Notes:

1. Do not scale from this drawing.
2. In case of any discrepancies in drawings, details or bills, refer to engineers for clarification: unilateral decisions by the Contractor will not be accepted.
3. This drawing is to be read in conjunction with all related Architects, Consultants & Sub-Contractors drawings and specifications.
4. The Contractor is advised that all design drawings and information are to be read concurrently and any discrepancies or omissions reported directly to PTA's Civil Engineering Department.

DRAWING STATUS
COMMENT/COSTING/APPROVAL
NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHK'D
P02	Site Layout Updated.	LB	08.02.21	
P01	First Issue.	LB	20.10.20	

PROJECT TITLE
Grimshaw Lane, Manchester

DRAWING TITLE
Proposed Levels
Sheet 2 of 3

DATE	July 2020	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No 9762
DRAWN	LB		REVISION P02
SCALE	1:500		
DRG SIZE	A1		

DRAWING No
9762-PTA-XX-XX-DR-C-8302

Consulting Civil & Structural Engineers
pta
29 Red Lion Street
Chesham
Bucks.
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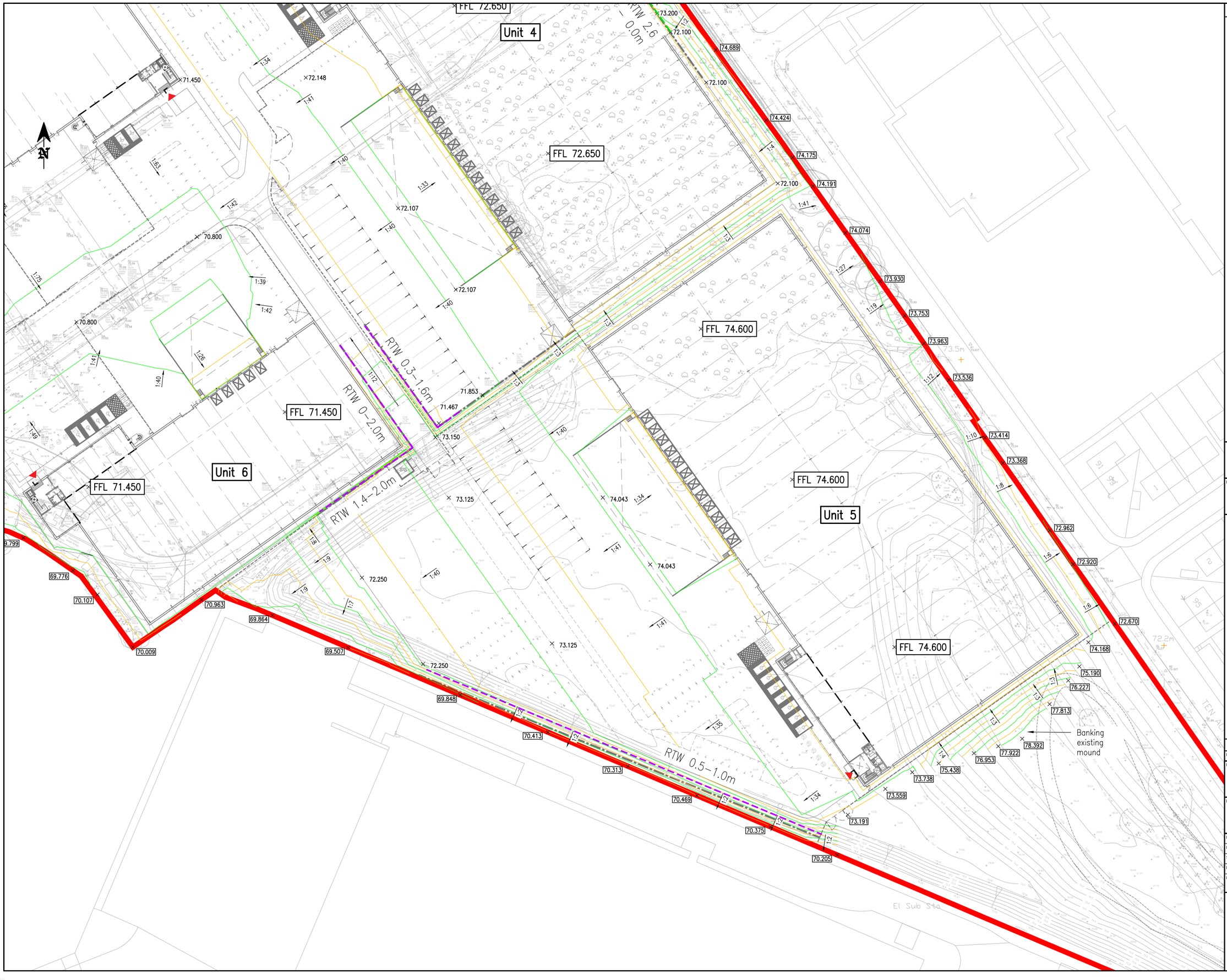
www.ptaconsult.co.uk

ROCHDALE CANAL
Ten Acres Lane Bridge
TEN ACRES LANE
MAKKAH CLOSE
Sheet pile retaining wall. Retained levels are unchanged to avoid interaction with potential tree root protection areas.
RTW 3.4m
RTW 1.5m
RTW 0.5m
RTW 3.1m
RTW 2.7m
RTW 2.6m – 0.0m
RTW 0.3–1.6m
RTW 0–2.0m
FFL 72.650
FFL 71.450
FFL 71.100
FFL 74.600
Unit 1
Unit 2
Unit 3
Unit 4
Unit 6



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DRAWING STATUS

COMMENT/COSTING/APPROVAL
NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CH'D
P01	First Issue.	LB	09.02.21	

PROJECT TITLE

Grimshaw Lane, Manchester

DRAWING TITLE

Proposed Levels
Sheet 3 of 3

DATE	Feb. 2021	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No 9762
DRAWN	LB		
SCALE	1:500		REVISION P01
DRG SIZE	A1		

DRAWING No

9762-PTA-XX-XX-DR-C-8303

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APPENDIX K – Extract from TRC Phase II Geo-environmental Site Assessment

construction programme may influence the volumes of groundwater that need to be managed. The developer should also consider the impact of weather and potential for rainwater and surface run-off to accumulate within excavations.

Extensive groundwater contamination has been identified at the Site (see Section 5.0). It is likely that this water will require pre-treatment, filtration and other such treatment prior to discharge. TRC have provided recommendations on the groundwater in Section 5.0. However, it is recommended that the developer consultants with the local water authority and/or Environment Agency to obtain necessary discharge consents and agree the scope of pre-treatment prior to discharge.

7.2.5 Ground Floor Slabs

Ground bearing floor slabs are likely to be feasible in areas where the floor is resting directly upon Glacial Till or where ground improvement has been. If this is not undertaken then a suspended floor slab will need to be utilised in areas where made ground or fill material is present. Further assessment for potentially desiccated clays should be undertaken in the area of trees that has not been investigated to date. If desiccation is identified, then precautionary measures to allow for future heave will need to be undertaken.

The investigation has identified that there were elevated concentrations of permanent ground gas (methane and carbon dioxide) and volatile organic compounds (naphthalene) in various areas of the Site. Further details are provided in Section 8. Precautionary measures will need to be included within the floor slab to prevent the ingress of gas into the buildings. In the area where elevated concentrations of naphthalene have been identified the membrane should prevent the ingress of VOCs as well as permanent gases.

7.2.6 Below Ground Concrete

As detailed in Section 4, water soluble sulphate analysis was carried out on samples from the Made Ground, Glacial Till and groundwater. In accordance with BRE Digest 1 (2005), the results indicate that the Design Sulphate Class would be DS-2 and ACEC class would be AC-2, assuming mobile groundwater conditions.

In addition, Total Potential Sulphate (TPS) concentrations were also calculated for the samples analysed. The results indicate that the Made Ground is not pyritic but the Glacial Till is pyritic. The results indicated that a Design Sulphate Class of DS-2 and ACEC class for AC-2 is appropriate the for the Site.

7.2.7 Soakaway Potential

The Site is potentially unsuitable for use as a soakaway due to the nature of the ground, the presence of Clay which is generally impermeable and contaminated ground encountered. The designer should consider alternative routes for surface water drainage.

7.2.8 Pavement Construction

Future testing of near-surface conditions for pavement design will need to be undertaken during the cut and fill at the Site to determine an appropriate CBR value for the formation level. However, for preliminary design purposes it is recommended that a CBR value of 2% is adopted for the made ground.

During the Site investigation groundwater was encountered between 0.3mbgl and 4.0mbgl. During subsequent gas and groundwater monitoring, groundwater resting levels were recorded between 0.12mbgl and 2.49mbgl.

Two areas of NAPL contamination have been identified at the Site. The locations of the contaminated groundwater zones are presented on Figure 03, annex A. Historical mapping shows that tanks were present from the late 1940's to 2000, in close proximity to monitoring wells WS204 and WS205. It is considered likely that the tanks were used for the storage of oils on Site and that the tanks have leaked while they were in situ.

A separate contaminated groundwater zone is present between WS201 and WS202, the sample obtained from WS202 indicates that the product is a similar chemical composition to lubricating oil. The lubricating oil has been identified in WS201, WS202 and TP05 (hist). It is considered possible that an underground storage tank containing lubricating oil may be present beneath the floor slab of the building at this location.

Groundwater samples exceeded the EQS for heavy metals, petroleum hydrocarbons and speciated hydrocarbons. SoBRA values were also exceeded for speciated PAHs and petroleum hydrocarbons. Exceedances of the EQS for heavy metals occurred at the majority of sampling locations within the Site. However, this is indicative of broader groundwater quality and background concentrations in the local area. Therefore, no further assessment of heavy metals in groundwater is considered necessary.

The risk to deeper groundwater and productive aquifers beneath the Site is considered to be low. This is mainly due to the low permeability of the Glacial Till present across the Site but also the overall mobility of the carbon band ranges. The majority of the carbon band ranges showing elevated levels are of very low to low mobility. However, elevated levels of aromatics in WS204 are considered to be of moderate mobility. To the west of WS204 in CP06 marginally elevated levels of aromatic petroleum hydrocarbons which are considered moderately mobile carbon bands have been identified. This may be suggestive that some minor movement of contaminants from the source zone has occurred. The movement is suspected within the area of infilled ground at the west of the Site, as depicted on Figure 03. The concentrations of petroleum hydrocarbons in monitoring wells down hydraulic gradient of the groundwater contamination zone surrounding WS201 and WS202 are not considered to be significant. Therefore, the potential for off-Site migration is considered to be very low.

Localized targeted remediation of the two areas of hydrocarbon contamination (shown on Figure 03, annex A) is recommended. This may include some localized soil excavation and removal with groundwater / oil recovery to reduce the contaminant mass and provide environmental betterment. Given the type of contamination (lubricating oil) it may be that residual contamination is encountered during demolition and clearance. Contamination may be found beneath former plant or drainage features that have not been detected to date. This type of contamination could be addressed through localized removal. Due to the impermeable nature of the Glacial Till present across the Site it is unlikely that the contamination has migrated far from its original source. It is considered likely that remediation would include decommissioning existing drainage, removal of all underground tanks, pumping and removal of contaminated water and petroleum hydrocarbons from underground tanks and chambers.

Methane was detected in six boreholes namely, WS204, WS205, WS209, CP04 (Hist) and CP06 (Hist) during monitoring. The concentrations of methane ranged from 0.0 to 76.7%. The area of deep Made Ground at the west of the Site has been identified as a source of hazardous ground gases. Carbon dioxide concentrations was detected in all of the monitoring wells with concentrations ranging from 0.1% to 13.6%. A flow rate was detected in six of the monitoring wells.

The site has been classified as Characteristic Situation 2, with the exception of the area of infilled land at the west of the Site which is classified as Characteristic Situation 3. This is due to significantly elevated concentrations of methane recorded in CP06 (Hist) and WS205. However, it should be noted that once the Site is remediated and petroleum hydrocarbons have been treated at the two contaminated groundwater

BOREHOLE LOG

BH NO. CP201

Facility/Project Name:	Date Borehole Started:	Date Borehole Completed:	Project Number:
Mathers Foundry, Manchester	13/8/20	14/8/20	385367

Drilling Firm:	Drilling Method:	Surface Elev. (m)	TOC Elevation (m)	Total Depth (m bgs)	Borehole Dia. (cm)
DMW Drilling	Cable Percussive	73.0	---	10.0	

Boring Location: CP201	Personnel	Drilling Equipment:
N: 53.49725 E: -2.19463	Logged By - Abigail Li Driller - DMW Drilling	Cable Percussive

Civil Town/City/or Village:	County:	Water Level Observations:
Manchester		While Drilling: Date/Time ▽ Depth (m bgs) 2 After Drilling: Date/Time Depth (m bgs)

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	SPT N VALUE	DEPTH IN METERS	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
			1	MADE GROUND: Dark grey slightly silty sandy GRAVEL. Sand is fine to coarse. Gravel is very angular to subrounded fine to coarse brick, chert and concrete.				
ENV SPT		12		MADE GROUND: Light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse concrete. (REWORKED NATURAL)				
			2 ▽	Stiff light brown slightly gravelly very sandy CLAY. Sand is fine to coarse. (GLACIAL TILL)				...At 2.0mbgl: groundwater strike.
SPT		11	3					
			4	Very stiff light brown slightly gravelly sandy CLAY. (GLACIAL TILL)				
ENV SPT		13	5					

METRIC BOREHOLE LOG (NON-U.S) 385367 MATHERS FOUNDRY.GPJ 385367 16/9/20

Signature:	Firm: TRC Solutions
	Fax

BOREHOLE LOG

BH NO. CP201

SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (%)	SPT N VALUE	DEPTH IN METERS	LITHOLOGIC DESCRIPTION	USCS	GRAPHIC LOG	WELL DIAGRAM	COMMENTS
			7					
SPT		27	8					
			9					
			10					
			11					
			12					
			13					