



Ryefield Farm House Woodgate

Greenfield Run Off and MicroDrainage Calculations

Prepared by:
Kazys Narbutas Consulting Limited

Unit 5B Tanners Court,
Tanners Lane, East Wellow,
Romsey. SO51 6DP

KNC2111/GFR

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Date May 2021 File	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

IH 124 Mean Annual Flood

Input

Return Period (years)	100	Soil	0.400
Area (Ha)	50.000	Urban	0.000
SAAR (mm)	747.000	Region Number	7

Results 1/s

QBAR Rural	183.6
QBAR Urban	183.6
Q 100 years	585.5
Q 1 year	156.0
Q 2 years	161.7
Q 5 years	234.9
Q 10 years	297.4
Q 20 years	367.7
Q 25 years	394.3
Q 30 years	416.0
Q 50 years	480.9
Q 100 years	585.5
Q 200 years	688.3
Q 250 years	721.4
Q 1000 years	947.1

Section: Civils		 KAZYS NARBUTAS CONSULTING <i>Civil Engineering Consultant</i> Unit 5B, 100-102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000			
Project: Ryefields Farm House, Woodgate					
Client : Domusea					
Date: May 2021	Job No. KNC2107	Page No. 1	Chk:	By: KHN	Rev: A
Reference	Calculation Existing Site Discharge				Result
<u>Existing Green Field Run off from IH124</u> Existing site area 0.21Ha Q_{bar} discharge from 50Ha site = 183.6lits/sec (see MicroDrainage IH124 results) Applying ratio of existing site to this discharge: $0.21/50 \times 183.6 = 0.8 \text{ lit/sec}$; assume practical discharge 1.0lit/sec Take 1.0 lits/sec pumped discharge from attenuation tank to foul sewer. Required storage volume for 1 in 100year storm event +40% climate change and 10% urban creep = 70.5m³. Attenuation tank -Aquacell (or similar) 12.5 x 3.0 x 2.0 deep.					

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Micro Drainage	Source Control W.11.2	

Summary of Results for 100 year Return Period (+40%)

Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	1.0	1.0	7.7333	0.7333	27.5	OK
30 Summer	1.0	1.0	7.9723	0.9723	36.5	OK
60 Summer	1.0	1.0	8.2163	1.2163	45.6	OK
120 Summer	1.0	1.0	8.4412	1.4412	54.0	OK
180 Summer	1.0	1.0	8.5417	1.5417	57.8	OK
240 Summer	1.0	1.0	8.5872	1.5872	59.5	OK
360 Summer	1.0	1.0	8.6132	1.6132	60.5	OK
480 Summer	1.0	1.0	8.5957	1.5957	59.8	OK
600 Summer	1.0	1.0	8.5667	1.5667	58.7	OK
720 Summer	1.0	1.0	8.5362	1.5362	57.6	OK
960 Summer	1.0	1.0	8.4767	1.4767	55.4	OK
1440 Summer	1.0	1.0	8.3622	1.3622	51.1	OK
15 Winter	1.0	1.0	7.8233	0.8233	30.9	OK
30 Winter	1.0	1.0	8.0948	1.0948	41.1	OK
60 Winter	1.0	1.0	8.3742	1.3742	51.5	OK
120 Winter	1.0	1.0	8.6372	1.6372	61.4	OK
180 Winter	1.0	1.0	8.7617	1.7617	66.1	OK
240 Winter	1.0	1.0	8.8242	1.8242	68.4	OK
360 Winter	1.0	1.0	8.8772	1.8772	70.4	OK
480 Winter	1.0	1.0	8.8797	1.8797	70.5	OK

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	126.07	23
30 Summer	84.75	37
60 Summer	54.37	68
120 Summer	33.67	126
180 Summer	25.06	186
240 Summer	20.18	246
360 Summer	14.84	364
480 Summer	11.92	472
600 Summer	10.05	520
720 Summer	8.74	580
960 Summer	7.00	706
1440 Summer	5.11	974
15 Winter	126.07	23
30 Winter	84.75	37
60 Winter	54.37	66
120 Winter	33.67	124
180 Winter	25.06	182
240 Winter	20.18	240
360 Winter	14.84	356
480 Winter	11.92	466

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Storm Duration (mins)	Maximum Control (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
600 Winter	1.0	1.0	8.8542	1.8542	69.5	0 K
720 Winter	1.0	1.0	8.8132	1.8132	68.0	0 K
960 Winter	1.0	1.0	8.7302	1.7302	64.9	0 K
1440 Winter	1.0	1.0	8.5662	1.5662	58.7	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
600 Winter	10.05	574
720 Winter	8.74	674
960 Winter	7.00	758
1440 Winter	5.11	1060

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Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	1440
M5-60 (mm)	19.200	Summer Storms	Yes
Ratio-R	0.350	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+40
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.120

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.000	4	8	0.120

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Tank/Pond Details

Invert Level (m) 7.000 Ground Level (m) 9.600

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.00	37.5	1.00	37.5	2.00	37.5	3.00	37.5	4.00	37.5	5.00	37.5
0.20	37.5	1.20	37.5	2.20	37.5	3.20	37.5	4.20	37.5		
0.40	37.5	1.40	37.5	2.40	37.5	3.40	37.5	4.40	37.5		
0.60	37.5	1.60	37.5	2.60	37.5	3.60	37.5	4.60	37.5		
0.80	37.5	1.80	37.5	2.80	37.5	3.80	37.5	4.80	37.5		

Pump Outflow Control

Invert Level of Control 7.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.10	1.0	0.80	1.0	2.00	1.0	4.00	1.0	7.00	1.0
0.20	1.0	1.00	1.0	2.20	1.0	4.50	1.0	7.50	1.0
0.30	1.0	1.20	1.0	2.40	1.0	5.00	1.0	8.00	1.0
0.40	1.0	1.40	1.0	2.60	1.0	5.50	1.0	8.50	1.0
0.50	1.0	1.60	1.0	3.00	1.0	6.00	1.0	9.00	1.0
0.60	1.0	1.80	1.0	3.50	1.0	6.50	1.0	9.50	1.0