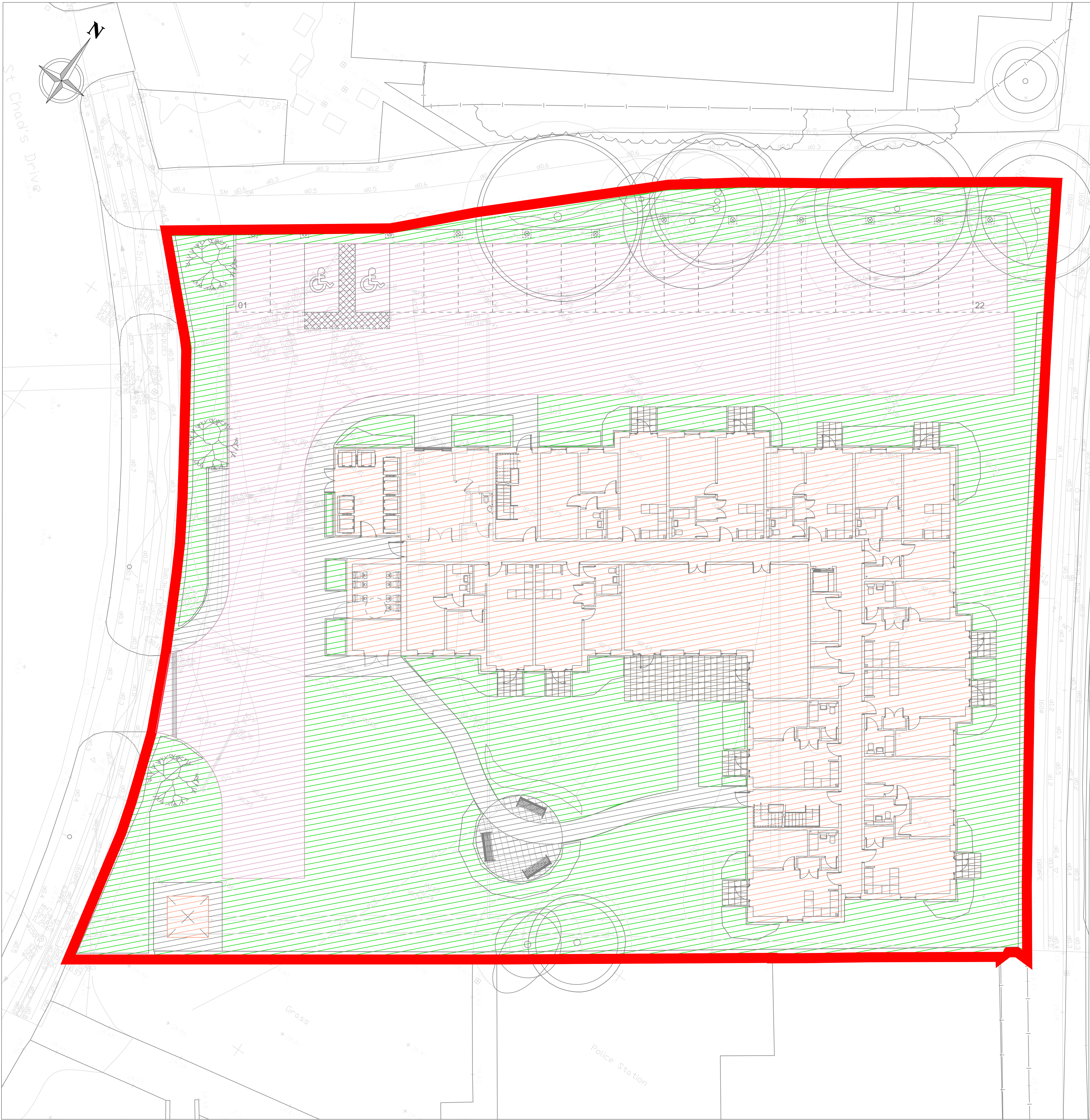


APPENDIX IX

Proposed Impermeable Area Layout



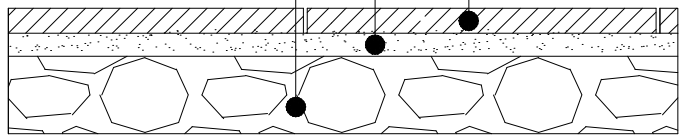
NOTES:

- 1) ACCESS ROAD & CAR PARK FORMATION TO BE PROOF ROLLED & ADDITIONAL CBR TESTS UNDERTAKEN
- 2) SUBBASE CAN BE REDUCED IN ACCORDANCE WITH TABLE 3 (NHBC 2020: CHAPTER 10) DEPENDENT ON RESULTS.

NHBC STANDARDS 2022: TABLE 3	
CBR VALUE	TYPE 1 ONLY
<2%	Subgrade requires improvement
2%-3%	325
3%-5%	250
5%-7%	150
7%-20%	100

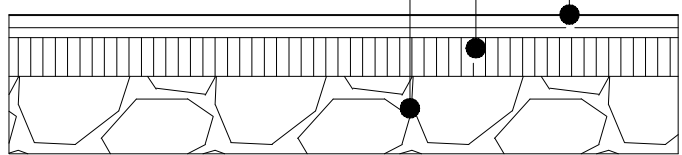
BUILD UPS TO BE READ IN CONJUNCTION WITH THE ARCHITECTS EXTERNAL WORKS PLAN.

450mm(W)x450mm(L)x32mm(D)
BUFF STACK BOND BROADWAY FLAGSTONE PAVING
BY BRETT (OR SIMILAR APPROVED)
25mm SAND BLINDING
100mm TYPE 1 TO MCHW1 800 SERIES



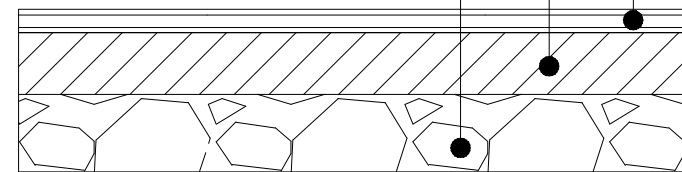
PRIVATE & COMMUNAL PATIO
SCALE: 1:10 @ A1

SURFACE COURSE -
30mm 0/6 DBM 100/150
BINDER COURSE -
50mm 0/20 DBM100/150
SUB-BASE -
100mm TYPE 1 TO MCHW VOLUME 1 CL. 801



BITUMINOUS FOOTPATH
SCALE: 1:10 @ A1

SURFACE COURSE -
30mm (SMA10 surf 40/60)
BASE -
80mm (AC20 dense bin 100/150 des)
SUB-BASE
100mm TYPE 1 TO MCHW VOLUME 1 CL. 801



BITUMINOUS ACCESS ROAD DETAIL
(CBR 7%-20%)
SCALE: 1:10 @ A1

- NOTES:
1. All dimensions must be checked on site and not scaled from this drawing.
 2. The Contractor shall make a survey of the site and shall be responsible for obtaining all dimensions and levels necessary for the proper fabrication of the structure as indicated.
 3. All levels shown on this drawing are relative to Agreed Datum
 4. This drawing is to be read in conjunction with 29958/100 Series Drawings.
 5. All existing invert levels are to be confirmed by contractor prior to construction. Connection subject to approval.

- Denotes Site Boundary - 3,535m²
- Denotes Proposed Impermeable Road Area - 871m²
- Denotes Proposed Impermeable Building Area - 986m²
- Denotes Proposed Impermeable Path Area - 200m²
- Denotes Proposed Impermeable Patio Area - 62m²
- Denotes Proposed Permeable Grassed Area - 1,416m²
- Proposed Total Impermeable Area - 2,119m²
- Proposed Total Permeable Area - 1,416m²

B	30/11/23	ISSUED FOR APPROVAL	WP	WP
A	20/11/23	ISSUED FOR APPROVAL	WP	WP
Rev	Date	Description	DR	CH

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Telephone(+44) 01482 627963
Fax (+44) 01482 641736
Email info@ggpconsult.co.uk

Client **McCarthy Stone**
Life, well lived

Job Title
Kirkby,
St Chad's Drive,
Liverpool,
L32 8RH

Drawing Title
Proposed Impermeable
Area Plan

Status APPROVAL

Scale 1:150 @ A1 Date Nov' 2023

Drawn By *W. Brown* Checked W.B. Approved J.H.C

Dwg. No. 29958 / 103 Rev B

NOT FOR CONSTRUCTION

APPENDIX X

1:100 Year Storm Event +40% CC (5l/s)

GGP Consult				Page 1																																																																																																																																																																																																																			
2 Hallam Road, Priory Park East Hull, Humberside HU4 7DY																																																																																																																																																																																																																							
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Innovyze			Source Control 2020.1.3																																																																																																																																																																																																																				
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 1244 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>26.672</td><td>0.297</td><td>0.9</td><td>52.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>26.763</td><td>0.388</td><td>0.9</td><td>68.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>26.855</td><td>0.480</td><td>0.9</td><td>84.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>26.944</td><td>0.569</td><td>0.9</td><td>100.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>26.990</td><td>0.615</td><td>1.0</td><td>108.1</td><td>O K</td></tr><tr><td>240 min Summer</td><td>27.018</td><td>0.643</td><td>1.0</td><td>112.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>27.047</td><td>0.672</td><td>1.0</td><td>118.2</td><td>O K</td></tr><tr><td>480 min Summer</td><td>27.063</td><td>0.688</td><td>1.0</td><td>120.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>27.068</td><td>0.693</td><td>1.0</td><td>121.9</td><td>O K</td></tr><tr><td>720 min Summer</td><td>27.068</td><td>0.693</td><td>1.0</td><td>121.8</td><td>O K</td></tr><tr><td>960 min Summer</td><td>27.057</td><td>0.682</td><td>1.0</td><td>119.9</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>27.027</td><td>0.652</td><td>1.0</td><td>114.6</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>26.985</td><td>0.610</td><td>1.0</td><td>107.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>26.946</td><td>0.571</td><td>0.9</td><td>100.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>26.875</td><td>0.500</td><td>0.9</td><td>87.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>26.809</td><td>0.434</td><td>0.9</td><td>76.4</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>26.750</td><td>0.375</td><td>0.9</td><td>65.9</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>26.696</td><td>0.321</td><td>0.9</td><td>56.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>26.648</td><td>0.273</td><td>0.9</td><td>48.0</td><td>O K</td></tr><tr><td>15 min Winter</td><td>26.708</td><td>0.333</td><td>0.9</td><td>58.5</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>133.499</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>87.739</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>54.957</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>33.275</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.488</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>19.586</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>14.221</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>11.338</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>9.503</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>8.223</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>6.539</td><td>0.0</td><td>934</td></tr><tr><td>1440 min Summer</td><td>4.728</td><td>0.0</td><td>1146</td></tr><tr><td>2160 min Summer</td><td>3.413</td><td>0.0</td><td>1536</td></tr><tr><td>2880 min Summer</td><td>2.705</td><td>0.0</td><td>1936</td></tr><tr><td>4320 min Summer</td><td>1.947</td><td>0.0</td><td>2768</td></tr><tr><td>5760 min Summer</td><td>1.540</td><td>0.0</td><td>3568</td></tr><tr><td>7200 min Summer</td><td>1.284</td><td>0.0</td><td>4328</td></tr><tr><td>8640 min Summer</td><td>1.106</td><td>0.0</td><td>5104</td></tr><tr><td>10080 min Summer</td><td>0.974</td><td>0.0</td><td>5848</td></tr><tr><td>15 min Winter</td><td>133.499</td><td>0.0</td><td>23</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	26.672	0.297	0.9	52.2	O K	30 min Summer	26.763	0.388	0.9	68.2	O K	60 min Summer	26.855	0.480	0.9	84.4	O K	120 min Summer	26.944	0.569	0.9	100.0	O K	180 min Summer	26.990	0.615	1.0	108.1	O K	240 min Summer	27.018	0.643	1.0	112.9	O K	360 min Summer	27.047	0.672	1.0	118.2	O K	480 min Summer	27.063	0.688	1.0	120.8	O K	600 min Summer	27.068	0.693	1.0	121.9	O K	720 min Summer	27.068	0.693	1.0	121.8	O K	960 min Summer	27.057	0.682	1.0	119.9	O K	1440 min Summer	27.027	0.652	1.0	114.6	O K	2160 min Summer	26.985	0.610	1.0	107.2	O K	2880 min Summer	26.946	0.571	0.9	100.3	O K	4320 min Summer	26.875	0.500	0.9	87.8	O K	5760 min Summer	26.809	0.434	0.9	76.4	O K	7200 min Summer	26.750	0.375	0.9	65.9	O K	8640 min Summer	26.696	0.321	0.9	56.5	O K	10080 min Summer	26.648	0.273	0.9	48.0	O K	15 min Winter	26.708	0.333	0.9	58.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	133.499	0.0	23	30 min Summer	87.739	0.0	37	60 min Summer	54.957	0.0	68	120 min Summer	33.275	0.0	126	180 min Summer	24.488	0.0	186	240 min Summer	19.586	0.0	246	360 min Summer	14.221	0.0	364	480 min Summer	11.338	0.0	484	600 min Summer	9.503	0.0	602	720 min Summer	8.223	0.0	722	960 min Summer	6.539	0.0	934	1440 min Summer	4.728	0.0	1146	2160 min Summer	3.413	0.0	1536	2880 min Summer	2.705	0.0	1936	4320 min Summer	1.947	0.0	2768	5760 min Summer	1.540	0.0	3568	7200 min Summer	1.284	0.0	4328	8640 min Summer	1.106	0.0	5104	10080 min Summer	0.974	0.0	5848	15 min Winter	133.499	0.0	23
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360 min Summer	14.221	0.0	364																																																																																																																																																																																																																				
480 min Summer	11.338	0.0	484																																																																																																																																																																																																																				
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2 Hallam Road, Priory Park East Hull, Humberside HU4 7DY					
Date 30/11/2023 16:17 File Source Control Infiltra...		Designed by GGPAeecOne Checked by			
Innovyze		Source Control 2020.1.3			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	26.811	0.436	0.9	76.6	O K
60 min Winter	26.915	0.540	0.9	94.9	O K
120 min Winter	27.016	0.641	1.0	112.7	O K
180 min Winter	27.070	0.695	1.0	122.1	O K
240 min Winter	27.103	0.728	1.0	127.9	O K
360 min Winter	27.140	0.765	1.0	134.5	O K
480 min Winter	27.161	0.786	1.0	138.2	O K
600 min Winter	27.172	0.797	1.0	140.0	O K
720 min Winter	27.211	0.836	1.0	140.7	O K
960 min Winter	27.171	0.796	1.0	139.9	O K
1440 min Winter	27.137	0.762	1.0	133.9	O K
2160 min Winter	27.083	0.708	1.0	124.4	O K
2880 min Winter	27.029	0.654	1.0	114.9	O K
4320 min Winter	26.924	0.549	0.9	96.4	O K
5760 min Winter	26.827	0.452	0.9	79.4	O K
7200 min Winter	26.739	0.364	0.9	63.9	O K
8640 min Winter	26.661	0.286	0.9	50.2	O K
10080 min Winter	26.593	0.218	0.9	38.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	87.739	0.0	37		
60 min Winter	54.957	0.0	66		
120 min Winter	33.275	0.0	124		
180 min Winter	24.488	0.0	182		
240 min Winter	19.586	0.0	242		
360 min Winter	14.221	0.0	358		
480 min Winter	11.338	0.0	474		
600 min Winter	9.503	0.0	588		
720 min Winter	8.223	0.0	702		
960 min Winter	6.539	0.0	924		
1440 min Winter	4.728	0.0	1328		
2160 min Winter	3.413	0.0	1648		
2880 min Winter	2.705	0.0	2108		
4320 min Winter	1.947	0.0	2988		
5760 min Winter	1.540	0.0	3856		
7200 min Winter	1.284	0.0	4616		
8640 min Winter	1.106	0.0	5368		
10080 min Winter	0.974	0.0	6056		
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2 Hallam Road, Priory Park East Hull, Humberside HU4 7DY		
Date 30/11/2023 16:17	Designed by GGPAeecOne	
File Source Control Infiltra...	Checked by	
Innovyze		Source Control 2020.1.3

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.399	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.212

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.106	4 8	0.106

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2 Hallam Road, Priory Park East Hull, Humberside HU4 7DY		
Date 30/11/2023 16:17 File Source Control Infiltra...	Designed by GGPAeecOne Checked by	
Innovyze Source Control 2020.1.3		

Model Details

Storage is Online Cover Level (m) 28.685

Cellular Storage Structure

Invert Level (m) 26.375 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.03140 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03140

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	185.0	185.0	0.801	1.0	228.5
0.800	185.0	228.5			

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APPENDIX XI

1:30 Year Storm Event +40% CC (5l/s)

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2 Hallam Road, Priory Park East Hull, Humberside HU4 7DY																																																																																																																																																																																																																							
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<u>Summary of Results for 30 year Return Period (+40%)</u> Half Drain Time : 957 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>26.603</td><td>0.228</td><td>0.9</td><td>40.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>26.670</td><td>0.295</td><td>0.9</td><td>51.9</td><td>O K</td></tr><tr><td>60 min Summer</td><td>26.738</td><td>0.363</td><td>0.9</td><td>63.7</td><td>O K</td></tr><tr><td>120 min Summer</td><td>26.802</td><td>0.427</td><td>0.9</td><td>75.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>26.835</td><td>0.460</td><td>0.9</td><td>80.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>26.855</td><td>0.480</td><td>0.9</td><td>84.3</td><td>O K</td></tr><tr><td>360 min Summer</td><td>26.875</td><td>0.500</td><td>0.9</td><td>88.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>26.884</td><td>0.509</td><td>0.9</td><td>89.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>26.885</td><td>0.510</td><td>0.9</td><td>89.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>26.882</td><td>0.507</td><td>0.9</td><td>89.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>26.871</td><td>0.496</td><td>0.9</td><td>87.3</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>26.849</td><td>0.474</td><td>0.9</td><td>83.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>26.816</td><td>0.441</td><td>0.9</td><td>77.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>26.784</td><td>0.409</td><td>0.9</td><td>71.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>26.723</td><td>0.348</td><td>0.9</td><td>61.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>26.668</td><td>0.293</td><td>0.9</td><td>51.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>26.619</td><td>0.244</td><td>0.9</td><td>42.8</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>26.576</td><td>0.201</td><td>0.9</td><td>35.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>26.538</td><td>0.163</td><td>0.8</td><td>28.7</td><td>O K</td></tr><tr><td>15 min Winter</td><td>26.631</td><td>0.256</td><td>0.9</td><td>45.0</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>102.983</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>67.094</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>41.816</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>25.309</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>18.674</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>14.988</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>10.950</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>8.764</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>7.369</td><td>0.0</td><td>600</td></tr><tr><td>720 min Summer</td><td>6.394</td><td>0.0</td><td>714</td></tr><tr><td>960 min Summer</td><td>5.108</td><td>0.0</td><td>816</td></tr><tr><td>1440 min Summer</td><td>3.718</td><td>0.0</td><td>1064</td></tr><tr><td>2160 min Summer</td><td>2.703</td><td>0.0</td><td>1472</td></tr><tr><td>2880 min Summer</td><td>2.154</td><td>0.0</td><td>1876</td></tr><tr><td>4320 min Summer</td><td>1.563</td><td>0.0</td><td>2684</td></tr><tr><td>5760 min Summer</td><td>1.244</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.042</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>0.901</td><td>0.0</td><td>4928</td></tr><tr><td>10080 min Summer</td><td>0.797</td><td>0.0</td><td>5648</td></tr><tr><td>15 min Winter</td><td>102.983</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	26.603	0.228	0.9	40.1	O K	30 min Summer	26.670	0.295	0.9	51.9	O K	60 min Summer	26.738	0.363	0.9	63.7	O K	120 min Summer	26.802	0.427	0.9	75.0	O K	180 min Summer	26.835	0.460	0.9	80.9	O K	240 min Summer	26.855	0.480	0.9	84.3	O K	360 min Summer	26.875	0.500	0.9	88.0	O K	480 min Summer	26.884	0.509	0.9	89.4	O K	600 min Summer	26.885	0.510	0.9	89.6	O K	720 min Summer	26.882	0.507	0.9	89.0	O K	960 min Summer	26.871	0.496	0.9	87.3	O K	1440 min Summer	26.849	0.474	0.9	83.4	O K	2160 min Summer	26.816	0.441	0.9	77.5	O K	2880 min Summer	26.784	0.409	0.9	71.8	O K	4320 min Summer	26.723	0.348	0.9	61.2	O K	5760 min Summer	26.668	0.293	0.9	51.5	O K	7200 min Summer	26.619	0.244	0.9	42.8	O K	8640 min Summer	26.576	0.201	0.9	35.2	O K	10080 min Summer	26.538	0.163	0.8	28.7	O K	15 min Winter	26.631	0.256	0.9	45.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	102.983	0.0	23	30 min Summer	67.094	0.0	37	60 min Summer	41.816	0.0	66	120 min 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Innovyze			Source Control 2020.1.3			
<u>Summary of Results for 30 year Return Period (+40%)</u>						
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	
30 min Winter	26.707	0.332	0.9	58.3	O K	
60 min Winter	26.783	0.408	0.9	71.7	O K	
120 min Winter	26.857	0.482	0.9	84.7	O K	
180 min Winter	26.896	0.521	0.9	91.5	O K	
240 min Winter	26.920	0.545	0.9	95.8	O K	
360 min Winter	26.947	0.572	0.9	100.5	O K	
480 min Winter	26.960	0.585	0.9	102.8	O K	
600 min Winter	26.965	0.590	0.9	103.7	O K	
720 min Winter	26.965	0.590	0.9	103.7	O K	
960 min Winter	26.956	0.581	0.9	102.0	O K	
1440 min Winter	26.926	0.551	0.9	96.8	O K	
2160 min Winter	26.880	0.505	0.9	88.8	O K	
2880 min Winter	26.832	0.457	0.9	80.4	O K	
4320 min Winter	26.740	0.365	0.9	64.2	O K	
5760 min Winter	26.657	0.282	0.9	49.6	O K	
7200 min Winter	26.585	0.210	0.9	36.9	O K	
8640 min Winter	26.524	0.149	0.8	26.2	O K	
10080 min Winter	26.476	0.101	0.8	17.7	O K	
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)			
30 min Winter	67.094	0.0	37			
60 min Winter	41.816	0.0	66			
120 min Winter	25.309	0.0	124			
180 min Winter	18.674	0.0	182			
240 min Winter	14.988	0.0	240			
360 min Winter	10.950	0.0	356			
480 min Winter	8.764	0.0	472			
600 min Winter	7.369	0.0	584			
720 min Winter	6.394	0.0	694			
960 min Winter	5.108	0.0	908			
1440 min Winter	3.718	0.0	1132			
2160 min Winter	2.703	0.0	1596			
2880 min Winter	2.154	0.0	2048			
4320 min Winter	1.563	0.0	2900			
5760 min Winter	1.244	0.0	3696			
7200 min Winter	1.042	0.0	4464			
8640 min Winter	0.901	0.0	5104			
10080 min Winter	0.797	0.0	5752			
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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.399	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.212

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.106	4 8	0.106

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Model Details

Storage is Online Cover Level (m) 28.685

Cellular Storage Structure

Invert Level (m) 26.375 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.03140 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03140

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	185.0	185.0	0.801	1.0	228.5
0.800	185.0	228.5			

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APPENDIX XII

1:1 Year Storm Event +40% CC (5l/s)

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<u>Summary of Results for 1 year Return Period (+40%)</u> Half Drain Time : 397 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>26.466</td><td>0.091</td><td>0.8</td><td>16.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>26.492</td><td>0.117</td><td>0.8</td><td>20.6</td><td>O K</td></tr><tr><td>60 min Summer</td><td>26.519</td><td>0.144</td><td>0.8</td><td>25.3</td><td>O K</td></tr><tr><td>120 min Summer</td><td>26.544</td><td>0.169</td><td>0.8</td><td>29.7</td><td>O K</td></tr><tr><td>180 min Summer</td><td>26.556</td><td>0.181</td><td>0.8</td><td>31.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>26.563</td><td>0.188</td><td>0.9</td><td>33.0</td><td>O K</td></tr><tr><td>360 min Summer</td><td>26.568</td><td>0.193</td><td>0.9</td><td>33.8</td><td>O K</td></tr><tr><td>480 min Summer</td><td>26.568</td><td>0.193</td><td>0.9</td><td>33.9</td><td>O K</td></tr><tr><td>600 min Summer</td><td>26.567</td><td>0.192</td><td>0.9</td><td>33.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>26.566</td><td>0.191</td><td>0.9</td><td>33.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>26.561</td><td>0.186</td><td>0.9</td><td>32.6</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>26.547</td><td>0.172</td><td>0.8</td><td>30.3</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>26.526</td><td>0.151</td><td>0.8</td><td>26.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>26.506</td><td>0.131</td><td>0.8</td><td>23.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>26.471</td><td>0.096</td><td>0.8</td><td>16.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>26.446</td><td>0.071</td><td>0.8</td><td>12.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>26.430</td><td>0.055</td><td>0.8</td><td>9.7</td><td>O K</td></tr><tr><td>8640 min 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Summer</td><td>3.405</td><td>0.0</td><td>444</td></tr><tr><td>720 min Summer</td><td>2.981</td><td>0.0</td><td>510</td></tr><tr><td>960 min Summer</td><td>2.417</td><td>0.0</td><td>648</td></tr><tr><td>1440 min Summer</td><td>1.798</td><td>0.0</td><td>924</td></tr><tr><td>2160 min Summer</td><td>1.339</td><td>0.0</td><td>1324</td></tr><tr><td>2880 min Summer</td><td>1.086</td><td>0.0</td><td>1704</td></tr><tr><td>4320 min Summer</td><td>0.808</td><td>0.0</td><td>2424</td></tr><tr><td>5760 min Summer</td><td>0.655</td><td>0.0</td><td>3112</td></tr><tr><td>7200 min Summer</td><td>0.557</td><td>0.0</td><td>3752</td></tr><tr><td>8640 min Summer</td><td>0.488</td><td>0.0</td><td>4416</td></tr><tr><td>10080 min Summer</td><td>0.436</td><td>0.0</td><td>5152</td></tr><tr><td>15 min Winter</td><td>41.999</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	26.466	0.091	0.8	16.0	O K	30 min Summer	26.492	0.117	0.8	20.6	O K	60 min Summer	26.519	0.144	0.8	25.3	O K	120 min Summer	26.544	0.169	0.8	29.7	O K	180 min Summer	26.556	0.181	0.8	31.9	O K	240 min Summer	26.563	0.188	0.9	33.0	O K	360 min Summer	26.568	0.193	0.9	33.8	O K	480 min Summer	26.568	0.193	0.9	33.9	O K	600 min Summer	26.567	0.192	0.9	33.8	O K	720 min Summer	26.566	0.191	0.9	33.5	O K	960 min Summer	26.561	0.186	0.9	32.6	O K	1440 min Summer	26.547	0.172	0.8	30.3	O K	2160 min Summer	26.526	0.151	0.8	26.6	O K	2880 min Summer	26.506	0.131	0.8	23.0	O K	4320 min Summer	26.471	0.096	0.8	16.9	O K	5760 min Summer	26.446	0.071	0.8	12.5	O K	7200 min Summer	26.430	0.055	0.8	9.7	O K	8640 min Summer	26.423	0.048	0.8	8.4	O K	10080 min Summer	26.418	0.043	0.7	7.6	O K	15 min Winter	26.477	0.102	0.8	18.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	41.999	0.0	22	30 min Summer	27.354	0.0	36	60 min Summer	17.317	0.0	66	120 min Summer	10.743	0.0	124	180 min Summer	8.086	0.0	182	240 min 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Innovyze		Source Control 2020.1.3			
<u>Summary of Results for 1 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	26.507	0.132	0.8	23.2	O K
60 min Winter	26.537	0.162	0.8	28.6	O K
120 min Winter	26.567	0.192	0.9	33.7	O K
180 min Winter	26.582	0.207	0.9	36.4	O K
240 min Winter	26.591	0.216	0.9	37.9	O K
360 min Winter	26.598	0.223	0.9	39.1	O K
480 min Winter	26.597	0.222	0.9	39.0	O K
600 min Winter	26.595	0.220	0.9	38.7	O K
720 min Winter	26.592	0.217	0.9	38.2	O K
960 min Winter	26.584	0.209	0.9	36.7	O K
1440 min Winter	26.563	0.188	0.9	33.0	O K
2160 min Winter	26.528	0.153	0.8	26.9	O K
2880 min Winter	26.496	0.121	0.8	21.3	O K
4320 min Winter	26.446	0.071	0.8	12.5	O K
5760 min Winter	26.423	0.048	0.8	8.5	O K
7200 min Winter	26.417	0.042	0.7	7.3	O K
8640 min Winter	26.412	0.037	0.6	6.4	O K
10080 min Winter	26.408	0.033	0.5	5.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	27.354	0.0	36		
60 min Winter	17.317	0.0	64		
120 min Winter	10.743	0.0	122		
180 min Winter	8.086	0.0	178		
240 min Winter	6.603	0.0	236		
360 min Winter	4.944	0.0	346		
480 min Winter	4.008	0.0	440		
600 min Winter	3.405	0.0	474		
720 min Winter	2.981	0.0	552		
960 min Winter	2.417	0.0	706		
1440 min Winter	1.798	0.0	1002		
2160 min Winter	1.339	0.0	1428		
2880 min Winter	1.086	0.0	1816		
4320 min Winter	0.808	0.0	2504		
5760 min Winter	0.655	0.0	3048		
7200 min Winter	0.557	0.0	3744		
8640 min Winter	0.488	0.0	4488		
10080 min Winter	0.436	0.0	5240		
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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.400	Shortest Storm (mins)	15
Ratio R	0.399	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.212

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.106	4 8	0.106

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Model Details

Storage is Online Cover Level (m) 28.685

Cellular Storage Structure

Invert Level (m) 26.375 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.03140 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.03140

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	185.0	185.0	0.801	1.0	228.5
0.800	185.0	228.5			

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