

STUBBS MEWS

DRAINAGE MANAGEMENT AND MAINTENANCE PLAN

1.0 INTRODUCTION

- 1.1 The site has been developed to provide residential accommodation, arranged in two staggered terrace each comprised of nine modular houses over a podium car park structure.

A post development site layout for Stubbs Mews is included in Appendix A.

2.0 DRAINAGE PROPOSALS

- 2.1 The general drainage strategy is outlined in the previously submitted Drainage Statement, ref: 308/01 – Drainage Statement – Revision C, dated February 2019 though allowable run-off rates have been further reduced to a maximum of 5l/s following subsequent discussions with United Utilities and Manchester City Council.

- 2.2 The site is drained utilising new private foul and surface water drainage systems as shown on the proposed Drainage Layout drawing, ref: 308-01-70 included in Appendix B.

3.0 SURFACE WATER DRAINAGE

- 3.1 As agreed with the Local Authority Flood Risk Management Team and United Utilities, surface water drainage from the site is managed sustainably via on site attenuation storage and subsequent discharge to the combined sewer network at controlled rates.
- 3.2 Details of the contractor designed proprietary attenuation tank and hydrobrake flow control manhole are included in appendices C and D respectively.

4.0 MANAGEMENT AND MAINTENANCE

- 4.1 Management and maintenance of the new private surface water network will be required to secure the operation of the sustainable drainage scheme through its lifetime. The process is to be managed by the appointed property management company, details as noted below.

Residential Management Group
3 Chepstow Street
Manchester
M1 5FW

0345 003 0044

- 4.2 The management company will be responsible for inspection of manholes and catch pits upstream and downstream of the attenuation tank and for the appropriate removal of silt build up as required. It is anticipated that this work will be undertaken on a regular 3 monthly basis or as required following large storm events.
- 4.3 Where proprietary products have been used, such as for attenuation tanks or hydrobrake flow controls, and there are no specific maintenance requirements then

inspection will be undertaken in line with the general maintenance of the system outlined above. Extracts from trade literature are included in appendices C and D and summarised below.

4.2.1 ATTENUATION TANK

Extract from manufacturer's O&M manual:

GEOLIGHT maintenance

Once received stormwater reaches the storage reservoir through one or more distribution pipes laid out on the side faces of the Geolight blocks.

These distribution pipes consist of a , 450 mm Ø 300 Ø or 225Ø generally, covered in a trench filled with draining material requiring little compaction, like washed rolled pebbles, free from fines, and 15/25 grading.

A 10 mm mesh geogrid or GEOTextile, laid between the distribution pipe and Geolight, prevents the horizontal Geolight blocks being clogged by the draining materials.

The permeability of the supply and distribution pipe located on the periphery of the reservoir is designed to prevent any clogging of the system upstream of the stormwater drain. This sizing is checked for each supply. It is obtained thanks to design programmes by SDS limited following testing of a size 1 reservoir in which all hydraulic configurations were studied.

These tests also made it possible to check the very good vertical and horizontal permeabilities of Geolight blocks and this general layout is usually accepted.

The choice of one of these layouts or a combination of them is according to:

- the place reserved for the reservoir
- available slopes
- hydraulic parameters (discharge)
- position of stormwater input and output systems.

The ends of feeder drains (distribution pipes) are connected to inspection chambers(manholes), acting as settling tanks and making inspection and maintenance of the whole distribution pipe possible.

For small discharges, stormwater does not penetrate Geolight blocks, but circulates either in an appropriate bypass, or in the distribution pipe drain. This is for draining the first water which will be handled downstream if required.

When the reservoir is drained, water is drained through a distribution pipe possibly the same as the one located at the input which operates in the opposite direction. Drainage discharge is controlled by the downstream system piping.

A ventilation system consisting of a drainage geocomposite is fresh air vented in the inspection pits. It is laid out in the upper part of the distribution pipes and the general space occupied by the reservoir.

We generally recommend that the stormwater tank inspection chambers are checked periodically in conjunction with general maintenance of the underground pipe network.

4.2.2 HYDROBRAKE FLOW CONTROL

Extract from the manufacturer's O&M manual:

Vortex Flow Control

Operation & Maintenance Instructions

Item: Crown Radial Type Vortex Flow Control Unit

Operation

The Vortex Flow Control unit is a surface water regulator. It is entirely self activating and requires no manual intervention

Maintenance

The unit requires no routine maintenance

In the event of a blockage, it can be removed after the system has been drained down by pulling on the lifting cable located at the access

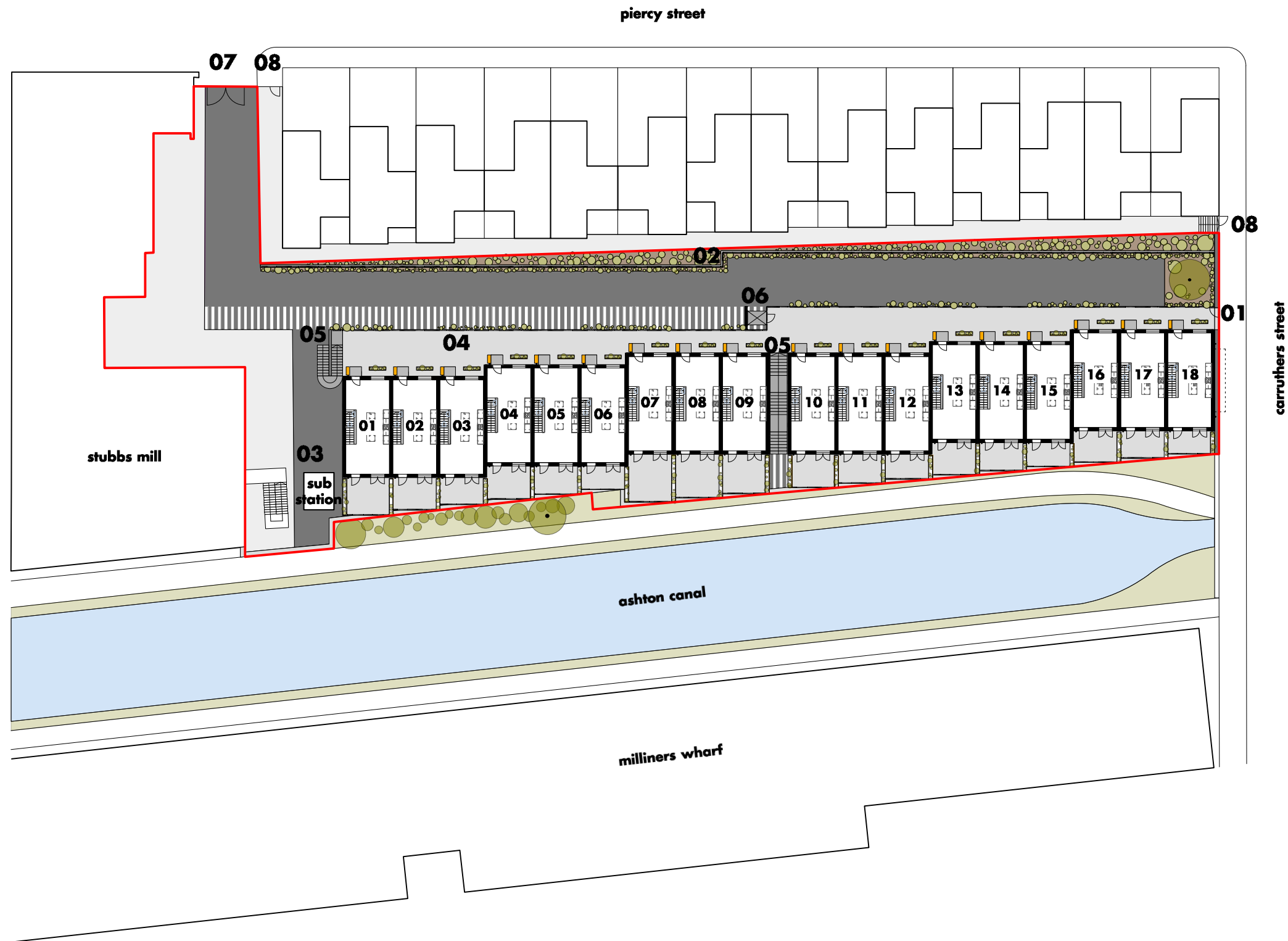
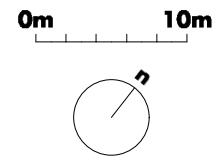
Inspection

The chamber containing the unit should be inspected in line with normal practice. Any debris or silt should be removed

Any visible fixing bolts should be checked. If an internal blockage is suspected the vortex unit can be removed and inspected internally through the inlet or outlet hole

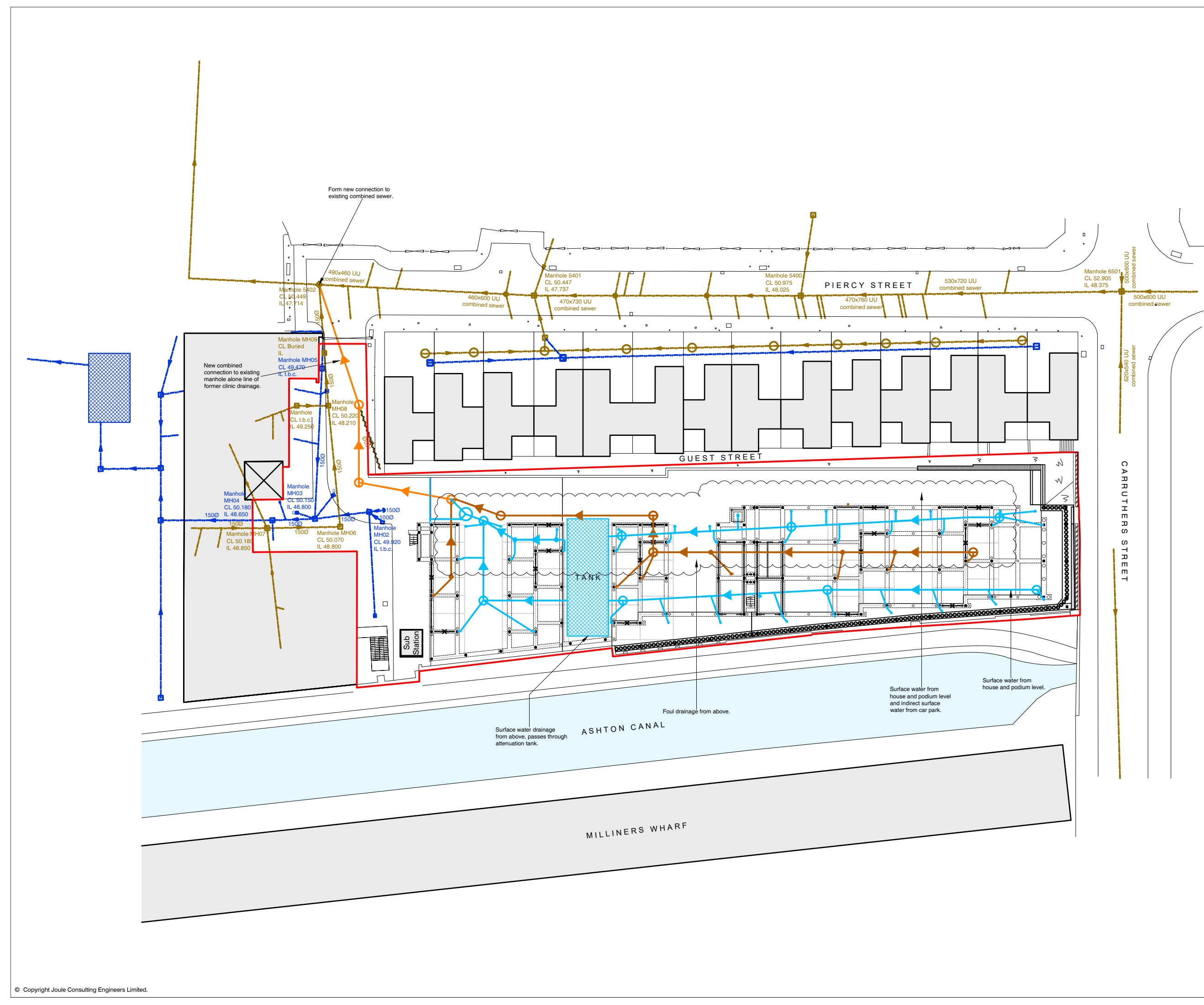
The unit must be replaced and securely fitted before the unit becomes operational

APPENDIX A – POST DEVELOPMENT SITE LAYOUT



- 01 level access to carruthers street
- 02 landscape buffer
- 03 existing substation
- 04 podium deck
- 05 stair from car park
- 06 lift to podium level
- 07 existing vehicular access gate
- 08 proposed secure pedestrian gate

APPENDIX B – PROPOSED DRAINAGE LAYOUT



Notes:

1. This drawing is to be read in conjunction with the site survey and all relevant Architects and Engineers drawings and the specification.

2. For general notes refer to drawing no. 308-01-N01 & N02.

Key:

Site Boundary, (taken from Architects drawings).

Drainage Key:

Existing Drainage, (Surface Water).

Existing Drainage, (combined foul & storm water).

Proposed Drainage, (Surface Water).

Proposed Drainage Attenuation Tank, (Surface Water).

Proposed Drainage, (foul).

Proposed Drainage, (combined foul & storm water).

CONSTRUCTION

20.10.20	Issued for Construction, foul and surface water drainage updated inline with site requirements.	E	TP	SW
08.10.20	Issued for Construction, end stair & lift updated, notes updated.	D	TP	SW
18.08.20	Issued for Construction, foul & surface water runs & ICs omitted in line with drainage distributed under podium slab.	C	TP	SW
06.03.20	Issued for Information, proposed building position updated, drainage drop positions updated, drainage layout updated, drainage levels updated, tank layout updated, extent of BPW reduced, RC retaining wall added.	B	TP	SW
01.11.19	Issued for Information, MH C03 added, drainage layout updated.	A	TP	SW
06.09.19	Issued for Information.	-	TP	SW
Date	Issue	Rev.	Revised	Checked

joule

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Project:

Stubbs Mews,
Manchester.

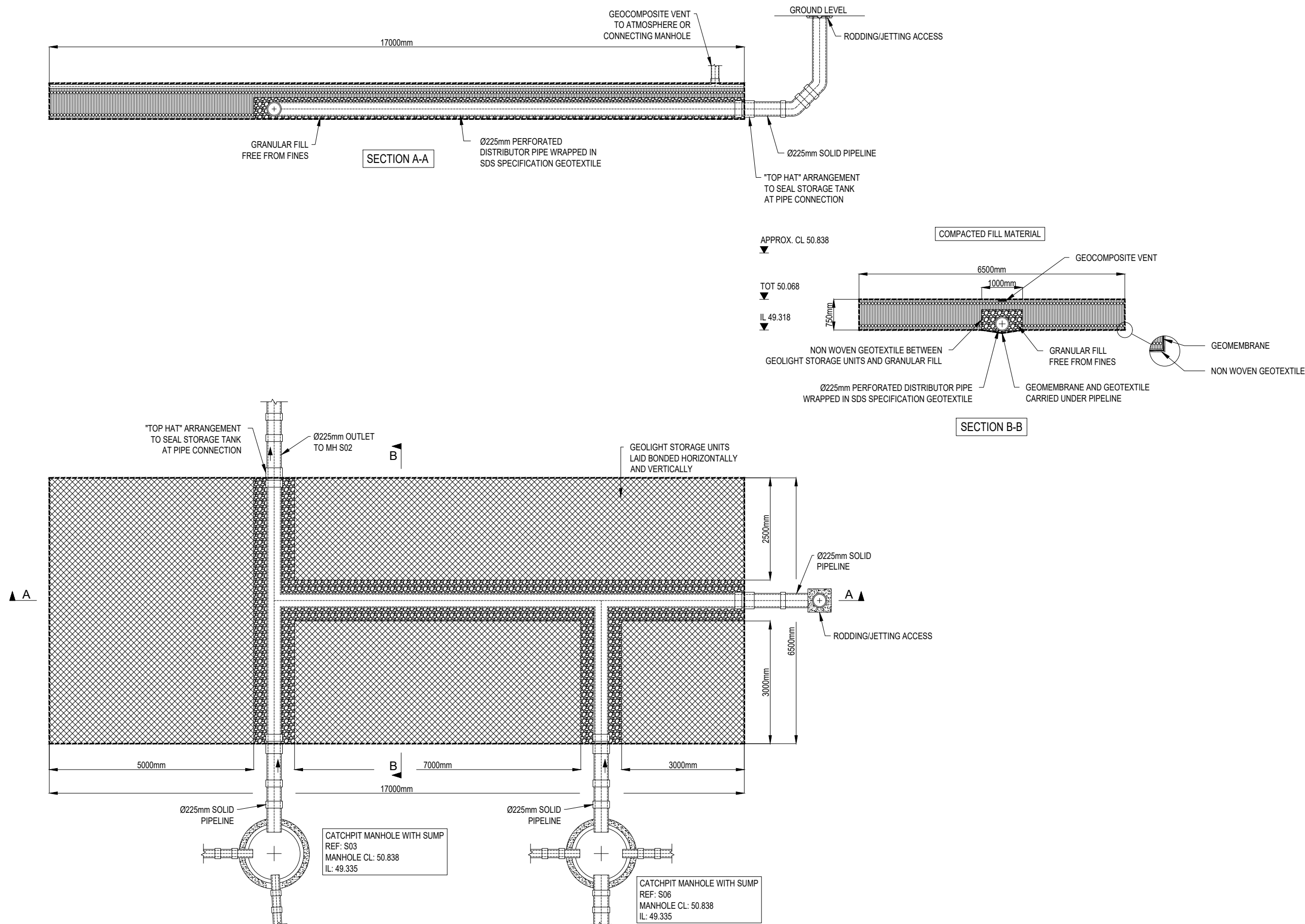
Title:

Proposed,
Drainage,
Ground Floor Level,
Overall Site.

Job No:	308-01	Org No:	70	Rev:	E
Scale:	1:500 @ A3	Date:	06.19	Drawn:	TP

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APPENDIX C – CONTRACTOR DESIGNED PROPRIETARY ATTENUATION TANK



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Biddisham
Somerset
BS26 2RE
+44 (0)1934 751303

sdslimited.com

STUBBS MEWS, MANCHESTER

ADANA CONSTRUCTION

ATTENUATION TANK 1 DETAIL

REFERENCE DRAWINGS:			
Drawing Number	Revision	Drawing Title	Date
308-01-161	E	PROPOSED DRAINAGE GROUND FLOOR LEVEL SHEET 2 of 3	20.10.20

Scale	NTS	Date	06.10.20
Drawing No	E95320_01_B	Rev	B

Sustainable Drainage Systems Ltd

Operation and Maintenance Manual



PROJECT: 964-20-DI Stubbs Mews, Manchester

CONTRACTOR: Adana Construction Ltd

Sustainable Drainage Systems Limited

Clearwater House, Castlemills, Biddisham, BS26 2RE

Tel: 01934751303 Fax: 01934751304

info@sdslimited.com

www.sdslimited.com

Site Supervisor: Matthew Pugh

Sustainable Drainage Systems Ltd

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

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- GEOLight Maintenance
- GEOvent ABG Fildrain Datasheet
- GSE Ultraflex Smooth GEOMembrane Datasheet
- GEOTextile Bontec NW Datasheet
- Cherry Drainage Pipe Specification Datasheet

Sustainable Drainage Systems Ltd

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

1. Scope of Works / System Description

1.1. *Basis of Design*

Sustainable Drainage Systems (SDS) works were carried out in line with design information and requirements supplied by Adana Construction Ltd.

1.2. *Purpose of the Installation*

To supply and install a stormwater system as required and fulfilling the drainage requirements at Stubbs Mews, Manchester.

1.3. *Installation Description*

SDS have installed 1 no attenuation tank at Stubbs Mews, Manchester.

1.3.1. *SDS GEOLight Attenuation Tank*

Installation Started:	11 th December 2020
Installation Completed:	11 th December 2020
Tank Dimensions:	various
Tank Volume:	86m ³
Location:	Please refer to Drawing No. for further information.

The excavation was dug (by others) to the dimensions of the tank plus an extra 0.5m to the length and width to allow for working space during installation. After excavation the hole was blinded to form a level ground with either sand or shingle (by others).

The excavation base was then lined with GEOTextile with additional allowance for the lining to be brought up and over the sides of the tank and allow for it to be completely encased on completion of the build.

Low density polyethylene (LLDPE) GEMembrane was laid on top of the GEOTextile to cover the base and sides of the excavation. The membrane was sealed using an airtight twin edge weld using a hot air type welder (110v). For information on the welding, please refer to document Membrane Welded Joint Information Sheet.

GEOLight blocks were moved into position and installed following a layout plan. During installation a trench allowance was made to lay slotted twinwall distribution pipe through the tank with a length of solid pipe attached at each end of the slotted distribution pipe to allow for the tank system to be attached to the upstream and downstream stormwater manholes (by others). Pre-manufactured top hat seals were welded to the GEMembrane at the entry and exit points of the solid pipe at each end of the tank to ensure a watertight seal. On each vertical face of the GEOLight blocks along the internal trench for the distribution pipe, additional GEOTextile was installed to prevent internal clogging of the lateral channels in the GEOLight blocks.

Sustainable Drainage Systems Ltd

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

All pipe positions and levels within the system were confirmed and approved (by others) prior to the installation of pipe bedding being laid within the trench (by others).

After the tank was built to the layout drawing, GEOvent was laid along the length of the tank before the GEOMembrane was pulled up and over the sides of the tanks to enclose and secure the GEOlight blocks where a panel of GEOMembrane was welded to the top of the tank to form a watertight seal of the tank.

Once the tank was complete, the additional allowance of GEOTextile lining the excavation was pulled up and over the sides of the tanks to completely encase the tank. Backfilling around and over the tank was then completed (by others).

The installation method above is as detailed in the Method Statement

On completion, as detailed in the Method Statement, the attenuation tank was signed off by SDS and a client representative on site using the Sign Off QA Sheet.

For all datasheet information relating to specific materials used manufacturers' details in Section 7.

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Project: 964-20-DI Stubbs Mews, Manchester

2. Operating and Fault Finding Routines

2.1. *Operating Procedures*

Once installed this system is entirely inert and thus has no applicable operating procedures

2.2. *Fault Finding Routines*

Once installed this system is not a product that will develop faults over time

3. Schedule of Materials Used

Attenuation Tank

Item Ref	Model Number	Supplier	Item Type	Description	Location
GEOlight	HG400	SDS	GEOlight block	Lightweight Polyvinyl Chloride (PVC) honeycomb modular block	Attenuation Tank
GEOvent	25SW.NW9-M.CE	ABG	Fildrain	GEOcomposite vent	Attenuation Tank
GEOtextile	Bontec NW9	Bonar Ltd	Bontec NW	Thermally bonded nonwoven GEOtextile	Attenuation Tank
GEOmembrane	Ultraflex Smooth	GSE Environmental	Waterproof Membrane	Smooth linear low density (LLDPE) GEOmembrane	Attenuation Tank
Top Hats	Ultraflex Smooth	GSE Environmental	Waterproof Membrane	Smooth linear low density (LLDPE) GEOmembrane Pipe Penetration Seal	Attenuation Tank
Pipe	MetroDrain	Cherry Drainage Ltd	Slotted Pipe	Cherry Drainage Ltd Twinwall Highway Drainage System	Attenuation Tank
Pipe	MetroDrain	Cherry Drainage Ltd	Solid Pipe	Cherry Drainage Ltd Twinwall Highway Drainage System	Attenuation Tank
Collars	MetroDrain	Cherry Drainage Ltd	Coupling Collars	Cherry Drainage Ltd polypropylene coupling	Attenuation Tank
T Pieces	MetroDrain	Cherry Drainage Ltd	Solid Pipe	Cherry Drainage Ltd Twinwall Highway Drainage System	Attenuation Tank

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

4. Planned Maintenance

4.1. *Planned Maintenance Procedure*

There are no specific steps for planned maintenance; however, it is recommended that the stormwater tank inspection chambers, including the stormwater drainage distribution pipes, are checked periodically in conjunction with general maintenance of the underground pipe network

Please refer to the document GEOlight Maintenance for further clarification

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

5. Safety Procedures

5.1. *CoSHH Data Sheets*

None of the materials used in this installation require reference to CoSHH

5.2. *Risk Assessments*

Maintenance of this installation does not pose any major risk and therefore has no applicable risk assessment requirements

5.3. *Disposal*

None of the materials used in this installation require specialist disposal

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

6. Spares

6.1. *Spares & Lubricants Issued to the Client at Handover*

No spares were issued to the client at handover

6.2. *Recommended Spares / Lubricants for the Client to Hold*

It is not recommended that the client hold any spares as they are not required for this installation

6.3. *General Spares & Lubricants Lists*

There are no general spares lists available for these works

Operation and Maintenance Manual

Project: 964-20-DI Stubbs Mews, Manchester

7. Manufacturers / Suppliers Details

7.1. Sustainable Drainage Systems Limited

MANUFACTURER/ SUPPLIER	ADDRESS	CONTACT DETAILS	TOTAL No. OF PAGES
Sustainable Drainage Systems	Clearwater House Castlemills Biddisham Somerset BS26 2RE	Tel: 01934 751303 e-mail: info@sdslimited.com	12
EQUIPMENT REF/ MODEL	PUBLICATION DETAILS		NO. OF PAGES
GEOLight	GEOLight Brochure		8
GEOLight	GEOLight Datasheet		2
GEOLight	GEOLight Maintenance		1
GEOMembrane	Membrane Welded Joint Information Sheet		1

7.2. ABG Limited

MANUFACTURER/ SUPPLIER	ADDRESS	CONTACT DETAILS	TOTAL No. OF PAGES
ABG Limited	E7 Meltham Mills Road Meltham Yorkshire HD9 4DS	Tel: 01484 852096 e-mail: geo@abgltd.com	1
EQUIPMENT REF/ MODEL	PUBLICATION DETAILS		NO. OF PAGES
GEOvent	ABG Fildrain 25SW.NW8-M.CE Datasheet		1

7.3. BONAR Limited

MANUFACTURER/ SUPPLIER	ADDRESS	CONTACT DETAILS	TOTAL No. OF PAGES
BONAR Limited	Unit 28, Bergen Way Sutton Fields Industrial Estate (West) Hull HU7 0YQ	Tel: 01482 863777 e-mail: info@bonar.com	1
EQUIPMENT REF/ MODEL	PUBLICATION DETAILS		NO. OF PAGES
GEOtextile	Bontec NW - Needle Punched and Thermally Bonded Nonwoven Datasheet		1

7.4. GSE Environmental (UK Office)

MANUFACTURER/ SUPPLIER	ADDRESS	CONTACT DETAILS	TOTAL No. OF PAGES
GSE Environmental	49C Fordham Road Soham Cambridge CB7 5AH	Tel: 01487 824339 e-mail: msmith@gseworld.com	1
EQUIPMENT REF/ MODEL	PUBLICATION DETAILS		NO. OF PAGES
GSE GEOMembrane	GSE Ultraflex Smooth Geomembrane Datasheet		1

7.5. Cherry Drainage Pipes Limited

MANUFACTURER/ SUPPLIER	ADDRESS	CONTACT DETAILS	TOTAL No. OF PAGES
Cherry Drainage Pipes Ltd	12 Derryhirk Road Dungannon Co.Tyrone BT71 6NH	Tel: 028 3885 3900 e-mail: sales@cherrypipes.com	2
EQUIPMENT REF/ MODEL	PUBLICATION DETAILS		NO. OF PAGES
Twinwall Carrier Pipe	Cherry Drainage Pipes Carrier Pipe information and datasheet		1
Twinwall Filter Pipe	Cherry Drainage Pipes Filter Pipe information and datasheet		1
EQUIPMENT REF/ MODEL	PUBLICATION DETAILS		NO. OF PAGES
Double Wall Corrugated Polypropylene Pipe	Paladex Pipe information and datasheet		1

GEOLIGHT maintenance

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We generally recommend that the stormwater tank inspection chambers are checked periodically in conjunction with general maintenance of the underground pipe network.

APPENDIX D – CONTRACTOR DESIGNED PROPRIETARY HYDROBRAKE FLOW
CONTROL



Vortex Flow Control

Operation & Maintenance Instructions

Item: Crown Radial Type Vortex Flow Control Unit

Operation

The Vortex Flow Control unit is a surface water regulator. It is entirely self activating and requires no manual intervention

Maintenance

The unit requires no routine maintenance

In the event of a blockage, it can be removed after the system has been drained down by pulling on the lifting cable located at the access

Inspection

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