

Date: 11th May 2023

Sue Wells
Manchester City Council
Development Control
PO Box 488
Manchester
Lancashire
M60 2JT

By email

Dear Lee,

BENNETT STREET, MANCHESTER

DISCHARGE OF CONDITION 11A PLANNING PERMISSION 134504/FO/2022

RESPONSE TO EA COMMENTS RECEIVED 19TH APRIL 2023

E3P has received written comments from Lee Beverage at the Environment Agency (EA) following a review of the E3P Phase I and II Ground Investigation Report (ref 15-974-R1-2, December 2022) for the proposed residential development at Bennett Street, Manchester. The EA comments are documented in their letter dated 26th April 2023 (ref: SO/2022/122323-02-LO1).

The EA letter dated 26th April was prepared in relation to the submission of technical documentation on 18th January 2023 under the EA Chargeable Agreement ENVPAC/1/GMC/00438.

E3P has addressed this letter to Manchester City Council in pursuance of satisfaction of Planning Condition 11A of the Planning Permission 134504/FO/2022. It is understood that MCC will liaise with the Environment Agency directly as their role as a consultee of the planning authority to seek discharge of condition 11A based on the additional technical submission made herein.

This letter has been set out with the pertinent comments and request for further action from the EA in **blue**, with E3P's responses below the relevant section. We have reviewed the comments and have provided responses in the order in which they were raised.



EA The borehole logs which have been presented in this latest ground investigation reporting submission suggest that the superficial clay layer is 'firm to stiff'. However we note the earlier 2022 borehole logs suggest a clay layer with sand bands, with the clay layer in question also having a gravel content. A check of the wider locality suggests that in some places that clay layer in question is 'soft to firm'. This latter observation suggests a degree of variability in this geological unit / within development area. From the current reporting submission, we have been unable to confirm further to the driller assessment, particle size and distribution. Further information on this matter (particle size distribution curves) would enable a better understanding of underlying geology to be founded and, in turn, whether any associated potential risk(s) exist.

As update to the current e3p ltd report subject of this review, please can we request Particle Size Distribution Curves are provided that support the British Standard 5930 assessment of the site.

Action [1] - Provision of Particle Size Distribution Curves

E3P attended site on 2nd May 2023 to obtain additional geotechnical samples of Made Ground and natural soil below the site. PSD analysis of natural clay soils (TP301 at 1.50 m bgl) classified soils as Class 2B in line with Manual of Contract Documents for Highway Works (MCHW) series 600. Results of PSDs are appended to this letter as MRN 4588/45.

Within the E3P ground investigation, in the absence of PSD's, hand shear vane test results taken between 1.00 m and 4.00 m (Table 8.5), lab descriptions (throughout section 8), plasticity index results (Table 8.8) and photographs of the side walls and spoil from trial pits / window samples (exploratory hole logs and within Appendix IV) provide evidence that soil horizons match that described within the exploratory hole logs.

Supplementary rotary boreholes were drilled using a rotary Odex / Symmetrix drill system that systematically advances the drill tooling and casing using rotary percussive system. This technique returns drill flush as a mist or mud, which cannot be sampled for particle size analysis. The above aside, the drilling logs confirmed a stiff, overly consolidated clay with no losses in flush. The logs for the E3P rotary boreholes all indicate a stiff, high-strength glacial till with good competency overlying the Glaciofluvial sand deposits at depth.

The E3P Cable Percussion and window sample boreholes include in-situ geotechnical testing that confirms a firm low to medium strength to very stiff very high strength competent clay stratum. If this material were indicative of a soft clay or silt matrix, the SPT N values would be significantly reduced.

The BGS confirms the deposition of overly consolidated glacial till, and there is no evidence to suggest the presence of a soft or alluvial type deposition in the immediate vicinity. BGS boreholes immediately adjacent confirm very stiff boulder clay. The BGS borehole suggestive of soft clay does not include any testing to substantiate this qualitative geological description, this description is based on historical data and is contradictory to the E3P logs prepared in accordance with BS5930.

When considering literature sources and the E3P logs, we are confident that where the E3P geologists and environmental scientists log the site in accordance with BS5930, the site is underlain by a stiff high strength overly consolidated glacial till with very little effective permeability.

Additional PSD's will be undertaken as part of the remediation and enabling works to classify soils to ensure appropriate engineering of soils.



EA Further to the above, we note the current e3p Ltd ground investigation report has also identified the presence of groundwater within made ground deposits and has identified that this groundwater body appears to be consistently impacted by hydrocarbon contamination across the site (including the presence of Non-aqueous phase liquids – NAPL).

A shallow discontinuous perched groundwater was noted in the exploratory locations at sporadic locations during the Ground Investigation at ~44m AOD. This is a discontinuous perched water body identified in less than half of the exploratory positions. The groundwater ingress was limited during the trial pits confirming the absence of any viable body capable of significant base flow to a receiving receptor.

No viable aquifer is identified in the superficial drift.

Historically the site was surfaced by cobble sets with 'coal tar' used as a sealant. All cobble sets and coal tar is removed from the site in its entirety. It is noted that the coal tar sealant is the likely source of residual TPH / PAH impact to shallow perched water. Removing this hazardous material from site constitutes remediation of the impact source.

E3P has attended site post-demolition and can confirm that all cobble sets and coal tar materials appear to have been fully removed across the entirety of the site. (Photos appended to this letter).

Arising from previous phases of work associated with the site and as aforementioned above, we are aware that two sub-surface/culverted ordinary watercourses intersect the site. We note some sampling has been undertaken of these watercourses which has found them to be impacted by contamination. We note the contaminant profile of watercourse sampling undertaken is similar to that which has been identified within the soils and the shallow groundwater sampling undertaken on-site.

Action [2] – Additional Watercourse Sampling & Consideration to Sub-Surface Culver Condition

The E3P ground investigation identified exceedances of EQS within perched groundwater from within the Made Ground across the site for heavy metals (cadmium, chromium III, copper, nickel and zinc), PAH (naphthalene, anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indeno[123-cd]pyrene and fluoranthene) and TPH (fractions C10-C35). The source of the contaminants cannot be attributed to one area or point source given that the coal tar has been removed, and the majority of the residual impact is within the anthropogenic soil.

E3P notes the removal of the primary and secondary sources of impact across the site, identified as coal tar sealant to cobble sets and any and all above-ground fuel tanks in the former bus depot. Without a point source - following the removal of coal tar across the site and any significantly impacted TPH soils that are identified throughout remedial works, excavation and removal of Made Ground soils across the entirety of the site is not a sustainable or viable option.

E3P notes the requirement in the remediation strategy to undertake validation sampling across these areas and the need to remove any materials that pose a significant risk to either human health or controlled waters.



Given the multiple phases of ground investigation, the spread of exploratory hole locations and the volume of chemical data obtained to date, this is sufficient to allow the site to be fully classified with respect to human health, controlled waters and the wider environ.

However, we would agree with the EA comment requiring further justification to develop a pragmatic approach in dealing with site-wide PAH, metal and TPH impact within Made Ground soils with regard to the protection of controlled water receptors.

As part of this assessment, E3P has completed a review of the site hydrogeology inclusive of additional sampling at upstream locations for both culverts, resulting in the development of an updated conceptual site model specifically related to controlled waters.

This model is attached to this letter for review by the EA to aid in their understanding of the site issues, completed remediation works (source removal) and mitigation in the form of new build phase works to ensure the protection of the viable receptors.

In light of the EA comments and suggested action, E3P has revisited the site to collect further water samples from both the identified receptor (culverts) at onsite and upstream locations, to enable the assessment of a robust risk based assessment. The sample location plan is Appended to the end of this letter as E3P drawing 15-974-027.

A synopsis of the supplementary water sampling and a summary of the reported laboratory test results is presented below.

CULVERTS

Corn brook culvert – To Remain In-situ With Some Upgrade Work

- ✳ Previously only sampled on site;
- ✳ Previous exceedances of Fluoranthene, Anthracene, Naphthalene, TPH C10-12, C12-16, C16-35, Copper, Zinc;
- ✳ Updated sampling records no PAH or TPH exceedances (none recorded above LOD) for upstream or on site results – indicating;
- ✳ Updated sampling records heavy metal impact above EQS for total cyanide, copper, nickel and zinc – exception of zinc (35 ug/l upstream vs 41 ug/l on site) all upstream values are higher than on site values and, as such, heavy metal impact within Corn Brook is deemed to originate off site;
- ✳ Kellen Homes have instructed CCTV shows no defects – No viable pathway between discontinuous shallow perched water to culvert.

The supplementary sampling of Corn Brook has not identified any ongoing pollution impact within the water body on site or downstream.



It is highly probable that the impact identified during the prior round of sampling was attributed to upstream impact. When considering the site setting in a densely populated urban area with a prolonged history of potentially polluting land uses upstream (and downstream), the impact to Corn Brook is to be anticipated.

Kellen Homes have completed a survey of Corn Brook, and this shows good integrity of the culvert structure on-site with no evidence of groundwater ingress (attributed to a discontinuous perched water body) entering the culvert on-site. This situation is to be expected given the limited volume of water within the discontinuous perched water in the Made Ground and the presence of low permeability clay surrounding the Corn Brook culvert, which in essence, negates any realistic pollution linkage.

In the absence of any discernible ongoing or persistent source on-site, considering the absence of a pollutant linkage and no impact to the receptor, the developed site CSM does not identify any significant risk.

Black Brook Culvert - Subject to Diversion & Abandonment)

- ✿ Previously only sampled on site;
- ✿ Previous exceedances of Naphthalene, Copper, Zinc, Cyanide;
- ✿ Updated sampling records no PAH or TPH exceedances (none recorded above LOD) for upstream or downstream results;
- ✿ Updated sampling records heavy metal impact above EQS for total cyanide, copper, nickel and zinc – exception of minor zinc (32 ug/l upstream vs 38 ug/l on site) and nickel (4 ug/l upstream vs 5.1 ug/l on site) all upstream values are higher than on site values – as such, heavy metal impact within Black Brook is deemed to originate off site; and
- ✿ CCTV shows no defects – Black Brook will be diverted and abandoned out and installed into new culvert that will have no defect or leak. No viable pathway between MG or discontinuous perched water to the culverted water course.

There is no evidence to suggest that Black Brook is currently being adversely impacted by the site.

The development works will result in the abandonment of this culvert with a diversion into new infrastructure that will protect the surface water feature. In essence the abandonment of this historical culvert and the diversion of the water flow will remove the identified receptor.

The developed site CSM has not identified any complete pollutant linkage, however, the proposed diversion and construction of a new concrete-lined culvert will constitute significant environmental enhancement.



EA We have reviewed the information that is available from the 2022 phase of investigations and identified that each of the four boreholes installed into the Principal Aquifer has only been sampled once. Linking to our commentary for Action [2], we note this observation (one round of sampling) also applicable to the surface watercourses.

Whilst we, tentatively agree (fuller characterisation of underlying site conditions/geology pending – see Action [1]) that there is unlikely to be a significant pollutant linkage to the underlying Principal Aquifer, we advise that a single round of sampling and the lack of fuller British Standard data means we are unable to put aside the risk as being absent or insignificant at this current time.

We acknowledge and agree with the EA's tentative agreement that the underlying aquifer is unlikely to be at significant risk from pollution at this site.

Please see the above points clarifying the nature of the site geology, which we believe will address the query relating to soil mechanics (Action 1).

Demolition works are currently ongoing at the Bennett Street site, and while all wells to the aquifer will be located and decommissioned as part of the remediation works, they are not all currently serviceable to facilitate further groundwater sampling.

A further groundwater sample has been obtained from RB203 (see attached laboratory certificate) with a discussion of pertinent chemical laboratory results outlined below.

Principal Aquifer

- ✿ 15-20 m of stiff low permeability CLAY offering protection from downward migration;
- ✿ Discontinuous perched water body on-site, no viable superficial aquifer;
- ✿ All primary source of impact removed;
- ✿ No significant mobile source of pollution impact, only residue within the anthropogenic material from coal tar cobble sealant;
- ✿ All materials under former above-ground storage tanks are to be sampled during remediation, and any grossly TPH impacted soil or groundwater is to be removed during remediation as per the remediation strategy;
- ✿ The underlying soils are classified as overly consolidated glacial till, with an engineering classification of MCHW Series 600 Class 2 (cohesive);
- ✿ Initial sampling of wells in the aquifer recorded PAH (benzo[a]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, indigo[123-cd]pyrene and fluoranthene + heavy metal copper and total cyanide at relatively low concentrations;
- ✿ April 2023 water sample from RB203 only given other wells are currently not serviceable;



Bennett Street, Manchester

EA Response – May

11th May 2023

- 🔦 Water level within RB203 recorded at 15.00 m bgl, 13.10 m below base of Made Ground with low permeability CLAY encountered from base of Made Ground to 10.60 m bgl;
- 🔦 April 2023 RB203 sample obtained has suspended solids of 1100 mg/l;
- 🔦 April 2023 water sample (RB203 only) – no PAH or TPH exceedances (none recorded above laboratory LOD);
- 🔦 April 2023 water sample (RB203 only) – heavy metal impact above EQS for copper, lead and nickel. No source on-site or viable exposure pathway from site to aquifer within the updated site CSM;
- 🔦 Given no viable pathway between on site sources and the aquifer, heavy metal impact is deemed to be background impact within the wider aquifer given its location within a highly industrial area; and
- 🔦 As per the updated detailed site CSM, no viable pathway was deemed to be present from discontinuous perched waters to the aquifer.

EA We have reviewed the surface watercourse information and identified that whilst SW3 is located on plan No. 11, that the corresponding lab results have not been included. We ask that confirmation is provided as to whether SW3 was sampled and, if yes to this question, requests that the results of this sampling activity are provided – noting this sampling location is situated upstream (Corn Brook) and our previous commentary regarding potential receptor linkage.

SW3 was not previously sampled during the previous E3P ground investigation, given no access to Corn Brook culvert was available in this location as anticipated.

A updated upstream sample location was identified as a manhole on Hayfield Close to the east.

E3P attended site in April 2023 and obtained samples from upstream and on site locations for both Black Brook and Corn Brook to accurately assess the risk to controlled waters, the findings of this are discussed above.

The location of recent water samples obtained in April 2023 is given on E3P Drawing 15-974-027 appended to this letter.



E3P Conclusion

In light of the EA's comments, further surface water and groundwater samples have been collected from the site. Additionally, PSD testing has been undertaken to confirm the classification of underlying soils. This sampling and risk-based assessment confirm the developed site CSM, indicating no significant risk to controlled waters from the subject site.

The developed CSM identifies variable background PAH and inorganic metalloid impact within the surface water and, potentially, the groundwater. However, this is clearly attributed to the heavily industrialised urban area and no point source on-site.

We welcome the EA's initial agreement that the aquifer is unlikely to be at risk from low-level residual impact on-site. This is confirmed by the developed CSM and some further sampling as requested.

The abandonment of Black Brook (and diversion) removes this as a viable receptor.

Corn Brook has been surveyed and found to be in good condition with no evidence of hydraulic conductivity with the shallow discontinuous perched water on-site. Additional samples obtained upstream identified heavy metal impact above EQS and above on site concentrations for the majority of determinants, indicating that the heavy metal, and likely previously identified PAH impact originates off site.

All primary sources of pollution impact in the form of coal tar sealant to coble sets and above-ground fuel storage have been removed in their entirety. E3P has visited the site post-demolition to confirm this situation.

The remediation strategy includes validation sampling beneath all former point sources to ensure any grossly impacted (localised) soil or perched water is removed from the site.

Upon completion of the site remediation and development, we are confident that the developed site CSM demonstrates the absence of any significant risk to controlled waters.

Yours sincerely,
For and on behalf of E3P Ltd

Matthew Dee
Geoenvironmental Project Manager

Appended

Photographs

Drawings : 15-974-026 Waters Conceptual Site Model
15-974-027 Water Sampling Location Plan

Chemical Testing Results

Geotechnical Testing Certification



Photographs

PLATE 1 COBBLES WITH COAL TAR SEALANT DURING E3P 2021 INVESTIGATION



PLATE 2 COBBLES WITH COAL TAR SEALANT DURING E3P 2021 INVESTIGATION



PLATE 3 COBBLE REMOVAL STARTING IN SOUTH OF THE SITE IN AUGUST 2022



PLATE 4 COAL TAR SEALANT ON REMOVED COBBLES



PLATE 5 COBBLES (AND COAL TAR) REMOVED – APRIL 2023



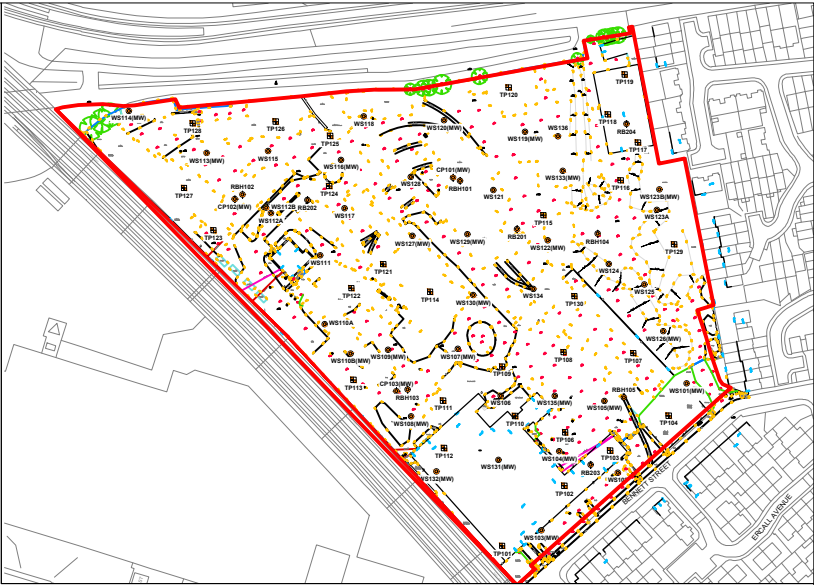
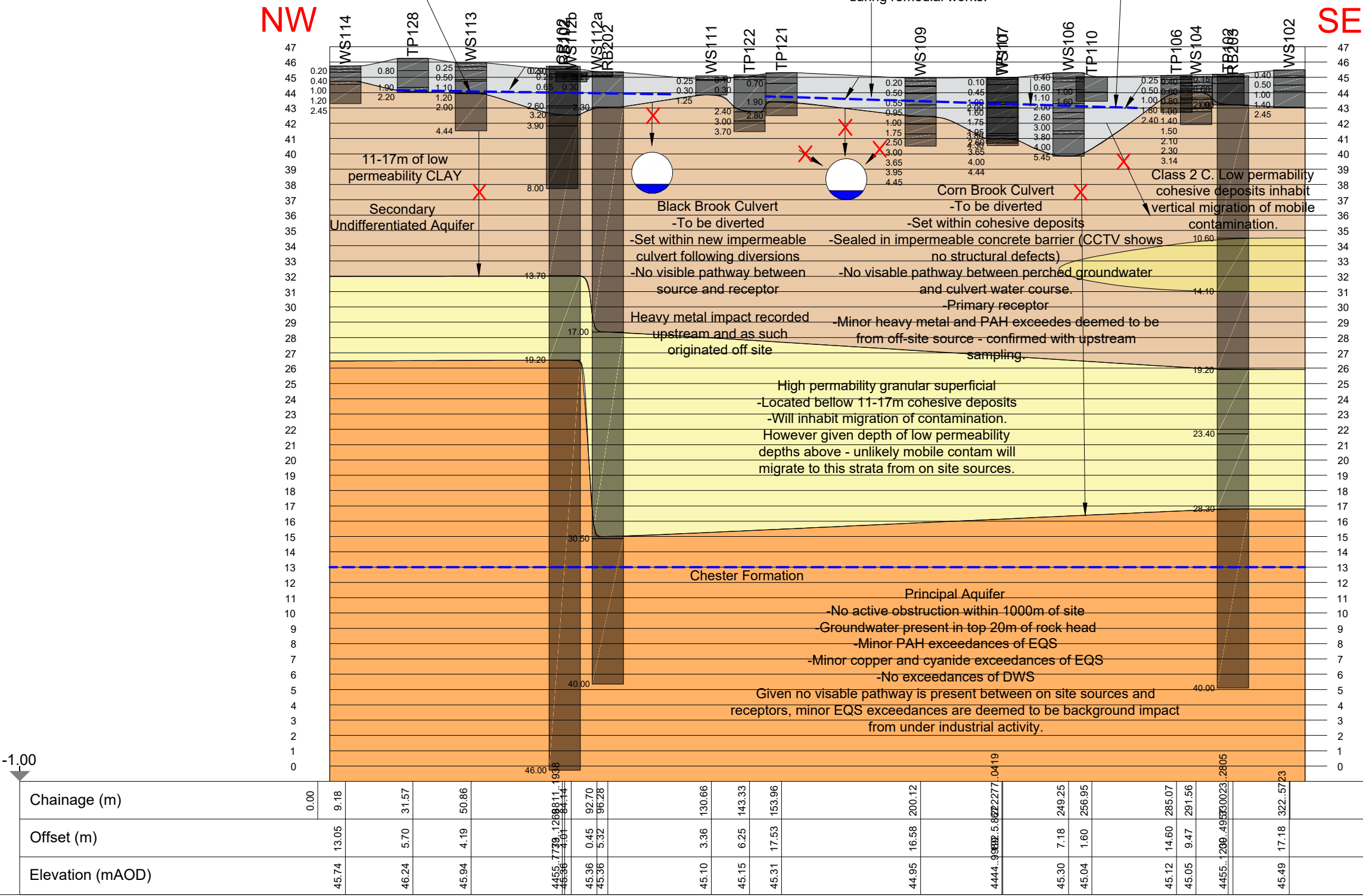
PLATE 6 COBBLES (AND COAL TAR) REMOVED – APRIL 2023



Currently site is open with rain water infiltrating and potentially mobilising contaminants. Development will limit infiltration with hardstand (roads and plots) and installation of surface water drainage. This will limit infiltration and lower risk of contaminant mobilisation.

Made Ground is a potential source of PAH, heavy metal and TPH. Leaching of determinants resulting in impacted perched groundwater. Poin source of coal tar and impacted TPH soil removed during remedial works.

Impacted PAH, TPH, heavy metals perched groundwater above EQS values.



Geology Key

- Made Ground
- Cohesive Superficial
- Granular Superficial
- Chester Formation
- Pathway
- Pathway Not Deemed Visible
- Water Level

Notes:

P1	REVC	11.05.2023	EB	MD
P1	REVB	05.05.2023	HM	MD
P1	REVA	27.04.2023	EB	MD
Phase	Issue	Date	Drawn	Checked

Client:

Kellen Homes

Bennett Street,
Manchester

Job No:

15-974

Drawing No:

026

Drawing Title:

Waters Conceptual
Site Model

Date:

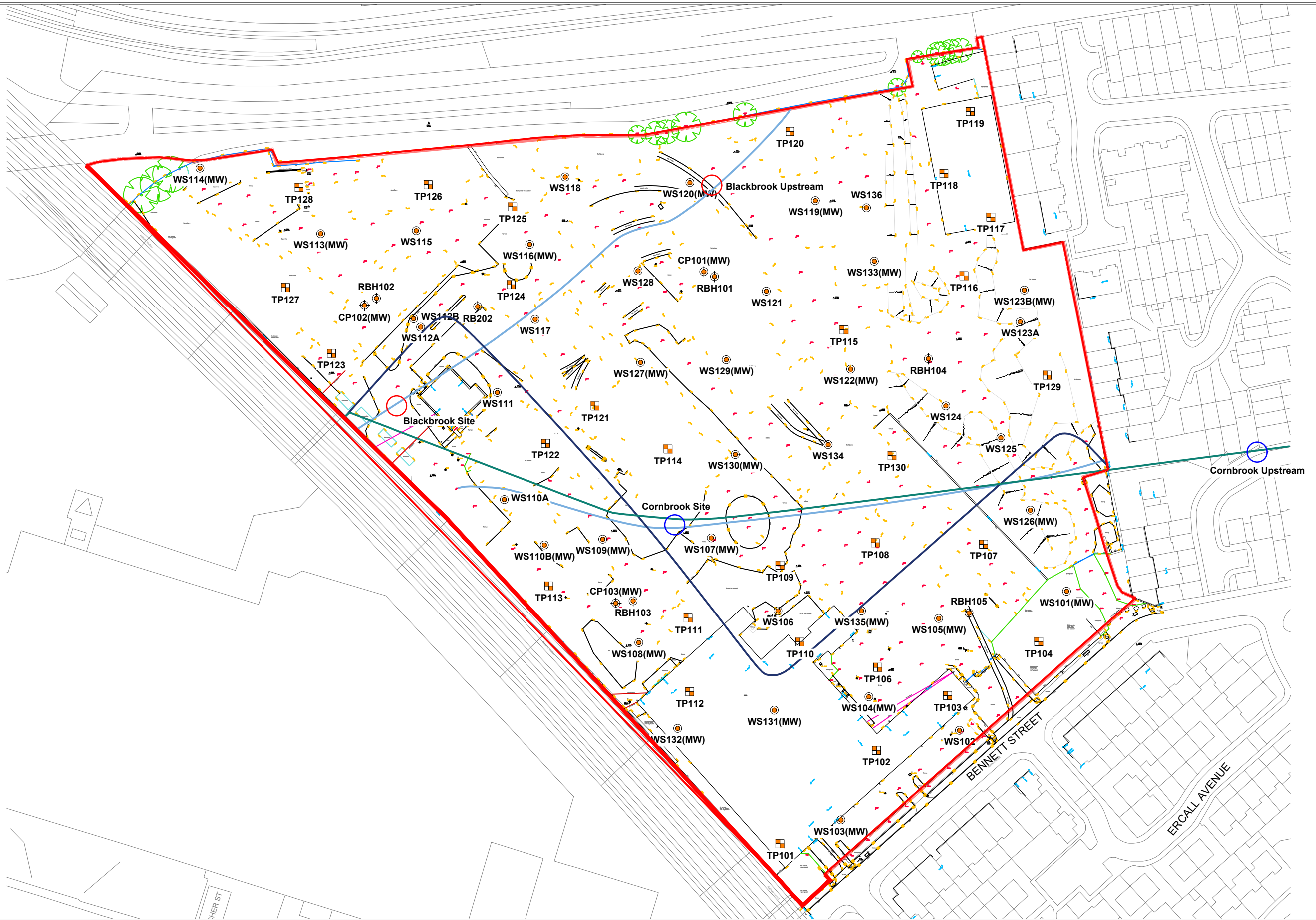
11.05.2023

Scale:

NTS@ A3

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Location Symbols

Approximate Window Sample Probehole Location

Approximate Window Sample Probehole Location with Install

Approximate Cable Percussive Borehole Location

Approximate Rotary Borehole Location

Blackbrook Site/Upstream

Culvert

Indicates proposed route of culvert watercourse diversion via the central section of the new access roads.

Indicates existing route of Corn Brook culvert

Cornbrook Site/Upstream

Notes:				
P1	REVA	10.05.2023	OW	JB
Phase	Issue	Date	Drawn	Checked

Client:

Kellen Homes

Job Title:

Bennett Street,
Manchester

Job No:

15-974

Drawing No:

027

Date:

10.05.2023

Scale:

NTS@ A3

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Analytical Report Number : 23-31807

Project / Site name:	Bennett Street	Samples received on:	03/05/2023
Your job number:	15-974	Samples instructed on/ Analysis started on:	03/05/2023
Your order number:	004743	Analysis completed by:	09/05/2023
Report Issue Number:	1	Report issued on:	09/05/2023
Samples Analysed:	5 water samples		


Signed:

Dominika Warjan
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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



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Analytical Report Number: 23-31807

Project / Site name: Bennett Street

Your Order No: 004743

Lab Sample Number				2667833	2667834	2667835	2667836	2667837
Sample Reference				BB US	RB2023	Black Brook Site	Corn Brook US	Corn Brook Site
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

pH (L005B)	pH Units	N/A	ISO 17025	7.6	7.3	7.8	7.7	7.7
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	3.3	< 1.0	2	2.1	2
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	6.39	2.51	6.74	6.59	6.56
Total Suspended Solids (L004B)	mg/l	2	ISO 17025	74	1100	23	28	22

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	1	< 1.0
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Heavy Metals / Metalloids

Calcium (dissolved)	mg/l	0.012	ISO 17025	180	110	140	140	140
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.41	15.9	2.97	3.1	2.85
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.07	0.12	0.02	0.02	0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	0.5	0.5	0.3	0.3
Copper (dissolved)	µg/l	0.5	ISO 17025	8.6	2.1	3.9	2.9	2.4
Lead (dissolved)	µg/l	0.2	ISO 17025	0.6	6.3	< 0.2	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	180	400	230	180	180
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	4	8.7	5.1	4.4	4.1
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.8	3.1	0.9	0.9	0.9
Zinc (dissolved)	µg/l	0.5	ISO 17025	32	8	38	35	41

Monoaromatics & Oxygenates#

Benzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
p & m-xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
o-xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

Petroleum Hydrocarbons

TPH1 (C10 - C40) EH_ID_TOTAL_MS	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C5 - C6 HS_ID_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 HS_ID_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 HS_ID_AL	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 EH_ID_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 EH_ID_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 EH_ID_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 EH_ID_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) HS+EH_ID_AL_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10



4041



Analytical Report Number: 23-31807

Project / Site name: Bennett Street

Your Order No: 004743

Lab Sample Number				2667833	2667834	2667835	2667836	2667837
Sample Reference				BB US	RB2023	Black Brook Site	Corn Brook US	Corn Brook Site
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
TPH-CWG - Aromatic >C5 - C7 HS_ID_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 HS_ID_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 HS_ID_AR	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 EH_ID_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 EH_ID_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 EH_ID_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 EH_ID_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) HS+EH_ID_AR_MS	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

VOCs#

Chloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Chloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Bromomethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1-Dichloroethene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Cis-1,2-dichloroethene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1-Dichloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Trichloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1,1-Trichloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dichloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1-Dichloropropene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Trans-1,2-dichloroethene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Benzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Tetrachloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Trichloroethene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Dibromomethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Bromodichloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Cis-1,3-dichloropropene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Trans-1,3-dichloropropene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Toluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1,2-Trichloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,3-Dichloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Dibromochloromethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Tetrachloroethene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dibromoethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Chlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Ethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
p & m-Xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Styrene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Tribromomethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
o-Xylene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Isopropylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Bromobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
n-Propylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
2-Chlorotoluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
4-Chlorotoluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0



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Analytical Report Number: 23-31807

Project / Site name: Bennett Street

Your Order No: 004743

Lab Sample Number				2667833	2667834	2667835	2667836	2667837
Sample Reference				BB US	RB2023	Black Brook Site	Corn Brook US	Corn Brook Site
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
1,3,5-Trimethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
tert-Butylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
sec-Butylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,3-Dichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
p-Isopropyltoluene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,4-Dichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Butylbenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Hexachlorobutadiene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	NONE	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0

SVOCs

Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05



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Analytical Report Number: 23-31807

Project / Site name: Bennett Street

Your Order No: 004743

Lab Sample Number				2667833	2667834	2667835	2667836	2667837
Sample Reference				BB US	RB2023	Black Brook Site	Corn Brook US	Corn Brook Site
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				02/05/2023	02/05/2023	03/05/2023	03/05/2023	03/05/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



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**Analytical Report Number : 23-31807****Project / Site name: Bennett Street****Water matrix abbreviations:****Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)**

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
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
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Suspended solids in water	Determined gravimetrically with GFC filtration papers.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	NONE
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	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	NONE
Low level 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
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025

Analytical Report Number : 23-31807

Project / Site name: Bennett Street

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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. Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

TEST REPORT

Client e3p

Address Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contract Bennett Street

Job Number MRN 4588/45
Date of Issue 11 May 2023
Page 1 of 4

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation.
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

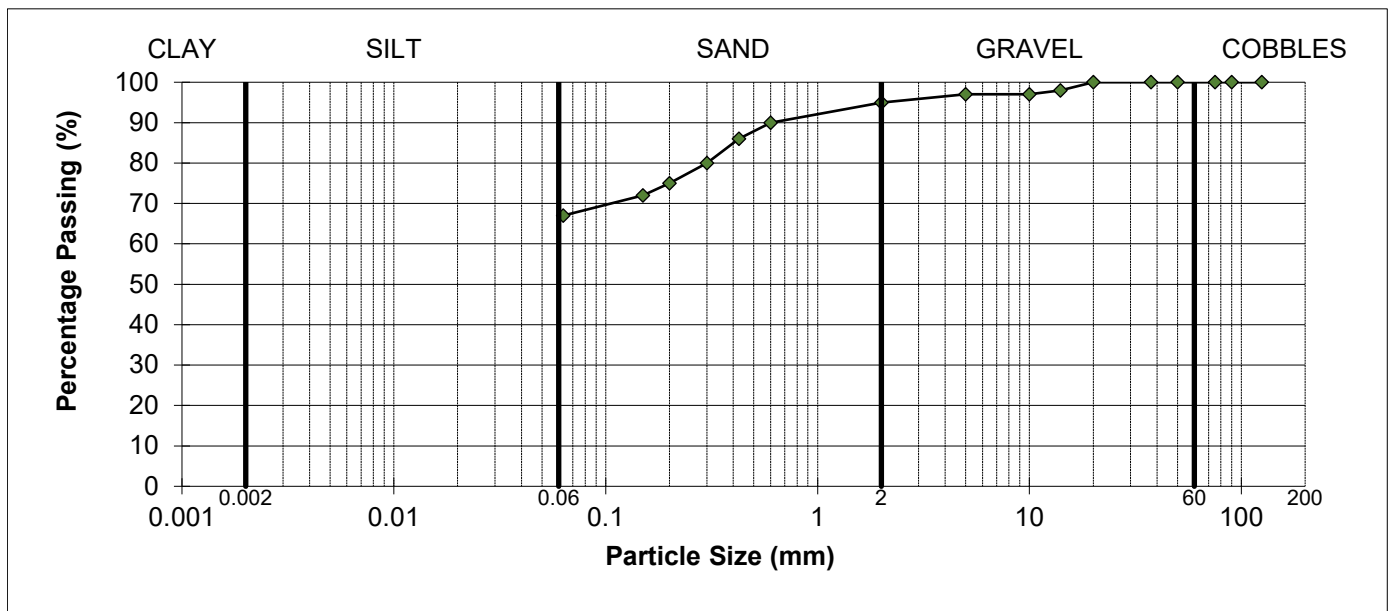
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	e3p
SITE	Bennett Street
JOB NUMBER	MRN 4588/45

SAMPLE LABEL	TP301 1.5m	DATE SAMPLED	28-Apr-23
LAB SAMPLE No	124835	DATE RECEIVED	28-Apr-23
DATE TESTED	02-May-23	SAMPLED BY	Client

MATERIAL	Brown silty slightly sandy slightly gravelly CLAY
ADVISED SOURCE	Not advised

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	97	
90	100		2	95	80-100
75	100		0.6	90	
50	100		0.425	86	
37.5	100		0.3	80	
20	100		0.2	75	
14	98		0.15	72	
10	97		0.063	67	15-100



REMARKS

Sample complies with the advised grading specification for a 2A/2B material (SHW 2016)

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

11-May-23

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

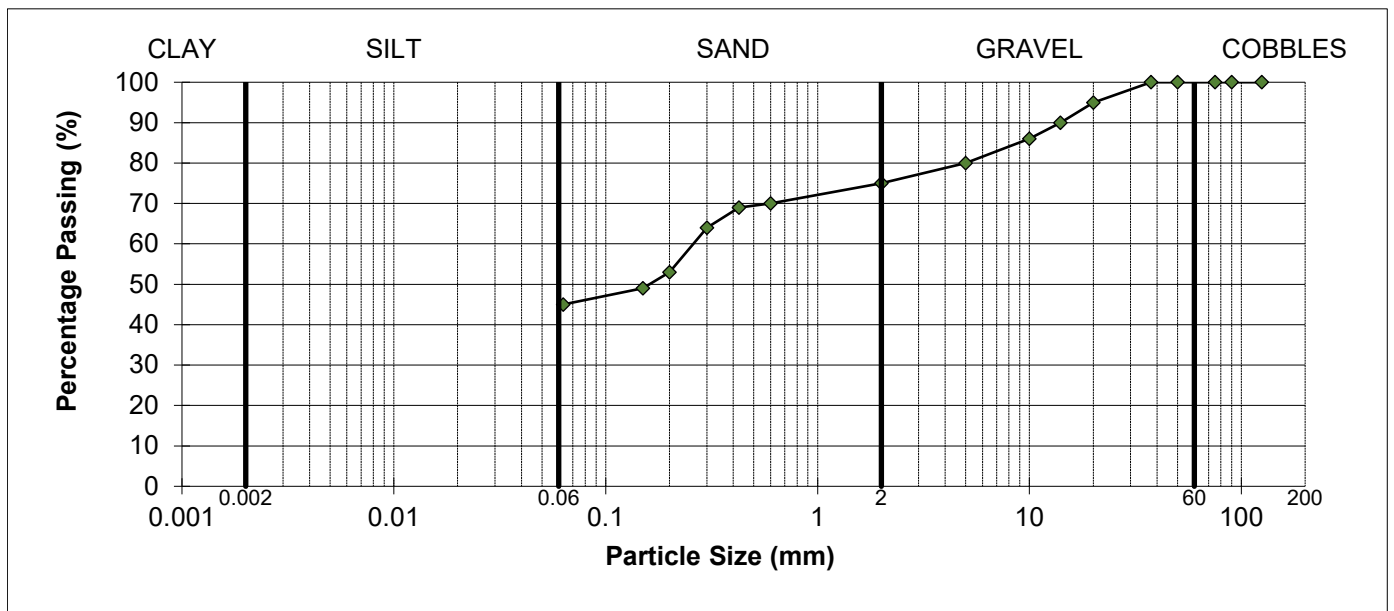
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	e3p
SITE	Bennett Street
JOB NUMBER	MRN 4588/45

SAMPLE LABEL	TP302 1.2m	DATE SAMPLED	28-Apr-23
LAB SAMPLE No	124836	DATE RECEIVED	28-Apr-23
DATE TESTED	02-May-23	SAMPLED BY	Client

MATERIAL	MADE GROUND; Brown silty slightly sandy slightly gravelly CLAY
ADVISED SOURCE	Not advised

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	80	
90	100		2	75	15-80
75	100		0.6	70	
50	100		0.425	69	
37.5	100		0.3	64	
20	95		0.2	53	
14	90		0.15	49	
10	86		0.063	45	15-80



REMARKS

Sample complies with the advised grading specification for a 2C material (SHW 2016)

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

11-May-23

TEST CERTIFICATE
PARTICLE SIZE DISTRIBUTION

BS EN ISO 17892-4:2016

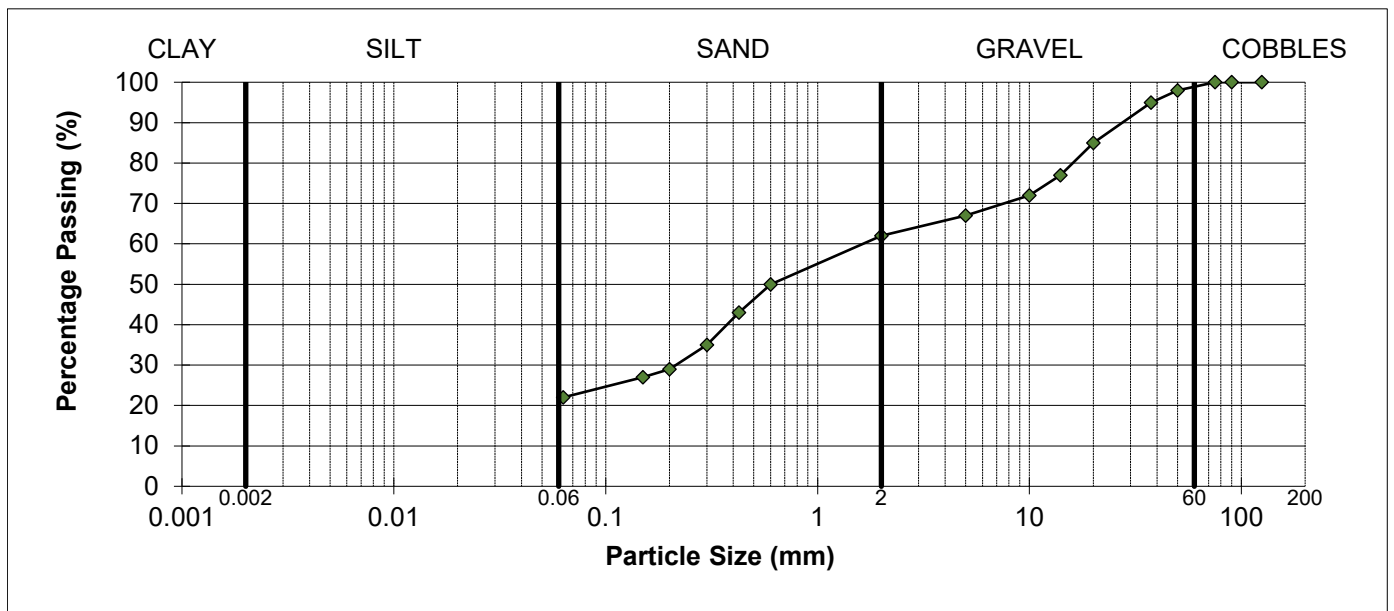
Determination of Water Content in accordance with BS EN ISO 17892-1:2014 (Oven Dry)

CLIENT	e3p
SITE	Bennett Street
JOB NUMBER	MRN 4588/45

SAMPLE LABEL	TP301 0.3m	DATE SAMPLED	02-May-23
LAB SAMPLE No	124834	DATE RECEIVED	02-May-23
DATE TESTED	02-May-23	SAMPLED BY	Client

MATERIAL	Made Ground; Brown silty SAND & GRAVEL
ADVISED SOURCE	Not advised

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100	100	5	67	
90	100		2	62	15-80
75	100		0.6	50	
50	98		0.425	43	
37.5	95		0.3	35	
20	85		0.2	29	
14	77		0.15	27	
10	72		0.063	22	15-80



REMARKS

Sample complies with the advised grading specification for a 2C material (SHW 2016)

SIGNED



NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

11-May-23