

APPENDIX I LIMITATIONS



1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



APPENDIX II GLOSSARY

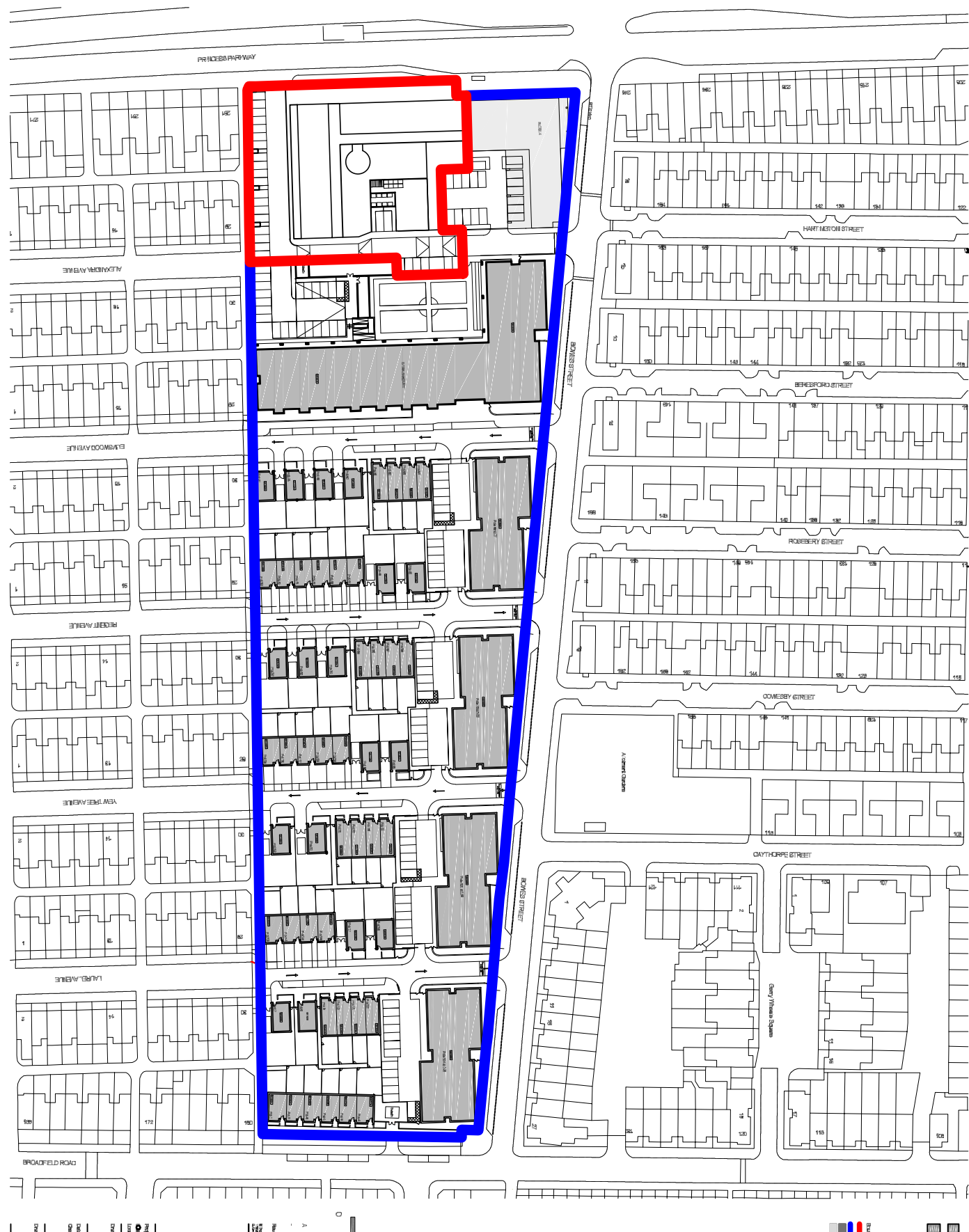


TERMS

AST	Above Ground Storage Tank	SGV	Soil Guideline Value
BGS	British Geological Survey	SPH	Separate Phase Hydrocarbon
BSI	British Standards Institute	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	SPT	Standard Penetration Test
CIEH	Chartered Institute of Environmental Health	SVOC	Semi Volatile Organic Compound
CIRIA	Construction Industry Research Association	UST	Underground Storage Tank
CLEA	Contaminated Land Exposure Assessment	VCCs	Vibro Concrete Columns
CSM	Conceptual Site Model	VOC	Volatile Organic Compound
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)	WTE	Water Table Elevation
DWS	Drinking Water Standard	m	Metres
EA	Environment Agency	km	Kilometres
EQS	Environmental Quality Standard	%	Percent
GAC	General Assessment Criteria	%v/v	Percent volume in air
GL	Ground Level	mb	Milli Bars (atmospheric pressure)
GSV	Gas Screening Value	l/hr	Litres per hour
HCV	Health Criteria Value	µg/l	Micrograms per Litre (parts per billion)
ICSM	Initial Conceptual Site Model	ppb	Parts Per Billion
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)	mg/kg	Milligrams per kilogram (parts per million)
ND	Not Detected	ppm	Parts Per Million
LMRL	Lower Method Reporting Limit	mg/m³	Milligram per metre cubed
NR	Not Recorded	m bgl	Metres Below Ground Level
PAH	Polycyclic Aromatic Hydrocarbon	m bcl	Metre Below Cover Level
PCB	Poly-Chlorinated Biphenyl	mAOD	Metres Above Ordnance Datum (sea level)
PID	Photo Ionisation Detector	kN/m²	Kilo Newtons per metre squared
QA	Quality Assurance	µm	Micro metre
SGV	Soil Guideline Value		

APPENDIX III DRAWINGS





Notes:				
P1	REVA	29.04.2021	EB	RH
Phase	Issue	Date	Drawn	Checked

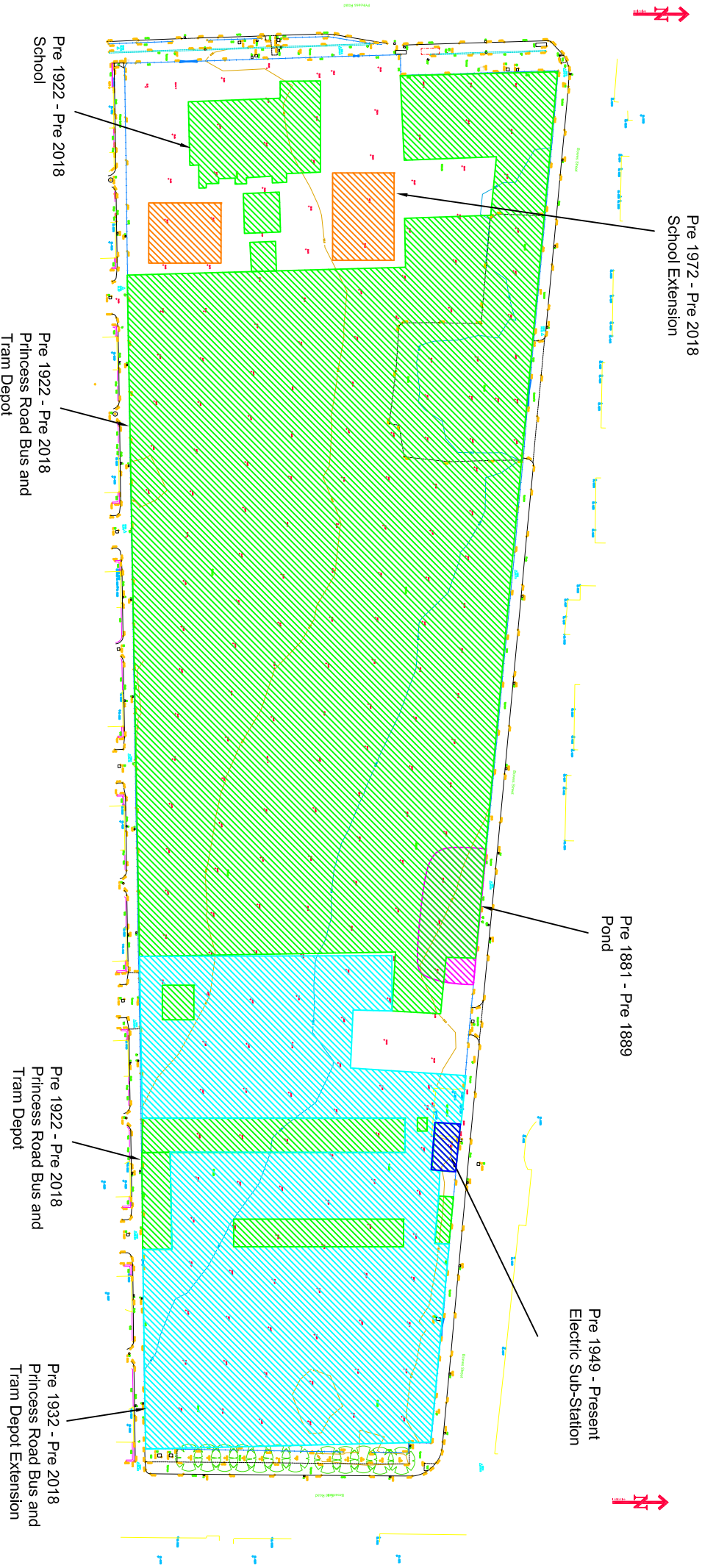
Client: Rowlinson Construction	
Job Title: Bowes Street, Manchester	

Job No: 11-813	Date: 29.04.2021
Drawing No: 002	Scale: NTS@ A3
Drawing Title: Proposed Development Plan	



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- Historical Features**
- Pre 1881 (Pond)
 - Pre 1922 (School, Princess Road Bus and Tram Depot)
 - Pre 1932 (Depot Extension)
 - Pre 1949 (Electric Sub-Station)
 - Pre 1972 (School Extension)

Notes:

P1	-	02.02.2018	DRAFT	CB	MD
Phase	Revision	Date	Issue	Drawn	Authorised
Client: Rowlinson Construction			Job No: 11-813	Date: 02.02.2018	
			Drawing No: 003	Scale: 1:1250 @ A3	

Job Title: Bowes Street, Manchester	Drawing Title: Historical Features Plan
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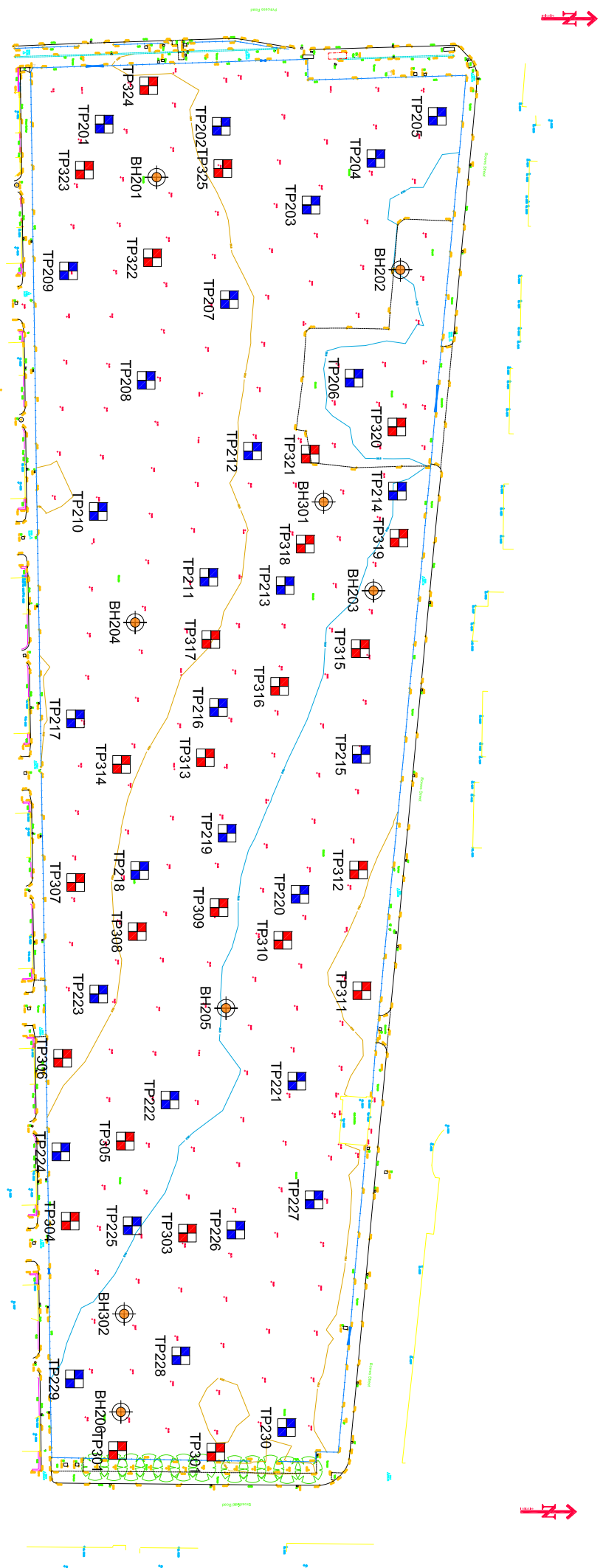
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Key:

Location Symbols

- | | | |
|---|-------|--|
|  | TF201 | Approximate Trial Pit Location (Capita Location) |
|  | TF301 | Approximate Trial Pit Location (Capita Location) |
|  | BH101 | Approximate Borehole Location (Capita Location) |



Notes:

P1 Phase	- Revision	02.02.2018 Date	DRAFT Issue	CB Drawn	MD Authorised
Client:					
Rowlinson Construction					
Job No: 11-813		Date: 02.02.2018			
Drawing No: 004		Scale: 1:1250 @ A3			

Job Title

wing Title

**Boves Street
Manchester**

Exploratory Hole Location Plan



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Notes

N.D. - N

0.007%–Solls may contain <0.001% asbestos using composite testing to ensure there is no potential risk to human health. This value is present within areas where there may be short term low level exposure of soils containing trace asbestos fibres by construction workers where an appropriate level of asbestos management is employed (dust suppression).

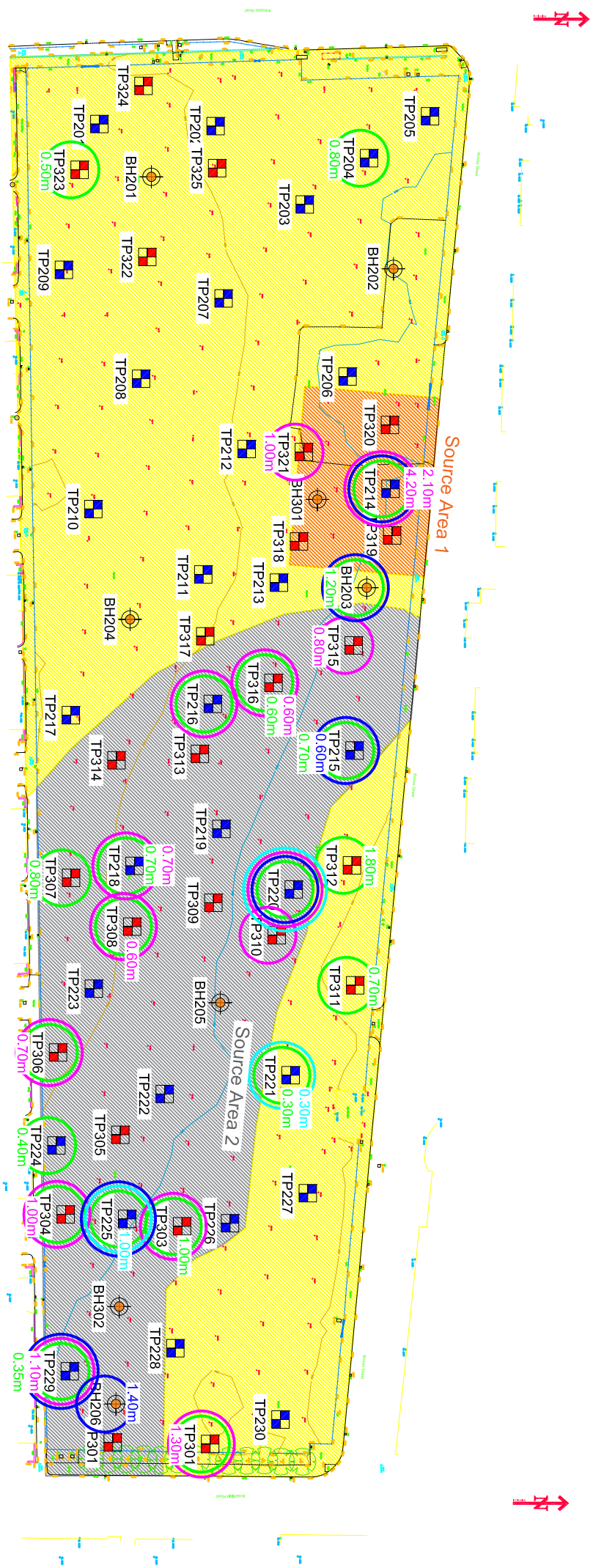
Undefined - This will be dependent upon soils encountered during the earthworks, which may be placed at these depths to ensure no potential risk to human health.



Keys:

Location Symbols

- | | | |
|--|-------|--|
| | TP201 | Approximate Trial Pit Location (Caplia Location) |
| | TP301 | Approximate Trial Pit Location (Caplia Location) |
| | BH101 | Approximate Borehole Location (Caplia Location) |
| | | Area of hydrocarbon contamination in surface of bedrock and within groundwater. Detailed assessment required to generate SSRTS, with excavation, delineation and chemical validation to remove impacted soils. |
| | | Remainder of site suitable for residential development with installation of 600mm cover system in gardens and landscaping. |
| | | Area where hydrocarbon contamination identified within near surface soils. Confirmed no vertical delineation and soils to be installed in soils if houses include installation of hydrocarbon membranes, replace DOK for covered waters required to confirm they will present no undue risk to underlying principle aquifer. |
| | | Elevated heavy metals 600mm chemically suitable cover system will be installed within all gardens to mitigate |
| | | Paths 600mm chemically suitable cover system will be installed within all gardens to mitigate |
| | | Elevated TPHs and BTEX hotspot delineation and remediation will be required to remove vadose pathway or houses will require installation of hydrocarbon membranes |
| | | Elevate naphthalene hotspot delineation and remediation will be required to remove vadose pathway |



Remediation Issues

<i>Item</i>	<i>Pit Number</i>	<i>Active</i>
Garden Cover System	-	-
Holspot Treatment	-	-
CO ₂ Membrane	-	-
CH ₄ Membrane	-	-
Hydrocarbon Membrane	-	-
Hazardous Material Storage	-	-

Notes:

N.B.: All areas of identified contamination impact to soil and groundwater are estimated using best endeavors from historic and current intrusive investigation. However, the contractor must satisfy themselves of the potential extent of contamination and the remediation works. The identified impact must be spatially delineated in accordance with the EEP Remediation strategy. The entire development site will require a 600mm chemically suitable cover system comprising of 150mm topsoil and 450mm subsoil with underlying orange to clay geotextile membrane installed in proposed garden areas to mitigate the elevated contaminant concentrations.

P1	-	02-02-2018	DRAFT	CB	MD
Phase	Revision	Date	Issue	Drawn	Authorised
Rowlinson Construction			Job No:		
			11-813		
			Drawing No:	Scale:	
			005	1:1250 @ A3	

Job Title:

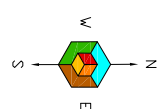
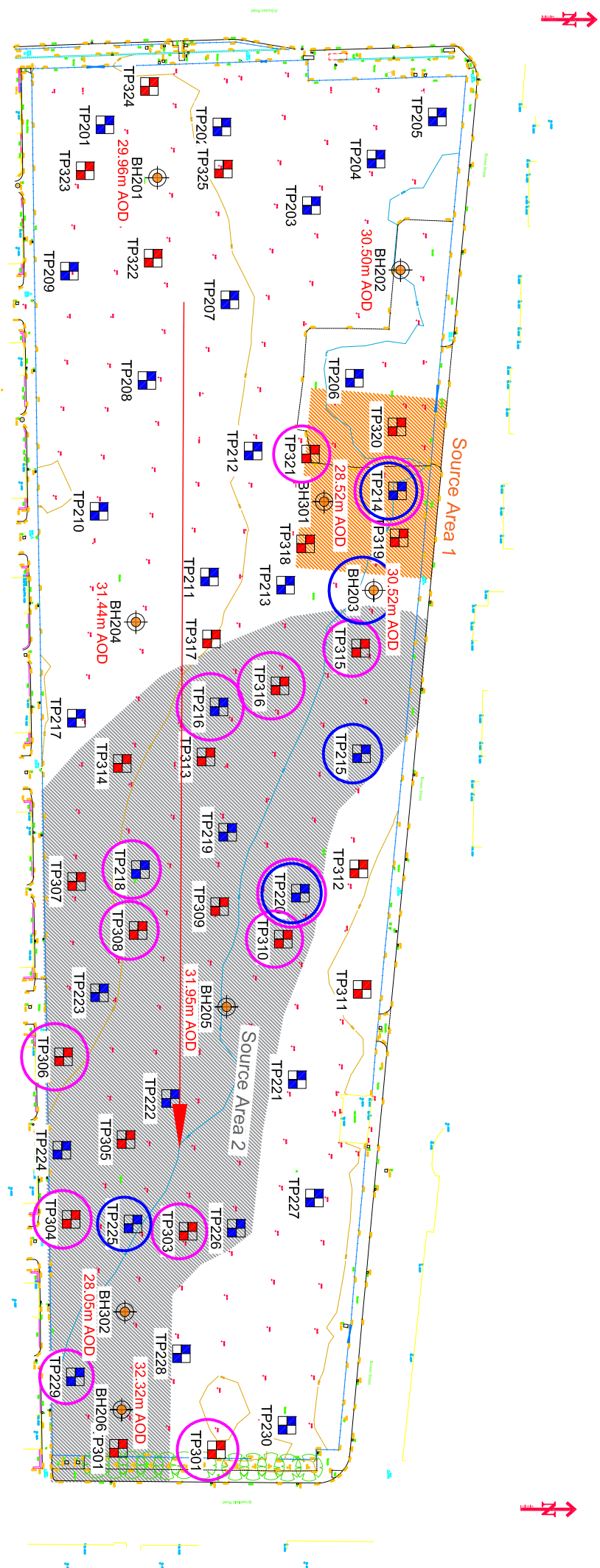
**Bowes Street
Manchester**

Remediation Issues



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Location Symbols

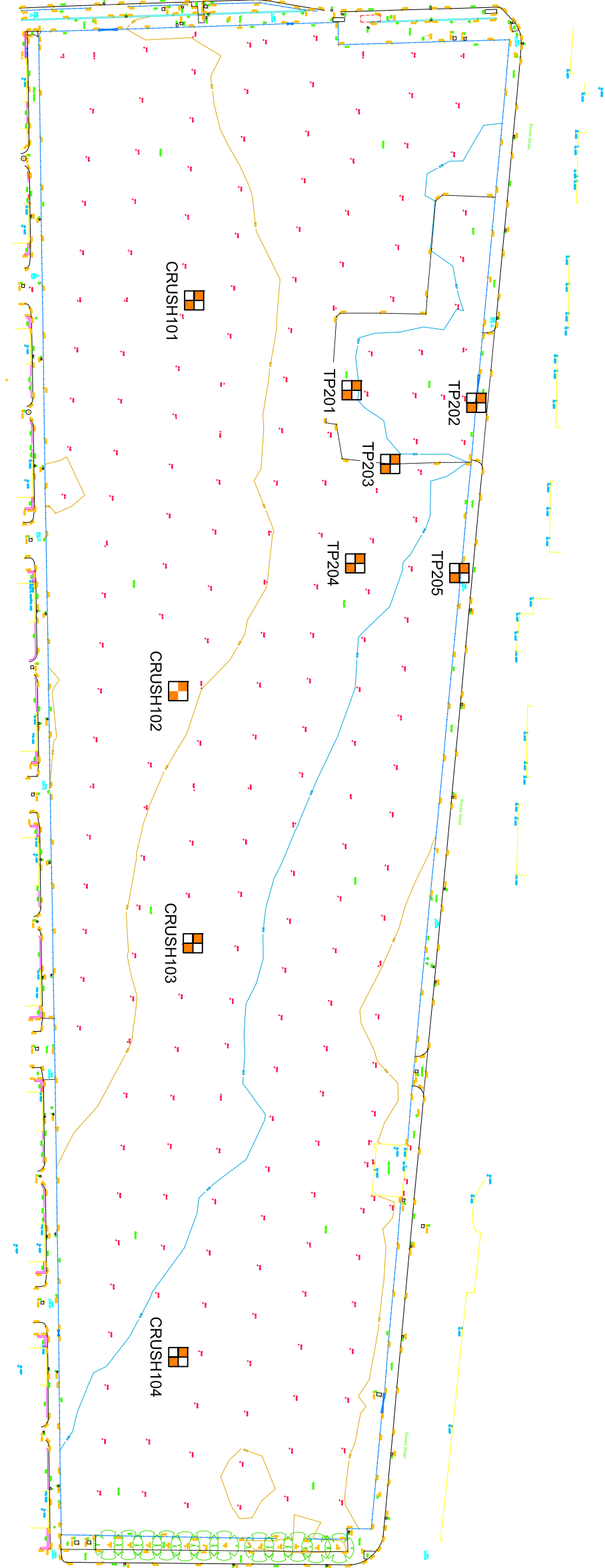
Symbol	Description
	Approximate Trial Pit Location (Capita location)
TP201	
	Approximate Trial Pit Location (Capita location)
TP201	
	Approximate Borehole Location (Capita Location)
BH101	
	Area where hydrocarbon contamination identified in surface of bedrock and within groundwater. Detailed assessment required to generate SFR's, with excavation, delineation and chemical valuation to remove impacted soils.
	Area where hydrocarbon contamination identified within near surface soils. Confirms no vertical delineation and soils to be retained in situ if houses include installation of hydrocarbon membranes, however DQCs for controlled waters required to confirm they will present no undue risks to underlying principle aquifer.
	Elevated TPHs and BTEX hotspot delineation and remediation will be required to remove volatilisation pathway or houses will require installation of hydrocarbon membranes
	Elevated naphthalene hotspot delineation and remediation will be required to remove volatilisation pathway
30,00m AOD	Average Groundwater Levels in M AOD
	Assumed Groundwater Flow

Client:	Phase	Revision	Date	Issue	Drawn	Authorised
	P1	-	02.02.2018	DRAFT	CB	MD
Rowlinson Construction						
Job No:	11-813					
	Drawing No: 006					
Date:	02.02.2018					
Scale:	1:1250 @ A3					

Job Title:	Bowes Street, Manchester
Drawing Title:	Controlled Waters Risk Assessment Plan

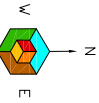


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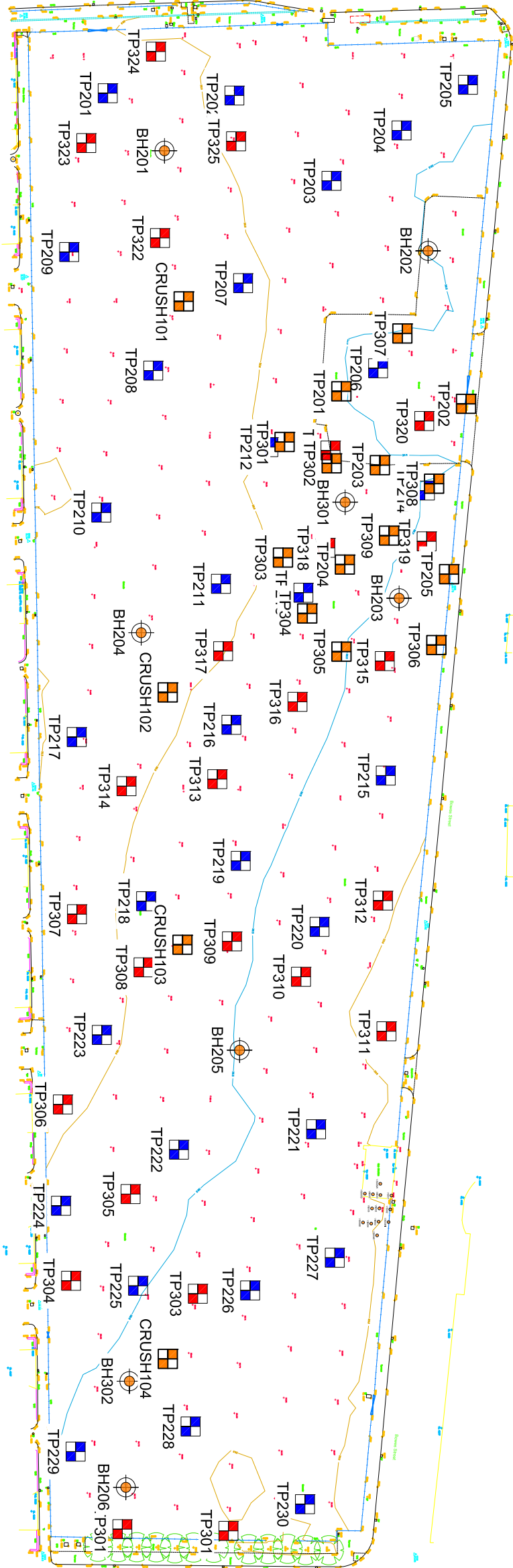
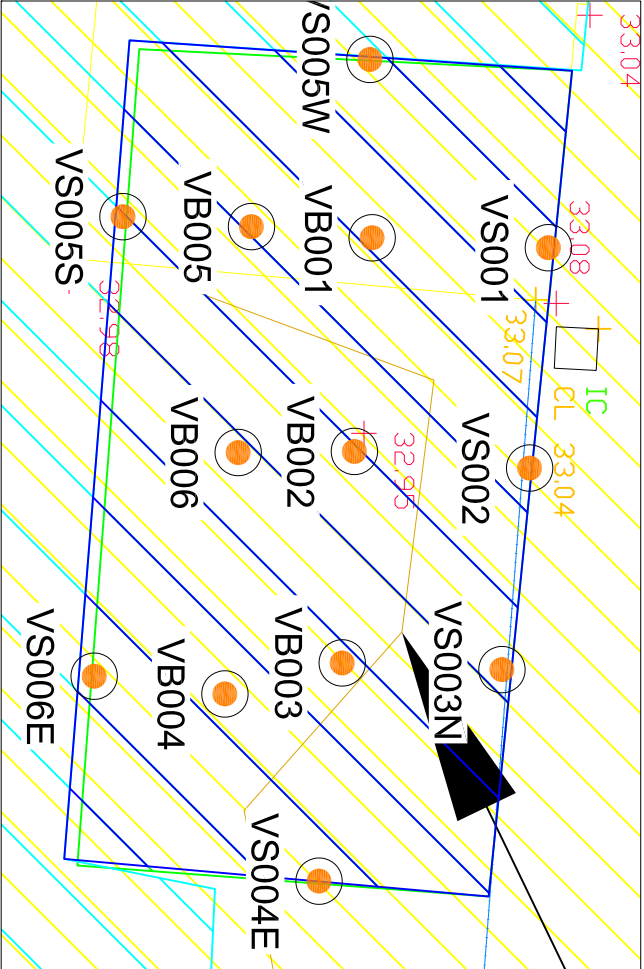
- Location Symbols**
- Approximate Trial Pit Location
 - Approximate Crush Location

P1		-	10.04.2018	DRAFT	HM	MD
Phase		Revision	Date	Issue	Drawn	Authorised
Client:		Rowlinson Construction		Job No:	11-813	Date: 10.04.2018
				Drawing No:	007	Scale: NTS
Job Title:		Bowes Street, Manchester		Drawing Title: Additional Exploratory Hole Location Plan		



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Notes:			

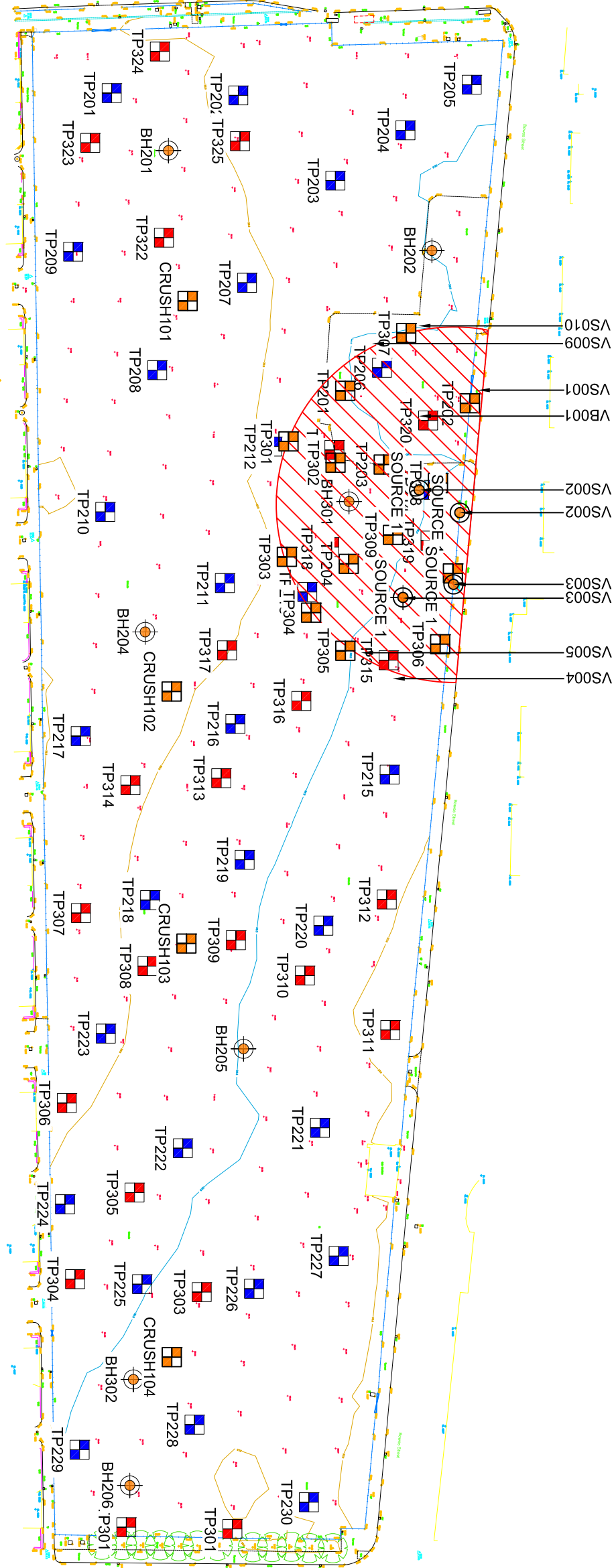
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Phase	Revision	Date	Issue	Drawn	Authorised
Client:			Job No:	11-813	Date: 12.06.2019
Rowlinson Construction			Drawing No:	010	Scale: NTS

Job Title:	Bowes Street, Manchester	Drawing Title:	Sample Location Plan
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- Location Symbols**
- TP201 Approximate Trial Pit Location (Capilla Location)
 - TP301 Approximate Trial Pit Location (Capilla Location)
 - BH101 Approximate Borehole Location (Capilla Location)
 - Hotspot Area 1 Location

Notes:			

P1	R1	04.07.2018	REVISION	HM	MD
P1	-	27.06.2018	DRAFT	CB	MD
Phase	Revision	Date	Issue	Drawn	Authorised

Client:	Job No:		Date:	
	11-813		04.07.2018	
	Drawing No:		Scale:	

Job Title:	Rowlinson Construction	Drawing Title:	Validation Location Plan
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APPENDIX IV PHOTOGRAPHS





PLATE 1 – EXCAVATION OF SOURCE AREA 1



PLATE 2 – BATTERING OF SOURCE AREA 1 EXCAVATION AGAINST ADJACENT HIGHWAY



PLATE 3 – STOCKPILING OF EXCAVATED MATERIAL FROM SOURCE AREA 1



PLATE 4 – PID MONITORING OF CONTAMINATED MATERIAL





PLATE 5 – BASE OF SOURCE AREA 1 AFTER EXCAVATION



PLATE 6 – MATERIAL SAMPLED FOR BASE VALIDATION





PLATE 7 – WIDE VIEW OF COMPLETED SOURCE AREA 1 EXCAVATION



PLATE 8 – TOP 1.0m OF RETAINED MATERIAL FROM SOURCE AREA 1





PLATE 9 – CONTAMINATED MATERIAL BEING TURNED



PLATE 10 – WEST SIDE OF SOURCE AREA 1 EXCAVATION





PLATE 11 – INFILLED SOURCE AREA 1



PLATE 12 –INSTALLED VAPOUR RISK ASSESSMENT BOREHOLES





PLATE 13 – FURTHER BOREHOLES

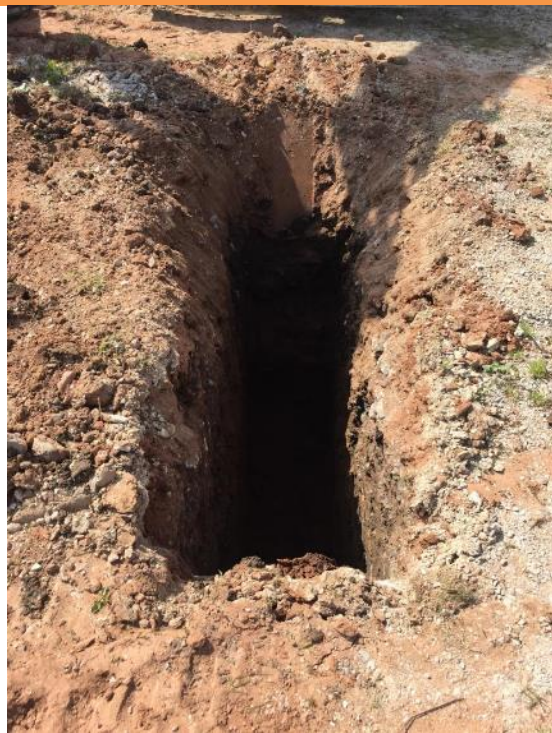


PLATE 14 – SOURCE AREA 2 FURTHER INVESTIGATION TRIAL PIT





PLATE 15 – SOURCE AREA 2 FURTHER INVESTIGATION ARISINGS



PLATE 16 – SOURCE AREA 2 FURTHER INVESTIGATION TRIAL PIT





PLATE 17 – SOURCE AREA 2 FURTHER INVESTIGATION ARISING



PLATE 18 – SOURCE AREA 2 FURTHER INVESTIGATION ARISING





PLATE 19 – EAST OF SITE



PLATE 20 – VIEW OF SITE FACING EAST





PLATE 21 – VIEW OF WEST OF SITE



PLATE 22 – WEST OF SITE





PLATE 23 – UNDERGROUND OBSTRUCTIONS FROM SOURCE AREA 1



PLATE 24 – PRELIMINARY TRIAL PITS IN VINICITY OF SUBSTATION





PLATE 25 – PRELIMINARY TRIAL PITS IN VINICITY OF SUBSTATION



PLATE 26 – ARISINGS OF PRELIMINARY TRIAL PITS



PLATE 27 – ARISINGS OF PRELIMINARY TRIAL PITS



PLATE 28 – POST DEMOLITION EXCAVATION BENEATH SUBSTATION





PLATE 29 – IMPACTED MATERIAL BENEATH SUBSTATION



PLATE 30 – REMNANT CONTAMINATION AT VB004





PLATE 31 – CLEAN BASE AND BATTERED SIDES OF EXCAVATION DURING VALIDATION



PLATE 32 – IN SITU UNDERGROUND TANK BENEATH FORMER SUBSTATION

