DBFL Consulting Engineers							
Ormond House	MCC Offices						
Upper Ormond Quay	Network Analysis						
Dublin 7	Catchment 1A	Mirro					
Date 14/04/2023	Designed by KMM	Drainage					
File 220084_Surface water Ne	Checked by JPC	Dialilade					
Innovyze	Network 2020.1						

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	МН Туре
S1.000	S17	225	0.726	2.234	Unclassified	1200	0	0.726	Unclassified
S1.001	S16	225	2.234	2.396	Unclassified	1200	0	2.234	Unclassified
S1.002	S15	225	1.362	2.396	Unclassified	1200	0	2.396	Unclassified
S1.003	S14	225	1.362	1.362	Unclassified	1200	0	1.362	Unclassified

Free Flowing Outfall Details for Storm

Outfall	Outfall	c.	Level	I.	Level		Min	D,L	W
Pipe Number	Name		(m)		(m)	I.	Level	(mm)	(mm)
							(m)		

S1.003 S00 NaN 53.611 53.244 0 0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow 0.000
Areal Reduction Factor	1.000	MADD Factor * 10m3/ha Storage 2.000
Hot Start (mins)	0	Inlet Coefficient 0.800
Hot Start Level (mm)	0	Flow per Person per Day (1/per/day) 0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins) 60
Foul Sewage per hectare (1/s)	0.000	Output Interval (mins) 1

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

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type Summer
Return Period (years)	100	Cv (Summer) 0.750
Region	Scotland and Ireland	Cv (Winter) 0.840
M5-60 (mm)	16.100	Storm Duration (mins) 30
Ratio R	0.271	

DBFL Consulting Engineers							
Ormond House	MCC Offices						
Upper Ormond Quay	Network Analysis						
Dublin 7	Catchment 1A	Micro					
Date 14/04/2023		Drainage					
File 220084_Surface water Ne	Checked by JPC	Dialilade					
Innovyze	Network 2020.1						

Online Controls for Storm

Hydro-Brake® Optimum Manhole: S14, DS/PN: S1.003, Volume (m³): 2.2

Unit Reference MD-SHE-0070-2000-0800-2000 0.800 Design Head (m) Design Flow (1/s) 2.0 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 70 Invert Level (m) 54.263 Minimum Outlet Pipe Diameter (mm) 100 Suggested Manhole Diameter (mm) 1200

 Control
 Points
 Head (m)
 Flow (1/s)

 Design Point (Calculated)
 0.800
 2.0

 Flush-Flo™
 0.240
 2.0

 Kick-Flo®
 0.504
 1.6

 Mean Flow over Head Range
 1.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m) F	flow (1/s)	Depth (m) Flo	ow (1/s)	Depth (m) Flow	(1/s)	Depth (m)	Flow (1/s)
0.100	1.8	1.200	2.4	3.000	3.7	7.000	5.5
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.2	8.000	5.8
0.400	1.9	1.800	2.9	4.500	4.4	8.500	6.0
0.500	1.6	2.000	3.0	5.000	4.7	9.000	6.2
0.600	1.8	2.200	3.2	5.500	4.9	9.500	6.3
0.800	2.0	2.400	3.3	6.000	5.1		
1.000	2.2	2.600	3.4	6.500	5.3		

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Upper Ormond Quay	Network Analysis	
Dublin 7	Catchment 1A	Micro
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File 220084_Surface water Ne	Checked by JPC	Dialilade
Innovyze	Network 2020.1	

Storage Structures for Storm

Cellular Storage Manhole: S14, DS/PN: S1.003

Invert Level (m) 52.850 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00 Infiltration Coefficient Side (m/hr) 0.00000

Depth	(m)	Area	(m²)	Inf.	Area	(m²)	Depth	(m)	Area	(m²)	Inf.	Area	(m²)
0.	000		85.0			0.0	1.	.001		0.0			0.0
1.	000		85.0			0.0							

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Ormond House	MCC Offices	
Upper Ormond Quay	Network Analysis	
Dublin 7	Catchment 1A	Micro
Date 14/04/2023	Designed by KMM	Drainage
File 220084_Surface water Ne	Checked by JPC	Dialilade
Innovyze	Network 2020.1	

$\frac{\text{1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)}}{\text{for Storm}}$

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * $10m^3$ /ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.271 Region Scotland and Ireland Cv (Summer) 0.750 M5-60 (mm) 16.100 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440, 2160, 2880, 4320, 5760,
7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 20, 20, 20

									Water	Surcharged	Flooded	
	US/MH							US/CL	Level	Depth	Volume	Flow /
PN	Name			1	Event			(m)	(m)	(m)	(m³)	Cap.
S1.000	S17	15	minute	1	year	Winter	I+20%	55.697	54.840	-0.131	0.000	0.34
S1.001	S16	15	minute	1	year	Winter	I+20%	56.844	54.523	-0.087	0.000	0.69
S1.002	S15	15	minute	1	year	Winter	I+20%	56.942	54.460	-0.086	0.000	0.70
S1.003	S14	7200	minute	1	year	Winter	I+20%	55.850	54.301	-0.187	0.000	0.01

PN	US/MH Name	Overflow (1/s)	Maximum Vol (m³)	Pipe Flow (1/s)	Status
S1.000	S17		0.101	11.9	OK
S1.001	S16		0.474	21.7	OK
S1.002	S15		0.356	21.8	OK
S1.003	S14		86.735	0.6	OK

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Ormond House	MCC Offices	
Upper Ormond Quay	Network Analysis	
Dublin 7	Catchment 1A	Micro
Date 14/04/2023	Designed by KMM	Drainage
File 220084_Surface water Ne	Checked by JPC	Dialilade
Innovyze	Network 2020.1	

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * $10m^3$ /ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000 Foul Sewage per hectare (1/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.271 Region Scotland and Ireland Cv (Summer) 0.750 M5-60 (mm) 16.100 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF Analysis Timestep Fine Inertia Status OFF DTS Status ON

Profile(s)
Duration(s) (mins)

15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Period(s) (years)
Climate Change (%)

Summer and Winter
15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

1, 30, 100
20, 20, 20

										Surcharged		,
	US/MH							US/CL	Level	Depth		Flow /
PN	Name			E	vent			(m)	(m)	(m)	(m³)	Cap.
S1.000	S17	2160	minute	30	year	Winter	I+20%	55.697	55.116	0.145	0.000	0.05
S1.001	S16	2160	minute	30	year	Winter	I+20%	56.844	55.364	0.754	0.000	0.12
S1.002	S15	2160	minute	30	year	Winter	I+20%	56.942	55.502	0.956	0.000	0.10
S1.003	S14	2160	minute	30	year	Winter	I+20%	55.850	55.633	1.145	0.307	0.02

PN	US/MH Name	Overflow (1/s)	Maximum Vol (m³)	Pipe Flow (1/s)	Status
S1.000	S17		0.413	1.8	SURCHARGED
S1.001	S16		3.923	3.9	SURCHARGED
S1.002	S15		1.790	3.2	SURCHARGED
S1.003	S14		88.585	2.1	FLOOD