant)

Contract Number: 42716

Test Description	Qty
BRE Full Suite **includes pH, water & acid soluble sulphate, total sulphur, magnesium, chloride and nitrate** BRE - BR279 - @ Non Accredited Test	9
Dry Den/MC (2.5kg Rammer Method 1 Litre Mould) BS 1377:1990 - Part 4 : 3.3 - * UKAS	7
Disposal of samples for job	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

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Approved Signatories:
Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager) - Paul Evans (Quality/Technical Manager)
Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant) - Wayne Honey (Administrative/Quality Assistant)

GSTL

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)
DESCRIPTIONS

Contract Number	**42716**	
Site Name	**Abermule Business Park**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
BH103	5	D	1.20	-	1.65	Brown fine to coarse gravelly sandy silty CLAY.
BH103	7	D	2.00	-	2.45	Grey silty CLAY.
BH103	9	D	3.00	-	3.45	Brown silty clayey fine to coarse sandy GRAVEL.
BH104	5	D	1.20	-	1.65	Brown fine to coarse gravelly sandy silty CLAY.
BH105	4	B	0.50	-	1.20	Brown fine to coarse gravelly sandy silty CLAY.
SA05	5	D	0.50	-	0.70	Brown fine to medium gravelly sandy silty CLAY.
SA07	5	B	0.30	-	0.50	Brown fine to medium gravelly sandy silty CLAY.
SA08	5	D	0.50	-	0.70	Brown fine to medium gravelly sandy silty CLAY.
SA12	4	D	0.50	-	0.70	Brown fine to coarse gravelly sandy silty CLAY.
SA15	5	D	0.30	-	0.50	Brown fine to medium gravelly sandy silty CLAY.
SA14	4	D	0.40	-	0.60	Brown fine to medium gravelly sandy silty CLAY.
TP101	4	D	0.20	-	0.40	Brown fine to medium gravelly sandy silty CLAY.
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

Operators	Checked	18/02/2019	Ben Sharp (Contracts Manager)
** Please Select Operator **	Approved	18/02/2019	Emma Sharp (Office Manager)

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2788

GSTL

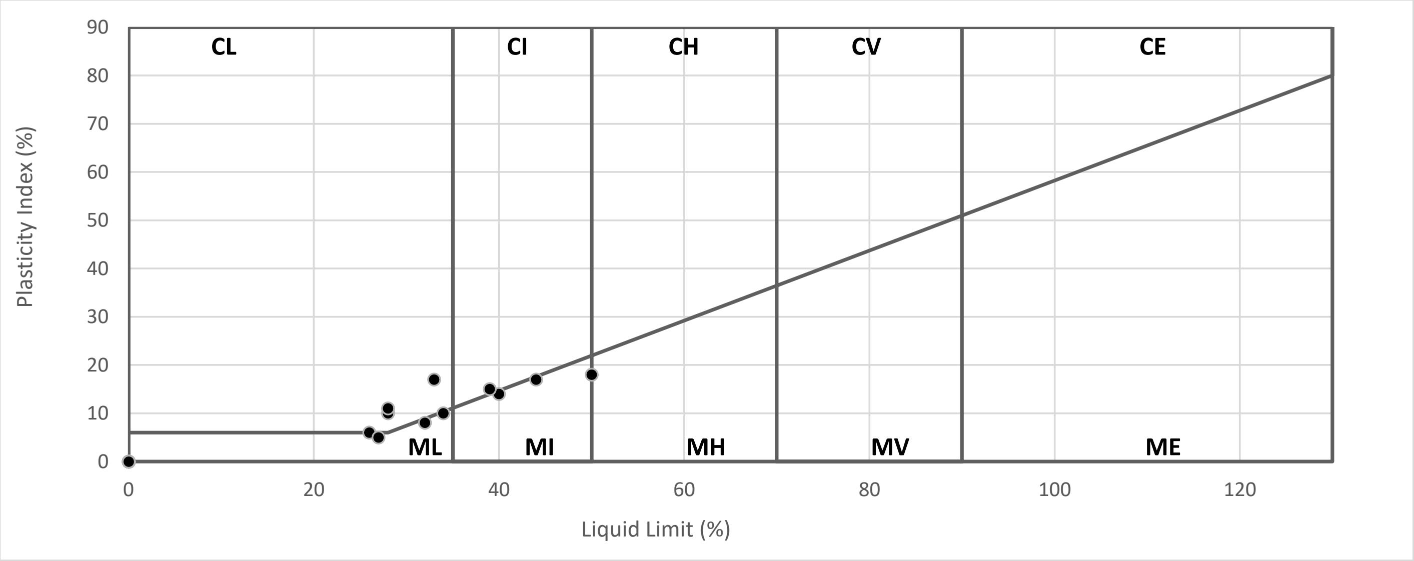
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377 : Part 2 : 1990 Method 5)

Contract Number	**42716**	
Site Name	**Abermule Business Park**	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH103	5	D	1.20	-	1.65	17	32	24	8	100	ML Low Plasticity
BH103	7	D	2.00	-	2.45	4.8		NP		54	
BH103	9	D	3.00	-	3.45	11	33	16	17	42	CL Low Plasticity
BH104	5	D	1.20	-	1.65	21	40	26	14	79	MI Intermediate Plasticity
BH105	4	B	0.50	-	1.20	27	44	27	17	82	MI Intermediate Plasticity
SA05	5	D	0.50	-	0.70	28	50	32	18	82	MI/H Inter/High Plasticity
SA07	5	B	0.30	-	0.50	20	28	18	10	84	CL Low Plasticity
SA08	5	D	0.50	-	0.70	21	34	24	10	87	ML Low Plasticity
SA12	4	D	0.50	-	0.70	25	39	24	15	77	CI Intermediate Plasticity
SA15	5	D	0.30	-	0.50	18	28	17	11	80	CL Low Plasticity
SA14	4	D	0.40	-	0.60	16	26	20	6	76	M/CL Low Plasticity
TP101	4	D	0.20	-	0.40	22	27	22	5	64	ML Low Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:1999+A2:2010



Operators	Checked	18/02/2019	Ben Sharp (Contracts Manager)
** Please Select Operator **	Approved	18/02/2019	Emma Sharp (Office Manager)

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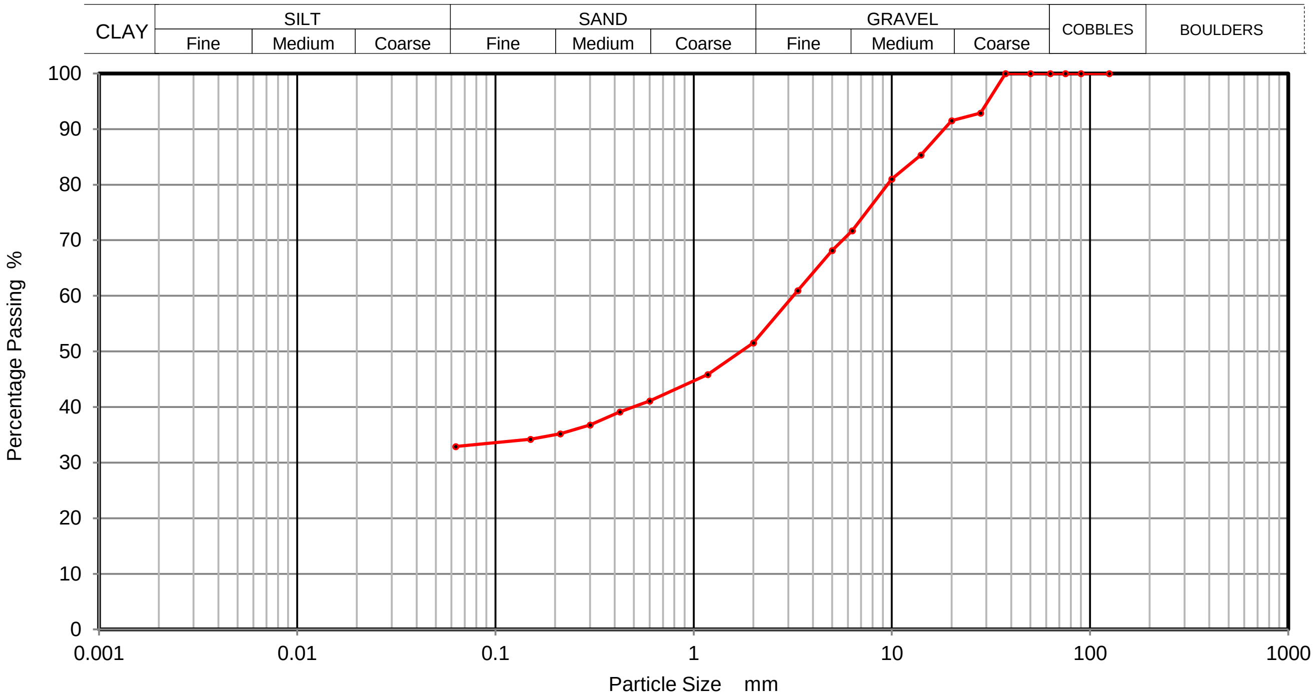
2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	**42716**
		Borehole/Pit No.	**BH101**
Site Name	**Abermule Business Park**	Sample No.	**6**
Soil Description	Brown fine to coarse sandy silty clayey fine to coarse GRAVEL.	Depth Top	**1.20**
		Depth Base	**1.65**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	92		
14	85		
10	81		
6.3	72		
5	68		
3.35	61		
2	52		
1.18	46		
0.6	41		
0.425	39		
0.3	37		
0.212	35		
0.15	34		
0.063	33		

Sample Proportions	% dry mass
Cobbles	0
Gravel	48
Sand	19
Silt and Clay	33

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

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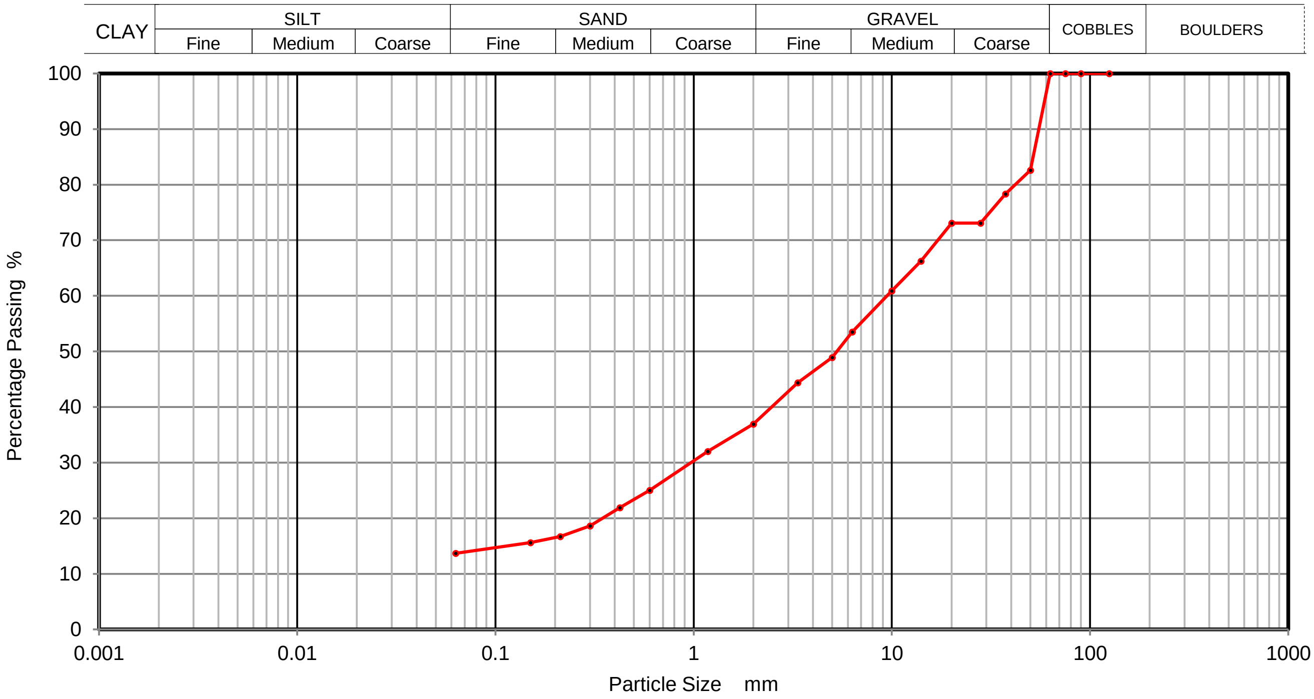
GSTL

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**BH101**
Site Name	**Abermule Business Park**	Sample No.	**7**
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**2.00**
		Depth Base	**2.45**
		Sample Type	**D**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	83		
37.5	78		
28	73		
20	73		
14	66		
10	61		
6.3	54		
5	49		
3.35	44		
2	37		
1.18	32		
0.6	25		
0.425	22		
0.3	19		
0.212	17		
0.15	16		
0.063	14		

Sample Proportions	% dry mass
Cobbles	0
Gravel	63
Sand	23
Silt and Clay	14

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

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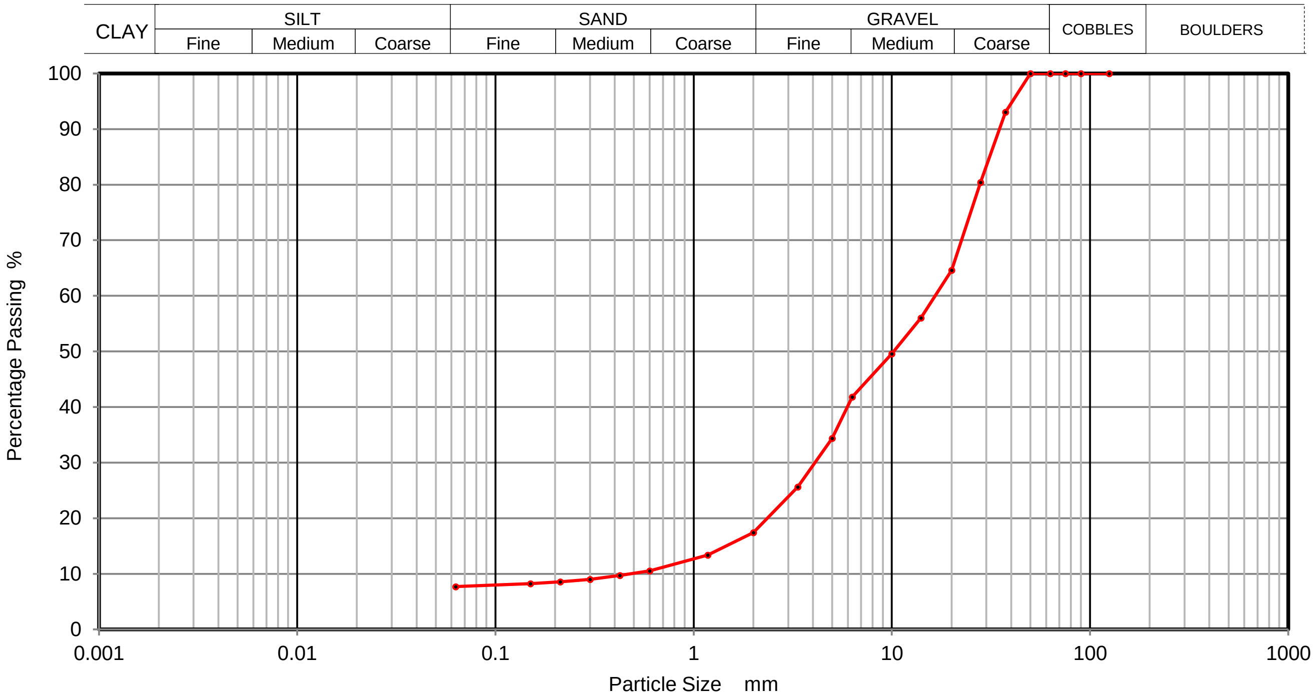
GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42716**
		Borehole/Pit No.	**BH102**
Site Name	**Abermule Business Park**	Sample No.	**7**
Soil Description	Brown silty fine to medium slightly sandy fine to coarse GRAVEL.	Depth Top	**2.00**
		Depth Base	**2.45**
		Sample Type	**B**



Sieving		**Sedimentation**	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	93		
28	80		
20	65		
14	56		
10	50		
6.3	42		
5	34		
3.35	26		
2	17		
1.18	13		
0.6	11		
0.425	10		
0.3	9		
0.212	9		
0.15	8		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	83
Sand	9
Silt and Clay	8

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

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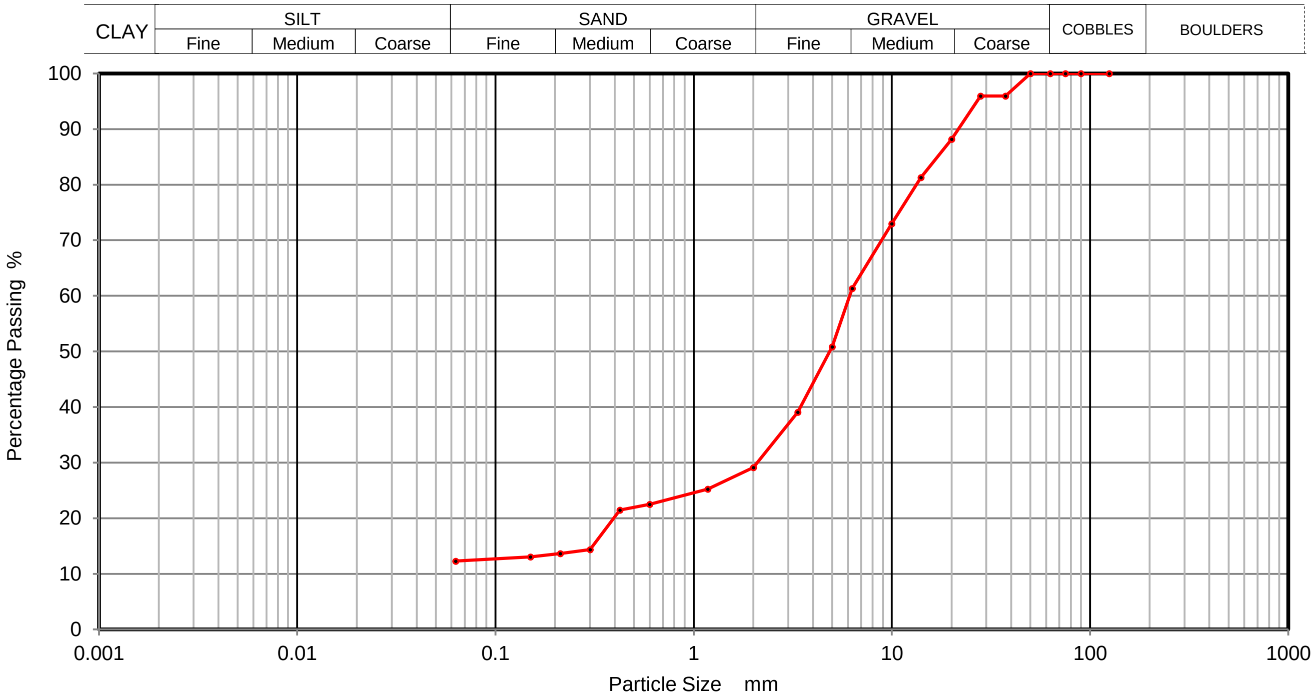
GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42716**
		Borehole/Pit No.	**BH102**
Site Name	**Abermule Business Park**	Sample No.	**5**
Soil Description	Brown silty clayey fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**1.20**
		Depth Base	**1.65**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	96		
28	96		
20	88		
14	81		
10	73		
6.3	61		
5	51		
3.35	39		
2	29		
1.18	25		
0.6	22		
0.425	21		
0.3	14		
0.212	14		
0.15	13		
0.063	12		

Sample Proportions	% dry mass
Cobbles	0
Gravel	71
Sand	17
Silt and Clay	12

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

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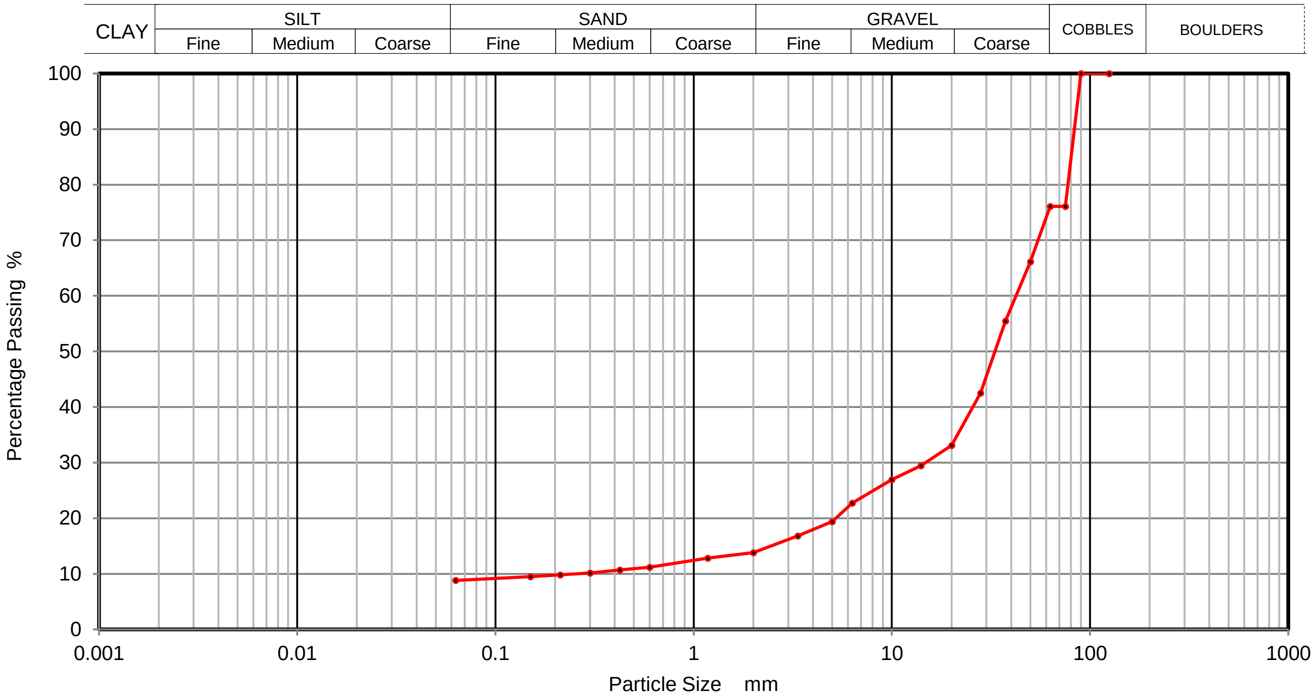
GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42716**
		Borehole/Pit No.	**BH103**
Site Name	**Abermule Business Park**	Sample No.	**12**
Soil Description	Brown fine to medium slightly sandy silty fine to coarse GRAVEL with many cobbles.	Depth Top	**4.00**
		Depth Base	**4.45**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	76		
63	76		
50	66		
37.5	55		
28	43		
20	33		
14	29		
10	27		
6.3	23		
5	19		
3.35	17		
2	14		
1.18	13		
0.6	11		
0.425	11		
0.3	10		
0.212	10		
0.15	9		
0.063	9		

Sample Proportions	% dry mass
Cobbles	24
Gravel	62
Sand	5
Silt and Clay	9

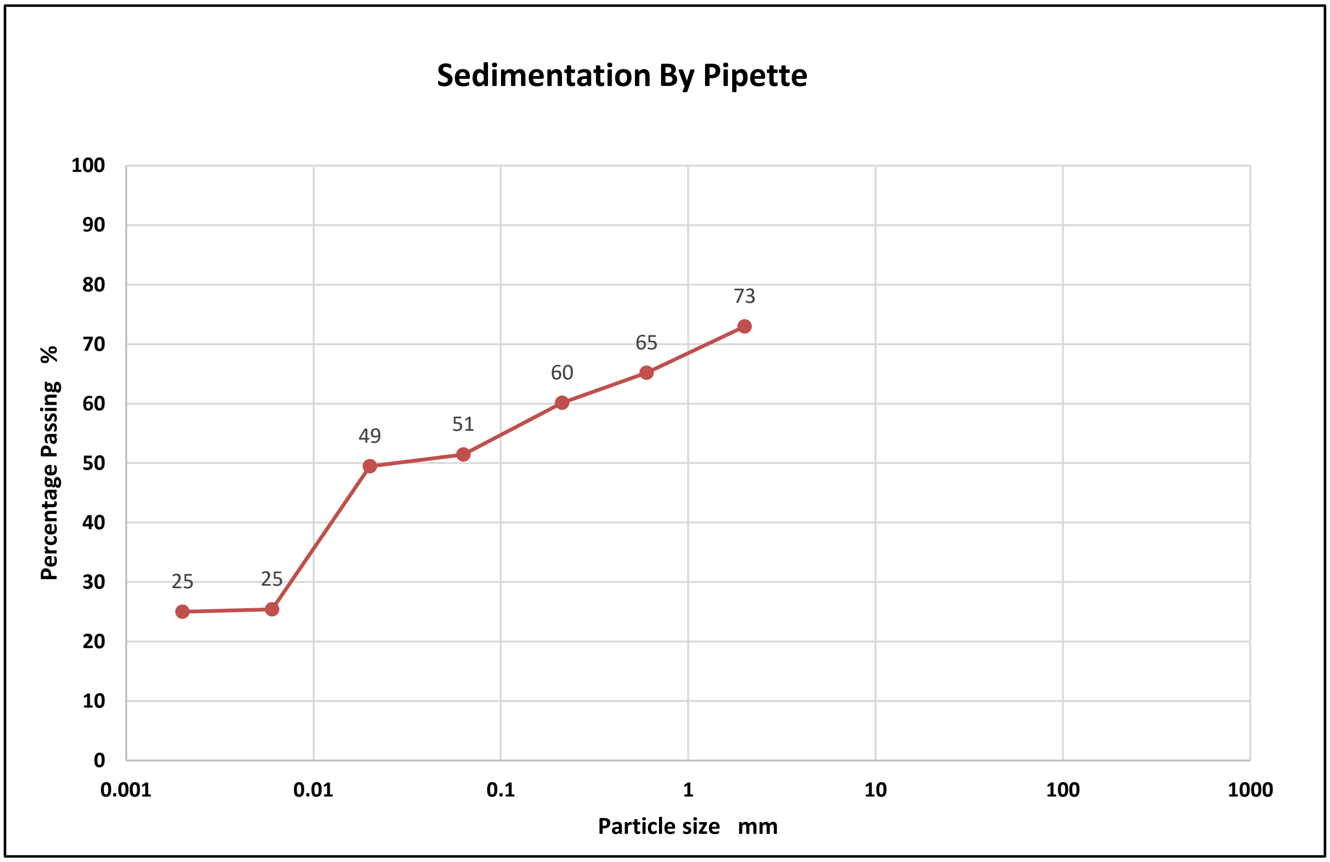
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	**Sedimentation By Pipette Analysis** **BS 1377 Part 2:1990** **Clause 9.4**	Contract Number	42716
		Borehole/Pit No.	BH103
Site Name	Abermule Business Park	Sample No.	9
Soil Description	Brown sandy clayey silty GRAVEL.	Depth Top	3.00
		Depth Base	3.45
		Sample Type	D



Top Sieve Analysis

BS Test Sieve	Percentage Passing
2.00	73
0.60	65
0.212	60
0.063	51

Sedimentation Analysis

Particle Diameter	Percentage Passing
0.02	49
0.006	25
0.002	25

Soil Fraction	Total Percentage
Gravel	27
Sand	22
Silt	26
Clay	25

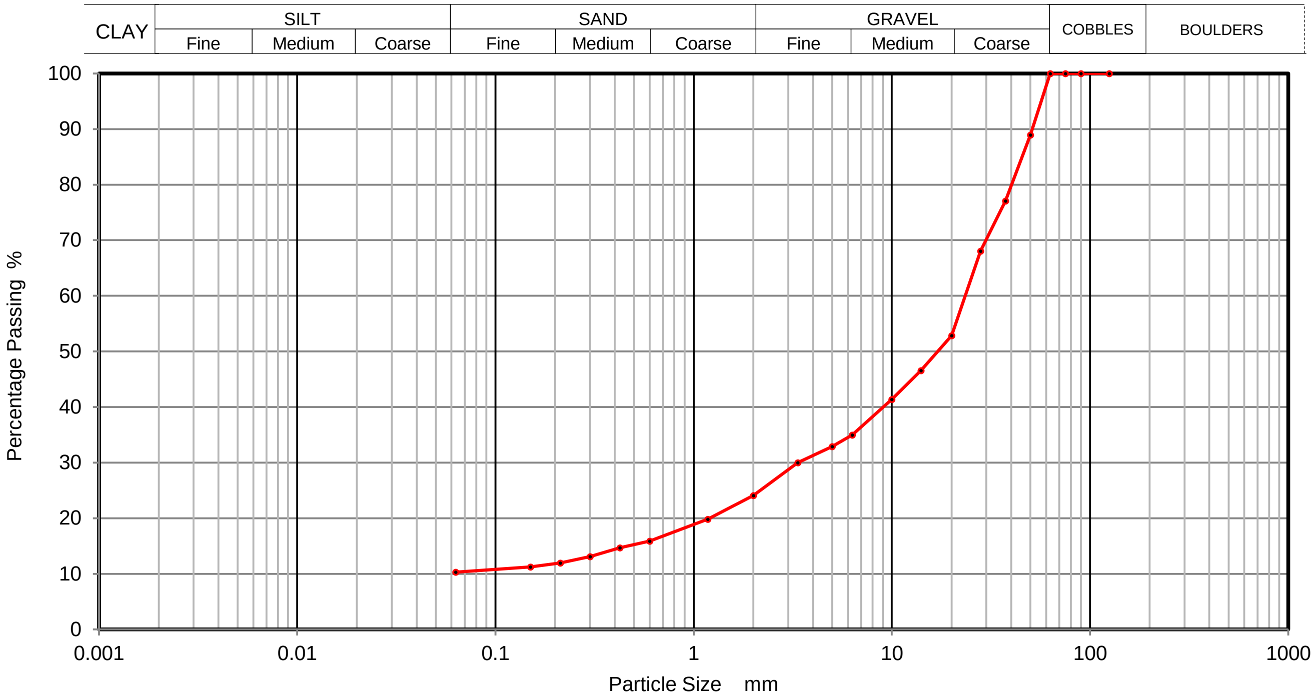
Operators	Checked	17/02/2019	Ben Sharp	
RO	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**BH104**
Site Name	**Abermule Business Park**	Sample No.	**8**
Soil Description	Brown silty fine to medium sandy fine to coarse GRAVEL.	Depth Top	**2.00**
		Depth Base	**2.45**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	77		
28	68		
20	53		
14	47		
10	41		
6.3	35		
5	33		
3.35	30		
2	24		
1.18	20		
0.6	16		
0.425	15		
0.3	13		
0.212	12		
0.15	11		
0.063	10		

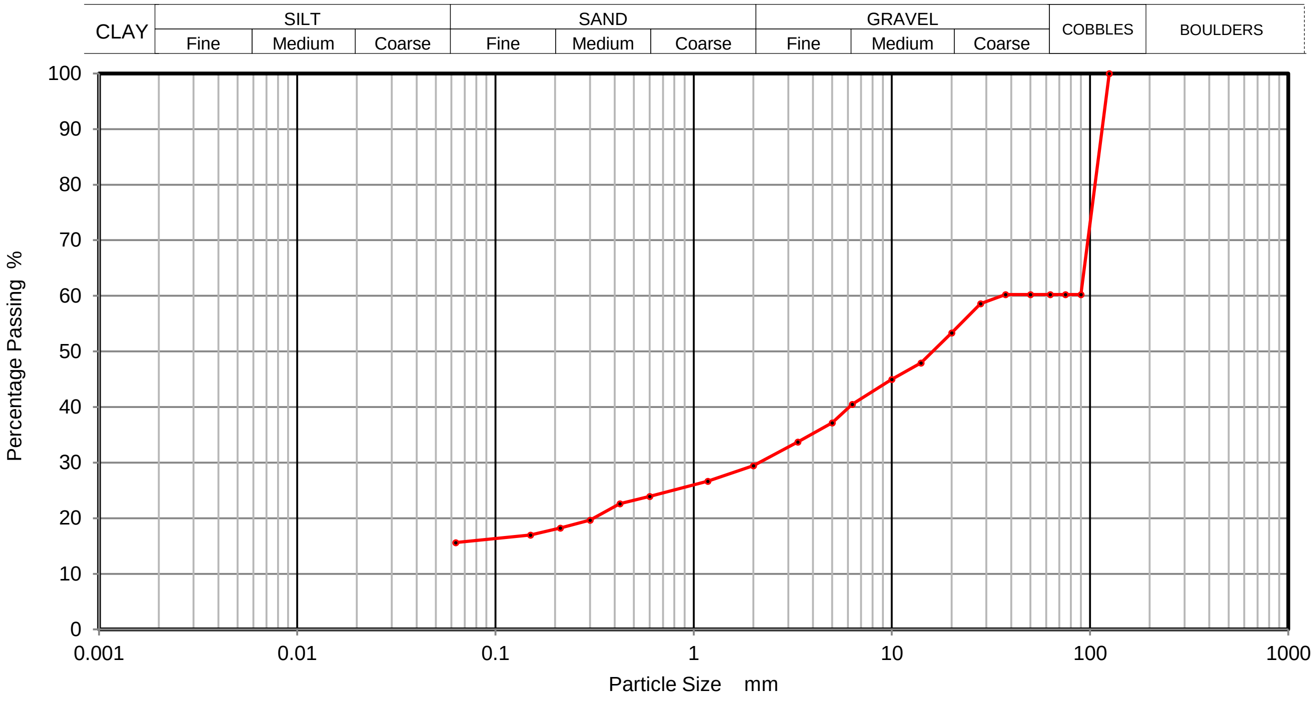
Sample Proportions	% dry mass
Cobbles	0
Gravel	76
Sand	14
Silt and Clay	10

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42716**
		Borehole/Pit No.	**BH104**
Site Name	**Abermule Business Park**	Sample No.	**14**
Soil Description	Brown fine to medium sandy silty clayey fine to coarse GRAVEL with many cobbles.	Depth Top	**5.00**
		Depth Base	**5.45**
		Sample Type	**B**



Sieving		**Sedimentation**	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	60		
75	60		
63	60		
50	60		
37.5	60		
28	59		
20	53		
14	48		
10	45		
6.3	41		
5	37		
3.35	34		
2	29		
1.18	27		
0.6	24		
0.425	23		
0.3	20		
0.212	18		
0.15	17		
0.063	16		

Sample Proportions	% dry mass
Cobbles	40
Gravel	31
Sand	13
Silt and Clay	16

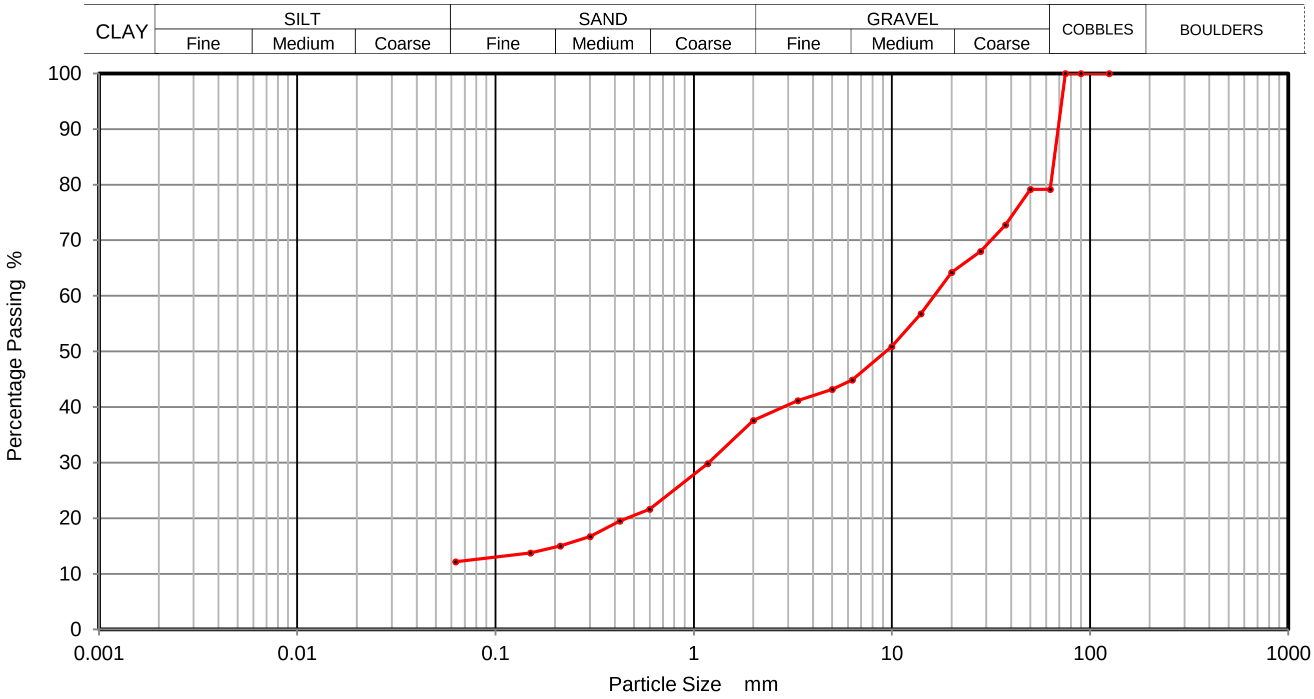
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING
2788

GSTL	**PARTICLE SIZE DISTRIBUTION** **BS 1377 Part 2:1990** **Wet Sieve, Clause 9.2**	Contract Number	**42716**
		Borehole/Pit No.	**BH105**
Site Name	**Abermule Business Park**	Sample No.	**7**
Soil Description	Brown silty fine to medium sandy fine to coarse GRAVEL with many cobbles.	Depth Top	**2.00**
		Depth Base	**2.45**
		Sample Type	**D**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	79		
50	79		
37.5	73		
28	68		
20	64		
14	57		
10	51		
6.3	45		
5	43		
3.35	41		
2	38		
1.18	30		
0.6	22		
0.425	19		
0.3	17		
0.212	15		
0.15	14		
0.063	12		

Sample Proportions	% dry mass
Cobbles	21
Gravel	41
Sand	26
Silt and Clay	12

Remarks

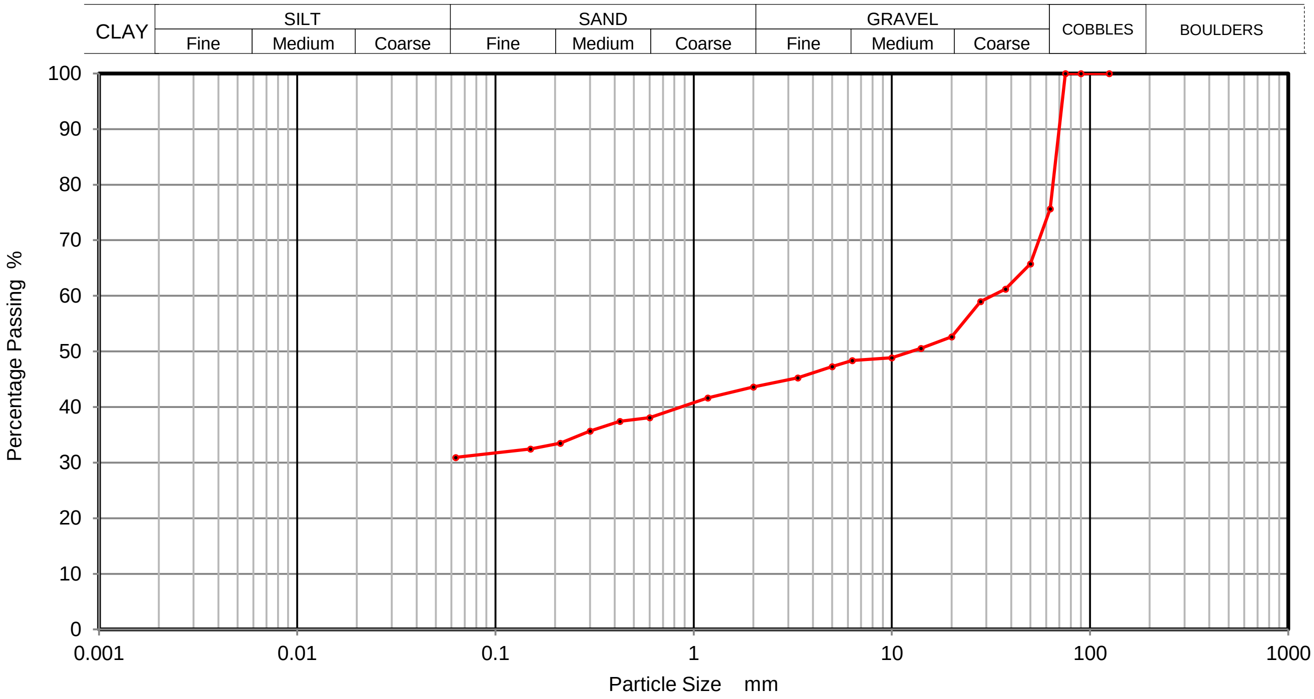
Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**BH106**
Site Name	**Abermule Business Park**	Sample No.	**4**
Soil Description	Brown fine to medium sandy silty clayey fine to coarse GRAVEL with many cobbles.	Depth Top	**1.20**
		Depth Base	**1.65**
		Sample Type	**D**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	76		
50	66		
37.5	61		
28	59		
20	53		
14	51		
10	49		
6.3	48		
5	47		
3.35	45		
2	44		
1.18	42		
0.6	38		
0.425	37		
0.3	36		
0.212	34		
0.15	32		
0.063	31		

Sample Proportions	% dry mass
Cobbles	24
Gravel	32
Sand	13
Silt and Clay	31

Remarks

Preparation and testing in accordance with BS1377 unless noted below

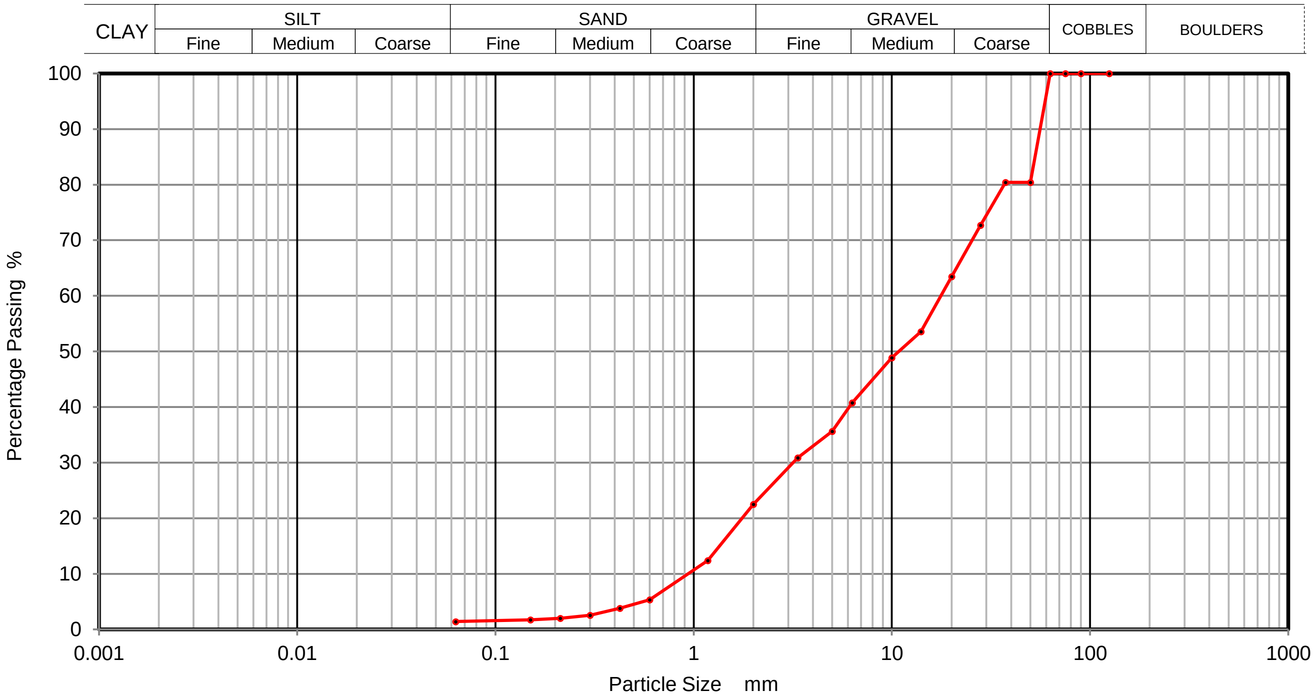
Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING
2788

GSTL

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**BH106**
Site Name	**Abermule Business Park**	Sample No.	**8**
Soil Description	Brown silty fine to medium sandy fine to coarse GRAVEL.	Depth Top	**3.00**
		Depth Base	**3.10**
		Sample Type	**D**



Sieving		**Sedimentation**	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	80		
37.5	80		
28	73		
20	63		
14	54		
10	49		
6.3	41		
5	36		
3.35	31		
2	23		
1.18	12		
0.6	5		
0.425	4		
0.3	3		
0.212	2		
0.15	2		
0.063	1		

Sample Proportions	% dry mass
Cobbles	0
Gravel	77
Sand	22
Silt and Clay	1

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

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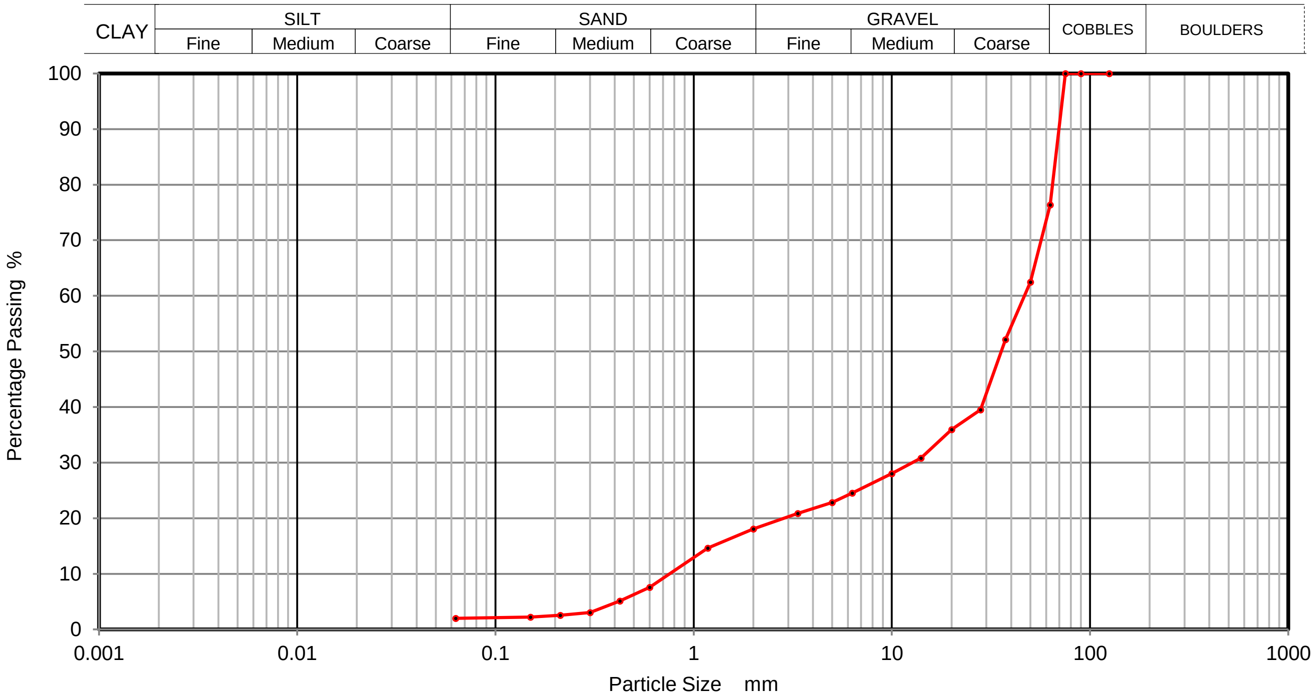
GSTL

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**SA07**
Site Name	**Abermule Business Park**	Sample No.	**6**
Soil Description	Brown silty fine to medium sandy fine to coarse GRAVEL with many cobbles.	Depth Top	**0.70**
		Depth Base	**0.90**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	76		
50	63		
37.5	52		
28	39		
20	36		
14	31		
10	28		
6.3	25		
5	23		
3.35	21		
2	18		
1.18	15		
0.6	8		
0.425	5		
0.3	3		
0.212	3		
0.15	2		
0.063	2		

Sample Proportions	% dry mass
Cobbles	24
Gravel	58
Sand	16
Silt and Clay	2

Remarks

Preparation and testing in accordance with BS1377 unless noted below

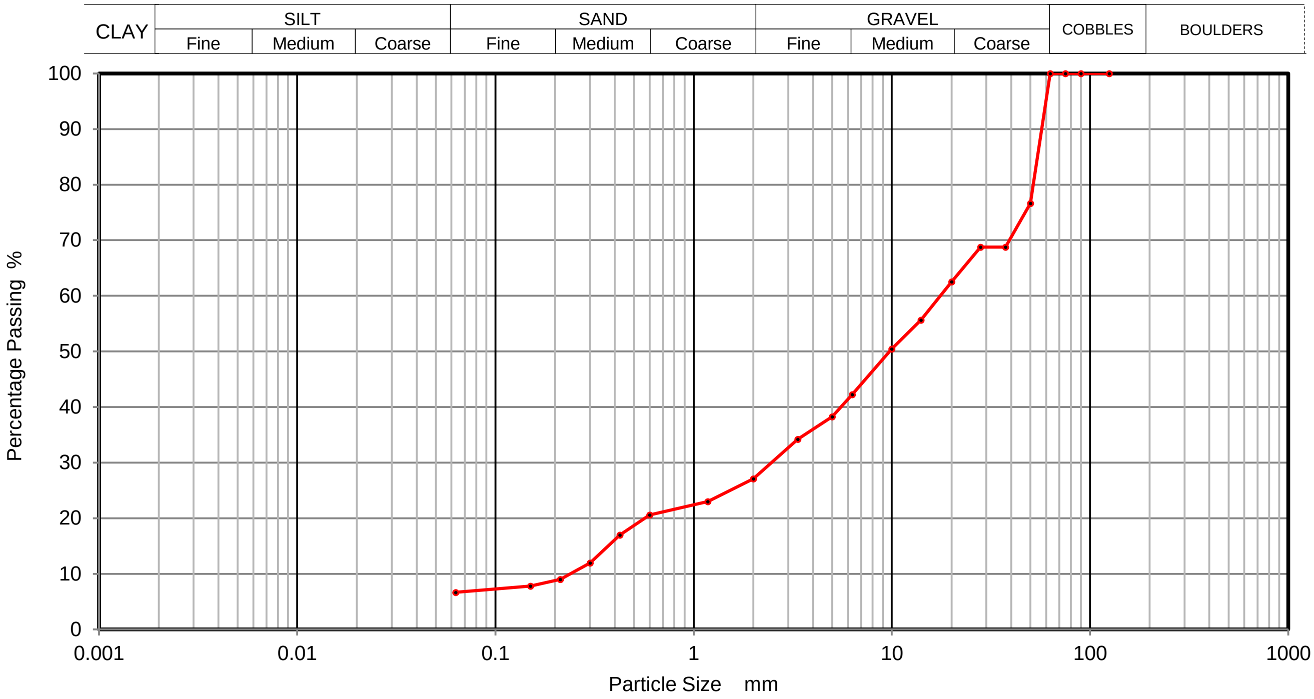
Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**SA10**
Site Name	**Abermule Business Park**	Sample No.	**7**
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	**1.10**
		Depth Base	**1.20**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	77		
37.5	69		
28	69		
20	63		
14	56		
10	50		
6.3	42		
5	38		
3.35	34		
2	27		
1.18	23		
0.6	21		
0.425	17		
0.3	12		
0.212	9		
0.15	8		
0.063	7		

Sample Proportions	% dry mass
Cobbles	0
Gravel	73
Sand	20
Silt and Clay	7

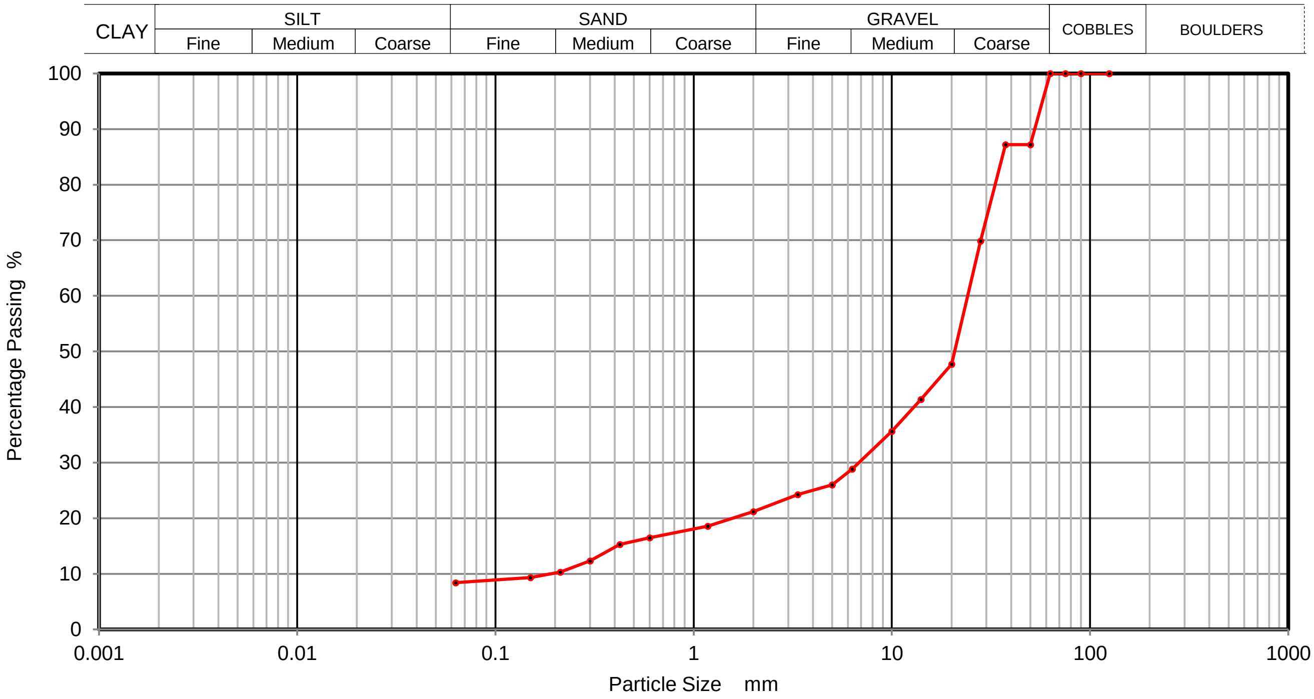
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	PARTICLE SIZE DISTRIBUTION BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Contract Number	42716
		Borehole/Pit No.	SA15
Site Name	**Abermule Business Park**	Sample No.	7
Soil Description	Brown silty fine to coarse sandy fine to coarse GRAVEL.	Depth Top	0.80
		Depth Base	1.00
		Sample Type	B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	87		
37.5	87		
28	70		
20	48		
14	41		
10	36		
6.3	29		
5	26		
3.35	24		
2	21		
1.18	19		
0.6	16		
0.425	15		
0.3	12		
0.212	10		
0.15	9		
0.063	8		

Sample Proportions	% dry mass
Cobbles	0
Gravel	79
Sand	13
Silt and Clay	8

Remarks

Preparation and testing in accordance with BS1377 unless noted below

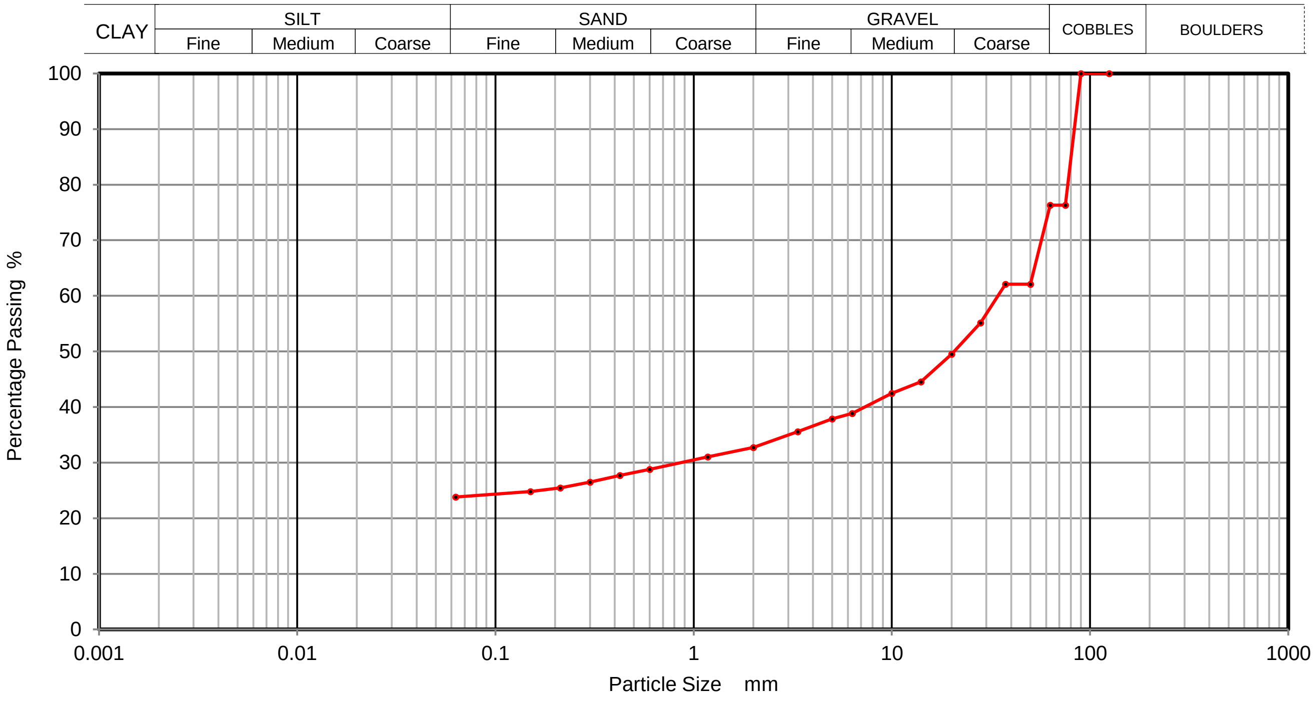
Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL

PARTICLE SIZE DISTRIBUTION
BS 1377 Part 2:1990
Wet Sieve, Clause 9.2

		Contract Number	**42716**
		Borehole/Pit No.	**TP104**
Site Name	**Abermule Business Park**	Sample No.	**5**
Soil Description	Brown fine to medium slightly sandy silty clayey fine to coarse GRAVEL with many cobbles.	Depth Top	**0.40**
		Depth Base	**0.60**
		Sample Type	**B**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	76		
63	76		
50	62		
37.5	62		
28	55		
20	50		
14	45		
10	42		
6.3	39		
5	38		
3.35	36		
2	33		
1.18	31		
0.6	29		
0.425	28		
0.3	27		
0.212	25		
0.15	25		
0.063	24		

Sample Proportions	% dry mass
Cobbles	24
Gravel	43
Sand	9
Silt and Clay	24

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operators	Checked	17/02/2019	Ben Sharp	
RO/MH	Approved	18/02/2019	Paul Evans	D P Evans

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GSTL

PARTICLE DENSITY BY GAS JAR
(BS 1377 : PART 2 : 8.2 : 1990)

Contract Number	**42716**	
Site Name	**Abermule Business Park**	

Hole Reference	Sample Number	Sample Type	Depth (m)							Particle Density		Remarks
TP101	7	B	0.60	-	0.80					2.62		
TP104	5	B	0.40	-	0.60					2.63		
				-								
				-								
				-								
				-								
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Key	**Reported As**
Moisture Content	%
Bulk Density	Mg/m^3
Dry Density	Mg/m^3
Particle Density	Mg/m^3
Air Voids	%

Operators	Checked	19/02/2019	Ben Sharp	
CA/JS	Approved	20/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

GSTL	**Certificate of Chemical Analysis (BRE BR 279)**	**Contract Number**	42716
		Client Reference	10026414
Client	Arcadis	**Date Received**	
Site Name	Abermule Business Park	**Date Started**	12/02/2019
		Date Completed	08/03/2019
		No. of Samples	9

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Chloride Content	Ph Value	Total Sulphur	Magnesium	Nitrate
BH101	8	B	2.00	-	2.45	0.27	<0.01	NCP	6.64	0.11	<1	10-25
BH103	7	D	2.00	-	2.45	0.27	0.03	NCP	7.29	0.12	<1	25-50
BH104	4	B	0.50	-	1.20	0.25	0.04	NCP	7.36	0.11	<1	50
SA12	5	B	0.50	-	0.70	0.31	0.03	NCP	7.49	0.13	<1	25-50
SA14	5	B	0.40	-	0.60	0.27	0.03	NCP	8.01	0.11	<1	10-25
SA15	6	B	0.30	-	0.50	0.31	0.04	NCP	7.86	0.13	<1	50
TP101	7	B	0.60	-	0.80	0.31	0.03	NCP	7.94	0.13	<1	50
BH103	9	D	3.00	-	3.45	0.25	0.03	NCP	7.33	0.11	<1	10-25
BH104	14	B	5.00	-	5.45	0.27	0.03	NCP	7.62	0.12	<1	25-50
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Key	**Reported As**
Acid Soluble Sulphate	% SO_4
Aqueous Extract Sulphate	g/l SO_4
Chloride Content (Semi)	mg Cl/l
PH Value	@ 25°
Total Sulphur	% S
Magnesium	g/l SO_4
Nitrate	NO_3 mg/l

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	
Darren Bourne	Date	06/03/2019		

GSTL	**Certificate of Chemical Analysis** **BS1377 Part 3 1990**	**Contract Number**	42716
		Client Reference	10026414
Client	Arcadis	**Date Received**	
Site Name	Abermule Business Park	**Date Started**	12/02/2019
		Date Completed	18/02/2019
		No. of Samples	1

Hole Number	Sample Number	Sample Type	Depth (m)			Acid Soluble Sulphate	Aqueous Extract Sulphate	Water Soluble Chloride	PH Value	Organic Matter Content	Acid Soluble Chloride	Loss On Ignition
BH103	5	D	1.20	-	1.65					1.9		
				-								
				-								
				-								
				-								
				-								
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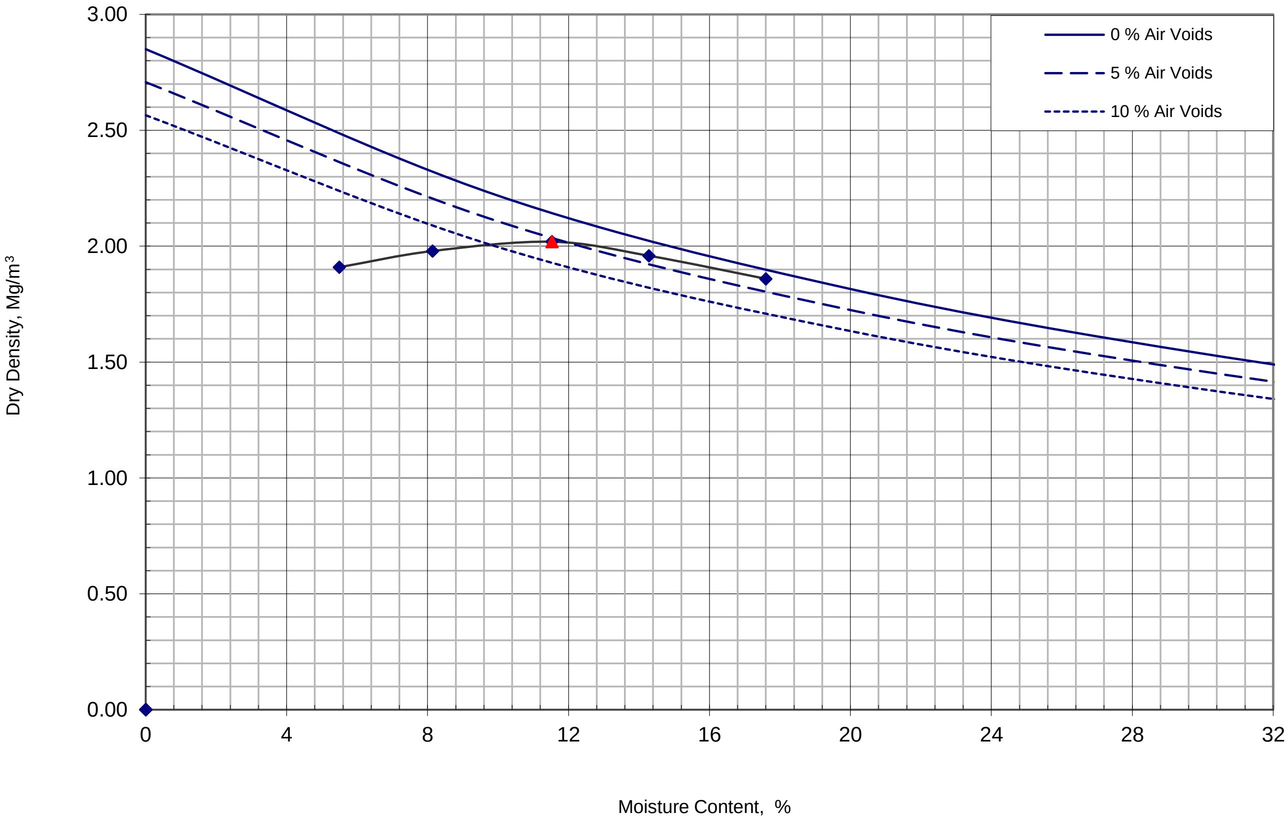
Key	Reported As	Clause
Acid Soluble Sulphate	% SO_3	Clause 5.2 & 5.5
Aqueous Extract Sulphate	g/l SO_3	Clause 5.3 & 5.5
Water Soluble Chloride	%	Clause 7.2
PH Value	@ 25°	Clause 9.5
Organic	%	Clause 3
Acid Soluble Chloride	%	Clause 7.3
LOI	%	Clause 4

Remarks

NCP = No Chloride Present

Test Operator	Checked and Authorised by		Ben Sharp	
Darren Bourne	Date	18/02/2019		

GSTL	**Dry Density / Moisture Content Relationship** **BS 1377:Part 4:1990**	Contract Number	**42716**
		Borehole / Pit No	**BH101**
Site Name	**Abermule Business Park**	Sample No	**6**
		Depth Top	**1.20**
Compaction Method	**2.5 Kg Rammer**	Depth Base	**1.65**
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	**B**



Compaction Point	1	2	3	4	5							
Moisture Content	5.5	8.1	12	14	18							
Bulk Density	2.01	2.14	2.25	2.24	2.19							
Dry Density	1.91	1.98	2.02	1.96	1.86							

Initial Moisture Content	14	%
Maximum Dry Density	2.02	Mg/m3
Optimum Moisture Content	12	%
Particle Density	2.85 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	8	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	D P Evans

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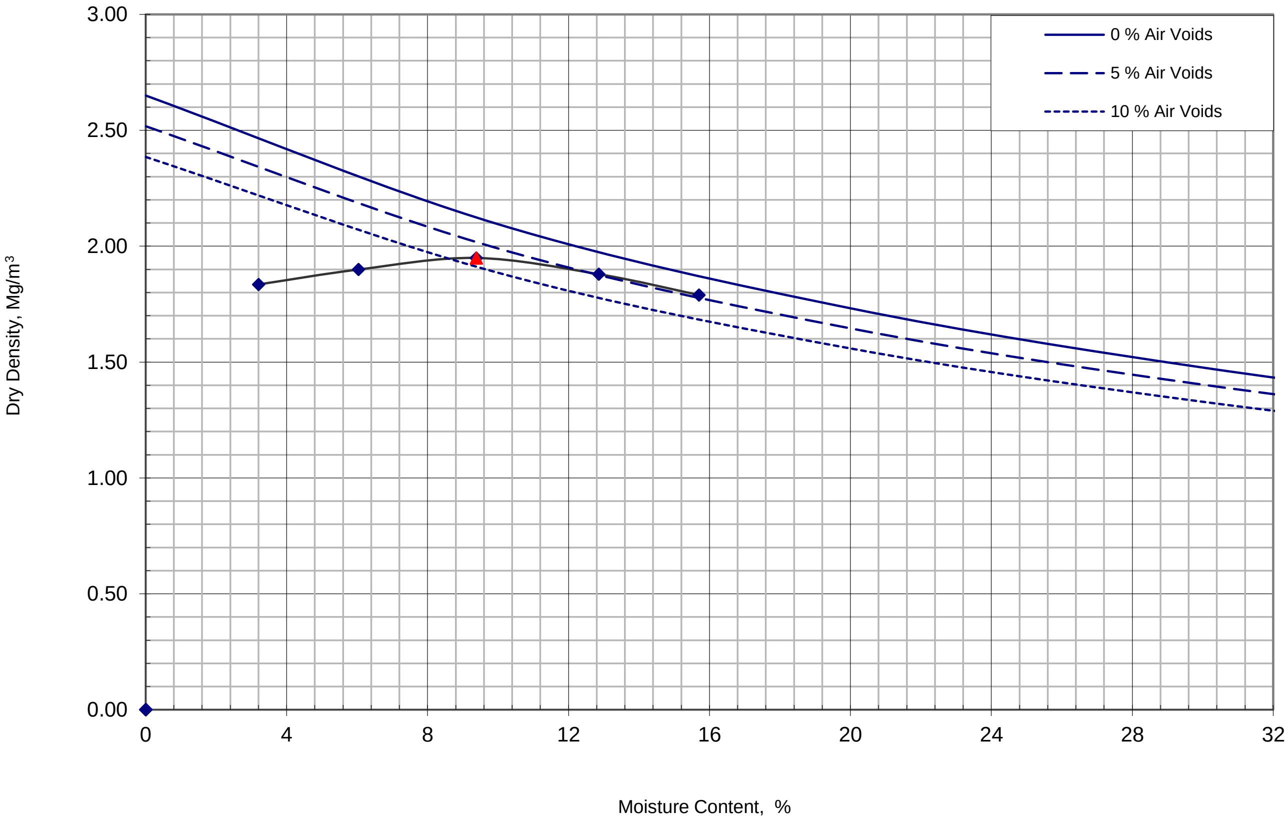
GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	42716
		Borehole / Pit No	BH102
Site Name	**Abermule Business Park**	Sample No	**4**
Soil Description	**Grey fine to coarse gravelly silty CLAY.**	Depth Top	**1.20**
Compaction Method	**2.5 Kg Rammer**	Depth Base	**1.65**
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	**B**



Compaction Point	1	2	3	4	5							
Moisture Content	3.2	6.0	9.4	13	16							
Bulk Density	1.89	2.01	2.13	2.12	2.07							
Dry Density	1.83	1.90	1.95	1.88	1.79							

Initial Moisture Content	13	%
Maximum Dry Density	1.95	Mg/m3
Optimum Moisture Content	9	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	6.3	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	D P Evans

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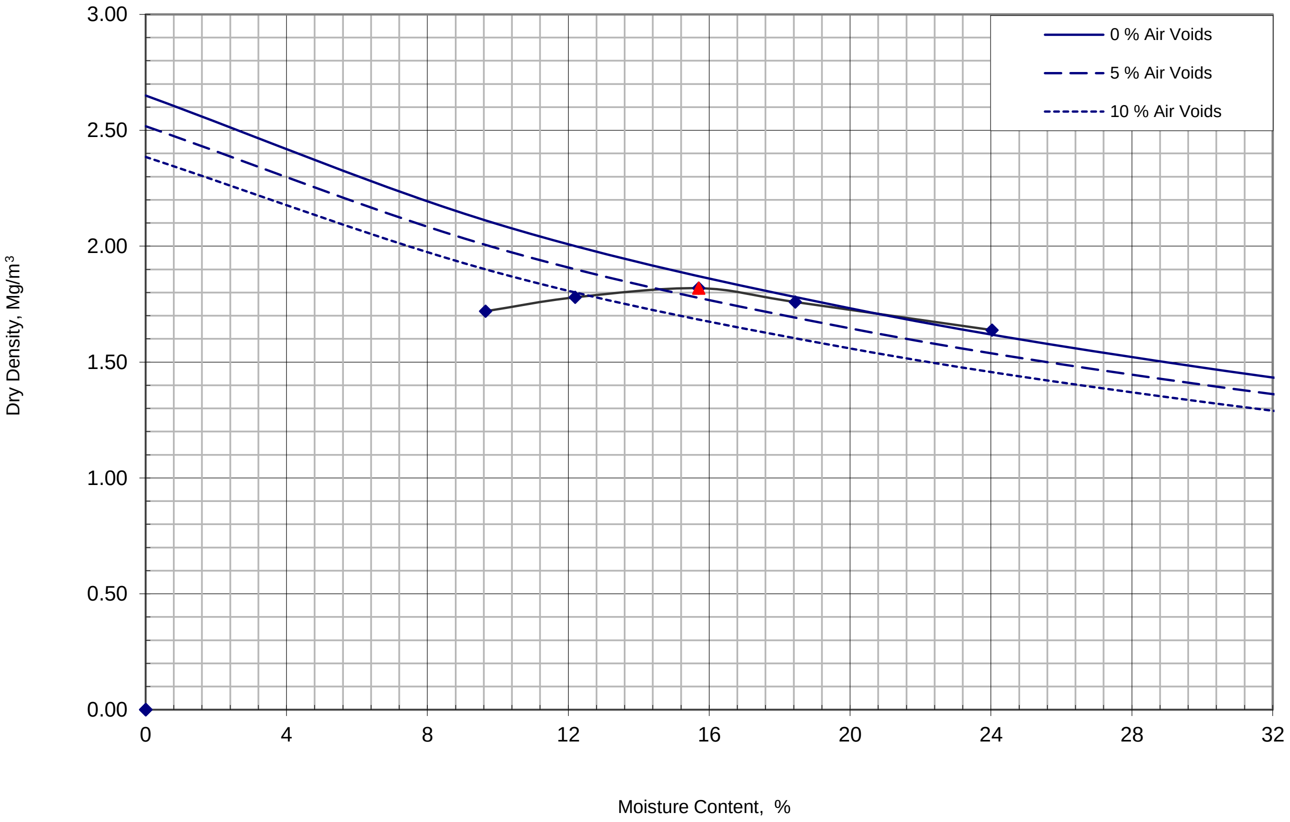
GSTL	**Dry Density / Moisture Content Relationship** **BS 1377:Part 4:1990**	Contract Number	**42716**
		Borehole / Pit No	**BH103**
Site Name	**Abermule Business Park**	Sample No	**4**
Soil Description	**Grey silty CLAY.**	Depth Top	**0.50**
Compaction Method	**2.5 Kg Rammer**	Depth Base	**1.20**
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	**B**



Compaction Point	1	2	3	4	5							
Moisture Content	9.7	12	16	18	24							
Bulk Density	1.89	2.00	2.10	2.08	2.03							
Dry Density	1.72	1.78	1.82	1.76	1.64							

Initial Moisture Content	24	%
Maximum Dry Density	1.82	Mg/m3
Optimum Moisture Content	16	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	6.3	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	D P Evans

UKAS
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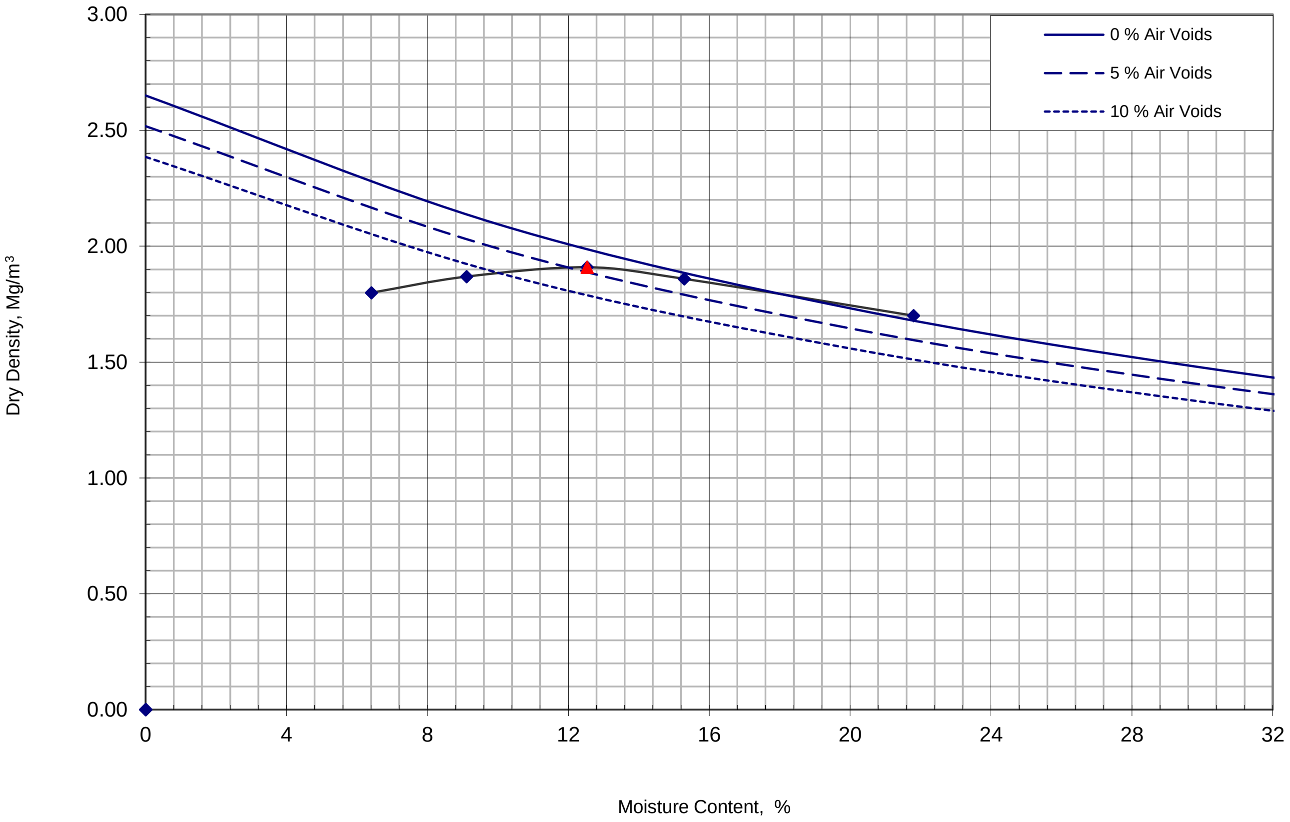
2788

GSTL	**Dry Density / Moisture Content Relationship** **BS 1377:Part 4:1990**	Contract Number	**42716**
		Borehole / Pit No	**BH104**
Site Name	**Abermule Business Park**	Sample No	**4**
Soil Description	**Brown fine to coarse gravelly silty CLAY.**	Depth Top	**0.50**
Compaction Method	**2.5 Kg Rammer**	Depth Base	**1.20**
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	**B**



Compaction Point	1	2	3	4	5							
Moisture Content	6.4	9.1	13	15	22							
Bulk Density	1.91	2.04	2.15	2.14	2.07							
Dry Density	1.80	1.87	1.91	1.86	1.70							

Initial Moisture Content	22	%
Maximum Dry Density	1.91	Mg/m3
Optimum Moisture Content	13	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	3.6	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	

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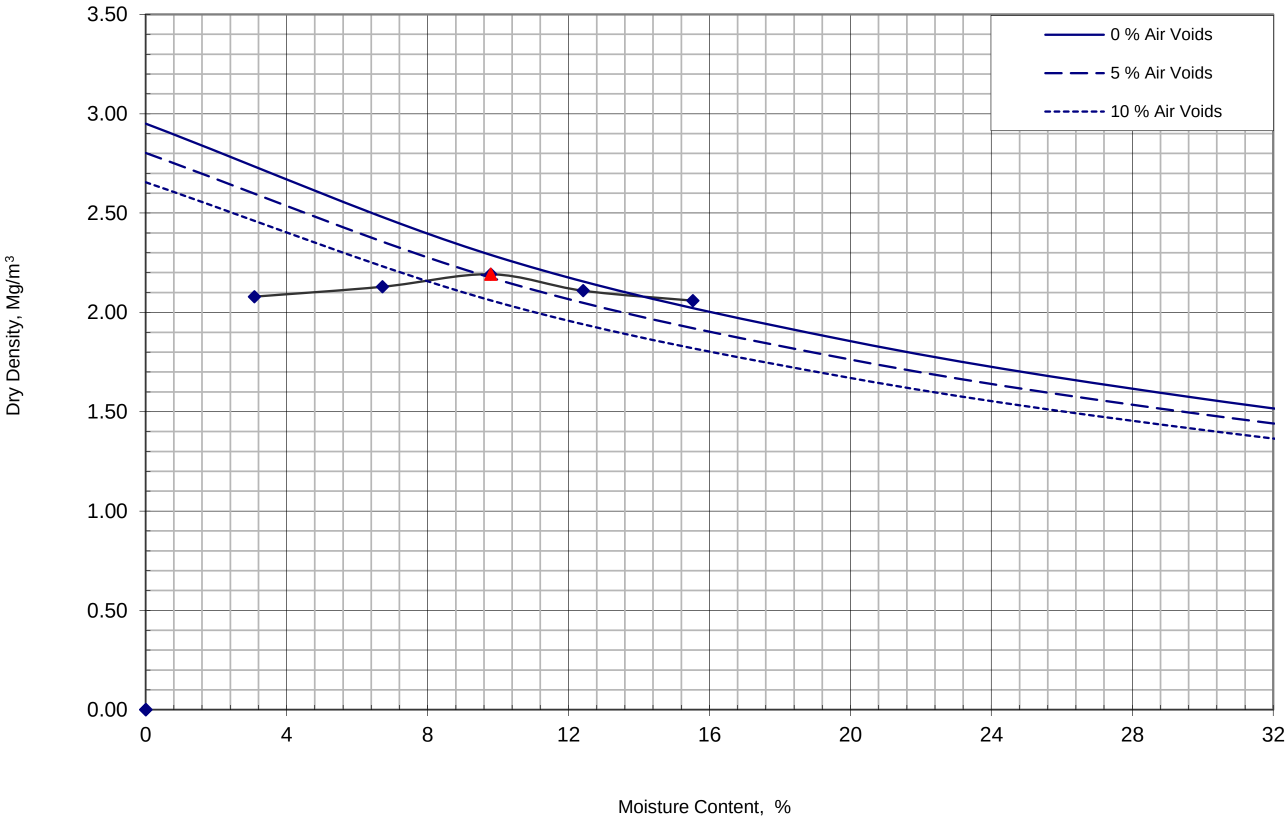
GSTL	**Dry Density / Moisture Content Relationship** **BS 1377:Part 4:1990**	Contract Number	**42716**
		Borehole / Pit No	**BH104**
Site Name	**Abermule Business Park**	Sample No	**8**
		Depth Top	**2.00**
Compaction Method	**2.5 Kg Rammer**	Depth Base	**2.45**
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	**B**



Compaction Point	1	2	3	4	5							
Moisture Content	3.1	6.7	9.8	12	16							
Bulk Density	2.14	2.27	2.41	2.37	2.38							
Dry Density	2.08	2.13	2.19	2.11	2.06							

Initial Moisture Content	9.8	%
Maximum Dry Density	2.19	Mg/m3
Optimum Moisture Content	10	%
Particle Density	2.95 Assumed	Mg/m3
Material Retained 37.5mm	23	%
Material Retained 20mm	47	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	

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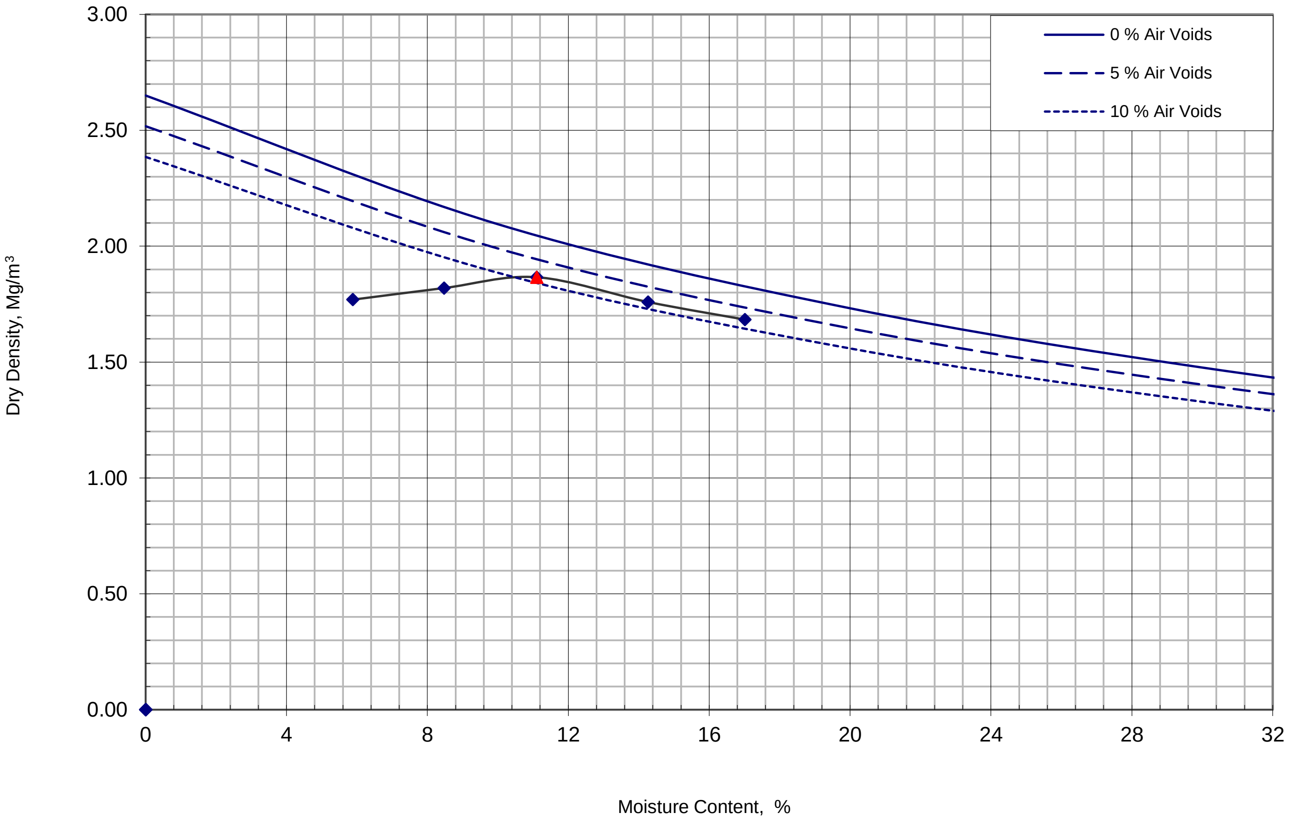
GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	42716
		Borehole / Pit No	SA15
Site Name	**Abermule Business Park**	Sample No	6
Soil Description	**Grey fine to coarse gravelly silty CLAY.**	Depth Top	0.30
Compaction Method	**2.5 Kg Rammer**	Depth Base	0.50
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	B



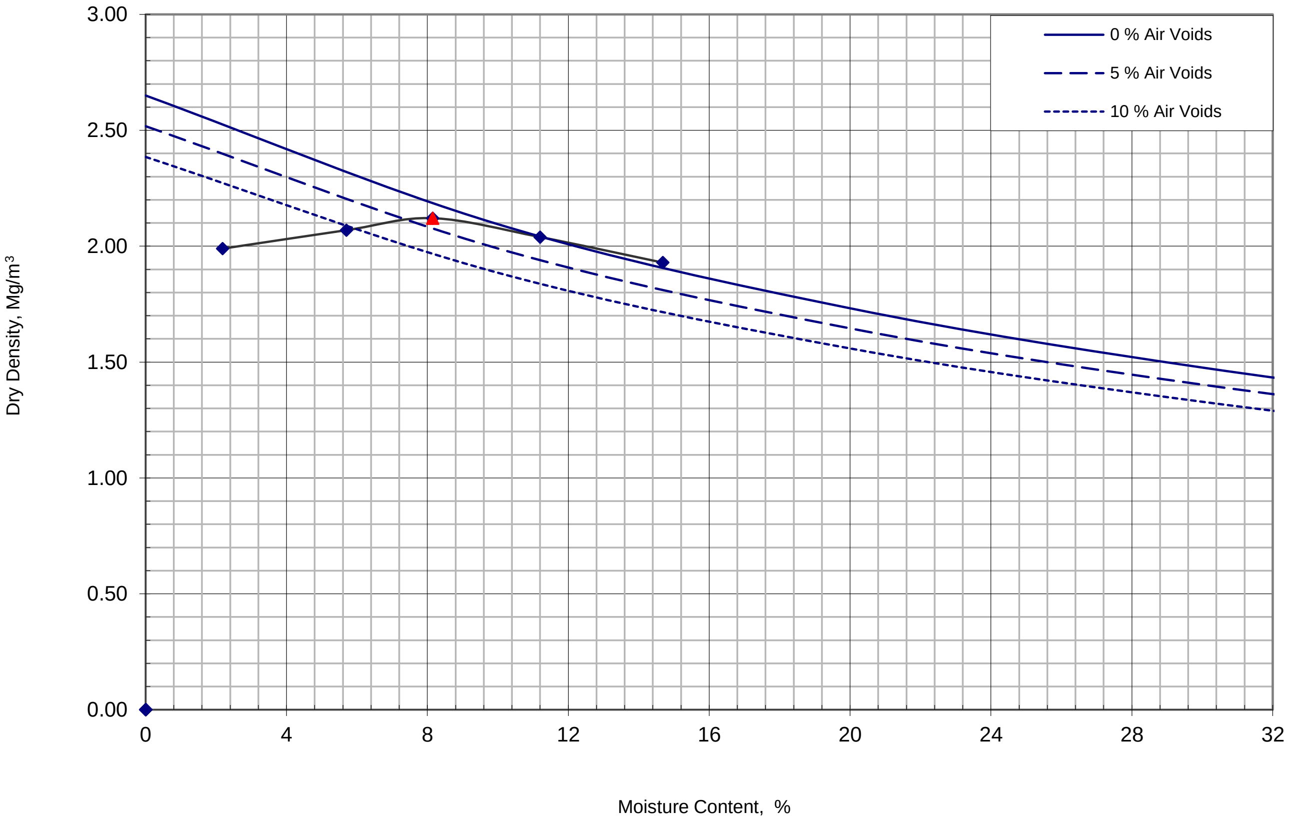
Compaction Point	1	2	3	4	5							
Moisture Content	5.9	8.5	11	14	17							
Bulk Density	1.87	1.97	2.07	2.01	1.97							
Dry Density	1.77	1.82	1.87	1.76	1.68							

Initial Moisture Content	17	%
Maximum Dry Density	1.87	Mg/m3
Optimum Moisture Content	11	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	0	%
Material Retained 20mm	4.4	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING
2788

GSTL	Dry Density / Moisture Content Relationship BS 1377:Part 4:1990	Contract Number	**42716**
		Borehole / Pit No	**SA15**
Site Name	**Abermule Business Park**	Sample No	**7**
		Depth Top	**0.80**
Compaction Method	**2.5 Kg Rammer**	Depth Base	**1.00**
Compaction Clause	**BS1377:Part 4:1990, Clause 3.3**	Sample Type	**B**



Compaction Point	1	2	3	4	5							
Moisture Content	2.2	5.7	8.2	11	15							
Bulk Density	2.03	2.19	2.29	2.27	2.21							
Dry Density	1.99	2.07	2.12	2.04	1.93							

Initial Moisture Content	8.2	%
Maximum Dry Density	2.12	Mg/m3
Optimum Moisture Content	8	%
Particle Density	2.65 Assumed	Mg/m3
Material Retained 37.5mm	13	%
Material Retained 20mm	52	%

Operators	Checked	17/02/2019	Ben Sharp	
CA	Approved	18/02/2019	Paul Evans	D P Evans

UKAS TESTING 2788

APPENDIX H

Environmental Laboratory Results

Asbestos Laboratory Reports and Material Risk Assessment Reports (as provided by Powys County Council)

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Analytical Report Number : 19-24944

Project / Site name:	Abermule Business Park	**Samples received on:**	11/01/2019
Your job number:	10026414	**Samples instructed on:**	15/01/2019
Your order number:		**Analysis completed by:**	24/01/2019
Report Issue Number:	1	**Report issued on:**	24/01/2019
Samples Analysed:	8 soil samples		

Signed: ____________________

Jordan Hill
Reporting 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.

Lab Sample Number				1131913	1131914	1131915	1131916	1131917
Sample Reference				SA01	SA01	SA05	SA06	SA08
Sample Number				1	3	1	1	1
Depth (m)				0.00-0.10	0.30-0.50	0.00-0.30	0.00-0.20	0.00-0.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	15	9.0	16	19	16
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.1	1.8	2.0
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.5	7.2	7.0	6.4	7.8
Total 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	0.015	0.012	0.016	0.013	0.0090
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	0.53	< 0.05	0.51	0.25	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.51	< 0.05	0.47	0.25	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.43	< 0.05	0.31	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.31	< 0.05	0.30	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.57	< 0.05	0.45	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.20	< 0.05	0.24	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.45	< 0.05	0.39	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.27	< 0.05	0.22	< 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	0.29	< 0.05	0.23	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.56	< 0.80	3.12	< 0.80	< 0.80

Lab Sample Number				1131913	1131914	1131915	1131916	1131917
Sample Reference				SA01	SA01	SA05	SA06	SA08
Sample Number				1	3	1	1	1
Depth (m)				0.00-0.10	0.30-0.50	0.00-0.30	0.00-0.20	0.00-0.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.3	13	8.5	9.2	13
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.3	1.4	0.9	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 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	35	36	34	38	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	41	26	26	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	27	31	31	27
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	32	44	34	35	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	110	120	120	110

Monoaromatics

Benzene	ug/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-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	13	-	22	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	16	-	26	-	-

Lab Sample Number				1131918	1131919	1131920		
Sample Reference				SA11	SA14	SA16		
Sample Number				None Supplied	1	1		
Depth (m)				0.00-0.30	0.10-0.30	0.00-0.20		
Date Sampled				Deviating	Deviating	Deviating		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	27	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	14	17	16		
Total mass of sample received	kg	0.001	NONE	1.7	1.7	1.7		
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.3	7.0	7.2		
Total 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	0.013	0.014	0.013		
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	< 0.05	1.8		
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.47		
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	8.2		
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	7.7		
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	5.5		
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.6		
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	7.8		
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.7		
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	7.2		
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.4		
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.97		
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.8		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	57.1		

Analytical Report Number: 19-24944

Project / Site name: Abermule Business Park

Lab Sample Number				1131918	1131919	1131920		
Sample Reference				SA11	SA14	SA16		
Sample Number				None Supplied	1	1		
Depth (m)				0.00-0.30	0.10-0.30	0.00-0.20		
Date Sampled				Deviating	Deviating	Deviating		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.9	12	11		
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	0.7	1.5		
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0		
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	39	35		
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	31	40		
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	29	57		
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3		
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	36	29		
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0		
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	130	130		

Monoaromatics

Benzene	ug/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-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	< 1.0	< 1.0	< 1.0		
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0		
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0		
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	48		
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	52		

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	2.6		
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	66		
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	15	290		
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	17	360		

Analytical Report Number : 19-24944

Project / Site name: Abermule Business 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 *
1131913	SA01	1	0.00-0.10	Brown loam and clay with gravel and vegetation.
1131914	SA01	3	0.30-0.50	Brown loam and clay with gravel and vegetation.
1131915	SA05	1	0.00-0.30	Brown loam and clay with gravel and vegetation.
1131916	SA06	1	0.00-0.20	Brown loam and clay with gravel and vegetation.
1131917	SA08	1	0.00-0.20	Brown loam and clay with gravel and vegetation.
1131918	SA11	None Supplied	0.00-0.30	Brown loam and clay with vegetation and stones.
1131919	SA14	1	0.10-0.30	Brown loam and clay with gravel and vegetation.
1131920	SA16	1	0.00-0.20	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 19-24944

Project / Site name: Abermule Business 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
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.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	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
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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
SA01	1	S	19-24944	1131913	a			
SA01	3	S	19-24944	1131914	a			
SA05	1	S	19-24944	1131915	a			
SA06	1	S	19-24944	1131916	a			
SA08	1	S	19-24944	1131917	a			
SA11		S	19-24944	1131918	a			
SA14	1	S	19-24944	1131919	a			
SA16	1	S	19-24944	1131920	a			

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

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f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 19-24967

Project / Site name:	Abermule Business Park	**Samples received on:**	11/01/2019
Your job number:	10026414	**Samples instructed on:**	15/01/2019
Your order number:	14020726	**Analysis completed by:**	24/01/2019
Report Issue Number:	1	**Report issued on:**	24/01/2019
Samples Analysed:	5 soil samples		

Signed:

Jordan Hill
Reporting 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

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Analytical Report Number: 19-24967

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1132073	1132074	1132075	1132076	1132077
Sample Reference				BH101	BH102	BH102	BH106	BH106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.50	0.00-0.50	1.20-1.65	0.10-0.20	0.60-0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	20	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	19	11	18	6.7
Total mass of sample received	kg	0.001	NONE	1.3	1.1	1.6	1.8	2.0
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.6	6.7	7.2	6.8	6.9
Total 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	0.016	0.013	0.0081	0.014	0.011
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	0.26	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.24	< 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	9.3	12	11	12	12
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	1.3	< 0.2	0.9	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 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	38	40	28	36	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30	29	34	30	31
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	29	17	33	22
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.3	< 0.3	0.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	36	37	37	33	38
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	130	98	130	100

Analytical Report Number: 19-24967

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1132073	1132074	1132075	1132076	1132077
Sample Reference				BH101	BH102	BH102	BH106	BH106
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.50	0.00-0.50	1.20-1.65	0.10-0.20	0.60-0.80
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

Monoaromatics

Benzene	ug/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-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	-	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	-

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	-	< 10	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	< 10	-	-	-

Analytical Report Number : 19-24967

Project / Site name: Abermule Business 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 *
1132073	BH101	None Supplied	0.00-0.50	Brown clay and loam with vegetation.
1132074	BH102	None Supplied	0.00-0.50	Brown loam and clay with vegetation.
1132075	BH102	None Supplied	1.20-1.65	Beige clay and sand with stones.
1132076	BH106	None Supplied	0.10-0.20	Brown clay and loam with vegetation.
1132077	BH106	None Supplied	0.60-0.80	Brown gravelly clay.

Analytical Report Number : 19-24967

Project / Site name: Abermule Business 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
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.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	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
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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH101		S	19-24967	1132073	a			
BH102		S	19-24967	1132074	a			
BH102		S	19-24967	1132075	a			
BH106		S	19-24967	1132076	a			
BH106		S	19-24967	1132077	a			

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

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Analytical Report Number : 19-26283

Project / Site name:	Abermule Business Park	**Samples received on:**	17/01/2019
Your job number:	10026414	**Samples instructed on:**	25/01/2019
Your order number:	14020726	**Analysis completed by:**	04/02/2019
Report Issue Number:	1	**Report issued on:**	04/02/2019
Samples Analysed:	16 soil samples		

Signed:

Jordan Hill
Reporting 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

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Analytical Report Number: 19-26283

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140521	1140522	1140523	1140524	1140525
Sample Reference				TP101	TP101	TP102	TP102	TP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.20	0.20-0.40	0.00-0.20	0.60-0.80	0.00-0.30
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	19	< 0.1
Moisture Content	%	N/A	NONE	15	12	16	6.3	16
Total mass of sample received	kg	0.001	NONE	1.1	1.2	1.1	1.3	1.1
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.2	6.8	6.9	7.3	6.5
Total 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	0.014	0.0068	0.010	0.0069	0.012
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	13	12	12	16	9.7
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	0.7	1.9	0.6	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 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	52	33	40	28	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	35	33	35	39	28
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	19	33	26	30
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	39	41	35	39	34
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	110	130	99	120

Lab Sample Number				1140521	1140522	1140523	1140524	1140525
Sample Reference				TP101	TP101	TP102	TP102	TP103
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.20	0.20-0.40	0.00-0.20	0.60-0.80	0.00-0.30
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	1.3	1.2	1.3	1.2	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	11	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	14
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	14

Analytical Report Number: 19-26283

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140526	1140527	1140528	1140529	1140530
Sample Reference				TP103	TP104	TP104	HTP01	HTP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40-0.60	0.00-0.20	0.40-0.60	0.00-0.20	0.00-0.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	21	15	12	16	16
Total mass of sample received	kg	0.001	NONE	1.0	1.2	1.2	1.8	1.8
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.9	7.0	6.8	6.6	6.5
Total 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	0.024	0.018	0.024	0.015	0.013
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	6.0	8.9	9.1	10
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	1.1	0.7	1.0	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 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	34	39	33	35	34
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	31	30	23	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	26	21	24	26
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	39	36	37	32	32
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	110	100	110	110

Analytical Report Number: 19-26283

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140526	1140527	1140528	1140529	1140530
Sample Reference				TP103	TP104	TP104	HTP01	HTP02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40-0.60	0.00-0.20	0.40-0.60	0.00-0.20	0.00-0.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	1.2	1.5	1.5	1.6	1.4
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	1.5	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 19-26283

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140531	1140532	1140533	1140534	1140535
Sample Reference				HTP03	HTP04	HTP05	HTP06	HTP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	6.2	14	15	22	15
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.7	1.7	1.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7	7.9	7.7	7.1	7.3
Total 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	0.016	0.023	0.046	0.014	0.030

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	0.33	< 0.05	0.91	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.32	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.87	1.6	< 0.05	4.8	0.30
Pyrene	mg/kg	0.05	MCERTS	0.74	1.6	< 0.05	4.6	0.29
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.45	0.83	< 0.05	2.2	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.54	0.90	< 0.05	2.3	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.74	1.4	< 0.05	3.6	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.36	0.69	< 0.05	1.2	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.68	1.5	< 0.05	3.1	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.42	0.89	< 0.05	1.9	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.45	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.49	1.2	< 0.05	2.2	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	5.29	10.9	< 0.80	27.6	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.0	8.0	5.2	8.3	12
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	1.2	0.5	3.0	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 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	40	32	31	33	39
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30	28	23	36	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	51	22	43	32
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	32	31	28	31	39
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	77	110	120	150	140

Lab Sample Number				1140531	1140532	1140533	1140534	1140535
Sample Reference				HTP03	HTP04	HTP05	HTP06	HTP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
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	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	1.2	1.4	< 1.0	1.3	1.2
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	12	< 8.0	17	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	16	< 10	21	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	10	< 10

Analytical Report Number: 19-26283

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140536				
Sample Reference				HTP08				
Sample Number				None Supplied				
Depth (m)				0.00-0.20				
Date Sampled				Deviating				
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	27				
Total mass of sample received	kg	0.001	NONE	1.6				

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected				

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.5				
Total Cyanide	mg/kg	1	MCERTS	< 1				
Free Cyanide	mg/kg	1	MCERTS	< 1				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.029				

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0				

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05				
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05				
Fluorene	mg/kg	0.05	MCERTS	< 0.05				
Phenanthrene	mg/kg	0.05	MCERTS	0.67				
Anthracene	mg/kg	0.05	MCERTS	0.19				
Fluoranthene	mg/kg	0.05	MCERTS	2.5				
Pyrene	mg/kg	0.05	MCERTS	2.3				
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.1				
Chrysene	mg/kg	0.05	MCERTS	1.1				
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.5				
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.73				
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.4				
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.84				
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.95				

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	13.2				

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18				
Boron (water soluble)	mg/kg	0.2	MCERTS	2.2				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.2				
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	330				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	55				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	290				

Analytical Report Number: 19-26283

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140536				
Sample Reference				HTP08				
Sample Number				None Supplied				
Depth (m)				0.00-0.20				
Date Sampled				Deviating				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	ug/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-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	1.3				
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0				
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0				
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	28				
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	35				

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	< 10				
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10				

Analytical Report Number : 19-26283

Project / Site name: Abermule Business 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 *
1140521	TP101	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140522	TP101	None Supplied	0.20-0.40	Brown loam and clay with gravel and vegetation.
1140523	TP102	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140524	TP102	None Supplied	0.60-0.80	Brown gravelly loam with stones.
1140525	TP103	None Supplied	0.00-0.30	Brown loam and clay with gravel and vegetation.
1140526	TP103	None Supplied	0.40-0.60	Brown clay and sand with vegetation.
1140527	TP104	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140528	TP104	None Supplied	0.40-0.60	Brown loam and clay with gravel and vegetation.
1140529	HTP01	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140530	HTP02	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140531	HTP03	None Supplied	0.00-0.20	Brown gravelly clay with tar and vegetation.
1140532	HTP04	None Supplied	0.00-0.20	Brown loam and clay with gravel and brick.
1140533	HTP05	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140534	HTP06	None Supplied	0.00-0.20	Brown loam and clay with gravel and vegetation.
1140535	HTP07	None Supplied	0.00-0.20	Brown clay and loam with gravel and vegetation.
1140536	HTP08	None Supplied	0.00-0.20	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 19-26283

Project / Site name: Abermule Business 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
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
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.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	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
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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
HTP01		S	19-26283	1140529	a			
HTP02		S	19-26283	1140530	a			
HTP03		S	19-26283	1140531	a			
HTP04		S	19-26283	1140532	a			
HTP05		S	19-26283	1140533	a			
HTP06		S	19-26283	1140534	a			
HTP07		S	19-26283	1140535	a			
HTP08		S	19-26283	1140536	a			
TP101		S	19-26283	1140521	a			
TP101		S	19-26283	1140522	a			
TP102		S	19-26283	1140523	a			
TP102		S	19-26283	1140524	a			
TP103		S	19-26283	1140525	a			
TP103		S	19-26283	1140526	a			
TP104		S	19-26283	1140527	a			
TP104		S	19-26283	1140528	a			

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

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Analytical Report Number : 19-26285

Replaces Analytical Report Number : 19-26285, issue no. 1

Project / Site name:	Abermule Business Park	**Samples received on:**	17/01/2019
Your job number:	10026414	**Samples instructed on:**	25/01/2019
Your order number:	14020726	**Analysis completed by:**	07/02/2019
Report Issue Number:	2	**Report issued on:**	08/02/2019
Samples Analysed:	5 soil samples		

Signed:

Jordan Hill
Reporting 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

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Analytical Report Number: 19-26285

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140539	1140540	1140541	1140542	1140543
Sample Reference				BH103	BH103	BH104	BH104	BH105
Sample Number				1	3	1	3	1
Depth (m)				0.00-0.50	0.50-1.20	0.00-0.50	0.50-1.20	0.00-0.30
Date Sampled				14/01/2019	14/01/2019	15/01/2019	15/01/2019	16/01/2019
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	16	16	17	20	18
Total mass of sample received	kg	0.001	NONE	1.0	1.2	1.1	1.0	1.0
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.0	6.9	6.8	7.1	6.5
Total 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	0.010	0.011	0.015	0.020	0.013
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	1.3	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.42	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.30	< 0.05	6.6	0.67	0.26
Pyrene	mg/kg	0.05	MCERTS	0.32	< 0.05	6.3	0.68	0.24
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.1	0.27	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.4	0.35	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.5	0.45	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.6	0.22	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	4.9	0.47	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.6	0.28	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.7	0.36	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	40.0	3.75	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	6.7	8.7	7.8	9.1
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.4	1.0	1.1	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 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	33	39	36	37	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	24	38	30	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	14	45	31	30
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	36	41	34	36	34
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	90	120	110	110

Analytical Report Number: 19-26285

Project / Site name: Abermule Business Park
Your Order No: 14020726

Lab Sample Number				1140539	1140540	1140541	1140542	1140543
Sample Reference				BH103	BH103	BH104	BH104	BH105
Sample Number				1	3	1	3	1
Depth (m)				0.00-0.50	0.50-1.20	0.00-0.50	0.50-1.20	0.00-0.30
Date Sampled				14/01/2019	14/01/2019	15/01/2019	15/01/2019	16/01/2019
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	ug/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-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	1.2	-	< 1.0	-	1.1
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	3.9	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	11	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	59	-	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	-	74	-	< 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	-	2.7	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	-	50	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	-	180	-	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	-	230	-	< 10

Analytical Report Number : 19-26285

Project / Site name: Abermule Business 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 *
1140539	BH103	1	0.00-0.50	Brown clay and loam with gravel and vegetation.
1140540	BH103	3	0.50-1.20	Grey clay.
1140541	BH104	1	0.00-0.50	Brown clay and loam with gravel and vegetation.
1140542	BH104	3	0.50-1.20	Brown clay and sand with gravel.
1140543	BH105	1	0.00-0.30	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 19-26285

Project / Site name: Abermule Business 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
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.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	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
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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH103	1	S	19-26285	1140539	c	Free cyanide in soil	L080-PL	c
BH103	1	S	19-26285	1140539	c	Total cyanide in soil	L080-PL	c
BH103	3	S	19-26285	1140540	c	Free cyanide in soil	L080-PL	c
BH103	3	S	19-26285	1140540	c	Total cyanide in soil	L080-PL	c
BH104	1	S	19-26285	1140541	c	Free cyanide in soil	L080-PL	c
BH104	1	S	19-26285	1140541	c	Total cyanide in soil	L080-PL	c
BH104	3	S	19-26285	1140542	c	Free cyanide in soil	L080-PL	c
BH104	3	S	19-26285	1140542	c	Total cyanide in soil	L080-PL	c
BH105	1	S	19-26285	1140543	c	Free cyanide in soil	L080-PL	c
BH105	1	S	19-26285	1140543	c	Total cyanide in soil	L080-PL	c

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

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TESTING
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Analytical Report Number : 19-27265

Project / Site name: Abermule Business Park

Your job number: 10026414

Your order number: 14020726

Report Issue Number: 1

Samples Analysed: 6 water samples

Samples received on: 04/02/2019

Samples instructed on: 04/02/2019

Analysis completed by: 12/02/2019

Report issued on: 12/02/2019

Signed:

Rexona Rahman
Head of Customer Services
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

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Analytical Report Number: 19-27265

Project / Site name: Abermule Business Park

Your Order No: 14020726

Lab Sample Number				1146179	1146180	1146181	1146182	1146183
Sample Reference				BH101	BH102	BH103	BH104	BH105
Sample Number				1	1	1	1	1
Depth (m)				8.00-8.00	4.50-4.50	7.00-7.00	8.50-8.50	5.00-5.00
Date Sampled				30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
Time Taken				1400	1330	1300	1230	1150
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.3	7.1	6.8	7.4	7.3
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	45	ISO 17025	46800	49900	19100	57500	36500
Sulphate as SO_4	mg/l	0.045	ISO 17025	46.8	49.9	19.1	57.5	36.5
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	1.44	-	1.29	-	1.74
Alkalinity	mgCaCO3/l	3	ISO 17025	230	230	140	220	190
Hardness - Total	mgCaCO3/l	1	ISO 17025	282	-	182	-	273

Phenols by HPLC

Catechol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Resorcinol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Cresols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthols	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trimethylphenol	µg/l	0.5	NONE	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Total Phenols

Total Phenols (HPLC)	µg/l	3.5	NONE	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5

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: 19-27265

Project / Site name: Abermule Business Park

Your Order No: 14020726

Lab Sample Number				1146179	1146180	1146181	1146182	1146183
Sample Reference				BH101	BH102	BH103	BH104	BH105
Sample Number				1	1	1	1	1
Depth (m)				8.00-8.00	4.50-4.50	7.00-7.00	8.50-8.50	5.00-5.00
Date Sampled				30/01/2019	30/01/2019	30/01/2019	30/01/2019	30/01/2019
Time Taken				1400	1330	1300	1230	1150
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.22	0.62	0.17	1.97	< 0.15
Boron (dissolved)	µg/l	10	ISO 17025	63	96	34	36	31
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.08	< 0.02	< 0.02	0.04
Calcium (dissolved)	mg/l	0.012	ISO 17025	90	-	62	-	92
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	< 0.2	< 0.2	< 0.2	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	2.8	2.8	3.2	2.9	2.7
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Magnesium (dissolved)	mg/l	0.005	ISO 17025	14	-	6.9	-	10
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	1.4	12	1.2	0.9	2.1
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.7	< 0.6	< 0.6	< 0.6	0.7
Zinc (dissolved)	µg/l	0.5	ISO 17025	3.9	5.6	4.0	3.6	3.5
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								
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: 19-27265

Project / Site name: Abermule Business Park

Your Order No: 14020726

Lab Sample Number				1146184				
Sample Reference				BH106				
Sample Number				1				
Depth (m)				3.00-3.00				
Date Sampled				30/01/2019				
Time Taken				1100				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					

General Inorganics

pH	pH Units	N/A	ISO 17025	7.1				
Total Cyanide	µg/l	10	ISO 17025	< 10				
Free Cyanide	µg/l	10	ISO 17025	< 10				
Sulphate as SO_4	µg/l	45	ISO 17025	27500				
Sulphate as SO_4	mg/l	0.045	ISO 17025	27.5				
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	-				
Alkalinity	mgCaCO3/l	3	ISO 17025	160				
Hardness - Total	mgCaCO3/l	1	ISO 17025	-				

Phenols by HPLC

Catechol	µg/l	0.5	NONE	< 0.5				
Resorcinol	µg/l	0.5	NONE	< 0.5				
Ethylphenol & Dimethylphenol	µg/l	0.5	NONE	< 0.5				
Cresols	µg/l	0.5	NONE	< 0.5				
Naphthols	µg/l	0.5	NONE	< 0.5				
Isopropylphenol	µg/l	0.5	NONE	< 0.5				
Phenol	µg/l	0.5	NONE	< 0.5				
Trimethylphenol	µg/l	0.5	NONE	< 0.5				

Total Phenols

Total Phenols (HPLC)	µg/l	3.5	NONE	< 3.5				

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: 19-27265

Project / Site name: Abermule Business Park

Your Order No: 14020726

Lab Sample Number				1146184				
Sample Reference				BH106				
Sample Number				1				
Depth (m)				3.00-3.00				
Date Sampled				30/01/2019				
Time Taken				1100				
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.31				
Boron (dissolved)	µg/l	10	ISO 17025	37				
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02				
Calcium (dissolved)	mg/l	0.012	ISO 17025	-				
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0				
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Copper (dissolved)	µg/l	0.5	ISO 17025	3.3				
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2				
Magnesium (dissolved)	mg/l	0.005	ISO 17025	-				
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05				
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.1				
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.7				
Zinc (dissolved)	µg/l	0.5	ISO 17025	8.7				
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								
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 : 19-27265

Project / Site name: Abermule Business 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
Alkalinity in Water (by discreet analyser)	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	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
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-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
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Phenols, speciated, in water, by HPLC	Determination of speciated phenols by HPLC.	In house method based on Blue Book Method.	L030-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
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH101	1	W	19-27265	1146179	c	pH at 20oC in water (automated)	L099-PL	c
BH102	1	W	19-27265	1146180	c	pH at 20oC in water (automated)	L099-PL	c
BH103	1	W	19-27265	1146181	c	pH at 20oC in water (automated)	L099-PL	c
BH104	1	W	19-27265	1146182	c	pH at 20oC in water (automated)	L099-PL	c
BH105	1	W	19-27265	1146183	c	pH at 20oC in water (automated)	L099-PL	c
BH106	1	W	19-27265	1146184	c	pH at 20oC in water (automated)	L099-PL	c

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

Gwasanaethau Eiddo
Calon Cymru Cyf
Heart of Wales
Property Services Ltd

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1509

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Unit 31 Ddole Rd Industrial Estate
Llandrindod Wells
Powys
LD1 6DF
Tel: 0333 222 5913

Client: Lisa Contestabile
PCC Highways, Transport & Recycling
County Hall
Llandrindod Wells
Powys, LD1 5LG
Copy to:

Date Reported: 08/10/2018

Lab Reference: 180032

TEST REPORT

ASBESTOS FIBRE IDENTIFICATION

TESTED BY IN HOUSE METHOD IN ACCORDANCE WITH HSG 248 (ASBESTOS: THE ANALYSTS' GUIDE FOR SAMPLING, ANALYSIS AND CLEARANCE PROCEDURES) 2005

Site	Abermule Business Park		
Building Ref.	N/A		
Sample Location	Debris in soil under fencing line, as plans		
Date Sampled	08/10/2018	Surveyor/Sampler	Tracy Gittens
Date Received	08/10/2018	Event No.	0
Date Tested	08/10/2018	Analyst	Eleri Halliday

Product type	Fibre Identification
Board	Amosite
	Chrysotile

CHRYSOTILE = White Asbestos, AMOSITE = Brown Asbestos, CROCIDOLITE = Blue Asbestos
ANTHOPHYLLITE, TREMOLITE, ACTINOLITE = Minor Asbestos Types

The laboratory takes no responsibility for sampling undertaken by non-laboratory staff, or for the interpretation of results. UKAS accreditation is for analysis only.

Remarks:

Signed: EHalliday

Authorised Signatories:

M. Myhill, Asbestos Officer   E. Halliday, Asbestos Officer   T. Gittens, Asbestos Officer

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Calon Cymru Cyf
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Client: PCC Highways
County Hall
Llandrindod Wells
Powys
LD1 5LG

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Date Reported: 23/10/2018

Lab Reference: 180041

TEST REPORT

ASBESTOS FIBRE IDENTIFICATION

TESTED BY IN HOUSE METHOD IN ACCORDANCE WITH HSG 248 (ASBESTOS: THE ANALYSTS' GUIDE FOR SAMPLING, ANALYSIS AND CLEARANCE PROCEDURES) 2005

Site	Abermule Busines Park		
Building Ref.	N/A		
Sample Location	Debris in spoil heap (as plans)		
Date Sampled	18/10/2018	Surveyor/Sampler	Tracy Gittens
Date Received	18/10/2018	Event No.	
Date Tested	22/10/2018	Analyst	Tracy Gittens

Product type	Fibre Identification
Cement	Chrysotile

CHRYSOTILE = White Asbestos, AMOSITE = Brown Asbestos, CROCIDOLITE = Blue Asbestos
ANTHOPHYLLITE, TREMOLITE, ACTINOLITE = Minor Asbestos Types

The laboratory takes no responsibility for sampling undertaken by non-laboratory staff, or for the interpretation of results. UKAS accreditation is for analysis only.

Remarks:

Signed: ....T J Gitten..

Authorised Signatories:

M. Myhill, Asbestos Officer E. Halliday, Asbestos Officer T. Gittens, Asbestos Officer

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County Hall
Llandrindod Wells
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Date Reported: 23/10/2018

Lab Reference: 180042

TEST REPORT

ASBESTOS FIBRE IDENTIFICATION

TESTED BY IN HOUSE METHOD IN ACCORDANCE WITH HSG 248 (ASBESTOS: THE ANALYSTS' GUIDE FOR SAMPLING, ANALYSIS AND CLEARANCE PROCEDURES) 2005

Site	Abermule Busines Park		
Building Ref.	N/A		
Sample Location	Debris in spoil heap (as plans)		
Date Sampled	18/10/2018	Surveyor/Sampler	Tracy Gittens
Date Received	18/10/2018	Event No.	
Date Tested	22/10/2018	Analyst	Tracy Gittens

Product type	Fibre Identification
Cement	No asbestos detected

CHRYSOTILE = White Asbestos, AMOSITE = Brown Asbestos, CROCIDOLITE = Blue Asbestos
ANTHOPHYLLITE, TREMOLITE, ACTINOLITE = Minor Asbestos Types

The laboratory takes no responsibility for sampling undertaken by non-laboratory staff, or for the interpretation of results. UKAS accreditation is for analysis only.

Remarks:

Signed: T J Gitten

Authorised Signatories:

M. Myhill, Asbestos Officer E. Halliday, Asbestos Officer T. Gittens, Asbestos Officer

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Client: PCC Highways
County Hall
Llandrindod Wells
Powys
LD1 5LG
Copy to:

Date Reported: 23/10/2018

Lab Reference: 180043

TEST REPORT

ASBESTOS FIBRE IDENTIFICATION

TESTED BY IN HOUSE METHOD IN ACCORDANCE WITH HSG 248 (ASBESTOS: THE ANALYSTS' GUIDE FOR SAMPLING, ANALYSIS AND CLEARANCE PROCEDURES) 2005

Site	Abermule Busines Park		
Building Ref.	N/A		
Sample Location	Debris in spoil heap (as plans)		
Date Sampled	18/10/2018	Surveyor/Sampler	Tracy Gittens
Date Received	18/10/2018	Event No.	
Date Tested	22/10/2018	Analyst	Tracy Gittens

Product type	Fibre Identification
Cement	Chrysotile

CHRYSOTILE = White Asbestos, AMOSITE = Brown Asbestos, CROCIDOLITE = Blue Asbestos
ANTHOPHYLLITE, TREMOLITE, ACTINOLITE = Minor Asbestos Types

The laboratory takes no responsibility for sampling undertaken by non-laboratory staff, or for the interpretation of results. UKAS accreditation is for analysis only.

Remarks:

Signed: ....T J Gitten..................................

Authorised Signatories:

M. Myhill, Asbestos Officer   E. Halliday, Asbestos Officer   T. Gittens, Asbestos Officer

This Report relates only to the samples tested. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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Property I.D.	Abermule Business Park
Sample Reference No.	180041
Page No.	Page 1 of 2

GENERAL DETAILS

Building	:	**None**	**Floor**	:	**Ground**
Room/Area	:	**As plans**	**Level of Identification**		
Sample description	:	**Debris in spoil heap**	**Sampled**		

ASSESSMENT DETAILS

Asbestos Type	:	**Chrysotile**	:	**Accessibility**	:	**Easy**
Product Type	:	**Cement**	:	**Friability**	:	**Low**
Extent	:	**Unknown**	:	**Material Risk Assessment *** (From page 2)	:	**Low**
Action Assessment	:	**Remove under controlled conditions**	:	**Recommended Timescale**	:	**Pre-works**
Works to the material	:	**An assessment needs to be undertaken by a competent person in line with HSE Asbestos Essentials Task Manual Sheet A0 each time works are required.**				

***This is an assessment undertaken by the surveyor when sampling on site. A formal assessment will need to be undertaken by the Premises Manager.**

Property I.D.	Abermule Business Park
Sample Reference No.	180041
Page No.	Page 2 of 2

MATERIAL RISK ASSESSMENT REPORT

		Value	**Score**
Product Type	**Asbestos-reinforced composites** (plastic, resin, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement)	1	1
	Asbestos insulating board, mill boards, other low density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.	2	
	Thermal insulation (pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.	3	
Damage/ Deterioration	**Good Condition:** No visible damage	0	
	Low Damage: A few scratches or surface marks; broken edges on boards, tiles etc.	1	
	Medium Damage: Significant breakage of materials or several small areas where material has been damaged revealing loose fibres.	2	
	High Damage: High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.	3	3
Surface Treatment	**Composite materials containing asbestos: Reinforced plastics, resins, vinyl tiles.**	0	
	Enclosed sprays and lagging, asbestos cement sheets, AIB (with exposed face painted or encapsulated), **etc.**	1	1
	Unsealed AIB, or encapsulated lagging and sprays	2	
	Unsealed lagging and sprays	3	
Asbestos Type	**Chrysotile (White)**	1	1
	Amosite (Brown)	2	
	Crocidolite (Blue)	3	
Material Score	(Sum of the Material Score)	**Total Score**	6
Material Risk	(Very low = 4 or less, Low = 5 - 6, Medium = 7 - 9, High = 10 or more)	Low	

GENERAL DETAILS AND COMMENTS

Comments : It is likely that this material has been placed on the site from elsewhere and therefore would not necessarily be found at depth. It would be advisable to undertake further ground investigations in the area to quantify the levels present in the spoil heap and whether there has been any migration into the ground below.
Ground investigations for asbestos contamination should be designed, undertaken & evaluated by competent specialists who have an appropriate level of geoenvironmental & asbestos qualifications, skills & experience

Recommendations : Remove under controlled conditions

Property I.D.	Abermule Business Park
Sample Reference No.	180042
Page No.	Page 1 of 1

GENERAL DETAILS

Building	**:**	**None**	**Floor**	**:**	**Ground**
Room/Area	**:**	**As plans**	**Level of Identification**		
Sample description	**:**	**Debris in spoil heap**	**Sampled**		

ASSESSMENT DETAILS

Asbestos Type	**:**	**No asbestos detected**	**:**	**Accessibility**	**:**	**Easy**
Product Type	**:**	**Cement**	**:**	**Friability**	**:**	**Low**
Extent	**:**	**Not applicable**	**:**	**Material Risk Assessment *** (From page 2)	**:**	**Not applicable**
Action Assessment	**:**	**Not applicable**	**:**	**Recommended Timescale**	**:**	**Not applicable**
Not applicable	**:**	**Not applicable**				

***This is an assessment undertaken by the surveyor when sampling on site. A formal assessment will need to be undertaken by the Premises Manager.**

Property I.D.	Abermule Business Park
Sample Reference No.	180043
Page No.	Page 1 of 2

GENERAL DETAILS

Building	:	**None**	**Floor**	:	**Ground**
Room/Area	:	**As plans**	**Level of Identification**		
Sample description	:	**Debris in spoil heap**	**Sampled**		

ASSESSMENT DETAILS

Asbestos Type	:	**Chrysotile**	:	**Accessibility**	:	**Easy**
Product Type	:	**Cement**	:	**Friability**	:	**Low**
Extent	:	**Unknown**	:	**Material Risk Assessment *** (From page 2)	:	**Low**
Action Assessment	:	**Remove under controlled conditions**	:	**Recommended Timescale**	:	**Pre-works**
Works to the material	:	**An assessment needs to be undertaken by a competent person in line with HSE Asbestos Essentials Task Manual Sheet A0 each time works are required.**				

***This is an assessment undertaken by the surveyor when sampling on site. A formal assessment will need to be undertaken by the Premises Manager.**

Property I.D.	Abermule Business Park
Sample Reference No.	180043
Page No.	Page 2 of 2

MATERIAL RISK ASSESSMENT REPORT

		Value	**Score**
Product Type	**Asbestos-reinforced composites** (plastic, resin, mastics, roofing felts, vinyl floor tiles, semi-rigid paints or decorative finishes, asbestos cement)	1	1
	Asbestos insulating board, mill boards, other low density insulation boards, asbestos textiles, gaskets, ropes and woven textiles, asbestos paper and felt.	2	
	Thermal insulation (pipe and boiler lagging), sprayed asbestos, loose asbestos, asbestos mattresses and packing.	3	
Damage/ Deterioration	**Good Condition:** No visible damage	0	
	Low Damage: A few scratches or surface marks; broken edges on boards, tiles etc.	1	
	Medium Damage: Significant breakage of materials or several small areas where material has been damaged revealing loose fibres.	2	
	High Damage: High damage or delamination of materials, sprays and thermal insulation. Visible asbestos debris.	3	3
Surface Treatment	**Composite materials containing asbestos:** **Reinforced plastics, resins, vinyl tiles.**	0	
	Enclosed sprays and lagging, asbestos cement sheets, AIB (with exposed face painted or encapsulated), **etc.**	1	1
	Unsealed AIB, or encapsulated lagging and sprays	2	
	Unsealed lagging and sprays	3	
Asbestos Type	**Chrysotile (White)**	1	1
	Amosite (Brown)	2	
	Crocidolite (Blue)	3	
Material Score	(Sum of the Material Score)	**Total Score**	6
Material Risk	(Very low = 4 or less, Low = 5 - 6, Medium = 7 - 9, High = 10 or more)	Low	

GENERAL DETAILS AND COMMENTS

Comments : It is likely that this material has been placed on the site from elsewhere and therefore would not necessarily be found at depth. It would be advisable to undertake further ground investigations in the area to quantify the levels present in the spoil heap and whether there has been any migration into the ground below.

Ground investigations for asbestos contamination should be designed, undertaken & evaluated by competent specialists who have an appropriate level of geoenvironmental & asbestos qualifications, skills & experience

Recommendations : Remove under controlled conditions

APPENDIX I

HazWaste Assessment

Job name	Abermule Business Park - Stockpile Samples V2
Comments	
Classification Engine	WM3 1st Edition v1.1, May 2018
Waste Stream	Abermule Business Park
Created by	Fiona Waldron (Arcadis Consulting (UK) Ltd)
Created on	05/03/2019

Determinand (laboratory concentrations)	**Unit**	**HTP01**	**HTP02**	**HTP03**	**HTP04**	**HTP05**	**HTP06**	**HTP07**	**HTP08**
Classification Result		Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous
Depth	m	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20	0.00-0.20
moisture {no correction}	%	16	16	6.2	14	15	22	15	27
asbestos	mg/kg	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
pH	pH	6.6	6.5	7.7	7.9	7.7	7.1	7.3	7.5
cyanides {salts of hydrogen cyanide with the exception o	mg/kg	<1.884	<1.884	<1.884	<1.884	<1.884	<1.884	<1.884	<1.884
phenol	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1
naphthalene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
acenaphthylene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
acenaphthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
fluorene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
phenanthrene	mg/kg	<0.05	<0.05	<0.05	0.33	<0.05	0.91	<0.05	0.67
anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	<0.05	0.19
fluoranthene	mg/kg	<0.05	<0.05	0.87	1.6	<0.05	4.8	0.3	2.5
pyrene	mg/kg	<0.05	<0.05	0.74	1.6	<0.05	4.6	0.29	2.3
benzo[a]anthracene	mg/kg	<0.05	<0.05	0.45	0.83	<0.05	2.2	<0.05	1.1
chrysene	mg/kg	<0.05	<0.05	0.54	0.9	<0.05	2.3	<0.05	1.1
benzo[b]fluoranthene	mg/kg	<0.05	<0.05	0.74	1.4	<0.05	3.6	<0.05	1.5
benzo[k]fluoranthene	mg/kg	<0.05	<0.05	0.36	0.69	<0.05	1.2	<0.05	0.73
benzo[a]pyrene; benzo[def]chrysene	mg/kg	<0.05	<0.05	0.68	1.5	<0.05	3.1	<0.05	1.4
indeno[123-cd]pyrene	mg/kg	<0.05	<0.05	0.42	0.89	<0.05	1.9	<0.05	0.84
dibenz[a,h]anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	0.45	<0.05	<0.05
benzo[ghi]perylene	mg/kg	<0.05	<0.05	0.49	1.2	<0.05	2.2	<0.05	0.95
arsenic {arsenic trioxide}	mg/kg	9.1	10	4	8	5.2	8.3	12	18
boron {boron tribromide/trichloride/trifluoride (combined)}	mg/kg	1	0.9	1.1	1.2	0.5	3	1.1	2.2
cadmium {cadmium sulfide}	mg/kg	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	1.2
chromium in chromium(VI) compounds {chromium(VI) ox	mg/kg	<7.692	<7.692	<7.692	<7.692	<7.692	<7.692	<7.692	<7.692
chromium in chromium(III) compounds {chromium(III) ox	mg/kg	35	34	40	32	31	33	39	39
copper {dicopper oxide; copper (I) oxide}	mg/kg	23	23	30	28	23	36	30	330
lead {lead chromate}	mg/kg	24	26	26	51	22	43	32	55
mercury {mercury dichloride}	mg/kg	<0.406	<0.406	<0.406	<0.406	<0.406	<0.406	<0.406	<0.406
nickel {nickel dihydroxide}	mg/kg	32	32	32	31	28	31	39	32
selenium {selenium compounds with the exception of cad	mg/kg	<2.554	<2.554	<2.554	<2.554	<2.554	<2.554	<2.554	<2.554
zinc {zinc chromate}	mg/kg	110	110	77	110	120	150	140	290
benzene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
toluene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ethylbenzene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropa	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH (C6 to C40) petroleum group	mg/kg	<10	<10	<10	16	<10	21	<10	35
confirm TPH has NOT arisen from diesel or petrol	n/a								

Notes:

HP3 Flamable has been changed to non hazardous for TPH at concentrations <1000 mg/kg. Where a substance has a HP3 classification, it is assumed that enough material is present for ignition to occur, i.e. that the chemical is in its raw from, not within the soil matrix. In the case of soils, ignition is unlikely at concentrations <1000 mg/kg. However, this would need to be confirmed by the operator of the landfill where the waste is intended to be taken.

Waste Classification Report

ANCYN-F2A5C-BLZQR

Job name

Abermule Business Park - Stockpile Samples V2

Description/Comments

Project

Abermule Busi

Site

Abermule

Related Documents

#	Name	Description
None		

Waste Stream Template

Abermule Business Park

Classified by

Name:
Fiona Waldron
Date:
06 Mar 2019 08:20 GMT
Telephone:
0117 3721231

Company:
Arcadis Consulting (UK) Ltd
1st Floor, 2 Glass Wharf
Temple Quay
Bristol
BS2 0FR

Report

Created by: Fiona Waldron
Created date: 06 Mar 2019 08:20 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	HTP01	0.00-0.20	Non Hazardous		3
2	HTP02	0.00-0.20	Non Hazardous		6
3	HTP03	0.00-0.20	Non Hazardous		9
4	HTP04	0.00-0.20	Non Hazardous		12
5	HTP05	0.00-0.20	Non Hazardous		15
6	HTP06	0.00-0.20	Non Hazardous		18
7	HTP07	0.00-0.20	Non Hazardous		21
8	HTP08	0.00-0.20	Non Hazardous		24

Classification of sample: HTP01

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

Sample details

Sample Name:		LoW Code:	
HTP01		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				6.6	pH		6.6	pH	6.6 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-371-1	120-12-7									
10	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-912-4	206-44-0									
11	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			204-927-3	129-00-0									
12		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		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
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		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
19	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.1	mg/kg	1.32	12.015	mg/kg	0.0012 %		
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1	mg/kg	13.43	13.43	mg/kg	0.00134 %		
22		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
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
24		chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		35	mg/kg	1.462	51.154	mg/kg	0.00512 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
26		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	24	mg/kg	1.56	37.436	mg/kg	0.0024 %		
27		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
28		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		32	mg/kg	1.579	50.544	mg/kg	0.00505 %		
29		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
30		zinc { zinc chromate }	024-007-00-3				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
											Total:	0.0507 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HTP02

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

Sample details

Sample Name:		LoW Code:	
HTP02		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				6.5	pH		6.5	pH	6.5 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			204-371-1	120-12-7									
10	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-912-4	206-44-0									
11	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			204-927-3	129-00-0									
12		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-034-00-4	205-911-9	205-99-2									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		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
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		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
19	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10	mg/kg	1.32	13.203	mg/kg	0.00132 %		
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.9	mg/kg	13.43	12.087	mg/kg	0.00121 %		
22		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
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
24		chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		34	mg/kg	1.462	49.693	mg/kg	0.00497 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		23	mg/kg	1.126	25.895	mg/kg	0.00259 %		
26		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	26	mg/kg	1.56	40.555	mg/kg	0.0026 %		
27		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
28		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		32	mg/kg	1.579	50.544	mg/kg	0.00505 %		
29		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
30		zinc { zinc chromate }	024-007-00-3				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
											Total:	0.0507 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HTP03

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

Sample details

Sample Name:		LoW Code:	
HTP03		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.2% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.2% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
10	●	fluoranthene				0.87	mg/kg		0.87	mg/kg	0.000087 %		
			205-912-4	206-44-0									
11	●	pyrene				0.74	mg/kg		0.74	mg/kg	0.000074 %		
			204-927-3	129-00-0									
12		benzo[a]anthracene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				0.54	mg/kg		0.54	mg/kg	0.000054 %		
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				0.74	mg/kg		0.74	mg/kg	0.000074 %		
		601-034-00-4	205-911-9	205-99-2									

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.36	mg/kg		0.36	mg/kg	0.000036 %		
16		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.68	mg/kg		0.68	mg/kg	0.000068 %		
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.42	mg/kg		0.42	mg/kg	0.000042 %		
18		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
19	●	benzo[ghi]perylene		205-883-8	191-24-2		0.49	mg/kg		0.49	mg/kg	0.000049 %		
20	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4	mg/kg	1.32	5.281	mg/kg	0.000528 %		
21	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.1	mg/kg	13.43	14.773	mg/kg	0.00148 %		
22	⚛	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
23	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
24	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		40	mg/kg	1.462	58.462	mg/kg	0.00585 %		
25	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		30	mg/kg	1.126	33.777	mg/kg	0.00338 %		
26	⚛	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	26	mg/kg	1.56	40.555	mg/kg	0.0026 %		
27	⚛	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
28	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		32	mg/kg	1.579	50.544	mg/kg	0.00505 %		
29	⚛	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
30	⚛	zinc { zinc chromate }	024-007-00-3				77	mg/kg	2.774	213.609	mg/kg	0.0214 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
											Total:	0.0432 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HTP04

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

Sample details

Sample Name:		LoW Code:	
HTP04		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
14% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 14% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				7.9	pH		7.9	pH	7.9 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
8	●	phenanthrene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
10	●	fluoranthene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			205-912-4	206-44-0									
11	●	pyrene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			204-927-3	129-00-0									
12		benzo[a]anthracene				0.83	mg/kg		0.83	mg/kg	0.000083 %		
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				0.9	mg/kg		0.9	mg/kg	0.00009 %		
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				1.4	mg/kg		1.4	mg/kg	0.00014 %		
		601-034-00-4	205-911-9	205-99-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene				0.69	mg/kg		0.69	mg/kg	0.000069 %		
		601-036-00-5	205-916-6	207-08-9									
16		benzo[a]pyrene; benzo[def]chrysene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
		601-032-00-3	200-028-5	50-32-8									
17	●	indeno[123-cd]pyrene				0.89	mg/kg		0.89	mg/kg	0.000089 %		
			205-893-2	193-39-5									
18		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									
19	●	benzo[ghi]perylene				1.2	mg/kg		1.2	mg/kg	0.00012 %		
			205-883-8	191-24-2									
20		arsenic { arsenic trioxide }				8	mg/kg	1.32	10.563	mg/kg	0.00106 %		
		033-003-00-0	215-481-4	1327-53-3									
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.2	mg/kg	13.43	16.116	mg/kg	0.00161 %		
				10294-33-4, 10294-34-5, 7637-07-2									
22		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
23		chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
24		chromium in chromium(III) compounds { ● chromium(III) oxide }				32	mg/kg	1.462	46.77	mg/kg	0.00468 %		
			215-160-9	1308-38-9									
25		copper { dicopper oxide; copper (I) oxide }				28	mg/kg	1.126	31.525	mg/kg	0.00315 %		
		029-002-00-X	215-270-7	1317-39-1									
26		lead { lead chromate }			1	51	mg/kg	1.56	79.551	mg/kg	0.0051 %		
		082-004-00-2	231-846-0	7758-97-6									
27		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
28		nickel { nickel dihydroxide }				31	mg/kg	1.579	48.964	mg/kg	0.0049 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		034-002-00-8											
30		zinc { zinc chromate }				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
		024-007-00-3											
31		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]									
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
36	●	TPH (C6 to C40) petroleum group				16	mg/kg		16	mg/kg	0.0016 %		
				TPH									
										Total:	0.0551 %		

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
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 TPH in soil is not likely to be flammable at concentrations <1000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0016%)

Classification of sample: HTP05

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

Sample details

Sample Name:		LoW Code:	
HTP05		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				7.7	pH		7.7	pH	7.7 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
10	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
11	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
12		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
15		benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9							
16		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							
17	●	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5							
18		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							
19	●	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2							
20	⚛	arsenic { arsenic trioxide }				5.2 mg/kg	1.32	6.866 mg/kg	0.000687 %		
		033-003-00-0	215-481-4	1327-53-3							
21	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.5 mg/kg	13.43	6.715 mg/kg	0.000672 %		
				10294-33-4, 10294-34-5, 7637-07-2							
22	⚛	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6							
23	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4 mg/kg	1.923	<7.692 mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0							
24	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide }				31 mg/kg	1.462	45.308 mg/kg	0.00453 %		
			215-160-9	1308-38-9							
25	⚛	copper { dicopper oxide; copper (I) oxide }				23 mg/kg	1.126	25.895 mg/kg	0.00259 %		
		029-002-00-X	215-270-7	1317-39-1							
26	⚛	lead { lead chromate }			1	22 mg/kg	1.56	34.316 mg/kg	0.0022 %		
		082-004-00-2	231-846-0	7758-97-6							
27	⚛	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
28	⚛	nickel { nickel dihydroxide }				28 mg/kg	1.579	44.226 mg/kg	0.00442 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
		034-002-00-8									
30	⚛	zinc { zinc chromate }				120 mg/kg	2.774	332.898 mg/kg	0.0333 %		
		024-007-00-3									
31		benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
32		toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3							
33	●	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4							
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<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]							
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4							
36	●	TPH (C6 to C40) petroleum group				<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
				TPH							
								Total:	0.0508 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HTP06

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

Sample details

Sample Name:		LoW Code:	
HTP06		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
22% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 22% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				7.1	pH		7.1	pH	7.1 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
8	●	phenanthrene				0.91	mg/kg		0.91	mg/kg	0.000091 %		
			201-581-5	85-01-8									
9	●	anthracene				0.32	mg/kg		0.32	mg/kg	0.000032 %		
			204-371-1	120-12-7									
10	●	fluoranthene				4.8	mg/kg		4.8	mg/kg	0.00048 %		
			205-912-4	206-44-0									
11	●	pyrene				4.6	mg/kg		4.6	mg/kg	0.00046 %		
			204-927-3	129-00-0									
12		benzo[a]anthracene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				2.3	mg/kg		2.3	mg/kg	0.00023 %		
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				3.6	mg/kg		3.6	mg/kg	0.00036 %		
		601-034-00-4	205-911-9	205-99-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene				1.2	mg/kg		1.2	mg/kg	0.00012 %		
		601-036-00-5	205-916-6	207-08-9									
16		benzo[a]pyrene; benzo[def]chrysene				3.1	mg/kg		3.1	mg/kg	0.00031 %		
		601-032-00-3	200-028-5	50-32-8									
17	●	indeno[123-cd]pyrene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			205-893-2	193-39-5									
18		dibenz[a,h]anthracene				0.45	mg/kg		0.45	mg/kg	0.000045 %		
		601-041-00-2	200-181-8	53-70-3									
19	●	benzo[ghi]perylene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
			205-883-8	191-24-2									
20		arsenic { arsenic trioxide }				8.3	mg/kg	1.32	10.959	mg/kg	0.0011 %		
		033-003-00-0	215-481-4	1327-53-3									
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }				3	mg/kg	13.43	40.29	mg/kg	0.00403 %		
				10294-33-4, 10294-34-5, 7637-07-2									
22		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
23		chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
24		chromium in chromium(III) compounds { ● chromium(III) oxide }				33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
			215-160-9	1308-38-9									
25		copper { dicopper oxide; copper (I) oxide }				36	mg/kg	1.126	40.532	mg/kg	0.00405 %		
		029-002-00-X	215-270-7	1317-39-1									
26		lead { lead chromate }			1	43	mg/kg	1.56	67.072	mg/kg	0.0043 %		
		082-004-00-2	231-846-0	7758-97-6									
27		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
28		nickel { nickel dihydroxide }				31	mg/kg	1.579	48.964	mg/kg	0.0049 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		034-002-00-8											
30		zinc { zinc chromate }				150	mg/kg	2.774	416.122	mg/kg	0.0416 %		
		024-007-00-3											
31		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]									
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
36	●	TPH (C6 to C40) petroleum group				21	mg/kg		21	mg/kg	0.0021 %		
				TPH									
										Total:	0.0711 %		

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
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 TPH in soil is not likely to be flammable at concentrations <1000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0021%)

Classification of sample: HTP07

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

Sample details

Sample Name:		LoW Code:	
HTP07		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				7.3	pH		7.3	pH	7.3 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
10	●	fluoranthene				0.3	mg/kg		0.3	mg/kg	0.00003 %		
			205-912-4	206-44-0									
11	●	pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %		
			204-927-3	129-00-0									
12		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene 601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
16		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**
17	●	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		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**
19	●	benzo[ghi]perylene	205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20	⚛	arsenic { arsenic trioxide } 033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
21	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }		10294-33-4, 10294-34-5, 7637-07-2		1.1	mg/kg	13.43	14.773	mg/kg	0.00148 %		
22	⚛	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**
23	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide } 024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
24	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide }	215-160-9	1308-38-9		39	mg/kg	1.462	57.001	mg/kg	0.0057 %		
25	⚛	copper { dicopper oxide; copper (I) oxide } 029-002-00-X	215-270-7	1317-39-1		30	mg/kg	1.126	33.777	mg/kg	0.00338 %		
26	⚛	lead { lead chromate } 082-004-00-2	231-846-0	7758-97-6	1	32	mg/kg	1.56	49.914	mg/kg	0.0032 %		
27	⚛	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**
28	⚛	nickel { nickel dihydroxide } 028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		39	mg/kg	1.579	61.6	mg/kg	0.00616 %		
29	⚛	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**
30	⚛	zinc { zinc chromate } 024-007-00-3				140	mg/kg	2.774	388.381	mg/kg	0.0388 %		
31		benzene 601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
32		toluene 601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
33	●	ethylbenzene 601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4] 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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
36	●	TPH (C6 to C40) petroleum group		TPH		<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
										Total:	0.0628 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: HTP08

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

Sample details

Sample Name:		LoW Code:	
HTP08		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
27% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 27% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				7.5	pH		7.5	pH	7.5 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		**<LOD**
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
			201-695-5	86-73-7									
8	●	phenanthrene				0.67	mg/kg		0.67	mg/kg	0.000067 %		
			201-581-5	85-01-8									
9	●	anthracene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
			204-371-1	120-12-7									
10	●	fluoranthene				2.5	mg/kg		2.5	mg/kg	0.00025 %		
			205-912-4	206-44-0									
11	●	pyrene				2.3	mg/kg		2.3	mg/kg	0.00023 %		
			204-927-3	129-00-0									
12		benzo[a]anthracene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				1.5	mg/kg		1.5	mg/kg	0.00015 %		
		601-034-00-4	205-911-9	205-99-2									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.73 mg/kg		0.73 mg/kg	0.000073 %		
16		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.4 mg/kg		1.4 mg/kg	0.00014 %		
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		0.84 mg/kg		0.84 mg/kg	0.000084 %		
18		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
19	●	benzo[ghi]perylene		205-883-8	191-24-2		0.95 mg/kg		0.95 mg/kg	0.000095 %		
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18 mg/kg	1.32	23.766 mg/kg	0.00238 %		
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		2.2 mg/kg	13.43	29.546 mg/kg	0.00295 %		
22		cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1.2 mg/kg	1.285	1.542 mg/kg	0.00012 %		
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4 mg/kg	1.923	<7.692 mg/kg	<0.000769 %		<LOD
24		chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		39 mg/kg	1.462	57.001 mg/kg	0.0057 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		330 mg/kg	1.126	371.543 mg/kg	0.0372 %		
26		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	55 mg/kg	1.56	85.79 mg/kg	0.0055 %		
27		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
28		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		32 mg/kg	1.579	50.544 mg/kg	0.00505 %		
29		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
30		zinc { zinc chromate }	024-007-00-3				290 mg/kg	2.774	804.502 mg/kg	0.0805 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
36	●	TPH (C6 to C40) petroleum group			TPH		35 mg/kg		35 mg/kg	0.0035 %		
									Total:	0.146 %		

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
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 TPH in soil is not likely to be flammable at concentrations <1000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0035%)

Appendix A: Classifier defined and non CLP determinands

- **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)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **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

- **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

- **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

- **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

- **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

- **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

- **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

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

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

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

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)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

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

Appendix B: Rationale for selection of metal species

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

arsenic {arsenic trioxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead chromate}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

zinc {zinc chromate}

Worst case

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.63.3818.7784 (04 Mar 2019)
HazWasteOnline Database: 2019.63.3818.7784 (04 Mar 2019)

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

Job name	Abermule Business Park - TP Samples
Comments	
Classification Engine	WM3 1st Edition v1.1, May 2018
Waste Stream	Abermule Business Park
Created by	Fiona Waldron (Arcadis Consulting (UK) Ltd)
Created on	06/03/2019

Determinand (laboratory concentrations)	**Unit**	**TP101**	**TP101[2]**	**TP102**	**TP102[2]**	**TP103**	**TP103[2]**	**TP104**	**TP104[2]**
Classification Result		Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous	Non Hazardous
Depth	m	0.00-0.20	0.20-0.40	0.00-0.20	0.60-0.80	0.00-0.30	0.40-0.60	0.00-0.20	0.40-0.60
moisture {no correction}	%	15	12	16	6.3	16	21	15	12
asbestos	mg/kg	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
pH	pH	6.2	6.8	6.9	7.3	6.5	6.9	7	6.8
cyanides {salts of hydrogen cyanide with the exception o	mg/kg	<1.884	1	<1.884	<1.884	<1.884	<1.884	<1.884	<1.884
phenol	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1
naphthalene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
acenaphthylene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
acenaphthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
fluorene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
phenanthrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
fluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
benzo[a]anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
chrysene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
benzo[b]fluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
benzo[k]fluoranthene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
benzo[a]pyrene; benzo[def]chrysene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
indeno[123-cd]pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
dibenz[a,h]anthracene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
benzo[ghi]perylene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
arsenic {arsenic trioxide}	mg/kg	13	12	12	16	9.7	11	6	8.9
boron {boron tribromide/trichloride/trifluoride (combined)}	mg/kg	1.4	0.7	1.9	0.6	1.5	0.8	1.1	0.7
cadmium {cadmium sulfide}	mg/kg	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257	<0.257
chromium in chromium(VI) compounds {chromium(VI) ox	mg/kg	<7.692	<7.692	<7.692	<7.692	<7.692	<7.692	<7.692	<7.692
chromium in chromium(III) compounds {chromium(III) ox	mg/kg	52	33	40	28	39	34	39	33
copper {dicopper oxide; copper (I) oxide}	mg/kg	35	33	35	39	28	28	31	30
lead {lead chromate}	mg/kg	31	19	33	26	30	20	26	21
mercury {mercury dichloride}	mg/kg	<0.406	<0.406	<0.406	<0.406	<0.406	<0.406	<0.406	<0.406
nickel {nickel dihydroxide}	mg/kg	39	41	35	39	34	39	36	37
selenium {selenium compounds with the exception of cad	mg/kg	<2.554	<2.554	<2.554	<2.554	<2.554	<2.554	<2.554	<2.554
zinc {zinc chromate}	mg/kg	130	110	130	99	120	120	110	100
benzene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
toluene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ethylbenzene	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropa	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TPH (C6 to C40) petroleum group	mg/kg	<10	<10	11	<10	14	<10	<10	<10
confirm TPH has NOT arisen from diesel or petrol	n/a								

Notes:

HP3 Flamable has been changed to non hazardous for TPH at concentrations <1000 mg/kg. Where a substance has a HP3 classification, it is assumed that enough material is present for ignition to occur, i.e. that the chemical is in its raw from, not within the soil matrix. In the case of soils, ignition is unlikely at concentrations <1000 mg/kg. However, this would need to be confirmed by the operator of the landfill where the waste is intended to be taken.

Waste Classification Report

383FV-LURW4-BPHWY

Job name

Abermule Business Park - TP Samples

Description/Comments

Project

Aberm

Site

Aber

Related Documents

#	Name	Description
None		

Waste Stream Template

Abermule Business Park

Classified by

Name: **Fiona Waldron**	Company: **Arcadis Consulting (UK) Ltd**
Date: **06 Mar 2019 08:31 GMT**	**1st Floor, 2 Glass Wharf**
Telephone: **0117 3721231**	**Temple Quay** **Bristol** **BS2 0FR**

Report

Created by: Fiona Waldron
Created date: 06 Mar 2019 08:31 GMT

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazard properties	Page
1	TP101	0.00-0.20	Non Hazardous		3
2	TP101[2]	0.20-0.40	Non Hazardous		6
3	TP102	0.00-0.20	Non Hazardous		9
4	TP102[2]	0.60-0.80	Non Hazardous		12
5	TP103	0.00-0.30	Non Hazardous		15
6	TP103[2]	0.40-0.60	Non Hazardous		18
7	TP104	0.00-0.20	Non Hazardous		21
8	TP104[2]	0.40-0.60	Non Hazardous		24

Classification of sample: TP101

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

Sample details

Sample Name:		LoW Code:	
TP101		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% 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	●	pH			PH		6.2 pH		6.2 pH	6.2 pH		
2		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
3		phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
4		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
5	●	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
6	●	acenaphthene		201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
7	●	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
8	●	phenanthrene		201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
9	●	anthracene		204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
10	●	fluoranthene		205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
11	●	pyrene		204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
13		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
16		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									
17	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
18		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									
19	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
20		arsenic { arsenic trioxide }				13	mg/kg	1.32	17.164	mg/kg	0.00172 %		
		033-003-00-0	215-481-4	1327-53-3									
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.4	mg/kg	13.43	18.802	mg/kg	0.00188 %		
				10294-33-4, 10294-34-5, 7637-07-2									
22		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
23		chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
24		chromium in chromium(III) compounds { ● chromium(III) oxide }				52	mg/kg	1.462	76.001	mg/kg	0.0076 %		
			215-160-9	1308-38-9									
25		copper { dicopper oxide; copper (I) oxide }				35	mg/kg	1.126	39.406	mg/kg	0.00394 %		
		029-002-00-X	215-270-7	1317-39-1									
26		lead { lead chromate }			1	31	mg/kg	1.56	48.354	mg/kg	0.0031 %		
		082-004-00-2	231-846-0	7758-97-6									
27		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
28		nickel { nickel dihydroxide }				39	mg/kg	1.579	61.6	mg/kg	0.00616 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		034-002-00-8											
30		zinc { zinc chromate }				130	mg/kg	2.774	360.639	mg/kg	0.0361 %		
		024-007-00-3											
31		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]									
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
36	●	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
										Total:	0.0629 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP101[2]

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

Sample details

Sample Name:
TP101[2]
Sample Depth:
0.20-0.40 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 Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				6.8	pH		6.8	pH	6.8 pH		
				PH									
2		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 %		
		006-007-00-5											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
10	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
11	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
12		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		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
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		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
19	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %		
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7	mg/kg	13.43	9.401	mg/kg	0.00094 %		
22		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
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
24		chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		33	mg/kg	1.126	37.154	mg/kg	0.00372 %		
26		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	19	mg/kg	1.56	29.636	mg/kg	0.0019 %		
27		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
28		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		41	mg/kg	1.579	64.759	mg/kg	0.00648 %		
29		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
30		zinc { zinc chromate }	024-007-00-3				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
											Total:	0.0524 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102

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

Sample details

Sample Name:		LoW Code:	
TP102		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% 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	●	pH			PH		6.9	pH		6.9	pH	6.9 pH		
2		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
3		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
5	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
11	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
13		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
15		benzo[k]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9							
16		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							
17	●	indeno[123-cd]pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5							
18		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							
19	●	benzo[ghi]perylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2							
20		arsenic { arsenic trioxide }				12 mg/kg	1.32	15.844 mg/kg	0.00158 %		
		033-003-00-0	215-481-4	1327-53-3							
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.9 mg/kg	13.43	25.517 mg/kg	0.00255 %		
				10294-33-4, 10294-34-5, 7637-07-2							
22		cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6							
23		chromium in chromium(VI) compounds { chromium(VI) oxide }				<4 mg/kg	1.923	<7.692 mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0							
24		chromium in chromium(III) compounds { ● chromium(III) oxide }				40 mg/kg	1.462	58.462 mg/kg	0.00585 %		
			215-160-9	1308-38-9							
25		copper { dicopper oxide; copper (I) oxide }				35 mg/kg	1.126	39.406 mg/kg	0.00394 %		
		029-002-00-X	215-270-7	1317-39-1							
26		lead { lead chromate }			1	33 mg/kg	1.56	51.474 mg/kg	0.0033 %		
		082-004-00-2	231-846-0	7758-97-6							
27		mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
28		nickel { nickel dihydroxide }				35 mg/kg	1.579	55.282 mg/kg	0.00553 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]							
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
		034-002-00-8									
30		zinc { zinc chromate }				130 mg/kg	2.774	360.639 mg/kg	0.0361 %		
		024-007-00-3									
31		benzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2							
32		toluene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3							
33	●	ethylbenzene				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4							
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<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]							
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4							
36	●	TPH (C6 to C40) petroleum group				11 mg/kg		11 mg/kg	0.0011 %		
				TPH							
								Total:	0.0614 %		

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
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 TPH in soil is unlikely to be flammable at concentrations <1000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0011%)

Classification of sample: TP102[2]

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

Sample details

Sample Name:		LoW Code:	
TP102[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.60-0.80 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
6.3% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 6.3% No Moisture Correction applied (MC)

#		Determinand			CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number								
1	●	pH			PH		7.3	pH		7.3	pH	7.3 pH		
2		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
3		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
4		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
5	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
6	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
7	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
8	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
9	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
10	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
11	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
13		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
16		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									
17	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
18		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									
19	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
20	⚛	arsenic { arsenic trioxide }				16	mg/kg	1.32	21.125	mg/kg	0.00211 %		
		033-003-00-0	215-481-4	1327-53-3									
21	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.6	mg/kg	13.43	8.058	mg/kg	0.000806 %		
				10294-33-4, 10294-34-5, 7637-07-2									
22	⚛	cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
23	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
24	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide }				28	mg/kg	1.462	40.924	mg/kg	0.00409 %		
			215-160-9	1308-38-9									
25	⚛	copper { dicopper oxide; copper (I) oxide }				39	mg/kg	1.126	43.91	mg/kg	0.00439 %		
		029-002-00-X	215-270-7	1317-39-1									
26	⚛	lead { lead chromate }			1	26	mg/kg	1.56	40.555	mg/kg	0.0026 %		
		082-004-00-2	231-846-0	7758-97-6									
27	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
28	⚛	nickel { nickel dihydroxide }				39	mg/kg	1.579	61.6	mg/kg	0.00616 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		034-002-00-8											
30	⚛	zinc { zinc chromate }				99	mg/kg	2.774	274.641	mg/kg	0.0275 %		
		024-007-00-3											
31		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]									
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
36	●	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
										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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP103

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

Sample details

Sample Name:		LoW Code:	
TP103		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.30 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
16% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
1	●	pH				6.5	pH		6.5	pH	6.5 pH		
				PH									
2		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											
3		phenol				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2									
4		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
5	●	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8									
6	●	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9									
7	●	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7									
8	●	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8									
9	●	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7									
10	●	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0									
11	●	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0									
12		benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
13		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
14		benzo[b]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2									

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
16		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									
17	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
18		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									
19	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
20	⚛	arsenic { arsenic trioxide }				9.7	mg/kg	1.32	12.807	mg/kg	0.00128 %		
		033-003-00-0	215-481-4	1327-53-3									
21	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }				1.5	mg/kg	13.43	20.145	mg/kg	0.00201 %		
				10294-33-4, 10294-34-5, 7637-07-2									
22	⚛	cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
23	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
24	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide }				39	mg/kg	1.462	57.001	mg/kg	0.0057 %		
			215-160-9	1308-38-9									
25	⚛	copper { dicopper oxide; copper (I) oxide }				28	mg/kg	1.126	31.525	mg/kg	0.00315 %		
		029-002-00-X	215-270-7	1317-39-1									
26	⚛	lead { lead chromate }			1	30	mg/kg	1.56	46.794	mg/kg	0.003 %		
		082-004-00-2	231-846-0	7758-97-6									
27	⚛	mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
28	⚛	nickel { nickel dihydroxide }				34	mg/kg	1.579	53.703	mg/kg	0.00537 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
29	⚛	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		034-002-00-8											
30	⚛	zinc { zinc chromate }				120	mg/kg	2.774	332.898	mg/kg	0.0333 %		
		024-007-00-3											
31		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]									
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
36	●	TPH (C6 to C40) petroleum group				14	mg/kg		14	mg/kg	0.0014 %		
				TPH									
										Total:	0.0567 %		

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
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 TPH in soil is unlikely to be flammable at concentrations <1000 mg/kg.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0014%)

Classification of sample: TP103[2]

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

Sample details

Sample Name:	LoW Code:	
TP103[2]	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.40-0.60 m	Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:		
21% (no correction)		

Hazard properties

None identified

Determinands

Moisture content: 21% 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	●	pH			PH		6.9 pH		6.9 pH	6.9 pH		
2		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**
3		phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		**<LOD**
4		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
5	●	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
6	●	acenaphthene		201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
7	●	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
8	●	phenanthrene		201-581-5	85-01-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
9	●	anthracene		204-371-1	120-12-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
10	●	fluoranthene		205-912-4	206-44-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
11	●	pyrene		204-927-3	129-00-0		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
13		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		**<LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
16		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									
17	●	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-893-2	193-39-5									
18		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									
19	●	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
20		arsenic { arsenic trioxide }				11	mg/kg	1.32	14.524	mg/kg	0.00145 %		
		033-003-00-0	215-481-4	1327-53-3									
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }				0.8	mg/kg	13.43	10.744	mg/kg	0.00107 %		
				10294-33-4, 10294-34-5, 7637-07-2									
22		cadmium { cadmium sulfide }			1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6									
23		chromium in chromium(VI) compounds { chromium(VI) oxide }				<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
24		chromium in chromium(III) compounds { ● chromium(III) oxide }				34	mg/kg	1.462	49.693	mg/kg	0.00497 %		
			215-160-9	1308-38-9									
25		copper { dicopper oxide; copper (I) oxide }				28	mg/kg	1.126	31.525	mg/kg	0.00315 %		
		029-002-00-X	215-270-7	1317-39-1									
26		lead { lead chromate }			1	20	mg/kg	1.56	31.196	mg/kg	0.002 %		
		082-004-00-2	231-846-0	7758-97-6									
27		mercury { mercury dichloride }				<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
		080-010-00-X	231-299-8	7487-94-7									
28		nickel { nickel dihydroxide }				39	mg/kg	1.579	61.6	mg/kg	0.00616 %		
		028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]									
29		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1	mg/kg	2.554	<2.554	mg/kg	<0.000255 %		<LOD
		034-002-00-8											
30		zinc { zinc chromate }				120	mg/kg	2.774	332.898	mg/kg	0.0333 %		
		024-007-00-3											
31		benzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
32		toluene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
33	●	ethylbenzene				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<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]									
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
		603-181-00-X	216-653-1	1634-04-4									
36	●	TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
										Total:	0.0546 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP104

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

Sample details

Sample Name:		LoW Code:	
TP104		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.00-0.20 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
15% (no correction)			

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number							
1	●	pH				7 pH		7 pH	7pH		
				PH							
2		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									
3		phenol				<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
		604-001-00-2	203-632-7	108-95-2							
4		naphthalene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3							
5	●	acenaphthylene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			205-917-1	208-96-8							
6	●	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9							
7	●	fluorene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			201-695-5	86-73-7							
8	●	phenanthrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			201-581-5	85-01-8							
9	●	anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			204-371-1	120-12-7							
10	●	fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			205-912-4	206-44-0							
11	●	pyrene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			204-927-3	129-00-0							
12		benzo[a]anthracene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-033-00-9	200-280-6	56-55-3							
13		chrysene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9							
14		benzo[b]fluoranthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		601-034-00-4	205-911-9	205-99-2							

#		Determinand				CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
16		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**
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
18		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**
19	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		**<LOD**
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6	mg/kg	1.32	7.922	mg/kg	0.000792 %		
21		boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.1	mg/kg	13.43	14.773	mg/kg	0.00148 %		
22		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**
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		**<LOD**
24		chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		39	mg/kg	1.462	57.001	mg/kg	0.0057 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		31	mg/kg	1.126	34.903	mg/kg	0.00349 %		
26		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	26	mg/kg	1.56	40.555	mg/kg	0.0026 %		
27		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**
28		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 %		
29		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**
30		zinc { zinc chromate }	024-007-00-3				110	mg/kg	2.774	305.156	mg/kg	0.0305 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		**<LOD**
36	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		**<LOD**
											Total:	0.0527 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP104[2]

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

Sample details

Sample Name:		LoW Code:	
TP104[2]		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.40-0.60 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content:			
12% (no correction)			

Hazard properties

None identified

Determinands

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

#		Determinand				CLP Note	**User entered data**		Conv. Factor	Compound conc.		**Classification value**	MC Applied	Conc. Not Used
			CLP index number	EC Number	CAS Number									
1	●	pH			PH		6.8	pH		6.8	pH	6.8 pH		
2		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**
3		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
4		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
5	●	acenaphthylene		205-917-1	208-96-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
6	●	acenaphthene		201-469-6	83-32-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
7	●	fluorene		201-695-5	86-73-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
8	●	phenanthrene		201-581-5	85-01-8		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
9	●	anthracene		204-371-1	120-12-7		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
10	●	fluoranthene		205-912-4	206-44-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
11	●	pyrene		204-927-3	129-00-0		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
13		chrysene	601-048-00-0	205-923-4	218-01-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**

#		Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
16		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
17	●	indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		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
19	●	benzo[ghi]perylene		205-883-8	191-24-2		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
20	⚛	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.9	mg/kg	1.32	11.751	mg/kg	0.00118 %		
21	⚛	boron { ● boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7	mg/kg	13.43	9.401	mg/kg	0.00094 %		
22	⚛	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
23	⚛	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<4	mg/kg	1.923	<7.692	mg/kg	<0.000769 %		<LOD
24	⚛	chromium in chromium(III) compounds { ● chromium(III) oxide }		215-160-9	1308-38-9		33	mg/kg	1.462	48.231	mg/kg	0.00482 %		
25	⚛	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		30	mg/kg	1.126	33.777	mg/kg	0.00338 %		
26	⚛	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	21	mg/kg	1.56	32.756	mg/kg	0.0021 %		
27	⚛	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
28	⚛	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		37	mg/kg	1.579	58.441	mg/kg	0.00584 %		
29	⚛	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
30	⚛	zinc { zinc chromate }	024-007-00-3				100	mg/kg	2.774	277.415	mg/kg	0.0277 %		
31		benzene	601-020-00-8	200-753-7	71-43-2		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
32		toluene	601-021-00-3	203-625-9	108-88-3		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
33	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
34		o-xylene; [1] p-xylene; [2] m-xylene; [3] xylene [4]	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]		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
35		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.001	mg/kg		<0.001	mg/kg	<0.0000001 %		<LOD
36	●	TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
											Total:	0.0485 %		

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
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

- **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)/Risk Phrase(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **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

- **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

- **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

- **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

- **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

- **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

- **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

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

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

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

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)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2B (77) 2000

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

Appendix B: Rationale for selection of metal species

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

arsenic {arsenic trioxide}

Worst case species based on hazard statements

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on hazard statements

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead chromate}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

zinc {zinc chromate}

Worst case

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.63.3818.7784 (04 Mar 2019)
HazWasteOnline Database: 2019.63.3818.7784 (04 Mar 2019)

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

APPENDIX J

CSM Risk Assessment Methodology

CONCEPTUAL SITE MODEL

General

The aim of the initial conceptual model and risk assessment is to provide a preliminary identification of the risks to controlled waters, proposed future site users and the surrounding area posed by any contamination present on site. The assessment is based on identification of ‘contaminant linkages’, i.e. contaminant-pathway-receptor relationships. This approach accords with the guidance that accompanies Part 2A of the Environmental Protection Act of 1990 where land is considered to be contaminated when ‘significant harm’ is occurring, or where there is the ‘significant possibility of significant harm’ or where significant pollution of controlled waters is being, or is likely to be caused. In such cases the contaminant linkage itself is defined as being ‘significant’.

A source of contamination and a pathway to receptors must be present for there to be a risk. The preliminary risk assessment assesses the strength of the link between the source, the pathway and the receptor.

Source - Contaminant that has potential to cause harm to environmental receptors. In a wider sense, sources can include particular ground conditions, for example the existence of redundant footings, which have the potential to impact on development proposals.

Pathway - The route by which the source is brought into contact with the receptor. This can include the transport of contamination via groundwater, wind-blown dust, vapours, excavation and deposition etc.

Receptor - Human beings, other living organisms, physical systems and built structures that could be affected by the source. A receptor will only be affected if a pathway from the source to the receptor is present. Groundwater and surface water systems can be considered as receptors in their own right as their quality is regulated by the statutory bodies, as well as being pathways for contaminant migration to other receptors.

ENVIRONMENTAL RISK ASSESSMENT

Qualitative Methodology

The risk assessment considers the potential sources, receptors and pathways identified in the Conceptual Site Model.

The environmental assessment has been undertaken with due regard to Contaminated Land Guidance Documents issued by the Department of the Environment Food and Rural Affairs (DEFRA). The Guidance requires a risk-based approach; with the potential environmental risk assessed qualitatively using the 'source-pathway-target' contaminant linkage concept contained in Part 2A of the Environment Protection Act. Unless specifically stated as relating to 'Contaminated Land' as defined in the Environmental Protection Act 1990 (as amended), references to 'contamination' and 'contaminants' relate in general terms to the presence of potentially hazardous substances, in, on or under the subject site.

Based on information presented in

- CIRIA C552 (2001) Contaminated Land Risk Assessment: A guide to good practice; and
- NHBC / EA/ CIEH (2008) R&D Publication 66: (Volume 1) Guidance for the Safe Development of Housing on Land Affected by Contamination
- DEFRA (2012) Environmental Protection Act 1990: Part 2A. Contaminated Land Statutory Guidance

Risk assessment considers the identified sources, the potential receptors and the pathways linking them together.

The designation of risk is based upon the consideration of both:

a. **the severity of the potential consequence -** this takes into account both the potential severity of the hazard and the sensitivity of the receptor
b. **the magnitude of probability** (i.e. likelihood) - this takes into account both the presence of the hazard and receptor and the integrity of the pathway

Severity (consequence) can be defined as the adverse effects (or harm) arising from a defined hazard, which impairs the quality of human health or the environment in the short or longer term. Definitions of different categories of severity are detailed in Table 1 below.

Probability can be defined as the chance of a particular event occurring in a given period of time. Definitions of different categories of probability are detailed in Table 2 below.

A contaminant linkage must first be established before tests for probability and consequence are applied. If there is no contaminant linkage then there is no potential risk.

Table 1 - Classification of Potential Consequence (Severity)

	Human Health	Controlled Water	Built Environment[1]	Ecosystems[2]
Severe	Short term (acute) risk to human health. Concentrations present likely to result in "significant harm" as defined by Part 2A.	Substantial pollution of sensitive water resources.	Catastrophic damage to buildings, structures or the environment, including building collapse.	Major damage to aquatic or other ecosystem, which is likely to result in a substantial adverse change or irreversible change in its functioning or harm to a species of special interest.
Medium	Chronic damage to human health. Concentrations present that could result in significant harm.	Pollution of sensitive water resources or small scale pollution of sensitive water resources	Significant damage to buildings, structures or the environment making it unsafe to occupy, or damage that may impair a scheduled ancient monument.	Significant damage to aquatic or other ecosystems or organism forming part of an ecosystem that could endanger the long term maintenance of a population at that location.
Mild	Slight short term health effects to humans. Exposure to human health unlikely to lead to significant harm.	Pollution to non-sensitive water resources	Minor damage to sensitive buildings, structures, services or the environment.	Minor or short lived damage to aquatic or other ecosystems.
Minor	Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.)	Insubstantial pollution to non-sensitive water resources	Easily repairable effects of damage to buildings or structures	Harm (although not necessarily significant harm which may result in financial loss or expenditure to resolve e.g. loss of plants in a landscape scheme).

1. Property includes crops including timber, produce grown domestically (gardens or allotments for consumption), livestock, other owned or domesticated animals or wild animals which are subject to shooting or fishing rights. It also includes buildings, meaning any structure or erection, but does not include plant or machinery within a building or buried services.
2. Where ecological system effects relate to a Site of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Marine Nature Reserve (MNR), and areas of Special Protection for Birds, a "European site", or any habitat or site afforded protection under the Wildlife & Countryside Act 1981 and The Conservation of Habitats and Species Regulations 2010, i.e. candidate Special Areas of Conservation, potential Special Protection Areas and listed Ramsar sites.

Table 2 Classification of Probability

(Only applies if there is a possibility of a contaminant linkage being present)

High likelihood	There is a contaminant linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution.
Likely	There is a contaminant 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	There is a contaminant 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 an event would take place and is less likely in the shorter term.
Unlikely	There is a contaminant linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

Table 3 Classification of Risk

Once the severity and probability have been classified for a contaminant linkage they can be compared to produce a risk category from very high risk to very low risk as shown in the matrix below.

Consequence				
Severe	Moderate/Low	Moderate	High	Very High
Medium	Low	Moderate/Low	Moderate	High
Mild	Very Low	Low	Moderate/Low	Moderate
Minor	Very Low	Very Low	Low	Moderate/Low
Probability	Unlikely	Low	Likely	High

Table 4 Risk Classification Descriptions

Table 4 below describes the risk classifications.

Risk Term	**Description**
Very High Risk	There is a high probability that significant harm could arise to a designated receptor from an identified hazard at the site without appropriate remedial action or there is evidence that significant harm to a designated receptor is already occurring.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remedial action. Remediation works may be necessary in the short-term and are likely over the longer term.
Moderate Risk	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 such harm would be relatively mild. Some remediation work may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely, at worst, that this harm if realised would normally be mild. Any subsequent remediation works are likely to be relatively limited.
Very Low Risk	It is a low possibility that harm could arise to a receptor, but it is likely at worst, that this harm if realised would normally be mild or minor.

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