

Project name	Islington Wharf Phase 4		
Design note title	Investigation of PAH, Arsenic and Lead impacted soils		
Document reference	10042-HYD-XX-XX-RP-GE-0003		
Author	Jason Bradley BSc MSc FGS		
Checked	Danny Hope BSc (Hons) MSc MCIWEM CEnv C.WEM SiLC		
Revision	S2_P1		
Date	12 June 2020	Approved	✓

Introduction

Terms of Reference

Hydrock were instructed by Waterside Places (the client) on 24th April 2020 to undertake a supplementary ground investigation at the site known as Islington Wharf Phase 4, which extends to approximately 0.18 ha and currently comprises an area of relatively flat brownfield land.

The supplementary investigation was undertaken in accordance with Hydrock fee proposal C-10042-FP-GE-0002, and was based on recommendations provided by Hydrock within Ground Investigation Report 10042-HYD-XX-XX-RP-GE-0002-S2-P02.

Proposed Development

The proposed development, as shown on Ryder Architecture drawing (ref. IW4-RYD-00-XX-VS-A-3610), presented in Appendix A, is to comprise a mixed commercial and residential end use with associated car parking in the south west and soft landscaping at the north and east perimeter. The apartment blocks will vary in height between 16 storeys and 11 storeys high.

Background & Objectives

The January 2020 investigation identified significantly elevated concentrations of polycyclic aromatic hydrocarbons (PAH) in the Made Ground at four locations (TP02, TP03, TP04 and BH04), and arsenic and lead at one location (TP02). The areas of impacted Made Ground are shown on Hydrock drawing 10042-HYD-XX-XX-DR-GE-0004 provided in Appendix A.

The ground investigation in January 2020 identified the requirement for additional ground investigation to establish the depths at which Made Ground is impacted by PAH, arsenic and lead.

The site is to be redeveloped as a residential apartment block with external hard standing covering the majority of the site and an area of soft landscaping. In the January 2020 investigation PAH, arsenic and lead were found at elevated concentrations which potentially present a risk to human health, shallow groundwater and also have the potential to create a temporary pathway to deeper strata and groundwater during piling works.

The purpose of the investigation is to determine an approximate volume of material impacted by PAH and metals to inform the cut and fill design.

Once the volume is calculated and dependent on the PAH and metal concentrations, it may be possible to reuse the material on site away from areas of proposed piling.

Scope

The scope of the supplementary ground investigation comprised:

A ground investigation using trial pitting to:

- obtain further data on the depth of the Made Ground at the PAH hot spot and arsenic and lead hot spot;
- allow the collection of samples at 0.5m intervals within the Made Ground for laboratory analysis (speciated PAH16) from TP101 – TP104, (Arsenic and Lead) from TP106 - TP108; and
- allow the collection of a sample within the Made Ground for Waste Acceptance Criteria (WAC) laboratory analysis from TP105.

An interpretive letter report, which will include the following:

- factual ground investigation data including:
 - » record of observations made during the fieldwork
 - » logs of the exploratory holes;
 - » exploratory hole location plan;
- generic quantitative risk assessment using laboratory data;
- an updated Conceptual Site Model (CSM), including identification of plausible pollution linkages; and
- Drawing identifying the extents of the PAH hot spot.

Ground Investigation

Fieldwork

Fieldwork was undertaken on 30th April 2020 and 28th May 2020 comprising a total of eight trial pits, including TP101 – TP104 located within the area of the known PAH hotspot, TP106 - TP108 located within the area of the known arsenic and lead hotspot and TP105 located in the vicinity of the previously formed TP05.

The ground investigation locations were surveyed in using topographic survey quality GPS and are shown on the Exploratory Hole Location Plan (10042-HYD-XX-XX-DR-GE-0005) in Appendix C.

Trial pits were dug using a 13-tonne tracked excavator (TP101-TP105) and JCB 3CX (TP106-TP108), and were formed to depths ranging between 1.10m and 3.60m bgl. On completion, trial pits were backfilled with arisings. The logs, including details of ground conditions and soil sampling, are also presented in Appendix C.

Table 1 below presents the rationale behind the exploratory holes excavated in this latest phase of works.

Table 1. Exploratory hole Rationale

Exploratory Holes	Rationale
TP101 to TP104	Excavation in the vicinity of deep Made Ground proven to contain elevated PAH contamination in the original investigation.
TP105	Excavation in the vicinity of TP05 to determine the likely waste classification of the Made Ground.
TP106 to TP108	Excavation in the vicinity of TP02 where significantly elevated concentrations of arsenic and lead were encountered in the Made Ground.

Sampling strategy & protocols

In trial pits TP101 – TP108 the Made Ground was sampled at 0.50m depth intervals to establish the vertical distribution of PAH, arsenic and lead impacted material. In total the testing comprised the following:

- 20 samples analysed for Speciated PAH
- 19 samples analysed for arsenic and lead
- 1 sample analysed for Waste Acceptance Criteria

Samples were taken, stored and transported in general accordance with BS 10175:2011+A2:2017 to a UKAS and MCERTS accredited laboratory.

Ground Investigation Records and data

Summary of strata encountered

Details of the ground investigation works are provided in the logs in Appendix B, and the individual strata are described below.

Surface Covering

Asphalt was encountered at TP101-TP106, this is in good condition having been recently laid as part of the construction compound previously located on site.

Granular sub base material was encountered at TP107 and TP108 comprising beige sandy gravel of Limestone.

Made Ground

Below the surface covering, Made Ground was recorded at each location to depths between 1.00 and >3.50m bgl. The Made Ground generally comprised dark brownish black slightly sandy ashy gravel and cobbles with metal, clinker, plastic and ceramic fragments and rare wood and rootlets. The gravel and cobbles generally consisted of brick, concrete, tarmac and sandstone. Numerous old car wheels and tyres were also encountered within the Made Ground.

A thin layer (0.30-0.50m) of reworked clay was also encountered in TP101 and TP103 at 2.70m and 3.00m bgl. The material is soft orange/brown silty gravelly clay with brick, clinker and ashy pockets.

Table 2 below shows the depth of Made Ground encountered in the latest Trial pits.

Table 2. Made Ground Depth

Exploratory Hole	Base of Made Ground (mBgl)	Exploratory Hole	Base of Made Ground (mBgl)
TP101	3.00	TP105	1.30
TP102	>2.80*	TP106	>3.00 *
TP103	3.50	TP107	>3.00 *
TP104	1.00	TP108	>3.50

* Unable to prove base of Made Ground due to the instability of the side walls of the pits causing collapse.

Glacial Till

Glacial Till was encountered beneath the Made Ground. The Glacial Till is firm brown slightly silty CLAY with occasional blue veining in trial pits TP101 and TP103 and in trial pits TP104 and TP105, comprised firm light brown slightly gravelly silty CLAY. Gravel is of fine to medium sub angular to sub rounded sandstone.

Groundwater

Groundwater was encountered as a slight seepage at the base of the Made Ground in one trial pit (TP103) at 3.40m bgl.

Visual and olfactory evidence of contamination

The Made Ground is reported to be ashy with gravel of clinker and tarmac present throughout. The reworked clay layer also had pockets of ash with clinker.

Tarmac planings in the form of gravel and cobbles were frequent in TP101 and TP102. A bulk sample of the tarmac was collected from TP102 at 2.3 – 2.6m bgl and scheduled for PAH16 analysis.

Trial Pit photographs are provided in Appendix C.

Chemical Analysis Results

Polycyclic aromatic hydrocarbons (PAH)

A total of 20 samples were collected between 0.20 m and 3.50m bgl in the Made Ground at TP101-TP104, and tested for speciated polycyclic aromatic hydrocarbons (PAH16). The full laboratory analysis results are provided in Appendix D.

The results indicate the presence of significantly elevated concentrations of Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3,cd)pyrene.

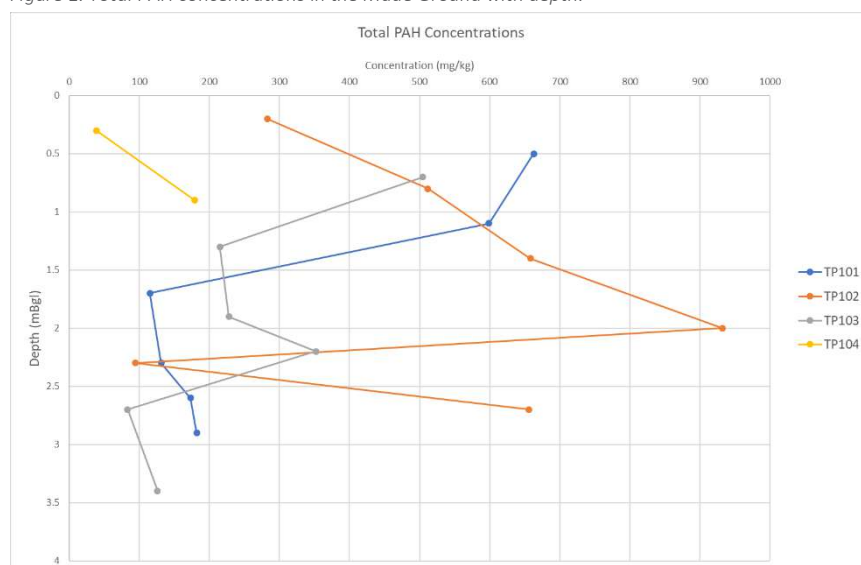
The elevated concentrations of PAH found at the following locations and depths are summarised in table 3 below:

Table 3. PAH in the Made Ground

Exploratory Hole	Depth range	Comments
TP101	0.50 - 1.70	Elevated PAH concentrations
TP102	0.20 - >2.80*	Elevated PAH concentrations
TP103	0.70 - 2.70	Elevated PAH concentrations
TP104	0.30 - 1.00	No elevated PAH concentrations

The assessment indicates that the Made Ground impacted by elevated concentrations of PAH is confined to TP101, TP102 and TP103, with the depth of impacted material variable between locations. In TP103 PAH impacted material is known to be present to at least 2.80m and has the potential to extend to the full depth of the Made Ground. The distribution of total PAH concentration with depth is shown in figure 1 below.

Figure 1. Total PAH concentrations in the Made Ground with depth.



An updated contamination zonation plan 10042-HYD-XX-XX-DR-GE-0006 is also provided in Appendix A.

Arsenic and Lead

A total of 19 samples were collected between 0.40 m and 3.50m bgl in the Made Ground at TP106-TP108, and tested for Arsenic and Lead. The full laboratory analysis results are provided in Appendix D.

The results indicate the presence of significantly elevated concentrations of Arsenic and Lead.

The significant exceedances of Arsenic and Lead found at the following locations and depths are summarised in table 4 below:

Table 4. Arsenic and Lead in the Made Ground

Exploratory Hole	Depth range	Comments
TP106	0.50 - 1.50	Elevated arsenic and lead concentrations
TP107	0.40 - 2.40	Elevated arsenic and lead concentrations
TP108	0.40 - 0.90	Elevated arsenic and lead concentrations

The assessment indicates that the Made Ground in the areas around TP106-TP108 are impacted by elevated concentrations of arsenic and lead, with the depth of impacted material variable between locations.

No elevated concentrations of arsenic and lead were identified below 2.40m bgl. The base of the Made Ground was unproven in TP106-TP108. However, there is clear evidence that arsenic and lead concentrations decrease with depth, and therefore the Made Ground below 3.50m is not envisaged to pose a significant risk. The distribution of Lead concentration with depth and Arsenic concentrations with depth are shown on figure 2 and figure 3 respectively, below.

Figure 2. Lead concentration in the Made Ground with depth.

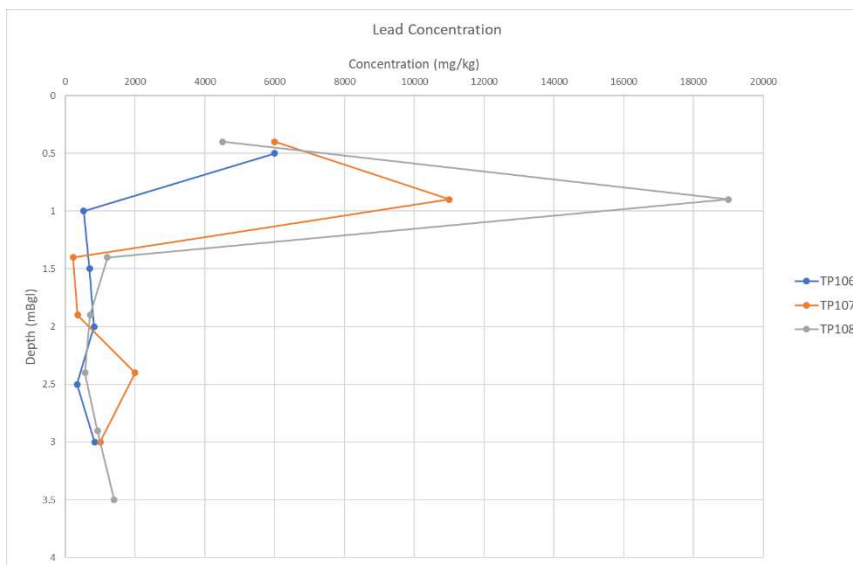
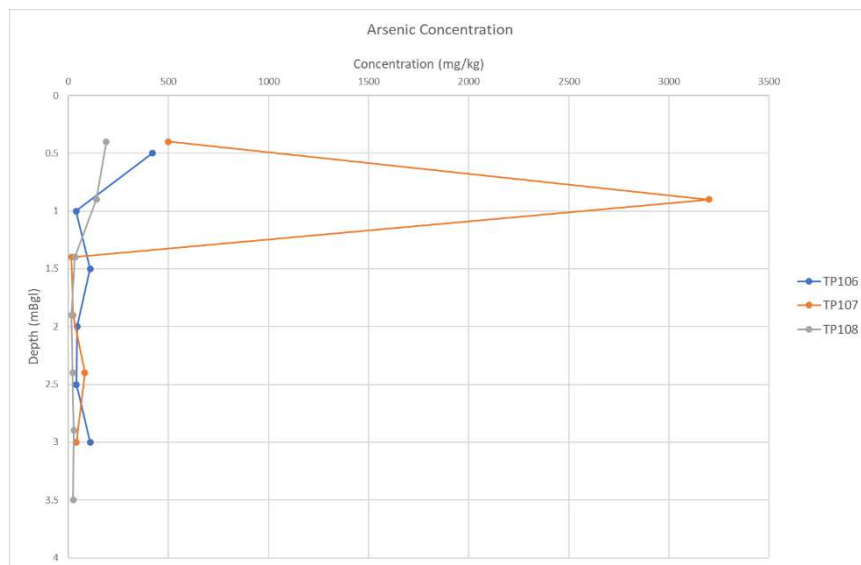


Figure 3. Arsenic concentration in the Made Ground with depth.



An updated contamination zonation plan 10042-HYD-XX-XX-DR-GE-0006 is also provided in Appendix A.

Waste Acceptance Criteria (WAC)

A WAC test previously undertaken on the Made Ground at TP05 (January investigation) classified the material as hazardous waste due to the non-hazardous threshold for Loss on Ignition (LOI) over the limit by 0.1%. Hydrock have completed a HazWasteOnline™ assessment of the Made Ground at TP05 and this has designated the material as non-hazardous. However it should be noted that ACM was encountered in this location which unless picked may mean the soils could be classed as hazardous. For previous results refer to Hydrock report 10042-HYD-XX-XX-RP-GE-0002-S2-P02.

During this investigation a single sample of the Made Ground from TP105 (located adjacent to TP05) at 0.50m to 1.0m bgl. was tested for Waste Acceptance Criteria analysis. The results indicate the material is classed as non-hazardous due to elevated concentrations of PAH and fluoride. The full laboratory analysis results are provided in Appendix D.

It should be noted that the chemical results should be provided to the receiving landfill operator and the final decision on the classification of the material will be provided by them.

Conclusion

Polycyclic aromatic hydrocarbons (PAH)

The presence of PAH at significant concentrations in the Made Ground at TP101, TP102 and TP103 presents a risk during piling work to the underlying Secondary (undifferentiated) Aquifer. Piling work is expected to create a temporary pathway between the PAH impacted Made Ground and the founding strata of the Glacial Till.

The proposed footprint of the new building is in the north and west of the site, with the PAH impacted Made Ground only slightly encroaching beneath the proposed building, shown on zonation plan 10042-HYD-XX-XX-DR-GE-0007 provided in Appendix A.

The position of the new building footprint, in relation to the PAH hot spot suggests that the majority of the PAH impacted soils will be unaffected by piling works, with the area around TP103 the only plausible risk for creating a temporary pathway during piling.

It is recommended the Made Ground at TP103 is excavated to 2.70m bgl. (the depth of impacted material), and any hot spot material near TP103 within a 1.0m radius of pile locations is also excavated. It is recommended the material excavated from the hotspot is either disposed of off-site and replaced with chemically and geotechnically suitable fill or moved to an area of the site where no piling work is undertaken (subject to further assessment of the risk to human health and the environment). The area of hot spot required for excavation is 7.06m² and 2.70m depth, equalling a volume of approximately 19.06m³ of excavated material. For the hot spot excavation location refer to drawing 10042-HYD-XX-XX-DR-GE-0008 provided in Appendix A.

Full details of the excavation requirements and wider site earthworks for the development are to be confirmed in a Remediation Strategy and Materials Management Plan for the approval of the local authority and Environment Agency.

Arsenic and Lead

The presence of arsenic and lead at significant concentrations in the Made Ground at TP106-TP108 presents a risk during piling work to the underlying Secondary (undifferentiated) Aquifer. Piling work is expected to create a temporary pathway between the PAH impacted Made Ground and the founding strata of the Glacial Till.

The proposed footprint of the new building is in the north and west of the site, with the arsenic and lead impacted Made Ground present beneath the north east corner of the proposed building, shown on zonation plan 10042-HYD-XX-XX-DR-GE-0007 provided in Appendix A.

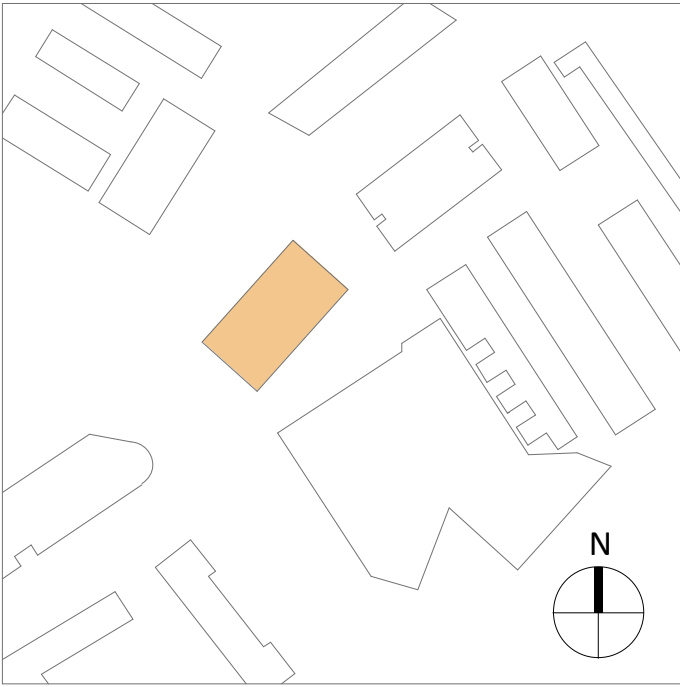
The area of arsenic and lead impacted Made Ground is entirely beneath the proposed new building. Consequently, the impacted soils will be affected by piling works, and so a plausible risk remains for creating a temporary pathway during piling.

It is recommended the Made Ground at TP107 is excavated to 2.40m bgl. (the depth of impacted material), and the Made Ground at TP106 and TP108 is excavated to 1.50m bgl. It is recommended the material excavated from the hotspot is either disposed of off-site and replaced with chemically and geotechnically suitable fill or moved to an area of the site where no piling work is undertaken (subject to further assessment of the risk to human health and the environment).

The area of hot spot required for excavation at TP107 is 17.61m² and 2.40m depth, equalling a volume of approximately 42.26m³ of excavated material. The area of hot spot required for excavation at TP106 and TP108 is 34.19m² and 1.50m depth, equalling a volume of approximately 51.28m³ of excavated material. For the hot spot excavation locations refer to drawing 10042-HYD-XX-XX-DR-GE-0008 provided in Appendix A.

Full details of the excavation requirements and wider site earthworks for the development are to be confirmed in a Remediation Strategy and Materials Management Plan for the approval of the local authority and Environment Agency.

Appendix A Drawings



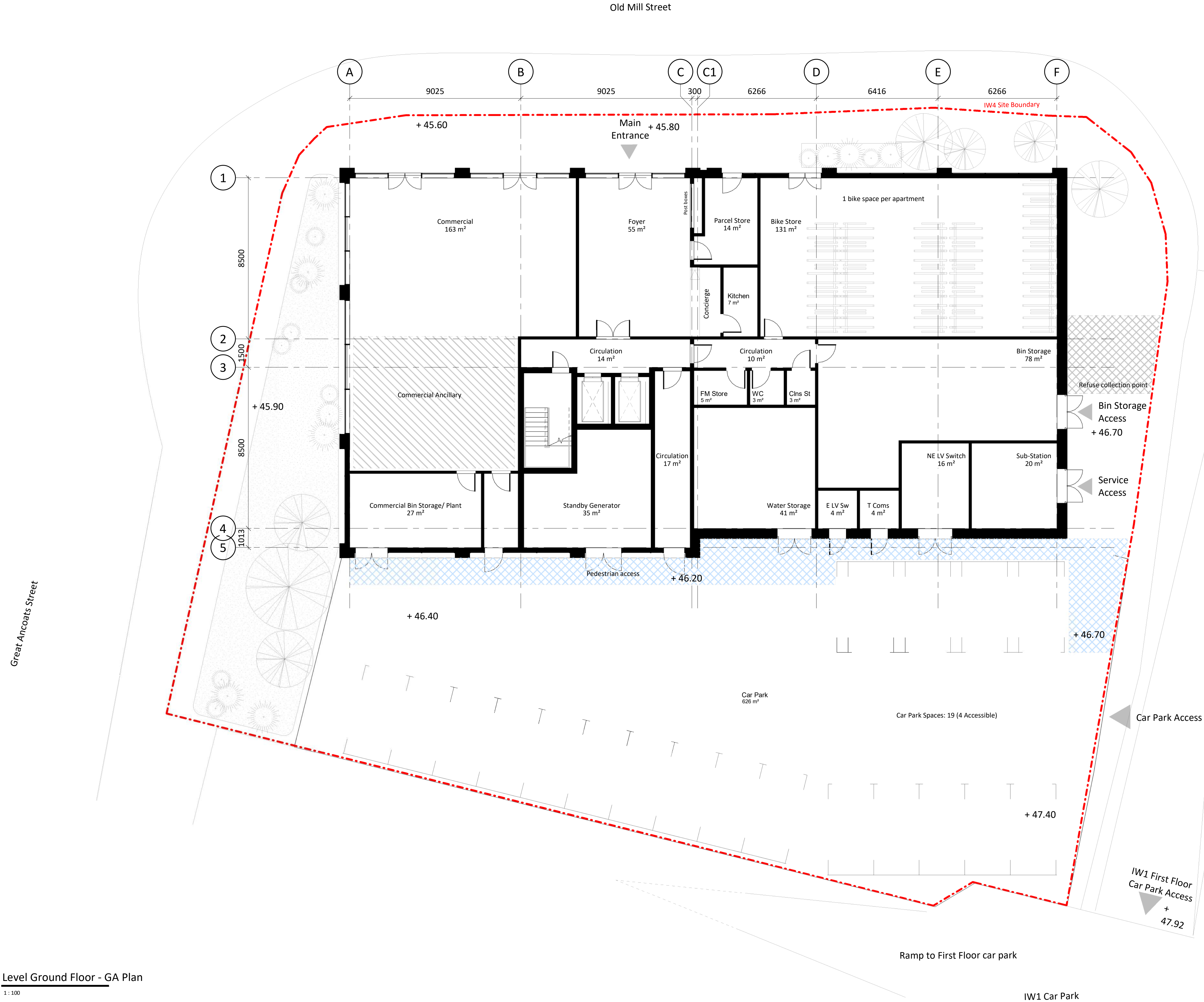
Flat Type Count and Unit Mix		
Name	Count	Unit Mix
1B2P	33	31.1%
2B4P	73	68.9%
Grand total: 106		

Total Car Park Spaces:	19 (4 accessible)
Total Cycle spaces:	106 (1:1 ratio)
Refuse Capacity:	12 x 240 L 22 x 1110 L

Note: refuse capacity calculated using the Manchester Residential Quality Guidance

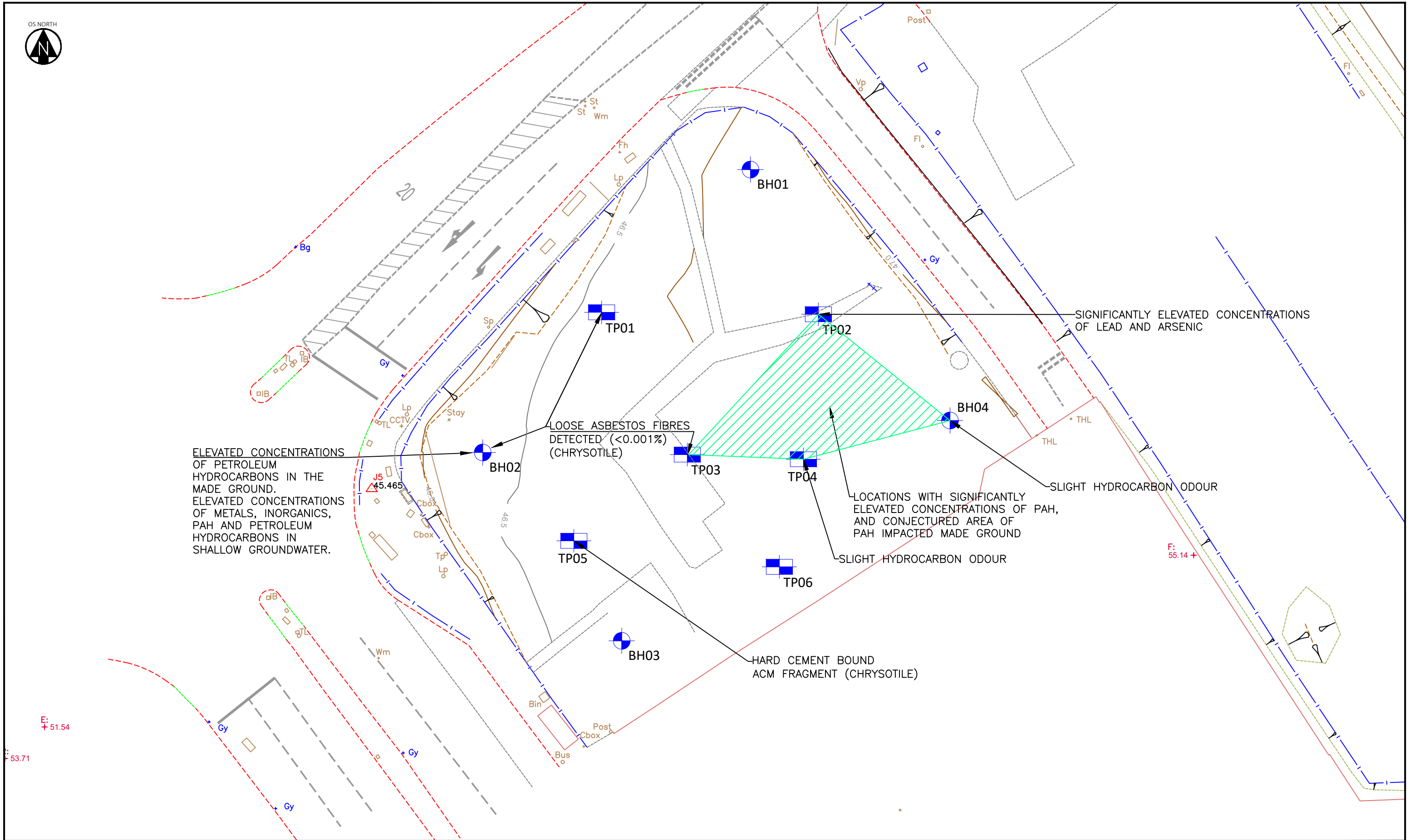
Revision	Date	Drawn by	Checked by
P03	04.02.20	AAI	MSmi
Partition shown between Lobby and Commercial area Concierge kitchen and WC added. Cleaners Store added External doors added to Generator and Commercial Bin Store			
Revision	Date	Drawn by	Checked by
P02	27.01.20	AAI	MSmi
Updated following Design Review			
Revision	Date	Drawn by	Checked by
P01	18.12.19	HBa	MSmi
First issue for comment			
Amendment			
Purpose of issue			
Issued for information			
Project			
Muse Development Islington Wharf - Phase 4 Manchester			
Drawing			
Level 00 - GA Plan			

Drawing No.	Originator	Zone	Level	Type	Role	Number
Project ID	-	RYD	-00-00-DR-	A	-	3000
IW4						
Ryder Project No.	Scale at A1	Drawn By	Status	Revision		
2791-04	As	HBa	S2	P03		
indicated						

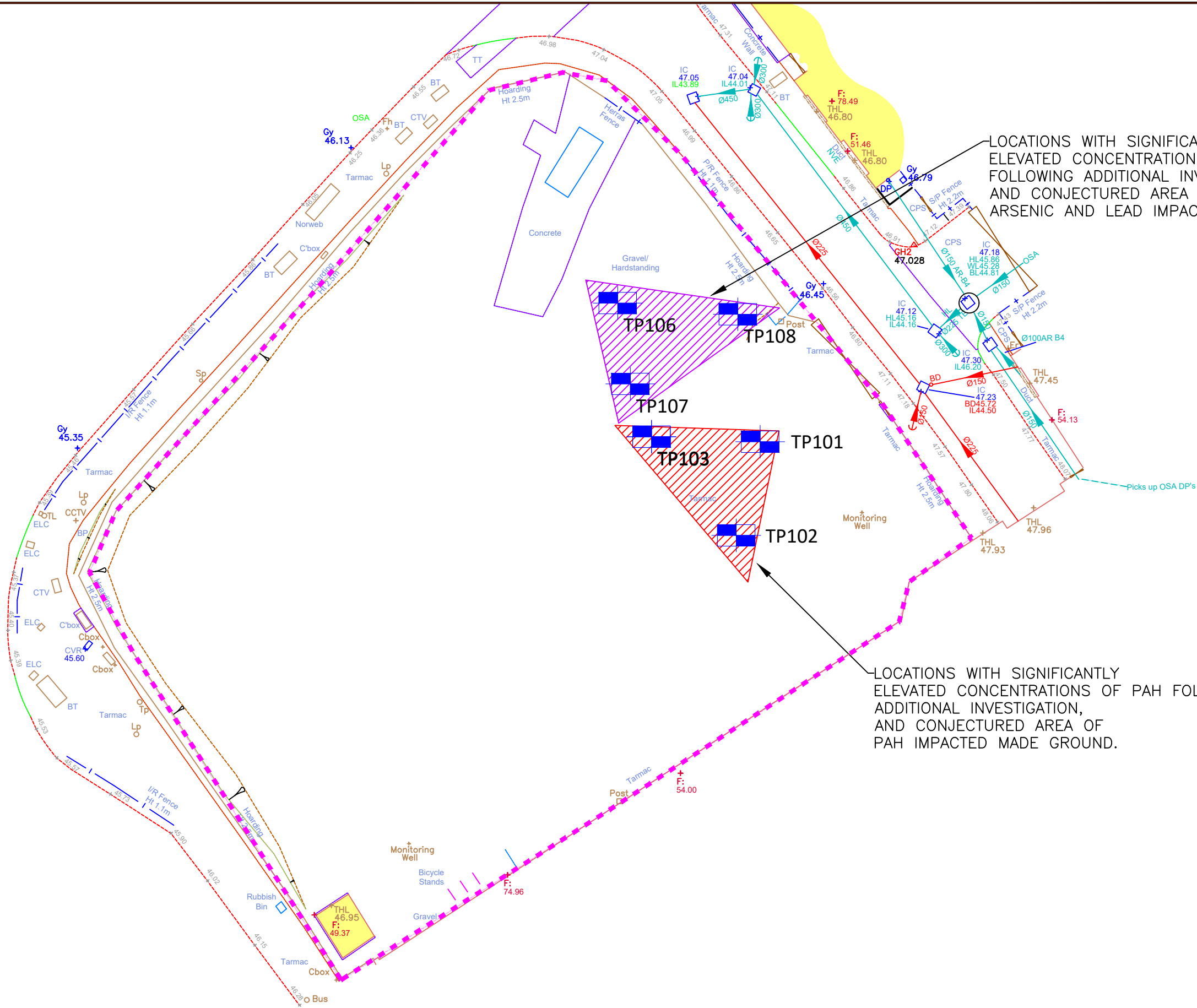


Ramp to First Floor car park

IW1 Car Park



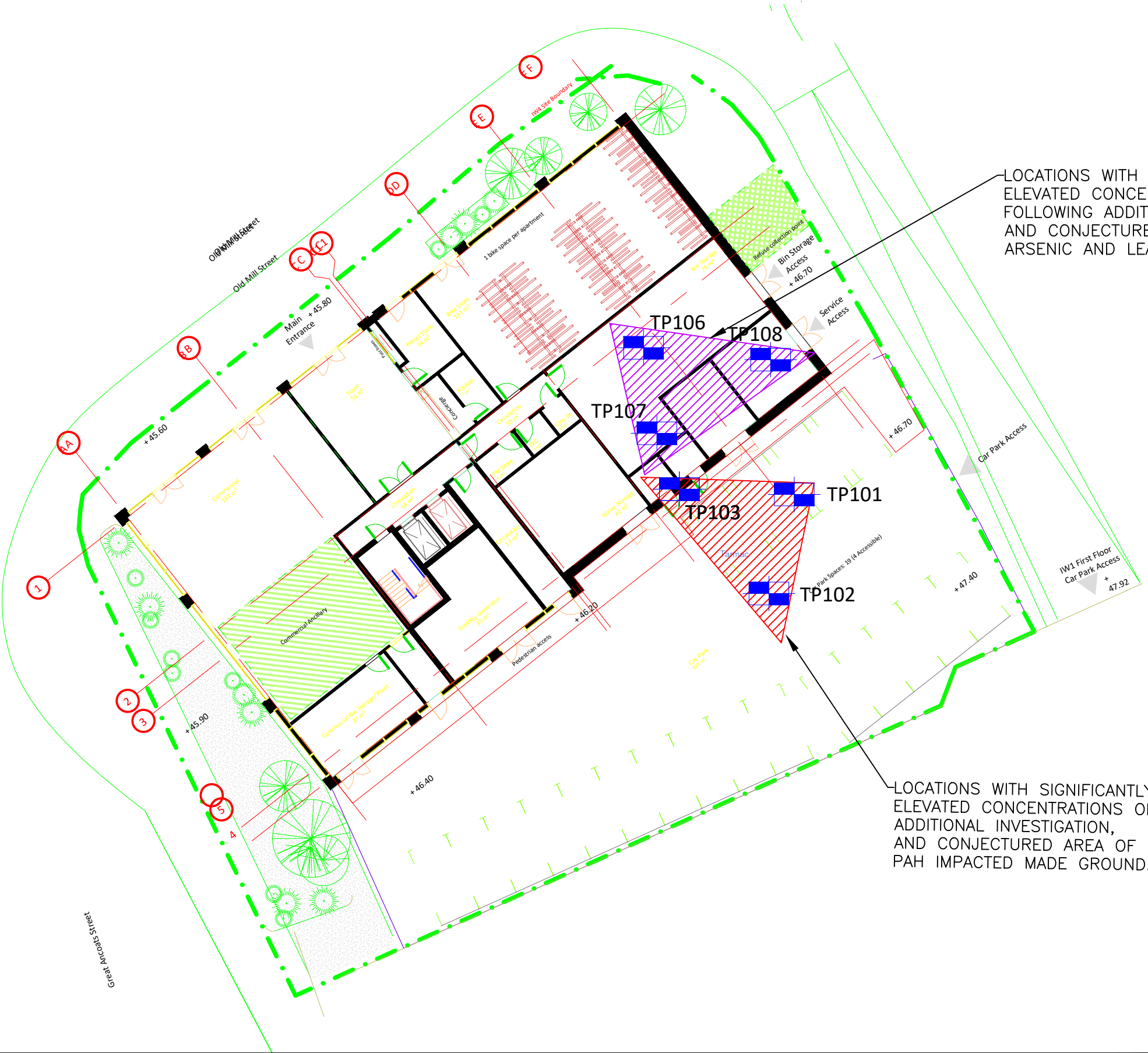
KEY TPXX BHXX Hydrock Trial Pit Hydrock Borehole	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: xxxxxxx			Hydrock 4 Lakeside Festival Way Stoke-on-Trent ST1 5BY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com CLIENT MUSE DEVELOPMENTS PROJECT ISLINGTON WHARF PHASE 4	TITLE CONTAMINATION ZONATION PLAN		
					HYDROCK PROJECT NO. C-10042 SCALE @ A3 NTS		
					PURPOSE OF ISSUE SUITABLE FOR INFORMATION		STATUS S2
					DRAWING NO. (PROJECT CODE ORIGINATOR_ZONE_LEVEL_TYPE_ROLE_NUMBER) 10042-HYD-XX-XX-DR-GE-0004		REVISION P1



LOCATIONS WITH SIGNIFICANTLY ELEVATED CONCENTRATIONS OF ARSENIC AND LEAD FOLLOWING ADDITIONAL INVESTIGATION, AND CONJECTURED AREA OF ARSENIC AND LEAD IMPACTED MADE GROUND.

LOCATIONS WITH SIGNIFICANTLY ELEVATED CONCENTRATIONS OF PAH FOLLOWING ADDITIONAL INVESTIGATION, AND CONJECTURED AREA OF PAH IMPACTED MADE GROUND.

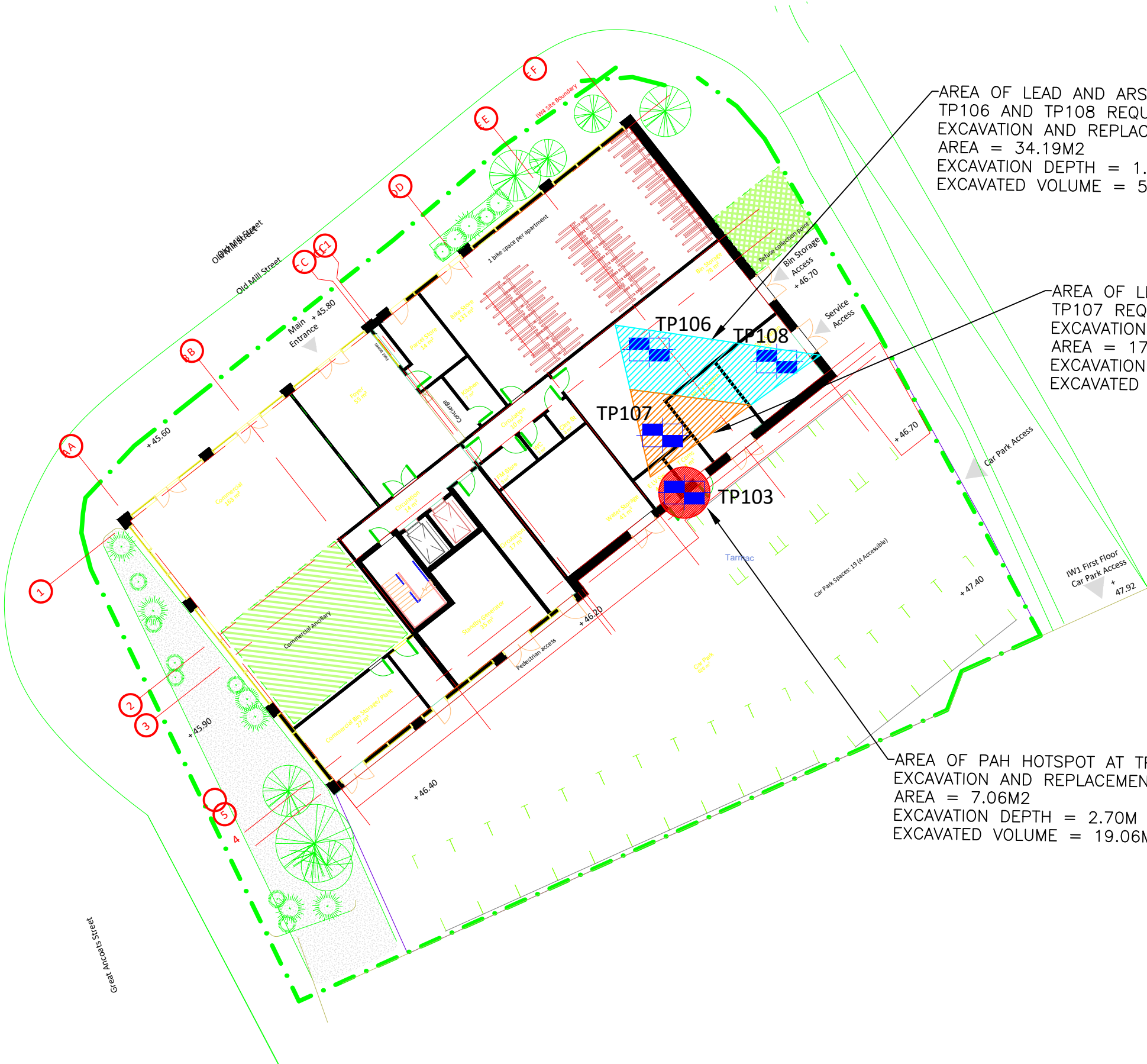
KEY	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: xxxxxxxx				Hydrock 4 Lakeside Festival Way Stoke-on-Trent ST1 5RY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com	TITLE	
						UPDATED CONTAMINATION ZONATION	
						PLAN -	
						EXISTING LAYOUT	
						HYDROCK PROJECT NO. C-10042	SCALE @ A3 NTS
						PURPOSE OF ISSUE	
						SUITABLE FOR INFORMATION	
						STATUS	
						S2	
						DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	
10042-HYD-XX-XX-DR-GE-0006							
REVISION							
P1							



LOCATIONS WITH SIGNIFICANTLY ELEVATED CONCENTRATIONS OF ARSENIC AND LEAD FOLLOWING ADDITIONAL INVESTIGATION, AND CONJECTURED AREA OF ARSENIC AND LEAD IMPACTED MADE GROUND.

LOCATIONS WITH SIGNIFICANTLY ELEVATED CONCENTRATIONS OF PAH FOLLOWING ADDITIONAL INVESTIGATION, AND CONJECTURED AREA OF PAH IMPACTED MADE GROUND.

KEY	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: xxxxxxx				Hydrock 4 Lakeside Festival Way Stoke-on-Trent ST1 5RY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com	TITLE	
						UPDATED CONTAMINATION ZONATION	
						PLAN -	
						PROPOSED LAYOUT	
						HYDROCK PROJECT NO. C-10042	SCALE @ A3 NTS
						PURPOSE OF ISSUE SUITABLE FOR INFORMATION	
						STATUS S2	
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 10042-HYD-XX-XX-DR-GE-0007							
REVISION P1							



AREA OF LEAD AND ARSENIC HOTSPOT AT TP106 AND TP108 REQUIRING EXCAVATION AND REPLACEMENT.
AREA = 34.19M2
EXCAVATION DEPTH = 1.50M
EXCAVATED VOLUME = 51.28M3

AREA OF LEAD AND ARSENIC HOTSPOT AT TP107 REQUIRING EXCAVATION AND REPLACEMENT.
AREA = 17.61M2
EXCAVATION DEPTH = 2.40M
EXCAVATED VOLUME = 42.26M3

AREA OF PAH HOTSPOT AT TP103 REQUIRING EXCAVATION AND REPLACEMENT.
AREA = 7.06M2
EXCAVATION DEPTH = 2.70M
EXCAVATED VOLUME = 19.06M3

KEY	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: xxxxxxx					Hydrock 4 Lakeside Festival Way Stoke-on-Trent ST1 5RY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com	TITLE				
							AREA OF PAH HOT SPOT REQUIRING REMEDICATION - PROPOSED LAYOUT				
							HYDROCK PROJECT NO. C-10042		SCALE @ A3 NTS		
							PURPOSE OF ISSUE SUITABLE FOR INFORMATION				STATUS S2
							DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 10042-HYD-XX-XX-DR-GE-0008				REVISION P1

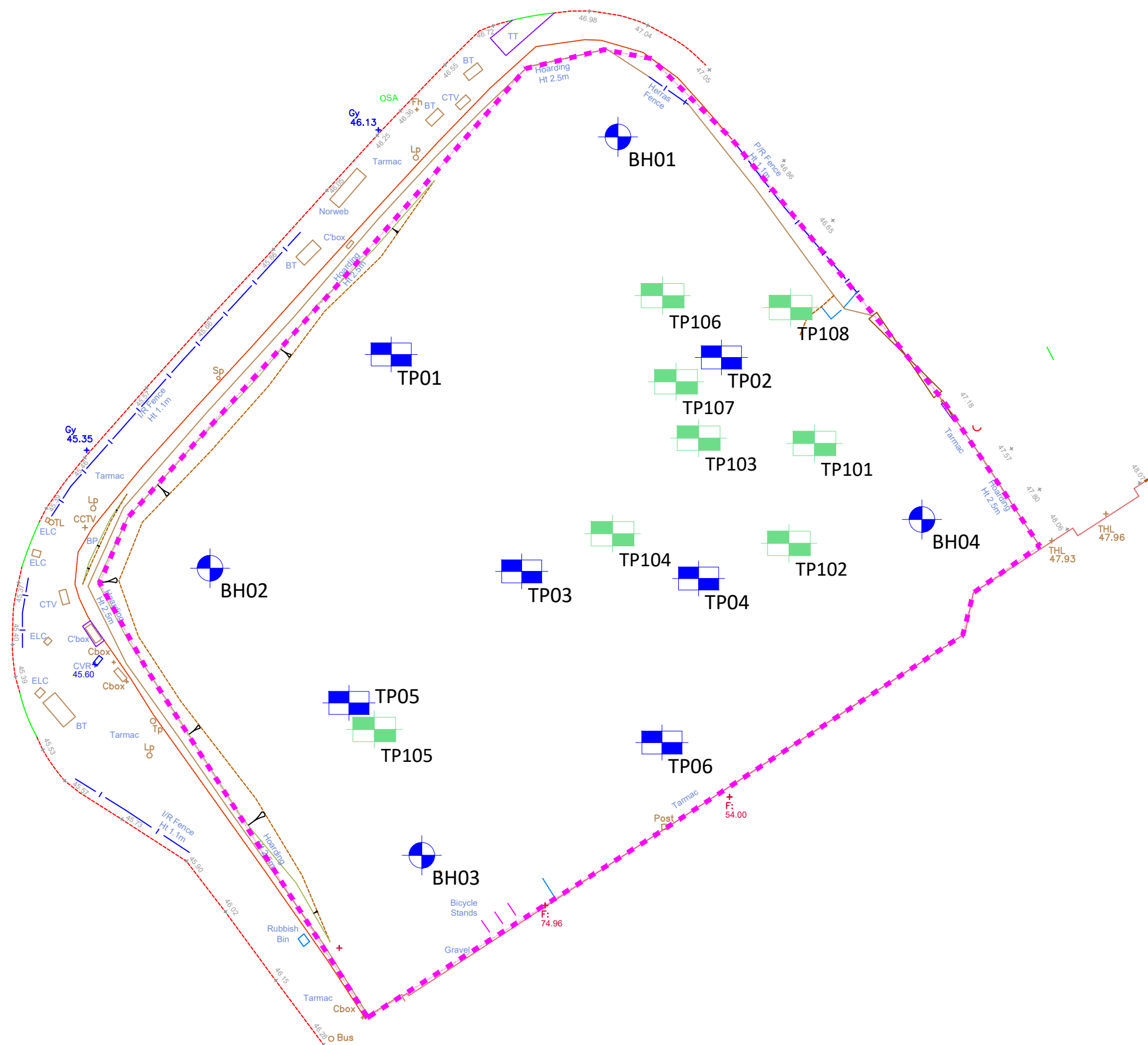
Appendix B Exploratory Hole Logs and Location Plan



398260N

398240N

398220N



KEY  TP01 MAIN GI EXPLORATORY LOCATIONS  TP101 DELINEATION GI EXPLORATORY LOCATIONS	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: xxxxxxx			 4 Lakeside Festival Way Stoke-on-Trent ST1 5RY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com CLIENT WATERSIDE PLACES	TITLE EXPLORATORY HOLE PLAN - SUPPLEMENTARY WORK LOCATIONS & PREVIOUS LOCATIONS HYDROCK PROJECT NO. C-10042 SCALE @ A3 NTS PURPOSE OF ISSUE SUITABLE FOR INFORMATION STATUS S2 DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 10042-HYD-XX-XX-DR-GE-0005 REVISION P1
				PROJECT ISLINGTON WHARF PHASE 4	
			P1 FIRST ISSUE JB 02/06/2020 NAME XX/XX/XX NAME XX/XX/XX		
			REV REVISION NOTES/COMMENTS DRAWN BY DATE CHECKED BY DATE APPROVED BY DATE		

Project Name: Islington Wharf Phase 4

Dimensions: 0.80m x 3.80m

Hole Type:
TP

Location: Great Ancoats Street / Old Mill Street,
Manchester, M4 6DN

Project No:
C-10042-C

Co-ords: 385262E, 398256N

Ground Level: 47.23m C

Scale:
1:25

Client: Waterside Places

Date(s): 30/04/20

Plant Used:
13t Excavator

5.0

Remarks:

1) Location cleared for utilities and UXO 2) Trial pit complete at 3.3m bgl at request of site engineer 3) Trial pit backfilled with arisings on completion

B = Bulk Sample
D = Disturbed Sample
ES = Environmental Sample
W = Water Sample
PID = Photoionization Detector (ppm)
CBR = In Situ California Bearing Ratio (%)
HSV = Hand Shear Vane (kPa)
HP = Hand Penetrometer (kPa)
AB = Asbestos Bulk Sample

Stability:

Stable.

Groundwater:

Groundwater not encountered

Logged:

JB

Checked:	
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Trial Pit

Trial Pit No:
TP102

Sheet 1 of 1

Project Name: Islington Wharf Phase 4

Dimensions: 0.80m x 2.80m

Hole Type:
TP

Location: Great Ancoats Street / Old Mill Street,
Manchester, M4 6DN

Project No:
C-10042-C

Co-ords:	385260E, 398250N
Ground Level:	47.47m OD

Scale:
1:25

Client: Waterside Places

Date(s): 30/04/20

Plant Used:
13t Excavator

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.05	47.42		Asphalt. (MADE GROUND)	1.0 2.0 3.0 4.0 5.0
	0.20 - 0.30	ES		0.20	47.27		Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND)	
	0.80 - 0.90	ES					Dark brownish black slightly sandy ashey GRAVEL and COBBLES. Gravel and cobbles are fine to coarse sub angular of brick, concrete, tarmac, clinker and sandstone with rootlets, metal, glass, plastic and ceramic fragments. (MADE GROUND) At 0.90m bgl: X3 car wheels and tyres	
	1.40 - 1.50	ES						
	2.00 - 2.10	ES						
	2.30 - 2.60	ES						
	2.70 - 2.80	ES		2.80	44.67		End of Trial Pit at 2.80m	

Remarks:

1) Location cleared for utilities and UXO 2) Trial pit complete at 2.8m bgl due to side wall collapse 3) Trial pit backfilled with arisings on completion

B = Bulk Sample
D = Disturbed Sample
ES = Environmental Sample
W = Water Sample
PID = Photoionization Detector (ppm)
CBR = In Situ California Bearing Ratio (%)
HSV = Hand Shear Vane (kPa)
HP = Hand Penetrometer (kPa)
AB = Asbestos Bulk Sample

Stability:

Unstable below 0.50m bgl.

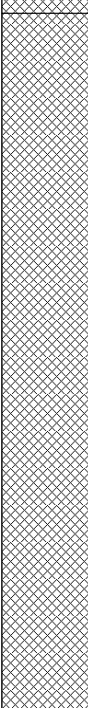
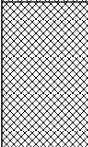
Groundwater:

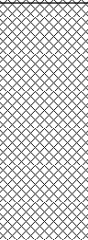
Groundwater not encountered

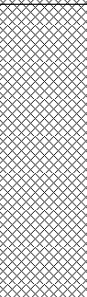
Logged:

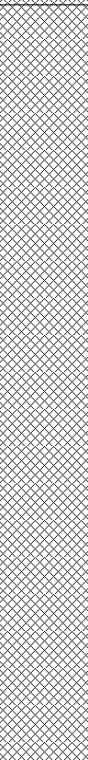
JB

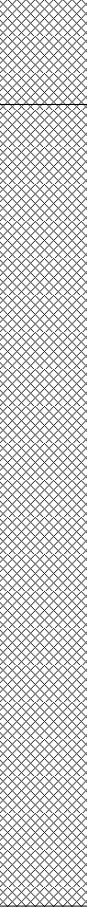
Checked:	
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Hydrock www.hydrock.com						Trial Pit		Trial Pit No: TP103		
Project Name: Islington Wharf Phase 4						Dimensions: 0.60m x 3.80m		Sheet 1 of 1		
Location: Great Ancoats Street / Old Mill Street, Manchester, M4 6DN				Project No: C-10042-C		Co-ords: 385255E, 398256N Ground Level: 47.21m OD		Hole Type: TP		
Client: Waterside Places						Date(s): 30/04/20		Scale: 1:25		
Client: Waterside Places						Date(s): 30/04/20		Plant Used: 13t Excavator		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
▼				0.05	47.16		Asphalt. (MADE GROUND)			1.0 2.0 3.0 4.0 5.0
							Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND)			
				0.30	46.91		Concrete. (MADE GROUND)			
				0.40	46.81		Greyish sandy GRAVEL. Gravel is fine to coarse sub angular of limestone and concrete. (MADE GROUND)			
	0.70 - 0.80	ES		0.70	46.51		Dark brownish black slightly sandy ashey GRAVEL and COBBLES. Gravel and cobbles are fine to coarse sub angular of brick, concrete, tarmac, clinker and sandstone with rootlets, metal, glass, plastic and ceramic fragments. (MADE GROUND)			
	1.30 - 1.40	ES					At 0.7m bgl: black geotextile membrane			
							At 1.6m bgl: buried car wheel and tyre			
	1.90 - 2.00	ES					Between 2.0m and 3.0m bgl: occasional clinker and cinders			
	2.20	ES					Between 2.1m and 2.5m bgl: rare fine gravel of tar			
	2.70 - 3.00	ES								
				3.00	44.21		Soft orangish brown silty gravelly CLAY. Gravel is fine to coarse sub angular of brick and clinker with occasional pockets of ash. (MADE GROUND)			
	3.40 - 3.50	ES		3.50	43.71		Firm brown slightly silty CLAY with occasional blue veining. (GLACIAL TILL)			
				3.60	43.61		End of Trial Pit at 3.60m			
Remarks:		1) Location cleared for utilities and UXO 2) Trial pit complete at 3.6m bgl at request of site engineer 3) Trial pit backfilled with arisings on completion						B = Bulk Sample D = Disturbed Sample ES = Environmental Sample W = Water Sample PID = Photoionization Detector (ppm) CBR = In Situ California Bearing Ratio (%) HSV = Hand Shear Vane (kPa) HP = Hand Penetrometer (kPa) AB = Asbestos Bulk Sample		
Stability:		Stable.								
Groundwater:		Slight seepage at 3.40m bgl.						Logged:	JB	Checked:

Hydrock  www.hydrock.com						Trial Pit		Trial Pit No: TP104 Sheet 1 of 1		
Project Name: Islington Wharf Phase 4						Dimensions: 0.60m x 2.60m		Hole Type: TP		
Location: Great Ancoats Street / Old Mill Street, Manchester, M4 6DN				Project No: C-10042-C		Co-ords: 385250E, 398250N Ground Level: 47.42m OD		Scale: 1:25		
Client: Waterside Places						Date(s): 30/04/20		Plant Used: 13t Excavator		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.30 - 0.40	ES		0.05	47.37		Asphalt. (MADE GROUND)			1.0 2.0 3.0 4.0 5.0
				0.20	47.22		Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND) Brown slightly ashey sandy GRAVEL with low cobble content. Gravel and Cobbles are fine to coarse sub angular to sub rounded of brick, concrete and sandstone with occasional clinker, metal, plastic, wood and ceramic fragments and relict rootlets. (MADE GROUND) <i>Between 0.8m and 1.0m bgl: band of black gravelly ash</i>			
	1.00	46.42		Firm light brown slightly gravelly silty CLAY. Gravel is fine to medium sub angular to sub rounded of sandstone. (GLACIAL TILL)						
	1.10	46.32		End of Trial Pit at 1.10m						
Remarks:		1) Location cleared for utilities and UXO 2) Trial pit complete at 1.1m bgl at request of site engineer 3) Trial pit backfilled with arisings on completion						B = Bulk Sample D = Disturbed Sample ES = Environmental Sample W = Water Sample PID = Photoionization Detector (ppm) CBR = In Situ California Bearing Ratio (%) HSV = Hand Shear Vane (kPa) HP = Hand Penetrometer (kPa) AB = Asbestos Bulk Sample		
Stability:		Stable.								
Groundwater:		Groundwater not encountered						Logged: JB Checked:		

Hydrock  www.hydrock.com						Trial Pit		Trial Pit No: TP105 Sheet 1 of 1		
Project Name: Islington Wharf Phase 4						Dimensions: 1.20m x 2.80m		Hole Type: TP		
Location: Great Ancoats Street / Old Mill Street, Manchester, M4 6DN				Project No: C-10042-C		Co-ords: 385236E, 398239N		Scale: 1:25		
Client: Waterside Places						Date(s): 30/04/20		Plant Used: 13t Excavator		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.50 - 1.00	ES		0.08	46.68		Asphalt. (MADE GROUND)			
				0.30	46.46		Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND)			
							Dark brown slightly sandy clayey GRAVEL and COBBLES. Gravel and cobbles are fine to coarse sub angular of brick, concrete, sandstone and slate with metal, glass, plastic and ceramic fragments. (MADE GROUND)			
				1.30	45.46			Firm light brown slightly gravelly silty CLAY. Gravel is fine to medium sub angular to sub rounded of sandstone. (GLACIAL TILL)		
				1.40	45.36			End of Trial Pit at 1.40m		
									1.0	
									2.0	
									3.0	
									4.0	
									5.0	
Remarks:		1) Location cleared for utilities and UXO 2) Trial pit complete at 1.4m bgl at request of site engineer 3) Trial pit backfilled with arisings on completion						B = Bulk Sample D = Disturbed Sample ES = Environmental Sample W = Water Sample PID = Photoionization Detector (ppm) CBR = In Situ California Bearing Ratio (%) HSV = Hand Shear Vane (kPa) HP = Hand Penetrometer (kPa) AB = Asbestos Bulk Sample		
Stability:		Stable.								
Groundwater:		Groundwater not encountered						Logged: JB Checked:		

Hydrock  www.hydrock.com						Trial Pit		Trial Pit No: TP106 Sheet 1 of 1		
Project Name: Islington Wharf Phase 4						Dimensions: 0.60m x 3.80m		Hole Type: TP		
Location: Great Ancoats Street / Old Mill Street, Manchester, M4 6DN				Project No: C-10042-C		Co-ords: 385253E, 398264N Ground Level: 47.24m OD		Scale: 1:25		
Client: Waterside Places						Date(s): 28/05/20		Plant Used: JCB 3CX		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.50 - 0.60	ES		0.08	47.16		Asphalt. (MADE GROUND)			1.0 2.0 3.0 4.0 5.0
				0.20	47.04		Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND)			
							Greyish sandy GRAVEL. Gravel is fine to coarse sub angular of concrete. (MADE GROUND)			
	1.00 - 1.10	ES		0.50	46.74		Dark brown sandy clayey GRAVEL and COBBLES. Gravel and cobbles are fine to coarse sub angular of brick, concrete, sandstone and mortar with metal, glass, plastic and ceramic fragments. (MADE GROUND)			
							At 0.50m bgl: black geotextile membrane			
							At 0.8m to 3.0m bgl: former brick wall encountered in south and west side of the pit.			
							Between 1.2m and 1.5m bgl: X2 car wheels and tyres			
1.50 - 1.60	ES									
2.00 - 2.10	ES									
2.50 - 2.60	ES									
2.90 - 3.00	ES			3.00	44.24		End of Trial Pit at 3.00m			
Remarks:		1) Location cleared for utilities and UXO 2) Trial pit complete at 3.0m bgl due to concrete obstruction at base of pit - suspected old floor/base 3) Trial pit backfilled with arisings on completion						B = Bulk Sample D = Disturbed Sample ES = Environmental Sample W = Water Sample PID = Photoionization Detector (ppm) CBR = In Situ California Bearing Ratio (%) HSV = Hand Shear Vane (kPa) HP = Hand Penetrometer (kPa) AB = Asbestos Bulk Sample		
Stability:		Unstable below 0.50m bgl.								
Groundwater:		Groundwater not encountered						Logged: JB Checked:		

Hydrock  www.hydrock.com						Trial Pit		Trial Pit No: TP107 Sheet 1 of 1		
Project Name: Islington Wharf Phase 4						Dimensions: 0.60m x 3.50m		Hole Type: TP		
Location: Great Ancoats Street / Old Mill Street, Manchester, M4 6DN				Project No: C-10042-C		Co-ords: 385254E, 398259N Ground Level: 47.47m OD		Scale: 1:25		
Client: Waterside Places						Date(s): 28/05/20		Plant Used: JCB 3CX		
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description			
	Depth (m)	Type	Results							
	0.40 - 0.50	ES		0.35	47.12		Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND)			
	0.90 - 2.00	ES					Dark brownish black sandy ashey GRAVEL and COBBLES. Gravel and cobbles are fine to coarse sub angular of brick, concrete, sandstone and mortar with metal, glass, plastic and ceramic fragments. (MADE GROUND) At 0.35m bgl: black geotextile membrane			
	1.40 - 1.50	ES					Between 1.0m and 1.5m bgl: X3 car wheels and tyres			
	1.90 - 2.00	ES					Between 2.0m and 2.3m bgl: old carpet cuttings			
	2.40 - 2.50	ES								
	3.00	ES		3.00	44.47		End of Trial Pit at 3.00m			
Remarks:		1) Location cleared for utilities and UXO 2) Trial pit complete at 3.0m bgl due to pit instability and side wall collapse 3) Trial pit backfilled with arisings on completion						B = Bulk Sample D = Disturbed Sample ES = Environmental Sample W = Water Sample PID = Photoionization Detector (ppm) CBR = In Situ California Bearing Ratio (%) HSV = Hand Shear Vane (kPa) HP = Hand Penetrometer (kPa) AB = Asbestos Bulk Sample		
Stability:		Unstable below 0.35m bgl.								
Groundwater:		Groundwater not encountered						Logged: JB Checked:		

Trial Pit

Trial Pit No:

TP108

Sheet 1 of 1

Project Name: Islington Wharf Phase 4

Dimensions: 0.60m x 4.00m

Hole Type
TP

Location: Great Ancoats Street / Old Mill Street,
Manchester, M4 6DN

Project No
C-10042-C

Co-ords: 385260E, 398264N

Ground Level: 47.30m OD

Scale

1:25

Client: Waterside Places

Date(s): 28/05/20

Plant Used:
JCB 3CX

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description	
	Depth (m)	Type	Results					
				0.30	47.00		Greyish beige slightly sandy GRAVEL. Gravel is fine to coarse sub angular of limestone. (MADE GROUND)	1.0 – 5.0
	0.40 - 0.50	ES					Dark brown slightly ashey sandy GRAVEL and COBBLES. Gravel and cobbles are fine to coarse sub angular of brick, concrete, sandstone and mortar with rootlets, metal, glass, plastic and ceramic fragments. (MADE GROUND)	
	0.90 - 1.00	ES						
	1.40 - 1.50	ES						
	1.90 - 2.00	ES				2.0 –		
	2.40 - 2.50	ES						
	2.90 - 3.00	ES				3.0 –		
	3.50	ES		3.50	43.80		End of Trial Pit at 3.50m	

Remarks:

1) Location cleared for utilities and UXO 2) Trial pit complete at 3.5m bgl due to pit instability and side wall collapse 3) Trial pit backfilled with arisings on completion

B = Bulk Sample
D = Disturbed Sample
ES = Environmental Sample
W = Water Sample
PID = Photoionization Detector (ppm)
CBR = In Situ California Bearing Ratio (%)
HSV = Hand Shear Vane (kPa)
HP = Hand Penetrometer (kPa)
AB = Asbestos Bulk Sample

Stability:

Unstable below 0.30m bgl.

Groundwater:

Groundwater not encountered

Logged:

JB

Checked:

Appendix C Trial Pit Photographs

Site Investigation Photograph 1	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP101 excavation.	

Site Investigation Photograph 2	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP101 arising.	

Site Investigation Photograph 3	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP102 excavation.	

Site Investigation Photograph 4	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP102 arising.	

Site Investigation Photograph 5	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP103 excavation.	

Site Investigation Photograph 6	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP103 arisings.	

Site Investigation Photograph 7	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP104 excavation.	

Site Investigation Photograph 8	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP104 arising.	

Site Investigation Photograph 9	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP105 excavation	

Site Investigation Photograph 10	
Date: 30/04/20	
Direction Photograph Taken: n/a.	
Description: TP105 arising.	

Site Investigation Photograph 11	
Date: 28/05/20	
Direction Photograph Taken: n/a.	
Description: TP106 excavation	

Site Investigation Photograph 12	
Date: 28/05/20	
Direction Photograph Taken: n/a.	
Description: TP106 arisings.	

Site Investigation Photograph 13	
Date: 28/05/20	
Direction Photograph Taken: n/a.	
Description: TP107 excavation	

Site Investigation Photograph 14	
Date: 28/05/20	
Direction Photograph Taken: n/a.	
Description: TP107 arisings.	

Site Investigation Photograph 15	
Date: 28/05/20	
Direction Photograph Taken: n/a.	
Description: TP108 excavation	

Site Investigation Photograph 16	
Date: 28/05/20	
Direction Photograph Taken: n/a.	
Description: TP108 arisings.	

Appendix D Laboratory Analysis Results

**Jason Bradley**

Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: stoke@hydrock.com

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

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

Analytical Report Number : 20-11576

Project / Site name:	Islington Wharf, Phase 4	Samples received on:	28/05/2020
Your job number:	C 10042 C	Sample instructed/ Analysis started on:	28/05/2020
Your order number:	POP036995	Analysis completed by:	04/06/2020
Report Issue Number:	1	Report issued on:	04/06/2020
Samples Analysed:	19 soil samples		

Signed: Karolina Marek

Karolina Marek
PL Head of Reporting Team

For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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



Analytical Report Number: 20-11576

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036995

Lab Sample Number				1520300	1520301	1520302	1520303	1520304
Sample Reference				TP106	TP106	TP106	TP106	TP106
Sample Number				01	02	03	04	05
Depth (m)				0.50	1.00	1.50	2.00	2.50
Date Sampled				28/05/2020	28/05/2020	28/05/2020	28/05/2020	28/05/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Stone Content				%	0.1	NONE	< 0.1	< 0.1
Moisture Content				%	N/A	NONE	14	16
Total mass of sample received				kg	0.001	NONE	0.42	0.44

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	420	39	110	44	41
Lead (aqua regia extractable)	mg/kg	1	MCERTS	6000	520	690	820	340



Analytical Report Number: 20-11576

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036995

Lab Sample Number				1520305	1520306	1520307	1520308	1520309
Sample Reference				TP106	TP107	TP107	TP107	TP107
Sample Number				06	01	02	03	04
Depth (m)				3.00	0.40	0.90	1.40	1.90
Date Sampled				28/05/2020	28/05/2020	28/05/2020	28/05/2020	28/05/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Stone Content				%	0.1	NONE	< 0.1	< 0.1
Moisture Content				%	N/A	NONE	16	12
Total mass of sample received				kg	0.001	NONE	0.43	0.40

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	110	500	3200	17	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	840	6000	11000	220	350



Analytical Report Number: 20-11576

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036995

Lab Sample Number				1520310	1520311	1520312	1520313	1520314
Sample Reference				TP107	TP107	TP108	TP108	TP108
Sample Number				05	06	01	02	03
Depth (m)				2.40	3.00	0.40	0.90	1.40
Date Sampled				28/05/2020	28/05/2020	28/05/2020	28/05/2020	28/05/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		
Stone Content				%	0.1	NONE	< 0.1	< 0.1
Moisture Content				%	N/A	NONE	12	14
Total mass of sample received				kg	0.001	NONE	0.46	0.41

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	83	41	190	140	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2000	1000	4500	19000	1200



Analytical Report Number: 20-11576

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036995

Lab Sample Number				1520315	1520316	1520317	1520318	
Sample Reference				TP108	TP108	TP108	TP108	
Sample Number				04	05	06	07	
Depth (m)				1.90	2.40	2.90	3.50	
Date Sampled				28/05/2020	28/05/2020	28/05/2020	28/05/2020	
Time Taken				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
Moisture Content				%	N/A	NONE	12	10
Total mass of sample received				kg	0.001	NONE	0.40	0.42

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	22	27	25	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	710	560	920	1400	



Analytical Report Number : 20-11576

Project / Site name: Islington Wharf, Phase 4

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1520300	TP106	01	0.50	Brown loam and clay with gravel.
1520301	TP106	02	1.00	Brown loam and clay with gravel.
1520302	TP106	03	1.50	Brown loam and clay with gravel.
1520303	TP106	04	2.00	Brown loam and clay with gravel.
1520304	TP106	05	2.50	Brown clay and loam with gravel.
1520305	TP106	06	3.00	Brown clay and loam with gravel.
1520306	TP107	01	0.40	Brown loam and clay with gravel.
1520307	TP107	02	0.90	Brown loam and clay with gravel.
1520308	TP107	03	1.40	Brown clay.
1520309	TP107	04	1.90	Brown clay and loam with gravel.
1520310	TP107	05	2.40	Brown clay and loam with gravel.
1520311	TP107	06	3.00	Brown clay and loam with gravel.
1520312	TP108	01	0.40	Brown loam and sand with gravel and brick.
1520313	TP108	02	0.90	Brown loam and sand with gravel and brick.
1520314	TP108	03	1.40	Brown loam and sand with gravel and brick.
1520315	TP108	04	1.90	Brown loam and sand with gravel and brick.
1520316	TP108	05	2.40	Brown loam and sand with gravel and brick.
1520317	TP108	06	2.90	Brown loam and sand with gravel and brick.
1520318	TP108	07	3.50	Brown loam and sand with gravel and brick.



Analytical Report Number : 20-11576

Project / Site name: Islington Wharf, Phase 4

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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

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.

**Jason Bradley**

Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: stoke@hydrock.com

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

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

Analytical Report Number : 20-98421

Project / Site name:	Islington Wharf, Phase 4	Samples received on:	01/05/2020
Your job number:	C-10042-C	Samples instructed on:	01/05/2020
Your order number:	POP036593	Analysis completed by:	11/05/2020
Report Issue Number:	1	Report issued on:	11/05/2020
Samples Analysed:	20 soil samples		

Signed:

Will Fardon

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

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

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

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

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

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

Analytical Report Number: 20-98421

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036593

Lab Sample Number				1504343	1504344	1504345	1504346	1504347
Sample Reference				TP104	TP104	TP103	TP103	TP103
Sample Number				01	02	01	02	03
Depth (m)				0.30-0.40	0.90-1.00	0.70-0.80	1.30-1.40	1.90-2.00
Date Sampled				30/04/2020	30/04/2020	30/04/2020	30/04/2020	30/04/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	15	14	11	11
Total mass of sample received	kg	0.001	NONE	0.60	0.50	0.50	0.50	0.50

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	2.7	2.4	3.7	4.0
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.77	0.15	0.33
Acenaphthene	mg/kg	0.05	MCERTS	0.42	6.3	7.4	3.8	4.4
Fluorene	mg/kg	0.05	MCERTS	0.62	5.3	5.1	3.0	3.6
Phenanthrene	mg/kg	0.05	MCERTS	6.7	36	55	28	32
Anthracene	mg/kg	0.05	MCERTS	1.0	7.2	13	5.8	7.7
Fluoranthene	mg/kg	0.05	MCERTS	5.8	27	75	35	40
Pyrene	mg/kg	0.05	MCERTS	5.8	28	70	33	37
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.3	13	51	18	18
Chrysene	mg/kg	0.05	MCERTS	2.9	12	43	16	14
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	3.5	12	54	22	21
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.8	6.0	30	8.3	7.8
Benzo(a)pyrene	mg/kg	0.05	MCERTS	3.2	11	45	17	16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.3	4.6	21	8.5	8.3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.42	1.7	7.3	2.7	2.5
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.7	6.2	25	10	10

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	38.5	179	504	215	228
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Analytical Report Number: 20-98421

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036593

Lab Sample Number				1504348	1504349	1504350	1504351	1504352
Sample Reference				TP103	TP103	TP103	TP101	TP101
Sample Number				04	05	06	01	02
Depth (m)				2.20	2.70-3.00	3.40-3.50	0.50-0.60	1.10-1.20
Date Sampled				30/04/2020	30/04/2020	30/04/2020	30/04/2020	30/04/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	26	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	8.4	16	17	10
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50	0.50	0.50

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.3	0.55	0.79	4.5	5.0
Acenaphthylene	mg/kg	0.05	MCERTS	2.2	< 0.05	0.20	0.66	0.40
Acenaphthene	mg/kg	0.05	MCERTS	2.2	1.1	2.4	11	9.5
Fluorene	mg/kg	0.05	MCERTS	3.0	0.96	2.2	7.9	7.9
Phenanthrene	mg/kg	0.05	MCERTS	32	11	20	71	61
Anthracene	mg/kg	0.05	MCERTS	7.9	2.1	3.8	19	18
Fluoranthene	mg/kg	0.05	MCERTS	60	14	22	79	73
Pyrene	mg/kg	0.05	MCERTS	59	13	20	77	73
Benzo(a)anthracene	mg/kg	0.05	MCERTS	35	7.6	11	65	60
Chrysene	mg/kg	0.05	MCERTS	27	5.9	8.4	57	53
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	38	9.5	12	75	81
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	14	2.7	3.8	39	23
Benzo(a)pyrene	mg/kg	0.05	MCERTS	30	6.3	8.7	64	59
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	16	3.4	4.4	38	31
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	4.5	1.2	1.4	11	9.6
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	18	4.0	5.2	43	34

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	352	83.4	126	663	599
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Analytical Report Number: 20-98421

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036593

Lab Sample Number				1504353	1504354	1504355	1504356	1504357
Sample Reference				TP101	TP101	TP101	TP101	TP102
Sample Number				03	04	05	06	01
Depth (m)				1.70-1.80	2.30-2.40	2.60	2.90-3.00	0.20-0.30
Date Sampled				30/04/2020	30/04/2020	30/04/2020	30/04/2020	30/04/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	18	16	17	15
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50	0.50	0.50

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.76	0.62	1.1	0.91	3.8
Acenaphthylene	mg/kg	0.05	MCERTS	0.50	0.12	0.12	0.18	0.63
Acenaphthene	mg/kg	0.05	MCERTS	1.7	2.5	2.7	3.1	3.3
Fluorene	mg/kg	0.05	MCERTS	1.6	1.8	2.0	2.7	3.0
Phenanthrene	mg/kg	0.05	MCERTS	14	18	23	32	34
Anthracene	mg/kg	0.05	MCERTS	2.9	3.6	4.4	5.7	7.8
Fluoranthene	mg/kg	0.05	MCERTS	18	23	31	31	47
Pyrene	mg/kg	0.05	MCERTS	17	21	27	29	46
Benzo(a)anthracene	mg/kg	0.05	MCERTS	10	12	15	15	27
Chrysene	mg/kg	0.05	MCERTS	8.2	9.5	13	13	23
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	13	13	16	16	26
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	4.7	4.4	7.6	6.5	13
Benzo(a)pyrene	mg/kg	0.05	MCERTS	9.4	9.5	13	12	21
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	5.1	4.9	6.6	5.9	12
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.6	1.6	2.3	2.0	3.8
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	5.7	5.6	7.9	6.9	13

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	115	131	173	182	283
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Analytical Report Number: 20-98421

Project / Site name: Islington Wharf, Phase 4

Your Order No: POP036593

Lab Sample Number				1504358	1504359	1504360	1504361	1504362
Sample Reference				TP102	TP102	TP102	TP102	TP102
Sample Number				02	03	04	05	06
Depth (m)				0.80-0.90	1.40-1.50	2.00-2.10	2.30-2.60	2.70-2.80
Date Sampled				30/04/2020	30/04/2020	30/04/2020	30/04/2020	30/04/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	14	13	1.2	13
Total mass of sample received	kg	0.001	NONE	0.50	0.50	0.50	2.0	0.50

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	3.4	4.6	< 0.05	0.72	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	1.8	0.98	1.4	1.0	1.6
Acenaphthene	mg/kg	0.05	MCERTS	6.5	12	16	2.5	11
Fluorene	mg/kg	0.05	MCERTS	7.5	9.3	17	1.8	9.9
Phenanthrene	mg/kg	0.05	MCERTS	64	81	120	14	86
Anthracene	mg/kg	0.05	MCERTS	13	23	46	3.5	20
Fluoranthene	mg/kg	0.05	MCERTS	74	120	170	16	120
Pyrene	mg/kg	0.05	MCERTS	72	120	140	15	110
Benzo(a)anthracene	mg/kg	0.05	MCERTS	52	62	83	7.0	66
Chrysene	mg/kg	0.05	MCERTS	39	41	62	6.4	40
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	60	60	92	6.5	55
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	20	28	38	4.2	30
Benzo(a)pyrene	mg/kg	0.05	MCERTS	45	53	70	6.9	53
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	22	19	29	3.3	22
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	7.4	4.9	7.4	1.2	7.3
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	24	24	36	4.5	27

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	512	658	932	94.5	656
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Analytical Report Number : 20-98421

Project / Site name: Islington Wharf, Phase 4

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1504343	TP104	01	0.30-0.40	Brown loam and clay with gravel and plastic.
1504344	TP104	02	0.90-1.00	Brown loam and clay with gravel.
1504345	TP103	01	0.70-0.80	Brown loam and clay with gravel.
1504346	TP103	02	1.30-1.40	Brown loam and sand with gravel.
1504347	TP103	03	1.90-2.00	Brown loam and clay with gravel.
1504348	TP103	04	2.20	Brown loam and clay with gravel.
1504349	TP103	05	2.70-3.00	Brown clay and sand with gravel and stones.
1504350	TP103	06	3.40-3.50	Brown clay and sand with gravel.
1504351	TP101	01	0.50-0.60	Brown loam and clay with gravel and vegetation.
1504352	TP101	02	1.10-1.20	Brown clay and sand with gravel.
1504353	TP101	03	1.70-1.80	Brown clay and sand with gravel.
1504354	TP101	04	2.30-2.40	Brown clay and sand with gravel and vegetation.
1504355	TP101	05	2.60	Brown clay and sand with gravel.
1504356	TP101	06	2.90-3.00	Brown clay and sand with gravel.
1504357	TP102	01	0.20-0.30	Brown loam and clay with gravel.
1504358	TP102	02	0.80-0.90	Brown loam and clay with gravel.
1504359	TP102	03	1.40-1.50	Brown clay and sand with gravel.
1504360	TP102	04	2.00-2.10	Brown clay and sand with gravel.
1504361	TP102	05	2.30-2.60	Grey tar with gravel.
1504362	TP102	06	2.70-2.80	Brown clay and sand with gravel.

Analytical Report Number : 20-98421

Project / Site name: Islington Wharf, Phase 4

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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

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.

**Jason Bradley**

Hydrock Consultants Ltd
4 Lakeside
Festival Park
Stoke on Trent
ST1 5RY

t: 01782 261919
f: 01782 262020
e: stoke@hydrock.com

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

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

Analytical Report Number : 20-98423

Project / Site name:	Islington Wharf, Phase 4	Samples received on:	01/05/2020
Your job number:	C-10042-C	Samples instructed on:	01/05/2020
Your order number:	POP036593	Analysis completed by:	12/05/2020
Report Issue Number:	1	Report issued on:	13/05/2020
Samples Analysed:	10:1 WAC sample		

Signed: Karolina Marek

Karolina Marek
PL Head of Reporting Team

For & on behalf of i2 Analytical Ltd.

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

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

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

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

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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.

i2 Analytical

7 Woodshots Meadow
Croxley Green Business Park
Watford, WD18 8YS

Telephone: 01923 225404

Fax: 01923 237404

email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	20-98423						
					Client: HYDROCK		
Location	Islington Wharf, Phase 4						
Lab Reference (Sample Number)	1504365 / 1504366				Landfill Waste Acceptance Criteria		
					Limits		
Sampling Date	30/04/2020				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP105 01						
Depth (m)	0.50-1.00						
Solid Waste Analysis							
TOC (%)**	2.7				3%	5%	6%
Loss on Ignition (%) **	6.6				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	82				500	--	--
Total PAH (WAC-17) (mg/kg)	520				100	--	--
pH (units)**	8.0				--	>6	--
Acid Neutralisation Capacity (mol / kg)	8.9				--	To be evaluated	To be evaluated
Eluate Analysis					Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0117			0.0954	0.5	2	25
Barium *	0.0334			0.272	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0045			0.037	0.5	10	70
Copper *	0.015			0.12	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0014			0.0112	0.5	10	30
Nickel *	0.0009			0.0073	0.4	10	40
Lead *	0.0074			0.060	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.014			0.12	4	50	200
Chloride *	0.56			4.5	800	15000	25000
Fluoride	2.3			19	10	150	500
Sulphate *	5.8			47	1000	20000	50000
TDS*	68			550	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	7.25			59.0	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	84						
Moisture (%)	16						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					*= UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and I2 cannot be held responsible for any discrepancies with current legislation					** = MCERTS accredited		

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.



Analytical Report Number : 20-98423

Project / Site name: Islington Wharf, Phase 4

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1504365	TP105	01	0.50-1.00	Brown loam and clay with gravel.

Analytical Report Number : 20-98423

Project / Site name: Islington Wharf, Phase 4

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance on Sampling and Testing of Wastes to Meet Landfill Waste Acceptance"	L046-PL	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Speciated WAC-17 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. MCERTS accredited except Coronene.	L064-PL	D	NONE
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 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025

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

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Analytical Report Number : 20-98423

Project / Site name: Islington Wharf, Phase 4

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.