



Scyld & Wren Cottage Climping

Green Field Run Off and Micro Drainage Calculations for Sub Base Attenuation

Prepared by:
Kazys Narbutas Consulting Limited

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KNC2103/MDC-B

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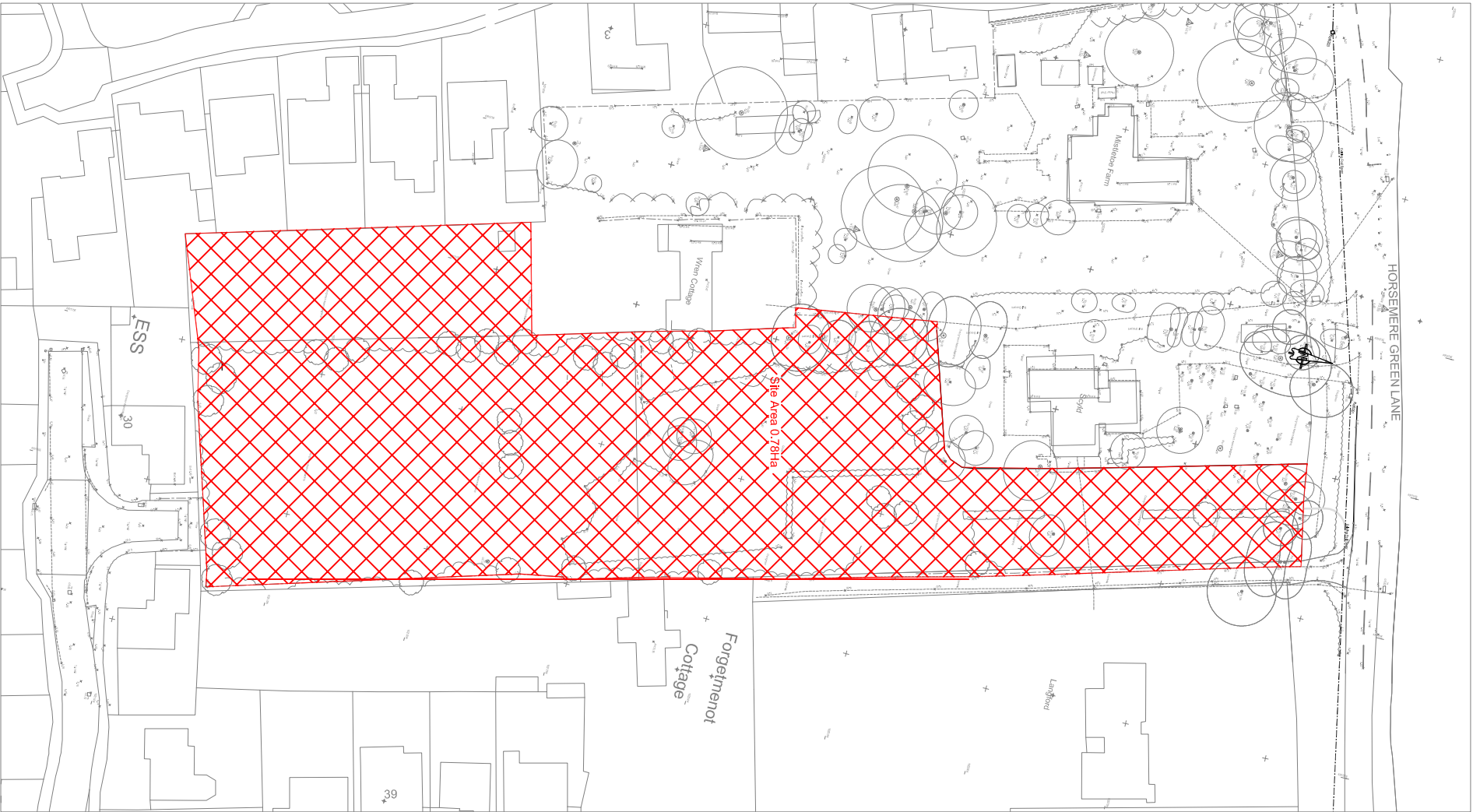
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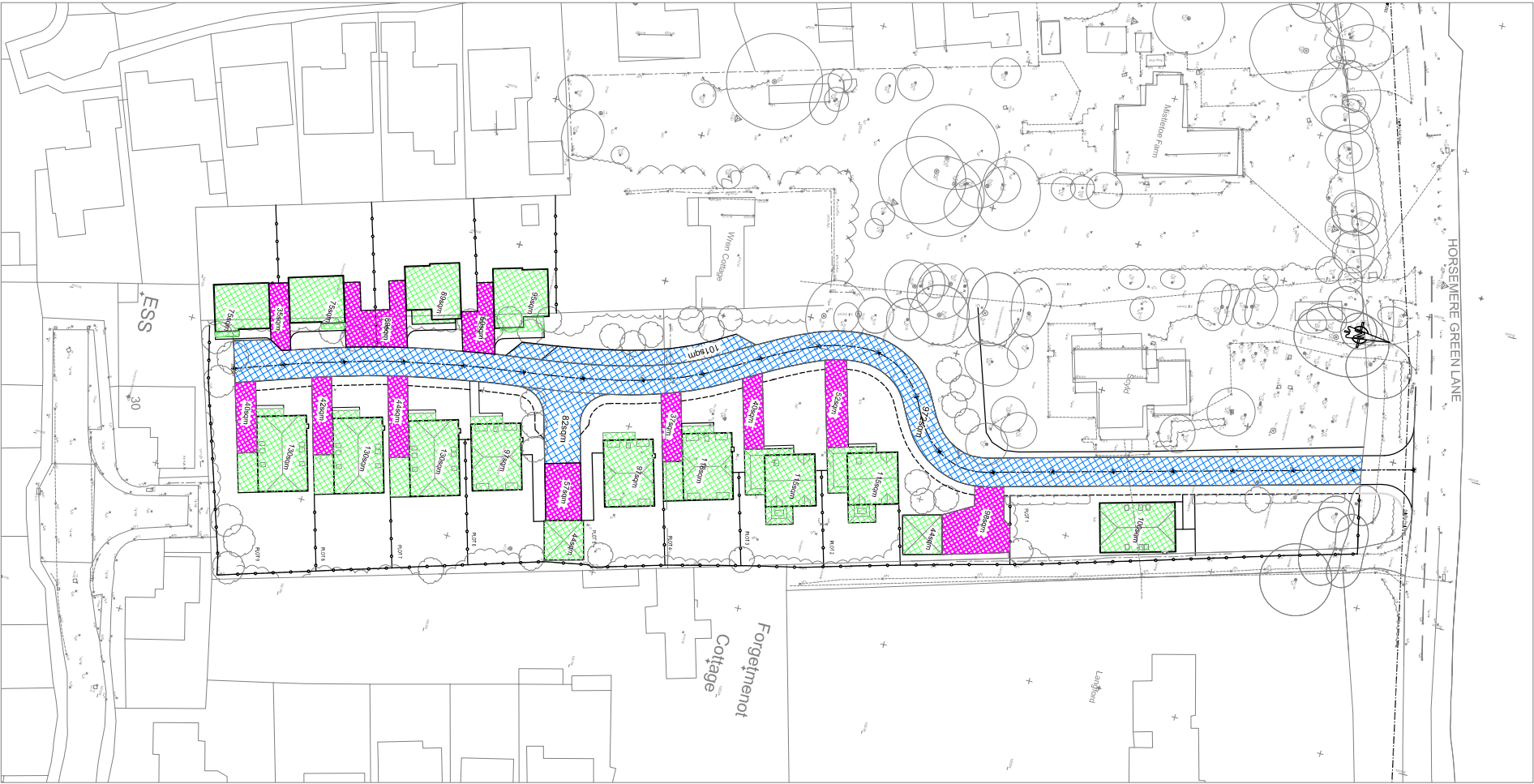
Date:

23rd February 2021

Revision	Description	Date	Initials
A	Initial issue	23 rd February 2021	KN
B	Discharge rate amended	29 th March 2021	KN



Existing Development Area - Scale 1:500



Proposed Impermeable Areas - Scale 1:500

Impermeable Areas Draining to Attenuation	
Buildings.....	145sqm
10% Urban Creep.....	150sqm
Drives & Parking	58sqm
Access Roads.....	115sqm
Total.....	2813sqm

Greenfield Run Off Discharge limited to 2.0litresec
In accordance with Arun DC criteria
Storage Required 221.7 cu m

B 23/02/21 Area for discharge rate amended		IN
A 23/02/21 FIRST ISSUE		IN
Rev	Date	Notes
1	23/02/21	First Issue
INFORMATION FOR PLANNING		
SCYLD HORSEMER GREEN LANE		
CLIPPING		
Date		
HERRINGGATE UK Ltd.		
KAZYS NARBYTAS CONSULTING		
Unit 10, Tanners Close, Engineering Centre, Herringgate, Hull, HU11 1EP		
Telephone: 01482 512101 Email: info@kazysnarbytas.co.uk		
Drawing Title		
Engineering Details		
Drainage Areas		
Drawn	Checked	Scales
KN	KN	1:500
Job No.	Drawing No.	Page Size
KN02103	500-01	A1
		Date
		02/21
		Revision
		B

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Date February 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)	759.000	Region Number	7

Results 1/s

QBAR Rural	187.0
QBAR Urban	187.0
Q 100 years	596.6
Q 1 year	159.0
Q 2 years	164.8
Q 5 years	239.4
Q 10 years	303.0
Q 20 years	374.6
Q 25 years	401.7
Q 30 years	423.8
Q 50 years	490.0
Q 100 years	596.6
Q 200 years	701.3
Q 250 years	734.9
Q 1000 years	965.0

Section: Civils		 KAZYS NARBUTAS CONSULTING <i>Civil Engineering Consultant</i> Unit 5B, Tanners Court, Tanners Lane, East Wellow, Romsey, Hants. SO51 6DP Telephone: 01794 522903 Email: kazys.n@knc.email	
Project: Scyld/Wren Cottage, Climping			
Client : HERRINGATE UK Ltd.			
Date: March 2021	Job No. KNC2103	Page No. 1	Chk: By: KHN Rev: B
Reference	Calculation Existing Site Discharge		Result
<u>Existing Green Field Run off from IH124</u> Area occupied by development = 0.281Ha Q_{bar} discharge from 50Ha site = 187.0lits/sec (see MicroDrainage IH124 results) Applying ratio of existing site to this discharge: $0.281/50 \times 187.0 = 1.05 \text{ lit/sec}$ In accordance with Arun D.C. design criteria take 2.0 lits/sec as limiting discharge through new surface water drainage network. Proposed impermeable area draining through attenuated discharge = 0.281Ha Volume of storage required for 1 in 100yr storm event + 40% addition for climate change and including additional 10% for urban creep = 221.7 cu.m. Sub-base attenuation 1155 sq.m x 0.578m deep			

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Date March 2021 File SubBase Attenuation 100yrs+40...	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

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

Half Drain Time : 1034 minutes

Storm Duration (mins)	Maximum Control (l/s)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	1.5	0.0	1.5	5.2732	0.2732	80.4	0 K
30 Summer	1.6	0.0	1.6	5.3357	0.3357	109.4	0 K
60 Summer	1.7	0.0	1.7	5.4027	0.4027	140.4	0 K
120 Summer	1.8	0.0	1.8	5.4692	0.4692	171.3	0 K
180 Summer	1.9	0.0	1.9	5.5047	0.5047	187.9	0 K
240 Summer	2.0	0.0	2.0	5.5262	0.5262	197.8	0 K
360 Summer	2.0	0.0	2.0	5.5518	0.5518	209.6	0 K
480 Summer	2.0	0.0	2.0	5.5653	0.5653	215.8	0 K
600 Summer	2.0	0.0	2.0	5.5713	0.5713	218.7	0 K
720 Summer	2.0	0.0	2.0	5.5728	0.5728	219.4	0 K
960 Summer	2.0	0.0	2.0	5.5693	0.5693	217.8	0 K
1440 Summer	2.0	0.0	2.0	5.5578	0.5578	212.4	0 K
2160 Summer	2.0	0.0	2.0	5.5357	0.5357	202.1	0 K
15 Winter	1.5	0.0	1.5	5.2732	0.2732	80.4	0 K
30 Winter	1.6	0.0	1.6	5.3357	0.3357	109.4	0 K
60 Winter	1.7	0.0	1.7	5.4027	0.4027	140.4	0 K
120 Winter	1.8	0.0	1.8	5.4697	0.4697	171.6	0 K
180 Winter	1.9	0.0	1.9	5.5057	0.5057	188.2	0 K
240 Winter	2.0	0.0	2.0	5.5272	0.5272	198.3	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	124.38	23
30 Summer	83.70	38
60 Summer	53.78	68
120 Summer	33.37	128
180 Summer	24.87	186
240 Summer	20.04	246
360 Summer	14.74	366
480 Summer	11.85	486
600 Summer	9.99	604
720 Summer	8.69	724
960 Summer	6.97	844
1440 Summer	5.09	1100
2160 Summer	3.71	1496
15 Winter	124.38	23
30 Winter	83.70	37
60 Winter	53.78	66
120 Winter	33.37	126
180 Winter	24.87	184
240 Winter	20.04	242

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Date March 2021 File SubBase Attenuation 100yrs+40...	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

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

Storm Duration (mins)	Maximum Control (l/s)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
360 Winter	2.0	0.0	2.0	5.5533	0.5532	210.4	0 K
480 Winter	2.0	0.0	2.0	5.5678	0.5678	217.1	0 K
600 Winter	2.0	0.0	2.0	5.5753	0.5753	220.4	0 K
720 Winter	2.0	0.0	2.0	5.5778	0.5778	221.7	0 K
960 Winter	2.0	0.0	2.0	5.5748	0.5748	220.3	0 K
1440 Winter	2.0	0.0	2.0	5.5593	0.5593	213.0	0 K
2160 Winter	2.0	0.0	2.0	5.5307	0.5307	199.9	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	14.74	358
480 Winter	11.85	472
600 Winter	9.99	586
720 Winter	8.69	696
960 Winter	6.97	908
1440 Winter	5.09	1130
2160 Winter	3.71	1600

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Rainfall Details

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	2160
M5-60 (mm)	19.000	Summer Storms	Yes
Ratio-R	0.348	Winter Storms	Yes
Cv (Summer)	1.000	Climate Change %	+40
Cv (Winter)	1.000		

Time / Area Diagram

Total Area (ha) = 0.281

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.000	4	8	0.281

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Porous Car Park Details

Infil Coef - Base (m/hr)	0.000000	Cover Level (m)	5.800
Membrane Percolation (mm/hr)	1000	Slope (1:x)	1000.0
Safety Factor	10.0	Max Percolation (l/s)	322.2
Porosity	0.40	Depression Storage (mm)	5
Length (m)	200.0	Evaporation (mm/day)	3
Width (m)	5.8	Cap Volume (m)	5.800
Invert Level (m)	5.000		

Hydro-Brake Outflow Control

Design Head (m)	0.570	Hydro-Brake Type	MD5	Invert Level (m)	5.000
Design Flow (l/s)	2.0	Diameter (mm)	67		

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	1.4	0.80	2.4	2.00	3.8	4.00	5.4	7.00	7.1
0.20	1.4	1.00	2.7	2.20	4.0	4.50	5.7	7.50	7.4
0.30	1.5	1.20	2.9	2.40	4.2	5.00	6.0	8.00	7.6
0.40	1.7	1.40	3.2	2.60	4.3	5.50	6.3	8.50	7.8
0.50	1.9	1.60	3.4	3.00	4.7	6.00	6.6	9.00	8.1
0.60	2.1	1.80	3.6	3.50	5.0	6.50	6.9	9.50	8.3