

STOCKTONS, MANCHESTER

DRAINAGE STRATEGY

Project No: 2301-06

July 2026

Rev: P04

STO-REN -XX-XX-RP-C-00002

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CONTENTS

1.0 INTRODUCTION ***1***
1.1 Purpose of this Report *1*
2.0 THE SITE ***2***
2.1 Site Location *2*
2.2 Site Description *2*
2.3 Existing Site Drainage *3*
2.4 Geology & Hydrogeology *3*
2.5 Hydrology *3*
2.6 Proposed Development *3*
3.0 SURFACE WATER DRAINAGE HIERARCHY ***4***
3.1 Surface Water Discharge Assessment *4*
4.0 SURFACE WATER DISCHARGE RATE ASSESSMENT ***6***
4.1 Pre-Development Surface Water Run-Off Rates *6*
4.2 Existing Greenfield Run-Off Volume *7*
4.3 Proposed Surface Water Discharge Rates and Volume *7*
5.0 ATTENUATION AND SUDS ASSESSMENT ***8***
5.1 Attenuation requirements *8*
5.2 Sustainable Urban Drainage Assessment *8*
5.3 Water Quality Assessment *9*
5.4 SuDS Maintenance and Management Plan *11*
6.0 DRAINAGE STRATEGY ***13***
6.1 Surface Water System *13*
6.2 Foul Water System *13*
6.3 Culvert Proposals *13*

APPENDIX A – TOPOGRAPHICAL SURVEY
APPENDIX B – UNITED UTILITIES SEWER MAP
APPENDIX C – CCTV SURVEY
APPENDIX D – CULVERT SURVEY
APPENDIX E – PROPOSED DEVELOPMENT PLANS
APPENDIX F – EXISTING DRAINED AREAS PLAN
APPENDIX G – RAINFALL PROFILES
APPENDIX H – GREENFIELD RUNOFF RATE
APPENDIX I – GREENFIELD RUNOFF VOLUME
APPENDIX J – PROPOSED IMPERMEABLE AREAS PLAN
APPENDIX K – QUICK STORAGE ESTIMATE
APPENDIX L – BELOW GROUND DRAINAGE GENERAL ARRANGEMENT
APPENDIX M – HYDRAULIC CALCULATIONS
APPENDIX N – NORTH-WEST SUDS PROFORMA

1.0 INTRODUCTION

1.1 Purpose of this Report

This Outline Surface Water Drainage Strategy has been prepared to support the planning application for the proposed Stocktons development.

The assessment includes: a summary of the site, an estimate of the existing and proposed surface water discharge rates, infiltration assessment, SuDS assessment, and outline drainage proposals and performance criteria.

This report should be read in conjunction with the Flood Risk Assessment by renaissance, July 2026 and the completed North-West SuDS Pro-Forma in Appendix M.

The proposals within this report are intended to demonstrate the feasibility of the overarching drainage strategy to support the planning proposal.

The Shooters Brook Proposals document (ref: STO-REN-XX-XX-RP-C-00003 Rev: P03) details the diameter of the existing culvert on site, and details of the revised culvert proposal. The document demonstrates that the proposed box culvert with a dimension of 1500mm x 1200mm provides a betterment than the existing culvert. The document also demonstrates that the revised easement zone is appropriate for a cover of the dimensions proposed.

2.0 THE SITE

2.1 Site Location

The proposed development site is located off Great Ancoats Street, Store Street and Ducie Street, Manchester.

The site location is described below:

- Post Code M1 2WD
- OS X (Easting) 385122
- OS Y (Northing) 398250

The site location is illustrated in Figure 2.1 below.



Google Earth 2026

Figure 2.1: Site Location

2.2 Site Description

The development site is circa 0.397 hectares with access from Great Ancoats Street to the east Ducie Street to the north and Store Street to the south.

The site comprises hard standing to the east in the form of a surface car park, and a number of warehouse buildings to the west.

The existing buildings on the site share a party wall with an industrial complex along the western boundary of the site.

The site slopes from northeast to southwest as shown by the topographical survey.

Refer to Appendix A for the existing topographical survey.

2.3 Existing Site Drainage

The United Utilities (UU) sewer asset map indicates an extensive network of public combined sewers within the highways that surround the site. These networks range in size from 300 diameter up to 3660. The records also indicate there to be small run of 300 combined sewer within the site boundary that connects into a larger sewer within Store Street. Refer to Appendix B for UU Sewer records.

A CCTV survey has been undertaken and confirms the site is currently drained via private drainage networks. The survey was inconclusive due to high levels of silt and therefore it is assumed the networks discharge to either the public sewer network or the Shooters Brook Culvert which passes through the site.

Refer to Appendix B for UU Sewer records.

Refer to Appendix C for CCTV Survey information.

2.4 Geology & Hydrogeology

A Phase I Geo-Environmental Assessment Report was completed by Brownfield Solutions Ltd. in October 2024 (AH/C5311/13546).

There is likely to be a significant presence of made ground on-site based on historical use.

BGS mapping indicates the site to be underlain by superficial deposits of the Glacial Till comprising of clay, sand and gravel. The deeper solid geology is indicated to be part of the Chester Pebble Beds Formation which typically comprises sandstone.

The Chester Formation is a principal aquifer of high intergranular and/or fracture permeability, usually providing a high level of water storage which may support water supply/river base flow on a strategic scale. The Glacial Till is assigned as a Secondary (Undifferentiated) Aquifer, where it is not possible to attribute either category A or B to the aquifer.

The nearest active groundwater abstraction licence is 1451m to the west of the site. There are no active potable groundwater abstraction licences within 2000m of the site.

2.5 Hydrology

The Shooters Brook, a tributary to the River Medlock, is culverted and passes beneath the site. The culvert has been partially surveyed upstream onto the site from an access point within Store Street. The survey was abandoned beneath the existing car park due to high levels of silt.

In addition to Shooters Brook, the Ashton Canal is located circa 100m south of the site.

There are no active surface water abstraction licences within 2000m of the site.

There are no licenced discharge consent records within 2000m of the site.

The site is not indicated to be within 500m of a Source Protection Zone.

Refer to Appendix D for Culvert survey findings.

2.6 Proposed Development

The proposed development comprises the construction of a 44-storey residential tower with 3 basement levels and a 24-storey residential block and commercial space, with 2 basement levels. In total, the scheme provides 723 apartments, c.4,000m^2 of coworking space, amenity areas for residents and an external public realm area.

Refer to Appendix E for development proposals.

3.0 SURFACE WATER DRAINAGE HIERARCHY

3.1 Surface Water Discharge Assessment

The Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA states that drainage from new developments should use the following hierarchy:

- Infiltration
- Discharge to a watercourse
- Discharge to a public sewer

In accordance with NPPF, runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy

- Priority 1: collected for non-potable use
- Priority 2: infiltrated to ground
- Priority 3: discharged to an above ground surface water body
- Priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- Priority 5: discharged to a combined sewer

'The SuDS approach to managing surface water runoff' as set out in the 'CIRIA SuDS Manual 2015' expands on the NPPF hierarchy and advises that the prescribed list below should be evaluated:

1) Control at Source – Infiltration, Re-Use, Green Roofs, Run-off to grass or verge, Harvesting, Water Butts, and Permeable Layers

2) On Site Treatment with Other SuDS Techniques – Collection for Infiltration and Detention

3) Local Treatment with Other SuDS Techniques – Collection away from the Site

4) Regional Treatment with Other SuDS Techniques – Collection in Wetlands and Balancing Ponds

5) Watercourse – including streams, ditches or existing swales.

6) Surface Water Sewers

7) Combined Sewers

Collection for Non-potable Use

There is no significant demand for non-potable use on the site, however the adoption of supplementary landscape irrigation is to be considered further.

Infiltration Based Systems

The site has been developed historically and as such made ground is likely to be present below ground. This could potentially pose risks to the mobilisation of contaminants should infiltration be utilised.

Additionally, the Phase 1 Geo-Environmental Assessment Report by Brownfield Solutions Ltd indicates that the site is underlain by low permeability clays which would not be suitable for infiltration.

For these reasons, infiltration-based systems have been discounted.

Discharge to a Surface Waterbody

The closest watercourse is the Shooters Brook Culvert which is to be diverted between the structures on the site.

It is proposed that surface water drainage on the site connects to the culvert, subject to an agreement with the LLFA.

4.0 SURFACE WATER DISCHARGE RATE ASSESSMENT

4.1 Pre-Development Surface Water Run-Off Rates

The development is considered 100% impermeable consisting of the existing hardstanding and building roofs from previous developments.

Refer to topographical survey in Appendix A and Existing Impermeable Areas drawing STO-REN-XX-XX-DR-C-00020 in Appendix F.

Existing Brownfield Run-Off Rates

The brownfield run off rates for the area of the site have been calculated using the Modified Rational Method based on the rainfall profiles provided in Appendix G.

Modified Rational Method: $\boldsymbol{Q = 2.78Ci_{(peak)}A}$

$$\boldsymbol{C = C_V C_R}$$

$$\boldsymbol{C = 0.84 \times 1.3}$$

Return Period	$I_{(peak)}$ (mm/hr)	Area (ha)	Peak Runoff (l/s)
1 in 2 Year	17.30	0.397	20.8
1 in 30 Year	31.70	0.397	38.2
1 in 100 Year	40.00	0.397	48.2

Table 4.1: Brownfield Run-Off Rates

Existing Brownfield Run-Off Volume

The existing brownfield run off volume expected for a site of this size for a 100-year 6-hour storm has been calculated using the modified rational method.

$$\boldsymbol{Runoff\ Volume = 10C \times i_{(average)} \times A \times storm\ duration}$$

$$\boldsymbol{Runoff\ Volume = 10 \times 1.092\ \times 10.200 \times 0.397 \times 6}$$

$$\boldsymbol{Runoff\ Volume = 265m^3}$$

Existing Greenfield Run-Off Rates

The greenfield run-off for the total site area has been considered, this has been calculated using the UK SuDS Greenfield Runoff Rate Estimation Tool (Appendix H). The rates presented below are what would be typical of a site with an equivalent surface area which remains undeveloped / covered with grass or vegetation

The equivalent greenfield run-off rate is tabled below: -

Return Period	$Q_{Greenfield}$ (l/s)
1 in 2 year	3.1
1 in 30 year	5.6
1 in 100 year	6.9
Q_{BAR}	3.3

Table 4.2 – Greenfield Run-off Rates

4.2 Existing Greenfield Run-Off Volume

The greenfield run off volume expected for the developed areas site for a 100-year 6-hour storm has been calculated using the Greenfield Volume calculator within InfoDrainage. The Greenfield Runoff Volume is calculated to be **117 m^3**.

Refer to Appendix I for InfoDrainage Greenfield Runoff Volume calculation.

4.3 Proposed Surface Water Discharge Rates and Volume

The Manchester, Salford and Trafford SFRA states that brownfield sites in the Core Conurbation Critical Drainage Area should restrict rates to at least 50% of the pre-development brownfield run-off rates, with an aim of reducing runoff to Greenfield rates up to a 1-in-100-year storm event, considering climate change.

The UK National Standards for Sustainable Drainage Systems (SuDS) states that if the proposed runoff volume from the development to surface waters or sewers for the 1-in-100-year, 6 hour rainfall event is greater than the volume of greenfield runoff for the same rainfall event, then the peak allowable discharge rate from the development for the 1-in-100-year event shall be limited to QBAR. It is therefore proposed that the total runoff from the site is limited to QBAR of 3.3 l/s.

It is also not considered feasible to reduce the discharge volume to greenfield volume or provide long term storage for the additional runoff volume over the Greenfield volume. This is due to the low infiltration rates and the limited space available over the site to provide long term storage.

It is therefore proposed that the total runoff from the site is limited to QBAR of 3.3 l/s.

5.0 ATTENUATION AND SUDS ASSESSMENT

5.1 Attenuation requirements

The proposed development area is circa 0.326 ha of building footprint and external hard landscaping.

Due to the nature of the development, urban creep has not been considered as it is unlikely that the percentage of impermeable area will increase during the lifetime of the development.

The post development discharge rates will include for an increase in the rainfall intensity of 40% and 45% for the 3.3% and 1% annual exceedance probability (AEP) respectively, to allow for climate change as is consistent with a design life of the development of 100 years, as outlined by the National Planning Practice Framework (NPPF).

Conservatively assuming a fully impermeable site, quick storage estimates for the above return periods, using Micro Drainage, indicate that the approximate attenuation volumes shown in table 3.4 are required to limit the peak surface water discharge to 3.3 l/s.

Return Period	Development Area (ha)	Surface Water Attenuation Estimate (m^3)
1:30 Year 40%CC	0.326	98-152
1:100 Year +45%CC	0.326	140-230

Table 5.1 – Attenuation Volumes

5.2 Sustainable Urban Drainage Assessment

Table 5.2 below provides a summary of typical SuDS techniques outlined within CIRIA guide 753 SuDS manual. Based on a review of the suitability of the SuDS techniques it is proposed that the Stocktons development may incorporate the following:

SuDS Technique	Description	Suitability for Development Site	
Rainwater Harvesting	Collection of rainwater run-off for use	Large impermeable area and limited usage deems this unsuitable.	✓
Green Roof	Vegetated roof area that reduces runoff and increases time of concentration.	Blue roof system chosen for roof areas.	×
Blue Roof	Roof area designed to store and reduce peak runoff rates during intense storms.	Suitable.	×
Infiltration systems	Systems that collect and store runoff allowing it to infiltrate into the ground.	Initial investigations suggest that infiltration is infeasible due to potential contaminants and presence of low permeability clays. Subject to further infiltration and contamination testing.	?
Proprietary treatment systems	Underground structures designed to provide treatment to runoff	Suitable to treat runoff before entering culvert.	×
Filter Strips	Grass strips that promote sedimentation and filtration as runoff is conveyed over the surface	Subject to infiltration and contamination testing.	?

Filter Drains	Granular filled Linear drains / soakaway with either granular fill and perforated pipe, or dense vegetation that treat runoff from adjacent impermeable areas	Subject to infiltration and contamination testing.	?
Swales	Shallow landscape channels that treat and convey runoff.	Unsuitable due to limited linear space on site.	×
Bioretention systems	Shallow landscape depressions that allow runoff to pond temporarily on the surface, before filtering through vegetation and underling soils. Can either infiltrate or convey via perforated pipes.	Unsuitable due to limited space on site.	×
Trees	Trees within soil filled pits or permeable paving that can collect, store and treat run off	Trees proposed on site. See landscaping proposals.	✓
Pervious Paving	Granular build-up beneath permeable paving systems that can be used to either store runoff (lined system) and increase time of concentration or allow percolation into the ground.	Limited space/requirement for treatment on site.	×
Attenuation Storage tanks/ large diameter pipes	Large underground voided spaces used to storage runoff before infiltration or controlled discharge	Suitable to store and convey surface water run-off.	✓
Ponds and wetlands	Permanent pools of water used to treat run-off and provide attenuation above normal water level	Unsuitable due to space constraints on site.	×
Detention Basins	Dry basins that are designed to temporarily store runoff providing water quality treatment. Can either be positively drained or infiltrate or both.	Unsuitable due to space constraints on site.	×

× Not suitable ✓ Suitable ? Potentially suitable subject to further investigation

Table 5.2 – Review of SuDS Techniques from CIRA C753 The SuDS Manual

5.3 Water Quality Assessment

Water quality is generally affected by frequent rainfall events, 1 in 1-year events or less. To assess the water quality consideration will be given to the guidance with CIRIA Guide C753 The SuDS Manual. The pollution hazard levels for different land uses are presented in the table below.

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydro-carbons
Residential Roofs	Very Low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking within infrequent change (eg schools, offices) ie <300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change	Medium	0.7	0.6	0.7

(eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways				
Site with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), site where chemical and other fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured, industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

Table 5.3 – Pollution Hazard Levels

The surface water run-off from the development will be from the building roofs and external hard landscaping. This results in a low pollution hazard level.

The SuDS Manual sets out various approaches to water quality risk management. The Simple Index approach uses hazard mitigation indices to ensure sufficient treatment is provided before discharge to a surface water body or groundwater. If infiltration is found to be viable upstream treatment will be required prior to discharge to ground. Table 5.4 (Table 26.4) extracted from the SuDS Manual sets out the characteristics of potential systems.

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates	Total Suspended Solids	Metals	Hydro-carbons
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential of at least 300 mm in depth	0.6	0.5	0.6
A soil with good contaminant attenuation potential of at least 300 mm in depth	0.4	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, i.e. graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20mm gravel) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth	0.4	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential of at least 300 mm in depth	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential of at least 300 mm in depth	0.8	0.8	0.8
Proprietary treatment systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

Table 5.4 – Indicative SuDS Mitigation Indices for discharges to groundwater (Table 26.4 'The SuDS Manual C753)

The use of a Hydro Downstream Defender Vortex Separator will provide the required treatment for a low pollution hazard level.

5.4 SuDS Maintenance and Management Plan

The Sustainable Urban Drainage systems are to be maintained by the property owner and/or a maintenance company on their behalf. They will be required to maintain the SuDS features in line with the following recommendations and suppliers' requirements of the various features.

The following operation and maintenance requirements for the SuDS features incorporated into the development are to be adopted by the Building Management Company. These requirements are general and have been extracted from the CIRA Guide C753.

Proprietary Treatments systems are to be maintained inline the supplier recommendations. The maintenance requirements for the Hydro Downstream Defender are included within table 5.6.

The Main Contractor delivering the development is to update the general requirements to reflect the product specific requirements of the as installed proprietary SuDS and incorporate these into the Operation & Maintenance manual for the building. A Verification Report, including photographic evidence, to demonstrate that the drainage has been constructed as per the design drawings. As-built drawings should be supplied by the Main Contractor where the construction of the drainage varies from the design drawings.

Maintenance Schedule	Required Action	Typical Frequency
Regular Inspection	Inspect all outlets, checking the flow restrictor has not been tampered with, damaged or removed.	Quarterly and after severe storms
	Check and replace pebble margin (if required) around the inspection chamber (this helps filter the water entering the outlet).	Quarterly and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Quarterly and after severe storms
	Inspect all overflows to ensure the overflow will discharge freely. Check for any signs of discharge, discharge of water via the overflow indicates that the roof is not functioning correctly and a more thorough investigation may be required	Quarterly and after severe storms
	Check that the surface finishes of the blue roof (green or hard landscaping) are still correctly installed and in good condition. That there has been no movement to the finished surface during investigations or activities by other trades.	Quarterly and after severe storms
	Check that the filter fleece is still in place on vertical edges around outlets. Ensure there is no openings that might allow leaves and debris into the blue roof system.	Quarterly and after severe storms
	Access ladders and man-safe system inspected, and date tagged as required so that the blue roof can always be accessed.	Quarterly and after severe storms
	Inspect underside of roof for evidence of leakage	Quarterly and after severe storms
Regular Maintenance	Remove debris, litter and fallen leaves to prevent clogging of the system	Quarterly and after severe storms
	Remove any debris from inlets, outlets and overflows.	Quarterly and after severe storms
	Remove fallen leaves and debris from deciduous plant foliage	Quarterly and after severe storms

	Remove nuisance and invasive vegetation, including weeds	Quarterly and after severe storms
Remedial Actions	If drain inlets, outlets or overflows have settled, cracked or moved, investigate and repair as appropriate	As required
	Repair ladders and man-safe systems to maintain safe access	As required

Table 5.5 - Operation and Maintenance requirements for Blue Roofs

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect sump and internal components	• Regularly during first year of installation • Every 6 months after the first year of installation
Remedial Actions	Sediment removal	• Once per year or as needed • Following a spill in the drainage area
	Oil and floatable removal	• Once per year or as needed • Following a spill in the drainage area

Table 5.6 - Operation and Maintenance schedule for Downstream Defender Vortex Particle Separator

6.0 DRAINAGE STRATEGY

Refer to Appendix L for the Below Ground Drainage Plan

6.1 Surface Water System

The development will have a dedicated surface water network that is to collect the rainwater from the proposed building roofs and impermeable external areas. The system will then discharge under gravity into the Shooters Brook culvert, subject to agreement with the Lead Local Flood Authority (LLFA).

The surface water discharge from the site is to be limited to the rate detailed within Section 4.3 of this report using a flow control device within the final manhole on site prior to discharge into the Shooters Brook. Proposed discharge rate is to be confirmed with the LLFA as part of the detailed design.

Attenuation will be provided by a tanks beneath the external hard and soft landscaping and blue roof systems for each of the blocks.

The surface water discharging from the site will be from the building roofs and external hard landscaping. As the run-off is to discharge into a watercourse, treatment is required to improve water quality prior to discharging into it. The main source of treatment is to be provided by a vortex separator which has been assessed using the Simple Index Approach. The drainage system is to also include catchpit manholes and silt buckets within channel sumps to assist in removing sediment.

The surface water drainage network is to be designed in accordance with Building Regulation Part H, BS EN 752 and Code for Adoption. In addition, the following requirements will also be adopted in accordance with the National Standards for Sustainable Drainage Systems:

- The below ground drainage system will be designed to ensure flooding does not occur on site for the 1-in-30-year and no internal flooding for the 1-in-100-year rainfall events.
- The surface water system is to be designed to accommodate the 1-, 2-, 30-and 100-year return events with 40% and 45% climate change allowances for the 30 and 100 year events respectively. The system will be designed for a maximum storm duration of 24 hours.

InfoDrainage calculations for the proposed surface water system are available in Appendix M.

The North-West SuDS Proforma has been completed to support this application, refer to Appendix N.

6.2 Foul Water System

The site will have two dedicated foul water networks that will collect the foul water associated with the development and discharge into the public combined sewers within Store Street and Ducie Street.

The new foul water drainage connections will be subject to separate section 106 applications with United Utilities.

The drainage system is to be designed in accordance with Building Regulations Part H, BS EN 752 and Codes for Adoption.

6.3 Culvert Proposals

The existing Shooters Brook culvert extends across the development site passing beneath the proposed location of Blocks A and B. In order to develop the site, it proposed that the existing

culvert is diverted outside the curtilage of the two buildings, within the landscape public realm, as shown on the Drainage GA in Appendix L.

A reinforced concrete box culvert section has been proposed across the extent of the diversion which has a number of benefits :-

- Reduction in culvert size and betterment of flow rates when compared to the existing masonry culvert section.
- Improved interface connectivity with existing culvert

An easement zone has been identified, over the section of the culverted watercourse, to facilitate future access and maintenance. Manchester City Council LLFA have been consulted as part of the planning engagement process. For further information regarding culvert proposals, refer to renaissance Shooters Brook Proposals report (Doc ref: STO-REN-XX-XX-RP-C-00003).

APPENDIX A

TOPOGRAPHICAL SURVEY

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NOTES:

All levels relate to OS (Newlyn) Datum, Established using Network RTK. Survey plotted on a plane Local Grid, Orientated to National Grid.

Services shown as 'From Statutory Authority Plans' line styles are taken from information supplied by the relevant Statutory Undertaker or Authority. These services were not located and are shown for indicative purposes only.

Please note survey control established for mapping only. Control shouldn't be used by third parties without confirmation from Layer Surveys.

Tree Spreads are symbolic only and are representative of the coverage spread.

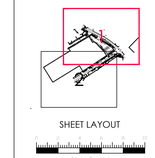
Only manholes and services visible at time of survey shown.

LEGEND:

BOL	BOLLARD	PPO	PIPE
BT	BT MANHOLE	POST	POST
BUS	BUS SHELTER	RWP	RAIN WATER PIPE
CB	CATCH BASIN	SIGN	SIGN POST
CCTV	CCTV CAMERA	SOIL	SOIL VENT PIPE
CL	CABLE TV COVER	SP/HP	SPEED CUSHION/ HUMP
DM	DRAINAGE MANHOLE	TC	TRAFFIC CONTROL
EM	ELECTRIC METER	TL	TRAFFIC LIGHT
FB	FIBRE BOX	TP	TELEPHONE POST
FH	FIRE HYDRANT	TRC	TRAFFIC CONTROL
GM	GAS MANHOLE	VENT	VENT PIPE
GV	GAS VALVE	WM	WATER METER
HC	HANDICAP	WV	WATER VALVE
IC	ELECTRIC MANHOLE/COVER		BUSH/HEDGE
LP	LIGHTING POST		BOLLARD
OC	OPEN CHAMBER		BUTT MARKS
OG	OPEN GULLY		CONIFER
SGV	GAS STOP VALVE		DECIDUOUS TREE
SV	STOP VALVE		GRASS VERGE
TC	TRAFFIC CONTROL		HEDGE/SHRUB
TP	TELEPHONE POST		
WV	WATER VALVE		
Cobble Kerb	Natural Kerb		

SURVEY STATIONS

Name	Easting	Northing	Height
S31	355940.258	398278.993	45.283
S32	355926.189	398258.454	44.938
S33	355917.495	398271.554	45.048
S34	355737.955	398271.555	43.649
S35	355737.955	398254.327	43.649
S36	355737.955	398254.327	42.833
S37	355737.955	398254.327	42.833
S38	355588.413	398185.665	40.272



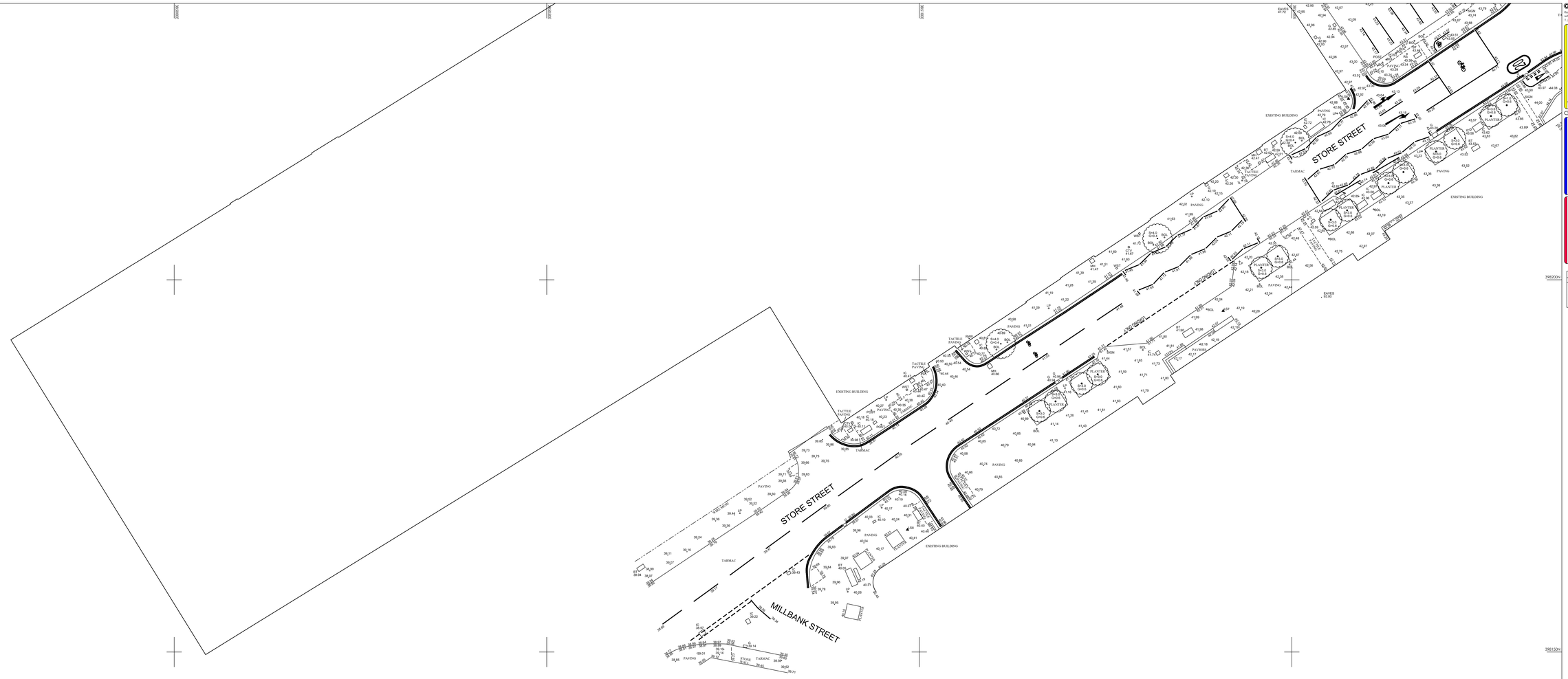
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REV	DATE	DESCRIPTION

CLIENT
Artal
9 Jordan Street
Knott Mill
Manchester
M15 4PY

PROJECT TITLE
Topographical Survey of Land at:
Stocktons
140 Great Ancoats St
Manchester, M4 6DU
Sheet 1 of 2

Drawing Ref.	Surveyed	Drawn	Checked
LS5035	A.S	I.T	L.S.L
Scale	Date	No.	Size	Rev
1:200	October 2023	01	A0	



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PLAN GRID NORTH

Scale bar: 0 2 4 6 8 10 metres

NOTES:

All levels relate to OS (Newlyn) Datum, Established using Network RTK. Survey plotted on a plane Local Grid, Orientated to National Grid.

Services shown as 'From Statutory Authority Plans' line styles are taken from information supplied by the relevant utility or statutory authority. These services were not located and are shown for indicative purposes only.

Please note survey control established for mapping only. Control shouldn't be used by third parties without confirmation from Layer Surveys.

Tree Spreads are symbolic only and are representative of the average spread.

Only manholes and services visible at time of survey shown.

LEGEND:

ACC	ACCESS	HYD	HYDRANT
AV	AIR VALVE	INSP	INSPECTION
BOL	BOLLARD	KERB	KERB HEIGHT
BT	BT MANHOLE/COVER	MARK	MARKER POST
BUS	BUS STOP/SIGN	MH	MANHOLE
C/L	CENTRE LINE	OHW	OVERHEAD WIRES
CCTV	CCTV CAMERA POLE	PC	PEDESTAL CONTROL
CL	CONIFER LARGE	PP	POWER POLE
DF	DRAIN PIPE	SL	SIGNAL LIGHT
DI	DRAIN INLET	TC	TRAFFIC CONTROL
EB	ELEC BOX	TRAF	TRAFFIC LIGHT
ELEC	ELECTRIC MANHOLE/COVER	VC	VALVE COVER
FB	FLOWER BED	WM	WATER METER
GAS	GAS MANHOLE/COVER	WV	WATER VALVE
GV	GAS VALVE		

SURVEY STATIONS

Name	Easting	Northing	Height
S21	393446.258	398239.993	45.283
S22	393500.395	398238.464	44.958
S23	393541.199	398239.804	44.808
S24	393167.955	398211.095	43.867
S25	393167.955	398211.095	43.867
S26	393157.850	398234.327	43.933
S27	393158.413	398148.443	43.773
S28	393308.413	398148.443	43.773

SHEET LAYOUT

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REV	DATE	DESCRIPTION
-	27/10/2023	

Client:
Artal
9 Jordan Street
Knott Mill
Manchester
M15 4PY

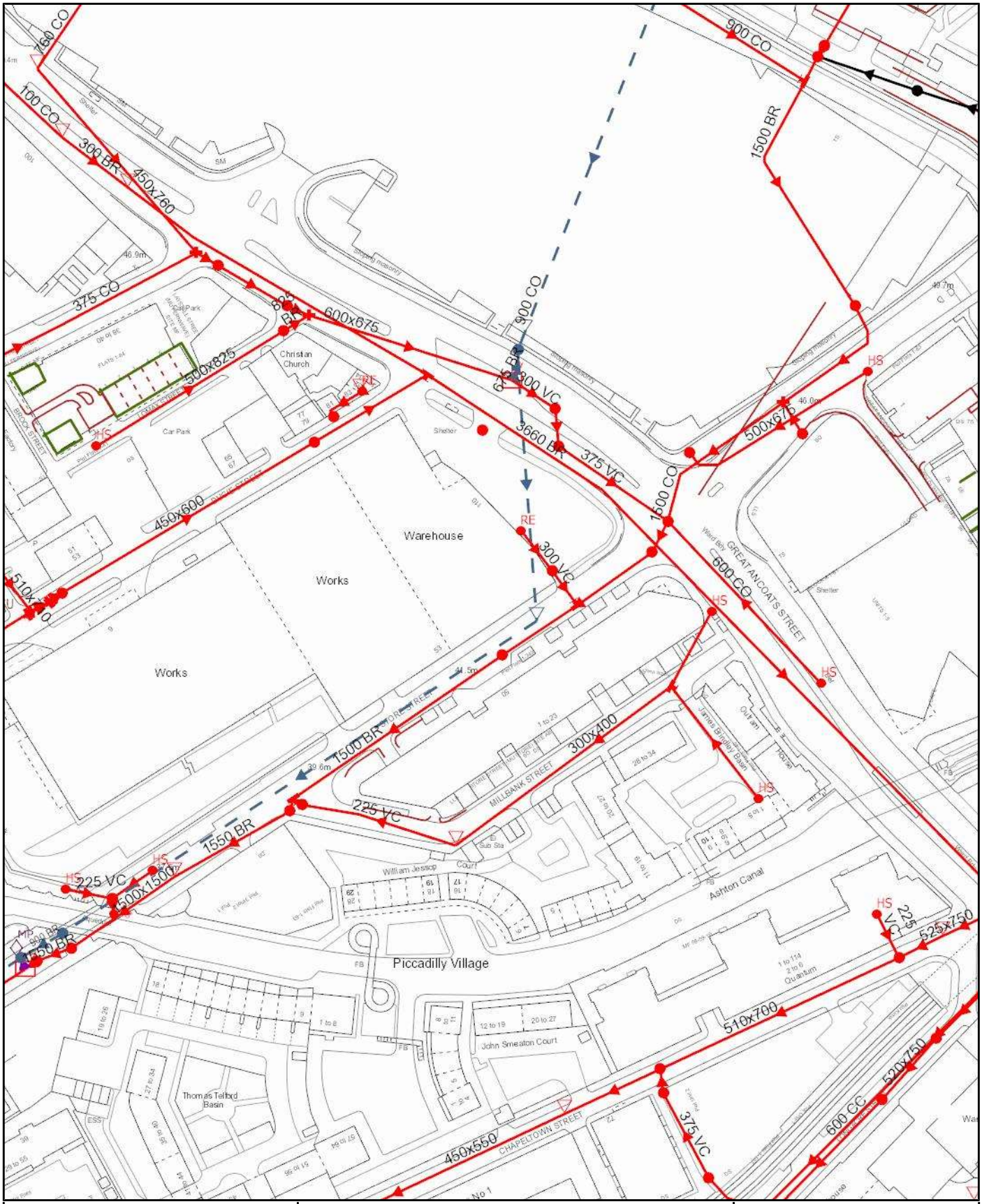
PROJECT TITLE:
Topographical Survey of Land at:
Stocktons
140 Great Ancoats St
Manchester, M4 6DU
Sheet 2 of 2

Drawing Ref.	Surveyed	Drawn	Checked
LS5025	A.L	LT	S.S.L

Scale	Date	No.	Size	Rev
1:200	October 2023	04	A0	

APPENDIX B

UNITED UTILITIES SEWER MAP



Scale:	1:1696	**SEWER RECORDS**	United Utilities Water for the North West
Date:	22/09/2022		
Address or Site Reference:	Store Street Great Ancoats		
Printed by:	Property Searches		

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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APPENDIX C

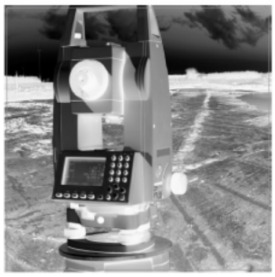
CCTV SURVEY









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DRAINAGE SURVEY

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Project Information

Layer Surveys Ltd
Office 1-2, The Gatehouse
Lancashire Business Park
Leyland
PR26 6TY

Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**

Client Details:

Artal
9 Jordan Street,
Knott Mill,
Manchester,
M15 4PY

Client Contact Name: Declan Cartwright
Client Contact Tel: 07810 101 715

Site Details:

Stocktons,
140 Great Ancoats St,
Manchester,
M4 6DU

Site Contact Name: Declan Cartwright
Site Contact Tel: 07810 101 715

Contractor Details:

Layer Surveys Ltd
Office 1-2, The Gatehouse
Lancashire Business Park
Leyland
PR26 6TY

Office Contact Number: 01772 611634

Purpose of Survey:

Report Contents

Page 1 Cover Page

Page 2 Job Overview

Page 3 Contents Page

Page 4 Survey Run Sheet(Survey 1 - MH 01 to UU 1203)

Page 6 Survey Run Sheet(Survey 2 - MH 02 to DOWNSTREAM)

Page 8 Survey Run Sheet(Survey 3 - MH 02 to UPSTREAM)

Page 10 Survey Run Sheet(Survey 4 - UU 1203 to UU 1204)

Page 13 Survey Run Sheet(Survey 5 - UU 1204 to UU 1205)

Page 17 Survey Run Sheet(Survey 6 - UU 1203 to UU 1201)

Page 20 Survey Run Sheet(Survey 7 - UU 1203 to BRANCH A)

Page 22 Survey Run Sheet(Survey 8 - UU 1201 to UU 1202)

Page 25 Survey Run Sheet(Survey 9 - MH05 to US.B)

Page 29 Survey Run Sheet(Survey 10 - MH05 to US.C)

Page 31 Survey Run Sheet(Survey 11 - MH01 to DS.X)

Page 33 Survey Run Sheet(Survey 12 - MH01 to US.B)

Page 35 Final Page

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**MH 01 X**	**27/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/3**	**ELFEIYII63**	**1**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **300mm**
Material **Vitrified clay**
Category

Start Node **MH 01**
End Node **UU 1203**
Total length **14.36 metres**

Scale **1:0.75**
Direction **Downstream**

Start Node Ref:MH 01 | I/L : metres | Depth: 8.10 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU 1202	8619456	Comment / 0
0.00	WL	Water level 5% height/diameter	8619457	Comment / 0
0.57	FL	Fracture longitudinal at 3 o'clock	8619458	Structural / 3
14.36	MHF	Finish node type, manhole, reference UU 1203	8619459	Comment / 0

End Node Ref:UU 1203 | I/L : metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Start node type, manhole, reference UU 1202



Water level 5% height/diameter



Fracture longitudinal at 3 o'clock



Finish node type, manhole, reference UU 1203

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**MH 02 X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**4/0**	**ELFEIYII63**	**2**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Surface water**
Catchment

Shape/Size **300mm**
Material **Vitrified clay**
Category

Start Node **MH 02**
End Node **DOWNSTREAM**
Total length **20 metres**

Scale **1:1.05**
Direction **Downstream**

Start Node Ref:MH 02 | I/L : metres | Depth: 3.58 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH 02	8619460	Comment / 0
0.00	WL	Water level 30% height/diameter	8619461	Comment / 0
0.00	DES	Settled deposits fine 75% cross-sectional area loss	8619462	Service / 4
0.00	SA	Survey abandoned - Remark: OBSTRUCTION - UNABLE TO PASS HIGH SILT DEPOSITS	8619463	Comment / 0



End Node Ref:DOWNSTREAM | I/L : metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference MH 02



Water level 30% height/diameter



Settled deposits fine 75% cross-sectional area loss



Survey abandoned - Remark: OBSTRUCTION - UNABLE TO PASS HIGH SILT DEPOSITS

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**UPSTREAM X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/0**	**ELFEIYII63**	**3**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Surface water**
Catchment

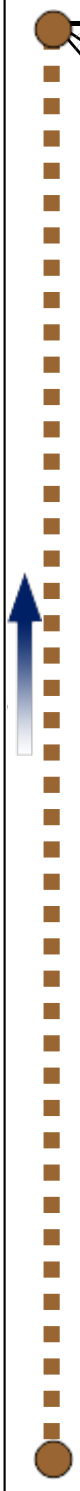
Shape/Size **225mm**
Material **Vitrified clay**
Category

Start Node **MH 02**
End Node **UPSTREAM**
Total length **20 metres**

Scale **1:1.05**
Direction **Upstream**

Start Node Ref:MH 02 | I/L : metres | Depth: 3.58 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH 02	8619465	Comment / 0
0.00	WL	Water level 60% height/diameter	8619466	Comment / 0
0.00	SA	Survey abandoned - Remark: UNABLE TO PASS	8619467	Comment / 0



End Node Ref:UPSTREAM | I/L : metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference MH 02



Water level 60% height/diameter



Survey abandoned - Remark: UNABLE TO PASS

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**UU 1203 X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/4**	**ELFEIYII63**	**4**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **375mm**
Material **Vitrified clay**
Category

Start Node **UU 1203**
End Node **UU 1204**
Total length **10.44 metres**

Scale **1:0.55**
Direction **Downstream**

Start Node Ref:UU 1203 | I/L : metres | Depth: 7.90 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU 1203	8619468	Comment / 0
0.00	WL	Water level 5% height/diameter	8619469	Comment / 0
0.62	LL	Line of drain/sewer deviates left	8619470	Comment / 0
4.72	FL	Fracture longitudinal at 2 o'clock	8619471	Structural / 3
5.19	FL	Fracture longitudinal at 1 o'clock	8619472	Structural / 3
7.10	FL	Fracture longitudinal at 10 o'clock	8619473	Structural / 3
7.63	FM (S01)	Fracture multiple from 3 to 3 o'clock, Start	8619474	Structural / 4
9.00	FM (F01)	Fracture multiple from 3 to 3 o'clock, Finished	8619475	Structural / 4
10.44	MHF	Finish node type, manhole, reference UU 1204	8619476	Comment / 0

End Node Ref:UU 1204 | I/L : metres | Depth: 7.70 metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference UU 1203



Water level 5% height/diameter



Line of drain/sewer deviates left



Fracture longitudinal at 2 o'clock



Fracture longitudinal at 1 o'clock



Fracture longitudinal at 10 o'clock

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Fracture multiple from 3 to 3 o'clock, Start



Fracture multiple from 3 to 3 o'clock, Finished



Finish node type, manhole, reference UU 1204

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**UU 1204 X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**2/4**	**ELFEIYII63**	**5**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **375mm**
Material **Vitrified clay**
Category

Start Node **UU 1204**
End Node **UU 1205**
Total length **47.63 metres**

Scale **1:2.50**
Direction **Downstream**

Start Node Ref:UU 1204 | I/L : metres | Depth: 7.70 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU 1204	8619477	Comment / 0
0.00	WL	Water level 5% height/diameter	8619478	Comment / 0
0.00	FL (S01)	Fracture longitudinal at 12 o'clock, Start	8619480	Structural / 3
0.51	FR	Fracture radiates from 11 o'clock	8619481	Structural / 4
0.53	FR	Fracture radiates from 2 o'clock	8619482	Structural / 4
0.53	H	Hole in drain/sewer at 11 o'clock	8619483	Structural / 4
2.03	FL (F01)	Fracture longitudinal at 12 o'clock, Finished	8619484	Structural / 3
26.34	DEE (S02)	Attached deposits, encrustation from 7 to 5 o'clock 5% cross-sectional area loss, Start	8619485	Service / 2
29.22	FL (S03)	Fracture longitudinal at 9 o'clock, Start	8619486	Structural / 3
32.12	DEE (F02)	Attached deposits, encrustation from 7 to 5 o'clock 5% cross-sectional area loss, Finished	8619487	Service / 2
32.12	FL (F03)	Fracture longitudinal at 9 o'clock, Finished	8619488	Structural / 3
42.54	FC	Fracture circumferential from 7 to 10 o'clock	8619489	Structural / 3
42.54	FL	Fracture longitudinal at 4 o'clock	8619490	Structural / 3
44.03	LD	Line of drain/sewer deviates down	8619491	Comment / 0
44.91	OJL	Open joint large	8619492	Structural / 1
47.63	MHF	Finish node type, manhole, reference UU 1205	8619479	Comment / 0

End Node Ref:UU 1205 | I/L : metres | Depth: 9.30 metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference UU 1204



Water level 5% height/diameter



Fracture longitudinal at 12 o'clock, Start



Fracture radiates from 11 o'clock



Fracture radiates from 2 o'clock



Hole in drain/sewer at 11 o'clock

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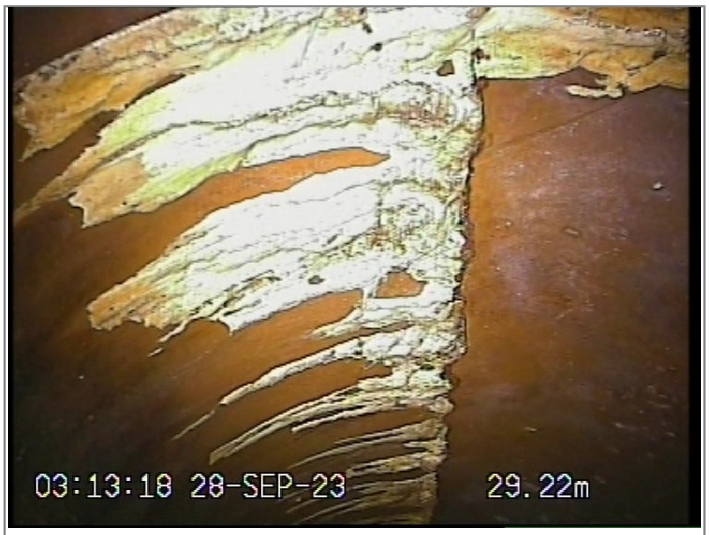
Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Fracture longitudinal at 12 o'clock, Finished



Attached deposits, encrustation from 7 to 5 o'clock 5% cross-sectional area loss, Start



Fracture longitudinal at 9 o'clock, Start



Attached deposits, encrustation from 7 to 5 o'clock 5% cross-sectional area loss, Finished



Fracture longitudinal at 9 o'clock, Finished



Fracture circumferential from 7 to 10 o'clock

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Fracture longitudinal at 4 o'clock



Line of drain/sewer deviates down



Open joint large



Finish node type, manhole, reference UU 1205

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**UU 1201 X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**4/0**	**ELFEIYII63**	**6**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **300mm**
Material **Vitrified clay**
Category

Start Node **UU 1203**
End Node **UU 1201**
Total length **12 metres**

Scale **1:0.63**
Direction **Upstream**

Start Node Ref:UU 1203 | I/L : metres | Depth: 7.90 metres



Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU 1203	8619493	Comment / 0
0.00	WL	Water level 5% height/diameter	8619494	Comment / 0
1.16	LR	Line of drain/sewer deviates right	8619496	Comment / 0
3.87	WL	Water level 10% height/diameter - Remark: HOLDING WATER	8619497	Comment / 0
6.10	DEX (S01)	Other settled deposits 10% cross-sectional area loss - Remark: FOUL WASTE, Start	8619498	Service / 3
9.92	DEX (S02)	Other settled deposits 25% cross-sectional area loss - Remark: FOUL WASTE, Start	8619499	Service / 4
9.92	DEX (F01)	Other settled deposits 10% cross-sectional area loss - Remark: FOUL WASTE, Finished	8619500	Service / 3
9.92	REM	BUILD UP OF FOUL WASTE	8619501	Comment / 0
10.15	DEX (F02)	Other settled deposits 25% cross-sectional area loss - Remark: FOUL WASTE, Finished	8619502	Service / 4
10.15	SA	Survey abandoned - Remark: OBSTRUCTION - UNABLE TO PASS DUE TO HIGH AMOUNT OF SETTLED DEPOSITS IN PIPE - MH IN VIEW	8619495	Comment / 0

End Node Ref:UU 1201 | I/L : metres | Depth: 7.84 metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference UU 1203



Water level 5% height/diameter



Line of drain/sewer deviates right



Water level 10% height/diameter - Remark: HOLDING WATER



Other settled deposits 10% cross-sectional area loss - Remark: FOUL WASTE, Start



Other settled deposits 25% cross-sectional area loss - Remark: FOUL WASTE, Start

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Other settled deposits 10% cross-sectional area loss - Remark: FOUL WASTE, Finished



BUILD UP OF FOUL WASTE



Other settled deposits 25% cross-sectional area loss - Remark: FOUL WASTE, Finished



Survey abandoned - Remark: OBSTRUCTION - UNABLE TO PASS DUE TO HIGH AMOUNT OF SETTLED DEPOSITS IN PIPE - MH IN VIEW

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**BRANCH A X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/0**	**ELFEIYII63**	**7**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **300mm**
Material **Vitrified clay**
Category

Start Node **UU 1203**
End Node **BRANCH A**
Total length **0.13 metres**

Scale **1:0.01**
Direction **Upstream**

Start Node Ref:UU 1203 | I/L : metres | Depth: 7.90 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU 1203	8619503	Comment / 0
0.00	WL	Water level 5% height/diameter	8619504	Comment / 0
0.04	LU	Line of drain/sewer deviates up	8619505	Comment / 0
0.13	OCF	Finish node type, other special chamber, reference INTERNAL BACKDROP	8619506	Comment / 0



End Node Ref:BRANCH A | I/L : metres

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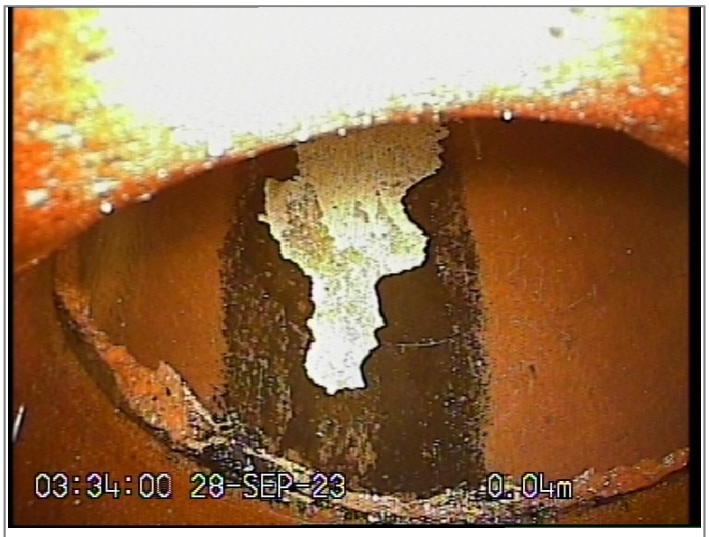
Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference UU 1203



Water level 5% height/diameter



Line of drain/sewer deviates up



Finish node type, other special chamber, reference INTERNAL BACKDROP

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CCTV Inspection Report

Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**UU 1202 X**	**28/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**4/0**	**ELFEIYII63**	**8**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Combined**
Catchment

Shape/Size **675mm**
Material **Brick**
Category

Start Node **UU 1201**
End Node **UU 1202**
Total length **1.11 metres**

Scale **1:0.06**
Direction **Upstream**

Start Node Ref:UU 1201 | I/L : metres | Depth: 7.84 metres



Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference UU 1201	8619507	Comment / 0
0.00	WL	Water level 5% height/diameter	8619508	Comment / 0
0.00	DER	Settled deposits coarse 25% cross-sectional area loss	8619514	Service / 4
0.76	LL	Line of drain/sewer deviates left	8619513	Comment / 0
1.11	SC	Dimensions of drain/sewer changes to 600mm	8619510	Comment / 0
1.11	MCCO	Material of drain/sewer changes to concrete at this point	8619511	Comment / 0
1.11	RPR	Point repair, pipe replaced from 12 to 12 o'clock	8619512	Comment / 0
1.11	OCF	Finish node type, other special chamber, reference UU 1202 - NODE POINT	8619509	Comment / 0

End Node Ref:UU 1202 | I/L : metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Start node type, manhole, reference UU 1201



Water level 5% height/diameter



Settled deposits coarse 25% cross-sectional area loss



Line of drain/sewer deviates left



Dimensions of drain/sewer changes to 600mm



Material of drain/sewer changes to concrete at this point

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**28/09/2023**



Point repair, pipe replaced from 12 to 12 o'clock



Finish node type, other special chamber, reference UU 1202 - NODE POINT

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CCTV Inspection Report

Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**US.B X**	**27/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/4**	**ELFEIYII63**	**9**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Foul**
Catchment

Shape/Size **100mm**
Material **Vitrified clay**
Category

Start Node **MH05**
End Node **US.B**
Total length **2.55 metres**

Scale **1:0.13**
Direction **Upstream**

Start Node Ref:MH05 | I/L : metres | Depth: 4.88 metres



Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH05	8619515	Comment / 0
0.00	WL	Water level 5% height/diameter	8619516	Comment / 0
1.31	OJL	Open joint large	8619517	Structural / 1
1.31	LU	Line of drain/sewer deviates up	8619518	Comment / 0
1.71	FL	Fracture longitudinal at 12 o'clock	8619519	Structural / 3
1.71	FL	Fracture longitudinal at 8 o'clock	8619520	Structural / 3
1.71	CC	Crack circumferential from 6 to 8 o'clock	8619521	Structural / 2
1.71	CC	Crack circumferential from 12 to 2 o'clock	8619522	Structural / 2
1.71	REM	MCPVC - Material of drain/sewer changes to polyvinyl chloride at this point	8619523	Comment / 0
1.71	JDL	Joint displaced large	8619524	Structural / 1
2.26	D	Deformed drain/sewer 10%	8619525	Structural / 4
2.31	FL	Fracture longitudinal at 4 o'clock	8619526	Structural / 3
2.55	BRF	Finish node type, major connection without manhole, reference US.B TRAP	8619527	Comment / 0

End Node Ref:US.B | I/L : metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Start node type, manhole, reference MH05



Water level 5% height/diameter



Open joint large



Line of drain/sewer deviates up



Fracture longitudinal at 12 o'clock



Fracture longitudinal at 8 o'clock

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Lancashire Business Park
Leyland
PR26 6TY

Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Crack circumferential from 6 to 8 o'clock



Crack circumferential from 12 to 2 o'clock



MCPVC - Material of drain/sewer changes to polyvinyl chloride at this point



Joint displaced large



Deformed drain/sewer 10%



Fracture longitudinal at 4 o'clock

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Finish node type, major connection without manhole, reference US.B TRAP

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CCTV Inspection Report

Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**US.C X**	**27/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/0**	**ELFEIYII63**	**10**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Foul**
Catchment

Shape/Size **100mm**
Material **Vitrified clay**
Category

Start Node **MH05**
End Node **US.C**
Total length **3.38 metres**

Scale **1:0.18**
Direction **Upstream**

Start Node Ref:MH05 | I/L : metres | Depth: 4.88 metres



Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH05	8619528	Comment / 0
0.00	WL	Water level 5% height/diameter	8619529	Comment / 0
0.36	JN	Junction at 6 o'clock, diameter 100mm	8619530	Comment / 0
2.36	LL	Line of drain/sewer deviates left	8619531	Comment / 0
3.38	SA	Survey abandoned - Remark: UNABLE TO PASS SHARP LEFT	8619532	Comment / 0

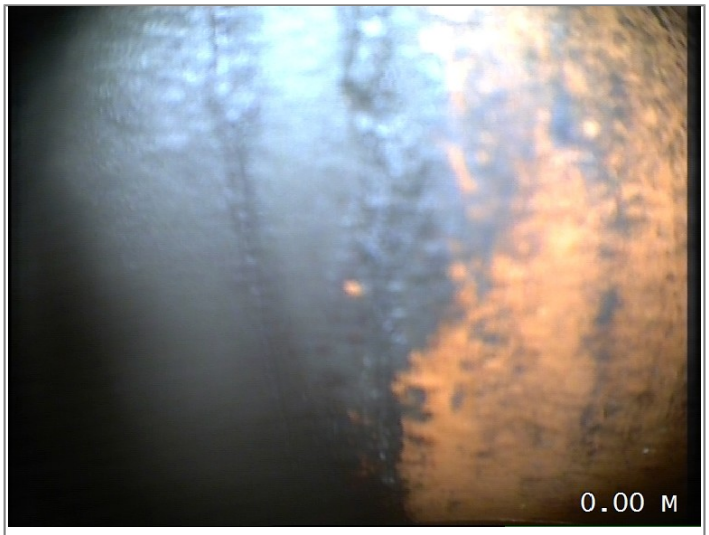
End Node Ref:US.C | I/L : metres

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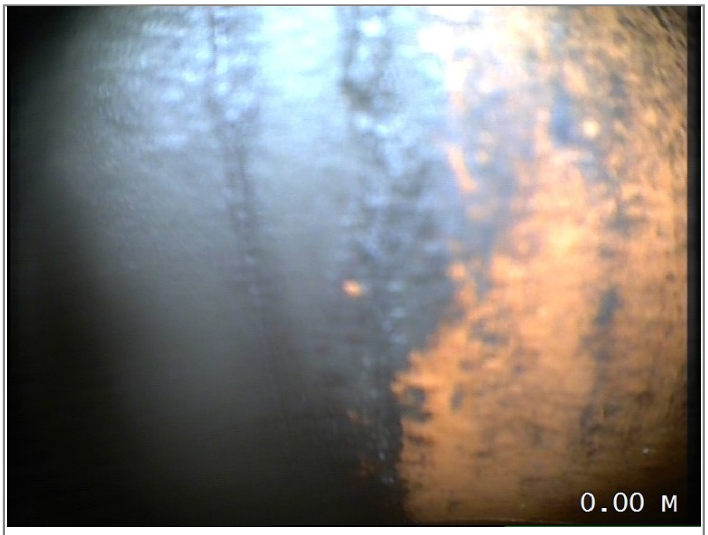
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CCTV Inspection Photos

Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Start node type, manhole, reference MH05



Water level 5% height/diameter



Junction at 6 o'clock, diameter 100mm



Line of drain/sewer deviates left



Survey abandoned - Remark: UNABLE TO PASS SHARP LEFT

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CCTV Inspection Report

Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**MH01 X**	**27/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/0**	**ELFEIYII63**	**11**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Foul**
Catchment

Shape/Size **150mm**
Material **Vitrified clay**
Category

Start Node **MH01**
End Node **DS.X**
Total length **0.69 metres**

Scale **1:0.04**
Direction **Downstream**

Start Node Ref:MH01 | I/L : metres | Depth: 1.1 metres



Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH01	8619538	Comment / 0
0.00	WL	Water level 5% height/diameter	8619539	Comment / 0
0.21	LD	Line of drain/sewer deviates down	8619540	Comment / 0
0.69	BRF	Finish node type, major connection without manhole, reference DS.X DROPSHAFT	8619541	Comment / 0

End Node Ref:DS.X | I/L : metres

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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Start node type, manhole, reference MH01



Water level 5% height/diameter



Line of drain/sewer deviates down



Finish node type, major connection without manhole, reference DS.X
DROPSHAFT

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Surveyed by (Operator)	Job Number	Pipe Length Reference(PLR)	Date	Pre Cleaned
CHRIS LUCOCK	**LS5025-MERGE**	**US.B X**	**27/09/2023**	**Not Cleaned**
Weather	Customer Present	Service Grade/Structural Grade	Base Unit	Section Number
1 - Dry		**0/0**	**ELFEIYII63**	**12**

Road **Stocktons,**
Place **140 Great Ancoats St,**
Location **Manchester,**

Division
District
Location Details

Purpose
Duty **Foul**
Catchment

Shape/Size **100mm**
Material **Vitrified clay**
Category

Start Node **MH01**
End Node **US.B**
Total length **0.64 metres**

Scale **1:0.03**
Direction **Upstream**

Start Node Ref:MH01 | I/L : metres | Depth: 1.1 metres

Position	Code	Description	Photo	Type/Grade
0.00	MH	Start node type, manhole, reference MH01	8619542	Comment / 0
0.00	WL	Water level 5% height/diameter	8619543	Comment / 0
0.31	LL	Line of drain/sewer deviates left	8619544	Comment / 0
0.64	BRF	Finish node type, major connection without manhole, reference US.B DROPSHAFT	8619546	Comment / 0

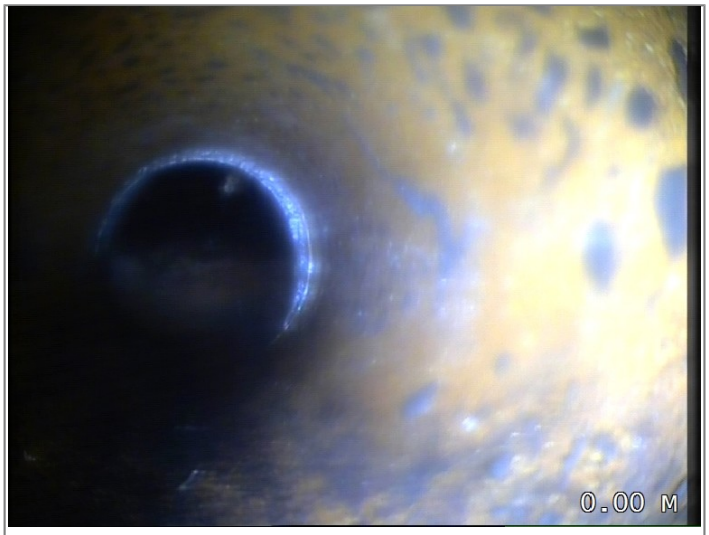
End Node Ref:US.B | I/L : metres

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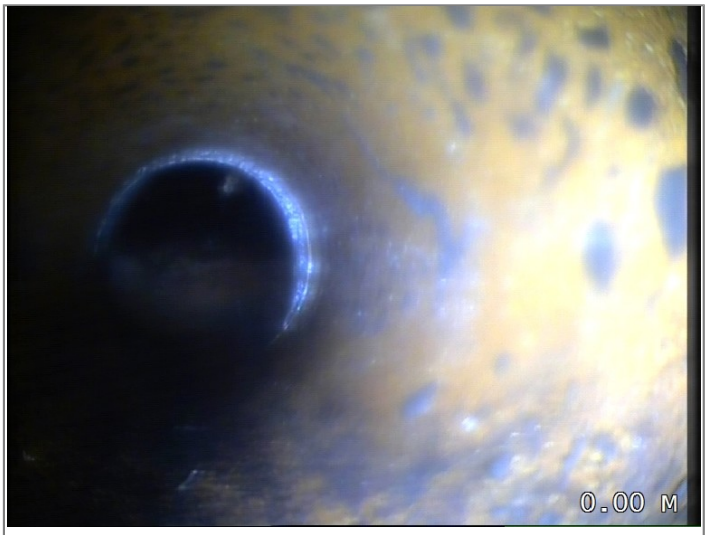
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Job Number	Surveyed by (Operator)	Base Unit	Date
LS5025-MERGE	**CHRIS LUCOCK**	**ELFEIYII63**	**27/09/2023**



Start node type, manhole, reference MH01



Water level 5% height/diameter



Line of drain/sewer deviates left



Finish node type, major connection without manhole, reference US.B DROPSHAFT



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T: 01772 611634

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darren@layersurveys.co.uk

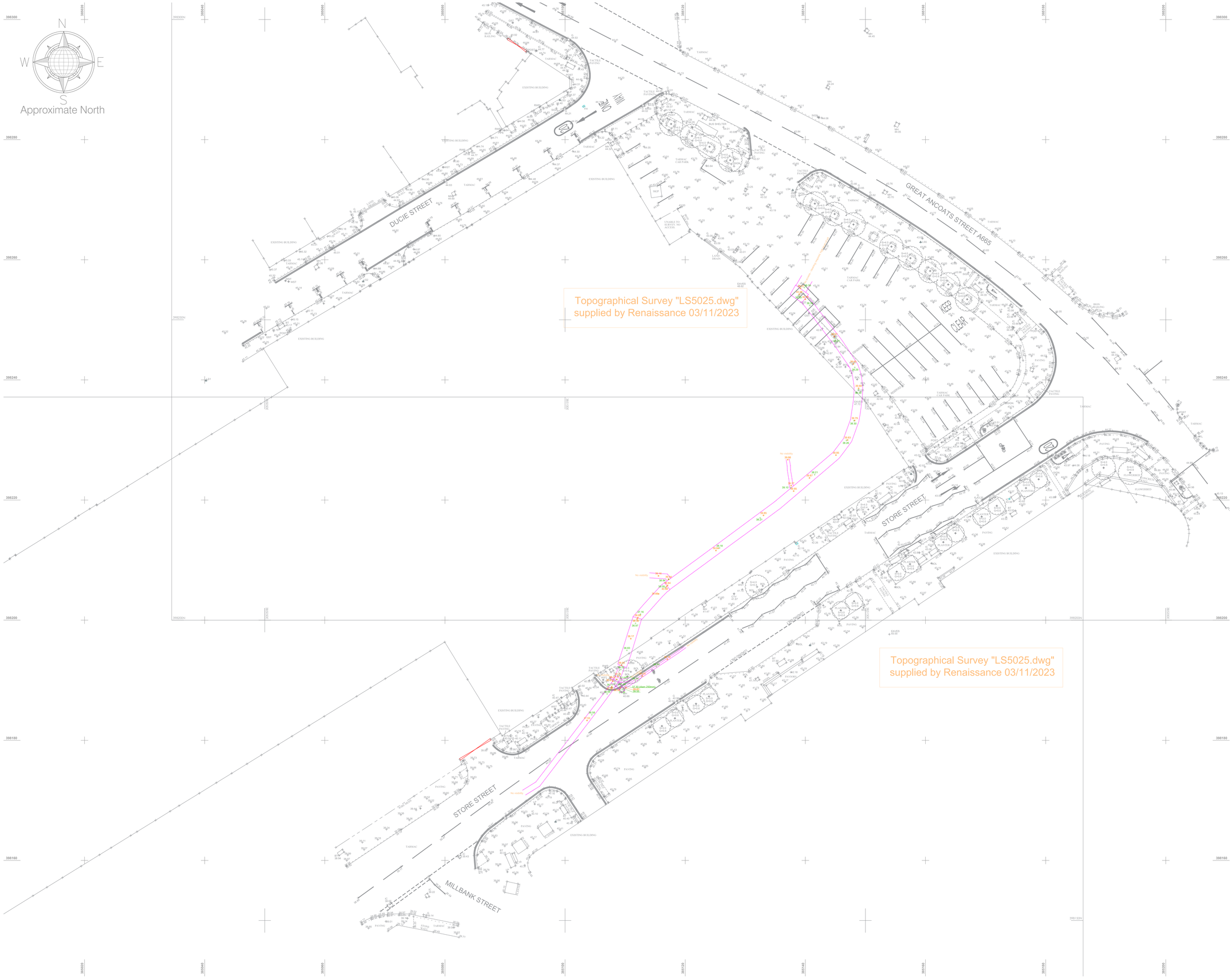
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APPENDIX D

CULVERT SURVEY



LEGEND

Utility Survey Point Features

- Air Valve
- Belisha Beacon
- CCTV Camera Pole
- Cable Riser
- Down Pipe
- Down Pipe To Ground
- Electrical Pole
- Earth Rod
- Fire Hydrant
- Gas Meter
- Gas Valve
- Gully
- Gully Round
- IC
- IC - Comms
- IC - Electric
- IC - Round
- IC - Telecom
- IC - TCSU/TFL
- IC - CATV
- Lamp Post
- MH
- MH - District Heat
- MH - Foul
- MH - Round
- MH - Surface Water
- Marker Post
- Pipe Riser
- Recessed Light
- Rodding Eye
- Stop Cock
- Traffic Light
- Telegraph Pole
- Valve General
- Water Meter
- Water Valve

Utility Survey Linework Features

Communications
- BT — British Telecom
- CATV — Cable TV
- CCTV — Closed Circuit TV
- COMMS — Communications
- FCL — Fibre Optic Line
- FOLC — Fibre Optic Line - Colt
- FOLE — Fibre Optic Line - Energis
- FOLF — Fibre Optic Line - Fibernet
- FOLL — Fibre Optic Line - Level 3
- FOLM — Fibre Optic Line - Mercury
- FOLMF — Fibre Optic Line - MFSC
- FOLT — Fibre Optic Line - Tanet
- FOLV — Fibre Optic Line - Virgin
- FOLVF — Fibre Optic Line - Vodafone
- FOLVN — Fibre Optic Line - Verizon
- FOLW — Fibre Optic Line - WCOM
- TS — Telecom Service

Drainage
- CW — Combined Water
- FW — Foul Water
- SW — Surface Water
- RM — Rising Main

Water
- FRW — Fire Water
- WM — Water Main
- WS — Water Service

Electrical
- E — Electrical Service
- EE — Electrical Earth
- P — Electrical Pilot Cable

Electrical
- EHV — Electrical - Extra High Voltage
- HV — Electrical - High Voltage
- LV — Electrical - Low Voltage
- TFL — Electrical - TFL
- SL — Street Lighting
- TCSU — Traffic Control System Unit

Gas
- G — Gas Service
- GLP — Gas Low Pressure
- GIP — Gas Intermediate Pressure
- GMP — Gas Medium Pressure
- GHP — Gas High Pressure

GPR + Unknown
- ED — Empty Duct
- GPR — GPR Anomaly
- UA — Unknown Asset
- UAPS — UA Passive Sweep
- UCL — Unknown Cable
- GPR Slab
- GPR Survey Area
- GPR buried structure
- GPR Reinforced Slab
- GPR interface layer (change in material)

Other
- DH — District Heat
- FU — Fuel Pipe
- XX — Decommissioned/Abandoned
- Manhole Chamber
- Manhole ID
- PEO — Pot End
- Scope of Works

PAS128 Quality Levels

(Consult document 'PAS128:2014.pdf' for full details)

- XX - A — Quality Level A
- XX - B1 — Quality Level B1
- XX - B1P — Quality Level B1P
- XX - B2 — Quality Level B2
- XX - B2P — Quality Level B2P
- XX - B3 — Quality Level B3
- XX - B3P — Quality Level B3P
- XX - B4 — Quality Level B4
- XX - C — Quality Level C
- XX - D — Quality Level D

Special Survey Features

E=XXXX.XXX ID N=YYYY.YYY H=ZZZ.ZZZ Survey Station

E=XXXX.XXX ID N=YYYY.YYY H=ZZZ.ZZZ Scan Target

Utility Survey Abbreviations

AB	Abandoned	CSER	Confined Space Entry Required
AR	Assumed Route	MH	Manhole
BI	Illuminated Bollard	OE	Overhead Electric
BLD	Blocked	OT	Overhead Telecom
CPD	Capped	SOF	Soffit Level
CL	Cover Level	TFR	Taken From Records
CPD	Capped	TVM	Ticket Vending Machine
CUT	Disconnected Utility	UTO	Unable to Open
EOG	End of GPR Signal	UTS	Unable to Survey
EOT	End of Trace	UTT	Unable to Trace
EOS	End of Survey	UKN	Unknown
IC	Inspection Cover	WL	Water Level
IL	Invert Level	XXd	Service Depth

Utility Material Abbreviations

AC	Asbestos Cement	CO	Concrete	SI	Spun Iron
BC	Brick Chamber	DI	Ductile Iro	ST	Steel
CI	Cast Iron	PE	Polyethylene	WTR	Water

Level Measured For Ducts/Pipes At Pits Is To Top of The Service — 0.80d

Level Measured For Drainage At Pits Is To Invert Level Of The Service — 0.80d

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Location Plan



10.00 Floor Level (Plans)

13.00 Soffit Level (Plans)

Revisions

Rev	Description	Surveyed by	Drawn by	Checked by
A	First Issue	DH - 23/11/2023	MM - 28/11/2023	MM - 28/11/2023

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London Manchester Birmingham Glasgow Belfast Cork Kildare

Client	Renaissance ltd
Project	Stockton's - Shooters Brook Survey
Site Address	140 Great Ancoats Street Manchester M4 6DU
Description	Underground Utility Survey(PAS128)
Survey Grid	Client Supplied Grid (OSGB36)
Survey Datum	GNSS - Ordnance Datum Newlyn (ODN)
RICS Band	Band F
Drawing Scale	1:200 @A0
Drawing Number	MGS55608-Culvert

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APPENDIX E

PROPOSED DEVELOPMENT PLANS



This drawing is copyright
Do not scale off dimensions.

All dimensions to be checked on site by contractor.

Contractor to report any dimensional discrepancies, errors or omissions prior to commencing on site.

SCALE 1:200

0 4m 8m 12m 20m

- Studio
- One Bed Apartment
- Two Bed Apartment
- Three Bed Apartment
- Amenity
- Plant
- Office
- Cafe
- Fire Escape
- Residential Entrance
- Office Entrance
- Cafe Entrance
- BOH Entrance
- Cycle Entrance

NORTH

Rev	Date	Description
P01	2024-12-20	Planning Submission
P02	05/06/2026	Planning Submission Amendment

Project Title
Stocktons Site

Status
PLANNING

Drawing Title
Site Wide
Proposed
Level 00 Site Plan

Project No
10359

Scale
1 : 200 @ A1

PROJ - ORIG - ZONE - ROLE - CLAS - TYPE - LOC - SEQ
10359-SHP-Z0-A-B5D9-G100-PL-00-001

Revision
P02

simpsonhaugh

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Birmingham +44 (0)121 233 1874

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APPENDIX F

EXISTING DRAINED AREAS PLAN

NOTES

1. THIS DRAWING IS INTENDED TO INDICATE THE EXISTING DRAINED AREAS AND DRAINAGE INFRASTRUCTURE AT THE STOCKTONS DEVELOPMENT. IT IS BASED UPON A REVIEW OF THE ORDINANCE SURVEY MAP, AERIAL IMAGES, TOPOGRAPHICAL SURVEY, CCTV SURVEY AND CULVERT SURVEY.

LEGEND	
REF	DESCRIPTION
	PLANNING BOUNDARY
	DEVELOPMENT BOUNDARY AREA: 3973 m² (0.397 ha)
	PERMEABLE AREA AREA: 0.0 m² (0.000 ha)
	IMPERMEABLE AREA AREA: 3973 m² (0.397 ha)

MH0100
CL: 44.450
IL: 36.350

675x600BR >>

300 VC >>

UU 1201
CL: 44.240
IL: 36.400

300 VC >>

UU 1203
CL: 44.050
IL: 36.150

<< 300 VC

UU 1204
CL: 43.700
IL: 36.000

600x450 BR >>

UNK >>

MH03
CL: 44.320
IL: 42.550 APPROX

MH5
CL: 44.690
IL: 39.810

UNK >>

MH04
CL: 43.320
IL: 39.740-39.620

DIGGLE STREET

GREAT ANCOATS STREET A665

375 VC >>

SHOOTERS BROOK CULVERT. SURVEY ABANDONED DUE TO HIGH LEVELS OF SILT

6m EASEMENT ASSOCIATED WITH UNITED UTILITIES COMBINED SEWER. SEWER TO BE SURVEYED UPSTREAM TO CONFIRM FULL EXTENT OF SEWER AND ASSOCIATED EASEMENT

UU 1207 / MH02
CL: 42.950
IL: 36.920

6000

6000

300 VC >>

UU 1205
CL: 44.330
IL: 35.030

UU 1208
CL: 44.200
IL: 32.450

3600 BR >>

<< 1500 BR

MH01
CL: 42.470
IL: 41.370

150 dia VC >>

STORE STREET

<< 1500 BR

MH07
CL: 41.470
IL: 39.910

150 dia VC >>

MH
CL: N/A
IL: N/A

<< 1500 BR

KEEP CLEAR

P01	FIRST ISSUE	05.12.24	JB	AI
Rev:	Description:	Date:	By:	Chkd:

renaissance

Renaissance Associates Ltd
Carvers Warehouse
77 Dale Street
Manchester
M1 2HG

Project:

STOCKTONS MANCHESTER

Drawing Title:

EXISTING DRAINED AREAS PLAN

Status:

STAGE 2

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	OCT 24	JB	JB	AI

Scale:	1:200	Project No:	2301-06

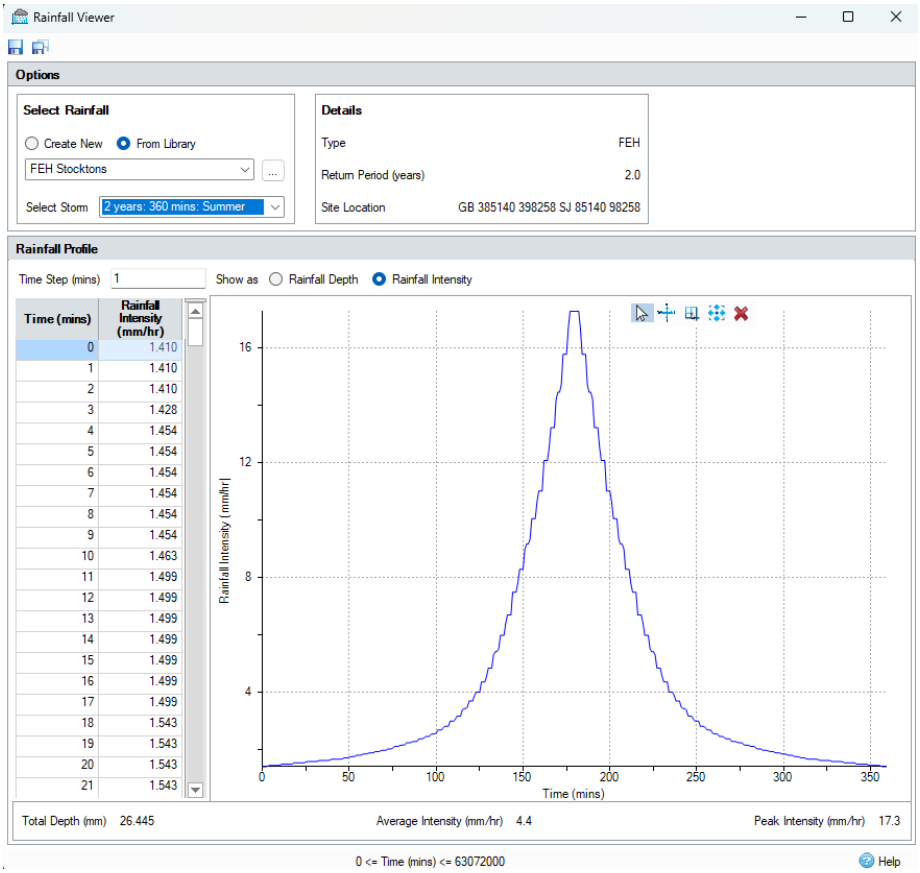
Project – Originator – Volume – Level – Type – Role – Number: STO-REN-XX-XX-DR-C-00020

Revision: P01

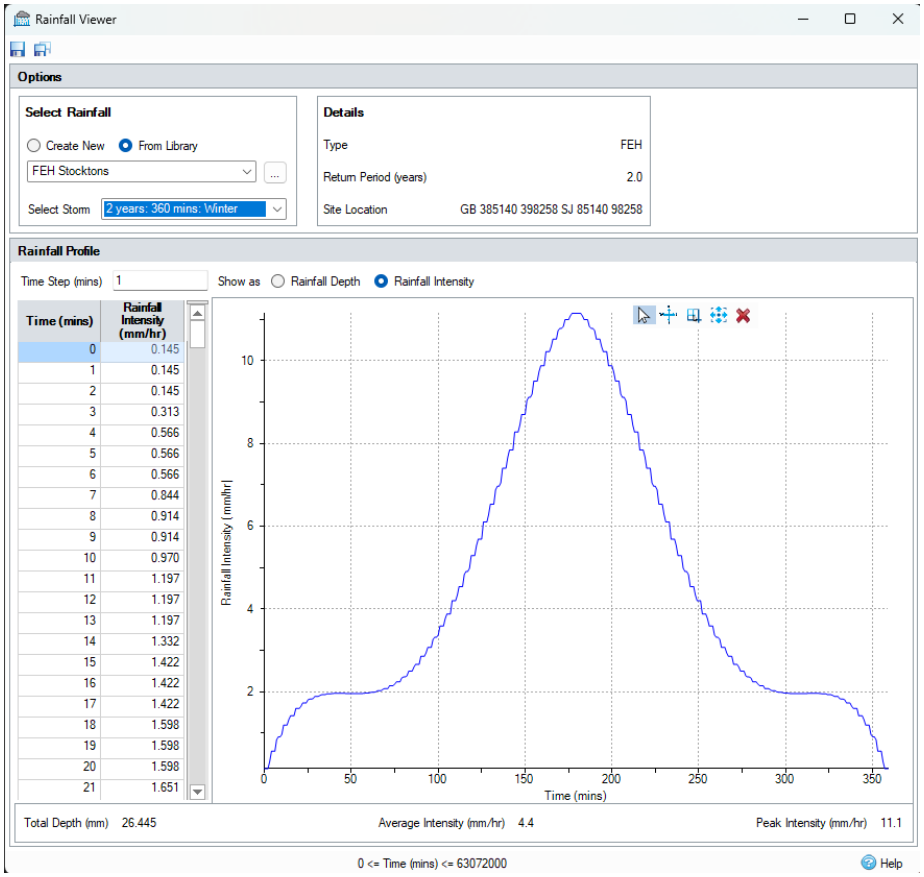
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APPENDIX G
RAINFALL PROFILES

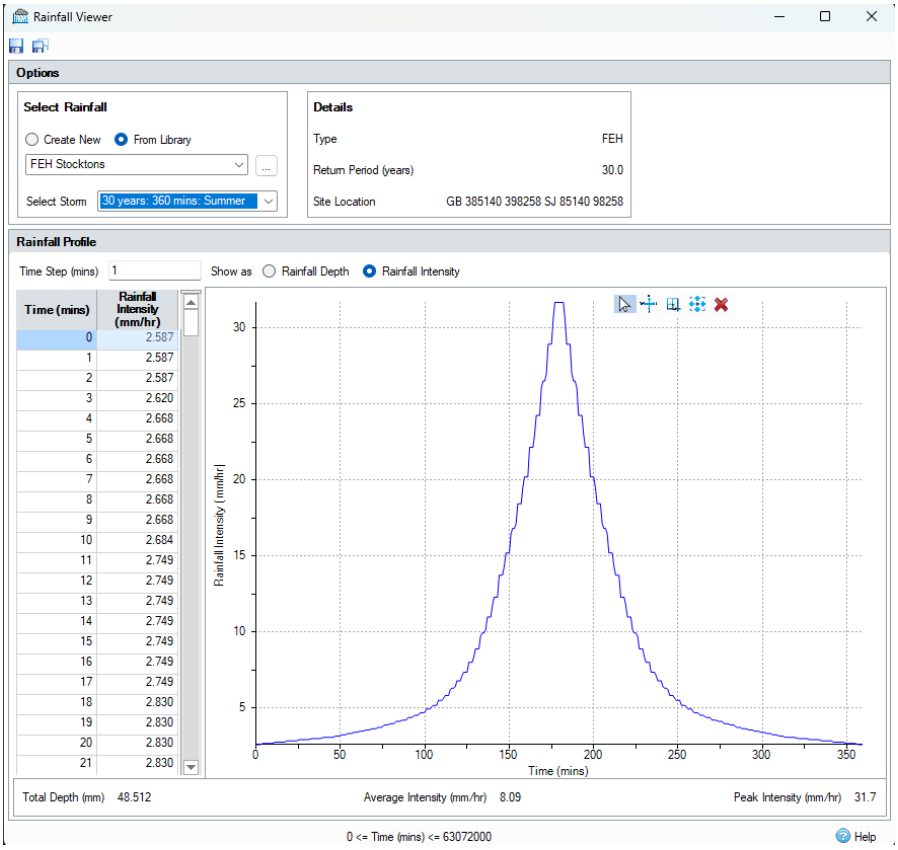
1-IN-2-YEAR: SUMMER



1-IN-2-YEAR: WINTER

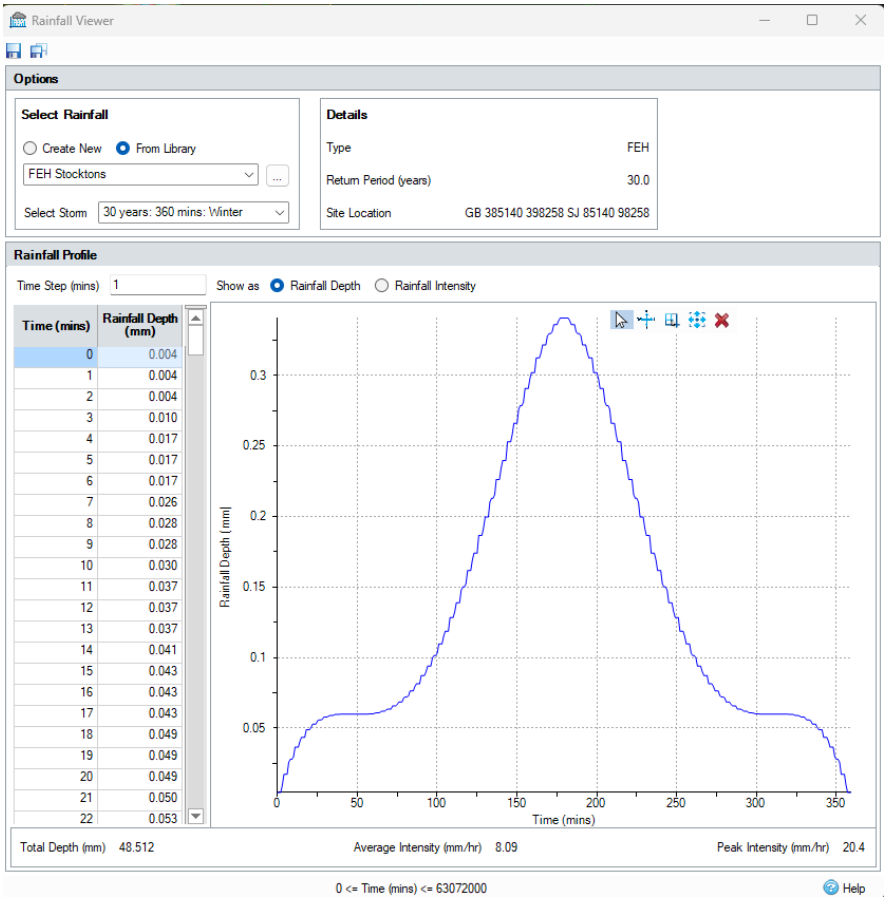


1-IN-30-YEAR: SUMMER



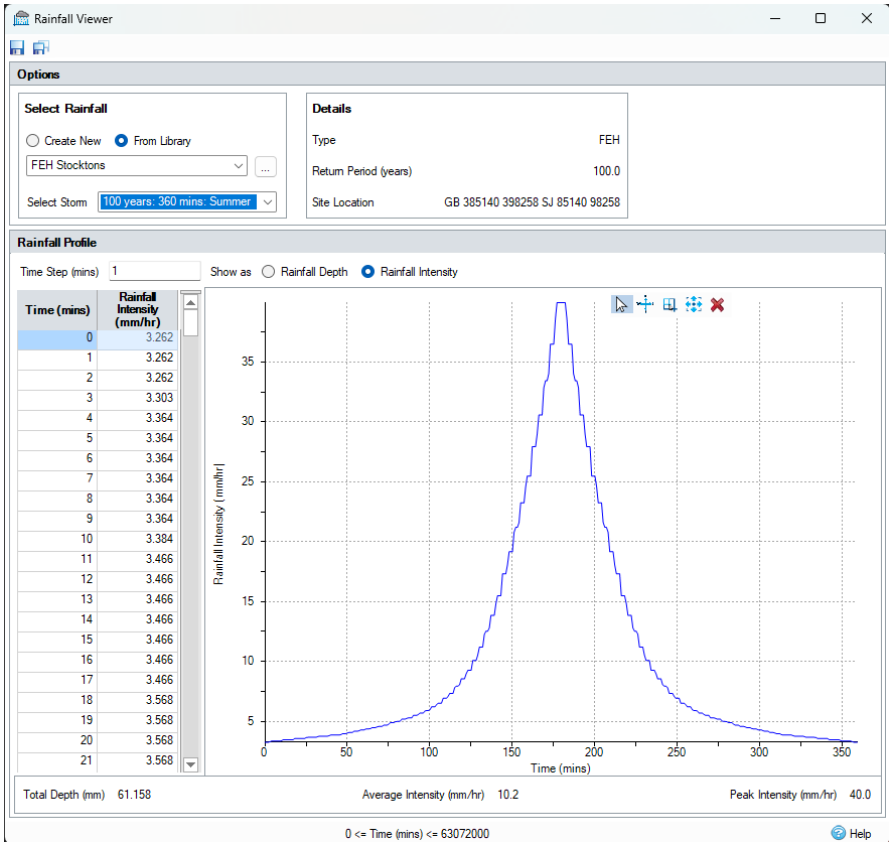
Time (mins)	Rainfall Intensity (mm/hr)
0	2.587
1	2.587
2	2.587
3	2.620
4	2.668
5	2.668
6	2.668
7	2.668
8	2.668
9	2.668
10	2.684
11	2.749
12	2.749
13	2.749
14	2.749
15	2.749
16	2.749
17	2.749
18	2.830
19	2.830
20	2.830
21	2.830

1-IN-30-YEAR: WINTER

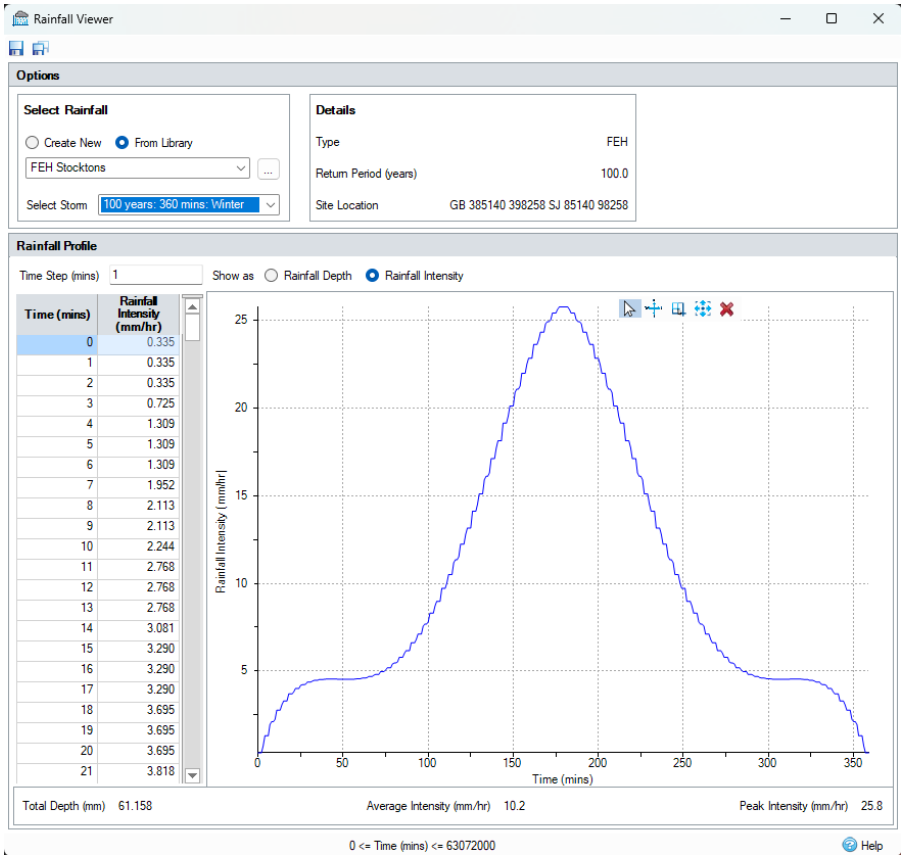


Time (mins)	Rainfall Depth (mm)
0	0.004
1	0.004
2	0.004
3	0.010
4	0.017
5	0.017
6	0.017
7	0.026
8	0.028
9	0.028
10	0.030
11	0.037
12	0.037
13	0.037
14	0.041
15	0.043
16	0.043
17	0.043
18	0.049
19	0.049
20	0.049
21	0.050
22	0.053

1-IN-100-YEAR: SUMMER



1-IN-100-YEAR: WINTER



APPENDIX H

GREENFIELD RUNOFF RATES

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

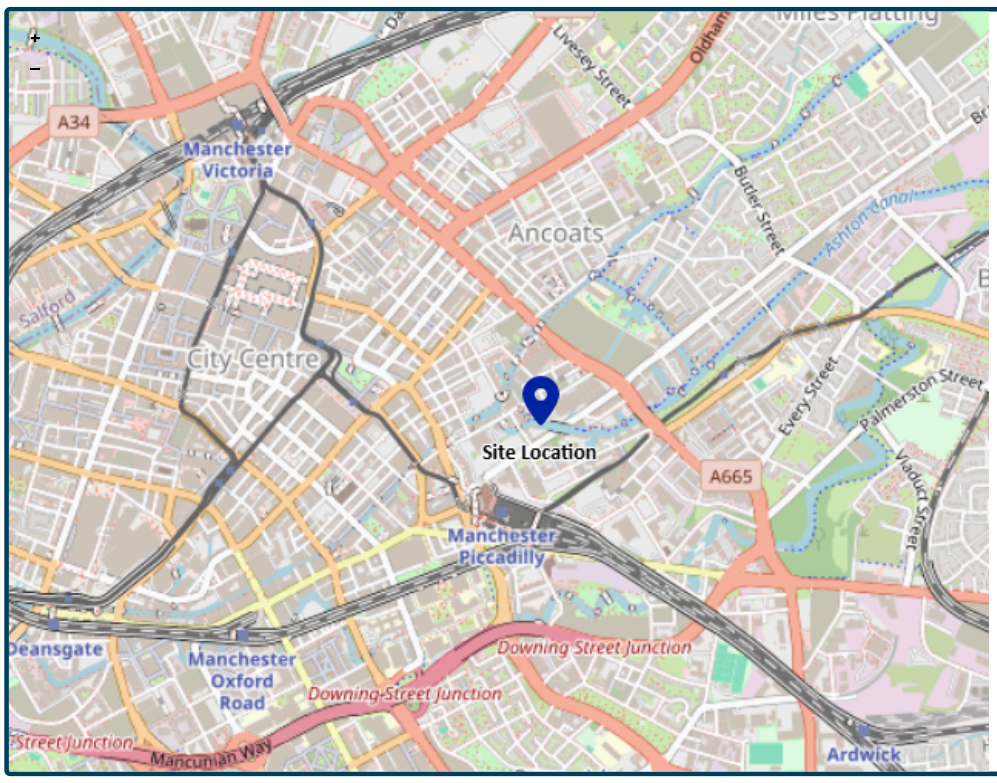
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	12/06/2026
Calculated by	
Reference	
Model version	2.2.3

Location

Site name	Stocktons
Site location	Manchester



© OpenStreetMap (https://www.openstreetmap.org/copyright) contributors.

Site easting (British National Grid)	384942
Site northing (British National Grid)	398060

Site details

Total site area (ha)	0.397 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	910 mm		
BFIHOST19scaled	0.333		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	3.1 l/s		
QBar (FEH statistical 2025) (l/s)	3.3 l/s		

Growth curve factors

	My value		Map value
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	2.9	l/s
Flow rate 2 year (l/s)	3.1	l/s
Flow rate 10 years (l/s)	4.6	l/s
Flow rate 30 years (l/s)	5.6	l/s
Flow rate 100 years (l/s)	6.9	l/s
Flow rate 200 years (l/s)	7.9	l/s

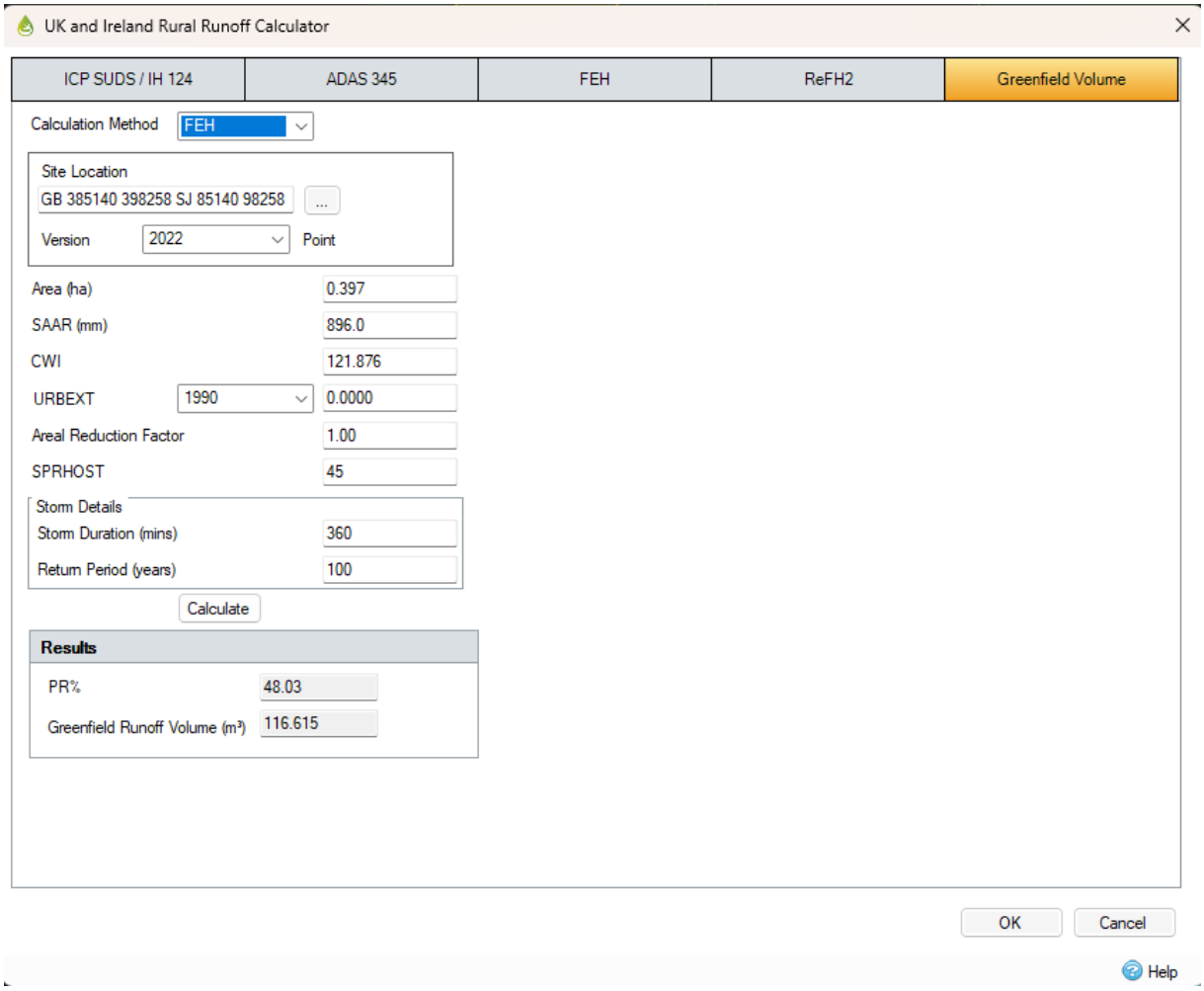
Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

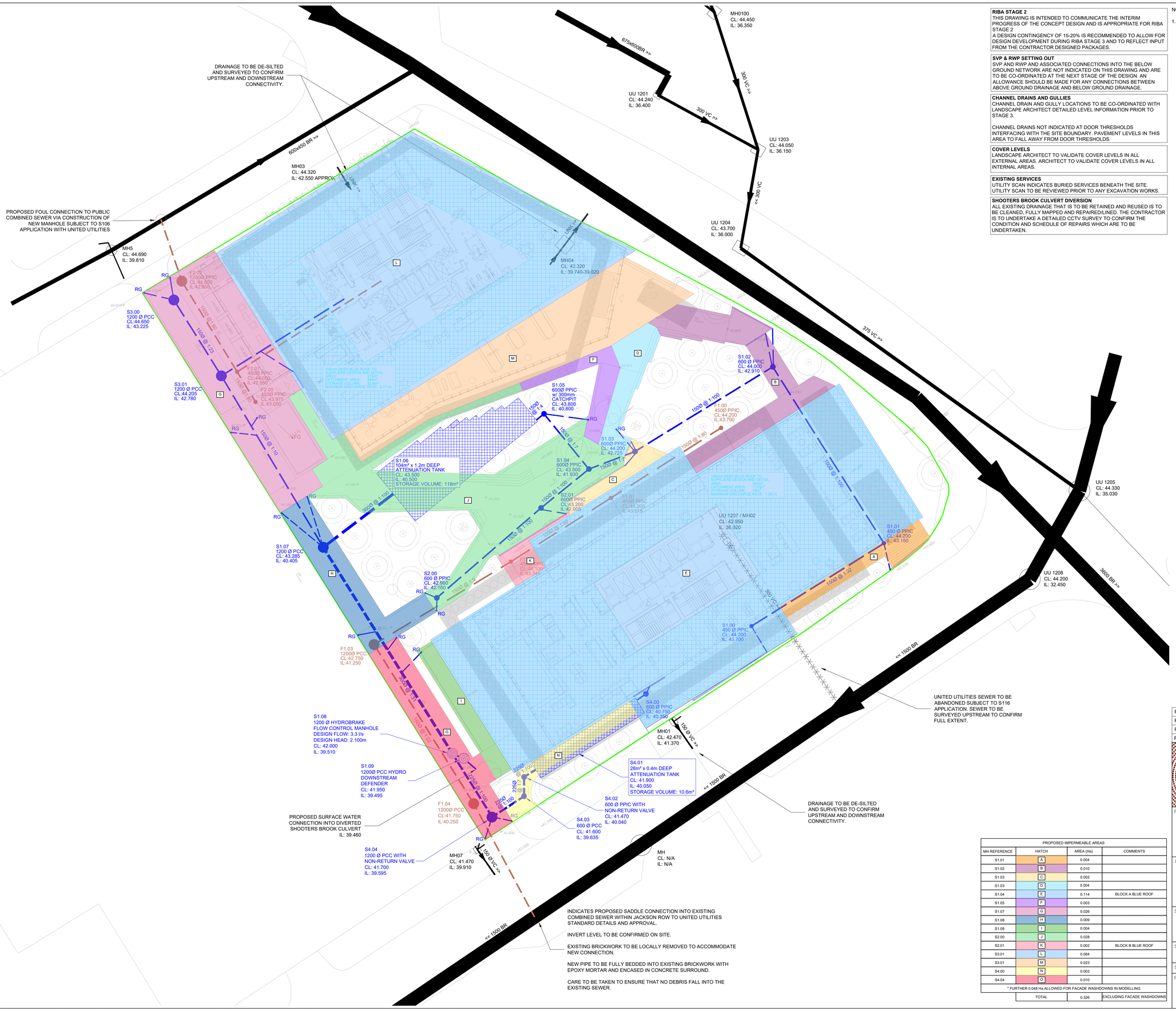
APPENDIX I

GREENFIELD RUNOFF VOLUME


UK and Ireland Rural Runoff Calculator
ICP SUDS / IH 124
ADAS 345
FEH
ReFH2
Greenfield Volume
Calculation Method
FEH
Site Location
GB 385140 398258 SJ 85140 98258
...
Version
2022
Point
Area (ha)
0.397
SAAR (mm)
896.0
CWI
121.876
URBEXT
1990
0.0000
Areal Reduction Factor
1.00
SPRHOST
45
Storm Details
Storm Duration (mins)
360
Return Period (years)
100
Calculate
Results
PR%
48.03
Greenfield Runoff Volume (m³)
116.615
OK
Cancel
Help

APPENDIX J

PROPOSED IMPERMEABLE AREAS PLAN



RIBA STAGE 2
THIS DRAWING IS INTENDED TO COMMUNICATE THE INTERIM PROGRESS OF THE CONCEPT DESIGN AND IS APPROPRIATE FOR RIBA STAGE 2
A DESIGN CONTINGENCY OF 15-20% IS RECOMMENDED TO ALLOW FOR DESIGN DEVELOPMENT DURING RIBA STAGE 3 AND TO REFLECT INPUT FROM THE CONTRACTOR DESIGNED PACKAGES.

SVP & RWP SETTING OUT
SVP AND RWP AND ASSOCIATED CONNECTIONS INTO THE BELOW GROUND NETWORK ARE NOT INDICATED ON THIS DRAWING AND ARE TO BE CO-ORDINATED AT THE NEXT STAGE OF THE DESIGN. AN ALLOWANCE SHOULD BE MADE FOR ANY CONNECTIONS BETWEEN ABOVE GROUND DRAINAGE AND BELOW GROUND DRAINAGE.

CHANNEL DRAINS AND GULLIES
CHANNEL DRAIN AND GULLY LOCATIONS TO BE CO-ORDINATED WITH LANDSCAPE ARCHITECT DETAILED LEVEL INFORMATION PRIOR TO STAGE 3.

CHANNEL DRAINS NOT INDICATED AT DOOR THRESHOLDS INTERFACING WITH THE SITE BOUNDARY. PAVEMENT LEVELS IN THIS AREA TO FALL AWAY FROM DOOR THRESHOLDS.

COVER LEVELS
LANDSCAPE ARCHITECT TO VALIDATE COVER LEVELS IN ALL EXTERNAL AREAS. ARCHITECT TO VALIDATE COVER LEVELS IN ALL INTERNAL AREAS.

EXISTING SERVICES
UTILITY SCAN INDICATES BURIED SERVICES BENEATH THE SITE. UTILITY SCAN TO BE REVIEWED PRIOR TO ANY EXCAVATION WORKS.

SHOOTERS BROOK CULVERT DIVERSION
ALL EXISTING DRAINAGE THAT IS TO BE RETAINED AND REUSED IS TO BE CLEANED, FULLY MAPPED AND REPAIRED/LINED. THE CONTRACTOR IS TO UNDERTAKE A DETAILED CCTV SURVEY TO CONFIRM THE CONDITION AND SCHEDULE OF REPAIRS WHICH ARE TO BE UNDERTAKEN.

NOTES

1. THIS DRAWING IS INTENDED TO INDICATE THE PROPOSED DRAINED AREAS OF THE STOCKTONS DEVELOPMENT. IT IS BASED UPON THE LANDSCAPE ARCHITECT'S PROPOSALS.

PROPOSED IMPERMEABLE AREAS

MH REFERENCE	HATCH	AREA (Ha)	COMMENTS
S1.01	A	0.004	
S1.02	B	0.010	
S1.03	C	0.002	
S1.03	D	0.004	
S1.04	E	0.114	BLOCK A BLUE ROOF
S1.05	F	0.003	
S1.07	G	0.026	
S1.08	H	0.009	
S1.08	I	0.004	
S2.00	J	0.028	
S2.01	K	0.002	BLOCK B BLUE ROOF
S3.01	L	0.084	
S3.01	M	0.023	
S4.00	N	0.003	
S4.04	O	0.010	
* FURTHER 0.048 Ha ALLOWED FOR FACADE WASHDOWNS IN MODELLING			
	TOTAL	0.326	EXCLUDING FACADE WASHDOWNS

Rev:	Description:	Date:	By:	Chkd:
P03	STAGE 2 ISSUE - REVISED PLANNING UPDATE	22.07.26	JA	AI
P02	UPDATED TO SUIT LATEST PROPOSALS	19.02.25	JB	AI
P01	ISSUED FOR PLANNING	05.12.24	HW	AI

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Manchester
M1 1EY

Project:
STOCKTONS MANCHESTER

Drawing Title:
PROPOSED DRAINED AREAS PLAN

Status:
STAGE 2

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	DEC24	HW	HW	AI

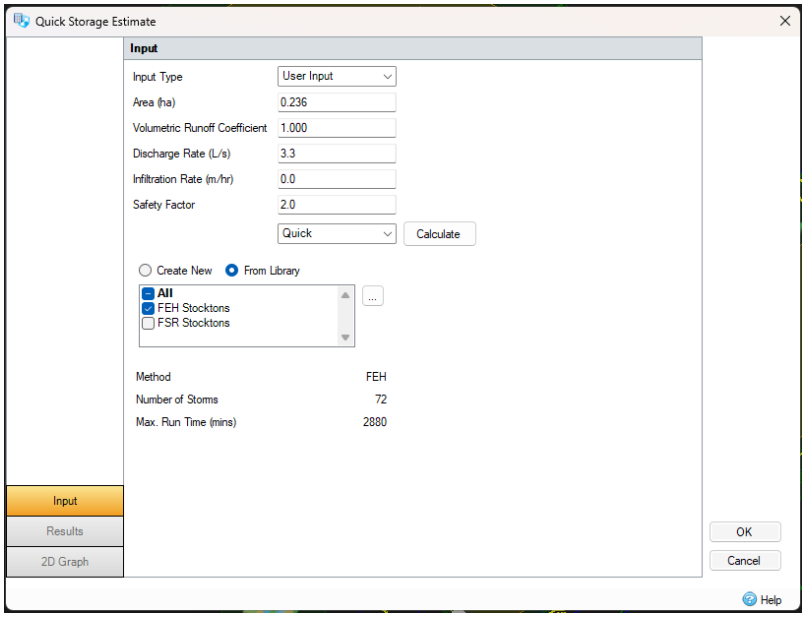
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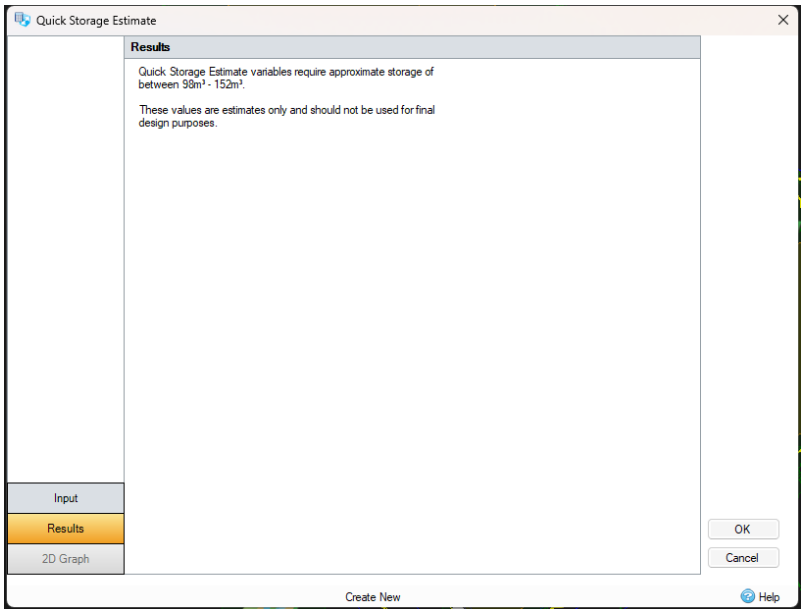
Project – Originator – Volume – Level – Type – Role – Number: STO-REN-XX-XX-DR-C-00021 | Revision: P03

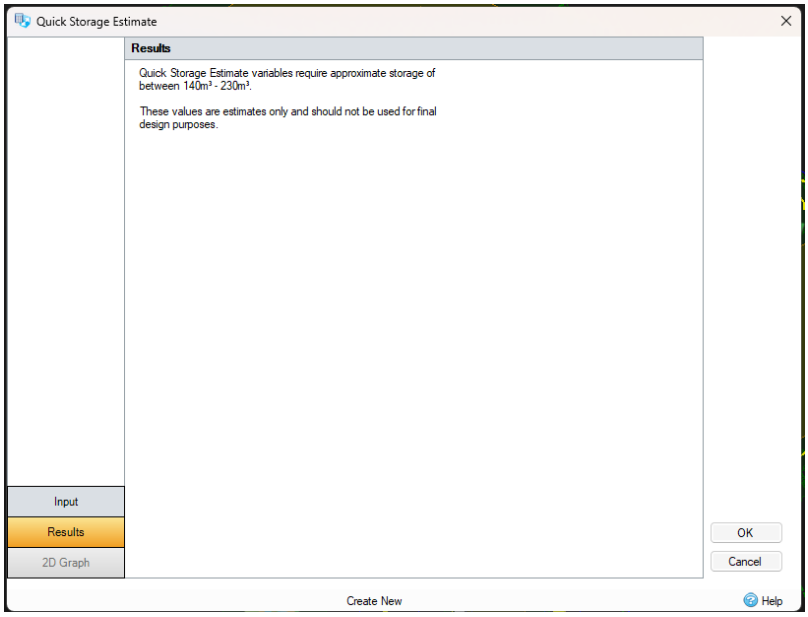
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APPENDIX K

QUICK STORAGE ESTIMATE

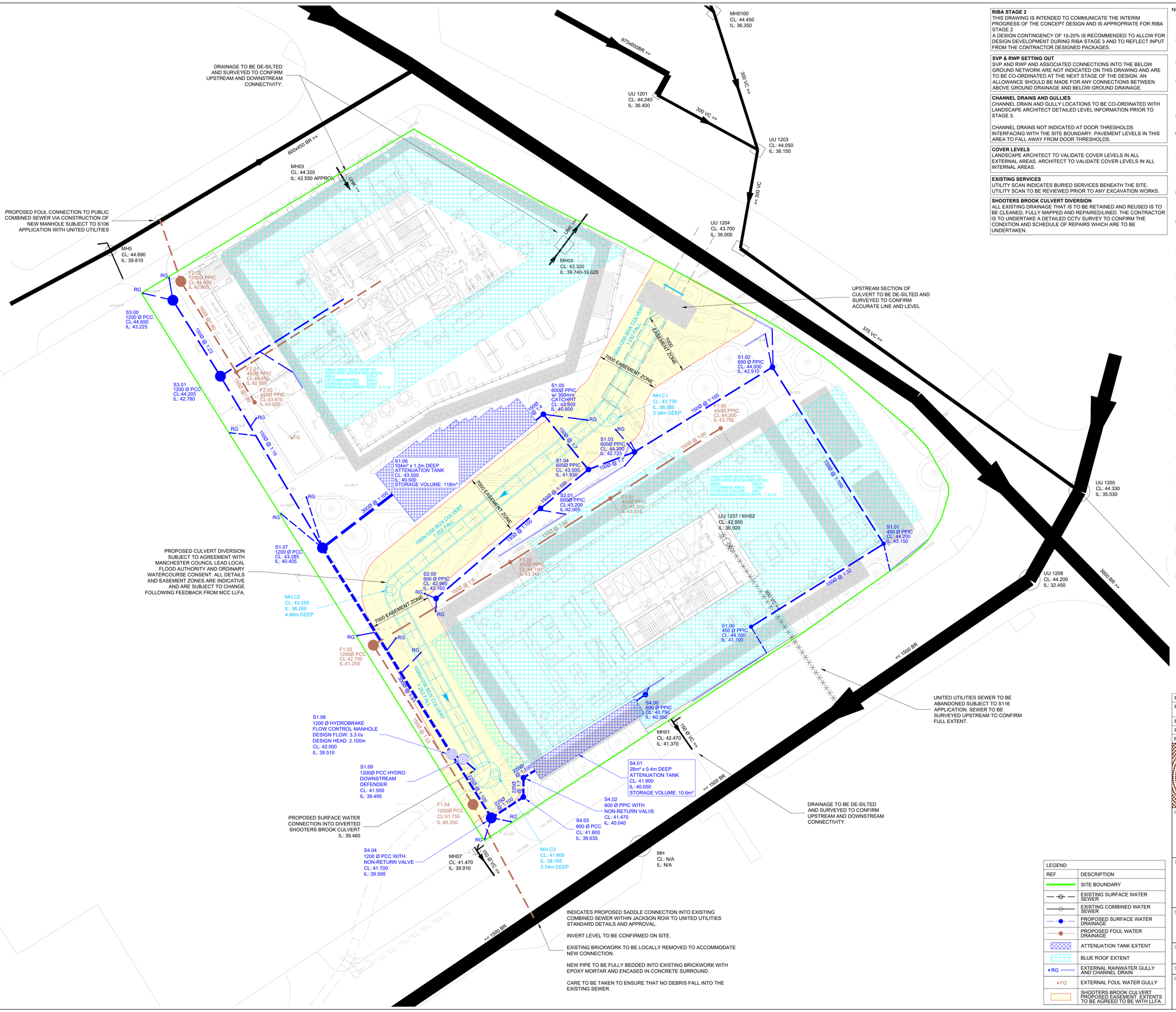

Quick Storage Estimate
Input
Input Type
User Input
Area (ha)
0.236
Volumetric Runoff Coefficient
1.000
Discharge Rate (L/s)
3.3
Infiltration Rate (m/hr)
0.0
Safety Factor
2.0
Quick
Calculate
Create New
From Library
All
FEH Stocktons
FSR Stocktons
Method
FEH
Number of Storms
72
Max. Run Time (mins)
2880
Input
Results
2D Graph
OK
Cancel
Help


Quick Storage Estimate
Results
Quick Storage Estimate variables require approximate storage of between 98m³ - 152m³.
These values are estimates only and should not be used for final design purposes.
Input
Results
2D Graph
OK
Cancel
Create New
Help


Quick Storage Estimate
Results
Quick Storage Estimate variables require approximate storage of between 140m³ - 230m³.
These values are estimates only and should not be used for final design purposes.
Input
Results
2D Graph
OK
Cancel
Create New
Help

APPENDIX L

BELOW GROUND DRAINAGE PLAN



RIBA STAGE 2
THIS DRAWING IS INTENDED TO COMMUNICATE THE INTERIM PROGRESS OF THE CONCEPT DESIGN AND IS APPROPRIATE FOR RIBA STAGE 2
A DESIGN CONTINGENCY OF 15-20% IS RECOMMENDED TO ALLOW FOR DESIGN DEVELOPMENT DURING RIBA STAGE 3 AND TO REFLECT INPUT FROM THE CONTRACTOR DESIGNED PACKAGES.

SVP & RWP SETTING OUT
SVP AND RWP AND ASSOCIATED CONNECTIONS INTO THE BELOW GROUND NETWORK ARE NOT INDICATED ON THIS DRAWING AND ARE TO BE CO-ORDINATED AT THE NEXT STAGE OF THE DESIGN. AN ALLOWANCE SHOULD BE MADE FOR ANY CONNECTIONS BETWEEN ABOVE GROUND DRAINAGE AND BELOW GROUND DRAINAGE.

CHANNEL DRAINS AND GULLIES
CHANNEL DRAIN AND GULLY LOCATIONS TO BE CO-ORDINATED WITH LANDSCAPE ARCHITECT DETAILED LEVEL INFORMATION PRIOR TO STAGE 3.

CHANNEL DRAINS NOT INDICATED AT DOOR THRESHOLDS INTERFACING WITH THE SITE BOUNDARY. PAVEMENT LEVELS IN THIS AREA TO FALL AWAY FROM DOOR THRESHOLDS.

COVER LEVELS
LANDSCAPE ARCHITECT TO VALIDATE COVER LEVELS IN ALL EXTERNAL AREAS. ARCHITECT TO VALIDATE COVER LEVELS IN ALL INTERNAL AREAS.

EXISTING SERVICES
UTILITY SCAN INDICATES BURIED SERVICES BENEATH THE SITE. UTILITY SCAN TO BE REVIEWED PRIOR TO ANY EXCAVATION WORKS.

SHOOTERS BROOK CULVERT DIVERSION
ALL EXISTING DRAINAGE THAT IS TO BE RETAINED AND REUSED IS TO BE CLEANED, FULLY MAPPED AND REPAIRED/LINED. THE CONTRACTOR IS TO UNDERTAKE A DETAILED CCTV SURVEY TO CONFIRM THE CONDITION AND SCHEDULE OF REPAIRS WHICH ARE TO BE UNDERTAKEN.

NOTES:
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RENAISSANCE, ARCHITECTS, LANDSCAPE ARCHITECTS AND BUILDING SERVICES ENGINEERS DRAWINGS.
2. THE FINAL CONNECTIONS TO THE PUBLIC SEWER IS SUBJECT TO UNITED UTILITIES APPROVAL AND IS TO BE IN ACCORDANCE WITH THIER AGREED DETAILS.
3. FOR ALL ABOVE GROUND DRAINAGE AND ASSOCIATED PUMPS REFER TO BUILDING SERVICES AND ARCHITECT'S DRAWINGS.
4. ALL BELOW GROUND DRAINAGE WORKS TO BE IN ACCORDANCE WITH RELEVANT BUILDING REGULATIONS AND SEWER SECTOR GUIDANCE APPENDIX C- DESIGN AND CONSTRUCTION GUIDANCE. IF DISCREPANCIES ARE NOTED BETWEEN SSG AND DRAWINGS THESE SHOULD BE BROUGHT TO THE ATTENTION OF RENAISSANCE FOR REVIEW.
5. RWPs, SVPs, SSs AND FLOOR GULLEYS ARE TO HAVE RODDABLE ACCESS POINTS ABOVE GROUND FLOOR TO BUILDING SERVICES DETAILS.
6. THE ATTENUATION TANK AND FLOW CONTROL ARE TO BE TO SUPPLIERS DESIGN AND DETAILS. INSTALLATION IS TO BE IN ACCORDANCE WITH THE SUPPLIERS REQUIREMENTS.
7. SEWERS TO BE LAID IN CLASS S BEDDING (150mm DIA GRANULAR BED AND SURROUND), WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN: 1.2m IN HIGHWAYS OR VERGES, OR LESS THAN 0.9m IN PEDESTRIAN AREAS, THEN A 150mm DIA CONCRETE SLAB SHOULD BE PROVIEDED ABOVE THE GRANULAR RED AND SURROUND.REFER TO DETAILS SHEETS.
8. THE CONTRACTOR IS TO UNDERTAKE A FULL CCTV SURVEY AT COMPLETION OF THE PROJECT TO DEMONSTRATE THAT THE DRAINAGE IS CLEAN ANY DEFECTS ARE TO BE CORRECTED BY THE CONTRACTOR PRIOR TO HANDOVER OF THE SYSTEM TO THE CLIENT.
9. THE CONTRACTOR IS TO KEEP A RECORD SET OF THE AS INSTALLED DRAINAGE ON SITE AND PROVIDE THIS TO RENAISSANCE UPON COMPLETION OF THE WORKS TO ALLOW FOR PRODUCTION OF A 'FINAL CONSTRUCTION' ISSUE DRAWING.
10. DURING THE WORKS ALTERATIONS TO THE DRAINAGE LAYOUT ARE TO BE MARKED UP BY THE CONTRACTOR AND AGREED WITH RENAISSANCE IN WRITING.
11. THE CHAMBER SIZE OF PCC MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
12. MANHOLE COVERS ARE TO BE IN ACCORDANCE WITH BS EN 124 FOR THE RATING INDICATED IN THE MANHOLE SCHEDULE. THE CONTRACTOR IS TO SUBMIT DETAILS FOR THE PROPOSED MANHOLE COVERS TO THE ENGINEER AND LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION.
13. ALL INTERNAL COVERS TO BE RECESSED AND TRIPLE SEALED
14. COVER SLABS MUST CARRY THE BSI KITEMARK. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOAD BEARING REDUCING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO REQUIRED SIZE.
15. ALL SEWERS TO BE BSI KITEMARK (CERTIFIED TO WIS 4-35-01)
16. ALL CONCRETE PIPES TO BE TO ES EN 1916 CLASS 120 (54kN/m).
17. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF THE WATER INDUSTRY SPECIFICATION 4-08092 (TABLE A2).
18. IF PLASTIC PIPES ARE TO BE USED THEN THE FOLLOWING MUST APPLY:
A.BSI KITEMARK (CERTIFIED TO BS EN 13476-1 AND WIS 4-35-01)
B.PIPES LESS THAN OR EQUAL TO 500mm DIA
C.BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENTS OF THE WATER INDUSTRY SPECIFICATION 4-08092 (TABLE A2)
17. THE MINIMUM CRUSHING STRENGTH FOR CLAY PIPES SHOULD BE AS FOLLOWS: 100mm DIA. 40kN/m, 150mm DIA DIA. 40kN/m, 225mm DIA. 45kN/m AND 300mm DIA. 72kN/m.
18. THE MINIMUM CRUSHING STRENGTH FOR CONCRETE PIPES SHOULD BE -(CLASS 120 TO EN 1916/BS5911-1 2002). PLASTIC PIPES SHOULD CONFORM TO WIS 4-35-01 AND BS EN13476.
19. SULPHATE RESISTANT CEMENT (C20-DC3) AND PRECAST CONCRETE PRODUCTS MUST BE USED OR A LABORATORY REPORT PROVIDING THAT SUCH PRECAUTIONS ARE NOT NECESSARY.
20. SEWER PIPES TO BE LAID IN MAXIMUM 3 METER LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER PIPES. AND THIS IS AGREED BY THE CONTRACTOR WITH THE PIPE MANUFACTURER.
21. ALL FOUL AND SURFACE WATER BELOW GROUND SYSTEMS ARE TO BE VENTED WITHIN THE ABOVE GROUND DRAINAGE TO THE BUILDING SERVICES ENGINEERS DETAILS.
22. ALLOW FOR ALL THE EXISTING SURFACE WATER DRAINAGE ON SITE TO BE GRUBBED UP AND BACKFILLED. ANY CONNECTIONS FROM THE SITE TO THE PUBLIC SEWER TO THE SITE ARE TO BE CAPPED AND GROUTED.

Rev:	Description:	Date:	By:	Chkd:
P04	STAGE 2 ISSUE - REVISED PLANNING UPDATE	22.07.26	JA	AI
P03	CULVERT SECTION AND EASEMENT EXTENT UPDATED	16.06.25	HW	AI
P02	UPDATED TO SUIT LATEST PROPOSALS	19.02.25	JB	AI
P01	ISSUED FOR PLANNING	05.12.24	HW	AI

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Project:
STOCKTONS MANCHESTER

Drawing Title:
BELOW GROUND DRAINAGE PLAN

Status:
STAGE 2

Size:	Date:	Drawn by:	Designed by:	Checked by:
A1	DEC24	HW	HW	AI

Scale: 1:200 | Project No: 2301-06

Project – Originator – Volume – Level – Type – Role – Number: STO-REN-XX-XX-DR-C-01100 | Revision: P04

LEGEND

REF	DESCRIPTION
	SITE BOUNDARY
	EXISTING SURFACE WATER SEWER
	EXISTING COMBINED WATER SEWER
	PROPOSED SURFACE WATER DRAINAGE
	PROPOSED FOUL WATER DRAINAGE
	ATTENUATION TANK EXTENT
	BLUE ROOF EXTENT
RG	EXTERNAL RAINWATER GULLY AND CHANNEL DRAIN
FG	EXTERNAL FOUL WATER GULLY
	SHOOTERS BROOK CULVERT PROPOSED EASEMENT. EXTENTS TO BE AGREED TO BE WITH LLFA.

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APPENDIX M

HYDRAULIC CALCULATIONS

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address:		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
A - S1.01	S1.01		Time of Concentration	0.004	100	0	100	0.004
B - S1.02	S1.02		Time of Concentration	0.010	100	0	100	0.010
C - S1.03	S1.03		Time of Concentration	0.002	100	0	100	0.002
D - S1.03	S1.03		Time of Concentration	0.004	100	0	100	0.004
E - S1.04 (BLOCK A ROOF)	BLOCK A BLUE ROOF		Time of Concentration	0.114	100	0	100	0.114
F - S1.05	S1.05		Time of Concentration	0.003	100	0	100	0.003
G - S1.07	S1.07		Time of Concentration	0.026	100	0	100	0.026
H - S1.08	S1.08 (FLOW CONTROL 3.3l/s)		Time of Concentration	0.008	100	0	100	0.008
I - S1.08	S1.08 (FLOW CONTROL 3.3l/s)		Time of Concentration	0.004	100	0	100	0.004
J - S2.00	S2.00		Time of Concentration	0.028	100	0	100	0.028
K - S2.01	S2.01		Time of Concentration	0.002	100	0	100	0.002
L - S3.01 (BLOCK B ROOF)	BLOCK B BLUE ROOF		Time of Concentration	0.084	100	0	100	0.084
M - S3.01	S3.01		Time of Concentration	0.023	100	0	100	0.023
N - S4.00	S4.00		Time of Concentration	0.003	100	0	100	0.003
O - S4.04	S4.04		Time of Concentration	0.010	100	0	100	0.010
X - S1.00 (FACADE WASHDOWN)	S1.00		Time of Concentration	0.010	100	0	100	0.010
X - S1.01 (FACADE WASHDOWN)	S1.01		Time of Concentration	0.010	100	0	100	0.010
X - S3.01 (FACADE WASHDOWN)	S3.01		Time of Concentration	0.020	100	0	100	0.020
X - S4.00 (FACADE WASHDOWN)	S4.00		Time of Concentration	0.008	100	0	100	0.008
TOTAL		**0.0**		**0.374**				**0.374**

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase	Company Address:		

Flow Options

Peak Flow Calculation	(UK) Modified Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	1.200
Min. Slope (1:X)	500.00
Max. Slope (1:X)	40.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Pipe Size Library

Default

Add. Increment (mm)	75
Max. Diameter (mm)	0

Diameter (mm)	Min. Slope (1:X)	Max. Slope (1:X)
100	0.00	0.00
150	0.00	0.00

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase	Company Address:		

Manhole Options

Apply Offset	☐

Manhole Size Library

Default

Diameter / Width

Connection (mm)	Diameter / Length (m)	Width (m)
0	1.200	0.000
375	1.350	0.000
500	1.500	0.000
750	1.800	0.000

Additional Sizing

Connection (mm)	900
Diameter / Length (m)	0.900
Width (m)	0.000

Depth

Depth (m)	Diameter / Length (m)	Width (m)
0.000	1.050	0.000
1.500	1.200	0.000

Access

Depth (m)	Ladder Protrusion (mm)
0.000	130
3.000	230

Benching Requirements

Landing Width (mm)	500
Benching Width (mm)	225

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Outfall Details Storm Phase: Phase	Company Address:		

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
S1.08 (FLOW CONTROL 3.3l/s)	Free Discharge			

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address:		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
C - S1.03	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.3	0.159
M - S3.01	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.02	3.6	1.646
X - S4.00 (FACADE WASHDOWN)	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	0.01	1.4	0.609
X - S1.01 (FACADE WASHDOWN)	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	0.01	1.8	0.762
A - S1.01	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.5	0.252
L - S3.01 (BLOCK B ROOF)	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.08	13.0	5.997
X - S3.01 (FACADE WASHDOWN)	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	0.02	3.5	1.523
D - S1.03	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.7	0.309
B - S1.02	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.01	1.6	0.726
X - S1.00 (FACADE WASHDOWN)	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	0.01	1.8	0.762
E - S1.04 (BLOCK A ROOF)	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.11	17.5	8.087
K - S2.01	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.3	0.132

J - S2.00	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.03	4.2	1.955
H - S1.08	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.01	1.3	0.603
G - S1.07	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.03	4.0	1.832
N - S4.00	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.5	0.237
I - S1.08	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.5	0.252
O - S4.04	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.01	1.5	0.699
F - S1.05	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	0.00	0.5	0.243

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
C - S1.03	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	1.1	0.492
M - S3.01	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.02	10.9	5.021
X - S4.00 (FACADE WASHDOWN)	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	0.01	4.3	1.857
X - S1.01 (FACADE WASHDOWN)	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.322
A - S1.01	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	1.6	0.759
L - S3.01 (BLOCK B ROOF)	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.08	39.6	18.288
X - S3.01 (FACADE WASHDOWN)	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	0.02	10.7	4.643
D - S1.03	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	2.0	0.942
B - S1.02	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.01	4.8	2.217
X - S1.00 (FACADE WASHDOWN)	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.322
E - S1.04 (BLOCK A ROOF)	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.11	53.4	24.665
K - S2.01	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	0.8	0.393

J - S2.00	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.03	12.9	5.966
H - S1.08	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.01	4.0	1.839
G - S1.07	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.03	12.1	5.585
N - S4.00	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	1.6	0.723
I - S1.08	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	1.7	0.768
O - S4.04	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.01	4.6	2.127
F - S1.05	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	0.00	1.6	0.741

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
C - S1.03	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	1.4	0.645
M - S3.01	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.02	14.3	6.584
X - S4.00 (FACADE WASHDOWN)	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	0.01	5.6	2.437
X - S1.01 (FACADE WASHDOWN)	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	0.01	7.0	3.046
A - S1.01	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	2.2	0.996
L - S3.01 (BLOCK B ROOF)	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.08	51.9	23.980
X - S3.01 (FACADE WASHDOWN)	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	0.02	14.0	6.089
D - S1.03	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	2.7	1.233
B - S1.02	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.01	6.3	2.911
X - S1.00 (FACADE WASHDOWN)	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	0.01	7.0	3.046
E - S1.04 (BLOCK A ROOF)	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.11	70.0	32.347
K - S2.01	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	1.1	0.516

J - S2.00	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.03	16.9	7.823
H - S1.08	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.01	5.2	2.416
G - S1.07	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.03	15.9	7.322
N - S4.00	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	2.1	0.948
I - S1.08	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	2.2	1.005
O - S4.04	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.01	6.0	2.791
F - S1.05	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	0.00	2.1	0.975

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S3.00	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	44.650	43.225	43.225	0.000	0.0	0.000	0.000	0.0	0.000	OK
S3.01	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	44.205	42.780	42.811	0.031	6.9	0.035	0.000	6.8	3.353	OK
S1.07	FEH Stocktons: 2 years: +0 %: 240 mins: Winter	43.285	40.405	40.600	0.195	5.3	0.221	0.000	5.2	49.494	OK
S1.08 (FLOW CONTROL 3.3l/s)	FEH Stocktons: 2 years: +0 %: 240 mins: Winter	42.000	39.511	40.600	1.089	5.7	1.232	0.000	2.5	56.719	OK
S4.02	FEH Stocktons: 2 years: +0 %: 720 mins: Winter	41.470	40.039	40.114	0.075	0.8	0.021	0.000	0.8	3.209	OK
S4.04	FEH Stocktons: 2 years: +0 %: 600 mins: Winter	41.700	39.595	40.403	0.807	1.1	0.913	0.000	1.8	7.097	Surcharged
S1.00	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	44.200	43.700	43.724	0.024	1.8	0.004	0.000	1.7	0.760	OK
S1.01	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	44.200	43.150	43.197	0.047	4.0	0.007	0.000	3.8	1.739	OK
S1.03	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	44.200	42.726	42.756	0.030	5.9	0.008	0.000	5.9	2.862	OK
S1.04	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	43.500	41.932	41.972	0.040	10.1	0.011	0.000	10.0	5.198	OK
S1.05	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	43.800	40.800	40.845	0.045	10.6	0.013	0.000	10.5	5.434	OK
S2.00	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	42.960	42.160	42.211	0.051	4.2	0.014	0.000	4.1	1.996	OK
S4.00	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	40.750	40.350	40.367	0.017	1.9	0.005	0.000	1.9	0.820	OK
S1.02	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	44.000	42.912	42.971	0.059	5.3	0.017	0.000	5.0	2.414	OK
S2.01	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	43.200	42.003	42.056	0.053	4.4	0.015	0.000	4.3	2.166	OK
S4.03	FEH Stocktons: 2 years: +0 %: 600 mins: Winter	41.600	39.637	40.402	0.765	1.1	0.217	0.000	1.1	4.593	Surcharged

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S3.00	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	44.650	43.225	43.225	0.000	0.0	0.000	0.000	0.0	0.000	OK
S3.01	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	44.205	42.780	42.831	0.051	21.6	0.058	0.000	21.3	11.045	OK
S1.07	FEH Stocktons: 30 years: +40 %: 720 mins: Winter	43.285	40.405	41.183	0.778	4.3	0.880	0.000	3.9	220.007	Surcharged
S1.08 (FLOW CONTROL 3.3l/s)	FEH Stocktons: 30 years: +40 %: 720 mins: Winter	42.000	39.511	41.183	1.672	4.2	1.891	0.000	3.0	216.979	OK
S4.02	FEH Stocktons: 30 years: +40 %: 1440 mins: Winter	41.470	40.039	40.334	0.295	1.6	0.083	0.000	2.1	10.283	Surcharged
S4.04	FEH Stocktons: 30 years: +40 %: 720 mins: Winter	41.700	39.595	41.183	1.587	0.5	1.795	0.000	0.4	9.226	Surcharged
S1.00	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	44.200	43.700	43.742	0.042	5.4	0.007	0.000	5.3	2.320	OK
S1.01	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	44.200	43.150	43.241	0.091	12.2	0.015	0.000	11.7	5.320	OK
S1.03	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	44.200	42.726	42.782	0.056	18.6	0.016	0.000	18.4	8.863	OK
S1.04	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	43.500	41.932	42.009	0.077	31.7	0.022	0.000	31.4	16.007	OK
S1.05	FEH Stocktons: 30 years: +40 %: 720 mins: Winter	43.800	40.800	41.183	0.383	3.7	0.108	0.000	3.7	106.751	Surcharged
S2.00	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	42.960	42.160	42.262	0.102	13.0	0.029	0.000	12.7	6.122	OK
S4.00	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	40.750	40.350	40.379	0.029	5.8	0.008	0.000	5.7	2.501	OK
S1.02	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	44.000	42.912	43.030	0.118	16.4	0.034	0.000	15.5	7.442	OK
S2.01	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	43.200	42.003	42.107	0.104	13.7	0.029	0.000	13.3	6.666	OK
S4.03	FEH Stocktons: 30 years: +40 %: 720 mins: Winter	41.600	39.637	41.182	1.545	0.3	0.437	0.000	0.4	4.817	Surcharged

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
S3.00	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	44.650	43.225	43.225	0.000	0.0	0.000	0.000	0.0	0.000	OK
S3.01	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	44.205	42.780	42.839	0.059	28.3	0.067	0.000	28.0	14.297	OK
S1.07	FEH Stocktons: 100 years: +45 %: 960 mins: Winter	43.285	40.405	41.599	1.194	4.6	1.351	0.000	3.6	322.564	Surcharged
S1.08 (FLOW CONTROL 3.3l/s)	FEH Stocktons: 100 years: +45 %: 960 mins: Winter	42.000	39.511	41.599	2.088	3.9	2.362	0.000	3.3	314.879	OK
S4.02	FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	41.470	40.039	40.457	0.418	1.4	0.118	0.000	2.4	14.415	Surcharged
S4.04	FEH Stocktons: 100 years: +45 %: 960 mins: Winter	41.700	39.595	41.599	2.003	0.4	2.266	0.000	0.6	14.357	Flood Risk
S1.00	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	44.200	43.700	43.748	0.048	7.0	0.008	0.000	6.9	3.044	OK
S1.01	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	44.200	43.150	43.259	0.109	16.0	0.017	0.000	15.3	6.978	OK
S1.03	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	44.200	42.726	42.791	0.065	23.7	0.018	0.000	23.3	11.608	OK
S1.04	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	43.500	41.932	42.022	0.091	40.4	0.026	0.000	40.0	20.963	OK
S1.05	FEH Stocktons: 100 years: +45 %: 960 mins: Winter	43.800	40.800	41.600	0.800	4.1	0.226	0.000	4.1	162.066	Surcharged
S2.00	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	42.960	42.160	42.290	0.130	17.0	0.037	0.000	16.6	8.016	OK
S4.00	FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	40.750	40.350	40.457	0.107	0.4	0.030	0.000	0.4	13.790	Flood Risk
S1.02	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	44.000	42.912	43.088	0.177	21.4	0.050	0.000	19.7	9.754	Surcharged
S2.01	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	43.200	42.003	42.130	0.127	17.8	0.036	0.000	17.4	8.719	OK
S4.03	FEH Stocktons: 100 years: +45 %: 960 mins: Winter	41.600	39.637	41.598	1.961	0.3	0.555	0.000	0.3	6.887	Flood Risk

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Storm Event	Stormwater Control	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m^3)	Max. Flooded Volume (m^3)	Total Lost Volume (m^3)	Max. Outflow (L/s)	Total Discharge Volume (m^3)	Half Drain Down Time (mins)	Percentage Available (%)
FEH Stocktons: 2 years: +0 %: 240 mins: Winter	S1.06 - TANK	40.600	40.600	0.100	0.100	5.0	9.961	0.000	0.000	2.3	23.281		91.769
FEH Stocktons: 2 years: +0 %: 360 mins: Winter	BLOCK B BLUE ROOF	48.823	48.823	0.023	0.023	2.2	11.401	0.000	0.000	0.9	15.250		78.707
FEH Stocktons: 2 years: +0 %: 720 mins: Winter	BLOCK A BLUE ROOF	48.823	48.823	0.023	0.023	1.8	21.132	0.000	0.000	0.5	24.633		78.560
FEH Stocktons: 2 years: +0 %: 720 mins: Winter	S4.01 - TANK	40.114	40.114	0.064	0.064	0.2	1.711	0.000	0.000	0.8	3.209		84.361

Status
OK
OK
OK
OK

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Storm Event	Stormwater Control	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m^3)	Max. Flooded Volume (m^3)	Total Lost Volume (m^3)	Max. Outflow (L/s)	Total Discharge Volume (m^3)	Half Drain Down Time (mins)	Percentage Available (%)
FEH Stocktons: 30 years: +40 %: 720 mins: Winter	S1.06 - TANK	41.183	41.183	0.683	0.683	5.4	67.781	0.000	0.000	2.7	117.735	140	43.987
FEH Stocktons: 30 years: +40 %: 240 mins: Winter	BLOCK B BLUE ROOF	48.864	48.864	0.064	0.064	7.6	30.923	0.000	0.000	1.6	31.495	80	42.245
FEH Stocktons: 30 years: +40 %: 960 mins: Winter	BLOCK A BLUE ROOF	48.863	48.863	0.063	0.063	3.7	56.647	0.000	0.000	0.9	70.045	290	42.526
FEH Stocktons: 30 years: +40 %: 1440 mins: Winter	S4.01 - TANK	40.334	40.334	0.284	0.284	0.3	7.553	0.000	0.000	1.6	9.995	470	30.963

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

Status
OK
OK
OK
OK

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Avg. Depth

Storm Event	Stormwater Control	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m^3)	Max. Flooded Volume (m^3)	Total Lost Volume (m^3)	Max. Outflow (L/s)	Total Discharge Volume (m^3)	Half Drain Down Time (mins)	Percentage Available (%)
FEH Stocktons: 100 years: +45 %: 960 mins: Winter	S1.06 - TANK	41.599	41.599	1.099	1.099	6.4	109.142	0.000	0.000	2.9	173.338	565	9.807
FEH Stocktons: 100 years: +45 %: 360 mins: Winter	BLOCK B BLUE ROOF	48.885	48.885	0.085	0.085	7.3	41.284	0.000	0.000	1.9	52.974	200	22.894
FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	BLOCK A BLUE ROOF	48.886	48.886	0.086	0.086	3.7	78.007	0.000	0.000	1.1	117.382	710	20.855
FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	S4.01 - TANK	40.457	40.457	0.407	0.407	0.4	10.656	0.000	0.000	1.4	14.365	1055	2.594

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

Status
OK
OK
OK
OK

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 2 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S3.000	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S3.00	S3.01	44.650	43.225	0.015	0.000	0.0	0	0.0	OK
S3.001	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S3.01	S1.07	44.205	42.811	0.067	3.353	1.5	0.04	6.8	OK
S1.007	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	Pipe	S1.07	S1.08 (FLOW CONTROL 3.3l/s)	43.285	40.539	0.300	6.802	0.4	0.06	11.2	OK
S4.002	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	Pipe	S4.02	S4.03	41.470	40.108	0.225	2.828	0.4	0.01	1.3	OK
S1.000	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S1.00	S1.01	44.200	43.724	0.036	0.760	0.5	0.05	1.7	OK
BLOCK A OUTLET CONNECTION 4	FEH Stocktons: 2 years: +0 %: 600 mins: Winter	No Delay	BLOCK A BLUE ROOF	S1.02		48.823	0.004	5.481	0.0		0.1	
S1.001	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S1.01	S1.02	44.200	43.197	0.053	1.739	0.7	0.21	3.8	OK
S1.005	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	Pipe	S1.05	S1.06 - TANK	43.800	40.845	0.032	5.434	3.8	0.12	10.5	OK
S2.001	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	Pipe	S2.01	S1.04	43.200	42.056	0.047	2.166	0.9	0.24	4.3	OK
S1.003	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S1.03	S1.04	44.200	42.756	0.035	2.862	1.9	0.09	5.9	OK
S1.006	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	Pipe	S1.06 - TANK	S1.07	43.580	40.542	0.088	2.121	0.3	0.03	3.7	OK

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

BLOCK A OUTLET CONNECTION 2	FEH Stocktons: 2 years: +0 %: 600 mins: Winter	No Delay	BLOCK A BLUE ROOF	S2.01		48.823	0.006	5.481	0.0		0.1	
BLOCK A OUTLET CONNECTION 3	FEH Stocktons: 2 years: +0 %: 600 mins: Winter	No Delay	BLOCK A BLUE ROOF	S1.03		48.823	0.006	5.481	0.0		0.1	
BLOCK B OUTLET CONNECTION 1	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.823	0.005	5.083	0.0		0.3	
BLOCK B OUTLET CONNECTION 2	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.823	0.005	5.083	0.0		0.3	
S1.004	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	Pipe	S1.04	S1.05	43.500	41.972	0.042	5.198	2.4	0.15	10.0	OK
BLOCK B OUTLET CONNECTION 3	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.823	0.005	5.083	0.0		0.3	
S4.003	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	Pipe	S4.03	S4.04	41.600	40.349	0.225	2.824	0.2	0.03	1.3	Surcharged
S1.002	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S1.02	S1.03	44.000	42.971	0.045	2.414	1.1	0.28	5.0	OK
BLOCK A OUTLET CONNECTION 1	FEH Stocktons: 2 years: +0 %: 600 mins: Winter	No Delay	BLOCK A BLUE ROOF	S2.00		48.823	0.005	5.481	0.0		0.1	
S2.000	FEH Stocktons: 2 years: +0 %: 15 mins: Winter	Pipe	S2.00	S2.01	42.960	42.211	0.052	1.996	0.8	0.23	4.1	OK
S4.004	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	Pipe	S4.04	S1.08 (FLOW CONTROL 3.3l/s)	41.700	40.350	0.225	4.950	0.1	0.02	1.3	Surcharged
S4.001	FEH Stocktons: 2 years: +0 %: 360 mins: Winter	Pipe	S4.01 - TANK	S4.02	40.750	40.108	0.063	2.625	0.4	0.02	1.0	OK
S4.000	FEH Stocktons: 2 years: +0 %: 15 mins: Summer	Pipe	S4.00	S4.01 - TANK	40.750	40.367	0.015	0.820	2.0	0.02	1.9	OK

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S3.000	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S3.00	S3.01	44.650	43.225	0.026	0.000	0.0	0	0.0	OK
S3.001	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S3.01	S1.07	44.205	42.831	0.174	10.397	1.4	0.13	21.5	OK
S1.007	FEH Stocktons: 30 years: +40 %: 60 mins: Summer	Pipe	S1.07	S1.08 (FLOW CONTROL 3.3l/s)	43.285	40.906	0.300	19.037	0.4	0.06	11.7	Surcharged
S4.002	FEH Stocktons: 30 years: +40 %: 1440 mins: Winter	Pipe	S4.02	S4.03	41.470	40.334	0.225	10.345	0.4	0.01	1.8	Surcharged
S1.000	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S1.00	S1.01	44.200	43.742	0.066	2.320	0.7	0.17	5.3	OK
BLOCK A OUTLET CONNECTION 4	FEH Stocktons: 30 years: +40 %: 960 mins: Winter	No Delay	BLOCK A BLUE ROOF	S1.02		48.863	0.008	17.511	0.0		0.2	
S1.001	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S1.01	S1.02	44.200	43.241	0.105	5.320	0.9	0.66	11.7	OK
S1.005	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	Pipe	S1.05	S1.06 - TANK	43.800	40.892	0.137	16.738	4.4	0.37	32.8	OK
S2.001	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	Pipe	S2.01	S1.04	43.200	42.107	0.091	6.666	1.2	0.75	13.3	OK
S1.003	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S1.03	S1.04	44.200	42.782	0.066	8.863	2.4	0.27	18.4	OK
S1.006	FEH Stocktons: 30 years: +40 %: 180 mins: Winter	Pipe	S1.06 - TANK	S1.07	43.580	41.071	0.300	3.352	0.6	0.03	3.4	Surcharged

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

BLOCK A OUTLET CONNECTION 2	FEH Stocktons: 30 years: +40 %: 960 mins: Winter	No Delay	BLOCK A BLUE ROOF	S2.01		48.863	0.010	17.511	0.0		0.2	
BLOCK A OUTLET CONNECTION 3	FEH Stocktons: 30 years: +40 %: 960 mins: Winter	No Delay	BLOCK A BLUE ROOF	S1.03		48.863	0.012	17.511	0.0		0.2	
BLOCK B OUTLET CONNECTION 1	FEH Stocktons: 30 years: +40 %: 180 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.863	0.008	8.173	0.0		0.5	
BLOCK B OUTLET CONNECTION 2	FEH Stocktons: 30 years: +40 %: 180 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.863	0.008	8.173	0.0		0.5	
S1.004	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	Pipe	S1.04	S1.05	43.500	42.009	0.085	16.007	3.1	0.47	31.4	OK
BLOCK B OUTLET CONNECTION 3	FEH Stocktons: 30 years: +40 %: 180 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.863	0.008	8.173	0.0		0.5	
S4.003	FEH Stocktons: 30 years: +40 %: 1440 mins: Winter	Pipe	S4.03	S4.04	41.600	41.135	0.225	10.486	0.2	0.04	1.8	Surcharged
S1.002	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S1.02	S1.03	44.000	43.030	0.087	7.442	1.5	0.88	15.5	OK
BLOCK A OUTLET CONNECTION 1	FEH Stocktons: 30 years: +40 %: 960 mins: Winter	No Delay	BLOCK A BLUE ROOF	S2.00		48.863	0.010	17.511	0.0		0.2	
S2.000	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	Pipe	S2.00	S2.01	42.960	42.262	0.103	6.122	1.0	0.72	12.7	OK
S4.004	FEH Stocktons: 30 years: +40 %: 30 mins: Summer	Pipe	S4.04	S1.08 (FLOW CONTROL 3.3l/s)	41.700	40.478	0.225	0.022	0.1	0.07	3.9	Surcharged
S4.001	FEH Stocktons: 30 years: +40 %: 15 mins: Winter	Pipe	S4.01 - TANK	S4.02	40.750	40.131	0.087	0.408	0.5	0.04	2.2	OK
S4.000	FEH Stocktons: 30 years: +40 %: 15 mins: Summer	Pipe	S4.00	S4.01 - TANK	40.750	40.379	0.041	2.501	2.3	0.06	5.7	OK

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

FEH Stocktons: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S3.000	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S3.00	S3.01	44.650	43.225	0.030	0.000	0.0	0	0.0	OK
S3.001	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S3.01	S1.07	44.205	42.839	0.218	13.475	1.5	0.17	28.1	OK
S1.007	FEH Stocktons: 100 years: +45 %: 30 mins: Winter	Pipe	S1.07	S1.08 (FLOW CONTROL 3.3l/s)	43.285	40.997	0.300	9.697	0.4	0.06	11.5	Surcharged
S4.002	FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	Pipe	S4.02	S4.03	41.470	40.457	0.225	13.705	0.4	0.01	1.4	Surcharged
S1.000	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S1.00	S1.01	44.200	43.748	0.078	3.044	0.7	0.22	6.9	OK
BLOCK A OUTLET CONNECTION 4	FEH Stocktons: 100 years: +45 %: 720 mins: Winter	No Delay	BLOCK A BLUE ROOF	S1.02		48.884	0.009	17.093	0.0		0.3	
S1.001	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S1.01	S1.02	44.200	43.259	0.143	6.978	0.9	0.86	15.3	OK
S1.005	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	Pipe	S1.05	S1.06 - TANK	43.800	40.915	0.150	21.870	4.4	0.47	41.7	OK
S2.001	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	Pipe	S2.01	S1.04	43.200	42.130	0.109	8.719	1.3	0.98	17.4	OK
S1.003	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S1.03	S1.04	44.200	42.791	0.077	11.608	2.5	0.34	23.3	OK
S1.006	FEH Stocktons: 100 years: +45 %: 60 mins: Winter	Pipe	S1.06 - TANK	S1.07	43.580	41.142	0.300	0.935	0.4	0.03	3.6	Surcharged

Project:	Date: 21/05/2026		
	Designed by: JamesAlbert	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address:		

BLOCK A OUTLET CONNECTION 2	FEH Stocktons: 100 years: +45 %: 720 mins: Winter	No Delay	BLOCK A BLUE ROOF	S2.01		48.884	0.011	17.093	0.0		0.3	
BLOCK A OUTLET CONNECTION 3	FEH Stocktons: 100 years: +45 %: 720 mins: Winter	No Delay	BLOCK A BLUE ROOF	S1.03		48.884	0.012	17.093	0.0		0.3	
BLOCK B OUTLET CONNECTION 1	FEH Stocktons: 100 years: +45 %: 360 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.885	0.010	17.658	0.0		0.6	
BLOCK B OUTLET CONNECTION 2	FEH Stocktons: 100 years: +45 %: 360 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.885	0.011	17.658	0.0		0.6	
S1.004	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	Pipe	S1.04	S1.05	43.500	42.022	0.103	20.963	3.1	0.6	40.0	OK
BLOCK B OUTLET CONNECTION 3	FEH Stocktons: 100 years: +45 %: 360 mins: Winter	No Delay	BLOCK B BLUE ROOF	S3.01		48.885	0.010	17.658	0.0		0.6	
S4.003	FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	Pipe	S4.03	S4.04	41.600	41.582	0.225	14.134	0.2	0.03	1.5	Flood Risk
S1.002	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S1.02	S1.03	44.000	43.088	0.121	9.754	1.3	1.11	19.7	Surcharged
BLOCK A OUTLET CONNECTION 1	FEH Stocktons: 100 years: +45 %: 720 mins: Winter	No Delay	BLOCK A BLUE ROOF	S2.00		48.884	0.010	17.093	0.0		0.3	
S2.000	FEH Stocktons: 100 years: +45 %: 15 mins: Winter	Pipe	S2.00	S2.01	42.960	42.290	0.128	8.016	1.0	0.94	16.6	OK
S4.004	FEH Stocktons: 100 years: +45 %: 1440 mins: Winter	Pipe	S4.04	S1.08 (FLOW CONTROL 3.3l/s)	41.700	41.583	0.225	25.091	0.1	0.03	1.6	Flood Risk
S4.001	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S4.01 - TANK	S4.02	40.750	40.156	0.112	0.452	0.4	0.05	2.5	OK
S4.000	FEH Stocktons: 100 years: +45 %: 15 mins: Summer	Pipe	S4.00	S4.01 - TANK	40.750	40.384	0.055	3.282	2.4	0.08	7.5	OK

APPENDIX N

NORTHWEST SUDS PROFORMA

NORTH WEST SuDS PRO-FORMA TEMPLATE

Document Change Log		
Version	**Date Agreed**	**Changes made**
Version 1	April 2020	Initial version issued
Version 2	July 2020	• Page 1 – 'Guidance to support you' section – word 'approved' changed to 'appropriate' • Section 5 – Box 4 'Evidence Required' - word 'approved' changed to 'appropriate' • Section 5 – Box 9 'Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site' - word 'approved' changed to 'appropriate'
Version 3	August 2020	• Front sheet and Document Change Log added • Page 1 – Para 1 Footnote – words 'of 0.5 hectares' removed
Version 4	July 2021	• Front page amended and branding removed. • Section 1 - Previously Developed/ Brownfield Site – words *'then one of the approaches outlined in Section 24.5 of The SuDS Manual (C753) should be adopted'* removed. • Section 7b – Hierarchy Level 2 – Note wording amended from '*Where third party land is cited as a barrier, you should provide visibility of discussions held to date with the riparian landowner of the waterbody*' to '*Where discharge of any element in the hierarchy is discounted, an applicant should provide justification. If the reasoning for discounting a discharge of surface water to watercourse relates to issues associated with third party land or the securing of any other required consent, it may be necessary for the applicant to provide evidence to the local planning authority to support their proposed approach'*
Version 5	May 2022	• Pro-forma guidance updated to take account of the new climate change allowances published on 10 May 2022. There is no change to the pro-forma itself.

Website: [The Flood Hub]

This website is an online resource which has been funded by the North West Regional Flood and Coastal Committee as a one stop shop for flood advice and information across the North West.

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[PLEASE ADD LOCAL AUTHORITY LOGO TO THIS PAGE]

[*LOCAL AUTHORITY*] SuDS PRO-FORMA

This Pro-forma is endorsed by the North West Regional Flood and Coastal Committee, including representatives from Lead Local Flood Authorities, Highway Authorities, United Utilities and the Environment Agency

[Amend as appropriate]

Version 5: May 2022

NORTH WEST SuDS PRO-FORMA

This pro-forma is a requirement for any planning application for major development[1].

It supports applicants in summarising and confirming how surface water from a development will be managed sustainably under current and future conditions.

Your sustainable drainage system should be designed in accordance with **CIRIA The SuDS Manual C753** and any necessary adoption standards.

HOW TO COMPLETE

Blue Box	Instruction/ Question
Orange Box	Evidence Required
White Box	To be completed by Developer / Consultant

1. Complete ALL white boxes
2. Submit this pro-forma to the Local Planning Authority, along with:

- Sustainable Drainage Strategy
- Site Specific Flood Risk Assessment (if required)
- Minimum supporting evidence, as indicated in orange boxes of this pro-forma.

GUIDANCE TO SUPPORT YOU

The pro-forma should be completed in conjunction with 'Completing your SuDS Pro Forma Guide.'

The pro-forma can be completed using freely available tools such as **Tools for Sustainable Drainage Systems** or appropriate industry standard surface water management design software.

[1] *as defined in Section 2 of **Statutory Instrument 2015 No. 595** or on sites in Critical Drainage Areas.*

SECTION 1. APPLICATION & DEVELOPMENT DETAILS

Planning Application Reference *(if available)*	
State type of planning application *i.e. Pre-application, Outline, Full, Hybrid, Reserved Matters* *Information only required if drainage is to be considered as part of reserved matters application*	Full
Developer(s) Name:	Liquid Business (Manchester) Limited
Consultant(s) Name:	renaissance Associates Ltd
Development Address *(including postcode)*	Stocktons M1 2WD
Development Grid Reference *(Eastings/Northings)*	Easting: 385122 Northing: 398250
Total Development Site Area (Ha)	0.397Ha
Drained Area (Ha)* of Development	0.326 Ha
Please indicate the flood zone that your development is in. Tick all that apply. *Based on the Environment Agency Flood Map for Planning and the relevant Local Authority Strategic Flood Risk Assessment (to identify Flood Zones 3a/3b).*	Flood Zone 1 ☒ Flood Zone 2 ☐ Flood Zone 3a ☐ Flood Zone 3b ☐
What is the surface water risk of the site? Tick all that apply. *Based on the Environment Agency Surface Water Flood Map.*	High ☐ Medium ☐ Low ☒
Have you submitted a Site Specific Flood Risk Assessment (FRA)? *See separate guidance notes for clarification on when a FRA is required*	Yes ☒ No ☐
Have you submitted a Sustainable Drainage Strategy?	Yes ☒ No ☐
Does your drainage proposal provide multi-functional benefits via SuDS?	Yes ☒ No ☐
Expected Lifetime of Development *(years)* *Refer to Planning Practice Guidance "Flood Risk and Coastal Change" Paragraph 026*	100 Years

Development Type:		**State Proposed Number of Units**
Greenfield Site • *Site is wholly undeveloped, and a new drainage system will be installed*	☐	
Previously Developed/ Brownfield Site • *Site is already developed, and the <u>entirety</u> of the existing surface water drainage system will be used to serve the new development (evidence must be provided to prove existing surface water drainage system is reusable);* ***<u>OR</u>*** • *Where records of the previously developed system are not available so that the hydraulic characteristics of the system cannot be determined or where the drainage system is not in reasonable working order i.e. broken, blocked or no longer operational for other reasons.*	☒	
Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 1.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02	

SECTION 2: IMPERMEABLE AREA AND EXISTING DRAINAGE

	Existing (E)	Proposed (P)	Change (P – E)
State Impermeable Area (Ha)	0.397Ha	0.326 Ha	-0.071 Ha
Evidence Required: Plans showing development layout of site with existing and proposed impermeable areas.			☒

Are there existing sewers, watercourses, water bodies, highway drains, soakaways or filter drains on the site?	Yes ☒ No ☐ Don't Know ☐
Evidence Required: Plan(s) showing existing layout to include all: • Watercourses, open and culverted • Water bodies – ponds, swales etc. • Sewers, including manholes • Highway drains, include manholes, gullies etc. • Infiltration features - soakaways, filter drains etc.	☒

Drainage Design *Outline planning applications should be able to demonstrate that a suitable drainage system is achievable.* *All other type of planning application should provide full details or reference to previous planning application where drainage details have been submitted or approved.*	
Select which design approach you are taking to manage water quality *(refer to Section 3.3 SuDS Manual)* **Approach 1 – Volume control / Long Term Storage (Technical Standards S2/3, S4/5)** • *The attenuated runoff volume for the 1 in 100 year 6 hour event (plus climate change allowance) is limited to the greenfield runoff volume for the 1 in 100 year 6 hour event, with any additional runoff volume utilising long term storage and either infiltrated or released at 2 l/s/ha* • *The discharge rate for the critical duration 1 in 1 year event is restricted to the 1 in 1 year greenfield runoff rate* • *The discharge rate for the critical duration 1 in 100 year event (plus climate change allowance) is restricted to the 1 in 100 year greenfield runoff rate* **Approach 2 – Qbar (Technical Standards S6)** • *Justification has been provided that the provision of volume control/long term storage is not appropriate and an attenuation only approach is proposed. All events up to the critical duration 1 in 100 year event (plus climate change allowance) are limited to Qbar (1 in 2 year greenfield rate) or 2 l/s/ha, whichever is greater.*	☐ ☒
Evidence Required: Plans showing: • Existing flow routes and flood risks • Modified flow routes • Contributing and impermeable areas • Current (if any) and proposed 'source control' and 'management train' locations of sustainable drainage components (C753 Chapter 7) • Details of drainage ownership • Details of exceedance routes (Technical Standards S9) • Topographic survey • Locations and number of existing and proposed discharge points	☒

Note consideration should be given to manage surface water from both impermeable and permeable surfaces (including gardens and verges) likely to enter the drainage system.	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 2.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

SECTION 3: PEAK RUNOFF RATES – TECHNICAL STANDARDS S2, S3 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Rate (l/s)	Greenfield Rate (l/s)	Proposed Rate (l/s) *Previously developed sites - In line with S3 should be equivalent to Greenfield runoff rates – discuss with LLFA if this is not achievable pre-application*
Qbar *(Approach 2)*		3.3	3.3
1 in 1 Year Event *(Approach 1)*			
1 in 30 Year Event			
1 in 100 Year Event* *(Approach 1)*			
** Total discharge at the 1 in 100 year rate should be restricted to the greenfield runoff volume for the 1 in 100 Year 6 hour event with additional volumes (long-term storage volume) released at a rate no greater than 2 l/s/ha where infiltration is not possible. The climate change allowance should only be applied to the proposed rate and not the existing or greenfield rate.*			

Evidence Required: Methodology used to calculate peak runoff rate clearly stated and justified.	☒
Impermeable areas plan, supported by topographical survey confirming positive drainage.	☒
Hydraulic calculations and details of software used.	☒

State the hydraulic method used in your calculations *(Refer to Table 24.1 of The SuDS Manual)*	FEH - UK SuDS Tool & InfoDrainage

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 3.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

SECTION 4: DISCHARGE VOLUME – TECHNICAL STANDARDS S4, S5 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Volume (m^3)	Greenfield Volume (m^3)	Proposed Volume (m^3)
1 in 100 Year 6 Hour Event *(Approach 1)*			
Does the below statement apply to your development proposal? Long term storage is not achievable on this site and, in accordance with S6 of the Non Statutory Technical Standards for SuDS, the surface water discharge rates for events up to and including the 1 in 100 year critical event are limited to Qbar (Approach 2)			Yes ☒ No ☐
Evidence Required: Approach to managing the quantity of surface water leaving the site clearly stated and justified			☒
Methodology used to calculate discharge volume clearly stated and justified.			☒
Hydraulic calculations and details of software used.			☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 4.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

SECTION 5: STORAGE – TECHNICAL STANDARDS S7 AND S8

State climate change allowance used (%)	1 in 30 Year+40% 1 in 100 Year+45%
State housing density (houses per ha)	NA
State urban creep allowance used (%)	0% - Not suitable due to type of development
Evidence Required: State / used in appropriate industry standard surface water management design software.	☒

State storage volume required (m^3) *(excluding non-void spaces)* *Must include an allowance for climate change and urban creep*	Pipe Network: 11m^3 Blue Roof: 152m^3 Tank: 129m^3 Total: 292m^3 TBC following RIBA Stage 4 Design
Have you incorporated interception into your design? *(Refer to Chapter 24 of The SuDS Manual C753)* *Where possible, infiltration or other techniques are to be used to try and achieve zero discharge to receiving waters for rainfall depths up to 5mm.*	Yes ☐ No ☒
Evidence Required: Drainage plans showing location of attenuation and all flow control devices and supporting calculations.	☒

Summarise how storage will be provided for 1 in 30 year event on site. *Storage must be designed to ensure that at no flooding occurs onsite in a 1 in 30 year event except in designed areas **and** no flooding occurs offsite in a 1 in 100 year (plus climate change allowance) event.*	Blue roof, Attenuation Tank, Pipe Network
Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site. *Where storage above the 1 in 30 year rainfall event is provided in designated areas designed to accommodate excess surface water volumes, plans showing storage locations and surface water depths and supported by calculations used in appropriate industry standard surface water management design software. It is important to run a range of duration events to ensure the worst case condition is found for each drainage element on the site*	Blue roof, Attenuation Tank, Pipe Network
Evidence Required: Plans showing size and location of storage and supporting calculations. Where there is controlled flooding, extents and depths must be indicated.	☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 5.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

SECTION 6: WATER QUALITY PROTECTION

Contaminated surface water run-off can have negative impacts on the quality of receiving water bodies. The potential level of contamination will influence final the design of an appropriate treatment train as part of your sustainable drainage system.

Is the proposal site known to be or potentially contaminated?	Yes ☐ No☒
• *If the site is contaminated, it should be demonstrated that the sustainable drainage system will not increase the risk of pollution to controlled waters though the mobilisation of contaminants and/or creation of new pollution pathways.*	

Confirm the *Pollution Hazard Level* of the proposed development - Tick ALL that apply

Refer to Pollution Hazard Indices for different Land Use Classifications in Table 26.2 of The SuDS Manual C753 for further guidance.

Pollution Hazard Level *Tick ALL that apply*		**Surface water run-off from the proposed development will drain from:**
VERY LOW	☐	• Residential roofs
LOW	☒	• Other roofs (typically commercial/industrial roofs) • Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home-zones and general access roads) • Non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day
MEDIUM	☐	• Commercial yard and delivery areas • Non-residential car parking with frequent change (e.g. hospitals, retail) • All roads except low traffic roads and trunk roads/motorways[2]
HIGH	☐	• Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites) • Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured • Industrial sites • Trunk roads and motorways[1]

If the development's Pollution Hazard Level is 'Very Low' or 'Low', has the sustainable drainage design been risk assessed and appropriate mitigation measures included?	Yes ☒ No☐
• *If the proposed development has a very low or low polluting potential, you should design your sustainable drainage system to include an appropriate treatment train in accordance with The SuDS Manual (C753).*	

If the development's Pollution Hazard Level is 'Medium' or 'High', is the application supported by a detailed water quality risk assessment?	Yes ☐ No☐
• *If the proposed development has a high polluting potential, a detailed risk assessment will be required to identify an appropriate SuDS treatment train and ensure compliance with Paragraph 170 of the National Planning Policy Framework.* • *If the proposed development has a medium polluting potential, a detailed risk assessment may be required depending on the nature, scale and location of the development.*	

Has pre-application advice on water quality been obtained from the Environment Agency?	Yes ☐ No☒
If YES, provide details:	

[2] Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 6.	

SECTION 7: DETAILS OF YOUR SUSTAINABLE DRAINAGE SYSTEM

a) Function of your Sustainable Drainage System

Do your proposals store rainwater for later use (as a resource)?	Yes ☐ No ☒
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	

Do your proposals promote source control to manage rainfall close to where it falls? (e.g. promoting natural losses through soakage, infiltration and evapotranspiration)	Yes ☒ No ☐
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	Adoption of Blue roof

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7a.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

b) Hierarchy of Drainage Options – Planning Practice Guidance

The proposed method of discharge are set out within order of priority. Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

Proposed method of surface water discharge		**Is this proposed?**	
Hierarchy Level 1: Into the ground (via infiltration)		Yes ☐ No ☒	
If YES - Evidence Required		**If NO – Evidence Required** **Tick ALL that apply**	
☐	**A.** Completed Infiltration Checklist from The SuDS Manual (C753) Appendix B *An editable version of this form is available on SusDrain website.*	☐	A. Site investigation to demonstrate that the ground is not free draining. Test results to be provided in accordance with: • The methodology within BRE 365 (2016), ***OR*** • Falling head permeability tests BS EN ISO 22282-2: 2012
☐	**B.** British Geological Survey (BGS) Infiltration SuDS Map	☐	B. NOTE: where an applicant is unable to access a site to undertake testing, e.g. where unable to access a site for an outline application, they can submit a *SuDS GeoReport or similar.*
☐	**C.** Infiltration testing to BRE 365 (2016) or falling head permeability tests to BS EN ISO 2228-2: 2012 ***(optional for outline)***	☐	C. Evidence to confirm that infiltration to ground would result in a risk of deterioration to ground water quality.
☐	'Plan B' sustainable drainage plan and statement of approach with an alternative discharge method, in case infiltration proposals are proven not feasible upon	☐	D. Geotechnical advice from a competent person* which determines that infiltration of water to ground would pose an unacceptable risk of geohazards to the site and/or local area.

	further site specific ground investigation e.g. to consider seasonal variations to groundwater.		**Note: Competent person may include a Chartered Engineer, Chartered Geologists, Registered Ground Engineering Professionals (RoGEP).*

Proposed method of surface water discharge		**Is this proposed?**	
Hierarchy Level 2: To a surface water body *(select type)* ***NOTE:*** *Consent from LLFA or Permit from Environment Agency may be required – refer to guidance*		Yes ☒ No ☐ N/A ☐ ☐ Main river ☐ Canal ☐ Ordinary watercourse ☐ Other water body	
If YES - Evidence Required		**If NO – Evidence Required** **Tick ALL that apply**	
☒	Surface water body / watercourse survey and report	☐ **AND** ☒	Plan showing nearby watercourses and waterbodies Statement providing justification in your Sustainable Drainage Strategy ***Note:*** *Where discharge of any element in the hierarchy is discounted, an applicant should provide justification. If the reasoning for discounting a discharge of surface water to watercourse relates to issues associated with third party land or the securing of any other required consent, it may be necessary for the applicant to provide evidence to the local planning authority to support their proposed approach.*

Proposed method of surface water discharge		**Is this proposed?**	
Hierarchy Level 3: To a surface water sewer or highway drain *(select type)*		Yes ☐ No ☐ N/A ☒ ☐ Surface water sewer ☐ Highway drain	
If YES - Evidence Required		**If NO – Evidence Required** **Tick ALL that apply**	
☐	Written correspondence from Water and Sewerage Company/ Highway Authority regarding proposed connection.	☐ **AND** ☐	Plan showing nearby sewers and highway drains Statement providing justification in your Sustainable Drainage Strategy

Proposed method of surface water discharge		**Is this proposed?**
Hierarchy Level 4: To combined sewer		Yes ☐ No ☐ N/A ☒
If YES - Evidence Required		**If NO – Evidence Required**
☐	Written correspondence from Water and Sewerage Company	N/A

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7b.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

c) Proposed SuDS Component Types

	Tick ALL that apply				
Within property boundary	☐ Rainwater harvesting	☒ Green/ blue roofs	☐ Pervious pavements *[**Type:** A ☐ B ☐ C ☐]*	☐ Soakaway	☐ Bio retention systems

	Tick ALL that apply				
Within development site boundary *(not property)*	☐ Infiltration system *[**Type:** ☐ Surface level ☐ Below ground]*		☐ Filter strips	☐ Filter drains	☐ Swales
	☐ Bio retention system	☐ Detention basins	☐ Ponds and wetlands	☒ Attenuation tanks/ Oversized pipes	☐ Other (state below)
	If 'Other' please state:				

Off site *(not within the boundary of the proposed development)*	***Please state:***

I confirm that the above selected components have been designed in accordance with The SuDS Manual (C753).	I confirm ☒
I confirm that the management of flows resulting from rainfall in excess of a 1 in 100 year plus climate change rainfall event, and their exceedance route(s), has been fully considered in order to minimise the risks to people, property (new and existing) and infrastructure.	I confirm ☒

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7c.	STO-REN-XX-XX-RP-C-00002_P04 STO-REN-XX-XX-RP-C-00001_P02

SECTION 8: OPERATION AND MAINTENANCE – TECHNICAL STANDARD S12 AND NATIONAL PLANNING POLICY FRAMEWORK

The applicant is responsible to ensure that ALL components selected in Section 7 can be maintained for the design life of the development. This information is required so the Local Planning Authority can ensure the maintenance and management of the sustainable drainage system. The Local Planning Authority will discuss how this will be secured (e.g. via planning condition or planning obligation).

	Information Provided?
Management Plan	Yes ☒ No ☐
Evidence Required: **Plan/ drawing provided to show the position of the different SuDS components with:** • Key included to identify any of the adopting bodies that you will be offering your sustainable drainage components for adoption *(relates to maintenance and management arrangements below).* • Plan/ drawing to identify any areas where certain activities are prohibited, detailing reasons why. **Action plan for accidental pollutant spillages.**	☐ ☐

	Information Provided?
Maintenance Schedule	Yes ☒ No ☐
Evidence Required: A copy of the maintenance schedule including: 1. **Proactive and preventative maintenance** Detailing regular, occasional and remedial maintenance activities including recommendations for inspection and monitoring. This should include recommended frequencies, advice on plant/ machinery required and an explanation of the objectives for the maintenance proposed and potential implications of not meeting them. 2. **Reactive and corrective maintenance** (e.g. product repair and replacement). Including advice on excavations, or similar works, in locations that could affect the SuDS components/ adjacent structures.	☐

	Information Provided?
Maintenance and Management Arrangements	Yes ☐ No ☒
Evidence Required: Evidence of formal agreement with the party responsible for undertaking maintenance. Please select any of the adopting bodies that you will be offering your sustainable drainage components for adoption. Tick all that apply. ☐ **Water and Sewerage Company** *Section 104 agreement (Water Industry Act 1991)* ☐ **Highway Authority** *Section 278/38 agreement (Highways Act 1980)* ☐ **Local Authority Public Open Space** *[Refer to Local Authority Policy]* Please select the arrangement(s) for all non-adopted sustainable drainage components. Tick all that apply. ☐ **Management Company** ☐ **Property Owner** *(for SuDS components within property boundary only)* ☐ **Other** (please state)	☐

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 8.	

DECLARATION AND SUBMISSION

This pro-forma has been completed using evidence from information which has been submitted with the planning application.

The information submitted in the Sustainable Drainage Strategy and site-specific Flood Risk Assessment (FRA), where submitted, is proportionate to the site conditions, flood risks and magnitude of development and I agree that this information can be used as evidence to this sustainable drainage approach.

Submitter Details			
Completed by	James Albert	**Email Address**	jamesalbert@renaissance-ltd.com
		Telephone Number(s)	0161 393 6509
Signed off by	Andrew Isherwood	**Accreditation(s) and/or Qualification(s) of Signatory**	BEng, CEng, MIStructE
Date *(dd/mm/yyyy)*	22.07.2026	**Company**	renaissance Associates LTD

Client Details			
Name		**Company**	Liquid Business (Manchester) Limited