Contaminated Land
Manchester City Council

Email: l.miller@manchester.gov.uk

Date: 6th December 2016
Our Reference: LKC 16 1334

Dear Laura,

RE: LAND AT NEW ISLINGTON, MANCHESTER (PHASE 2 DEVELOPMENT – SITE INVESTIGATION SCOPE

1. Background

LKC have been instructed to carry out a Phase 2 intrusive investigation at the above site associated with the residential development of the site (planning reference 111587/FO/2016/N1).

Current and proposed development plans are enclosed.

LKC have undertaken a Preliminary Risk Assessment (PRA) (ref: LKC 16 1334 01 R1 date: December 2016).

Based on the finding of the PRA (summarised in Section 2) a site investigation has been designed and is detailed in Section 3. The PRA should be read in conjunction with this site investigation scope.

LKC would like to get the site investigation scope approval by the council prior to undertaking the work.

2. Summary of Preliminary Risk Assessment

The PRA produced by LKC is summarised below:

- The site area is 0.73ha.
- Significant development has taken place on the site historically including:
  -Cotton mill/engineering works, dye works, reservoirs, glass works, dock yard, canal branch and dock.
  -The whole site was then redeveloped in the 1970s for residential housing. This was demolished between 2006 and 2009.
- The site reconnaissance identified open land with limited vegetation. Evidence of earthworks could be seen and site cabins are present on site.
- Geology is mapped as Till over Manchester Marls Formation Mudstone.
- Risks from contamination were considered to be moderate across the site in terms of risk of contamination to future users, groundwater and surface water. Risks from hazardous gas were considered to be moderate.
- A contamination and geotechnical intrusive (Phase 2) investigation was recommended.

3. Phase 2 Geo-Environmental Investigation

1.1 Intrusive Investigation

BS10175[1] recommends a sampling density of 1 sample per 10-25m square centres for a 'main investigation' and 1 sample per 25-50m square centres for an 'exploratory investigation'.

Given the size of the site, LKC recommend 10no. investigation locations, which will give a sampling density of 1 per 25m square centres (in line with a main investigation).

The investigation will include trial pits and window sample boreholes.

Additional cable percussion boreholes should be drilled to provide details of deeper ground conditions for piling design).

If significant / gross contamination is identified or if areas of the site are inaccessible, further investigation may be required.

A site investigation location plan is attached. Please note locations may need to alter depending on current site access and service locations.

Window Sample Boreholes

3no. window sample boreholes will be drilled to 5-6mbgl or refusal if shallower. In-situ geotechnical testing in the form of Standard Penetration Tests (SPTs) will be undertaken in the natural strata at 1m intervals. If cohesive strata is encountered then LKC will collect hand shear vane readings to 3mbgl.

Material will be logged to BS14688-1[2] and soil samples (bulk and disturbed) will be collected for analysis. Groundwater strikes where encountered will be recorded.

All the boreholes will be installed with monitoring wells to allow for gas and groundwater monitoring / sampling.

Trial Pitting

7no. trial pits will be excavated using a mechanical excavator to depths of approximately 3mbgl.

Hand shear vane readings will be undertaken on any cohesive deposits encountered. Material will be logged to BS14688-1 and bulk and disturbed soil samples will be collected for analysis.

Cable Percussion Boreholes

7no. cable percussion boreholes will be drilled to between 14 and 20mbgl to provide geotechnical data to enable pile design. Three boreholes will be drilled to 20mbgl and four boreholes to 14mbgl in the locations shown on figure 5.

[1] British Standard (2011). "Investigation of Potentially Contaminated Sites – Code of Practice." BS10175:2011.
[2] British Standards (2002) Geotechnical investigation and testing – Identification and Classification of Soil. Part 1: Identification and description. BS EN ISO 14688-1:2002

3no. boreholes will be installed for groundwater and gas monitoring.

DCPs
DCPs will be undertaken using the window sample rig to obtain equivalent CBRs.

Soakaways
2 no. soakaways will be undertaken in trial pits to establish if soakaways are possible. Permeability can be calculated for soakaways using gravel filled trial pits and bowser following BRE365. Leachate testing will be undertaken in the area of the potential soakaways.

1.2 Gas Monitoring

Gas monitoring is expected to be required. It is anticipated that 6 gas monitoring visits over a three month period will be undertaken as a minimum. Monitoring will be carried out in line with CIRIA C665[3].

1.3 Laboratory Testing

Soil Sampling

Soil samples will be collected from all the intrusive locations. Standard sampling protocol and preservation of samples will be followed as described in the EA guidance on site investigations[4]. A photoionisation detector (PID) will be used to screen soils for total volatile organic compounds (TVOCs) on site.

Approximately 23no. representative soil samples will be sent to an approved laboratory and tested for some or all of the following contaminants (depending on the ground conditions encountered / PID results):

- Asbestos screen, arsenic, cadmium, chromium (total and hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc, cyanide suite, water soluble sulphate, pH, speciated PAH and organic matter, boron, phenols, banded petroleum hydrocarbons (TPHCWG), BTEX, MTBE, PCBs, SVOCs ,VOCs, glycols, herbicides and pesticides.

Water Sampling

Approximately 3no. representative water samples will be taken from boreholes and sent to an approved laboratory and tested for some or all of the above contaminants (depending on the ground conditions encountered / PID results).

1.4 Phase 2 Reporting

A Phase 2 Geo-Environmental Investigation Report will be issued including:

- Summary of PRA report.
- Summary of site works undertaken, including sample location plans.

[3] CIRIA (2007). "Assessing Risks Posed by Hazardous Ground Gases to Buildings." CIRIA C665
[4] EA (2000). "Technical Aspects of Site Investigation. Volumes 1 & 2 Text Supplements Research and Development Technical Report." P5-065/Tr.

- Details of ground conditions including borehole logs.
- A Generic Quantitative Risk Assessment (GQRA) will be undertaken. Soil results will be compared with current appropriate published guidelines (see below).
- Revised Contamination Conceptual Model to confirm the risk from the identified pollutant linkages.
- Recommendations for further investigation work, if required.
- Outline remedial recommendations if considered necessary.

If gross contamination is identified then a Detailed Remediation Strategy will need to be produced as a separate report.

With regards to the soil risk assessment, LKC will use the following assessment criteria hierarchy:

- Category 4 Screening Levels (C4SLs) [5,6]. Exception is 450mg.kg for lead.
- LQM Suitable 4 Use Levels (S4ULs) [7].
- ATRISK Soil Screening Values (SSVs) and CL:AIRE Generic Assessment Criteria (GACs) [8].

A factual geotechnical report will be issued under separate cover.

I trust that above site investigation scope is sufficient and look forward to hearing from you in due course.

Yours Sincerely



ROSIE CUMMINGS
SENIOR GEO-ENVIRONMENTAL CONSULTANT

Enclosed: Fig 1: Site Location Plan
Fig 2: Current Site Plan
Fig 3: Proposed Development Plan
Fig 4: Historical Features
Fig 5: Proposed Site Investigation Plan
Fig 6: Proposed SI Location Plan with Historical Features Overlay

[5] Defra (2014). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Policy Companion Document."
[6] CL:AIRE (2013). "SP1010: Development of Category 4 Screening Levels and Assessment of Land Affected by Contamination – Final project Report."
[7] LQM (2014). "The LQM/CIEH S4ULs for Human Health Risk Assessment."
[8] CL:AIRE (2009). "The Soil Generic Assessment Criteria for Human Health Risk Assessment."

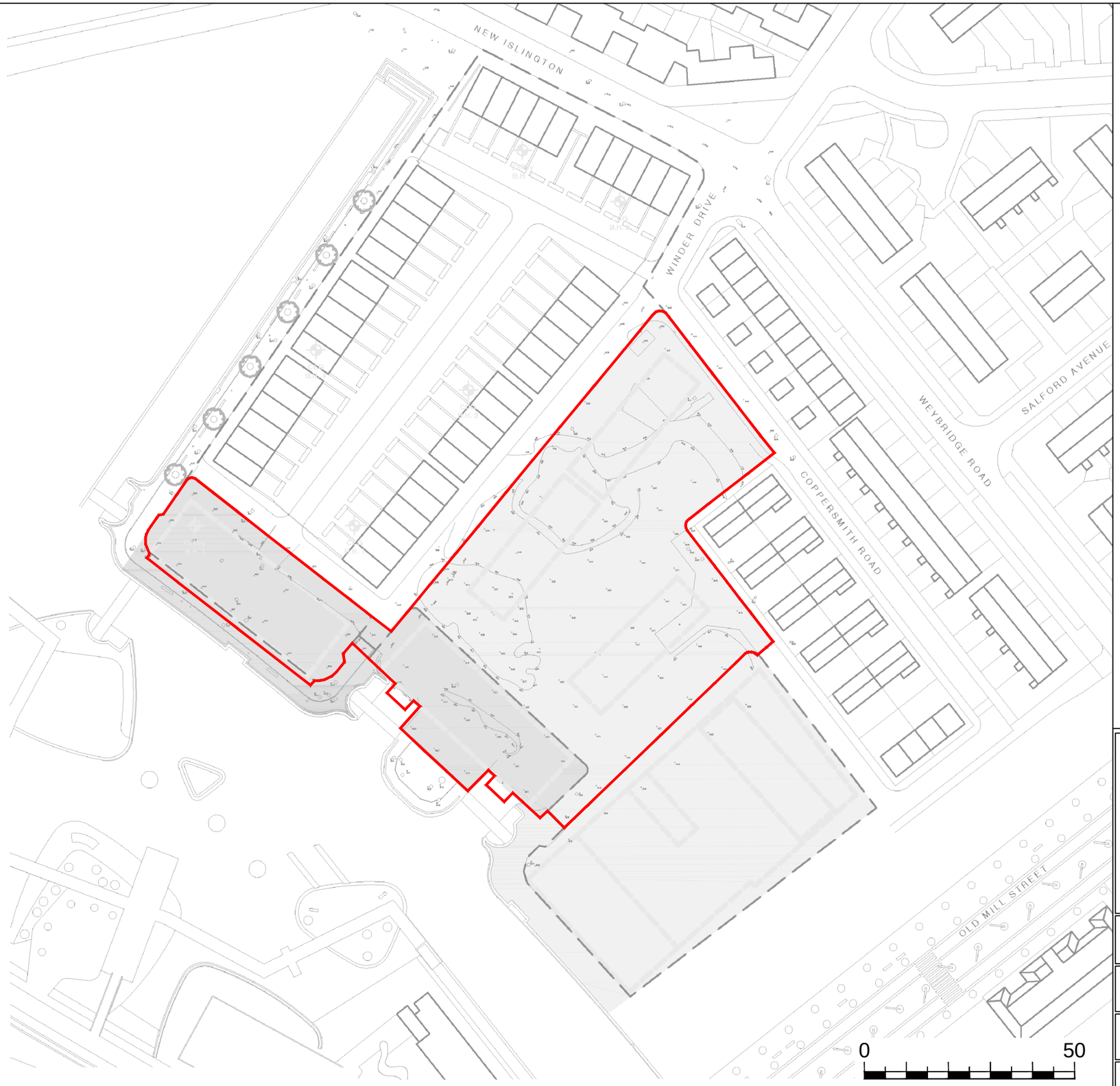


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Figure 1: Site Location Plan, Phase 2 Development, New Islington, Manchester

Drawn: December 2016 Scale: 1:25,000 @ A4 (see scale bar)

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KEY

Site Boundary

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.

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Client: Urban Splash

Site: Phase 2 Development, New Islington, Manchester

Title: Site Boundary Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 16 1334	1:1000 @ A3	2	

Drawn By:	Checked By:	Drawn:
AC	RC	Dec 2016

Extract from: Joule
Drawing Ref: Existing Site Plan, No.SI 20 (August 2016)

© Copyright Joule Consulting Engineers Limited



Extract from: Shedkm
Drawing Ref: Proposed Site Plan, No.001b, Rev:B (24/08/2016)

KEY

Site Boundary

proposed three stroey terraced houses	01
mansion house apartments (ground floor commerical)	02
mansion house apartments (ground floor residentail)	03
two storey terraced houses NI Phase 01	04
three storey terraced houses NI Phase 01	05
New Islington mairna	06
vacant land for development	07
proposed access road	08
landscape top suit existing falls	09
completed public realm to New Islington marina	10
residential entrances	^
commerical entrances	^

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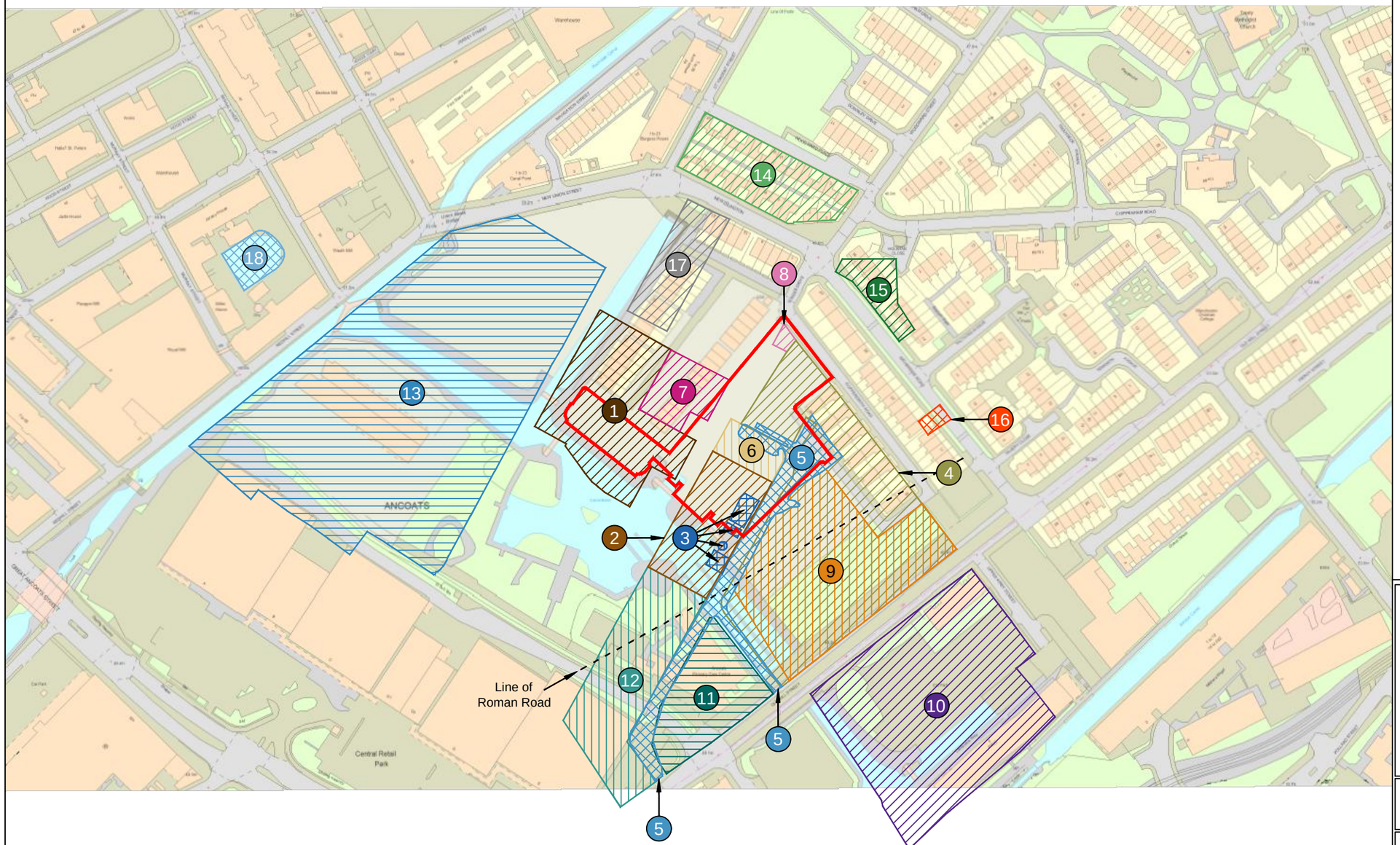
Client: Urban Splash

Site: Phase 2 Development, New Islington, Manchester

Title: Proposed Site Use

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 16 1334	1:500 @ A3	3	

Drawn By:	Checked By:	Drawn:
AC	RC	Dec 2016



KEY

- Site Boundary
- 1 Cotton Mills/Engineering Works/ Other Works
- 2 Canal Street Dye Works
- 3 Reservoirs
- 4 Glass Works/ Other Works
- 5 Canal Branch & Dock
- 6 Dock Yard/Stables/Garage
- 7 Church/School/Play Ground
- 8 Public House
- 9 Brick Field
- 10 Hospital
- 11 Wharfs/Works
- 12 Wharfs/Works
- 13 Canals/Wharfs/Works
- 14 Mill/Works
- 15 Foundry
- 16 Timber Yard
- 17 Foundry
- 18 Basin/Reservoir

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Client: Urban Splash

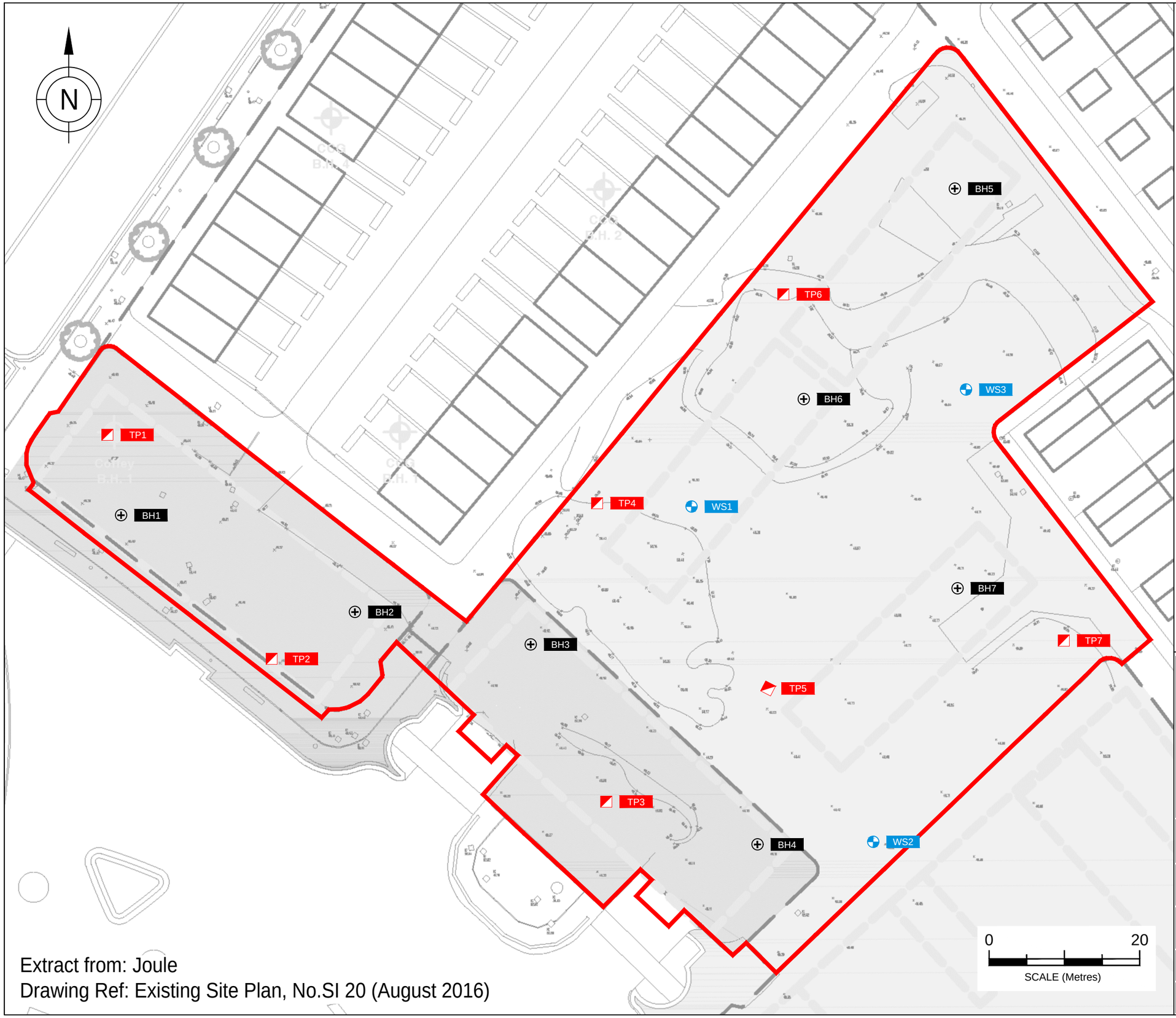
Site: Phase 2 Development, New Islington, Manchester

Title: Historical Features

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 16 1334	1:2500 @ A3	4	

Drawn By:	Checked By:	Drawn:
AC	CB	Dec 2016

Extract from: Envirocheck
Drawing Ref: Existing Site Plan (December 2016)



Extract from: Joule
Drawing Ref: Existing Site Plan, No.SI 20 (August 2016)

KEY

- Site Boundary
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Cable Percussive Borehole (Location Proposed by Joule)
  BH1, BH3, BH4 to 20mbgl
  BH2, BH5, BH6, BH7 to 14mbgl

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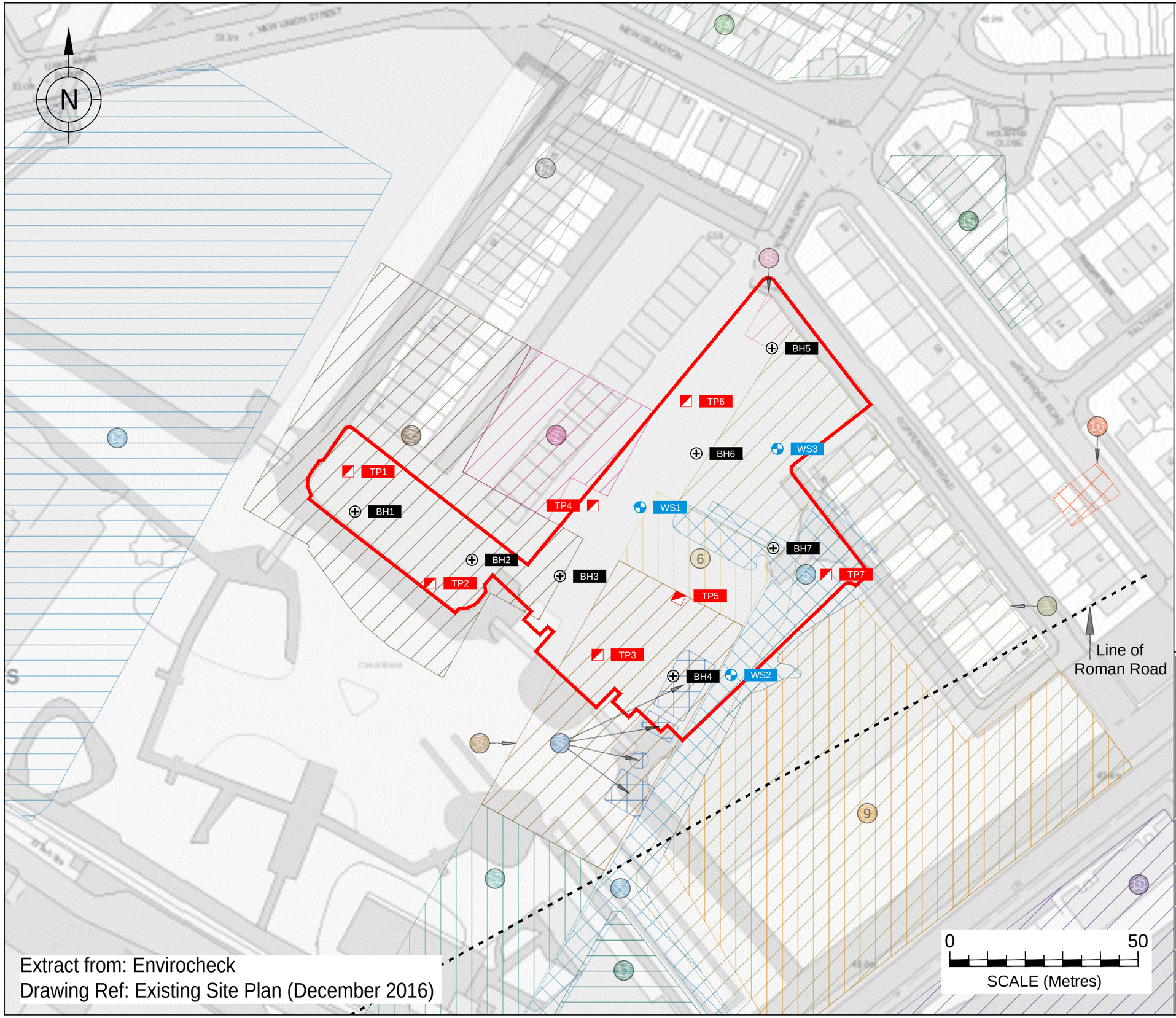
Client: Urban Splash

Site: Phase 2 Development, New Islington, Manchester

Title: Proposed Site Investigation Location Plan

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 16 1334	1:500 @ A3	5	

Drawn By:	Checked By:	Drawn:
AC	RC	Dec 2016



Extract from: Envirocheck
Drawing Ref: Existing Site Plan (December 2016)

KEY

- Site Boundary
- 1 Cotton Mills/Engineering Works/ Other Works
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- 3 Reservoirs
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- 8 Public House
- 9 Brick Field
- 10 Hospital
- 11 Wharfs/Works
- 12 Wharfs/Works
- 13 Canals/Wharfs/Works
- 14 Mill/Works
- 15 Foundry
- 16 Timber Yard
- 17 Foundry
- 18 Basin/Reservoir
- Window Sample Borehole (WS)
- Trial Pit (TP)
- Cable Percussive Borehole (Location Proposed by Joule)

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Client: Urban Splash

Site: Phase 2 Development, New Islington, Manchester

Title: Proposed Site Investigation Location Plan With Historical Features Overlay

Job No.:	Scale (See Scale Bar):	Figure:	Revision:
LKC 16 1334	1:1000 @ A3	6	

Drawn By:	Checked By:	Drawn:
AC	PQ	Dec 2016