

General notes

All dimensions are in metres unless otherwise stated.

All levels are in metres.

This drawing is to be read in conjunction with all relevant Engineers and Architect's drawings, Specifications, Reports and Engineering Details.

Do not scale from this drawing.

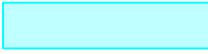
Based on Topographical Land Survey by SurveyEng Ltd, drawing number BH.TS.12 Rev C dated 26.03.2021.

Based on Planning Layout by Barratt Homes, drawing number H8797-BAH-XX-XX-DR-UD-203001-P03 dated 28.06.2024.

Drawing Key



Plot Areas = 5,665m²



Driveway Areas = 3,904m²



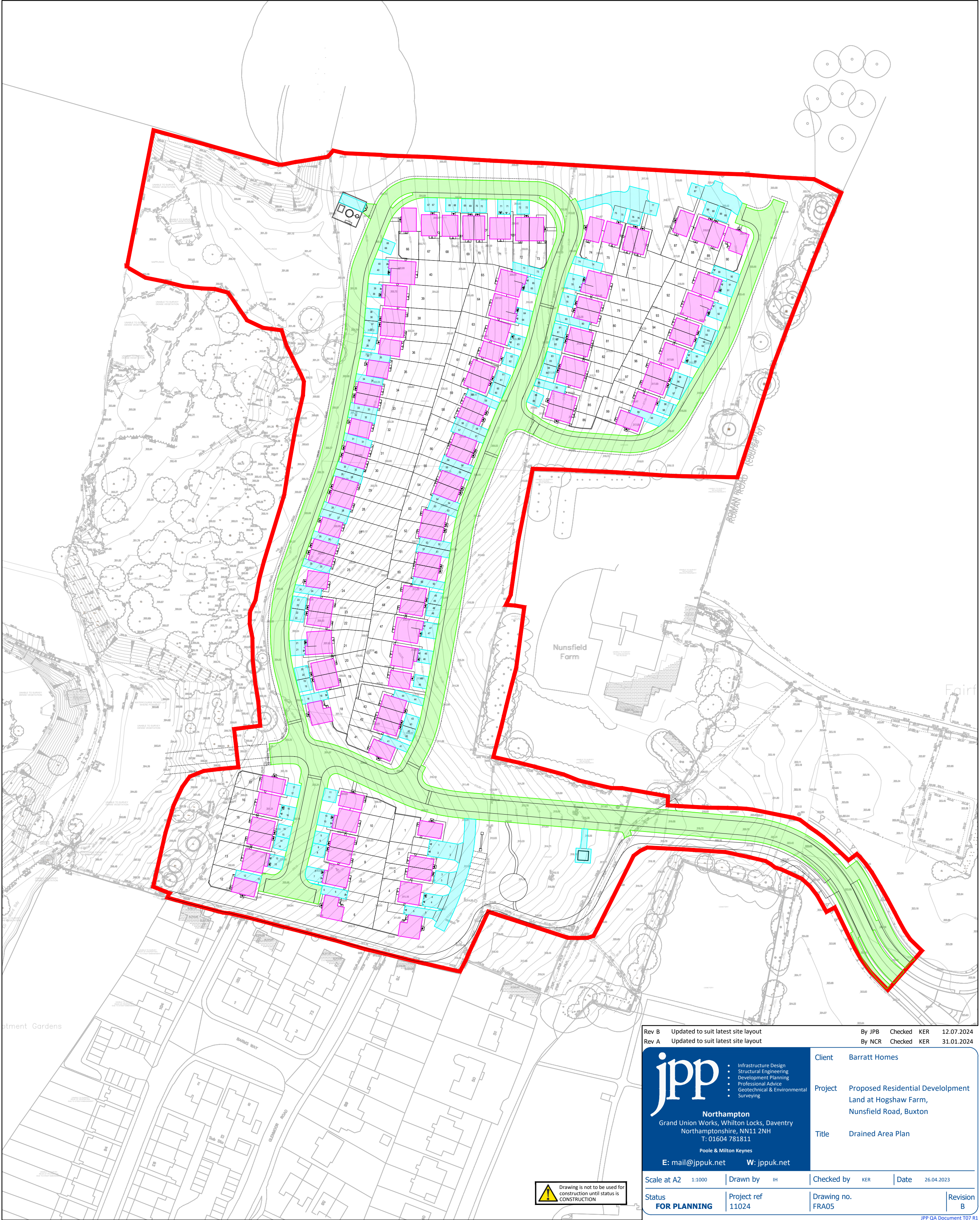
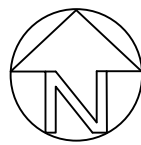
Road Areas = 9,260m²

Total Area = 18,829m²

10% Urban Creep to Plots = 567m²

Total Drained Area including 10% Urban Creep = 19,396m²

Site Boundary



Rev B	Updated to suit latest site layout	By JPB	Checked	KER	12.07.2024
Rev A	Updated to suit latest site layout	By NCR	Checked	KER	31.01.2024
jpp Northampton Grand Union Works, Whilton Locks, Daventry Northamptonshire, NN11 2NH T: 01604 781811 Poole & Milton Keynes E: mail@jppuk.net W: jppuk.net		Client	Barratt Homes		
		Project	Proposed Residential Development Land at Hogshaw Farm, Nunsfield Road, Buxton		
		Title	Drained Area Plan		
Scale at A2 1:1000		Drawn by	IH	Checked by	KER
Date		26.04.2023			
Status	FOR PLANNING	Project ref	11024	Drawing no.	FRA05
		Revision		B	



Appendix K

Attenuation Calculations

JPP Consulting Ltd					Page 1		
4, Ironstone Way Brixworth Northampton, NN3 9UD			Hogshaw Farm, Buxton 42.5 l/s 1.940ha inc 10% UC				
Date 12/07/2024 12:12 File 11024R - ATTENUATION__1...			Designed by JPB Checked by KER				
Innovyze			Source Control 2018.1.1				
<u>Summary of Results for 100 year Return Period (+40%)</u>							
Storm Event			Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer			98.525	0.525	45.1	568.6	O K
30 min Summer			98.627	0.627	45.1	680.2	O K
60 min Summer			98.736	0.736	45.1	797.8	O K
120 min Summer			98.831	0.831	45.1	900.9	O K
180 min Summer			98.863	0.863	45.1	935.1	O K
240 min Summer			98.878	0.878	45.1	952.0	O K
360 min Summer			98.888	0.888	45.1	962.5	O K
480 min Summer			98.881	0.881	45.1	955.4	O K
600 min Summer			98.866	0.866	45.1	938.4	O K
720 min Summer			98.845	0.845	45.1	915.8	O K
960 min Summer			98.790	0.790	45.1	856.5	O K
1440 min Summer			98.662	0.662	45.1	717.6	O K
2160 min Summer			98.502	0.502	45.1	544.2	O K
2880 min Summer			98.390	0.390	45.0	422.3	O K
4320 min Summer			98.270	0.270	42.7	292.4	O K
5760 min Summer			98.232	0.232	35.9	252.0	O K
7200 min Summer			98.209	0.209	31.0	226.8	O K
8640 min Summer			98.192	0.192	27.3	208.4	O K
10080 min Summer			98.179	0.179	24.5	194.4	O K
15 min Winter			98.590	0.590	45.1	639.5	O K
30 min Winter			98.708	0.708	45.1	767.3	O K
Storm Event			Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer			164.198	0.0	582.3	18	
30 min Summer			100.796	0.0	717.7	33	
60 min Summer			61.875	0.0	892.8	62	
120 min Summer			37.983	0.0	1097.5	120	
180 min Summer			28.551	0.0	1238.2	166	
240 min Summer			23.316	0.0	1348.8	196	
360 min Summer			17.526	0.0	1521.4	260	
480 min Summer			14.313	0.0	1657.1	330	
600 min Summer			12.232	0.0	1770.5	400	
720 min Summer			10.759	0.0	1868.9	470	
960 min Summer			8.754	0.0	2027.5	608	
1440 min Summer			6.545	0.0	2273.0	866	
2160 min Summer			4.894	0.0	2558.3	1228	
2880 min Summer			3.982	0.0	2774.5	1560	
4320 min Summer			2.943	0.0	3070.9	2208	
5760 min Summer			2.374	0.0	3313.1	2944	
7200 min Summer			2.010	0.0	3505.4	3672	
8640 min Summer			1.755	0.0	3669.9	4408	
10080 min Summer			1.564	0.0	3811.9	5136	
15 min Winter			164.198	0.0	653.7	18	
30 min Winter			100.796	0.0	805.3	32	
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4, Ironstone Way Brixworth Northampton, NN3 9UD		Hogshaw Farm, Buxton 42.5 l/s 1.940ha inc 10% UC			
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Innovyze		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	98.833	0.833	45.1	903.2	O K
120 min Winter	98.943	0.943	45.1	1022.7	O K
180 min Winter	98.984	0.984	45.1	1066.9	O K
240 min Winter	98.996	0.996	45.1	1079.4	O K
360 min Winter	99.000	1.000	45.2	1083.5	O K
480 min Winter	98.983	0.983	45.1	1065.3	O K
600 min Winter	98.954	0.954	45.1	1033.9	O K
720 min Winter	98.918	0.918	45.1	995.2	O K
960 min Winter	98.830	0.830	45.1	899.8	O K
1440 min Winter	98.621	0.621	45.1	673.3	O K
2160 min Winter	98.392	0.392	45.0	425.2	O K
2880 min Winter	98.276	0.276	43.4	299.5	O K
4320 min Winter	98.219	0.219	33.1	237.2	O K
5760 min Winter	98.190	0.190	26.9	206.5	O K
7200 min Winter	98.172	0.172	22.8	186.4	O K
8640 min Winter	98.159	0.159	20.0	171.9	O K
10080 min Winter	98.148	0.148	17.8	160.9	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	61.875	0.0	1000.7	62	
120 min Winter	37.983	0.0	1230.0	118	
180 min Winter	28.551	0.0	1387.6	172	
240 min Winter	23.316	0.0	1511.4	222	
360 min Winter	17.526	0.0	1704.9	278	
480 min Winter	14.313	0.0	1856.8	356	
600 min Winter	12.232	0.0	1983.8	434	
720 min Winter	10.759	0.0	2094.0	508	
960 min Winter	8.754	0.0	2271.7	656	
1440 min Winter	6.545	0.0	2547.3	922	
2160 min Winter	4.894	0.0	2865.9	1256	
2880 min Winter	3.982	0.0	3108.3	1532	
4320 min Winter	2.943	0.0	3441.2	2244	
5760 min Winter	2.374	0.0	3711.0	2944	
7200 min Winter	2.010	0.0	3926.7	3680	
8640 min Winter	1.755	0.0	4111.3	4408	
10080 min Winter	1.564	0.0	4271.4	5144	
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JPP Consulting Ltd		Page 3
4, Ironstone Way Brixworth Northampton, NN3 9UD	Hogshaw Farm, Buxton 42.5 l/s 1.940ha inc 10% UC	
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Model Details Storage is Online Cover Level (m) 100.000 Tank or Pond Structure Invert Level (m) 98.000 <table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td></tr><tr><td>0.000</td><td>1084.0</td><td>1.000</td><td>1084.0</td><td>1.001</td><td>0.0</td></tr></table> Hydro-Brake® Optimum Outflow Control Unit Reference MD-SHE-0282-4520-1000-4520 Design Head (m) 1.000 Design Flow (l/s) 45.2 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 282 Invert Level (m) 98.000 Minimum Outlet Pipe Diameter (mm) 300 Suggested Manhole Diameter (mm) 1800 Control Points Head (m) Flow (l/s) Design Point (Calculated) 1.000 45.2 Flush-Flo™ 0.432 45.1 Kick-Flo® 0.774 40.0 Mean Flow over Head Range - 36.4 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 <table><tr><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td></tr><tr><td>0.100</td><td>8.8</td><td>1.200</td><td>49.3</td><td>3.000</td><td>76.8</td><td>7.000</td><td>116.1</td></tr><tr><td>0.200</td><td>29.0</td><td>1.400</td><td>53.1</td><td>3.500</td><td>82.8</td><td>7.500</td><td>120.1</td></tr><tr><td>0.300</td><td>43.9</td><td>1.600</td><td>56.7</td><td>4.000</td><td>88.4</td><td>8.000</td><td>124.0</td></tr><tr><td>0.400</td><td>45.0</td><td>1.800</td><td>60.0</td><td>4.500</td><td>93.6</td><td>8.500</td><td>127.7</td></tr><tr><td>0.500</td><td>44.8</td><td>2.000</td><td>63.1</td><td>5.000</td><td>98.5</td><td>9.000</td><td>131.3</td></tr><tr><td>0.600</td><td>44.0</td><td>2.200</td><td>66.1</td><td>5.500</td><td>103.2</td><td>9.500</td><td>134.8</td></tr><tr><td>0.800</td><td>40.6</td><td>2.400</td><td>69.0</td><td>6.000</td><td>107.7</td><td></td><td></td></tr><tr><td>1.000</td><td>45.2</td><td>2.600</td><td>71.7</td><td>6.500</td><td>112.0</td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1084.0	1.000	1084.0	1.001	0.0	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	8.8	1.200	49.3	3.000	76.8	7.000	116.1	0.200	29.0	1.400	53.1	3.500	82.8	7.500	120.1	0.300	43.9	1.600	56.7	4.000	88.4	8.000	124.0	0.400	45.0	1.800	60.0	4.500	93.6	8.500	127.7	0.500	44.8	2.000	63.1	5.000	98.5	9.000	131.3	0.600	44.0	2.200	66.1	5.500	103.2	9.500	134.8	0.800	40.6	2.400	69.0	6.000	107.7			1.000	45.2	2.600	71.7	6.500	112.0		
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