Project: Project Otter	Date: 23/10/2024						
Beehive Centre	Designed by:	Checked by:	Approved By:				
Cambridge	GJ	CP	CP				
Report Details:	Company Address:	Company Address:					
Type: Stormwater Controls Summary	Waterman Gro	Waterman Group					
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London					
	SE1 9DG						



Max. Total Max. Max. Max. Max. Max. Total Max. Flood Max. Discharg Percentage US DS US DS Residen Stormwater Lost Storm Event Inflow ed Available Status Outflo е Control Leve Leve Depth Depth t Volume Volume (L/s) Volum w (L/s) Volume (%) (m) (m) (m) (m) (m^3) (m^3) e (m³) (m^3) FEH: 100 years: +40 %: Block 3 9.882 9.882 1.432 1.432 3.0 276.477 0.000 0.000 3.0 477.895 0.095 OK Tank 10080 mins: Winter FEH: 100 Block 4 years: +40 %: 9.849 9.849 0.949 0.949 3.9 473.200 0.000 0.000 1.9 235.813 5.332 OK 10080 mins: Tank Summer FEH: 100 Block 3 RG years: +40 %: 30 mins: 9.860 9.313 1.013 0.542 115.8 33.416 0.000 0.000 69.9 62.469 74.009 OK Summer FEH: 100 years: +40 %: Block 2 8.932 9.415 0.500 1.065 5.0 37.401 0.000 0.000 7.4 31.840 63.818 OK RG.1 10080 mins: Summer FEH: 100 years: +40 %: Flood Block 2 RG 10.574 9.111 2.055 0.811 337.7 192.923 0.000 0.000 48.1 99.741 43.553 30 mins: Risk Summer FEH: 100 years: +40 %: Highways 9.597 9.562 1,000 1.000 0.000 0.000 80.069 ΟK 11.6 14.377 14.0 93.139 RĞ (1) 960 mins: Summer FEH: 100 Block 10 years: +40 %: 10.289 1.091 299.9 0.000 OK 9.384 0.322 127.294 0.000 69.4 67.526 79,422 RG 15 mins: Summer FFH: 100 Highways years: +40 %: 10.034 10.116 0.805 0.993 60.0 51.478 0.000 0.000 0.850 68.846 OK 3.7 RĞ 30 mins: Summer FEH: 100 Block 1 RG years: +40 %: 8.885 0.000 0.000 9.444 0.813 0.385 119.5 49.700 47.7 30.474 79.776 OK 15 mins: Summer FEH: 100 Bioretentio years: +40 %: 9.258 8.422 0.801 0.062 8.5 10.605 0.000 0.000 0.3 0.166 93.212 OK n (10) 30 mins: Summer FEH: 100 Block 4 RG years: +40 %: 15 mins: 10.103 9.236 1.004 0.301 193.0 85.717 0.000 0.000 55.2 45.285 83.119 OK Summer FEH: 100 years: +40 %: Block 1 PP 9.019 9.019 0.434 0.619 7.2 74.700 0.000 0.000 11.9 829.548 52.726 OK 10080 mins: Summer FEH: 100 years: +40 %: Block 4 PP 9.907 9.850 0.021 0.342 0.000 0.000 89.504 OK 6.6 24.781 10.9 715.698 10080 mins: Summer FEH: 100 years: +40 %: 9.258 Site Pond 9.258 0.508 0.508 3.0 191.701 0.000 0.000 1.3 161.186 55.612 OK 10080 mins: Winter FEH: 100 years: +40 %: Highways 9.018 9.800 0.501 1.555 109.9 408.419 0.000 0.000 8.7 69.672 67.344 OK RG (2) 240 mins: Summer FEH: 100 years: +40 %: Block 2 PP OK 9.883 9.882 0.869 1 482 9.5 411.856 0.000 0.000 9.4 737.546 33.575 10080 mins: Winter FEH: 100 Block 2 years: +40 %: 9.883 9.883 1.503 1.503 69.869 0.000 0.000 OK 3.2 1.6 113.264 0.173 10080 mins: Tank

Winter

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Waterman Gro Pickfords Wha SE1 9DG	up rf, Clink Street, Lond		



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

Connection	Storm Event	Connection Type	From	То	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
SW1.000	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	Block 4 RG	MH1	11.326	9.935	0.375	121.083	0.0	0.01	2.4	Surcha rged
SW1.001	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	MH1	Block 3 RG	10.521	8.929	0.065	0.007	0.0	0	0.0	ок
SW1.002	FEH: 2 years: +0 %: 15 mins: Winter	Pipe	Block 3 RG	MH2	11.078	9.771	0.242	1.208	0.9	0.04	10.2	Surcha rged
SW1.003	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	MH2	Highways RG (2)	11.076	9.022	0.161	0.000	0.1	0.02	3.5	ок
SW1.004	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Highways RG (2)	MH5	9.908	8.745	0.042	200.716	0.1	0	0.6	Surcha rged
SW1.005	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	МН5	мн6	9.860	8.284	0.012	200.475	0.5	0	0.5	ок
SW3.001	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 1 PP	Highways RG (2)	9.993	8.926	0.310	0.001	0.0	0.01	1.9	Surcha rged
SW3.000	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	Block 1 RG	Block 1 PP	10.013	9.300	0.375	0.142	0.1	0.01	4.2	Surcha rged
SW4.003	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	Block 2 RG.1	Highways RG (2)	9.641	8.350	0.000	0.000	0.0	0	0.0	ок
SW5.000	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	Block 2 RG	Highways RG (2)	10.000	9.200	0.361	0.000	0.0	0.02	3.5	Surcha rged
SW4.000	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 3 Tank	Block 2 PP	9.782	9.026	0.294	34.273	0.0	0	0.6	Surcha rged
SW6.001	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 10 RG	Site Pond	13.104	10.062	0.252	39.233	0.3	0.01	1.0	Surcha rged
SW6.003	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	МНЗ	MH4	12.487	9.258	0.375	3.972	0.0	0.01	1.0	Surcha rged
SW6.004	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	MH4	Bioretenti on (10)	11.298	9.259	0.375	0.000	0.0	0.02	1.9	Surcha rged
SW7.000	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Highways RG (1)	MH4	11.364	9.241	0.375	210.682	0.0	0.01	4.0	Surcha rged
SW6.005	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Bioretenti on (10)	Highways RG (2)	10.423	9.161	0.329	0.001	0.0	0.01	2.2	Surcha rged
SW2.000	FEH: 2 years: +0 %: 360 mins: Summer	Pipe	Block 4 PP	Block 4 Tank	11.737	9.526	0.048	0.368	0.0	0	0.0	ок
SW2.001	FEH: 2 years: +0 %: 60 mins: Summer	Pipe	Block 4 Tank	MH1	10.154	8.942	0.092	1.185	0.2	0.02	2.7	ок
SW6.002	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Site Pond	МН3	12.974	9.258	0.375	5.072	0.2	0.01	1.3	Surcha rged
SW6.000	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	Highways RG	Block 10 RG	11.486	9.124	0.005	0.046	0.0	0	0.0	ок
SW4.001	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 2 PP	Block 2 Tank	18.750	8.501	0.332	40.367	0.3	0.02	2.9	ок

Project: Project Otte	Project Otter			Date: 23/10/2	024		1.					
Beehive Ce	ntre			Designed	by:	Checked by:		Approved By:			-	
Cambridge	<u> </u>			GJ	GJ CP CP			CP			× 7	V
Report Details: Type: Connections Summary Storm Phase: Phase			Waterm Pickford	Company Address: Waterman Group Pickfords Wharf, Clink Street, London SE1 9DG					6			
SW4.002	SW/4 ()()2 +() %: 15 mins: Pine			Block 2 RG.1	17.557	8.380	0.000	0.000	0.0	0	0.0	ок

0		00040
Created in	InfoDrainage	2024.2

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Waterman Gro Pickfords Wha SE1 9DG	up rf, Clink Street, Lond		



FEH: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	То	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
SW1.000	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 4 RG	MH1	11.326	9.936	0.263	49.842	0.7	0.22	45.3	Surcha rged
SW1.001	FEH: 30 years: +35 %: 10080 mins: Summer	Pipe	MH1	Block 3 RG	10.521	9.851	0.375	0.011	0.0	0.04	2.4	Surcha rged
SW1.002	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 3 RG	MH2	11.078	9.772	0.375	46.935	0.8	0.25	57.1	Surcha rged
SW1.003	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	MH2	Highways RG (2)	11.076	9.143	0.222	0.000	0.8	0.32	56.4	Surcha rged
SW1.004	FEH: 30 years: +35 %: 60 mins: Summer	Pipe	Highways RG (2)	MH5	9.908	8.745	0.375	13.606	0.5	0.04	4.9	Surcha rged
SW1.005	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	MH5	мн6	9.860	8.571	0.028	4.207	0.8	0.01	3.0	ок
SW3.001	FEH: 30 years: +35 %: 10080 mins: Winter	Pipe	Block 1 PP	Highways RG (2)	9.993	8.926	0.310	0.001	0.0	0.01	2.1	Surcha rged
SW3.000	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 1 RG	Block 1 PP	10.013	9.302	0.240	2.325	0.5	0.13	36.4	Surcha rged
SW4.003	FEH: 30 years: +35 %: 15 mins: Summer	Pipe	Block 2 RG.1	Highways RG (2)	9.641	8.350	0.002	0.003	0.0	0	0.0	ОК
SW5.000	FEH: 30 years: +35 %: 60 mins: Summer	Pipe	Block 2 RG	Highways RG (2)	10.000	9.368	0.372	0.002	0.4	0.25	46.1	Surcha rged
SW4.000	FEH: 30 years: +35 %: 360 mins: Summer	Pipe	Block 3 Tank	Block 2 PP	9.782	9.190	0.375	32.009	0.5	0.43	53.2	Surcha rged
SW6.001	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 10 RG	Site Pond	13.104	10.064	0.171	92.697	1.3	0.39	65.7	Surcha rged
SW6.003	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	МНЗ	MH4	12.487	8.995	0.375	7.487	0.8	0.16	22.8	Surcha rged
SW6.004	FEH: 30 years: +35 %: 10080 mins: Summer	Pipe	MH4	Bioretenti on (10)	11.298	9.259	0.375	0.000	0.0	0.02	2.0	Surcha rged
SW7.000	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Highways RG (1)	MH4	11.364	8.979	0.375	0.000	0.1	0.02	7.4	Surcha rged
SW6.005	FEH: 30 years: +35 %: 10080 mins: Summer	Pipe	Bioretenti on (10)	Highways RG (2)	10.423	9.161	0.329	0.001	0.0	0.01	2.3	Surcha rged
SW2.000	FEH: 30 years: +35 %: 120 mins: Summer	Pipe	Block 4 PP	Block 4 Tank	11.737	9.567	0.139	8.530	0.2	0.01	5.4	ок
SW2.001	FEH: 30 years: +35 %: 15 mins: Summer	Pipe	Block 4 Tank	MH1	10.154	9.034	0.195	1.875	0.6	0.06	11.3	ок
SW6.002	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Site Pond	мнз	12.974	8.995	0.320	10.500	1.1	0.16	34.1	ок
SW6.000	FEH: 30 years: +35 %: 15 mins: Summer	Pipe	Highways RG	Block 10 RG	11.486	9.133	0.024	0.312	0.0	0	0.0	ок
SW4.001	FEH: 30 years: +35 %: 240 mins: Summer	Pipe	Block 2 PP	Block 2 Tank	18.750	8.597	0.375	56.804	1.6	0.2	25.5	ок

Project: Project Otte	er			Date: 23/10/2	024		7					
Beehive Ce	ve Centre			Designed	by:	Checked by:		Approved By:		2		
Cambridge						CP		CP			~ 1	No.
Report Details: Type: Connections Summary Storm Phase: Phase			Waterm Pickford	Company Address: Waterman Group Pickfords Wharf, Clink Street, London SE1 9DG								
SW4.002	SW4 002 +35 %: 10080 Pine			Block 2 RG.1	17.557	9.882	0.375	0.000	0.0	0.02	1.6	Surcha rged

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Waterman Gro Pickfords Wha SE1 9DG	up rf, Clink Street, Lond		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	То	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
SW1.000	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 4 RG	MH1	11.326	9.936	0.349	67.358	0.6	0.28	57.3	Surcha rged
SW1.001	FEH: 100 years: +40 %: 10080 mins: Winter	Pipe	MH1	Block 3 RG	10.521	9.851	0.375	0.010	0.0	0.04	2.6	Surcha rged
SW1.002	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 3 RG	MH2	11.078	9.774	0.375	61.156	0.8	0.3	70.1	Surcha rged
SW1.003	Summer	Pipe	MH2	Highways RG (2)	11.076	9.157	0.230	0.000	1.0	0.4	69.7	Surcha rged
SW1.004	FEH: 100 years: +40 %: 360 mins: Summer	Pipe	Highways RG (2)	MH5	9.908	8.745	0.375	92.608	0.4	0.04	4.7	Surcha rged
SW1.005	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	MH5	мн6	9.860	8.721	0.028	5.622	0.8	0.01	3.0	Surcha rged
SW3.001	FEH: 100 years: +40 %: 480 mins: Summer	Pipe	Block 1 PP	Highways RG (2)	9.993	8.926	0.309	0.001	0.0	0.02	3.2	Surcha rged
SW3.000	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 1 RG	Block 1 PP	10.013	9.303	0.353	2.391	0.5	0.17	48.0	Surcha rged
SW4.003	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	Block 2 RG.1	Highways RG (2)	9.641	8.350	0.001	0.005	0.0	0	0.0	ОК
SW5.000	FEH: 100 years: +40 %: 120 mins: Summer	Pipe	Block 2 RG	Highways RG (2)	10.000	10.218	0.373	0.002	0.4	0.26	48.1	Surcha rged
SW4.000	FEH: 100 years: +40 %: 240 mins: Summer	Pipe	Block 3 Tank	Block 2 PP	9.782	9.420	0.375	31.158	1.4	1.28	159.4	Surcha rged
SW6.001	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 10 RG	Site Pond	13.104	10.079	0.184	122.174	1.4	0.45	74.6	Surcha rged
SW6.003	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	МНЗ	MH4	12.487	9.068	0.375	8.151	0.8	0.18	25.1	Surcha rged
SW6.004	FEH: 100 years: +40 %: 10080 mins: Winter	Pipe	MH4	Bioretenti on (10)	11.298	9.259	0.375	0.000	0.0	0.02	1.9	Surcha rged
SW7.000	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	Highways RG (1)	MH4	11.364	8.884	0.375	0.000	0.1	0.03	10.1	ОК
SW6.005	FEH: 100 years: +40 %: 10080 mins: Summer	Pipe	Bioretenti on (10)	Highways RG (2)	10.423	9.161	0.329	0.001	0.0	0.01	2.6	Surcha rged
SW2.000	FEH: 100 years: +40 %: 240 mins: Summer	Pipe	Block 4 PP	Block 4 Tank	11.737	9.582	0.240	23.048	0.2	0.02	8.2	ок
SW2.001	FEH: 100 years: +40 %: 15 mins: Winter	Pipe	Block 4 Tank	MH1	10.154	9.066	0.220	1.980	0.6	0.07	13.2	ок
SW6.002	FEH: 100 years: +40 %: 60 mins: Summer	Pipe	Site Pond	МНЗ	12.974	9.129	0.375	12.036	1.1	0.17	38.0	Surcha rged
SW6.000	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	Highways RG	Block 10 RG	11.486	9.914	0.375	9.170	0.0	0	0.0	Surcha rged
SW4.001	FEH: 100 years: +40 %: 120 mins: Summer	Pipe	Block 2 PP	Block 2 Tank	18.750	8.724	0.375	69.068	2.2	0.58	73.3	ОК

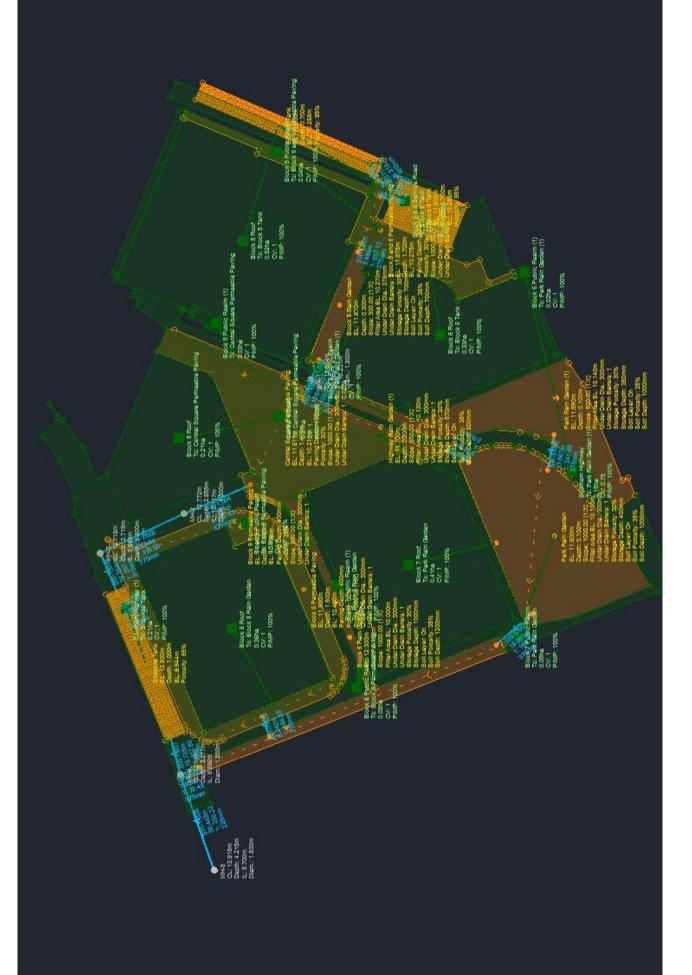
Project:		Date:						
Project Otter		23/10/2024	23/10/2024					
Beehive Centre		Designed by:	Checked by:	App	proved By:	7		
Cambridge		GJ	CP	CF)		~ 1	
Report Details:		Company Address:		-		7	V	
Type: Connections Summary		Waterman Gro	up			000	5	
Storm Phase: Phase		Pickfords Wha	rf, Clink Street,	London				N .
		SE1 9DG						
FEII: 400								
FEH: 100 years:	Block 2	Block 2		0.075				Surcha

SW4.002	+40 %: 10080 mins: Summer	Pipe	Block 2 Tank	Block 2 RG.1	17.557	9.883	0.375	0.000	0.0	0.02	1.7	Surcha rged



Proposed Development Runoff Calculations

Appendices
Railway Pensions Nominees Limited
Project Number: WIE17469-110
Document Reference: WIE17469-110-R-1-1-4-FRADS_Project Otter



Project: Project Otter	Date: 23/10/2024				
Beehive Centre	Designed by:	Checked by:	Approved By:		
Cambridge	GJ	CP	CP		
Report Title:	Company Address: Waterman Gro	Company Address: Waterman Group			
Rainfall Analysis Criteria	Pickfords Wha SE1 9DG	Pickfords Wharf, Clink Street, London			

Runoff Type	Dynamic
Output Interval (mins)	1
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	

Rainfall	
FEH	
Site Location	GB 546583 258531 TL 46583 58531
Rainfall Version	2022
Summer	✓
Winter	✓

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000
30.0	35.000
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880
10080	20160

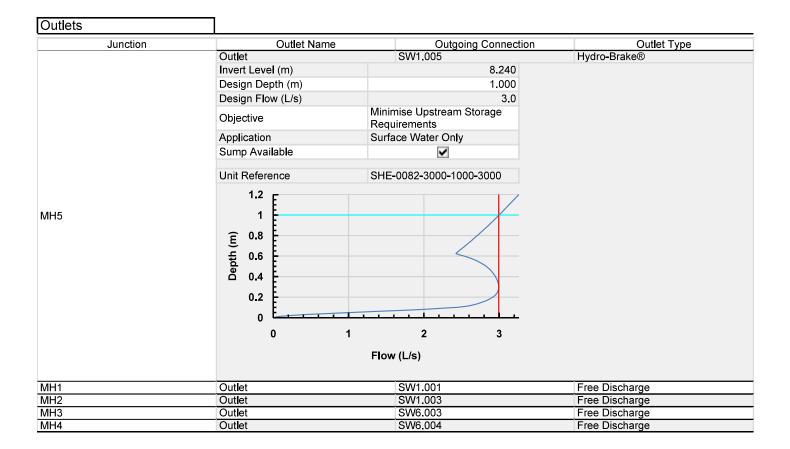
Project: Date: Project Otter 23/10/2024				
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	•	•	
Type: Inflow Summary	Waterman Gro	up		
Storm Phase: Phase	Pickfords Wha	rf, Clink Street, Lond	don	
	SE1 9DG			



Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Block 1 Public Realm	Block 1 PP		Time of Concentration	0.048	100	0	100	0.048
Block 1 Roof	Block 1 RG		Time of Concentration	0.119	100	0	100	0.119
Block 2 Public Realm	Block 2 PP		Time of Concentration	0.109	100	0	100	0.109
Block 2 Public Realm (1)	Block 2 RG		Time of Concentration	0.043	100	0	100	0.043
Block 2 Roof	Block 2 RG		Time of Concentration	0.358	100	0	100	0.358
Block 3 & 4 Highway	Block 4 Tank		Time of Concentration	0.166	100	0	100	0.166
Block 3 Public Realm	Block 3 RG		Time of Concentration	0.138	100	0	100	0.138
Block 3 Roof	Block 3 Tank		Time of Concentration	0.476	100	0	100	0.476
Block 4 Public Realm	Block 4 PP		Time of Concentration	0.046	100	0	100	0.046
Block 4 Roof	Block 4 RG		Time of Concentration	0.203	100	0	100	0.203
Block 10 Public Realm	Block 10 RG		Time of Concentration	0.012	100	0	100	0.012
Block 10 Public Realm (1)	Highways RG (1)		Time of Concentration	0.005	100	0	100	0.005
Block 10 Roof	Block 10 RG		Time of Concentration	0.182	100	0	100	0.182
Northern Highway	Highways RG (2)		Time of Concentration	0.207	100	0	100	0.207
Northern Highway (1)	Block 10 RG		Time of Concentration	0.121	100	0	100	0.121
Northern Highway (2)	Bioretention (10)		Time of Concentration	0.010	100	0	100	0.010
TOTAL		0.0		2.244				2.244

Project: Project Otter	Date: 23/10/2024	Date: 23/10/2024		
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Junctions	Waterman Gro	Waterman Group		
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London		
	SE1 9DG	· · · · · · · · · · · · · · · · · · ·		





Project:	Date:			
Project Otter	23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:			
Type: Stormwater Controls	Waterman Group			
Storm Phase: Phase	Pickfords Wharf, Clink Street, London			
	SE1 9DG			



Block 3 RG

Type : Bioretention

Ponding Area	
Exceedance Level (m)	11.071
Depth (m)	0.300
Base Level (m)	10.771
Top Area (m²)	149.02
Side Slope (1:X)	0.00
Base Area (m²)	149.02
Freeboard (mm)	100
Porosity (%)	100
Length (m)	38.408
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	128.571

Filter Area

Base Level (m) 8.771

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1000	35	50.0	Soil Type
	Storage	1000	30	500.0	

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Block 3 Public Realm
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	SW1.001
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

Outlet	
Outgoing Connection	SW1.002
Outlet Type	Under Drain

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	•		
Type: Stormwater Controls	Waterman Gro	up		
Storm Phase: Phase	Pickfords Wha	rf, Clink Street, Lone	don	
	SE1 9DG	,		



Advanced

Ponding Area	
Base Perimeter (m)	84.577
Top Perimeter (m)	84.577



Block 2 RG.1

Type : Bioretention

Ponding	

Exceedance Level (m)	10.000
Depth (m)	0.200
Base Level (m)	9.800
Top Area (m²)	174.001
Side Slope (1:X)	0.00
Base Area (m²)	174.001
Freeboard (mm)	100
Porosity (%)	100
Length (m)	40.674
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	103.368

Filter Area

Base Level (m) 8.350

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	950	35	50.0	Soil Type
	Storage	500	30	500.0	

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	SW4.002
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outgoing Connection	SW4.003	
Outlet Type	Under Drain	

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	•		
Type: Stormwater Controls	Waterman Gro	up		
Storm Phase: Phase	Pickfords What	rf, Clink Street, Lond		
	SE1 9DG	,		

Advanced

Ponding Area	
Base Perimeter (m)	89.904
Top Perimeter (m)	89.904



Block 2 RG Type : Bioretention

Ponding Area

Exceedance Level (m)	10.400
Depth (m)	0.200
Base Level (m)	10.200
Top Area (m²)	467.17
Side Slope (1:X)	0.00
Base Area (m²)	467.17
Freeboard (mm)	100
Porosity (%)	100
Length (m)	109.384
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	341.776

Filter Area

Base Level (m) 8.300

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1000	35	50.0	Soil Type
	Storage	900	30	500.0	

Project:	Date:			
Project Otter	23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Stormwater Controls	Waterman Gro	Waterman Group		
Storm Phase: Phase	Pickfords Wha	rf, Clink Street, Lond		
	SE1 9DG	,		



Inlets

Inlet		
Inlot Tuno	Do	:-

Inlet Type	Point Inflow
Incoming Item(s)	Block 2 Public Realm (1)
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Block 2 Roof
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	SW5.000
Outlet Type	Under Drain

Advanced

Ponding Area

)	
Base Perimeter (m)	227.311
Top Perimeter (m)	227.311



Type : Bioretention

Project: Project Otter	Date: 23/10/2024		
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Cambridge	GJ	CP	CP
Report Details:	Company Address:	•	
Type: Stormwater Controls	Waterman Gro	up	
Storm Phase: Phase	Pickfords Wha	rf, Clink Street, Lon-	don
	SE1 9DG		



Ponding Area

Exceedance Level (m)	11.162
Depth (m)	0.200
Base Level (m)	10.962
Top Area (m²)	80.07
Side Slope (1:X)	0.00
Base Area (m²)	80.07
Freeboard (mm)	100
Porosity (%)	100
Length (m)	17.683
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	72.134

Filter Area

Base Level (m) 8.562

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1400	35	35.0	Soil Type
	Storage	1000	30	30.0	

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Block 10 Public Realm (1)
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	SW7.000
Outlet Type	Under Drain

Advanced

Ponding Area

Base Perimeter (m)	44.421
Top Perimeter (m)	44.421



Type : Bioretention

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Stormwater Controls	Waterman Gro	Waterman Group		
Storm Phase: Phase	Pickfords What	Pickfords Wharf, Clink Street, London		
	SE1 9DG	,		

Ponding Area

Exceedance Level (m)	11.562
Depth (m)	0.300
Base Level (m)	11,262
Top Area (m²)	668.72
Side Slope (1:X)	0.00
Base Area (m²)	668.72
Freeboard (mm)	100
Porosity (%)	100
Length (m)	67.751
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	618.579

Filter Area

Base Level (m) 9.062

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1200	35	50.0	Soil Type
	Storage	1000	30	500.0	

Project: Project Otter	Date: 23/10/2024	I		
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
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Type: Stormwater Controls	Waterman Gro	Waterman Group		
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London		
	SE1 9DG	,		



Inlet	
Inlet Type	Point Inflow
Incoming Item(s)	Block 10 Public Realm
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction
Inlet (1) Inlet Type	Point Inflow Block 10 Roof
Incoming Item(s)	
Bypass Destination	(None)
Inlet Destination	Ponding Area
Capacity Type	No Restriction
Inlet (3)	٦
Inlet Type	Point Inflow
Incoming Itom(c)	SW6 000

Incoming Item(s)	SW6.000	
Bypass Destination	(None)	
Inlet Destination	Subsurface Area	
Capacity Type	No Restriction	
L-1-4 (0)	¬	
IInlet (2)		

Į	met (z)	
	Inlet Type	Point Inflow
	Incoming Item(s)	Northern Highway (1)
	Bypass Destination	(None)
	1.1.15 (1.1)	D !! A

Ponding Area No Restriction Inlet Destination Capacity Type

Outlets

Inlets

l	Outlet	
	Outgoing Connection	SW6.001
	Outlet Type	Under Drain

Ponding Area	
Base Perimeter (m)	155.242
Top Perimeter (m)	155.242

Project:	Date:			
Project Otter	23/10/2024			
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Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Stormwater Controls	Waterman Gro	up		
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London		
	SE1 9DG	SE1 9DG		





Highways RG

Type : Bioretention

Ponding Area	
Exceedance Level (m)	11.423
Depth (m)	0.400
Base Level (m)	11.023
Top Area (m²)	176.74
Side Slope (1:X)	0.00
Base Area (m²)	176.74
Freeboard (mm)	100
Porosity (%)	100
Length (m)	53.249
Long, Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	165,234

Base Level (m) Under Drain

Filter Area

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1000	35	50.0	Soil Type
	Storage	900	30	500.0	

9.123

Inlets

Outlets

Outlet		
	Outgoing Connection	SW6.000
	Outlet Type	Under Drain

Advanced

Ponding Area		
Base Perimeter (m)	113.137	
Top Perimeter (m)	113.137	



Type : Bioretention

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
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Type: Stormwater Controls	Waterman Gro	oup		
Storm Phase: Phase	Pickfords Wha	rf, Clink Street, Lond	don	
	SE1 9DG			



Ponding Area

Exceedance Level (m)	10.500
Depth (m)	0.300
Base Level (m)	10.200
Top Area (m²)	321.23
Side Slope (1:X)	0.00
Base Area (m²)	321,23
Freeboard (mm)	100
Porosity (%)	100
Length (m)	65.078
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	245.752

Filter Area

8.500 Base Level (m)

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	900	35	50.0	Soil Type
	Storage	800	30	500.0	

Inlets

Inlet (1)

Inlet Type	Point Inflow	
Incoming Item(s)	Block 1 Roof	
Bypass Destination	(None)	
Inlet Destination	Ponding Area	
Capacity Type	No Restriction	

Outlets

Outlet

Outgoing Connection	SW3.000
Outlet Type	Under Drain

Advanced

Ponding Area

Base Perimeter (m)	140.029
Top Perimeter (m)	140.029

Project:	Date:			
Project Otter	23/10/2024	23/10/2024		
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Stormwater Controls	Waterman Gro	up		
Storm Phase: Phase	Pickfords Whai	rf, Clink Street, Lond		
	SE1 9DG	SE1 9DG		



Bioretention (10)

Type : Bioretention

Ponding Area	
Exceedance Level (m)	10.361
Depth (m)	0.100
Base Level (m)	10.261
Top Area (m²)	246.15
Side Slope (1:X)	0.00
Base Area (m²)	246.15
Freeboard (mm)	100
Porosity (%)	100
Length (m)	48.242
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	156.231

Filter Area

Base Level (m) 8.361

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1100	35	50.0	Soil Type
	Storage	800	30	500.0	

Inlets

Inlet

Inlet Type Incoming Item(s)	Point Inflow Northern Highway (2)
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	SW6.004
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

lOutlet	

Outgoing Connection	SW6.005
Outlet Type	Under Drain

Project: Project Otter	Date: 23/10/2024		
Beehive Centre	Designed by:	Checked by:	Approved By:
Cambridge	GJ	CP	CP
Report Details:	Company Address:	•	
Гуре: Stormwater Controls	Waterman Gro	up	
Storm Phase: Phase	Pickfords Wha	rf, Clink Street, Lond	don
	SE1 9DG	,	



Advanced

Ponding Area	
Base Perimeter (m)	106.688
Top Perimeter (m)	106.688



Block 4 RG

Type : Bioretention

Ponding	

Exceedance Level (m)	11.235
Depth (m)	0.400
Base Level (m)	10.835
Top Area (m²)	550.52
Side Slope (1:X)	0.00
Base Area (m²)	550.52
Freeboard (mm)	100
Porosity (%)	100
Length (m)	81.829
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	507.776

Filter Area

Base Level (m) 8.935

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	900	35	50.0	Soil Type
	Storage	1000	30	500.0	

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Block 4 Roof
Bypass Destination	(None)
Inlet Destination	Subsurface Area
Capacity Type	No Restriction

Outlet		

Outgoing Connection	SW1.000
Outlet Type	Under Drain

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Stormwater Controls	Waterman Gro	Waterman Group		
Storm Phase: Phase	Pickfords What	Pickfords Wharf, Clink Street, London		
	SE1 9DG			

Advanced

Ponding Area	
Base Perimeter (m)	177.113
Top Perimeter (m)	177.113



Highways RG (2)

Type : Bioretention

Pond	ıng	Area

Exceedance Level (m)	10.000
Depth (m)	0.255
Base Level (m)	9.745
Top Area (m²)	1869.13
Side Slope (1:X)	0.00
Base Area (m²)	1869.13
Freeboard (mm)	100
Porosity (%)	100
Length (m)	136.150
Long. Slope (1:X)	500.00
Filtration Rate (m/hr)	50.0
Friction Scheme	Manning's n
n	0.03
Total Volume (m³)	1250.679

Filter Area

Base Level (m) 8.245

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	4
Friction Scheme	Manning's n
n	0.015
Release Height (m)	0.000

Filtration Layers

Use	Name	Filtration Layer Depth (mm)	Porosity (%)	Conductivity (m/hr)	Soil Type
✓	Soil	1000	35	50.0	Soil Type
	Storage	500	30	500.0	

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Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
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Type: Stormwater Controls	Waterman Group			
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London		
	SE1 9DG	,		



		SE1 9DG	
Inlets			
Inlet	1		
Inlet Type	Point Inflow		
Incoming Item(s)	Northern Highway		
Bypass Destination	(None)		
Inlet Destination	Subsurface Area		
Capacity Type	No Restriction		
Inlet (2)	1		
Inlet Type	Point Inflow		
Incoming Item(s)	SW1.003		
Bypass Destination	(None)		
Inlet Destination	Subsurface Area		
Capacity Type	No Restriction		
Inlet (1)]		
Inlet Type	Point Inflow		
Incoming Item(s)	SW3.001		
Bypass Destination	(None)		
Inlet Destination	Subsurface Area		
Capacity Type	No Restriction		
Inlet (3)	7		
Inlet Type	Point Inflow		
Incoming Item(s)	SW4.003		
Bypass Destination	(None)		
Inlet Destination	Subsurface Area		
Capacity Type	No Restriction		
Inlet (4)]		
Inlet Type	Point Inflow		
Incoming Item(s)	SW5.000		
Bypass Destination	(None)		
Inlet Destination	Subsurface Area		
Capacity Type	No Restriction		
Inlet (5)	1		
Inlet Type	Point Inflow		
Incoming Item(s)	SW6.005		
Bypass Destination	(None)		
Inlet Destination	Subsurface Area		
Capacity Type	No Restriction		
Capacity Type	No restriction		
Outlets			
Outlet	7		
Outgoing Connection	SW1.004		
Outlet Type	Under Drain		
2 2 2 2 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
Advanced			
Ponding Area			
Base Perimeter (m)		299.756 299.756	
Ton Parimeter (m)		200 756	

Top Pe	erimeter (m)	299.756

Project:	Date:			
Project Otter	23/10/2024	23/10/2024		
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
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Type: Stormwater Controls	Waterman Group			
Storm Phase: Phase	n Phase: Phase Pickfords Wharf, Clink Street, London			
	SE1 9DG	SE1 9DG		



Site Pond Type : Pond

Dimensions	
Exceedance Level (m)	10.000
Depth (m)	1.250
Base Level (m)	8.750
Freeboard (mm)	300
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	4.612
Total Volume (m³)	431.881

Depth (m)	Area (m²)	Volume (m³)
0.000	300.00	0.000
1 000	650.00	463 863

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	SW6.001
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	SW6.002
Outlet Type	Free Discharge

Perimeter	Circular
Length (m)	42.935
Friction Scheme	Manning's n
n	0.03

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Beehive Centre	Designed by:	Checked by:	Approved By:
Cambridge	GJ	CP	CP
Report Details:	Company Address:		
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Storm Phase: Phase	Pickfords Wharf, Clink Street, London		
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Block 1 PP

Type : Porous Paving

Dimensions	
Exceedance Level (m)	9.900
Depth (m)	1.500
Base Level (m)	8.400
Paving Layer Depth (mm)	400
Membrane Percolation (m/hr)	30.0
Porosity (%)	30
Length (m)	36.945
Long. Slope (1:X)	200.00
Width (m)	12.811
Total Volume (m³)	158.015

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Block 1 Public Realm
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	SW3.000
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	SW3.001
Outlet Type	Under Drain

Conductivity (m/hr)	30.0

Project:	Date:	Date:		
Project Otter	23/10/2024	23/10/2024		
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:	Company Address:		
Type: Stormwater Controls	Waterman Gro	Waterman Group		
Storm Phase: Phase	Pickfords What	Pickfords Wharf, Clink Street, London SE1 9DG		
	SE1 9DG			





Block 4 PP

Type : Porous Paving

Dimensions	
Exceedance Level (m)	11,307
Depth (m)	1.800
Base Level (m)	9.507
Paving Layer Depth (mm)	300
Membrane Percolation (m/hr)	30.0
Porosity (%)	30
Length (m)	75.692
Long. Slope (1:X)	200.00
Width (m)	6.821
Total Volume (m³)	236.095

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	1
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Block 4 Public Realm
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	SW2.000
Outlet Type	Under Drain

Conductivity (m/hr)	30.0
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Desirate	In-t-		
Project:	Date:	Date:	
Project Otter	23/10/2024	23/10/2024	
Beehive Centre	Designed by:	Checked by:	Approved By:
Cambridge	GJ	CP	CP
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Type: Stormwater Controls	Waterman Group		
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London	
	SE1 9DG	SE1 9DG	



Block 2 PP

Type : Porous Paving

Dimensions	
Exceedance Level (m)	10.500
Depth (m)	2.100
Base Level (m)	8.400
Paving Layer Depth (mm)	400
Membrane Percolation (m/hr)	30.0
Porosity (%)	30
Length (m)	122.649
Long. Slope (1:X)	200.00
Width (m)	9.524
Total Volume (m³)	620.028

Under Drain

Height Above Base (m)	0.000
Diameter (mm)	300
No. of Barrels	4
Release Height (m)	0.000
Friction Scheme	Manning's n
n	0.015

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Block 2 Public Realm
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	SW4.000
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	SW4.001
Outlet Type	Under Drain

Conductivity (m/hr)	50.0

	75.		
Project:	Date:		
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Beehive Centre	Designed by:	Checked by:	Approved By:
Cambridge	GJ	CP	CP
Report Details:	Company Address:		
Type: Stormwater Controls	Waterman Group		
Storm Phase: Phase	Pickfords Wharf, Clink Street, London		
	SE1 9DG		



Block 3 Tank

Type : Cellular Storage

Difficilisions	
Exceedance Level (m)	10.000
Depth (m)	0.600
Base Level (m)	8.450
Number of Crates Long	63
Number of Crates Wide	48
Number of Crates High	1
Porosity (%)	95
Crate Length (m)	0.4
Crate Width (m)	0.4
Crate Height (m)	0.6
Total Volume (m³)	276,739

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Block 3 Roof
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outgoing Connection	SW4.000
Outlet Type	Free Discharge

	75.				
Project:	Date:				
Project Otter	23/10/2024	23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:		
Cambridge	GJ	CP	CP		
Report Details:	Company Address:				
Type: Stormwater Controls	Waterman Group				
Storm Phase: Phase	Pickfords Wharf, Clink Street, London				
	SE1 9DG				





Block 4 Tank

Type : Cellular Storage

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Exceedance Level (m)	11.000
Depth (m)	1.000
Base Level (m)	8.900
Number of Crates Long	60
Number of Crates Wide	35
Number of Crates High	2
Porosity (%)	95
Crate Length (m)	0.5
Crate Width (m)	0.5
Crate Height (m)	0.5
Total Volume (m³)	499.850

Inlets

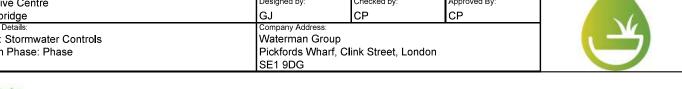
Inlet

Inlet Type	Point Inflow
In a prairie a Marro (a)	SW2.000
Incoming Item(s)	Block 3 & 4 Highway
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outgoing Connection	SW2.001
Outlet Type	Free Discharge

Project:	Date:	Date:				
Project Otter	23/10/2024	23/10/2024				
Beehive Centre	Designed by:	Checked by:	Approved By:			
Cambridge	GJ	CP	CP			
Report Details:	Company Address:	Company Address:				
Type: Stormwater Controls	Waterman Gro	Waterman Group				
Storm Phase: Phase	Pickfords What	Pickfords Wharf, Clink Street, London				
	SE1 9DG					





Block 2 Tank Type : Cellular Storage

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Exceedance Level (m)	10.000
Depth (m)	0.600
Base Level (m)	8.380
Number of Crates Long	22
Number of Crates Wide	22
Number of Crates High	1
Porosity (%)	95
Crate Length (m)	0.5
Crate Width (m)	0.5
Crate Height (m)	0.6
Total Volume (m³)	69.990

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	SW4.001
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outgoing Connection	SW4.002
Outlet Type	Free Discharge

Project: Project Otter	Date: 23/10/2024					
Beehive Centre	Designed by:	Designed by: Checked by: Approved By:				
Cambridge	GJ	CP	CP			
Report Details:	Company Address:	Company Address:				
Type: Junctions Summary	Waterman Gro	Waterman Group				
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London				
	SE1 9DG	,				



FEH: 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
МН6	FEH: 2 years: +0 %: 10080 mins: Summer	9.810	8.200	8.211	0.011	0.5	0.000	0.000	0.5	200.475	ОК
MH5	FEH: 2 years: +0 %: 10080 mins: Summer	9.860	8.240	8.284	0.044	0.6	0.078	0.000	0.5	200.491	ок
MH1	FEH: 2 years: +0 %: 10080 mins: Summer	10.521	8.800	9.421	0.621	2.3	1.098	0.000	0.0	259.768	Surcharged
MH2	FEH: 2 years: +0 %: 10080 mins: Summer	11.076	8.700	9.022	0.322	4.0	0.569	0.000	3.5	914.573	ок
мнз	FEH: 2 years: +0 %: 10080 mins: Summer	12.487	8.600	9.258	0.658	2.5	1.163	0.000	1.0	260.241	Surcharged
MH4	FEH: 2 years: +0 %: 10080 mins: Summer	11.298	8.400	9.259	0.859	4.0	1.518	0.000	1.9	305.808	Surcharged

Project: Project Otter	Date: 23/10/2024						
Beehive Centre	Designed by:	Checked by:	Approved By:				
Cambridge	GJ	CP	CP				
Report Details:	Company Address:	Company Address:					
Type: Junctions Summary	Waterman Gro	Waterman Group					
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London					
	SE1 9DG						



FEH: 30 years: Increase Rainfall (%): +35: 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
МН6	FEH: 30 years: +35 %: 30 mins: Summer	9.810	8.200	8.226	0.026	3.0	0.000	0.000	3.0	4.207	ОК
MH5	FEH: 30 years: +35 %: 60 mins: Summer	9.860	8.240	8.643	0.403	4.9	0.711	0.000	3.0	12.880	Surcharged
MH1	FEH: 30 years: +35 %: 10080 mins: Summer	10.521	8.800	9.851	1.051	2.4	1.856	0.000	2.4	389.039	Surcharged
MH2	FEH: 30 years: +35 %: 30 mins: Summer	11.076	8.700	9.143	0.443	57.1	0.782	0.000	56.4	45.370	Surcharged
мн3	FEH: 30 years: +35 %: 10080 mins: Summer	12.487	8.600	9.258	0.658	2.3	1.163	0.000	1.1	304.143	Surcharged
MH4	FEH: 30 years: +35 %: 10080 mins: Winter	11.298	8.400	9.259	0.859	3.7	1.518	0.000	1.9	433.647	Surcharged

Project: Project Otter	Date: 23/10/2024						
Beehive Centre	Designed by:	Checked by:	Approved By:				
Cambridge	GJ	CP	CP				
Report Details:	Company Address:	Company Address:					
Type: Junctions Summary	Waterman Gro	Waterman Group					
Storm Phase: Phase	Pickfords Wha	Pickfords Wharf, Clink Street, London					
	SE1 9DG						



FEH: 100 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
МН6	FEH: 100 years: +40 %: 30 mins: Summer	9.810	8.200	8.226	0.026	3.0	0.000	0.000	3.0	5.622	ОК
MH5	FEH: 100 years: +40 %: 60 mins: Summer	9.860	8.240	8.746	0.506	4.5	0.893	0.000	3.0	13.201	Surcharged
MH1	FEH: 100 years: +40 %: 10080 mins: Winter	10.521	8.800	9.851	1.051	2.7	1.858	0.000	2.6	418.424	Surcharged
MH2	FEH: 100 years: +40 %: 30 mins: Summer	11.076	8.700	9.157	0.457	70.1	0.807	0.000	69.7	59.600	Surcharged
МН3	FEH: 100 years: +40 %: 10080 mins: Winter	12.487	8.600	9.258	0.658	2.3	1.163	0.000	1.2	311.040	Surcharged
MH4	FEH: 100 years: +40 %: 10080 mins: Winter	11.298	8.400	9.259	0.859	3.2	1.518	0.000	1.9	456.949	Surcharged

Project:	Date:						
Project Otter	23/10/2024						
Beehive Centre	Designed by:	Checked by:	Approved By:				
Cambridge	GJ	CP	CP				
Report Details:	Company Address:						
Type: Stormwater Controls Summary	Waterman Gro	up					
Storm Phase: Phase	Pickfords Wha						
	SE1 9DG	SE1 9DG					



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

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Residen t Volume (m³)	Max. Flood ed Volum e (m³)	Total Lost Volume (m³)	Max. Outflo w (L/s)	Total Discharg e Volume (m³)	Percentage Available (%)	Status
Block 3 Tank	FEH: 2 years: +0 %: 10080 mins: Summer	9.026	9.026	0.576	0.576	2.2	264.433	0.000	0.000	0.6	65.530	4.447	ок
Block 4 Tank	FEH: 2 years: +0 %: 10080 mins: Summer	9.421	9.421	0.521	0.521	2.2	259.905	0.000	0.000	1.5	57.778	48.003	ок
Block 3 RG	FEH: 2 years: +0 %: 30 mins: Winter	9.851	9.019	1.004	0.248	15.9	14.114	0.000	0.000	8.1	3.677	89.022	ок
Block 2 RG.1	FEH: 2 years: +0 %: 120 mins: Summer	8.431	8.350	0.000	0.000	0.0	3.968	0.000	0.000	0.0	0.000	96.161	ок
Block 2 RG	FEH: 2 years: +0 %: 15 mins: Summer	9.423	8.567	0.905	0.267	78.9	41.936	0.000	0.000	5.9	1.469	87.730	ок
Highways RG (1)	FEH: 2 years: +0 %: 10080 mins: Summer	9.260	9.259	0.663	0.697	11.9	21.293	0.000	0.000	12.0	688.262	70.481	ок
Block 10 RG	FEH: 2 years: +0 %: 15 mins: Summer	10.203	9.073	1.005	0.011	62.0	41.479	0.000	0.000	0.3	0.126	93.295	ок
Highways RG	FEH: 2 years: +0 %: 120 mins: Summer	9.229	9.132	0.000	0.009	0.1	4.332	0.000	0.000	0.0	0.115	97.378	ок
Block 1 RG	FEH: 2 years: +0 %: 15 mins: Summer	9.434	8.626	0.804	0.126	28.9	19.038	0.000	0.000	3.9	1.207	92.253	ок
Bioretentio n (10)	FEH: 2 years: +0 %: 10080 mins: Summer	9.257	9.018	0.800	0.658	5.8	53.567	0.000	0.000	11.9	598.095	65.713	ок
Block 4 RG	FEH: 2 years: +0 %: 15 mins: Summer	10.099	8.941	1.000	0.006	39.9	26.125	0.000	0.000	0.1	0.020	94.855	ок
Block 1 PP	FEH: 2 years: +0 %: 10080 mins: Winter	9.019	9.019	0.435	0.619	7.4	74.702	0.000	0.000	11.1	507.058	52.725	ок
Block 4 PP	FEH: 2 years: +0 %: 120 mins: Summer	9.941	9.510	0.055	0.002	4.5	3.272	0.000	0.000	0.0	0.203	98.614	ок
Site Pond	FEH: 2 years: +0 %: 10080 mins: Summer	9.258	9.258	0.508	0.508	2.7	191.676	0.000	0.000	1.3	76.515	55.618	ок
Highways RG (2)	FEH: 2 years: +0 %: 120 mins: Summer	9.018	8.249	0.500	0.004	20.6	69.966	0.000	0.000	0.0	0.072	94.406	OK
Block 2 PP	FEH: 2 years: +0 %: 10080 mins: Summer	9.026	8.722	0.013	0.322	6.7	35.482	0.000	0.000	11.1	280.349	94.277	ок
Block 2 Tank	FEH: 2 years: +0 %: 10080 mins: Summer	8.722	8.722	0.342	0.342	2.9	39.292	0.000	0.000	0.0	20.071	43.860	ок

Project:	Date:			
Project Otter	23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:			
Type: Stormwater Controls Summary	Waterman Group			
Storm Phase: Phase	Pickfords Wharf, Cl	link Street, Londor	n	
	SE1 9DG			



FEH: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max, Residen t Volume (m³)	Max. Flood ed Volum e (m³)	Total Lost Volume (m³)	Max. Outflo w (L/s)	Total Discharg e Volume (m³)	Percentage Available (%)	Status
Block 3 Tank	FEH: 30 years: +35 %: 10080 mins: Summer	9.882	9.882	1.432	1.432	4.4	276.477	0.000	0.000	4.5	455.732	0.095	ок
Block 4 Tank	FEH: 30 years: +35 %: 10080 mins: Summer	9.849	9.849	0.949	0.949	3.7	473.179	0.000	0.000	2.0	163.620	5.336	ок
Block 3 RG	mins: Winter	9.852	9.170	1.004	0.399	77.0	22.768	0.000	0.000	40.3	20.806	82.291	ок
Block 2 RG.1	FEH: 30 years: +35 %: 10080 mins: Summer	8.932	9.395	0.500	1.045	5.3	37.201	0.000	0.000	5.9	32.728	64.011	ок
Block 2 RG	mins: Summer	10.473	9.101	1.954	0.801	255.7	153.298	0.000	0.000	45.4	64.118	55.147	ок
Highways RG (1)	FEH: 30 years: +35 %: 480 mins: Summer	9.597	9.562	1.000	1.000	4.8	11.548	0.000	0.000	6.0	24.981	83.991	ок
Block 10 RG	FEH: 30 years: +35 %: 15 mins: Summer	10.210	9.303	1.013	0.241	223.4	106,020	0.000	0.000	42.5	32,896	82.861	ок
Highways RG	FEH: 30 years: +35 %: 240 mins: Summer	9.347	9.347	0.118	0.224	2.2	13.270	0.000	0.000	1.5	4.313	91.969	ок
Block 1 RG	mins: Summer	9.440	8.819	0.810	0.319	92.0	40.195	0.000	0.000	39.6	18.882	83.644	ок
Bioretentio n (10)	FEH: 30 years: +35 %: 30 mins: Summer	9.257	8.374	0.800	0.013	6.3	9.659	0.000	0.000	0.0	0.016	93.817	ок
Block 4 RG	mins: Summer	10.107	9.208	1.008	0.273	128.7	70.912	0.000	0.000	45.2	52.351	86.035	ок
Block 1 PP	FEH: 30 years: +35 %: 10080 mins: Winter	9.019	9.019	0.434	0.619	6.5	74.694	0.000	0.000	10.7	741.318	52.730	ок
Block 4 PP	FEH: 30 years: +35 %: 10080 mins: Summer	9.905	9.850	0.019	0.342	7.7	24.779	0.000	0.000	10.2	532.882	89.505	ок
Site Pond	FEH: 30 years: +35 %: 10080 mins: Winter	9.258	9.258	0.508	0.508	2.6	191.700	0.000	0.000	1.2	147.586	55.613	ок
Highways RG (2)	FEH: 30 years: +35 %: 30 mins: Summer	9.019	8.571	0.502	0.326	170.7	165.841	0.000	0.000	4.4	5.293	86.740	ок
Block 2 PP	FEH: 30 years: +35 %: 10080 mins: Summer	9.883	9.882	0.869	1.482	8.1	411.874	0.000	0.000	9.2	722.495	33.572	ок
Block 2 Tank	FEH: 30 years: +35 %: 10080 mins: Summer	9.883	9.883	1.503	1.503	3.5	69.869	0.000	0.000	1.5	103.412	0.173	ок

Project:	Date:			
Project Otter	23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details:	Company Address:			
Type: Stormwater Controls Summary	Waterman Gro	up		
Storm Phase: Phase	Pickfords Whar	f, Clink Street, Lond	don	
	SE1 9DG			



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Project: Project Otter	Date: 23/10/2024					
Beehive Centre	Designed by:	Checked by:	Approved By:			
Cambridge	GJ	CP	CP			
Report Details:	Company Address:	•				
Type: Stormwater Controls Summary	Waterman Gro	oup				
Storm Phase: Phase	Pickfords Wharf, Clink Street, London					
	SE1 9DG					



Max. Total Max. Max. Max. Max. Max. Total Max. Flood Max. Discharg Percentage US DS US DS Residen Stormwater Lost Storm Event Inflow ed Available Status Outflo е Control Leve Leve Depth Depth t Volume Volume (L/s) Volum w (L/s) Volume (%) (m) (m) (m) (m) (m^3) (m^3) e (m³) (m^3) FEH: 100 years: +40 %: Block 3 9.882 9.882 1.432 1.432 3.0 276.477 0.000 0.000 3.0 477.895 0.095 OK Tank 10080 mins: Winter FEH: 100 Block 4 years: +40 %: 9.849 9.849 0.949 0.949 3.9 473.200 0.000 0.000 1.9 235.813 5.332 OK 10080 mins: Tank Summer FEH: 100 Block 3 RG years: +40 %: 30 mins: 9.860 9.313 1.013 0.542 115.8 33.416 0.000 0.000 69.9 62.469 74.009 OK Summer FEH: 100 years: +40 %: Block 2 8.932 9.415 0.500 1.065 5.0 37.401 0.000 0.000 7.4 31.840 63.818 OK RG.1 10080 mins: Summer FEH: 100 years: +40 %: Flood Block 2 RG 10.574 9.111 2.055 0.811 337.7 192.923 0.000 0.000 48.1 99.741 43.553 30 mins: Risk Summer FEH: 100 years: +40 %: Highways 9.597 9.562 1,000 1.000 0.000 0.000 80.069 ΟK 11.6 14.377 14.0 93.139 RĞ (1) 960 mins: Summer FEH: 100 Block 10 years: +40 %: 10.289 1.091 299.9 0.000 OK 9.384 0.322 127.294 0.000 69.4 67.526 79,422 RG 15 mins: Summer FFH: 100 Highways years: +40 %: 10.034 10.116 0.805 0.993 60.0 51.478 0.000 0.000 0.850 68.846 OK 3.7 RĞ 30 mins: Summer FEH: 100 Block 1 RG years: +40 %: 8.885 0.000 0.000 9.444 0.813 0.385 119.5 49.700 47.7 30.474 79.776 OK 15 mins: Summer FEH: 100 Bioretentio years: +40 %: 9.258 8.422 0.801 0.062 8.5 10.605 0.000 0.000 0.3 0.166 93.212 OK n (10) 30 mins: Summer FEH: 100 Block 4 RG years: +40 %: 15 mins: 10.103 9.236 1.004 0.301 193.0 85.717 0.000 0.000 55.2 45.285 83.119 OK Summer FEH: 100 years: +40 %: Block 1 PP 9.019 9.019 0.434 0.619 7.2 74.700 0.000 0.000 11.9 829.548 52.726 OK 10080 mins: Summer FEH: 100 years: +40 %: Block 4 PP 9.907 9.850 0.021 0.342 0.000 0.000 89.504 OK 6.6 24.781 10.9 715.698 10080 mins: Summer FEH: 100 years: +40 %: 9.258 Site Pond 9.258 0.508 0.508 3.0 191.701 0.000 0.000 1.3 161.186 55.612 OK 10080 mins: Winter FEH: 100 years: +40 %: Highways 9.018 9.800 0.501 1.555 109.9 408.419 0.000 0.000 8.7 69.672 67.344 OK RG (2) 240 mins: Summer FEH: 100 years: +40 %: Block 2 PP OK 9.883 9.882 0.869 1 482 9.5 411.856 0.000 0.000 9.4 737.546 33.575 10080 mins: Winter FEH: 100 Block 2 years: +40 %: 9.883 9.883 1.503 1.503 69.869 0.000 0.000 OK 3.2 1.6 113.264 0.173 10080 mins: Tank

Winter

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Waterman Gro Pickfords Wha SE1 9DG	up rf, Clink Street, Lond		



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

Connection	Storm Event	Connection Type	From	То	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
SW1.000	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	Block 4 RG	MH1	11.326	9.935	0.375	121.083	0.0	0.01	2.4	Surcha rged
SW1.001	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	MH1	Block 3 RG	10.521	8.929	0.065	0.007	0.0	0	0.0	ок
SW1.002	FEH: 2 years: +0 %: 15 mins: Winter	Pipe	Block 3 RG	MH2	11.078	9.771	0.242	1.208	0.9	0.04	10.2	Surcha rged
SW1.003	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	MH2	Highways RG (2)	11.076	9.022	0.161	0.000	0.1	0.02	3.5	ок
SW1.004	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Highways RG (2)	MH5	9.908	8.745	0.042	200.716	0.1	0	0.6	Surcha rged
SW1.005	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	МН5	мн6	9.860	8.284	0.012	200.475	0.5	0	0.5	ок
SW3.001	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 1 PP	Highways RG (2)	9.993	8.926	0.310	0.001	0.0	0.01	1.9	Surcha rged
SW3.000	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	Block 1 RG	Block 1 PP	10.013	9.300	0.375	0.142	0.1	0.01	4.2	Surcha rged
SW4.003	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	Block 2 RG.1	Highways RG (2)	9.641	8.350	0.000	0.000	0.0	0	0.0	ок
SW5.000	FEH: 2 years: +0 %: 10080 mins: Winter	Pipe	Block 2 RG	Highways RG (2)	10.000	9.200	0.361	0.000	0.0	0.02	3.5	Surcha rged
SW4.000	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 3 Tank	Block 2 PP	9.782	9.026	0.294	34.273	0.0	0	0.6	Surcha rged
SW6.001	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 10 RG	Site Pond	13.104	10.062	0.252	39.233	0.3	0.01	1.0	Surcha rged
SW6.003	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	МНЗ	MH4	12.487	9.258	0.375	3.972	0.0	0.01	1.0	Surcha rged
SW6.004	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	MH4	Bioretenti on (10)	11.298	9.259	0.375	0.000	0.0	0.02	1.9	Surcha rged
SW7.000	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Highways RG (1)	MH4	11.364	9.241	0.375	210.682	0.0	0.01	4.0	Surcha rged
SW6.005	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Bioretenti on (10)	Highways RG (2)	10.423	9.161	0.329	0.001	0.0	0.01	2.2	Surcha rged
SW2.000	FEH: 2 years: +0 %: 360 mins: Summer	Pipe	Block 4 PP	Block 4 Tank	11.737	9.526	0.048	0.368	0.0	0	0.0	ок
SW2.001	FEH: 2 years: +0 %: 60 mins: Summer	Pipe	Block 4 Tank	MH1	10.154	8.942	0.092	1.185	0.2	0.02	2.7	ок
SW6.002	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Site Pond	МН3	12.974	9.258	0.375	5.072	0.2	0.01	1.3	Surcha rged
SW6.000	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	Highways RG	Block 10 RG	11.486	9.124	0.005	0.046	0.0	0	0.0	ок
SW4.001	FEH: 2 years: +0 %: 10080 mins: Summer	Pipe	Block 2 PP	Block 2 Tank	18.750	8.501	0.332	40.367	0.3	0.02	2.9	ок

Project: Project Otte	r			Date: 23/10/2	Date: 23/10/2024					1.		
Beehive Ce	ntre			Designed by: Checked by: Approved By:					7			
Cambridge				GJ		CP		CP			× 7	V
Report Details: Type: Conn Storm Phas	ections Summary				ian Group Is Wharf, Cl	link Street,	London			6		
SW4.002	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	Block 2 Tank	Block 2 RG.1	17.557	8.380	0.000	0.000	0.0	0	0.0	ок

0		00040
Created in	InfoDrainage	2024.2

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Waterman Gro Pickfords Wha SE1 9DG	up rf, Clink Street, Lond		



FEH: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	То	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
SW1.000	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 4 RG	MH1	11.326	9.936	0.263	49.842	0.7	0.22	45.3	Surcha rged
SW1.001	FEH: 30 years: +35 %: 10080 mins: Summer	Pipe	MH1	Block 3 RG	10.521	9.851	0.375	0.011	0.0	0.04	2.4	Surcha rged
SW1.002	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 3 RG	MH2	11.078	9.772	0.375	46.935	0.8	0.25	57.1	Surcha rged
SW1.003	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	MH2	Highways RG (2)	11.076	9.143	0.222	0.000	0.8	0.32	56.4	Surcha rged
SW1.004	FEH: 30 years: +35 %: 60 mins: Summer	Pipe	Highways RG (2)	MH5	9.908	8.745	0.375	13.606	0.5	0.04	4.9	Surcha rged
SW1.005	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	MH5	мн6	9.860	8.571	0.028	4.207	0.8	0.01	3.0	ок
SW3.001	FEH: 30 years: +35 %: 10080 mins: Winter	Pipe	Block 1 PP	Highways RG (2)	9.993	8.926	0.310	0.001	0.0	0.01	2.1	Surcha rged
SW3.000	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 1 RG	Block 1 PP	10.013	9.302	0.240	2.325	0.5	0.13	36.4	Surcha rged
SW4.003	FEH: 30 years: +35 %: 15 mins: Summer	Pipe	Block 2 RG.1	Highways RG (2)	9.641	8.350	0.002	0.003	0.0	0	0.0	ОК
SW5.000	FEH: 30 years: +35 %: 60 mins: Summer	Pipe	Block 2 RG	Highways RG (2)	10.000	9.368	0.372	0.002	0.4	0.25	46.1	Surcha rged
SW4.000	FEH: 30 years: +35 %: 360 mins: Summer	Pipe	Block 3 Tank	Block 2 PP	9.782	9.190	0.375	32.009	0.5	0.43	53.2	Surcha rged
SW6.001	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Block 10 RG	Site Pond	13.104	10.064	0.171	92.697	1.3	0.39	65.7	Surcha rged
SW6.003	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	МНЗ	MH4	12.487	8.995	0.375	7.487	0.8	0.16	22.8	Surcha rged
SW6.004	FEH: 30 years: +35 %: 10080 mins: Summer	Pipe	MH4	Bioretenti on (10)	11.298	9.259	0.375	0.000	0.0	0.02	2.0	Surcha rged
SW7.000	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Highways RG (1)	MH4	11.364	8.979	0.375	0.000	0.1	0.02	7.4	Surcha rged
SW6.005	FEH: 30 years: +35 %: 10080 mins: Summer	Pipe	Bioretenti on (10)	Highways RG (2)	10.423	9.161	0.329	0.001	0.0	0.01	2.3	Surcha rged
SW2.000	FEH: 30 years: +35 %: 120 mins: Summer	Pipe	Block 4 PP	Block 4 Tank	11.737	9.567	0.139	8.530	0.2	0.01	5.4	ок
SW2.001	FEH: 30 years: +35 %: 15 mins: Summer	Pipe	Block 4 Tank	MH1	10.154	9.034	0.195	1.875	0.6	0.06	11.3	ок
SW6.002	FEH: 30 years: +35 %: 30 mins: Summer	Pipe	Site Pond	мнз	12.974	8.995	0.320	10.500	1.1	0.16	34.1	ок
SW6.000	FEH: 30 years: +35 %: 15 mins: Summer	Pipe	Highways RG	Block 10 RG	11.486	9.133	0.024	0.312	0.0	0	0.0	ок
SW4.001	FEH: 30 years: +35 %: 240 mins: Summer	Pipe	Block 2 PP	Block 2 Tank	18.750	8.597	0.375	56.804	1.6	0.2	25.5	ок

Project: Project Otte	er			Date: 23/10/2	Date: 23/10/2024					7		
Beehive Ce	entre			Designed by: Checked by: Approved By:								
Cambridge				GJ	GJ CP CP							
Report Details: Type: Conn Storm Phas	ections Summary				nan Group ds Wharf, C	link Street,	London			()
SW4.002	FEH: 30 years: +35 %: 10080 mins: Winter	Pipe	Block 2 Tank	Block 2 RG.1	17.557	9.882	0.375	0.000	0.0	0.02	1.6	Surcha rged

Project: Project Otter	Date: 23/10/2024			
Beehive Centre	Designed by:	Checked by:	Approved By:	
Cambridge	GJ	CP	CP	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Waterman Gro Pickfords Wha SE1 9DG	up rf, Clink Street, Lond		



FEH: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	То	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
SW1.000	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 4 RG	MH1	11.326	9.936	0.349	67.358	0.6	0.28	57.3	Surcha rged
SW1.001	FEH: 100 years: +40 %: 10080 mins: Winter	Pipe	MH1	Block 3 RG	10.521	9.851	0.375	0.010	0.0	0.04	2.6	Surcha rged
SW1.002	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 3 RG	MH2	11.078	9.774	0.375	61.156	0.8	0.3	70.1	Surcha rged
SW1.003	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	MH2	Highways RG (2)	11.076	9.157	0.230	0.000	1.0	0.4	69.7	Surcha rged
SW1.004	FEH: 100 years: +40 %: 360 mins: Summer	Pipe	Highways RG (2)	MH5	9.908	8.745	0.375	92.608	0.4	0.04	4.7	Surcha rged
SW1.005	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	MH5	мн6	9.860	8.721	0.028	5.622	0.8	0.01	3.0	Surcha rged
SW3.001	FEH: 100 years: +40 %: 480 mins: Summer	Pipe	Block 1 PP	Highways RG (2)	9.993	8.926	0.309	0.001	0.0	0.02	3.2	Surcha rged
SW3.000	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 1 RG	Block 1 PP	10.013	9.303	0.353	2.391	0.5	0.17	48.0	Surcha rged
SW4.003	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	Block 2 RG.1	Highways RG (2)	9.641	8.350	0.001	0.005	0.0	0	0.0	ОК
SW5.000	FEH: 100 years: +40 %: 120 mins: Summer	Pipe	Block 2 RG	Highways RG (2)	10.000	10.218	0.373	0.002	0.4	0.26	48.1	Surcha rged
SW4.000	FEH: 100 years: +40 %: 240 mins: Summer	Pipe	Block 3 Tank	Block 2 PP	9.782	9.420	0.375	31.158	1.4	1.28	159.4	Surcha rged
SW6.001	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	Block 10 RG	Site Pond	13.104	10.079	0.184	122.174	1.4	0.45	74.6	Surcha rged
SW6.003	FEH: 100 years: +40 %: 30 mins: Summer	Pipe	МНЗ	MH4	12.487	9.068	0.375	8.151	0.8	0.18	25.1	Surcha rged
SW6.004	FEH: 100 years: +40 %: 10080 mins: Winter	Pipe	MH4	Bioretenti on (10)	11.298	9.259	0.375	0.000	0.0	0.02	1.9	Surcha rged
SW7.000	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	Highways RG (1)	MH4	11.364	8.884	0.375	0.000	0.1	0.03	10.1	ОК
SW6.005	FEH: 100 years: +40 %: 10080 mins: Summer	Pipe	Bioretenti on (10)	Highways RG (2)	10.423	9.161	0.329	0.001	0.0	0.01	2.6	Surcha rged
SW2.000	FEH: 100 years: +40 %: 240 mins: Summer	Pipe	Block 4 PP	Block 4 Tank	11.737	9.582	0.240	23.048	0.2	0.02	8.2	ок
SW2.001	FEH: 100 years: +40 %: 15 mins: Winter	Pipe	Block 4 Tank	MH1	10.154	9.066	0.220	1.980	0.6	0.07	13.2	ок
SW6.002	FEH: 100 years: +40 %: 60 mins: Summer	Pipe	Site Pond	мнз	12.974	9.129	0.375	12.036	1.1	0.17	38.0	Surcha rged
SW6.000	FEH: 100 years: +40 %: 15 mins: Summer	Pipe	Highways RG	Block 10 RG	11.486	9.914	0.375	9.170	0.0	0	0.0	Surcha rged
SW4.001	FEH: 100 years: +40 %: 120 mins: Summer	Pipe	Block 2 PP	Block 2 Tank	18.750	8.724	0.375	69.068	2.2	0.58	73.3	ок

Project:		Date:						
Project Otter		23/10/2024						
Beehive Centre		Designed by:	Checked by:	Approved By	:	9		
Cambridge		GJ	CP	CP			~ 1	
Report Details:		Company Address:		•		/		
Type: Connections Summary		Waterman Group)			0.70	5	70
Storm Phase: Phase		Pickfords Wharf,	Clink Street, L	ondon				0
		SE1 9DG						
FFI1: 400								_
FEH: 100 years:	Block 2 B	lock 2					l	Surcha

SW4.002	+40 %: 10080 mins: Summer	Pipe	Block 2 Tank	Block 2 RG.1	17.557	9.883	0.375	0.000	0.0	0.02	1.7	Surcha rged



Statutory Authority Consultations Ï

Document Reference: WIE17469-110-R-1-1-4-FRADS_Project Otter Appendices
Railway Pensions Nominees Limited
Project Number: WIE17469-110





Pre-Planning Assessment Report

Beehive Centre

InFlow Reference: PPE-0211319

Assessment Type: Used Water

Report published: 05/08/2024







Thank you for submitting a pre-planning enquiry.

This has been produced for Waterman Infrastructure & Environment.

Your reference number is **PPE-0211319**.

This report can be submitted as a drainage strategy for the development should it seek planning permission.

If you have any questions upon receipt of this report, you can submit a further question via InFlow. Alternatively, please contact the Planning & Capacity team on **07929 786 955** or email planningliaison@anglianwater.co.uk

Section 1 - Proposed development

The response within this report has been based on the following information which was submitted as part of your application:

List of planned developments					
Type of development	No. Of units				
Business	5				

The anticipated residential build rate is:

Year	Y1
Build rate	5

Development type: Brownfield

Planning application status: Pending Consideration

Site grid reference number: TL4662258561

The comments contained within this report relate to the public water mains and sewers indicated on our records.

Your attention is drawn to the disclaimer in the useful information section of this report.

InFlow Ref: PPE-0211319

Section 2 - Assets affected

Our records indicate that we have the following types of assets within or overlapping the boundary of your development site as listed in the table below.

Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence. We are unable to permit development either over or within the easement strip without our prior consent. The extent of the easement is provided in the table below. Please be aware that the existing water mains/public sewers should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair and this should be taken into consideration when planning your site layout.

Water and Used water e		
Asset type	Pipe size (mm)	Total easement required (m)
Sewer mains	375	3.00 m either side of the centre line
Sewer mains	450	3.50 m either side of the centre line
Sewer mains	525	3.50 m either side of the centre line

If it is not possible to avoid our assets then these may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). You will need to make a formal application if you would like a diversion to be considered.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

Section 3 - Water recycling services

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and effluent quality arising from your development.

Water recycling centre

The foul drainage from this development is in the catchment of Cambridge Water Recycling Centre which currently does not have capacity to treat the flows from the development site. Anglian Water has applied to the Environment Agency for an interim new permit to address exceedance. Please note that it is Anglian Water responsibility to take the necessary steps to ensure there is capacity to accommodate the domestic flows from the proposed development.

Our long-term plans for Cambridge WRC are linked to the Cambridge relocation project and the Development Consent Order. The new Cambridge WRC will take all existing domestic flows from current Cambridge WRC and all flows from the future growth within the WRC catchment. We are working with Greater Cambridgeshire to understand the long-term growth figures, using the emerging local plan allocations and planning permissions. This allows us to design and deliver a new Cambridge WRC which can meet future demand.

Used water network

Our assessment has been based on development flows connecting to the nearest foul water sewer of the same size or greater pipe diameter to that required to drain the site. The infrastructure to convey foul water flows to the receiving sewerage network is assumed to be the responsibility of the developer. Conveyance to the connection point is considered as Onsite Work and includes all work carried out upstream from of the point of connection, including making the connection to our existing network.

This connection point has been determined in reference to the calculated discharge flow and on this basis, a 200mm internal diameter pipe is required to drain the development site. We have assessed your preferred connection points is to the 450mm sewer in Coldhams lane and to the 300mm sewer in York Street.

The sewer in Coldhams Lane has been assessed at manhole MH7701 at National Grid reference (NGR) TL 46768 58720, the cover level is unavailable and the invert level is 8.14, and the sewer in York Street has been assessed at manhole MH4401 at NGR TL 46448 58470, the cover and invert levels for this manhole are unavailable in our asset record.

Anglian Water has assessed the impact of gravity flows from the planned development to the public foul sewerage network. We can confirm that this is acceptable as the foul sewerage system, at present, has available capacity for your site. Please note that Anglian Water will request a suitably worded condition at planning application stage to ensure this strategy is implemented to mitigate the risk of flooding.

It is assumed that the developer will provide the necessary infrastructure to convey flows from the site to the network. Consequently, this report does not include any costs for the conveyance of flows.

Surface water disposal

In principle, your proposed method of surface water disposal is acceptable to Anglian Water. It is our understanding that the evidence to confirm compliance with the surface water hierarchy is not available.

Once the evidence has been confirmed, then connection points may be made to the 525mm surface water sewer in York Street, downstream of manhole MH3652, at NGR TL 46426 58531 and to the 375mm surface water sewer in Coldhams Lane, downstream of manhole MH6751, at NGR TL 46629 58785. These connections may discharge at a total site wide rate of 7.1 litres per second (l/s).

Our assessment has been based on development flows connecting to the nearest surface water sewer of adequate size to drain the proposed development. It is your responsibility to provide the evidence to confirm that all alternative methods of surface water disposal have been explored and these will be required before your connection can be agreed.

This is subject to satisfactory evidence which shows the surface water management hierarchy as outlined in Building Regulations Part H has been explored. This would encompass the results from the site specific infiltration testing and/or confirmation that the flows cannot be discharged to a watercourse. Anglian Water's surface water policy follows the Surface Water hierarchy, outlined in Part H of the Building Regulations. Should your assumptions or evidence change then an alternative solution, connection point or flow rate may be required. You are therefore advised to update Anglian Water with the key supporting evidence at your earliest convenience.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website. We will adopt features located in public open space that are designed and constructed, in conjunction with the Local Authority and Lead Local Flood Authority (LLFA), to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

- 1. Effective upstream source control,
- 2. Effective exceedance design, and
- 3. Effective maintenance schedule demonstrating than the assets can be maintained both now and in the future with adequate access.

If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website

Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

Used Water Budget Costs

Your development site will be required to pay an Infrastructure charge for each new property connecting to the public water and sewerage network that benefits from Full planning permission. The infrastructure charge replaces the zonal charge as previously identified.

You will be required to pay an infrastructure charge upon connection for each new plot on your development site. The infrastructure charge are types of charges set out in Section 146(2) of the Water Industry Act 1991.

The charge should be paid by anyone who wishes to build or develop a property and is payable upon request of connection.

• The Infrastructure Charge is based on the cost of any reinforcement and upgrades to our existing network ("Network Reinforcements"), whether designed to address strategic or local capacity issues. For more information on our Infrastructure Charge, please see the 'Useful Information' section of this report.

Infrastructure charges are raised on a standard basis of one charge per new connection (one for water and one for sewerage).

The Water Recycling Infrastructure charge for your dwellings is:

Infrastructure charge	Number of units	Total
£ To be Confirmed (TBC)	5	£TBC

Please note that you should also budget for infrastructure charges on non-household premises where applicable and these will be calculated according to the number and type of water fittings in the premises. This is called the "relevant multiplier" method of calculating the charge and the relevant multiplier will be applied to the figures set out in our 2024-25 Developer Charging Arrangements to arrive at the amount payable. Details of the relevant multiplier for each fitting can be found on our website.

Section 4 – Points of Connection



Figure 1 – Showing your water recycling foul points of connection



Figure 2 – Showing your water recycling surface water points of connection

Section 5 - Useful information

Water Industry Act - Key used water sections

Section 98:

This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

Section 102:

This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.

Section 104:

This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.

Section 106:

This provides you with the right to have your constructed sewer connected to the public sewer.

Section 185

This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our website or via our Development Services team on **0345 60 66 087**.

Sustainable drainage systems

Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are not resilient to climate change in the long term.

Our preferred method of surface water disposal is through the use of Sustainable Drainage Systems or SuDS.

SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website

We recommend that you contact the Local Authority and Lead Local Flood Authority (LLFA) for your site to discuss your application.

Private sewer transfers

Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

Surface water sewers and lateral drains that do not discharge to the public sewer, e.g. those that discharged to a watercourse.

Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.

Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

It is anticipated that all new sewer applications will need to have an approved Section 104 application ahead of a Section 106 connection

InFlow Ref: PPE-0211319

Encroachment

Anglian Water operates a risk based approach to development encroaching close to our used water infrastructure. We assess the issue of encroachment if you are planning to build within 400 metres of a water recycling centre or, within 15 metres to 100 metres of a pumping station. We have more information available on our website

Locating our assets

Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from digdat

All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge.

We have more information on our website

Charging arrangements

Our charging arrangements and summary for this year's water and used water connection and infrastructure charges can be found on our website

Section 6 - Disclaimer

The information provided in this report is based on data currently held by Anglian Water Services Limited ('Anglian Water') or provided by a third party. Accordingly, the information in this report is provided with no guarantee of accuracy, timeliness, completeness and is without indemnity or warranty of any kind (express or implied).

This report should not be considered in isolation and does not nullify the need for the enquirer to make additional appropriate searches, inspections and enquiries. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework ('NPPF') and any infrastructure needs identified in this report must be considered in the context of current, adopted and/or emerging local plans. Where local plans are absent, silent or have expired these needs should be considered against the definition of sustainability holistically as set out in the NPPF.

Whilst the information in this report is based on the presumption that proposed development obtains planning permission, nothing in this report confirms that planning permission will be granted or that Anglian Water will be bound to carry out the works/proposals contained within this report.

No liability whatsoever, including liability for negligence is accepted by Anglian Water or its partners, employees or agents, for any error or omission, or for the results obtained from the use of this report and/or its content.

Furthermore, in no event will any of those parties be liable to the applicant or any third party for any decision made or action taken as a result of reliance on this report.

This report is valid from the date issued and the enquirer is advised to resubmit their request for an up to date report should there be a delay in submitting any subsequent application for water supply/sewer connection(s). Our pre-planning reports are valid for 12 months, however please note Anglian Water cannot reserve capacity and available capacity in our network can be reduced at any time due to increased requirements from existing businesses and houses as well as from new housing and new commercial developments.

My ref: FR/23-000387 Your ref: 23/03204/OUT Date: 04/09/2023 Doc no: 201109611

Doc no: 201109611
Officer: Jessica Gething

E Mail: Jessica.Gething@cambridgeshire.gov.uk

Cuma Ahmet South Cambridgeshire Hall Cambourne Business Park Cambourne Cambridge CB23 6EA



Executive Director: Frank Jordan
Place and Sustainability
Historic & Natural Environment

New Shire Hall Emery Crescent Enterprise Campus Alconbury Weald PE28 4YE

Proposal: Outline application (with all matters reserved) for the demolition of existing buildings and structures and redevelopment of the site for a new local centre (E (a-f), F1(b-f), F2(b,d)), open space and employment (office and laboratory) floorspace (E(g)(i)(ii) to the ground floor and employment floorspace (office and laboratory) (E(g)(i)(ii) to the upper floors, along with supporting infrastructure, including pedestrian and cycle routes, vehicular access, car and cycle parking, servicing areas, landscaping and utilities. (The Development is the subject of an Environmental Impact Assessment)

Beehive Centre Coldhams Lane Cambridge CB1 3ET Cambridgeshire

Comments from Lead Local Flood Authority (LLFA)

Dear Cuma,

Thank you for your consultation which we received on 24th August 2023.

At present we **object** to the grant of planning permission for the following reasons:

1. Hydraulic calculations

The applicant has provided hydraulic modelling for the proposed impermeable areas across the site. It is noted that the Cv values for the winter and summer storms have been input as 0.84 and 0.75 respectively. However, as the modelling is for the impermeable area, these values should be set to 1 to account for the total runoff during storm events.

In accordance with the <u>latest climate change peak rainfall intensity allowances</u>, a climate change allowance should be incorporated into the surface water management scheme for the 3.3% annual exceedance probability rainfall event. The allowance used should be based on the lifetime of the development and therefore should include a 35% climate change allowance on the 3.3% AEP hydraulic calculations.



2. Exceedance flow paths

In the event of blockage, exceedance flow paths need to include flood volumes, depths, velocities, and extents, these should be mapped onto a topographical plan of the site. Levels on the topographical plan should represent the post-development situation.

3. Inappropriate discharge rate

The proposed discharge rate of 82.2 l/s is excessive when compared to greenfield runoff rate of 36.6 l/s. As outlined in paragraph 6.3.8 of the SPD, brownfield (previously developed land) sites must reduce the existing runoff from the site as part of the redevelopment. Where possible, to provide betterment, redevelopments should look to reinstate greenfield runoff rates.

4. Sewer undertaker consent required

The applicant plans to discharge surface water from the site into an existing Private surface water network then into an existing Anglian Water surface water network. However, an 'in-principle' agreement from the sewer undertaker is required to discharge into their system at an agreed rate.

Informatives

Signage

Appropriate signage should be used in multi-function open space areas that would normally be used for recreation but infrequently can flood during extreme events. The signage should clearly explain the use of such areas for flood control and recreation. It should be fully visible so that infrequent flood inundation does not cause alarm. Signage should not be used as a replacement for appropriate design.

Green Roofs

All green roofs should be designed, constructed and maintained in line with the CIRIA SuDS Manual (C753) and the Green Roof Code (GRO).

Pollution Control

Surface water and groundwater bodies are highly vulnerable to pollution and the impact of construction activities. It is essential that the risk of pollution (particularly during the construction phase) is considered and mitigated appropriately. It is important to remember that flow within the watercourse is likely to vary by season and it could be dry at certain times throughout the year. Dry watercourses should not be overlooked as these watercourses may flow or even flood following heavy rainfall.

Assistance For Developers

Cambridgeshire County Council has a surface water guidance document which is available to <u>view here</u>. This document provides checklists and templates to help ensure you include sufficient information within your drainage strategies. Following this guidance will help reduce the risk of an objection which can hold up a planning application.



• We also offer a <u>pre-application service</u> which enables you to discuss your drainage proposals with the LLFA Officers prior to submission of a formal application.

Yours sincerely,

H Tandy

Hilary Tandy Flood Risk Business Manager

If you have any queries regarding this application, please contact the Officer named at the <u>top</u> of this letter (contact details are above).

Please note: We are reliant on the accuracy and completeness of the reports in undertaking our review and can take no responsibility for incorrect data or interpretation made by the authors.



LLFA Surface Water Drainage Pro-Forma

Document Reference: WIE17469-110-R-1-1-4-FRADS_Project Otter Appendices
Railway Pensions Nominees Limited
Project Number: WIE17469-110



4.2 Outline Applications

4.2.1 Further detail has been provided on some items within this table. They are provided later in the document or can be accessed by clicking on the hyperlinks.

	Outline	(ü)
1	Type of development (e.g. new development, extension to existing development, change of use)	Section 1 Section 3
2	Status of site (i.e. greenfield or previously developed)	Section 1
3	Total site area (ha)	Section 1.4
4	Existing impermeable area (ha)	Section 6.12
5	Proposed impermeable area / developable area (ha) (including an allowance for urban creep)	Section 6.2
6	Description of site topography	Section 1.6
7	Identification of watercourses within vicinity of site and their outfalls and associated flood risk	Section 1.9
8	Description of ground conditions (using site investigation reports where available) including information regarding geology and groundwater depth	Section 1.11
9	Identification of any surface water flood risk	Section 4.5
10	Existing site drainage arrangements	Section 6.1
11	Proposed method of surface water disposal (using drainage hierarchy) & supporting evidence	Section 6.16
12	Existing runoff rates (I/s/ha)	Section 6.12
13	Proposed runoff rates (I/s/ha)	Section 6.27
14	Existing runoff volumes (m³/ha)	Appendix E
15	Proposed runoff volumes (m³/ha)	Appendix G
16	Required volume of attenuation (m³ per m² of impermeable area)	Table 8
17	Appropriate consideration of climate change	Section 2.0
18	Preliminary SuDS proposals (type, location, size)	Appendix F
19	Infiltration test results in accordance with BRE365 (if proposing infiltration) or second viable option for surface water disposal if testing has not been undertaken	<u>nd</u>
20	Water Quality	Section 7
21	Evidence of in principle agreement from third party if discharging into their system	Section 11



22	Preliminary site layout plans (including SuDS features)	Appendix F
23	Details of proposed phasing (if applicable) and how each phase will be delivered in relation to the strategic surface water drainage strategy	Section 9.0

4.3 Full Applications

4.3.1 Further detail has been provided on some items within this table. They are provided later in the document or can be accessed by clicking on the hyperlinks.

	Full	(ü)
1	Type of development (e.g. new development, extension to existing development, change of use etc.)	
2	Status of site (i.e. greenfield or previously developed)	
3	Total site area (ha)	
4	Existing impermeable area (ha)	
5	Proposed impermeable area / developable area (ha) (including an allowance for urban creep)	
6	Description of site topography	
7	Identification of watercourses within vicinity of site and their outfalls and associated flood risk	
8	Description of ground conditions (using site investigation reports where available) including information regarding geology and groundwater depth	
9	Identification of any surface water flood risk & proposed mitigation	
10	Existing site drainage arrangements	
11	Proposed method of surface water disposal (using drainage hierarchy) & supporting evidence	
12	Existing runoff rates (I/s/ha)	
13	Proposed runoff rates (I/s/ha)	
14	Existing runoff volumes (m³/ha)	
15	Proposed runoff volumes (m³/ha)	
16	Total required volume of attenuation (m³)	
17	Appropriate consideration of climate change	
18	SuDS proposals (type, location, size)	
19	Infiltration test results in accordance with BRE365 (if proposing infiltration) or second viable option for surface water disposal if testing has not been undertaken	

UK and Ireland Office Locations

