

From: [Stephen McCann](#)
To: [Sean Whelan](#)
Cc: [Sharon Hill L](#)
Subject: RE: Flood risk information for Rochdale Sixth Form College,
Date: 03 August 2022 13:37:27
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.jpg](#)
[FRA by WYG.pdf](#)

Hello Sean,

There was an FRA done for the same college for a Planning ref. 17/01323/FUL which is available on the Planning Portal. For your convenience, I've appended it to this email.

The EA is engaged in a large scale flood alleviation scheme which started this year and will be completed in about 5 years time. This will reduce flood risk to the River Roch in the vicinity of the college. For more information on that issue, you'll need to contact the EA.

Stephen McCann

Drainage & Flooding Engineer
Highways, Property & Strategic Housing



☐ [01706 924606](tel:01706924606)

☐ [07552 570262](tel:07552570262)

☐ stephen.mccann@rochdale.gov.uk

Rochdale Borough Council
Floor 2, Number One Riverside
Smith Street, Rochdale, OL16 1XU

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For news, events and social media updates go to www.rochdale.gov.uk/newsandevents

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From: Sharon Hill L <Sharon.Hill@Rochdale.Gov.UK>
Sent: 03 August 2022 12:03
To: Stephen McCann <Stephen.McCann@Rochdale.Gov.UK>
Subject: FW: Flood risk information for Rochdale Sixth Form College,

Hi Stephen

Can you respond to the enquiry below please?

Regards

Sharon Hill L

Team Leader (Planning Support, Data & Innovation)
Planning & Development



☐ 01706 924305

☐ sharon.hill@rochdale.gov.uk

Rochdale Borough Council
Floor 3, Number One Riverside
Smith Street, Rochdale, OL16 1XU

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Please consider the environment before printing this email.

From: Sean Whelan <sean.whelan@watermangroup.com>

Sent: 03 August 2022 11:38

To: Development Management <development.management@rochdale.gov.uk>

Subject: Flood risk information for Rochdale Sixth Form College,

:CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good morning,

We have been instructed to undertake a flood risk assessment for proposed temporary classroom accommodation at Rochdale Sixth Form College, College Rd, Rochdale OL12 6HY – approximate Grid Reference is SD 89283 13258 or XY coordinates are (389283, 413258).

Please could you provide us with the following information:

- Records of historical flooding;
- Records of hidden or culverted watercourses in the area;
- Details of the functional floodplain extent;
- Any information on typical groundwater levels or records of groundwater flooding events in the area; and
- Any further flood risk information that may be applicable for the site.

I look forward to your response

Cheers,

Sean

Sean Whelan MCIWEM C.WEM CSci CEng

Senior Flood Risk Engineer

Waterman Infrastructure & Environment Ltd

Pickfords Wharf | Clink Street | London SE1 9DG

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Richard Ronksley
Principal/CEO
Rochdale Sixth Form College
Rochdale
OL12 6HY

Dear Richard,

Rochdale Sixth Form College - Post 16 Capacity Expansion Fund

I write further to our recent discussions regarding your plans to submit a funding bid for a new four-storey college building to accommodate future demographic growth.

The Council fully supports the expansion of the Sixth Form College which will complement our wider work to regenerate our Borough and provide residents with access to the skills and qualifications needed to support local economic growth. Rochdale Borough has an ambitious growth agenda. Our 2030 Growth Plan set out plans to develop 1 million m2 of new employment space, create 20,000 new jobs and 12,000 new homes to meet the needs of our young and growing population.

We have already invested up to £400m in Rochdale Town Centre within the last decade, with plans for up to 1500 new homes. A new retail and leisure complex Rochdale Riverside opened in April 2020 and plans approved for 240 homes and a 147-bedroom hotel as a second phase of the scheme. The Metrolink light rail network has been brought into the town centre alongside a new transport interchange and Number One Riverside office development. The restoration of Rochdale's magnificent Grade I listed Rochdale Town Hall is also underway surrounded by new public realm.

The role of centres is changing. The Council's Rochdale Town Centre vision promotes the delivery of a mix of uses to re-purpose the centre, increase footfall and vibrancy. Rochdale Sixth Form College is a key partner in this programme. We are working with Transport for Greater Manchester (TfGM) on complementary plans to improve pedestrian and cycle links into the Town Centre along St Mary's Gate and provide safe links between the transport interchange and college. These works are planned for completion by 2024.

I note the proposal will involve the development on part of the existing car park area with the retention of around 67 spaces on the site. There is abundant car parking elsewhere within Rochdale Town Centre with access to public transport and sustainable travel choices. I confirm the level of parking proposed within the scheme will not be an issue for the Council in granting a planning permission here.

Finally, the proposed expansion of the Sixth Form College is wholly in line with our vision and objectives for the town centre and wider Borough. The existing College building

was successfully delivered through the planning system and won several design wards locally. We therefore look forward to working in partnership again to deliver this exciting project.

Please let me know if you require anything further from the Council to support this bid.

Yours Sincerely

A handwritten signature in dark ink, appearing to read 'MR Robinson', with a stylized flourish at the end.

Mark Robinson
Assistant Director (Economy)



G. SW Calculations

Waterman Group		Page 1																																																																																																																																																																																																																																																																																																																																					
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<u>Summary of Results for 100 year Return Period (+45%)</u> Half Drain Time : 139 minutes. <table><tr><th>Storm Event</th><th>Max Level</th><th>Max Depth</th><th>Max Infiltration</th><th>Max Control</th><th>Max Overflow</th><th>Σ Outflow</th><th>Max Volume</th><th>Status</th></tr><tr><th></th><th>(m)</th><th>(m)</th><th>(l/s)</th><th>(l/s)</th><th>(l/s)</th><th>(l/s)</th><th>(m³)</th><th></th></tr><tr><td>15 min Summer</td><td>0.028</td><td>0.028</td><td>0.0</td><td>0.2</td><td>0.0</td><td>0.2</td><td>3.5</td><td>Flood Risk</td></tr><tr><td>30 min Summer</td><td>0.043</td><td>0.043</td><td>0.0</td><td>0.4</td><td>0.0</td><td>0.4</td><td>5.4</td><td>Flood Risk</td></tr><tr><td>60 min Summer</td><td>0.060</td><td>0.060</td><td>0.0</td><td>0.7</td><td>0.0</td><td>0.7</td><td>7.5</td><td>Flood Risk</td></tr><tr><td>120 min Summer</td><td>0.071</td><td>0.071</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>8.9</td><td>Flood Risk</td></tr><tr><td>180 min Summer</td><td>0.074</td><td>0.074</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>9.3</td><td>Flood Risk</td></tr><tr><td>240 min Summer</td><td>0.076</td><td>0.076</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>9.6</td><td>Flood Risk</td></tr><tr><td>360 min Summer</td><td>0.079</td><td>0.079</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>9.9</td><td>Flood Risk</td></tr><tr><td>480 min Summer</td><td>0.079</td><td>0.079</td><td>0.0</td><td>0.9</td><td>0.0</td><td>0.9</td><td>10.0</td><td>Flood Risk</td></tr><tr><td>600 min Summer</td><td>0.079</td><td>0.079</td><td>0.0</td><td>0.9</td><td>0.0</td><td>0.9</td><td>9.9</td><td>Flood Risk</td></tr><tr><td>720 min Summer</td><td>0.078</td><td>0.078</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>9.8</td><td>Flood Risk</td></tr><tr><td>960 min Summer</td><td>0.075</td><td>0.075</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>9.4</td><td>Flood Risk</td></tr><tr><td>1440 min Summer</td><td>0.068</td><td>0.068</td><td>0.0</td><td>0.8</td><td>0.0</td><td>0.8</td><td>8.5</td><td>Flood Risk</td></tr><tr><td>2160 min Summer</td><td>0.060</td><td>0.060</td><td>0.0</td><td>0.7</td><td>0.0</td><td>0.7</td><td>7.6</td><td>Flood Risk</td></tr><tr><td>2880 min Summer</td><td>0.055</td><td>0.055</td><td>0.0</td><td>0.6</td><td>0.0</td><td>0.6</td><td>6.9</td><td>Flood Risk</td></tr><tr><td>4320 min Summer</td><td>0.048</td><td>0.048</td><td>0.0</td><td>0.5</td><td>0.0</td><td>0.5</td><td>6.0</td><td>Flood Risk</td></tr><tr><td>5760 min Summer</td><td>0.043</td><td>0.043</td><td>0.0</td><td>0.4</td><td>0.0</td><td>0.4</td><td>5.4</td><td>Flood Risk</td></tr><tr><td>7200 min Summer</td><td>0.040</td><td>0.040</td><td>0.0</td><td>0.4</td><td>0.0</td><td>0.4</td><td>5.0</td><td>Flood Risk</td></tr><tr><td>8640 min Summer</td><td>0.037</td><td>0.037</td><td>0.0</td><td>0.3</td><td>0.0</td><td>0.3</td><td>4.6</td><td>Flood Risk</td></tr><tr><td>10080 min Summer</td><td>0.035</td><td>0.035</td><td>0.0</td><td>0.3</td><td>0.0</td><td>0.3</td><td>4.4</td><td>Flood Risk</td></tr><tr><td>15 min Winter</td><td>0.033</td><td>0.033</td><td>0.0</td><td>0.3</td><td>0.0</td><td>0.3</td><td>4.1</td><td>Flood Risk</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Overflow Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>130.195</td><td>0.0</td><td>3.7</td><td>0.0</td><td>70</td></tr><tr><td>30 min Summer</td><td>91.487</td><td>0.0</td><td>6.2</td><td>0.0</td><td>72</td></tr><tr><td>60 min Summer</td><td>61.498</td><td>0.0</td><td>9.5</td><td>0.0</td><td>86</td></tr><tr><td>120 min Summer</td><td>36.609</td><td>0.0</td><td>11.7</td><td>0.0</td><td>128</td></tr><tr><td>180 min Summer</td><td>27.084</td><td>0.0</td><td>13.2</td><td>0.0</td><td>166</td></tr><tr><td>240 min Summer</td><td>21.905</td><td>0.0</td><td>14.4</td><td>0.0</td><td>196</td></tr><tr><td>360 min Summer</td><td>16.293</td><td>0.0</td><td>16.3</td><td>0.0</td><td>260</td></tr><tr><td>480 min Summer</td><td>13.234</td><td>0.0</td><td>17.7</td><td>0.0</td><td>324</td></tr><tr><td>600 min Summer</td><td>11.274</td><td>0.0</td><td>19.0</td><td>0.0</td><td>388</td></tr><tr><td>720 min Summer</td><td>9.896</td><td>0.0</td><td>20.0</td><td>0.0</td><td>454</td></tr><tr><td>960 min Summer</td><td>8.061</td><td>0.0</td><td>21.8</td><td>0.0</td><td>580</td></tr><tr><td>1440 min Summer</td><td>6.042</td><td>0.0</td><td>24.4</td><td>0.0</td><td>826</td></tr><tr><td>2160 min Summer</td><td>4.586</td><td>0.0</td><td>28.0</td><td>0.0</td><td>1184</td></tr><tr><td>2880 min Summer</td><td>3.781</td><td>0.0</td><td>30.5</td><td>0.0</td><td>1540</td></tr><tr><td>4320 min Summer</td><td>2.866</td><td>0.0</td><td>34.0</td><td>0.0</td><td>2264</td></tr><tr><td>5760 min Summer</td><td>2.353</td><td>0.0</td><td>37.0</td><td>0.0</td><td>3000</td></tr><tr><td>7200 min Summer</td><td>2.025</td><td>0.0</td><td>39.1</td><td>0.0</td><td>3704</td></tr><tr><td>8640 min Summer</td><td>1.789</td><td>0.0</td><td>40.7</td><td>0.0</td><td>4432</td></tr><tr><td>10080 min Summer</td><td>1.609</td><td>0.0</td><td>41.9</td><td>0.0</td><td>5160</td></tr><tr><td>15 min Winter</td><td>130.195</td><td>0.0</td><td>4.4</td><td>0.0</td><td>68</td></tr></table>				Storm Event	Max Level	Max Depth	Max Infiltration	Max Control	Max Overflow	Σ Outflow	Max Volume	Status		(m)	(m)	(l/s)	(l/s)	(l/s)	(l/s)	(m³)		15 min Summer	0.028	0.028	0.0	0.2	0.0	0.2	3.5	Flood Risk	30 min Summer	0.043	0.043	0.0	0.4	0.0	0.4	5.4	Flood Risk	60 min Summer	0.060	0.060	0.0	0.7	0.0	0.7	7.5	Flood Risk	120 min Summer	0.071	0.071	0.0	0.8	0.0	0.8	8.9	Flood Risk	180 min Summer	0.074	0.074	0.0	0.8	0.0	0.8	9.3	Flood Risk	240 min Summer	0.076	0.076	0.0	0.8	0.0	0.8	9.6	Flood Risk	360 min 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8640 min Summer	0.037	0.037	0.0	0.3	0.0	0.3	4.6	Flood Risk																																																																																																																																																																																																																																																																																																																															
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15 min Winter	0.033	0.033	0.0	0.3	0.0	0.3	4.1	Flood Risk																																																																																																																																																																																																																																																																																																																															
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																																																																																																																																		
15 min Summer	130.195	0.0	3.7	0.0	70																																																																																																																																																																																																																																																																																																																																		
30 min Summer	91.487	0.0	6.2	0.0	72																																																																																																																																																																																																																																																																																																																																		
60 min Summer	61.498	0.0	9.5	0.0	86																																																																																																																																																																																																																																																																																																																																		
120 min Summer	36.609	0.0	11.7	0.0	128																																																																																																																																																																																																																																																																																																																																		
180 min Summer	27.084	0.0	13.2	0.0	166																																																																																																																																																																																																																																																																																																																																		
240 min Summer	21.905	0.0	14.4	0.0	196																																																																																																																																																																																																																																																																																																																																		
360 min Summer	16.293	0.0	16.3	0.0	260																																																																																																																																																																																																																																																																																																																																		
480 min Summer	13.234	0.0	17.7	0.0	324																																																																																																																																																																																																																																																																																																																																		
600 min Summer	11.274	0.0	19.0	0.0	388																																																																																																																																																																																																																																																																																																																																		
720 min Summer	9.896	0.0	20.0	0.0	454																																																																																																																																																																																																																																																																																																																																		
960 min Summer	8.061	0.0	21.8	0.0	580																																																																																																																																																																																																																																																																																																																																		
1440 min Summer	6.042	0.0	24.4	0.0	826																																																																																																																																																																																																																																																																																																																																		
2160 min Summer	4.586	0.0	28.0	0.0	1184																																																																																																																																																																																																																																																																																																																																		
2880 min Summer	3.781	0.0	30.5	0.0	1540																																																																																																																																																																																																																																																																																																																																		
4320 min Summer	2.866	0.0	34.0	0.0	2264																																																																																																																																																																																																																																																																																																																																		
5760 min Summer	2.353	0.0	37.0	0.0	3000																																																																																																																																																																																																																																																																																																																																		
7200 min Summer	2.025	0.0	39.1	0.0	3704																																																																																																																																																																																																																																																																																																																																		
8640 min Summer	1.789	0.0	40.7	0.0	4432																																																																																																																																																																																																																																																																																																																																		
10080 min Summer	1.609	0.0	41.9	0.0	5160																																																																																																																																																																																																																																																																																																																																		
15 min Winter	130.195	0.0	4.4	0.0	68																																																																																																																																																																																																																																																																																																																																		
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Pickfords Wharf Clink Street London, SE1 9DG								
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Innovyze	Source Control 2019.1							
<u>Summary of Results for 100 year Return Period (+45%)</u>								
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	0.049	0.049	0.0	0.5	0.0	0.5	6.2	Flood Risk
60 min Winter	0.069	0.069	0.0	0.8	0.0	0.8	8.6	Flood Risk
120 min Winter	0.081	0.081	0.0	0.9	0.0	0.9	10.2	Flood Risk
180 min Winter	0.085	0.085	0.0	0.9	0.0	0.9	10.7	Flood Risk
240 min Winter	0.086	0.086	0.0	0.9	0.0	0.9	10.8	Flood Risk
360 min Winter	0.087	0.087	0.0	0.9	0.0	0.9	10.9	Flood Risk
480 min Winter	0.086	0.086	0.0	0.9	0.0	0.9	10.7	Flood Risk
600 min Winter	0.083	0.083	0.0	0.9	0.0	0.9	10.4	Flood Risk
720 min Winter	0.080	0.080	0.0	0.9	0.0	0.9	10.1	Flood Risk
960 min Winter	0.074	0.074	0.0	0.8	0.0	0.8	9.3	Flood Risk
1440 min Winter	0.063	0.063	0.0	0.7	0.0	0.7	7.9	Flood Risk
2160 min Winter	0.054	0.054	0.0	0.6	0.0	0.6	6.8	Flood Risk
2880 min Winter	0.048	0.048	0.0	0.5	0.0	0.5	6.1	Flood Risk
4320 min Winter	0.041	0.041	0.0	0.4	0.0	0.4	5.1	Flood Risk
5760 min Winter	0.037	0.037	0.0	0.3	0.0	0.3	4.6	Flood Risk
7200 min Winter	0.034	0.034	0.0	0.3	0.0	0.3	4.2	Flood Risk
8640 min Winter	0.031	0.031	0.0	0.3	0.0	0.3	3.8	Flood Risk
10080 min Winter	0.028	0.028	0.0	0.2	0.0	0.2	3.6	Flood Risk
Storm Event		Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)		
30 min Winter		91.487	0.0	7.3	0.0	70		
60 min Winter		61.498	0.0	10.9	0.0	86		
120 min Winter		36.609	0.0	13.4	0.0	128		
180 min Winter		27.084	0.0	15.1	0.0	172		
240 min Winter		21.905	0.0	16.4	0.0	204		
360 min Winter		16.293	0.0	18.5	0.0	274		
480 min Winter		13.234	0.0	20.2	0.0	344		
600 min Winter		11.274	0.0	21.6	0.0	412		
720 min Winter		9.896	0.0	22.8	0.0	478		
960 min Winter		8.061	0.0	24.8	0.0	606		
1440 min Winter		6.042	0.0	27.8	0.0	852		
2160 min Winter		4.586	0.0	31.8	0.0	1204		
2880 min Winter		3.781	0.0	34.8	0.0	1576		
4320 min Winter		2.866	0.0	38.9	0.0	2292		
5760 min Winter		2.353	0.0	42.2	0.0	3000		
7200 min Winter		2.025	0.0	44.8	0.0	3744		
8640 min Winter		1.789	0.0	46.8	0.0	4496		
10080 min Winter		1.609	0.0	48.3	0.0	5256		
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Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 389294 413231 SD 89294 13231
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Green Roof

Area (m³)	257	Evaporation (mm/day)	3
Depression Storage (mm)	5	Decay Coefficient	0.050

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.004670	32 36	0.000943	64 68	0.000190	96 100	0.000038
4 8	0.003824	36 40	0.000772	68 72	0.000156	100 104	0.000031
8 12	0.003131	40 44	0.000632	72 76	0.000128	104 108	0.000026
12 16	0.002563	44 48	0.000517	76 80	0.000104	108 112	0.000021
16 20	0.002098	48 52	0.000424	80 84	0.000086	112 116	0.000017
20 24	0.001718	52 56	0.000347	84 88	0.000070	116 120	0.000014
24 28	0.001407	56 60	0.000284	88 92	0.000057		
28 32	0.001152	60 64	0.000233	92 96	0.000047		

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Model Details

Storage is Online Cover Level (m) 0.100

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	13.2
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	36.7	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.95	Evaporation (mm/day)	3
Invert Level (m)	0.000	Membrane Depth (m)	0

Orifice Outflow Control

Diameter (m) 0.041 Discharge Coefficient 0.600 Invert Level (m) 0.000

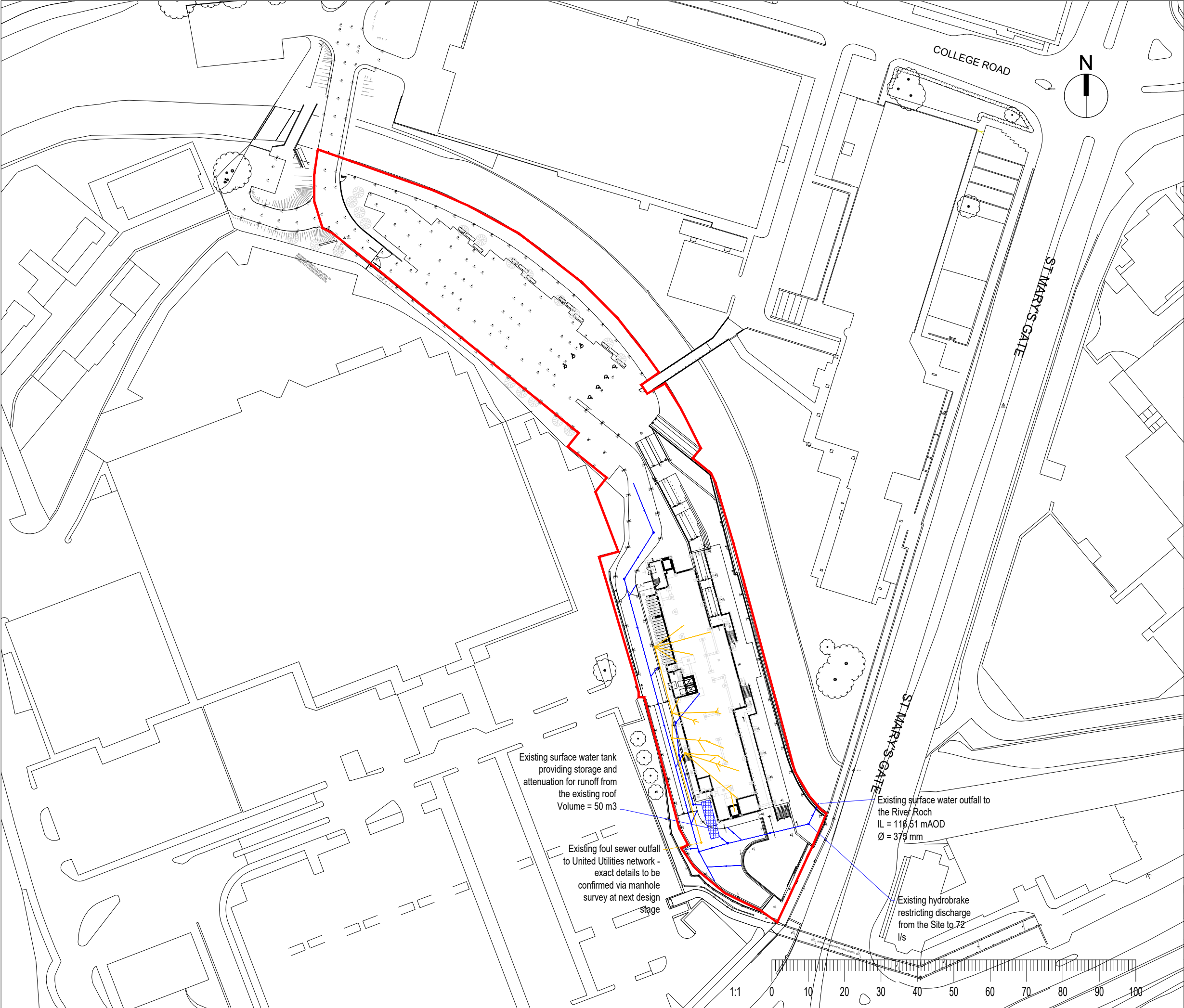
Weir Overflow Control

Discharge Coef 0.544 Width (m) 1.000 Invert Level (m) 0.100

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H. Drainage Strategy Drawing



- NOTES:
- 1) Existing drainage networks have been drawn indicatively based on the College's operation and maintenance drawing.
 - 2) The existing foul drainage connects into the United Utilities foul drainage network. Exact details are not known but will be confirmed at the next design stage.
 - 3) The existing surface water network is attenuated onsite in a surface water storage tank. The Site discharges directly to the River Roch, via a private outfall. Flows from the Site are restricted to 72 l/s.

- KEY:
- Attenuation Tank
 - Existing Foul Sewer
 - Existing Surface Water Sewer

P01	S1	03.11.22	First Issue	SW	BM
Status	Date	Description		By	Chk

Amendments

Project
Rochdale Sixth Form College

Title
Existing Site Layout

Client
Rochdale Sixth Form College

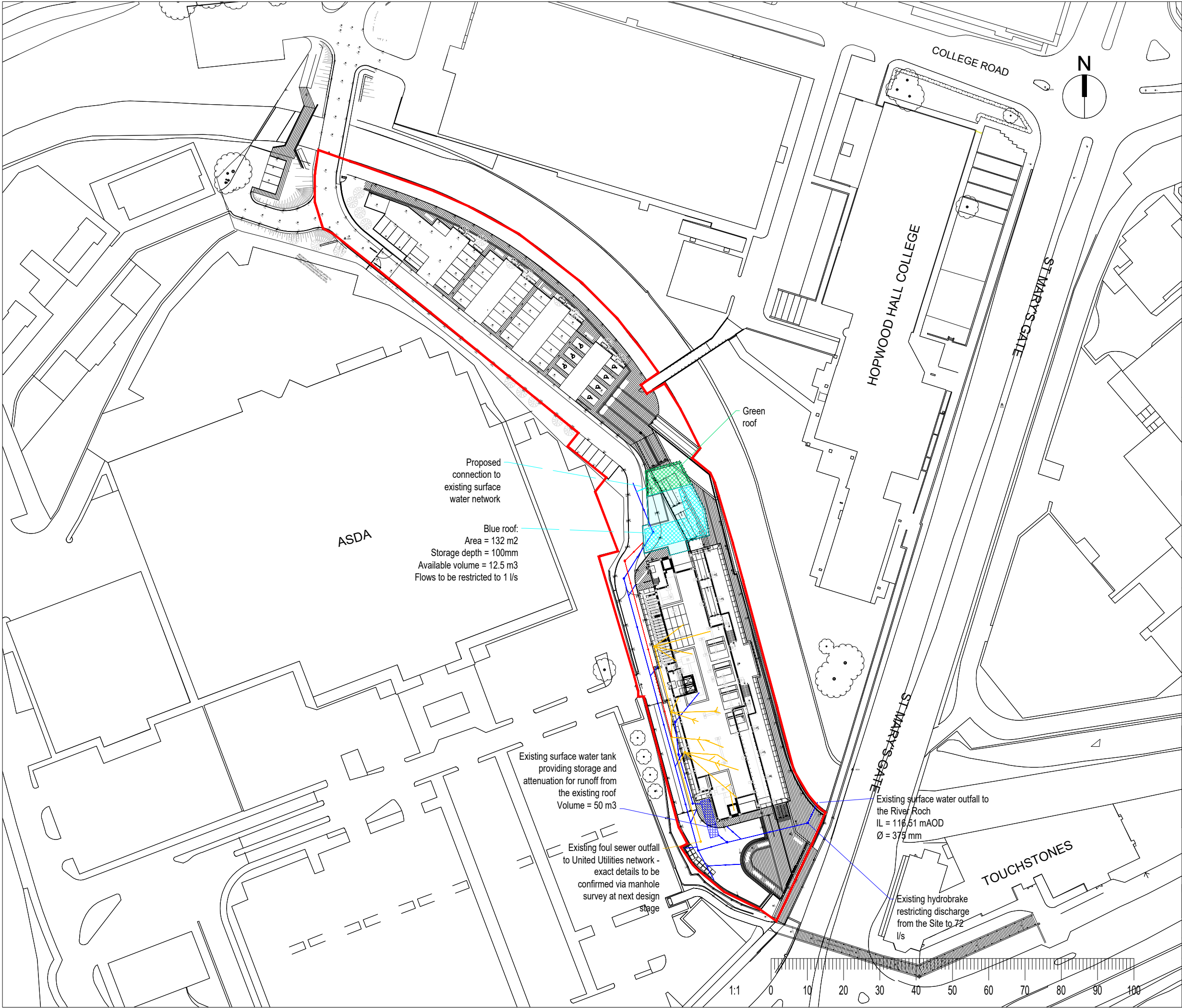


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Suitability
COORDINATION **S1**

Designed By	SW	Director	BM	Waterman Ref	L/Projec
Drawn By	SW	Date	03/11/2022	Scales @ A3	1:1000

Project - Originator - Volume - Level - Type - Role - Number					Revision
19085-WIE-ZZ-XX-DR-D-92001					P01



- NOTES:
- Existing drainage networks have been drawn indicatively based on the College's operation and maintenance drawing.
 - The existing foul drainage connects into the United Utilities foul drainage network. Exact details are not known but will be confirmed at the next design stage.
 - The existing surface water network is attenuated onsite in a surface water storage tank. The Site discharges directly to the River Roch, via a private outfall. Flows from the Site are restricted to 72 l/s.
 - The total roof area of the proposed extension will drain through blue and green roofs before discharging to the existing surface water sewer that runs adjacent to the building. Storage and attenuation via a blue roof at the roof level. Attenuation will be provided via a green roof in the terrace at the fifth floor level.

KEY:

	Roof Area draining to green roof
	Green Roof
	Roof area draining to blue roof
	Blue Roof
	Proposed Foul Sewer
	Proposed Surface Water Sewer
	Attenuation Tank
	Existing Foul Sewer
	Existing Surface Water Sewer

P01	S1	03.11.22	First Issue	SW	BM
Status	Date	Description		By	Chk

Amendments

Project	Rochdale Sixth Form College
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Title	Proposed Drainage Strategy
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Client	Rochdale Sixth Form College
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mail@watermangroup.com www.watermangroup.com	

Suitability	COORDINATION	S1
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Designed By	SW	Director	BM	Waterman Ref	L/Projec
Drawn By	SW	Date	03/11/2022	Scales @ A3	1:1000

Project - Originator - Volume - Level - Type - Role - Number	Revision
19085-WIE-ZZ-XX-DR-D-92002	P01

UK and Ireland Office Locations

