Barnsley Marshall		Page 1						
1 Birch Court								
Blackpole East								
Worcester, WR3 8SG		Micco						
Date 20/07/2023 08:55	Designed by AlexMavhunga	Micro						
File 472m3 Pond @ 3.0 lps	Checked by	Drainage						
Innovyze	Network 2020.1.3							
STORM SEWER DESIGN	by the Modified Rational Method							
Design	<u>Criteria for Storm</u>							
Pipe Sizes STA	ANDARD Manhole Sizes Alex003							
FSR Rainfall	Model - England and Wales							
Return Period (years)	3 PII	MP (응) 100						
M5-60 (mm)	18.500Add Flow / Climate Change0.334Minimum Backdrop Heigh	-						
Maximum Rainfall (mm/hr)	1 5							
	30 Min Design Depth for Optimisatio							
Foul Sewage (l/s/ha) Volumetric Runoff Coeff.								
		(1•11) 0000						
Designe	ed with Level Soffits							
<u>Time Are</u>	ea Diagram for Storm							
Time Area Time	Area Time Area Time Area							
(mins) (ha) (mins)	(ha) (mins) (ha) (mins) (ha)							
0-4 0.000 4-8	0.264 8-12 0.340 12-16 0.001							
Total Area	Contributing (ha) = 0.604							
Total Pip	pe Volume (m³) = 34.511							
Simulatic	on Criteria for Storm							
Volumetric Runoff Coeff 0								
Hot Start (mins)	.000 MADD Factor * 10m ³ /ha Storag 0 Inlet Coefficcien							
	0 Flow per Person per Day (l/per/day							
Manhole Headloss Coeff (Global) 0 Foul Sewage per hectare (1/s) 0								
Four sewage per nectare (1/S) 0	.000 Output interval (mins) 16						
Number of Input Hydrographs 0 Number of Storage Structures 1								
Number of Online Controls 1 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0								
Number of Offine Controls U Number of Real Time Controls U								
Synthet	<u>ic Rainfall Details</u>							
Rainfall Model	FSR Profile Type Wint	er						
	1000 Cv (Summer) 0.7							
	nd and Wales Cv (Winter) 0.8 18.500 Storm Duration (mins) 9							
Ratio R	0.334							
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Barnsley Marsh	nall							Page	e 2
Birch Court									
lackpole East	-								
lorcester, WR								Mie	cro
ate 20/07/202	23 08:5	5		Desig	ned by Al	exMavhung	a		
ile 472m3 Pon	nd @ 3.	0 lps		. Checke	ed by			DIC	inag
Innovyze									
		<u>(</u>	<u>nlin</u>	e Contro	ols for S	torm			
<u>Hydro-Bra</u>	ke® Opt	timum	Manho	ble: S10	, DS/PN:	S1.005, V	<i>Molume (m</i>	1 ³): 5	.8
			Un	it Refere	nce MD-SHE	-0072-3000-	1800-3000		
				ign Head			1.800		
			Desig	n Flow (l Flush-F		~	3.0		
						ise upstrea	alculated m storage		
				Applicat		<u>.</u>	Surface		
				mp Availa	ble		Yes		
				iameter (,		72		
				rt Level	. ,		103.682		
М.			-	iameter (iameter (100 1200		
		Con	trol 1	Points	Head (m) Flow (l/s	s)		
	De	esign Po	oint (Calculate			.0		
				Flush-Fl	.o™ 0.31	9 2	.3		
						<i>.</i>	0		
The hydrologic Hydro-Brake® 0	al calcu	lations	have	Kick-Fl Head Ran been bas	o® 0.64 nge ed on the 1	- 2 Head/Discha	.3 rge relati		
The hydrologic Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flor	al calcu ptimum a timum® b	lations s speci e utili	have fied. sed t	Kick-Fl Head Rar been bas Should hen these	ed on the i another typ storage re	- 2 Head/Discha pe of contr puting calc	.3 rge relati ol device ulations w	other vill be	than a
Hydro-Brake® O Hydro-Brake Op invalidated	al calcu ptimum a timum® b	lations s speci e utili	have fied. sed ti (m) Fl	Kick-Fl Head Rar been bas Should hen these	ed on the i another typ storage re	- 2 Head/Discha pe of contr puting calc	.3 rge relati ol device ulations w	other vill be Flow	than a
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flow 0.100 0.200	al calcu ptimum a timum® b w (l/s) 1.9 2.2	lations s speci e utili Depth 1.2 1.4	(m) Fl	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7	o® 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1	.3 rge relati ol device ulations w Depth (m) 7.000 7.500	other vill be Flow	(1/s) 5.6 5.8
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flow 0.100 0.200 0.300	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3	lations s speci e utili Depth 1.2 1.4 1.6	have fied. sed t. (m) Fl 200 200 500	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000	- 2 Head/Discha be of contr buting calc Flow (1/s) 3.8 4.1 4.3	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000	other vill be Flow	(1/s) 5.6 5.8 6.0
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flow 0.100 0.200 0.300 0.400	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3	Depth 1.2 1.4 1.6	have fied. sed t (m) F1 (00 (00 (00) (00) (00) (00) (00)	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0	0.08 0.64 nge ed on the 1 another typ storage re Depth (m) 3.000 3.500 4.000 4.500	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flo 0.100 0.200 0.300 0.400 0.500	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2	Depth 1.2 1.4 1.6 1.8 2.0	have fied. sed t (m) F1 (00 (00 (00 (00) (00)	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.000	- 2 Head/Discha be of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flo 0.100 0.200 0.300 0.400 0.500 0.600	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t (m) F1 (00 (00 (00) (00) (00) (00)	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.000 5.500	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flow 0.100 0.200 0.300 0.400 0.500	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2	Depth 1.2 1.4 1.6 1.8 2.0	have fied. sed t 200 300 300 300 300 300 300 300 300 300	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.000	- 2 Head/Discha be of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flor 0.100 0.200 0.300 0.400 0.500 0.600 0.800	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0 2.1	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t 200 300 300 300 300 300 300 300 300 300	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3 3.4	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.500 6.000	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0 5.3	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flor 0.100 0.200 0.300 0.400 0.500 0.600 0.800	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0 2.1	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t 200 300 300 300 300 300 300 300 300 300	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3 3.4	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.500 6.000	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0 5.3	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flor 0.100 0.200 0.300 0.400 0.500 0.600 0.800	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0 2.1	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t 200 300 300 300 300 300 300 300 300 300	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3 3.4	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.500 6.000	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0 5.3	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flor 0.100 0.200 0.300 0.400 0.500 0.600 0.800	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0 2.1	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t 200 300 300 300 300 300 300 300 300 300	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3 3.4	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.500 6.000	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0 5.3	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flo 0.100 0.200 0.300 0.400 0.500 0.600 0.800	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0 2.1	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t (m) F1 (00 (00) (00) (00) (00) (00) (00)	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3 3.4	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.500 6.000	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0 5.3	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4
Hydro-Brake® O Hydro-Brake Op invalidated Depth (m) Flor 0.100 0.200 0.300 0.400 0.500 0.600 0.800	al calcu ptimum a timum® b w (1/s) 1.9 2.2 2.3 2.3 2.3 2.2 2.0 2.1	Depth 1.2 1.4 1.6 1.8 2.0 2.2	have fied. sed t: 200 200 200 200 200 200 200 200	Kick-Fl Head Ran been bas Should hen these .ow (1/s) 2.5 2.7 2.8 3.0 3.1 3.3 3.4 3.6	0.08 0.64 nge ed on the 1 another tyj storage r Depth (m) 3.000 3.500 4.000 4.500 5.500 6.000	- 2 Head/Discha pe of contr buting calc Flow (1/s) 3.8 4.1 4.3 4.6 4.8 5.0 5.3 5.5	.3 rge relati ol device ulations w Depth (m) 7.000 7.500 8.000 8.500 9.000 9.500	other vill be Flow	(1/s) 5.6 5.8 6.0 6.2 6.4

Barnsley Marshall	1	Page 3					
1 Birch Court							
Blackpole East							
Worcester, WR3 8SG		Micro					
Date 20/07/2023 08:55	Designed by AlexMavhunga	Micro Drainage					
File 472m3 Pond @ 3.0 lps		Diamage					
Innovyze	Network 2020.1.3						
<u>Storage</u>	Structures for Storm						
<u>Tank or Pond M</u>	anhole: S10, DS/PN: S1.005						
Invert Level (m) 103.682							
	pth (m) Area (m ²) Depth (m) Area (m ²)						
0.000 140.0	1.700 444.0 2.118 533.3						
∩1 05	82-2020 Innovyze						

Barnsley	Mars	hall							Page 4
1 Birch									
Blackpole East Worcester, WR3 8SG									
	•						,		Micro
Date 20/07/2023 08:55					igned b	Drainage			
File 472	m3 Po	nd @ 3.	0 lps		cked by	Brainage			
Innovyze				Net	work 20	020.1.3			
	Carmon	omu of	<u>Results fo</u>	0.60		1000	an Mintan	(C+ c)	
	<u>5 unini</u>	ary or	Results IC	900	IIIIIuce	<u>1000 ye</u>	<u>ar winter</u>	(510	<u>_ III)</u>
		Margin f	for Flood Ri				DVD Status		
			An				rtia Status	OFF	
				DTS	Status	ON			
		Water	2				Half Drain	-	
	US/MH		Depth			Overflow		Flow	
PN	Name	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(1/s)	Status
S1.000	S01	105.861	0.945	0.000	0.06			5.2	SURCHARGED
S1.001	S02	105.861	1.255	0.000	0.11			9.3	SURCHARGED
S1.002	S03	105.859	1.571	0.000	0.17			12.7	SURCHARGED
S2.000	S04	105.861	0.945	0.000	0.08			6.8	SURCHARGED
S2.001	S05	105.860	1.253	0.000	0.14			13.0	SURCHARGED
S1.003	S06	105.857	1.679	0.000	0.31			28.3	SURCHARGED
S3.000	S07	105.857	0.941	0.000	0.05			4.3	SURCHARGED
S3.001	S08	105.857	1.251	0.000	0.08			8.1	SURCHARGED
S1.004	S09	105.855	1.734	0.000	0.39			36.2	SURCHARGED
S1.005		105.853		28.465				3.1	
S1.006		103.686	-0.092	0.000				3.1	
S1.007	S12	103.581	-0.106	0.000	0.19			3.1	OK
S1.008		102.582		0.000				3.1	
S1.009	S14	102.376	-0.115	0.000	0.12			3.1	OK*