# **Drainage Summary**

Marsh Lane New Mills

> Ironside Farrar Limited 3 Worsley Court High Street Worsley Manchester M28 3NJ

> > 30212/RDE

June 2016

Marsh Lane, New Mills

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File Ref: 30212/RDE

# DEVELOPMENT AT MARSH LANE NEW MILLS DRAINAGE SUMMARY

# 1.0 Introduction

This Drainage Summary has been prepared in support of a Planning Application by Forrest for a site known as Marsh Lane, New Mills.

The information provided within this drainage summary should be read alongside the Preliminary Drainage Layout prepared for this site (Appendix C). This summary details the drainage proposals for the proposed residential development.

# 2.0 <u>Site Description</u>

The site measures approximately 0.94 ha in area and is entirely greenfield with no existing impermeable area. It is situated within New Mills and comprises of 37 residential properties. The site was previously a quarry.

## 3.0 Existing Drainage & Consultations

A 225mm dia. combined sewer runs northwards within Marsh Lane to the junction of Low Leighton Road. No existing connection to the existing sewer network is presumed from the site. The existing sewer records are included in Appendix A.

Greenfield runoff rates from IOH 124 have been calculated as 6.1, 6.3, 10.4 and 12.8 (QBar, Q1, Q30 and Q100).

A wastewater pre development enquiry has been submitted to United Utilities and a response has been received (Appendix B). Foul has been accepted to the 225mm dia combined sewer in Marsh Lane at an unrestricted rate. Surface water has been accepted to the same combined sewer in Marsh Lane at a maximum rate of 6.2 l/s.

There are no other drainage connections or watercourses indicated on or immediately adjacent to the site.

Marsh Lane, New Mills

# 4.0 <u>Proposed Drainage</u>

The Preliminary Drainage Layout prepared (Appendix C) is designed to pass forward a maximum surface water discharge of 6.2 l/s. Two flow control units are proposed to achieve this discharge rate and to keep the large pipes for attenuation as shallow as possible. The last control manhole is a minimum adoptable orifice size of 100mm. Oversized pipes proposed for attenuation are 900mm dia and 1050mm dia pipes with appropriately sized large manholes.

The design flows produced are 5.1, 5.1 and 6.2 l/s for the 1, 30 and 100 year return periods. The 100 year return period includes a 30% climate change allowance. All flows are below United Utilities accepted surface water discharge of 6.2 l/s (hydraulic calculations attached as Appendix D).

The foul drainage from the site is proposed to combine with the surface water just prior to exiting the site and after the surface water control manholes. A new combined sewer connection within Marsh Lane is proposed.

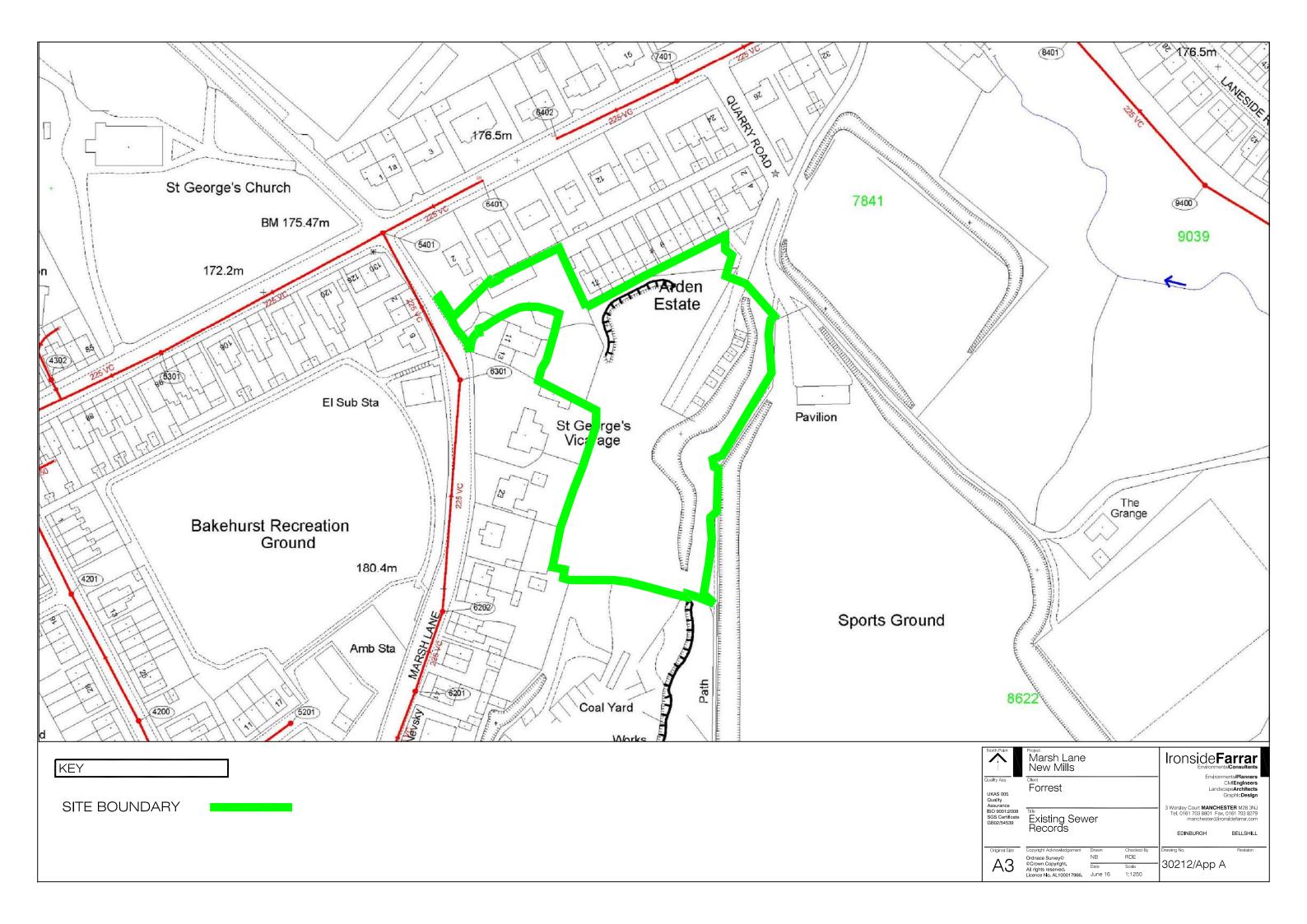
All proposed sewers for the development will be subject to a Section 104 Agreement with United Utilities.

## 5.0 <u>Ground Conditions</u>

The site previously used to be a quarry and therefore ground conditions are not expected to make infiltration viable. Forthcoming site investigations will confirm or disprove this assumption.

## 6.0 <u>Conclusions</u>

- Surface water and foul drainage is proposed to connect to the existing 225mm dia combined sewer within Marsh Lane.
- Attenuation will be incorporated into the surface water drainage system to restrict flows to 6.2 l/s in the 100 year return period (an allowance of 30% for future climate change is included).
- Infiltration SUDS techniques are assumed to not be suitable.



Wastewater predevelopment enquiry



This form is for all first time enquiries you may have when planning your development.

If your enquiry relates to advice on connection points and discharge rates, please complete all sections, providing as much information as you have available. You will notice some fields are marked as optional, all other fields are mandatory. For all other enquiries, please complete Sections 1, 2, 7 and 8.

When answering the yes/no questions please mark an 'x' in the appropriate box.

All enquiries must be accompanied by a site location plan, clearly identifying the site boundary.

Once completed, please return this form by email to <u>WastewaterDeveloperServices@uuplc.co.uk</u> or post to United Utilities, Developer Services and Planning, Warrington North Wastewater Treatment Works, Gatewarth Industrial Estate, Off Liverpool Road, Warrington, WA5 1DS.

We aim to respond to enquiries within 15 working days from receipt of your completed enquiry form.

Section 1: About	you											
			Applicant					Agent (if applicable)				
Name		IAN CALDER				ROBE	RT EAS					
Company name		FORREST				IRONS	SIDE FAI	RRAR LIMITED				
Home or company a (including postcode)	address	THE YARD, DOD BOLTON, BL5 3N		THOUGH"	ron,			COURT, WORSLEY, R, M28 3NJ				
Contact telephone n (a mobile number is fir		01942 841122				0161 7	'03 8801					
Email		lan.Calder@forres	st.co.uk			robert.eastaff@ironsidefarrar.com						
What is your enquin	/?	DISCHARGE POI	NT AND RATE	CONFIRM	MATION	l						
Who should we sen enquiry response to		Applicant		Agent		-		Both X				
Section 2: About	your site											
Site name		MARSH LANE, NI	EW MILLS									
Site address (or nearest main road)		MARSH LANE, NI	MARSH LANE, NEW MILLS, HIGH PEAK, DERBYSHIRE									
Nearest postcode		SK22 4PN										
Site grid reference (	mid point)	X: 400694					Y: 385331					
Approx. number of c	lwellings	37										
Approx. numbers of household units	non-	N/A										
Total site area (hect	ares)	0.94										
Development area - (Optional)	hectares	Residential	0.94	Comm	ercial			Industrial	-			
Estimated onsite da (Optional)	te								······································			
Estimated first occu (Optional)	pation											
Does the site have planning	Full	Yes	No	X	Applio subn	cation nitted		Planning Ref (if applicable)				
permission?	Outline	Yes	No	X	subn	cation nitted		Planning Ref (if appropriate)				
Have you approache about this site previo	ed us ously?	Yes	No	X	lf yes, Ref N	please p lo. &/or c details	orovide ontact					

Section 3: Your site dr	ainage strategy						
Type of site	GREENFIELD (Go to Q 3.1)	X	BROWNFIE (Go to Q 3				
3.1 Greenfield site (Option	al)			C	onfirmed	attachme	ent:
	Please provide full calculati	ions to show existing g	reenfield run off rates	Yes	х	No	
3.2 Brownfield site (Option	ial)			C	onfirmed	attachme	ent:
	an showing existing foul wal (including location of existing					No	
	n showing the existing surfa					No	· · · · · · · · · · · · · · · · · · ·
Will this development produ	uce trade effluent?			Yes		No	x
	If yes, have you applied for a	a trade effluent consent	from United Utilities	Yes		No	
Do you intend to discharge	highways drainage to the pu	ublic sewer network?		Yes	х	No	
		lf	yes, to which sewer?	PROPC	SED SW	SEWER	S
Section 4: Foul water c	connection						
	n existing connection to the	public sewer?		Yes	x	No	
				EX 225	BINED CO		
lf no, please	If yes, please provid provide the proposed flow r	le manhole number or g ate and connection poil		DOW	NSTREA	M OF MH	6301.
In the faul water discharge	ta ha numanda			Yes	<u>UNITS =</u>	1.71 L/S	
Is the foul water discharge				्रास्ठ	<u> </u>	No	Х
Section 5: Surface wat	er connection						
	connect surface water to a						Urban
Drainage Syste D	ems (SUDs) have been exp etails of SUDs can be foun	id at <u>http://www.ciria.c</u>	om/sudsdesign_gu	idance.htr	nanons <u>n</u>	2010.	R
					scharge I		i se de
How do you propose to dra	in surface water from the off				suraryea		
	מיז סעוומטס אימנסו ווטנוו נווע Sil	°` (Go to	UDs Section 6)	p.	ublic sewe Go to Q5.1	er	x
(5.1) Does the site have ex sewer?	isting surface water connect			p.	ublic sewe Go to Q5.1	er	x x
sewer?		ions to the public	Section 6) Yes (Go to Q5.2)	p.	ublic sewe Go to Q5.1	er ) lo	
sewer? (5.2) Proposed surface wat	isting surface water connecti er discharging to public sew Are y	ions to the public er via existing connec /ou proposing to use an	Section 6) Yes (Go to Q5.2) ion existing connection?	Yes	ublic sewe Go to Q5.1	er ) lo Q5.3) No	х
sewer? (5.2) Proposed surface wat	isting surface water connecti er discharging to public sew	ions to the public er via existing connec /ou proposing to use an	Section 6) Yes (Go to Q5.2) ion existing connection?	Yes	ublic sewe Go to Q5.1 (Go to	er ) lo Q5.3) No (Go to Q5.3)	x x
sewer? (5.2) Proposed surface wat If yes, please j (5.3) Proposed surface wa	isting surface water connect ter discharging to public sew Are y provide manhole number or ter discharging to public sew	er via existing connec /ou proposing to use an grid reference number &	Section 6) Yes (Go to Q5.2) ion existing connection proposed flow rates	Yes S	Ublic sewe Go to Q5.1 (Go to (Go to PROPOSE	er ) lo Q5.3) (Go to Q5.3) ECTION T ED 150 DI	X X FO
sewer? (5.2) Proposed surface wat If yes, please j (5.3) Proposed surface wa	isting surface water connect er discharging to public sew Are y provide manhole number or	er via existing connec you proposing to use an grid reference number a yer via a new connection proposed point of com	Section 6) Yes (Go to Q5.2) ion existing connection proposed flow rates	Yes Yes S COMB	Ublic sewe Go to Q5.1 (Go to CONNI ROPOSE INED SE	er ) lo Q5.3) (Go to Q5.3) ECTION T ED 150 DI	X X TO
sewer? (5.2) Proposed surface wat If yes, please ( (5.3) Proposed surface wa If a new connection poin Have you completed a floor	isting surface water connect er discharging to public sew Are y provide manhole number or ter discharging to public sew nt is required, please provide d risk assessment in support	ions to the public er via existing connec /ou proposing to use an grid reference number & /er via a new connection proposed point of com flow rate	Section 6) Yes (Go to Q5.2) ion existing connection? proposed flow rates on nection and proposed es (litres per second	Yes Yes S COMB	Ublic sewe Go to Q5.1 (Go to CONNI ROPOSE INED SE	er ) lo Q5.3) No (Go to Q5.3) ECTION 1 ED 150 DI WER AT	X X FO
sewer? (5.2) Proposed surface wat If yes, please j (5.3) Proposed surface wa If a new connection poir	isting surface water connect ter discharging to public sew Are y provide manhole number or ter discharging to public sew nt is required, please provide d risk assessment in support controlled?	ions to the public er via existing connec /ou proposing to use an grid reference number & /er via a new connection proposed point of com flow rate	Section 6) Yes (Go to Q5.2) ion existing connection? proposed flow rates on nection and proposed es (litres per second	Yes Yes S COMB	Ublic sewe Go to Q5.1 (Go to CONNI ROPOSE INED SE	er ) lo Q5.3) No (Go to Q5.3) ECTION 1 ED 150 DI WER AT = 6.1 L/S)	X X TO A 6.2 L/S

Section 6: Developm Is the development part of	of a larger site that wi	an and the grant of the second	d in phases	or will be sub	ject to				
separate planning applic	ations?				e details belov	Yes v	· · · · · · · · · · ·	No	
		1	2	3	Phase No. 4	5	(	3	7
Start date on site								·	
Anticipated date of first o	ccupation						-		
Anticipated completion da	ate								
No. of dwellings									
Sustainability code for dw	vellings								
Public houses and/or restaurants	No. of seats								
	Floor space (m <sup>2</sup> )				:				
Hotels: Total No. of beds							<u> </u>		
Schools: Total No. of pup	ils								
Hospitals: Total No. of be	ds						<u> </u>		
Nursing homes: Total No	, of beds								
Retail units: Total No. of u	units								
Office space: Total No. of	units								
Industrial / manufacturing	: Total No. of units								
Other: Foul water (litres p	er second)								
Section 7: Supporting	j information ase confirm you hav	e included a	lleunnorth	n informatio	n in volation i		uler		
	, so somminged na		ir supportin	ig internatio					
Site location plan						Yes	X	No	
Site boundary						Yes		No	
Proposed drainage layou						Yes	Х	No	
Indicative layout plan (opl						Yes	X	No	
Calculations in support of		or run off rate	s (optional)	<u>.</u>		Yes	X	No	
Flood risk assessment (if	appropriate)					Yes		No	
Section 8: Declaration I understand that the s	ubmission of this f	orm is to be t	reated as a	preliminary	enquiry and	lhe informa	tion ma	ly be si	ibject to
change. In particular conjunction with the	I understand that t	he informatio d in relation	in United U	tilities Water Jiry, any cha	<b>Elmited</b> prov	ides in res	oonse i	s valid	only in
Name (please print)	ROBERT E		1999	gnature		PR	N///	and the second se	
Company	IRONSIDE	FARRAR	Da	ate		16/06/	16		<u> </u>
		For U	nited Utilitie						
Date received			່ບເ	JW Ref No.					

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington, WA5 3LP. Registered in England and Wates. Registered number 2366678.

From: McDermott, Daniel <Daniel.McDermott@uuplc.co.uk>
Sent: 22 June 2016 14:26
To: Robert Eastaff
Subject: RE: DE2342: Wastewater Predevelopment Enquiry Marsh Lane, New Mills (30212) due 8/7/16

Good Afternoon

6.2l/s is acceptable

If I can be of any further assistance please don't hesitate to contact me.

Regards

Daniel McDermott Assistant Developer Engineer Developer Services and Planning Operational Services United Utilities T: 01925679409 Unitedutilities.com

From: Robert Eastaff [mailto:robert.eastaff@ironsidefarrar.com] Sent: 21 June 2016 17:24 To: McDermott, Daniel <Daniel.McDermott@uuplc.co.uk> Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>; Ian Calder <Ian.Calder@forrest.co.uk>; Simon Gough <simon.gough@ironsidefarrar.com> Subject: RE: DE2342: Wastewater Predevelopment Enquiry Marsh Lane, New Mills (30212) due 8/7/16

Our Ref: 30212 Date: 21/06/16

Hi Daniel,

Many thanks for your response. We will of course take into account the ground conditions within the final design. If however soakaways are not viable, would you consider a slight increase in SW discharge rate to the combined sewer?

To achieve UU's 100mm minimum orifice requirements, for a flow of 5.0 l/s the head for a typical vortex flow control is only 1.4m. The system we have designed uses a head of 2.1m to make better use of the large diameter pipes and to use the storage available within a surface feature like a swale or underground crate storage (set above the 30 year water level). The flow produced with a 2.1m head is 6.2 l/s with a minimum 100mm diameter orifice.

Please would you reconsider either allowing the 6.2 l/s SW discharge rate OR accepting the use of a smaller diameter orifice (less than 100mm) so that we can make better use of the large diameter pipes proposed for adoption and other storage features closer to the surface?

Regards,

## Rob

Robert Eastaff | Ironside Farrar | 3 Worsley Court | Worsley | Manchester |M28 3NJ | Tel: 0161 703 8801 | Fax: 0161 703 8279 | Web:ironsidefarrar.com

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From: McDermott, Daniel [mailto:Daniel.McDermott@uuplc.co.uk]
Sent: 21 June 2016 14:28
To: Robert Eastaff <robert.eastaff@ironsidefarrar.com>
Cc: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: DE2342: Wastewater Predevelopment Enquiry Marsh Lane, New Mills (30212) due 8/7/16

Good Afternoon Rob,

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months.

Foul will be allowed to drain to the public combined sewer network. Our preferred point of discharge would be to the 225mm combined sewer on Marsh Lane at an unrestricted rate.

Surface water from this site must drain to soak away or some other form of infiltration system but if ground conditions confirm that this is not a viable solution all surface water can drain to the 225mm combined sewer on Marsh Lane at a maximum pass forward flow of 51/s.

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimatley inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

http://www.unitedutilities.com/connecting-public-sewer.aspx

You may wish to offer the proposed new sewers for adoption. United Utilities assess adoption appliation based on Sewers adoption 6th Edition and for any pumping stations our company addenda document. Please refer to link below to obtain further guidance and application pack:

http://www.unitedutilities.com/sewer-adoption.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, Planning Conditions and local flood authority guidelines, we would recommend that you laise and make suitable agreements with the relevant statutory bodies.

If I can be of any further assistance please don't hesitate to contact me.

Regards

Daniel McDermott Assistant Developer Engineer Developer Services and Planning Operational Services United Utilities T: 01925679409 Unitedutilities.com

From: Robert Eastaff [mailto:robert.eastaff@ironsidefarrar.com] Sent: 16 June 2016 17:28 To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk> Cc: Ian Calder <Ian.Calder@forrest.co.uk> Subject: Wastewater Predevelopment Enquiry Marsh Lane, New Mills (30212)

Our Ref: 30212 Date: 16/06/16

Dear Sirs,

On behalf of our client Forrest please find attached completed wastewater predevelopment enquiry for a site known as Marsh Lane, New Mills.

Please can you confirm the point of connection and discharge rates proposed are acceptable to UU?

If you require any further information to progress the enquiry please do not hesitate to contact me.

Regards,

Rob

Robert Eastaff | Ironside Farrar | 3 Worsley Court | Worsley | Manchester |M28 3NJ | Tel: 0161 703 8801 | Fax: 0161 703 8279 | Web:ironsidefarrar.com

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EMGateway3.uuplc.co.uk made the following annotations

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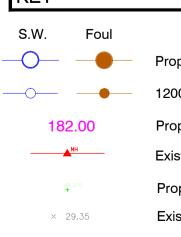
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Proposed sewer 1200mm dia I.C Proposed Plot Level Existing Combined Sewer Proposed level Existing Level

# BASIS FOR DRAINAGE DESIGN

1. Site Area = 0.94 ha. Assumed greenfield runoff, no existing impermeable area.

2. Greenfield runoff rates from IOH 124: Qbar = 6.1 l/s  $Q1 = 5.3 \, \text{l/s}$ Q30 = 10.4 l/s Q100 = 12.8 l/s

3. Maximum flow rate to be 6.2 l/s for 100 year return period event (+30% climate change).

4. Flows controlled with 2 no. vortex flow control units to limit flows to 6.2 l/s @ 2.2m head (minimum adoptable 100mmØ orifice) & 6.7 l/s @ 2.2m head. Attenuation provided in underground oversized pipes.

5. Design flow rates calculated as: Q1 = 5.1 l/s Q30 = 5.1 l/sQ100 +30% CC = 6.2 l/s

6. Surface water connection to new 150mmØ combined sewer in site access at flow rates stated above.

7. Foul / combined connection to new manhole on existing 225mmØ combined sewer in Marsh Lane. Foul flow from 37 no. units = 1.71 l/s.

8. Sewers to be offered for adoption under S104 Agreement with United Utilities.

STN	EASTINGS	NORTHINGS	LEVEL
006A	631.83	503,96	181.345
06A1	628.31	534.35	179.583
CM01	591.47	503.54	181.193
CM02	558,97	437.09	182.520
CM03	566.30	399,53	181.869
CM04	595,14	394,45	187,561
CM05	603.29	436.08	186.218
CM06	626.03	468.92	183,465

REV.	VISIO	INT.	DETAILS
A	270616	RDE	Arch layout updated to Rev B & drainage amended to
			client's comments.

North Point	Marsh Lane, New Mills				Farrar nentalConsultants
Quality Ass. UKAS 005 Quality Assurance	Forrest			Lan	Civil <b>Engineers</b> dscape <b>Architects</b> Graphic <b>Design</b>
ISO 9001:2008 SGS Certificate GB02/54539	Preliminary Dr Layout	rainage		3 Worsley Court <b>MANC</b> Tel. 0161 703 8801 F manchester@	
	Layout			EDINBURGH	BELLSHILL
Original Size	Copyright Acknowledgement	Drawn	Checked By	Drawing No.	Revision
	Ordnace Survey© ©Crown Copyright.	RDE	SRG	30212/100	۸
	All rights reserved. Licence No. AL100017966.	Date Jun 16	Scale 1:500	30212/100	A

Ironside Farrar Ltd		Page 1
3 Worsley Court	Greenfield Runoff	
High Street Worsley	Marsh Lane	L
Manchester	New Mills	Micro
Date Jun 16	Designed by RDE	
File	Checked by SRG	Diamaye
Micro Drainage	Source Control 2016.1	

#### ICP SUDS Mean Annual Flood

Input

Return Period	(years)	100		Soil	0.4	150
Are	ea (ha)	0.938		Urban	0.0	000
SAA	AR (mm)	983	Region	Number	Region	10

#### Results 1/s

QBAR Rural 6.1 QBAR Urban 6.1 Q100 years 12.8 Q1 year 5.3 Q30 years 10.4 Q100 years 12.8

Ironsi	de Fari	rar L	td								Pag	e 1
3 Wors	ley Co	urt			Pı	coposed SW	RevA					
High S	treet N	Worsl	әу		Ma	arsh Lane					4	~
Manche	ster				Ne	ew Mills					Mi	
Date J	un 16				De	esigned by	RDE					ainade
			ed S	SW RevA		necked by						
Micro	Draina	ge			Ne	etwork 201	6.1					
		<u>STORI</u>	4 SE	WER DES	SIGN by	the Modif	ied R	<u>ation</u>	al N	<u>letho</u>	<u>d</u>	
				De	sign Cr	iteria foi	<u>r Stor</u>	<u>rm</u>				
			E	Pipe Size	es STANDA	ARD Manhole	Sizes	STANDA	ARD			
Maximu	m Time	aximum of Con Fou	Rai cent 1 Se	eriod (y M5-60 Ra nfall (m ration ( wage (l/ Runoff C	ears) (mm) 18 tio R 0 m/hr) mins) s/ha) 0 oeff. 0	.000 .335 0 Min Des 30 Min .000 Mi	Add F Min Max sign De Vel fo in Slop	Flow / nimum H simum H epth fo or Auto oe for	Clim Backd Backd or Op o Des	lrop H lrop H otimis sign o	hange (% eight (m eight (m ation (m nly (m/s ion (1:X	a) 0.000 a) 0.000 a) 1.200 b) 1.00
					-	Diagram fo						
						rea   Time						
					(mins) (	ha) (mins)	(ha)					
					0-4 0	.330 4-8	0.127					
					0 1 0		0.12					
				Total	Area Cor	ntributing (	ha) = (	0.457				
				Tota	al Pipe N	/olume (m³)	= 138.3	377				
					- <u>1</u> -							
				<u>Netwo</u>	ork Des	ign Table	for S	<u>torm</u>				
PN	Length	Fall	Slo	pe I.Are		Base	k	HYD	DIA	Secti	on Type	Auto
	(m)	(m)	(1:)	X) (ha)	(mins)	Flow (l/s)	(mm)	SECT	(mm)			Design
1.000	47.445	0.119	400	.0 0.11	1 4.00	0.0	0.600	0	900	Pipe/	'Conduit	ð
1.001	19.765	0.049	400	.0 0.09	7 0.00	0.0	0.600	0	1050	Pipe/	'Conduit	ð
2.000	35.957	0.090	400	.0 0.08	9 4.00	0.0	0.600	0	1050	Pipe/	'Conduit	ð
1.002							0.600				Conduit	ę
1.003	38.725	0.097	400	.0 0.04	0 0.00	0.0	0.600	0	1050	Pipe/	Conduit	ð
					<u>Network</u>	Results :	<u> Table</u>					
PN	Rair	ъ Т.	c.	US/IL	Σ I.Area	Σ Base	Foul	Add F	low	Vel	Cap	Flow
	(mm/h		ns)	(m)	(ha)	Flow (l/s)				(m/s)	-	(l/s)
1.00	0 0.	00 4	.51	179.528	0.111	0.0	0.0		0.0	1.56	992.7	0.0
1.00				179.259	0.208				0.0		1486.6	0.0
2.00	0 0.	00 4	.35	179.300	0.089	0.0	0.0		0.0	1.72	1486.6	0.0
1.00	2 0.			179.210	0.326	0.0	0.0		0.0	0.82	14.5	0.0
1.00	3 0.	00 5	.18	177.397	0.366	0.0	0.0		0.0	1.72	1486.6	0.0
				C	1982-20	16 XP Solu	utions	3				

Ironside Farrar Ltd		Page 2
3 Worsley Court	Proposed SW RevA	
High Street Worsley	Marsh Lane	4
Manchester	New Mills	Mirro
Date Jun 16	Designed by RDE	
File 30212 Proposed SW RevA	Checked by SRG	Diamaye
Micro Drainage	Network 2016.1	

#### Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	ase (1/s)	k (mm)	HYD SECT	Section Type	Auto Design
	10.989 19.105			0.063 0.028	0.00		0.600		Pipe/Conduit Pipe/Conduit	
1.006 1.007	5.413 9.484		79.6 27.3	0.000	0.00		0.600 1.500	0 0	Pipe/Conduit Pipe/Conduit	

#### <u>Network Results Table</u>

PN	Rain	T.C.	US/IL	Σ I.Area	ΣВа	ase	Foul	Add Flow	Vel	Cap	Flow
	(mm/hr)	(mins)	(m)	(ha)	Flow	(l/s)	(l/s)	(1/s)	(m/s)	(1/s)	(1/s)
1.004	0.00	5.29	177.300	0.429		0.0	0.0	0.0	1.72	1486.6	0.0
1.005	0.00	5.47	177.273	0.457		0.0	0.0	0.0	1.72	1486.6	0.0
1.006	0.00	5.55	177.225	0.457		0.0	0.0	0.0	1.13	19.9	0.0
1.007	0.00	5.64	177.157	0.457		0.0	0.0	0.0	1.68	29.7	0.0

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High Street Worsley	Marsh Lane	4
Manchester	New Mills	Micco
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#### PIPELINE SCHEDULES for Storm

#### <u>Upstream Manhole</u>

PN	-	Diam (mm)		C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	0	900	1	183.144	179.528	2.716	Open Manhole	2400
1.001	0	1050	2	182.212	179.259	1.903	Open Manhole	2400
2.000	0	1050	3	181.950	179.300	1.600	Open Manhole	2400
1.002	0	150	4	181.601	179.210	2.241	Open Manhole	2700
1.003	0	1050	4	181.500	177.397	3.053	Open Manhole	2400
1.004	0	1050	5	180.660	177.300	2.310	Open Manhole	2400
1.005	0	1050	6	180.200	177.273	1.877	Open Manhole	2400
1.006	0	150	7	179.500	177.225	2.125	Open Manhole	2700
1.007	0	150	8	179.300	177.157	1.993	Open Manhole	1350

#### Downstream Manhole

PN	Length (m)	Slope (1:X)		C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
	47.445			182.212			Open Manhole Open Manhole	2400 2700
	35.957		-	181.601			Open Manhole	2700
1.002	5.122	150.0	4	181.500	179.175		Open Manhole	2400
1.003	38.725	400.0	5	180.660	177.300	2.310	Open Manhole	2400
	10.989		-	180.200			Open Manhole	2400
	19.105			179.500			Open Manhole	2700
		79.6		179.300			Open Manhole	1350
1.007	9.484	27.3		178.830	176.809	1.871	Open Manhole	1350

#### Simulation Criteria for Storm

Volumetric Runoff Coeff 0.840Additional Flow - % of Total Flow 0.000Areal Reduction Factor 1.000MADD Factor \* 10m³/ha Storage 2.000Hot Start (mins)0Hot Start Level (mm)0 Flow per Person per Day (1/per/day) 0.000Manhole Headloss Coeff (Global)0.500Foul Sewage per hectare (1/s)0.000

Number of Input Hydrographs 0 Number of Storage Structures 0 Number of Online Controls 2 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0

#### Synthetic Rainfall Details

Rainfall Model FSR Region England and Wales Return Period (years) 2 M5-60 (mm) 18.000

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#### Synthetic Rainfall Details

Ratio R 0.335 Cv (Winter) 0.840 Profile Type Winter Storm Duration (mins) 30 Cv (Summer) 0.750

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High Street Worsley		Marsh La				4
anchester		New Mill	-			
		-	-			Micro
Date Jun 16		Designed	-			Drainar
File 30212 Proposed SW	RevA	Checked				Diamag
licro Drainage		Network	2016.1			
	<u>Online</u>	Controls	for Stor	<u>°m</u>		
<u>Hydro-Brake Optin</u>	mum® Manho	ple: 4, DS	5/PN: 1.0	02, Volu	me (m³)	<u> </u>
	Uni	t Reference	MD-SHE-01	04-6700-22	00-6700	
		gn Head (m)	, _		2.200	
	Design	Flow (l/s)			6.7	
		Flush-Flo™			culated	
		-	Minimise	upstream	-	
		Application p Available			Surface Yes	
		p Available ameter (mm)			104	
		t Level (m)			179.210	
Minimum Out		. ,			150	
Suggested	Manhole Di	ameter (mm)			1200	
	Control P	oints	Head (m) F	'low (l/s)		
Desi	.gn Point (C	Calculated)	2.200	6.7		
		Flush-Flo™	0.454	5.6		
		Kick-Flo®	0.928	4.5		
	Flow over	Head Range	-	53		
The hydrological calcula	tions have		on the Head	-		-
The hydrological calcular Hydro-Brake Optimum® as Hydro-Brake Optimum® be invalidated	tions have specified. utilised th	been based Should ano en these st	on the Head ther type d orage rout:	d/Discharg of control ing calcul	device d ations wi	other than a ill be
The hydrological calcula Hydro-Brake Optimum® as Hydro-Brake Optimum® be invalidated Depth (m) Flow (1/s) De	tions have specified. utilised th <b>pth (m) Flc</b>	been based Should and en these st	on the Head ther type o orage rout: pth (m) Flo	d/Discharg of control ing calcul	device o ations wi epth (m)	other than a ill be <b>Flow (1/s)</b>
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be invalidated Depth (m) Flow (l/s) Dep 0.100 3.5	tions have specified. utilised th <b>pth (m) Flc</b> 1.200	been based Should and en these st ww (1/s) Dep 5.0	on the Head ther type o orage rout: pth (m) Flo 3.000	d/Discharg of control ing calcul ww (1/s) D 7.7	device of ations wi epth (m) 7.000	ther than a the second
The hydrological calcula Hydro-Brake Optimum® as Hydro-Brake Optimum® be invalidated Depth (m) Flow (1/s) De	tions have specified. utilised th <b>pth (m) Flc</b>	been based Should and en these st	on the Head ther type o orage rout: pth (m) Flo	d/Discharg of control ing calcul	device o ations wi epth (m)	other than a ill be <b>Flow (1/s)</b>
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be invalidated Depth (m) Flow (1/s) Dey 0.100 3.5 0.200 5.0	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400	been based Should and en these st ow (1/s) Deg 5.0 5.4	on the Head ther type o orage rout: pth (m) Flo 3.000 3.500	d/Discharg of control ing calcul ow (1/s) D 7.7 8.3	device of ations wi epth (m) 7.000 7.500	ther than a ill be Flow (1/s) 11.6 12.0
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be invalidated Depth (m) Flow (1/s) Dey 0.100 3.5 0.200 5.0 0.300 5.5	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600	been based Should and en these st ow (1/s) Deg 5.0 5.4 5.8	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000	d/Discharg of control ing calcul ow (1/s) D 7.7 8.3 8.9	device of ations with epth (m) 7.000 7.500 8.000	<pre>bther than a ill be Flow (1/s)</pre>
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated <b>Depth (m) Flow (1/s)</b> Dep 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200	been based Should and en these st ww (1/s) Deg 5.0 5.4 5.8 6.1	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500	d/Discharg of control ing calcul 7.7 8.3 8.9 9.4 9.9 10.3	device of ations with epth (m) 7.000 7.500 8.000 8.500	Flow (1/s) 11.6 12.0 12.3 12.7
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200 2.400	been based Should and en these st <b>w (1/s) De</b> 5.0 5.4 5.8 6.1 6.4 6.7 7.0	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.000 5.500 6.000	d/Discharg of control ing calcul <b>xw (l/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000	Flow (1/s) 11.6 12.0 12.3 12.7 13.0
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated <b>Depth (m) Flow (1/s)</b> Dep 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200	been based Should and en these st ow (1/s) Deg 5.0 5.4 5.8 6.1 6.4 6.7	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.000 5.500	d/Discharg of control ing calcul 7.7 8.3 8.9 9.4 9.9 10.3	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000	Flow (1/s) 11.6 12.0 12.3 12.7 13.0
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated <b>Depth (m) Flow (1/s)</b> Dep 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600	been based Should and en these st 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.000 5.500 6.000 6.500	d/Discharg of control ing calcul 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated <b>Depth (m) Flow (1/s)</b> Dept 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho	been based Should and en these st ww (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 01e: 7, DS t Reference	on the Head orage rout: orage rout: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 6.500 5.500	d/Discharg of control ing calcul <b>DW (1/s)</b> D 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2	device of ations wi epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 me (m <sup>3</sup> ) 00-6200	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be invalidated 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Desi	been based Should and en these st ww (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 ble: 7, DS t Reference gn Head (m)	on the Head orage rout: orage rout: 3.000 3.500 4.000 4.500 5.500 6.000 6.500 6.500	d/Discharg of control ing calcul <b>DW (1/s)</b> D 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 me (m <sup>3</sup> ) 00-6200 2.200	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Desi	been based Should and en these st ww (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 ble: 7, DS t Reference gn Head (m) Flow (1/s)	on the Head ther type of orage rout: <b>pth (m) Flo</b> 3.000 3.500 4.000 4.500 5.500 6.000 6.500 6.500 5.7PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s)</b> D 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 me (m <sup>3</sup> ) 00-6200 2.200 6.2	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th pth (m) Flc 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Desi	been based Should and en these st w (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 ble: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo <sup>™</sup>	on the Head ther type of orage rout: 2000 3.500 4.000 4.500 5.500 6.000 6.500 5.500 6.500 5.7PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 9.000 9.500 9.500 me (m <sup>3</sup> ) 00-6200 2.200 6.2 culated	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be invalidated 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design	been based Should and en these st ww (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 Dle: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo™ Objective	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 9.000 9.500 9.500 me (m <sup>3</sup> ) 00-6200 2.200 6.2 culated	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated <b>Depth (m) Flow (1/s)</b> Dept 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design	been based Should and en these st w (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 ble: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo <sup>™</sup>	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 0.000 9.500 0.200 6.2 culated storage	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be invalidated 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design	been based Should and en these st w (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 ble: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo™ Objective Application	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 9.500 00-6200 2.200 6.2 culated storage Surface	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular Hydro-Brake Optimum® as a Hydro-Brake Optimum® be a invalidated <b>Depth (m) Flow (1/s)</b> Dept 0.100 3.5 0.200 5.0 0.300 5.5 0.400 5.6 0.500 5.6 0.600 5.5 0.800 5.1 1.000 4.6	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design Sum Di	been based Should and en these st w (1/s) Dep 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 ble: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo™ Objective Application p Available	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 9.500 00-6200 2.200 6.2 culated storage Surface Yes	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular         Hydro-Brake Optimum® be invalidated         Depth (m) Flow (1/s)       Deg         0.100       3.5         0.200       5.0         0.300       5.5         0.400       5.6         0.500       5.1         1.000       4.6         Hydro-Brake Optim	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design Juni Design Sum Di Inver let Pipe Di	been based Should and en these st (1/s) Deg 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 Dle: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo <sup>TM</sup> Objective Application p Available ameter (mm) t Level (m) ameter (mm)	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 9.500 00-6200 2.200 6.2 culated storage Surface Yes 100 177.225 150	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular         Hydro-Brake Optimum® be invalidated         Depth (m) Flow (1/s)       Deg         0.100       3.5         0.200       5.0         0.300       5.5         0.400       5.6         0.500       5.1         1.000       4.6         Hydro-Brake Optim	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design Sum Di Inver	been based Should and en these st (1/s) Deg 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 Dle: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo <sup>TM</sup> Objective Application p Available ameter (mm) t Level (m) ameter (mm)	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 9.500 00-6200 2.200 6.2 culated storage Surface Yes 100 177.225	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4
The hydrological calcular         Hydro-Brake Optimum® be invalidated         Depth (m) Flow (1/s)       Deg         0.100       3.5         0.200       5.0         0.300       5.5         0.400       5.6         0.500       5.1         1.000       4.6         Hydro-Brake Optim	tions have specified. utilised th <b>pth (m) Flc</b> 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 mum® Manho Uni Design Juni Design Sum Di Inver let Pipe Di	been based Should and en these st (1/s) Deg 5.0 5.4 5.8 6.1 6.4 6.7 7.0 7.2 Dle: 7, DS t Reference gn Head (m) Flow (1/s) Flush-Flo <sup>TM</sup> Objective Application p Available ameter (mm) t Level (m) ameter (mm)	on the Head orage rout: pth (m) Flc 3.000 3.500 4.000 4.500 5.500 6.000 6.500 S/PN: 1.0 MD-SHE-010	d/Discharg of control ing calcul <b>w (1/s) D</b> 7.7 8.3 8.9 9.4 9.9 10.3 10.7 11.2 06, Volu: 00-6200-22 Cal	device of ations with epth (m) 7.000 7.500 8.000 8.500 9.000 9.500 9.500 00-6200 2.200 6.2 culated storage Surface Yes 100 177.225 150	Flow (1/s) 11.6 12.0 12.3 12.7 13.0 13.4

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3 Worsley Cour	t		Propo	Proposed SW RevA				
High Street Wo	rsley		Marsh	Marsh Lane				
Manchester	-		New M	ills			Micco	
Date Jun 16			Desig	ned by RI	Ε			
File 30212 Pro	posed SW	RevA .	Check	ed by SRG	• J		Drainag	
Micro Drainage	-			 rk 2016.1				
<u>Hydro-Bra</u>	<u>ake Optim</u>	um® Ma	anhole: 7,	DS/PN: 1	006, Vol	ume (m³)	: 27.4	
		Contro	l Points	Head (n	n) Flow (1/s	5)		
				ed) 2.20	0	.2		
	Dooio				0 0	• ∠		
	Desig	jn Point	t (Calculate Flush-Fl		35 5	1		
	Desig	n Point	t (Calculate Flush-Fl Kick-Fl	0.43		.1		
The hydrologica	Mean al calculat	Flow ov	Flush-Fl Kick-Fl ver Head Rar	Lo™ 0.43 Lo® 0.89 nge ed on the	94 4 - 4 Head/Discha	.1 .9 rge relati	-	
Hydro-Brake Opt Hydro-Brake Opt invalidated	Mean al calculat timum® as s timum® be u	Flow ov ions ha pecifie tilised	Flush-Fl Kick-Fl ver Head Rar we been bas d. Should then these	Lo™ 0.43 Lo® 0.89 nge ed on the another ty storage r	94 4 - 4 Head/Discha pe of contr outing calc	.1 .9 rge relati ol device ulations w	other than a ill be	
Hydro-Brake Opt Hydro-Brake Opt	Mean al calculat timum® as s timum® be u	Flow ov ions ha pecifie tilised	Flush-Fl Kick-Fl ver Head Rar we been bas d. Should then these	Lo™ 0.43 Lo® 0.89 nge ed on the another ty storage r	94 4 - 4 Head/Discha pe of contr outing calc	.1 .9 rge relati ol device ulations w	other than a ill be	
Hydro-Brake Opt Hydro-Brake Opt invalidated	Mean al calculat timum® as s timum® be u	Flow ov ions ha pecifie tilised	Flush-Fl Kick-Fl ver Head Rar we been bas d. Should then these	Lo™ 0.43 Lo® 0.89 nge ed on the another ty storage r	94 4 - 4 Head/Discha pe of contr outing calc	.1 .9 ol device ulations w Depth (m)	other than a ill be Flow (1/s)	
Hydro-Brake Opt Hydro-Brake Opt invalidated Depth (m) Flow	Mean al calculat timum® as s timum® be u w (1/s) Dep	Flow ov ions ha pecifie tilised <b>•th (m)</b>	Flush-Fl Kick-Fl Ver Head Rar We been bas d. Should then these Flow (1/s) 4.7	Lo™ 0.43 Lo® 0.89 Inge ed on the another ty storage r Depth (m)	<pre>94 4 - 4 Head/Discha pe of contr outing calc Flow (1/s) 7.2</pre>	.1 .9 ol device ulations w Depth (m) 7.000	other than a ill be <b>Flow (1/s)</b> 10.7	
Hydro-Brake Opt Hydro-Brake Opt invalidated Depth (m) Flow 0.100 0.200 0.300	Mean al calculat timum® as s timum® be u w (1/s) Dep 3.3 4.6 5.0	Flow ov ions ha pecifie tilised <b>oth (m)</b> 1.200 1.400 1.600	Flush-Fl Kick-Fl Ver Head Rar We been bas d. Should then these Flow (1/s) 4.7 5.0 5.3	.0™       0.43         .0®       0.89         inge       ed on the         another ty       storage r         Depth (m)       3.000         3.500       4.000	<pre>94 4 - 4 Head/Discha pe of contr outing calc Flow (1/s) 7.2 7.7 8.2</pre>	.1 .9 rge relati. ol device ulations w <b>Depth (m)</b> 7.000 7.500 8.000	other than a ill be <b>Flow (1/s)</b> 10.7 11.1 11.4	
Hydro-Brake Opt Hydro-Brake Opt invalidated Depth (m) Flow 0.100 0.200 0.300 0.400	Mean al calculat timum® as s timum® be u w (1/s) Dep 3.3 4.6 5.0 5.1	Flow ov ions ha pecifie tilised <b>oth (m)</b> 1.200 1.400 1.600 1.800	Flush-Fl Kick-Fl Ver Head Rar Ne been bas d. Should then these Flow (1/s) 4.7 5.0 5.3 5.6	Depth (m) 3.000 0.43 0.00 0.43 0.89 0.99	<pre>94 4 - 4 Head/Discha pe of contr outing calc Flow (1/s) 7.2 7.7 8.2 8.7</pre>	.1 .9 rge relati. ol device ulations w <b>Depth (m)</b> 7.000 7.500 8.000 8.500	other than a ill be <b>Flow (1/s)</b> 10.7 11.1 11.4 11.8	
Hydro-Brake Opt Hydro-Brake Opt invalidated Depth (m) Flow 0.100 0.200 0.300 0.400 0.500	Mean al calculat timum® as s timum® be u w (1/s) Dep 3.3 4.6 5.0 5.1 5.1	Flow ov ions ha pecifie tilised •th (m) 1.200 1.400 1.600 1.800 2.000	Flush-Fl Kick-Fl Ver Head Rar We been bas d. Should then these Flow (1/s) 4.7 5.0 5.3 5.6 5.9	Depth (m) 3.000 3.000 3.000 3.500 4.500 5.000	<pre>94 4 - 4 Head/Discha pe of contr outing calc Flow (1/s) 7.2 7.7 8.2 8.7 9.1</pre>	.1 .9 rge relations w ulations w <b>Depth (m)</b> 7.000 7.500 8.000 8.500 9.000	other than a ill be <b>Flow (1/s)</b> 10.7 11.1 11.4 11.8 12.1	
Hydro-Brake Opt Hydro-Brake Opt invalidated <b>Depth (m) Flow</b> 0.100 0.200 0.300 0.400 0.500 0.600	Mean al calculat timum® as s timum® be u w (1/s) Dep 3.3 4.6 5.0 5.1 5.1 5.1 5.0	Flow ov ions ha pecifie tilised •th (m) 1.200 1.400 1.600 1.800 2.000 2.200	Flush-Fl Kick-Fl Ver Head Rar We been bas d. Should then these Flow (1/s) 4.7 5.0 5.3 5.6 5.9 6.2	Depth (m) 3.000 3.000 3.000 3.500 4.500 5.500	<pre>94 4 - 4 Head/Discha pe of contr outing calc Flow (1/s) 7.2 7.7 8.2 8.7 9.1 9.6</pre>	.1 .9 rge relations w ulations w <b>Depth (m)</b> 7.000 7.500 8.000 8.500 9.000 9.500	other than a ill be <b>Flow (1/s)</b> 10.7 11.1 11.4 11.8 12.1	
Hydro-Brake Opt Hydro-Brake Opt invalidated Depth (m) Flow 0.100 0.200 0.300 0.400 0.500	Mean al calculat timum® as s timum® be u w (1/s) Dep 3.3 4.6 5.0 5.1 5.1	Flow ov ions ha pecifie tilised •th (m) 1.200 1.400 1.600 1.800 2.000	Flush-Fl Kick-Fl Ver Head Rar We been bas d. Should then these Flow (1/s) 4.7 5.0 5.3 5.6 5.9 6.2	Depth (m) 3.000 3.000 3.000 3.500 4.500 5.500	<pre>94 4 - 4 Head/Discha pe of contr outing calc Flow (1/s) 7.2 7.7 8.2 8.7 9.1 9.6</pre>	.1 .9 rge relations w ulations w <b>Depth (m)</b> 7.000 7.500 8.000 8.500 9.000 9.500	other than a ill be <b>Flow (1/s)</b> 10.7 11.1 11.4 11.8 12.1	

Ironside Farrar Ltd						Page 7
3 Worsley Court		Propo	osed SW H	RevA		
High Street Worsley		-	n Lane	-		4
Manchester		New N				- Com
Date Jun 16			ned by H	2 D.F.		Micro
File 30212 Proposed	SW RATTA	-	ked by SI			Drainace
=	DW IVENA		ork 2016.			
Micro Drainage		Netwo	DIK ZUIG.	• ⊥		
Hot Hot Star Manhole Headloss Co Foul Sewage per h Number of Number	<u>Start (mins)</u> Start (mins) ct Level (mm) peff (Global)	<u>for</u> <u>imulatic</u> 1.000 0 0.500 H 0.000 graphs 0 utrols 2	<u>Storm</u> on <u>Criteri</u> Addition MADD Flow per P Number of Number of	a al Flow - % Factor * 1 Inle erson per D Storage St Time/Area	of Total Fl Om³/ha Stora t Coeffiecie ay (l/per/da cructures O Diagrams O	ow 0.000 ge 2.000 nt 0.800
	fall Model Region Er M5-60 (mm) 'lood Risk War Analysis I	ngland a cning (m	nd Wales ( 18.000 ( m) ep 2.5 Sec us us	Ratio R Cv (Summer) Cv (Winter)	0.750 0.840 300. ent (Extended	1) DN FF
Return Period(	Profile(s) h(s) (mins) (s) (years) Change (%)	15, 3	0, 60, 120	, 180, 240,	ammer and Wir 360, 480, 6 960, 1440, 2 1, 30, 0, 0,	500, 2160 100
US/MH PN Name Storm	Return Clima Period Chan		irst (X) urcharge	First ( Flood		(Z) Overflow .ow Act.
1.000 1 15 Winter	1 -	+0% 100	/60 Summe:	<u>_</u>		
1.001 2 60 Winter	-		/30 Winter			
2.000 3 60 Winter			/60 Summer			
1.002 4 60 Winter			,	c 100/120 W	inter	
1.003 4 180 Winter 1.004 5 180 Winter			120 Winter 120 Winter			
1.004 5 180 Winter			120 Winter 120 Winter			
1.006 7 180 Winter			/15 Summer			
1.007 8 180 Winter	1 -	+0응				
Water	Surcharged H	looded		Pipe	3	
US/MH Level	-		Flow / Ove	_		Level
••,	(m)	(m³)	Cap. (	1/s) (1/s	) Status	
PN Name (m)	(111)		-			Exceeded
PN Name (m)		0 000	0 02	1 २		
•	-0.824	0.000	0.02	13. 10.	6 ок	
<b>PN Name (m)</b> 1.000 1 179.604	-0.824 -0.716				6 ОК 3 ОК	

Ironside Farrar Ltd		Page 8
3 Worsley Court	Proposed SW RevA	
High Street Worsley	Marsh Lane	Y.
Manchester	New Mills	Micco
Date Jun 16	Designed by RDE	
File 30212 Proposed SW RevA	Checked by SRG	Diamaye
Micro Drainage	Network 2016.1	1

<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (1/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	4	179.593	0.234	0.000	0.48		5.6	SURCHARGED	2
1.003	4	177.664	-0.783	0.000	0.01		6.4	OK	
1.004	5	177.664	-0.687	0.000	0.01		6.6	OK	
1.005	6	177.663	-0.659	0.000	0.01		6.5	OK	
1.006	7	177.664	0.289	0.000	0.31		5.1	SURCHARGED	
1.007	8	177.201	-0.106	0.000	0.19		5.1	OK	

	le Far	rar Ltd						Page 9
3 Worsl	ey Co	ourt		Prop	posed SW R	evA		
High St	reet	Worsley		Mars	sh Lane			4
Manches	ter			New	Mills			
Date Ju	n 16			Dest	igned by R	DE		MICLO
File 30	212 F	roposed	SW RevA .		cked by SR			Drainago
Micro D		-			work 2016.			
<u>30 yea</u> ı	<u>r Ret</u> i	urn Peric	<u>d Summary</u>		tical Resu Storm	ults by Max:	imum Leve	el (Rank 1
		Hot Hot Star Headloss Co ewage per h Number of Number	Start (mins et Level (mm beff (Global hectare (l/s Input Hydr of Online C	or 1.000 s) 0 n) 0 L) 0.500 s) 0.000 ographs ontrols	MADD Flow per Pe 0 Number of 2 Number of	l Flow - % of Factor * 10m³	/ha Storag coeffiecien (l/per/day ctures 0 agrams 0	e 2.000 t 0.800
			fall Model		and Wales C	ails Ratio R 0. v (Summer) 0. v (Winter) 0.	750	
	Ma	nrgin for F			tep 2.5 Seco tus tus	ond Increment	300.( (Extended) Of OFF OFF	J ?
	Reti			15,	30, 60, 120,	180, 240, 30	er and Wint 60, 480, 60 0, 1440, 21 1, 30, 1 0, 0,	)0 <b>,</b> .60
		Climate					0, 0,	30
	US/MH Name	Climate Storm	Return Cli Period Cha		First (X) Surcharge	First (Y) Flood		Z) Overflow
PN	Name	Storm	Period Cha	ange	Surcharge		First (	Z) Overflow
	Name 1		Period Cha	ange : +0% 10	• •		First (	Z) Overflow
<b>PN</b> 1.000	Name 1 2 3	Storm 120 Winter 120 Winter 120 Winter	<b>Period Cha</b> 30 30 30	ange : +0% 10 +0% 10	Surcharge		First (	Z) Overflow
PN 1.000 1.001 2.000 1.002	Name 1 2 3 4	Storm 120 Winter 120 Winter 120 Winter 120 Winter	<b>Period Cha</b> 30 30 30 30 30	+0% 10 +0% 10 +0% 10 +0% 10 +0%	Surcharge 00/60 Summer 00/30 Winter 00/60 Summer 1/15 Summer		First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003	Name 1 2 3 4 4	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter	Period         Change           30         30           30         30           30         30           30         30           30         30	+0% 10 +0% 10 +0% 10 +0% 100 +0% 100	Surcharge 00/60 Summer 00/30 Winter 00/60 Summer 1/15 Summer 0/120 Winter	Flood	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002	Name 1 2 3 4 4 5	Storm 120 Winter 120 Winter 120 Winter 120 Winter	Period         Characteria           30         30           30         30           30         30           30         30           30         30           30         30	+0% 100 +0% 100 +0% 100 +0% 100 +0% 100 +0% 100	Surcharge 00/60 Summer 00/30 Winter 00/60 Summer 1/15 Summer	Flood	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003 1.004	Name 1 2 3 4 4 5 6	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter	Period         Characteristic           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30	+0% 100 +0% 100 +0% 100 +0% 100 +0% 100 +0% 100	Surcharge 00/60 Summer 00/30 Winter 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter	Flood	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005	Name 1 2 3 4 4 5 6 7	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter	Period         Characteristic           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30	ange         :           +0%         10           +0%         10           +0%         10           +0%         100           +0%         100           +0%         100           +0%         100	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 0/120 Winter	Flood	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	Name 1 2 3 4 4 5 6 7	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter 600 Winter	Period         Charantee           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30	ange         :           +0%         10           +0%         10           +0%         10           +0%         100           +0%         100           +0%         100           +0%         100           +0%         100	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 0/120 Winter	Flood	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	Name 1 2 3 4 4 5 6 7	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter 600 Winter 240 Summer	Period         Characteristic           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30	ange     :       +0%     1C       +0%     1C       +0%     1C       +0%     1C       +0%     10C       +0%     10C       +0%     10C       +0%     10C       +0%     10C	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer	<b>Flood</b>	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	Name 1 2 3 4 4 5 6 7	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter 240 Summer Water	Period         Charantee           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30	ange     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer	Flood 100/120 Wint Pipe	First ( Overflo	Z) Overflow
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	Name 1 2 3 4 4 5 6 7 8 <b>US</b> /1	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter 240 Summer Water MH Level	Period         Characteristic           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30           30         30	ange     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 1/15 Summer 0/120 Winter 1/120 Winter 1/15 Summer 1/15 Summer	Flood 100/120 Wint Pipe	<b>First (</b> <b>Overflo</b>	Z) Overflow ow Act.
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006 1.007 PN	Name 1 2 3 4 4 5 6 7 8 US/1 Nam	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter 240 Summer Water MH Level he (m)	Period Cha 30 30 30 30 30 30 30 30 30 30	ange     3       +0%     10       +0%     10       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       (m³)     100	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer 1/15 Summer Flow / Over Cap. (1	Flood 100/120 Wint Pipe rflow Flow ./s) (1/s)	First ( Overflo	Z) Overflow w Act. Level
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006 1.007 PN 1.007	Name 1 2 3 4 4 5 6 7 8 US/1 Nam	Storm 120 Winter 120 Winter 120 Winter 120 Winter 120 Winter 100 Winter 1 180.000	Period Cha 30 30 30 30 30 30 30 30 30 30	ange     4       +0%     10       +0%     10       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       0.000     0.0000	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer 1/15 Summer Flow / Over Cap. (1 0.01	Flood 100/120 Wint Pipe rflow Flow ./s) (1/s) 9.9	First ( Overflo er Status OK	Z) Overflow w Act. Level
PN 1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006 1.007 PN	Name 1 2 3 4 4 5 6 7 8 US/1 Nam	Storm 120 Winter 120 Winter 120 Winter 120 Winter 600 Winter 600 Winter 240 Summer Water MH Level he (m)	Period Cha 30 30 30 30 30 30 30 30 30 30	ange     4       +0%     10       +0%     10       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     100       +0%     0.000       0.000     0.000	Surcharge 00/60 Summer 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer 1/15 Summer Flow / Over Cap. (1 0.01 0.01 0.01	Flood 100/120 Wint Pipe rflow Flow ./s) (1/s)	First ( Overflo	Z) Overflow w Act. Level

Ironside Farrar Ltd		Page 10
3 Worsley Court	Proposed SW RevA	
High Street Worsley	Marsh Lane	Y.
Manchester	New Mills	Micro
Date Jun 16	Designed by RDE	
File 30212 Proposed SW RevA	Checked by SRG	Diamada
Micro Drainage	Network 2016.1	

<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (1/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	4	180.000	0.641	0.000	0.48		5.6	SURCHARGED	2
1.003	4	178.311	-0.136	0.000	0.01		6.6	OK	
1.004	5	178.311	-0.040	0.000	0.01		6.4	OK	
1.005	6	178.311	-0.012	0.000	0.01		6.4	OK	
1.006	7	178.310	0.935	0.000	0.31		5.1	SURCHARGED	
1.007	8	177.201	-0.106	0.000	0.19		5.1	OK	

	Farra	r Ltd						Page 11
3 Worsley	y Court	t		Prop	osed SW Re	evA		
- High Stre	-			-	h Lane			4
Manchester					New Mills			
Date Jun				-	.gned by RE	)F:		Micro
		nosed s	W RevA		ked by SRG			Drainage
		_	W KEVA		ork 2016.1			J
Micro Dra	armage			Nerm	JULK ZUIØ.1			
Manho	Are F ole Heac ul Sewag Nu Nu Nu	eal Reduc Hot Start dloss Coe ge per he mber of Number o umber of Rainf M	stion Factor Start (mins) t Level (mm) eff (Global) ectare (l/s) Input Hydro f Online Co Offline Co <u>Synt</u> all Model	<u>1) fc</u> <u>Simulati</u> c 1.000 0 0 0 0.500 0 0.500 0 0.000 graphs ( ntrols 2 ntrols ( <u>chetic Ra</u>	and Wales Cv 18.000 Cv	Flow - % Factor * 10 Inlet cson per Da Storage Str Time/Area I Real Time C <u>ils</u> Ratio R (	of Total Flo m <sup>3</sup> /ha Storag Coeffiecier y (l/per/day cuctures 0 Diagrams 0 Controls 0 0.335 0.750	ow 0.000 ge 2.000 nt 0.800 γ) 0.000
	Return	Ouration (	Iner Profile(s)	DTS Stat DVD Stat ctia Stat	tus	Sum 180, 240,	O OF OF mer and Win	N F F 160 100
US/ PN Nai			Return Clir		First (X)	First ()	() First	
	me s	Storm	Period Cha	liige	Surcharge	Flood	Overfl	(Z) Overflow low Act.
1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006 1.007	1 180 2 180 3 180 4 180 5 1440 6 1440 7 1440	<pre>Storm ) Winter ) Winter</pre>	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 -	+30% 10 +30% 10 +30% 10 +30% 100 +30% 100	Surcharge 00/60 Summer 00/30 Winter 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer			
1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	1 180 2 180 3 180 4 180 5 1440 6 1440 7 1440	) Winter ) Winter ) Winter ) Winter ) Winter ) Winter ) Winter ) Winter	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 -	+30% 10 +30% 10 +30% 10 +30% 100 +30% 100 +30% 100 +30% +30%	00/60 Summer 00/30 Winter 00/60 Summer 1/15 Summer 0/120 Winter 0/120 Winter 0/120 Winter 1/15 Summer			
1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	1 180 2 180 3 180 4 180 5 1440 6 1440 7 1440	) Winter ) Winter ) Winter ) Winter ) Winter ) Winter ) Winter Winter Water Level	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 -	+30% 10 +30% 10 +30% 100 +30% 100 +30% 100 +30% 100 +30% Flooded Volume	00/60 Summer 00/30 Winter 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer 1/15 Summer	100/120 Wi Pipe flow Flow		
1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006	1 180 2 180 3 180 4 180 4 1440 5 1440 6 1440 7 1440 8 1440	) Winter ) Winter ) Winter ) Winter ) Winter ) Winter ) Winter Winter	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - <b>Surcharged</b>	+30% 10 +30% 10 +30% 10 +30% 100 +30% 100 +30% 100 +30% +30% Flooded	00/60 Summer 00/30 Winter 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer 1/15 Summer	100/120 Wi <b>Pipe</b>		.ow Act.
1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006 1.007	1 180 2 180 3 180 4 180 4 1440 5 1440 6 1440 7 1440 8 1440 <b>US/MH</b> Name	) Winter ) Winter ) Winter ) Winter ) Winter ) Winter ) Winter Water Level (m)	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - <b>Surcharged</b> Depth	+30% 10 +30% 10 +30% 10 +30% 100 +30% 100 +30% 100 +30% +30% Flooded Volume (m <sup>3</sup> )	00/60 Summer 00/30 Winter 1/15 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer Flow / Over Cap. (1,	100/120 Wi Pipe flow Flow /s) (1/s)	nter Status	Level
1.000 1.001 2.000 1.002 1.003 1.004 1.005 1.006 1.007	1 180 2 180 3 180 4 180 4 1440 5 1440 6 1440 7 1440 8 1440 <b>US/MH</b> Name 1 1	) Winter ) Winter ) Winter ) Winter ) Winter ) Winter ) Winter Winter Water Level	100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - <b>Surcharged</b> <b>Depth</b> (m)	+30% 10 +30% 10 +30% 100 +30% 100 +30% 100 +30% 100 +30% Flooded Volume	00/60 Summer 00/30 Winter 1/15 Summer 1/15 Summer 0/120 Winter 0/120 Winter 1/15 Summer Flow / Over Cap. (1, 0.02	100/120 Wi Pipe flow Flow (s) (1/s) 12.7	nter	Level

Ironside Farrar Ltd	Page 12	
3 Worsley Court	Proposed SW RevA	
High Street Worsley	Marsh Lane	Micro
Manchester	New Mills	
Date Jun 16	Designed by RDE	
File 30212 Proposed SW RevA	Checked by SRG	Diamarje
Micro Drainage	Network 2016.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank <u>1) for Storm</u>

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (1/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.002	4	181.603	2.243	1.723	0.60		7.0	FLOOD	2
1.003	4	179.488	1.041	0.000	0.01		7.0	SURCHARGED	
1.004	5	179.488	1.138	0.000	0.01		7.8	SURCHARGED	
1.005	6	179.488	1.165	0.000	0.01		7.7	SURCHARGED	
1.006	7	179.488	2.113	0.000	0.38		6.2	FLOOD RISK	
1.007	8	177.205	-0.102	0.000	0.23		6.2	OK	