

70 Ringley Road, Manchester: Surface water model 001 100 year + 40% 77272- Calculations	Date: 11/06/2024			BACE
	Designed by: Ben Daykin	Checked by:	Approved By:	
Report Details:	BACE:			
Type: Manhole Schedule Storm Phase: Phase	Benjamin Allen Consulting Engineers info@benjaminallen-ce.co.uk Toll Bar House Business centre - DE7 5FH			

Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole	107.600 107.050	Diameter / Length: 0.460					Manhole
E:14802709.851	0.550						
N:12850333.023			{a} 1.000	Pipe	107.050	Diam/Width:100	Not Applicable
Manhole (1)	107.500 106.800	Diameter / Length: 0.460	{1} 1.000	Pipe	106.800	Diam/Width:100	Manhole
E:14802711.930	0.700						
N:12850319.404			{a} 1.001	Pipe	106.800	Diam/Width:100	Not Applicable
Manhole (2)	107.600 106.700	Diameter / Length: 0.460	{1} 1.001	Pipe	106.700	Diam/Width:100	Manhole
E:14802704.260	0.900		{2} 2.000	Pipe	106.700	Diam/Width:100	
N:12850318.186			{a} 1.002	Pipe	106.700	Diam/Width:100	Not Applicable
Manhole (3)	107.600 106.600	Diameter / Length: 0.460	{1} 1.002	Pipe	106.600	Diam/Width:100	Manhole
E:14802697.236	1.000		{2} 3.000	Pipe	106.600	Diam/Width:100	
N:12850317.182			{a} 1.003	Pipe	106.600	Diam/Width:100	Not Applicable

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Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (4)	107.600 106.500	Diameter / Length: 0.460	{1} 1.003	Pipe	106.500	Diam/Width:100	Manhole
E:14802690.212	1.100		{2} 4.000	Pipe	106.500	Diam/Width:100	
N:12850316.107			{a} 1.004	Pipe	106.500	Diam/Width:150	Not Applicable
Manhole (5)	107.600 106.400	Diameter / Length: 0.460	{1} 1.004	Pipe	106.400	Diam/Width:150	Manhole
E:14802683.331	1.200		{2} 5.000	Pipe	106.400	Diam/Width:100	
N:12850315.032			{3} 6.001	Pipe	106.400	Diam/Width:100	
			{a} 1.005	Pipe	106.400	Diam/Width:150	Not Applicable
Manhole (6)	107.500 106.200	Diameter / Length: 1.200	{1} 1.005	Pipe	106.200	Diam/Width:150	Manhole
E:14802684.263	1.300		{2} Pipe	Pipe	106.200	Diam/Width:100	
N:12850307.434			{a} 1.006	Pipe	106.200	Diam/Width:150	Not Applicable
Manhole (7)	107.600 106.000	Diameter / Length: 1.200	{1} 1.006	Pipe	106.000	Diam/Width:150	Manhole
E:14802676.808	1.600						
N:12850304.997							Not Applicable

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Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (8)	107.600 107.000	Diameter / Length: 0.460					Manhole
E:14802702.468	0.600						
N:12850333.094			{a} 2.000	Pipe	107.000	Diam/Width:100	Not Applicable
Manhole (9)	107.600 107.000	Diameter / Length: 0.460					Manhole
E:14802695.122	0.600						
N:12850333.192			{a} 3.000	Pipe	107.000	Diam/Width:100	Not Applicable
Manhole (10)	107.600 107.000	Diameter / Length: 0.460					Manhole
E:14802688.151	0.600						
N:12850332.021			{a} 4.000	Pipe	107.000	Diam/Width:100	Not Applicable
Manhole (11)	107.600 106.900	Diameter / Length: 0.460					Manhole
E:14802681.291	0.700						
N:12850329.009			{a} 5.000	Pipe	106.900	Diam/Width:100	Not Applicable
Manhole (12)	107.600 107.000	Diameter / Length: 0.460					Manhole
E:14802674.655	0.600						
N:12850327.949			{a} 6.000	Pipe	107.000	Diam/Width:100	Not Applicable

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Name	Cover Level (m) Invert Level (m)	Manhole Size (m)	Connection Details				Type
Coordinates (m)	Depth (m)		Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (13)	107.600 106.800	Diameter / Length: 0.460	{1} 6.000	Pipe	106.800	Diam/Width:100	Manhole
E:14802676.997	0.800						
N:12850314.063				{a} 6.001	Pipe	106.800	Diam/Width:100

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Report Details: Type: Inflow Summary Storm Phase: Phase	BACE: Benjamin Allen Consulting Engineers info@benjaminallen-ce.co.uk Toll Bar House Business centre - DE7 5FH			

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Manhole (1)		Time of Concentration	0.007	100	10	110	0.008
Catchment Area (1)	Manhole (2)		Time of Concentration	0.009	100	10	110	0.010
Catchment Area (2)	Manhole (3)		Time of Concentration	0.009	100	10	110	0.010
Catchment Area (3)	Manhole (4)		Time of Concentration	0.009	100	10	110	0.010
Catchment Area (4)	Manhole (13)		Time of Concentration	0.007	100	10	110	0.008
Catchment Area (5)	Manhole (6)		Time of Concentration	0.035	100	10	110	0.038
TOTAL		0.0		0.075				0.083

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Report Details: Type: Network Design Criteria Storm Phase: Phase	BACE: Benjamin Allen Consulting Engineers info@benjaminallen-ce.co.uk Toll Bar House Business centre - DE7 5FH			

Flow Options

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

FSR - Ringley Rod

Type: FSR

Return Period (years)	1.0
Region	England And Wales
M5-60 (mm)	18.0
Ratio R	0.357

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	0.450
Min. Slope (1:X)	500.00
Max. Slope (1:X)	10.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Pipe Size Library

Default

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

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

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Manhole Options

Apply Offset

☐

Manhole Size Library

Default

Diameter / Width

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

Additional Sizing

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

Depth

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

Access

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

Benching Requirements

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

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Report Title: Rainfall Analysis Criteria	BACE: Benjamin Allen Consulting Engineers info@benjaminallen-ce.co.uk Toll Bar House Business centre - DE7 5FH			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	10
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall		
FSR - Ringley Rod		Type: FSR
Region	England And Wales	
M5-60 (mm)	18.0	
Ratio R	0.357	
Summer	☒	
Winter	☒	

Return Period	
Return Period (years)	Increase Rainfall (%)
1.0	0.000
30.0	0.000
100.0	40.000

Storm Durations	
Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400

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Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Ben Daykin			
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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. Residant Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Tank	FSR - Ringley Rod: 100 years: +40 %: 480 mins: Winter	106.777	106.777	0.577	0.577	4.5	41.861	0.000	0.000	0.8	20.390	18.368	OK

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Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
1.000	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole	Manhole (1)	107.600	107.494	0.100	0.000	0.1	0.13	1.0	Flood Risk
1.001	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (1)	Manhole (2)	107.500	107.493	0.100	1.963	0.5	0.31	2.1	Flood Risk
1.002	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (2)	Manhole (3)	107.600	107.488	0.100	4.343	0.7	0.59	4.2	Flood Risk
1.003	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (3)	Manhole (4)	107.600	107.469	0.100	6.707	0.8	0.9	6.4	Flood Risk
1.004	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (4)	Manhole (5)	107.600	107.421	0.150	9.037	0.5	0.41	8.8	Flood Risk
1.005	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (5)	Manhole (6)	107.600	107.405	0.150	10.686	0.8	0.46	13.4	Flood Risk
1.006	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (6)	Manhole (7)	107.500	107.370	0.020	1.497	0.8	0.04	1.1	Flood Risk
2.000	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (8)	Manhole (2)	107.600	107.490	0.100	0.000	0.1	0.12	1.0	Flood Risk
3.000	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (9)	Manhole (3)	107.600	107.471	0.100	0.000	0.1	0.11	1.1	Flood Risk
4.000	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (10)	Manhole (4)	107.600	107.423	0.100	0.000	0.1	0.11	1.1	Flood Risk
5.000	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (11)	Manhole (5)	107.600	107.408	0.100	0.000	0.1	0.1	1.1	Flood Risk

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6.000	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (12)	Manhole (13)	107.600	107.417	0.100	0.000	0.1	0.16	1.1	Flood Risk
6.001	FSR - Ringley Rod: 100 years: +40 %: 15 mins: Winter	Pipe	Manhole (13)	Manhole (5)	107.600	107.415	0.100	1.896	0.3	0.15	2.3	Flood Risk
Pipe	FSR - Ringley Rod: 100 years: +40 %: 30 mins: Winter	Pipe	Tank	Manhole (6)	107.400	106.537	0.100	0.000	0.1	0.16	0.9	Surch arged