

Emm Bee Ltd

Drainage Strategy Report

**Site located at
George Street
Heywood**

**22 December 2021
JSD/J122**

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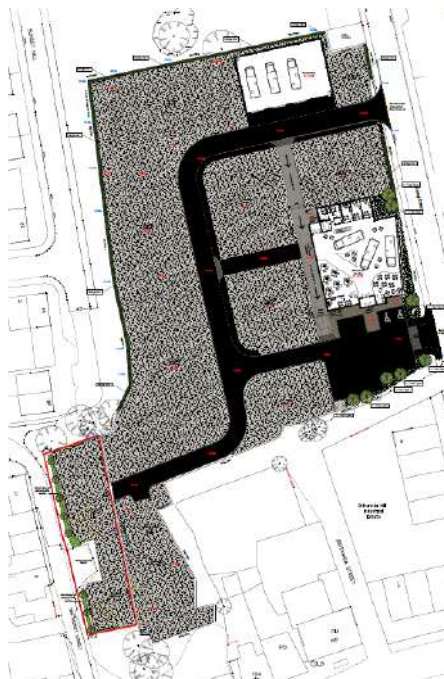
APPENDICES

Appendix A:	Topographic Survey & Proposed Site Layout Plan
Appendix B:	Extracts of Site Investigations
Appendix C:	United Utilities Sewer Records
Appendix D:	Drainage Design Calculations
Appendix E:	Drainage Drawings:-

J122/01 – ‘Drained Area Assessment’
J122/02 – ‘Drainage Scheme with Indicative Levels’
J122/03 – ‘Individual Surface Water Areas’
J122/04 – ‘Storage and Hydrobrake Details’
J122/05 - ‘Overland Exceedance Flow Routes’

SCHEDULE OF REVISIONS

<u>Revision</u>	<u>Date</u>	<u>Description</u>
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1.0 Purpose of Report

- 1.1 Emm Bee Ltd are considering relocating to and redeveloping the above site, scrub wasteland, with their motorhome dealership company. The site has been previously developed, including a scrap yard, but is now unmaintained and overgrown, does not contain any formal drainage apart from United Utilities 1600mm diameter combined sewer crossing the Southwest of the site (with no connection).
- 1.2 Whilst the site has been previously 'developed' i.e. Brownfield, from a drainage point of view, noting no formal drainage is present, the site would be classed as Greenfield.
- 1.3 The main development has obtained full planning approval (18/00971/FUL) and a supplementary planning application is being made to include a small additional parcel of land now to be included in the development. The approved permission includes drainage related Conditions 6 and 7 i.e. drainage to be considered in accordance with the drainage options hierarchy and foul and surface water shall be drained on separate systems :-

6 No development shall take place until a surface water drainage scheme, based on the hierarchy of drainage options in the National Planning Practice Guidance (NPPG) with evidence of an assessment of the site conditions shall be submitted to and approved in writing by the Local Planning Authority.

The surface water drainage scheme must be in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards, no surface water shall discharge to the public sewerage system either directly or indirectly.

7 Foul and surface water shall be drained on separate systems.

- 1.4 Figure 1 shows the site being located in Flood Zone 1 [low probability], a residential development [more vulnerable] of less than 1ha, is considered appropriate under the sequential test and would not require a site specific Flood Risk Assessment (FRA).

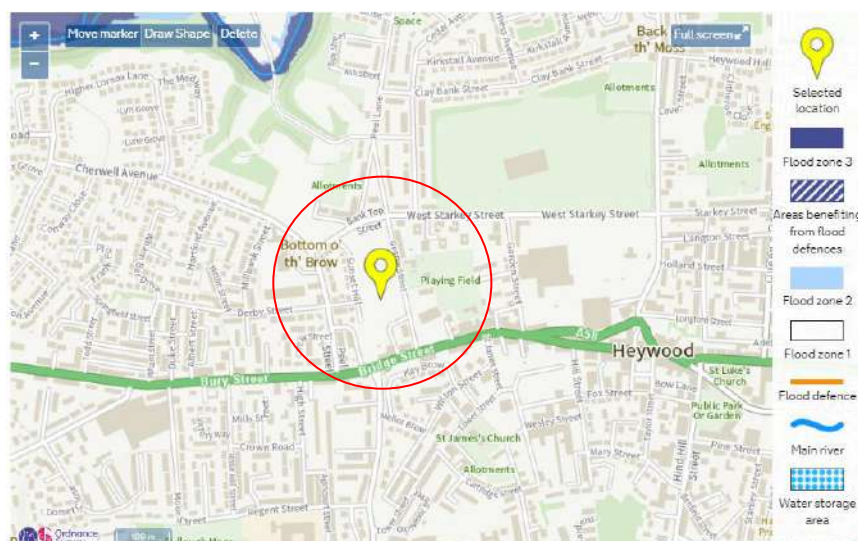


Figure 1 – Flood Zone Map

- 1.5 The drainage design should consider flood risk on site, ensure no increase in flood risk off-site due to the development and prepare the drainage strategy in accordance with the drainage hierarchy.

2.0 Site Location Details

- 2.1 The site, of 0.898 Hectares (8,980sq.m), generally comprises scrub.
- 2.2 The site is located between George Street and Sunset Hill (OL10 4PW). Site co-ordinates are 384969E, 410913N.
- 2.3 The site abuts George Street to the East, maintained public open space to the North, Sunset Hill to the West and Britannia Mill Industrial Estate and residential properties to the South. A Topographic survey of the site is in Appendix A.
- 2.4 Davenport Architecture Proposed Site Plan is also included in Appendix A.
- 2.5 Pluvial flood risk on and around the site is identified on Figure 2 and can be seen that only 'low risk' depth is noted on site, associated with the general low area of the site. The buildings are not located within the 'low risk' area, which is limited to vehicle parking.

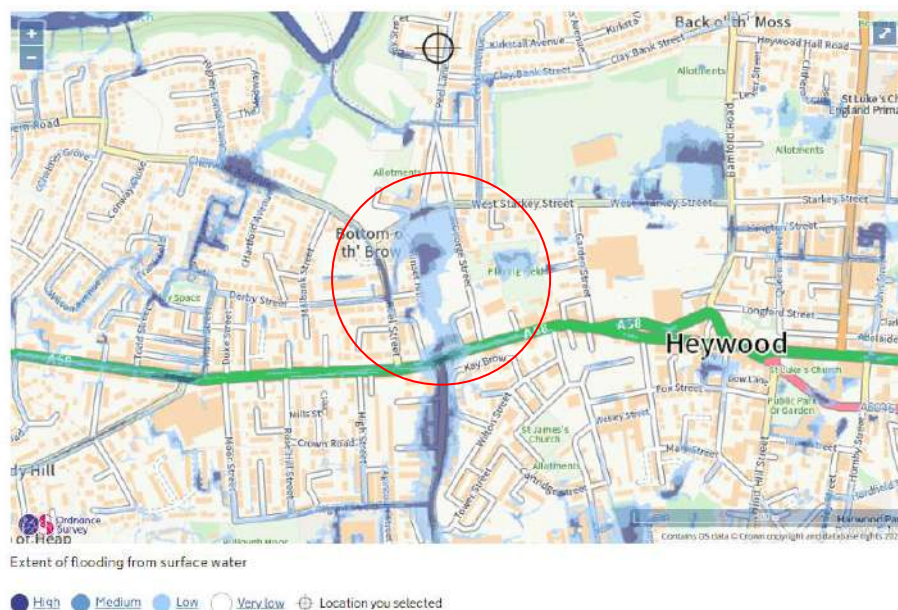


Figure 2 – Pluvial Flood Risk

- 2.6 Figure 3 shows an extract from potential reservoir flooding, which does not highlight any significant risk.



Figure 3 – Reservoir Flood Risk

- 2.7 No other significant sources of flood risk have been identified which could adversely affect the site.

3.0 Scheme Development – Surface Water Drainage Design

3.1 Drainage Strategy

- 3.1.1 The drainage scheme for the proposed residential development is to be carried out in accordance with the drainage hierarchy approach in Building Regulations 2000 Approved Document H – ‘Drainage & Waste Disposal, Section H3 – Rainwater Drainage’ and DEFRA Sustainable Drainage Systems – Non-statutory technical standards for sustainable drainage systems, March 2015 i.e. infiltration, watercourse, surface water sewer, combined sewer.

3.2 Use of Soakaways/Infiltration

- 3.2.1 With reference to Figure 4, extracts from BGS Geology Map 85, Manchester (Drift) it can be seen that there is expected to be Boulder Clay across the site.

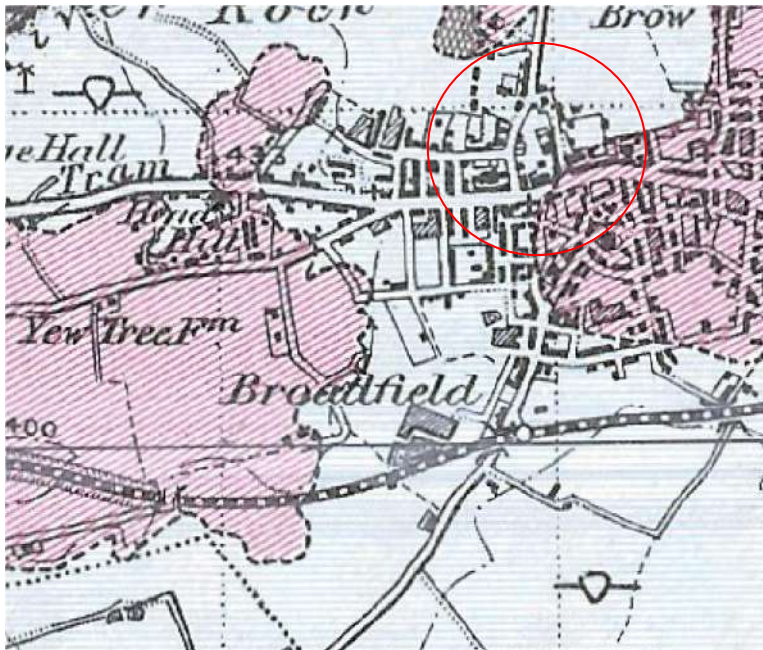


Figure 4 – Extracts from Geology Map

3.2.2 Ground Investigations/Percolation Testing

Site investigations have been previously undertaken on site by LK Consult Ltd and E3P Ltd which confirm various thicknesses of made ground across the site overlying a substantial layer of clay layer over the entire site. Extracts from these reports, LK Consult Ltd LKC-18-1262 dated November 2018 and E3P Ltd 13-224-L1 dated March 2019 are included in Appendix B.

Due to levels of contamination within the made ground (previous scrap yard etc) overlying boulder clay formal soakaways are not considered feasible or appropriate. The site does however have a relatively free draining nature (i.e. no evidence of boggy waterlogged ground) the use of reinforced permeable construction could be considered suitable for the vehicle parking areas, thus minimising the proposed drained areas.

Background information is also available in the form of planning reference 14/01420/FUL associated with the adjacent housing development to the West of the site included a Flood Risk Assessment and Surface water Drainage Strategy report (Issue 3 dated 23 January 2015) by RSK. Adoptable Drainage Layout drawing (subsequently indicated on the current United Utilities Sewer Records) confirm a connection to the 1600mm diameter combined sewer together with storage (oversized pipe and crates) and a Hydrobrake control. It can also be seen that the sewer records have also been updated with the location of the 1600mm diameter combined sewer now being located further away from the site to the North.

3.3 Below Ground Drainage Investigations

- 3.3.1 No drainage investigations have been carried out as no live drainage has been identified on the site (other than the 1600mm diameter combined sewer). Appendix C includes the detailed sewer records from United Utilities.

3.4 Surface Water Design Philosophy

- 3.4.1 Following the discounting of an infiltration solution, in accordance with the drainage hierarchy, the next appropriate solution would be to drain the surface water to a watercourse. Figure 5 confirms that there are no watercourses nearby to drain the site.

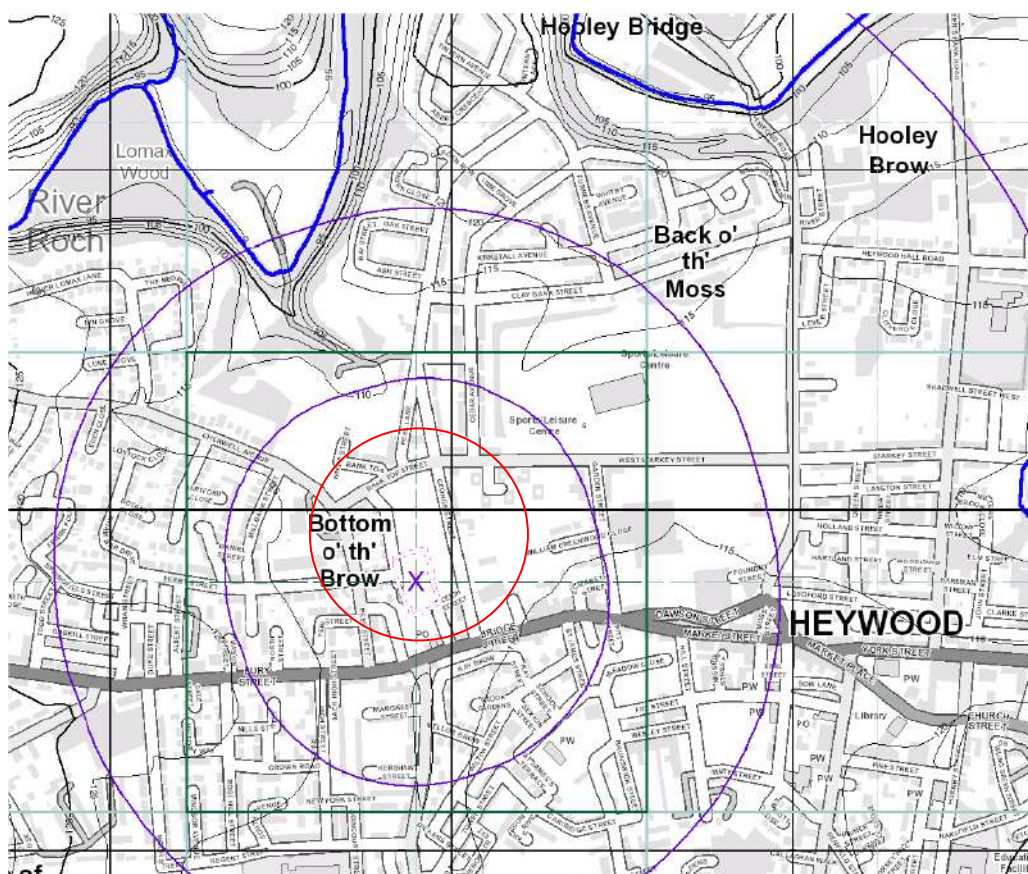


Figure 5 – Surface Water Features

- 3.4.2 The sewer records do not include any surface water drains in the vicinity of the site apart from the above noted sewer serving the adjacent housing site connecting to the 1600mm diameter combined sewer in Sunset Hill. Therefore the only suitable drainage disposal option is to connect to the combined sewer where it crosses the site.
- 3.4.3 Run-off Generated by the Development
As noted above, the site is essentially Greenfield, from a drainage point of view. Appendix E includes drawing J122/01 which confirms the site area of 8,980 sq.m and

proposed roof and private access road drained areas of 1,068sq.m and 1,871sq.m respectively, giving a total drained area of 2,939sq.m.

Appendix D includes the drainage design (MicroDrainage calculations) which include a calculation for Q-Bar of 6.9l/s, which being slightly greater than 5.0l/s would achieve an adequate self-cleansing flow.

The above design drained areas are to be increased by 10% to allow for any future urban creep resulting in a design drained area of 3,230sq.m. The proposed scheme design is also to be subject to 40% climate change allowance and all storms up to and including the 100 year event be considered. Appendix D also includes a drainage schematic and detailed MicroDrainage calculations for the drainage scheme.

With reference to the MicroDrainage calculations within Appendix D it can be seen that for the 100 year event with an allowance of 40% for climate change and a total drained area of 3,230sq.m the peak flow is limited to 6.9l/s and all water stored within the drainage system i.e. no flooding.

Using a Hydrobrake control, storage is required and two suitable options are feasible (a) crate i.e. Polystorm or (b) 'no-fines' stone filled tank. Crate storage provides 95% voids whereas 'no-fines' tank storage only provides 30%, resulting in around three times more storage volume required. Whilst in most cases the 'no-fines' storage would not be economically justified, in this case, noting the remediation works (removal of material and regrading it is a potential option due to the space available on site. With reference to the MicroDrainage calculations it can be seen that apart from slightly different Hydrobrake specifications the results are very similar.

It can be seen from the MicroDrainage calculations, for both storage options, that the highest water level relative to cover level i.e. closest water level to the surface is very similar in both cases at the Hydrobrake (S07) and being just over 600mm, which is well below the adjacent drained ground levels.

Drawing J122/02 in Appendix E confirms the detailed drainage design layout.

The new connection to the combined water sewer is therefore to be limited to 6.9l/s for the 100 year event, with a 40% climate change.

A S106 sewer connection agreement will be required with United Utilities and noting the receiving sewer, a junction connection (level soffit) would be the most appropriate form of connection.

3.4.4 Assessment of Exceedance Flows

Exceedance flows have been assessed on drawing J122/05 and the office/showroom and workshop buildings are to be typically set 150mm above adjacent ground level.

4.0 Foul Drainage Design

- 4.1 Foul drainage is also detailed on drawing J122/02 to comply with Building Regulations and will combine on site with the surface water outflow from the

Hydrobrake manhole and form a combined sewer connection to the adopted combined sewer on site.

- 4.2 An appropriate S106 agreement will also be required with United Utilities (in conjunction with the surface water connection) for the new proposed combined connection.

5.0 Maintenance

- 5.1 The drainage system will be private and not adopted by United Utilities. The drainage infrastructure, crate or 'no fines' stone storage, silt traps and Hydrobrake would be maintained by the owner, Emm Bee Ltd.
- 5.2 The site drainage is to comply with Building Regulations and would therefore be self-cleansing and fully accessible. Therefore the proposed drainage system provides a robust design which can be easily maintained.

6.0 Conclusions and Recommendations

- 6.1 This drainage design is proposed to satisfy the requirements of the Full Planning Application in accordance with the NPPF. All relevant drainage and flood risk considerations have been addressed.
- 6.2 Exceedance flows have been catered for by ensuring a positive fall away from the properties which are to be set 150mm above external ground level.
- 6.3 Ground conditions (contaminated made ground and clay) result in formal soakaways, resulting in a concentration of water) to be inappropriate, resulting in a storage and attenuation drainage system for roofs and impermeable hardstanding (private access road). In accordance with the drainage hierarchy, no watercourses or suitable surface water drains/sewers are within reasonable vicinity of the site and so the appropriate drainage solution is to connect to the 1600mm diameter combined sewer where it crosses the site. To minimise surface water volume discharging to the sewer, permeable surfacing is to be used for the parking areas. Proposed drained areas have been increased by 10% to allow for urban creep and the peak flow rate is to be limited to Q_{bar} , 6.9l/s with all water stored within the drainage system on site for up to the 100 year event with a 40% climate change allowance. Crate storage or 'no-fines' tanks (whichever is more economic to construct) controlled by a Hydrobrake are to be used in the scheme.
- 6.4 Foul drainage is to be separate on site and discharge to the last pipe connection forming a combined drainage connection to the combined sewer, with a level soffit junction connection.
- 6.5 All drainage and flood risk concerns associated with on and off-site sources have been addressed and demonstrate a sustainable, maintained and safe development.
- 6.6 This report is confined to the matters mentioned in Section 1 and no opinion is expressed or implied on matters not specifically mentioned.



J S DICKINSON
B.Eng., C.Eng., M.I.Struct.E.
On behalf of D and D Consulting Engineers Ltd

APPENDICES

Appendix A: Topographic Survey & Proposed Site Layout Plan

Appendix B: Extracts of Site Investigations

Appendix C: United Utilities Sewer Records

Appendix D: Drainage Design Calculations

Appendix E: Drainage Drawings

Appendix A
Topographic Survey & Proposed Site Layout Plan

[illegible]



Information to build on

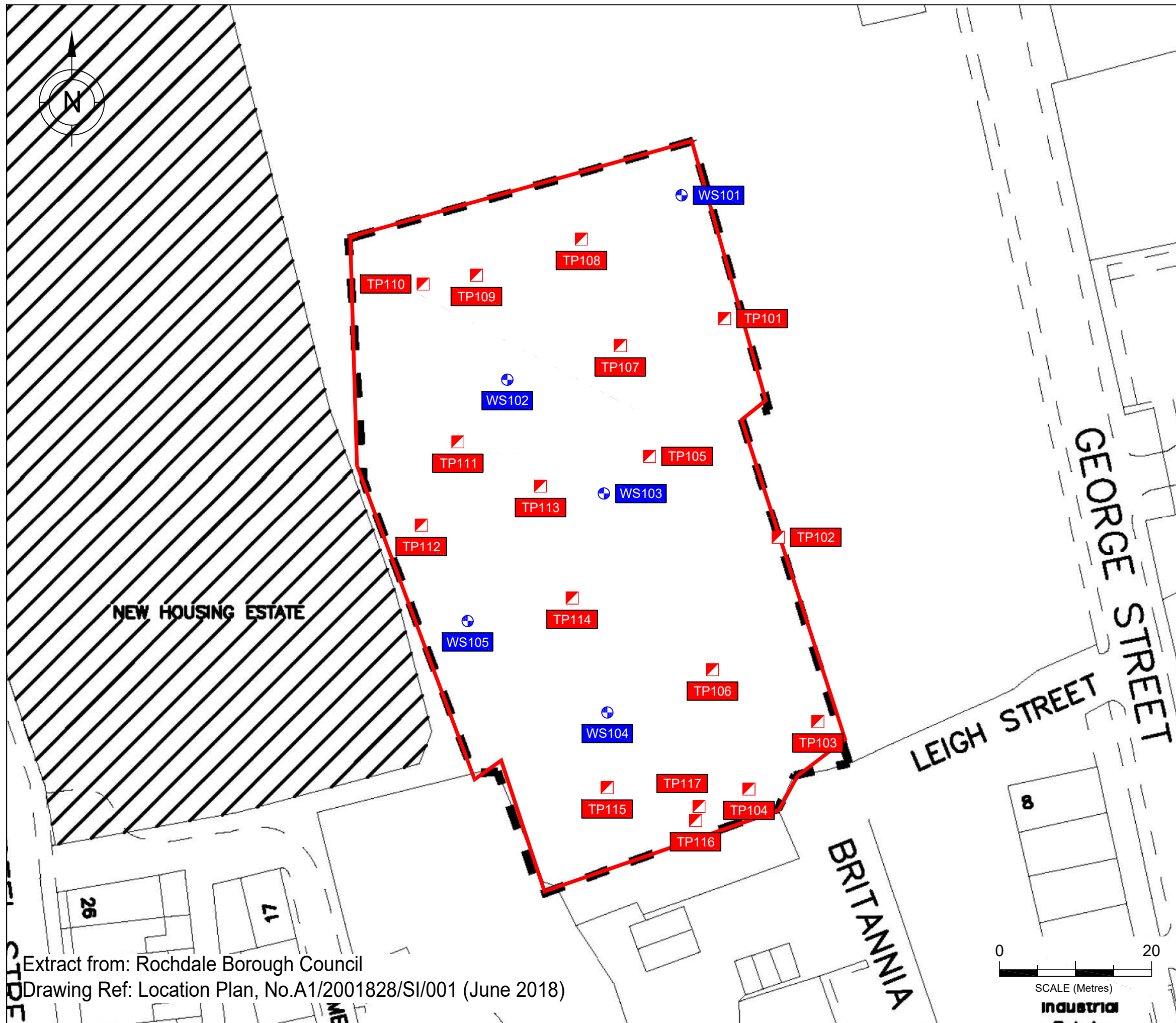
CLIENT _____

PROJECT TITLE

DRAWING TITLE

DRAWING TITLE		DATE		OS	
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SCALE AT A1		DATE		GRADE/STATION	
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P18041				1/2	
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Appendix B
Extracts of Site Investigations



KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)

Sampling Locations and features annotated by LK Consult Ltd are approximate and are based upon observed measurements unless otherwise stated. Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information.



Client: Rochdale Borough Council			
Site: Britannia Metals, Heywood			
Title: Sampling Location Plan			
Job No.: LKC 18 1262	Scale (See Scale Bar): 1:500 @ A3	Figure: 3	Revision:
Drawn By: AC	Checked By: CC	Drawn: Nov 2018	

Extract from: Rochdale Borough Council
Drawing Ref: Location Plan, No.A1/2001828/SI/001 (June 2018)

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**
Britannia Metals, Heywood**Trial Pit
Number**
TP101**Excavation Method**
Trial Pit**Dimensions**
0.5x2.0x2.3m**Ground Level (mOD)****Client**
Rochdale Borough Council**Job
Number**
LKC 18 1262**Location****Dates**
13/09/2018**Engineer****Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30-1.30	D1 PID =3.2ppm				(0.30) 0.30	MADE GROUND: Concrete.		
					(1.60)	MADE GROUND: Brown gravelly very sandy CLAY with frequent brick fragments, whole bricks, occasional ash, clinker, metal fragments, concrete fragments and glass. Sand is fine to medium. Gravel is fine to medium and sub-rounded to angular comprising mudstone.		
1.90-2.20	D2 PID =42ppm				1.90 (0.30)	MADE GROUND: Black slightly gravelly clayey SAND with frequent ash and clinker. Sand is fine to medium. Gravel is fine to medium and angular comprising mudstone. Moderate hydrocarbon odour and oily sheen noted.		
2.20-2.30	D3 PID =1.6ppm		Water strike(1) at 2.30m.		2.20 2.30	Soft to firm consistency low strength grey slightly sandy gravelly silty CLAY. Complete at 2.30m		▽1

**Remarks**Moderate hydrocarbon odour and oily sheen noted between 1.90-2.20mbgl.
Water at base of trial pit.
Trial pit unstable.**Scale (approx)**

1:40

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HM

Figure No.

LKC 18 1262.TP101

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

**Trial Pit
Number****TP102****Excavation Method**

Trial Pit

Dimensions

0.5x2.0x3.3m

Ground Level (mOD)**Client**

Rochdale Borough Council

**Job
Number**

LKC 18 1262

Location**Dates**

13/09/2018

Engineer**Sheet**

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D 1 PID =0.6ppm					MADE GROUND: Grass over blackish brown slightly sandy gravelly CLAY with frequent rootlets, brick fragments and occasional plastic, metal fragments, glass and rare polystyrene. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.		
1.20-2.20	D2 PID =0.4ppm				1.20 1.30	MADE GROUND: Concrete. Soft to firm consistency low strength yellowish grey brown mottled slightly sandy silty CLAY. Sand is fine to medium.		
2.00 2.20-3.20	SV 38 kPa B3				(2.00)			
3.00	SV 38 kPa				3.30	Complete at 3.30m		

**Remarks**

Trial pit dry and stable.

Scale (approx)

1:40

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HM

Figure No.

LKC 18 1262.TP102

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

**Trial Pit
Number****TP103****Excavation Method**

Trial Pit

Dimensions

0.5x2.0x3.8m

Ground Level (mOD)**Client**

Rochdale Borough Council

**Job
Number**

LKC 18 1262

Location**Dates**

13/09/2018

Engineer**Sheet**

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D 1 PID =0.8ppm				(1.70)	MADE GROUND: Grass over blackish brown gravelly sandy silty CLAY with frequent ash, brick fragments, occasional glass, metal fragments and rare polystyrene and glass fragments. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone.		
1.80-2.00	DB2 PID =0.5ppm				1.70 1.80	MADE GROUND: Concrete.		
2.00	SV 72 kPa				(1.30)	Soft to firm consistency low to medium strength yellowish grey brown mottled slightly sandy silty CLAY with rare coal fragments. Sand is fine to medium.		
3.10-3.80	B3				3.10 (0.70)	Orange brown slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse and subrounded to angular comprising mudstone.		
					3.80	Complete at 3.80m		

**Remarks**

Trial pit dry and stable.

Scale (approx)

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Figure No.

LKC 18 1262.TP103

Excavation Method

Trial Pit

Dimensions

0.5x2.0x3.5m

Ground Level (mOD)

Client	
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Rochdale Borough Council

Job	Rate	Time	Cost
1	10	10	100
2	10	10	100
3	10	10	100
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Number
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13/09/2018

Engineer

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.40-1.40	D1 PID =0.8ppm				0.10	MADE GROUND: Grass over blackish brown gravelly very sandy CLAY with frequent rootlets, brick fragments, glass, pottery fragments and occasional metal fragments and plastic. Sand is fine to medium. Gravel is fine to medium.		
					(0.30)			
					0.40	MADE GROUND: Concrete.		
					(2.70)	MADE GROUND: Blackish brown gravelly very sandy CLAY with frequent whole bricks, brick fragments, ash, clinker and occasional pottery fragments and glass. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone.		
3.10-3.50	DB2				3.10	Soft to firm consistency yellowish grey brown mottled slightly sandy silty CLAY. Sand is fine to medium.		
					(0.40)			
					3.50	Complete at 3.50m		



Remarks

Trial pit dry and stable.

Scale (approx)

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP104

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

**Trial Pit
Number
TP105****Excavation Method**

Trial Pit

Dimensions

0.5x2.0x4.0m

Ground Level (mOD)**Client**

Rochdale Borough Council

**Job
Number
LKC 18 1262****Location****Dates**

13/09/2018

Engineer**Sheet
1/1**

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D1 PID =0.6ppm					MADE GROUND: Grass over blackish brown gravelly sandy silty CLAY with frequent whole bricks, brick fragments and occasional concrete slabs, ahs and clinker. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone.		
2.50	SV 38 kPa				2.50	Soft to firm consistency low to medium strength greyish brown sandy silty CLAY.		
3.00	SV 48 kPa				(1.30)			
					3.80 (0.20) 4.00	Orangish brown silty fine to coarse SAND.		
						Complete at 4.00m		

**Remarks**

Trial pit dry and stable.

Scale (approx)

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP105

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**
Britannia Metals, Heywood**Trial Pit
Number**
TP106**Excavation Method**

Trial Pit

Dimensions

0.5x2.0x4.4m

Ground Level (mOD)**Client**

Rochdale Borough Council

**Job
Number**

LKC 18 1262

Location**Dates**

13/09/2018

Engineer**Sheet**

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30-1.30	D1 PID =0.9ppm				(1.70)	MADE GROUND: Grass over blackish brown gravelly sandy silty CLAY with occasional brick fragments, pottery fragments, metal fragments, ash, plastic and glass. Sand is fine to medium. Gravel is fine to medium and subrounded to angular comprising mudstone and sandstone.		
1.70-2.70	D2 PID =0.8ppm				1.70	Soft to stiff consistency low to medium strength slightly gravelly slightly sandy silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular to subrounded comprising mudstone and sandstone. Becoming softer consistency and sandy with depth.		
2.00 2.00-2.50	SV 32 kPa B3				(2.50)			
3.00	SV 52 kPa							
			Water strike(1) at 4.20m.		4.20 4.30 4.40	Orange fine to coarse SAND.		▽1
						Soft to stiff consistency low to medium strength slightly gravelly slightly sandy silty CLAY. Sand is fine to medium. Gravel is fine to medium and subangular to subrounded comprising mudstone and sandstone. Becoming softer consistency and sandy with depth. Strata damp.		
						Complete at 4.40m		

**Remarks**Trial pit stable.
Water seap noted at 4.2mbgl.**Scale (approx)**

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP106

 LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com				Site Britannia Metals, Heywood		Trial Pit Number TP107		
Excavation Method Trial Pit		Dimensions 0.5x2.0x3.2m		Ground Level (mOD)		Client Rochdale Borough Council		Job Number LKC 18 1262
		Location		Dates 13/09/2018		Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D1 PID =0.8ppm				(2.10)	MADE GROUND: Grass over blackish brown gravelly sandy CLAY with frequent brick fragments, pottery fragments and occasional ash, clinker, metal fragments and rare wood chippings and fabric. Sand is fine to medium. Gravel is fine to medium.		
2.50	SV 40 kPa				2.10 (1.10)	Soft to stiff consistency low to medium strength greyish brown slightly sandy silty CLAY with rare coal fragments. Sand is fine to medium.		
3.00	SV 50 kPa		Water strike(1) at 3.20m.		3.20	Complete at 3.20m		▽1
						Remarks Water seap at base of trial pit. Trial pit stable.		
						Scale (approx) 1:40	Logged By HM	Figure No. LKC 18 1262.TP107

Excavation Method

Trial Pit

Dimensions

0.5x2.0x2.6m

Ground Level (mOD)
Dates
13/09/2018

Client

Rochdale Borough Council

**Job
Number**
LKC 18 1262

Engineer
Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D 1 PID =1.8ppm					MADE GROUND: Grass over blackish brown gravelly very sandy CLAY with frequent brick fragments and occasional ash, clinker and glass. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone.		
0.20-2.00	D2 PID =40ppm				(1.20)			
					1.20	MADE GROUND: Black very gravelly very sandy CLAY with frequent ash, clinker and occasional wood debris. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone. Moderate hydrocarbon odour.		
					(0.80)			
2.20-2.60	DB3		Water strike(1) at 2.00m.		2.00	Firm consistency medium strength greyish brown slightly gravelly silty CLAY. Sand is fine to medium. Gravel is fine to medium. Gravel is fine to medium and subrounded comprising mudstone.		▽1
					(0.60)			
2.50	SV 50 kPa				2.60	Complete at 2.60m		


Remarks

Trial pit stable.
Seap of water at 2.00mbgl.
Moderate-fast inflow of water noted at base of trial pit.

Scale (approx)

1:40

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Figure No.

LKC 18 1262.TP108

 LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com					Site Britannia Metals, Heywood		Trial Pit Number TP109	
Excavation Method Trial Pit		Dimensions 0.5x2.0x2.8m		Ground Level (mOD)		Client Rochdale Borough Council		Job Number LKC 18 1262
		Location		Dates 14/09/2018		Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D1 PID =0.5ppm					MADE GROUND: Dark brown gravelly very sandy CLAY with occasional glass, brick fragments and pottery fragments. Sand is fine to medium. Gravel is fine to medium and subangular to subrounded comprising mudstone.		
1.20-2.20	DB2				1.20	Soft to firm consistency low to medium strength orangish blue grey mottled slightly sandy CLAY. Sand is fine to medium. Becoming less orange in colour with depth.		
2.00	SV 34 kPa				(1.60)			
2.50	SV 62 kPa				2.80	Complete at 2.80m		
								
Remarks Trial pit dry and stable.								
Scale (approx) 1:40			Logged By HM			Figure No. LKC 18 1262.TP109		

 LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com						Site Britannia Metals, Heywood		Trial Pit Number TP110
Excavation Method Trial Pit		Dimensions 0.5x2.0x3.0m		Ground Level (mOD)		Client Rochdale Borough Council		Job Number LKC 18 1262
		Location		Dates 14/09/2018		Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D1 PID =0.6ppm					MADE GROUND: Blackish brown gravelly sandy CLAY with frequent brick fragments, pottery fragments, glass and occasional ash, clinker and glass. Sand is fine to medium. Gravel is fine to medium and subangular to angular. Paving slab at 0.80-0.90mbgl.		
1.40-2.40	D 2				1.40	Soft to firm consistency low strength orangish grey brown mottled slightly sandy silty CLAY. Sand is fine to medium. Becoming less orange in colour with depth.		
2.00 2.00-2.50	SV 34 kPa B3				(1.60)			
2.50	SV 32 kPa				3.00	Complete at 3.00m		


Remarks

Trial pit dry and stable.

Scale (approx)

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP110

 LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com				Site Britannia Metals, Heywood			Trial Pit Number TP111			
Excavation Method Trial Pit		Dimensions 0.5x2.0x3.6m		Ground Level (mOD)		Client Rochdale Borough Council		Job Number LKC 18 1262		
		Location		Dates 14/09/2018		Engineer		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water		
0.00-1.00	D1 PID =1.0ppm		Water strike(1) at 0.60m.			MADE GROUND: Blackish brown gravelly sandy CLAY with frequent brick fragments, pottery fragments and occasional ash, clinker, glass, metal fragments and plastic. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone and slate.		▽1		
2.90-3.60	DB2				2.90	Soft to firm consistency low strength orangish grey brown slightly sandy silty CLAY with rare coal fragments. Becoming less orange with depth.				
3.00	SV 30 kPa				(0.70)					
					3.60	Complete at 3.60m				


Remarks

Water seap at 0.60mbgl.
Trial pit stable.

Scale (approx)

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP111

 LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com					Site Britannia Metals, Heywood		Trial Pit Number TP112	
Excavation Method Trial Pit		Dimensions 0.5x2.0x1.2m		Ground Level (mOD)		Client Rochdale Borough Council		Job Number LKC 18 1262
		Location		Dates 14/09/2018		Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D1 PID =4.2ppm				(1.10) 1.10	MADE GROUND: Blackish brown gravelly sandy CLAY with occasional ash, clinker, glass, whole bricks and rare polystyrene, plastic and metal. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.		
					Complete at 1.20m			



Remarks

Trial pit dry and stable.
Trial pit terminated at 1.10mbgl due to presence of concrete slab (potential culvert).

Scale (approx) 1:40	Logged By HM	Figure No. LKC 18 1262.TP112
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**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**
Britannia Metals, Heywood**Trial Pit
Number**
TP113**Excavation Method**
Trial Pit**Dimensions**
0.5x2.0x3.6m**Ground Level (mOD)****Client**
Rochdale Borough Council**Job
Number**
LKC 18 1262**Location****Dates**
14/09/2018**Engineer****Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.80	D1 PID =1.2ppm				(0.80)	MADE GROUND: Dark brown gravelly very sandy CLAY with occasional rootlets, glass and pottery fragments. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.		
0.80-1.80	D2 PID =1.4ppm				0.80	MADE GROUND: Blackish brown gravelly sandy CLAY with frequent ash, clinker, whole bricks, brick fragments, occasional glass, metal fragments, pottery fragments and rare wire ropes and cobbles of sandstone. Sand is fine to medium. Gravel is fine to coarse and angular to subrounded comprising mudstone and sandstone.		
					(2.60)			
3.40-3.60	DB3				3.40 (0.20) 3.60	Soft to firm consistency yellowish brown mottled silty CLAY.		
						Complete at 3.60m		

**Remarks**

Trial pit dry and stable.

Scale (approx)

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP113

 LK CONSULT LTD Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS Tel: 0161 763 7200 web: www.thelkgroup.com					Site Britannia Metals, Heywood			Trial Pit Number TP114	
Excavation Method Trial Pit		Dimensions 0.5x2.0x1.1m		Ground Level (mOD)		Client Rochdale Borough Council		Job Number LKC 18 1262	
		Location		Dates 14/09/2018		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.00-0.90	D1 PID =1.0ppm				(0.90)	MADE GROUND: Dark brown gravelly sandy CLAY with frequent brick fragments, glass and occasional clinker. Sand is fine to medium. Gravel is fine to medium and subangular comprising mudstone.			
0.90-1.10	D2 PID =2.2ppm				0.90 (0.20) 1.10	MADE GROUND: Pale greenish grey gravelly very sandy CLAY with occasional clinker and metal fragments. Sand is fine to medium. Gravel is fine to medium and angular to subangular comprising mudstone. Strong chemical odour. Complete at 1.10m			
						Remarks Trial pit dry and stable. Trial pit terminated due to strong chemical odour at 1.10mbgl.			
Scale (approx) 1:40						Logged By HM		Figure No. LKC 18 1262.TP114	

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

**Trial Pit
Number****TP115****Excavation Method**

Trial Pit

Dimensions

0.5x2.0x3.9m

Ground Level (mOD)**Client**

Rochdale Borough Council

**Job
Number**

LKC 18 1262

Location**Dates**

14/09/2018

Engineer**Sheet**

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-1.00	D1 PID =1.2ppm					MADE GROUND: Blackish brown gravelly sandy CLAY with frequent ash, clinker, glass, brick fragments and rare clay pipe fragments and wooden planks. Sand is fine to medium. Gravel is fine to medium and subangular to subrounded comprising mudstone and sandstone. Thin layer of pale greenish very sandy clay with moderate chemical odour at 1.10mbgl. (3.90) 3.90		
						Complete at 3.90m		

**Remarks**Trial pit dry and stable.
Moderate chemical odour at 1.10mbgl.**Scale (approx)**

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP115

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

**Trial Pit
Number****TP116****Excavation Method**

Trial Pit

Dimensions

0.5x2.0x3.7m

Ground Level (mOD)**Client**

Rochdale Borough Council

**Job
Number**

LKC 18 1262

Location**Dates**

14/09/2018

Engineer**Sheet**

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1 PID =1.0ppm				(0.20) 0.20	MADE GROUND: Dark brown gravelly sandy CLAY with occasional plastic, brick fragments and glass. Sand is fine to medium. Gravel is fine to medium and angular to subangular comprising slate and mudstone.		
0.50-1.50	D2 PID =0.8ppm				0.20 0.40	MADE GROUND: Concrete with metal rebar.		
					(3.30)	MADE GROUND: Blackish brown gravelly sandy CLAY with frequent brick fragments, pottery fragments and occasional whole bricks, ash, clinker, glass, metal fragments and plastic. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone. Very sandy and gravelly comprising predominantly ash and clinker between 0.40-1.00mbgl.		
					3.70	Remains of former brick wall noted at side of trial pit between 3.50-3.70mbgl. Concrete slab at base of trial pit (potential basement floor).		
						Complete at 3.70m		

RemarksTrial pit dry and stable.
Concrete slab at base of trial pit (potential basement floor).**Scale (approx)**

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP116



**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**
Britannia Metals, Heywood**Trial Pit
Number**
TP117**Excavation Method**
Trial Pit**Dimensions**
0.5x2.0x4.0m**Ground Level (mOD)****Client**
Rochdale Borough Council**Job
Number**
LKC 18 1262**Location****Dates**
14/09/2018**Engineer****Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	D1 PID =0.8ppm				(0.30)	MADE GROUND: Dark brown gravelly sandy CLAY with occasional plastic, brick fragments and glass. Sand is fine to medium. Gravel is fine to medium and angular to subangular comprising slate and mudstone.		
0.60-1.60	D2 PID =0.7ppm				(0.30) 0.60	MADE GROUND: Concrete with metal rebar.		
					(3.10)	MADE GROUND: Blackish brown gravelly sandy CLAY with frequent brick fragments, pottery fragments and occasional ash, clinker, glass, metal fragments and plastic. Sand is fine to medium. Gravel is fine to medium and subangular to angular comprising mudstone.		
3.70-4.00	DB3				3.70 (0.30) 4.00	Soft to firm consistency yellowish brown mottled silty CLAY.		
						Complete at 4.00m		

**Remarks**

Trial pit dry and stable.

Scale (approx)

1:40

Logged By

HM

Figure No.

LKC 18 1262.TP117

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

Number
WS101**Excavation Method**

Drive-in Windowless Sampler

Dimensions**Ground Level (mOD)****Client**

Rochdale Borough Council

Job
Number
LKC 18 1262**Location****Dates**

13/09/2018

Engineer**Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.80	D1					MADE GROUND: Dark brown sandy gravelly CLAY with frequent whole brick and fragments, occasional sandstone, timber and coal. Sand is fine to coarse. Gravel is fine to coarse, subangular.			
1.00-1.45	SPT N=12		2,2/3,3,3,3		(0.80)				
1.00-2.00	DB2				0.80	Firm to stiff consistency slightly gravelly sandy silty CLAY with occasional roots/rootlets. Sand is fine to coarse. Gravel is fine, rounded of quartz and mudstone.			
1.25	PP 2.25kg/cm2								
1.50	PP 3.50kg/cm2								
1.75	PP 2.50kg/cm2				(2.10)				
2.00-2.45	SPT N=15		1,2/3,4,4,4						
2.25	PP 1.75kg/cm2								
2.50	PP 1.50kg/cm2					Piece of limestone gravel encountered at 2.50mbgl. Potentially strata is made ground.			
2.75	PP 1.25kg/cm2				2.90				
3.00-3.45	SPT N=8		1,1/2,2,2,2		(3.00)	Dark brown gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, angular of shale and sandstone.			
3.25	PP 1.25kg/cm2								
3.50	PP 1.00kg/cm2				(1.00)	Soft consistency brown sandy silty CLAY. Sand is fine to coarse. Strata is damp.			
3.75	PP 1.00kg/cm2								
4.00-4.45	SPT N=12		1,1/1,2,4,5		4.00	Soft consistency brown sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is fine to coarse, subrounded of sandstone. Strata is damp.			
					(1.45)				
5.00-5.45	SPT N=23		3,3/3,4,6,10		5.45	Complete at 5.45m			

Remarks**Scale**
(approx)

1:40

Logged
By

PW

Figure No.

LKC 18 1262.WS101

Excavation Method

Drive-in Windowless Sampler

Dimensions
Location
Ground Level (mOD)
Dates

13/09/2018

Client

Rochdale Borough Council

Job Number
LKC 18 1262

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00	D1				(0.50)	MADE GROUND: Dark brown clayey gravelly SAND with frequent brick fragments, pottery and plastic		
0.50	D2				0.50	MADE GROUND: Black gravelly SAND of predominantly ash and clinker. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.		
1.00-1.45	SPT N=8		3,2/2,2,2,2		(1.90)			
2.00-2.45	SPT N=6		2,2/1,1,2,2		2.40	MADE GROUND: Dark brown sandy gravelly CLAY wit occasional brick fragments, ash and coal. Sand is fine to coarse. Gravel is fine to coarse, subangular of sandstone and mudstone.		
3.00-3.45	SPT N=4		1,0/1,1,1,1		(0.80)			
3.20	DB3				3.20	Soft consistency brownish grey silty CLAY.		
3.25	PP 0.50kg/cm2							
3.50	PP 0.50kg/cm2							
3.75	PP 1.00kg/cm2							
4.00-4.45	SPT N=17		2,3/3,4,5,5		(2.25)			
4.25	PP 0.50kg/cm2							
4.50	PP 4.50kg/cm2					Stiff consistency by 4.50mbgl. Potentially reworked above this depth.		
4.75	PP 4.00kg/cm2							
5.00-5.45	SPT N=29		3,5/5,7,8,9		5.45	Complete at 5.45m		

Remarks
Scale (approx)

1:40

Logged By

PW

Figure No.

LKC 18 1262.WS102

Excavation Method

Drive-in Windowless Sampler

Dimensions
Ground Level (mOD)
Client

Rochdale Borough Council

Job
Number
LKC 18 1262

Location
Dates

13/09/2018

Engineer
Sheet

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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.70	D1				(0.70)	MADE GROUND: Brown slightly clayey gravelly SAND with frequent brick fragments, occasional ash and plastic. Sand is fine to coarse. Gravel is fine to coarse, subangular.		
0.70-1.70	D2				0.70	MADE GROUND: Black sandy GRAVEL of predominantly ash and clinker with rare clay inclusions, brick fragments and lumps of slag. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.		
1.00-1.45	SPT N=22		5,6/7,5,5,5		(1.00)			
					1.70	Firm consistency silty CLAY with rare sandstone gravel.		
2.00-2.45	SPT N=7		2,2/1,1,2,3					
2.00-3.00	DB3				(1.70)			
3.00-3.45	SPT N=14		2,2/2,2,3,7					
3.25	PP 1.25kg/cm2				3.40	Dark orange coarse SAND.		
3.50	PP 4.00kg/cm2				(0.80)			
3.75	PP 2.00kg/cm2				4.20	Soft consistency brown silty CLAY. Strata is damp.		
4.00-4.45	SPT N=12		1,2/3,3,3,3		(1.25)			
4.25	PP 2.25kg/cm2				5.45	Complete at 5.45m		
5.00-5.45	SPT N=25		1,2/2,3,10,10					

Remarks
Scale
(approx)

1:40

Logged
By

PW

Figure No.

LKC 18 1262.WS103

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

Number
WS104**Excavation Method**

Drive-in Windowless Sampler

Dimensions**Ground Level (mOD)****Client**

Rochdale Borough Council

Job
Number
LKC 18 1262**Location****Dates**

13/09/2018

Engineer**Sheet**
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.00-0.30	D1				(0.30)	MADE GROUND: Brown sandy gravelly CLAY with occasional roots/rootlets and cobbles of sandstone. Sand is fine to coarse. Gravel is fine to coarse subangular.			
0.30	ACM				0.30 (0.20) 0.50				
0.50-1.00	D2				(0.50)	MADE GROUND: Concrete slab.			
1.00-1.45	SPT N=8		2,2/2,2,2,2		1.00	MADE GROUND: Black gravelly SAND of predominantly ash and clinker with occasional pockets of very fine compressible ash. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded. Faint diesel odour.			
1.00-2.00	D3				(1.00)	MADE GROUND: Brown slightly clayey gravelly SAND with frequent brick fragments, slate, occasional concrete fragments and inclusions of clay with depth. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.			
2.00-2.45	SPT N=12		2,3/3,3,3,3		2.00	MADE GROUND: Brown sandy gravelly CLAY with frequent brick fragments, slate and occasional concrete fragments. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded.			
					(1.10)				
3.00-3.45	SPT N=4		1,1/1,1,1,1		3.10	Firm consistency brown silty CLAY.			
3.10-4.00	DB4								
3.25	PP 1.50kg/cm2								
3.50	PP 3.50kg/cm2								
3.75	PP 4.25kg/cm2								
4.00-4.45	SPT N=10		2,2/3,3,2,2		(2.35)				
5.00-5.45	SPT N=9		1,1/1,2,2,4		5.45	Complete at 5.45m			

Remarks**Scale**
(approx)

1:40

Logged
By

PW

Figure No.

LKC 18 1262.WS104

**LK CONSULT LTD**Eton Business Park, Eton Hill Road, Radcliffe, M26 2ZS
Tel: 0161 763 7200 web: www.thelkgroup.com**Site**

Britannia Metals, Heywood

Number
WS105**Excavation Method**

This was attempted in 4 separate locations in the area with the same ground conditions encountered.

Dimensions**Ground Level (mOD)****Client**

Rochdale Borough Council

Job Number
LKC 18 1262**Location****Dates**

13/09/2018

Engineer**Sheet**
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50-0.69	SPT 25*/85 50/100		20,5/22,28		(0.69) 0.69	MADE GROUND: Brown sandy gravelly CLAY with frequent whole brick and fragments, occasional masonry, concrete, rare plastic and timber. Sand is fine to coarse. Gravel is fine to coarse, subrounded to subangular. Refusal against concrete at between 0.50 and 0.70mbgl in all locations. Complete at 0.69m		

Remarks**Scale (approx)**

1:40

Logged By

PW

Figure No.

LKC 18 1262.WS105



Key:

Location Symbols



TP

Approximate Trial Pit Location



TP

Approximate Trial Pit Location (Scrapyard Waste)

Notes:

P1	R1	25.03.2019	REVISION	HM	AA
P1	-	06.03.2019	DRAFT	RW	MD
Phase	Revision	Date	Issue	Drawn	Authorised

Client:

Emm Bee Motorhomes

Job No:

13-224

Date:

25.03.2019

Drawing No:

003

Scale:

N.T.S

Job Title:

George Street

Drawing Title:

Exploratory Hole Location Plan



Environmental Engineering Partnerships Ltd
City Hellport & Business Centre
Eccles, Manchester, M30 7RU
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
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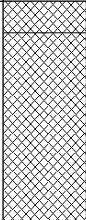
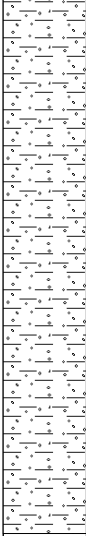
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				Trial Pit Log			TrialPit No TP101 Sheet 1 of 1	
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019
Location: Heywood						Dimensions (m):		Scale 1:24
Client:						Depth 2.80		Logged A. Allcock

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.10			MADE GROUND: Brown slightly gravelly, silty fine to medium sand. Gravel is fine to medium, subangular to angular of brick and mudstone with rootlets (topsoil)	
	0.50	ES					MADE GROUND: Brown gravelly fine to medium sand with cobbles and boulders. Gravel is fine to coarse subrounded to angular of brick, concrete, timber, metal and rare plastic. Cobbles are subangular to angular of brick, concrete and sandstone. Boulders are angular of concrete and slate.	1
	1.00	B						
				1.60			MADE GROUND: Black slightly gravelly fine to medium sand with ash. Gravel is fine to medium subrounded to angular of brick.	
				1.70			Firm to stiff bluey grey slightly gravelly, slightly sandy CLAY. Gravel is fine to medium subrounded to rounded of mudstone.	2
	2.00	HVP	126					
	2.30	D						
	2.30	HVP	93.33333333					
				2.80			End of Pit at 2.80m	3
								4
								5

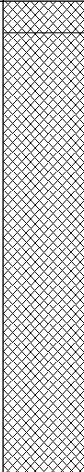
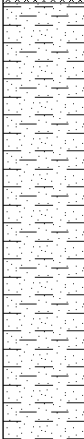
Remarks: Complete.		
Stability: Stable.		

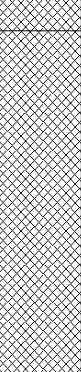
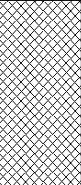
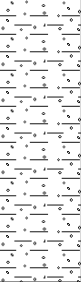
				Trial Pit Log			TrialPit No TP102 Sheet 1 of 1	
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019
Location: Heywood						Dimensions (m):		Scale 1:24
Client:						Depth 2.40		Logged A. Allcock

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.05	ES		0.10			MADE GROUND: Brown slightly gravelly, silty fine to medium sand with cobbles. Gravel is fine to medium, subangular to angular of brick and mudstone with rootlets (topsoil). Cobbles are subangular to angular brick.		
	0.50	ES		0.70			MADE GROUND: Brown and dark brown gravelly fine to medium sand. Gravel is fine to coarse subrounded to angular brick and concrete with ash. Cobbles are subangular to angular brick.		
	1.00	HVP	110				Stiff greysih brown and orange brown slightly gravelly CLAY. Gravel is fine to runrounded to rounded mudstone with organic material.	1	
	1.30	HVP	105.3333333						
	1.50	ES							
	1.60	HVP	106.6666667						
	1.90	HVP	96						2
	2.00	D							
	2.20	HVP	86						
				2.40			End of Pit at 2.40m		
								3	
								4	
								5	

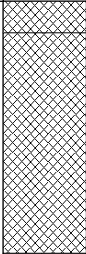
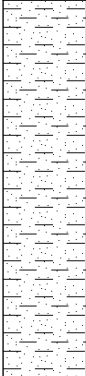
Remarks: Complete.		
Stability: Stable.		

				Trial Pit Log			TrialPit No TP103 Sheet 1 of 1			
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019		
Location: Heywood						Dimensions (m):		Scale 1:24		
Client:						Depth 2.50		Logged A. Allcock		
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.30	ES		0.12			MADE GROUND: Brown slightly gravelly, silty fine to medium sand. Gravel is fine to medium, subangular to angular of brick, ceramic and mudstone with rootlets (topsoil)			1
				0.50			MADE GROUND: Brown gravelly fine to medium sand with cobbles. Gravel is fine to coarse subangular to angular brick, concrete, ceramic, sandstone and rare plastic tubing. Cobbles are subangular to angular brick and concrete.			
	1.00	HVP	62.66666667				MADE GROUND: Firm to stiff dark brown gravelly, slightly sandy clay with cobbles. Gravel is fine to coarse subangular to angular brick, sandstone and concrete. Cobbles are subangular to angular brick (reworked).			
				1.20			MADE GROUND stiff light brown slightly gravelly fine to medium clay. Gravel is rubrounded to rounded mudstone (reworked)			
	1.50	HVP	80.66666667				MADE GROUND: Firm dark brown clay with rare gravel. Gravel is coarse angular brick (reworked).			
	1.70	ES		1.60			Firm to stiff bluey grey slightly gravelly, slightly sandy CLAY. Gravel is fine to medium subrounded to rounded of mudstone.			
	2.00	ES		1.80						
	2.00	HVP	85.33333333							
	2.50	HVP	85.33333333	2.50			End of Pit at 2.50m			
								4		
								5		
Remarks: Complete.										
Stability: Stable.										

				Trial Pit Log			TrialPit No TP104 Sheet 1 of 1		
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019	
Location: Heywood						Dimensions (m):		Scale 1:24	
Client:						Depth 2.90		Logged A. Allcock	
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
				0.10			MADE GROUND: Brown slightly gravelly, slightly silty fine to medium sand. Gravel is fine to medium subangular to angular brick and mudstone.	1	
	1.00	ES					MADE GROUND: Brown gravelly fine to medium sand with cobbles and boulders. Gravel is fine to coarse subangular to angular brick, concrete, metal, slate, asbestos sheeting, clinker and rare plastic. Cobbles are of subangular to angular brick, Boulders are of subangular to angular concrete.		
				1.50				Firm to stiff brown and light brown slightly sandy CLAY.	2
	1.70	HVP	79.3333333						
	2.00	ES							
	2.00	HVP	80						
	2.30	HVP	88					3	
	2.60	HVP	71.33333333				End of Pit at 2.90m		
				2.90				4	
								5	
Remarks: Complete.									
Stability: Stable.									

				Trial Pit Log			TrialPit No TP105 Sheet 1 of 1	
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019
Location: Heywood						Dimensions (m):		Scale 1:24
Client:						Depth 2.70		Logged A. Allcock
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.10			MADE GROUND: Brown slightly gravelly, silty fine to medium sand. Gravel is fine to medium, subangular to angular of brick and mudstone with rootlets (topsoil)	1
	0.50	ES					MADE RGOUND: Brown gravelly fine to medium sand with cobbles and boulders. Gravel is fine to coarse subangular to angular glass, brick, sandstone, concrete and timber. Cobbles are subangular to angular brick, concrete and timber. Boulders are angular concrete.	
				1.20			MADE GROUND: Firm brown slightly sandy, gravelly clay. Gravel is fine to coarse, subrounded to angular brick, slate and sandstone.	
	1.40	ES						
				1.80			Firm to stiff bluey grey slightly gravelly, slightly sandy CLAY. Gravel is fine to medium subrounded to rounded of mudstone.	2
	2.00	HVP	116.6666667					
2.30 2.30	ES HVP	95.333333						
			2.60					
			2.70			End of Pit at 2.70m		3
								4
								5
Remarks: Complete.								
Stability: Stable.								

				Trial Pit Log			TrialPit No TP106 Sheet 1 of 1	
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019
Location: Heywood						Dimensions (m):		Scale 1:24
Client:						Depth 2.00		Logged A. Allcock

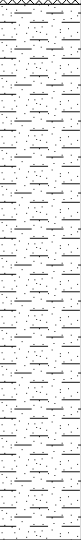
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Depth	Type	Results							
	0.05	ES		0.10			MADE GROUND: Brown slightly gravelly, silty fine to medium sand. Gravel is fine to medium, subangular to angular of brick and mudstone with rootlets (topsoil)			
				0.80			MADE GROUND: Dark brown gravelly fine to medium sand with cobbles. Gravel is fine to coarse subangular to angular brick, slate and concrete with cobbles of subangular to angular brick.			
	1.00	HVP	82					Stiff light grey and light brown sandy CLAY.	1	
	1.30	HVP	109.333333							
	1.40	ES								
	1.50	D								
	1.60	HVP	97.33333333							
	1.90	HVP	91.33333333	2.00			End of Pit at 2.00m	2		
								3		
								4		
								5		

Remarks: Complete.								
Stability: Stable.								

				Trial Pit Log			TrialPit No TP107 Sheet 1 of 1		
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019	
Location: Heywood						Dimensions (m):		Scale 1:24	
Client:						Depth 2.20		Logged A. Allcock	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.10			MADE GROUND: Brown slightly gravelly, silty fine to medium sand. Gravel is fine to medium, subangular to angular of brick and mudstone with rootlets (topsoil)	
	0.30	ES					MADE GROUND: Dark brown very gravelly fine to medium sand. Gravel is fine to coarse (mainly fine) subangular angular brick, mudstone, slate and rare clinker and fabric with ash.	1
	0.80	B						
				1.20			Stiff light grey and light brown sandy CLAY.	
	1.50	HVP	74.66666667					
	2.00	D						2
	2.00	ES						
	2.10	HVP	99.33333333	2.20				
							End of Pit at 2.20m	3
								4
								5

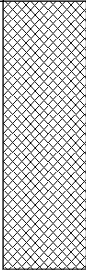
Remarks: Complete.								
Stability: Stable.								

				Trial Pit Log			TrialPit No TP108 Sheet 1 of 1	
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019
Location: Heywood						Dimensions (m):		Scale 1:24
Client:						Depth 2.30		Logged A. Allcock
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			MADE GROUND: Brown slightly gravelly, silty fine to medium sand. Gravel is fine to medium, subangular to angular of brick and mudstone with rootlets (topsoil)	
	0.30	ES		0.23			MADE GROUND: Black Asphalt.	
				0.60			MADE GROUND: V ery dark bronw gravelly fine to medium sand. Gravel is fine to medium subangular to angular mudstone with rare ceramic and brick.	
							Stiff light grey and light brown sandy CLAY.	
	1.00	ES						1
	1.00	HVP	56.66666667					
	1.30	HVP	67.33333333					
1.60	HVP	42						
1.90	HVP	63.33333333					2	
2.20	HVP	70.66666667						
				2.30			End of Pit at 2.30m	
								3
								4
								5

Remarks: Complete.

Stability: Stable.



				Trial Pit Log			TrialPit No SP101 Sheet 1 of 1	
Project Name: George Street				Project No. 12606		Co-ords: - Level:		Date 27/02/2019
Location: Heywood						Dimensions (m):		Scale 1:24
Client:						Depth 0.85		Logged A. Allcock
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40	ES		0.85			MADE GROUND: Brown slightly gravelly fine to medium sand. Gravel is fine to medium subrounded to subangular mudstone, brick and ceramic with rootlets.	
							End of Pit at 0.85m	
								1
								2
								3
								4
								5
Remarks: Complete.								
Stability: Stable.								