



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-A

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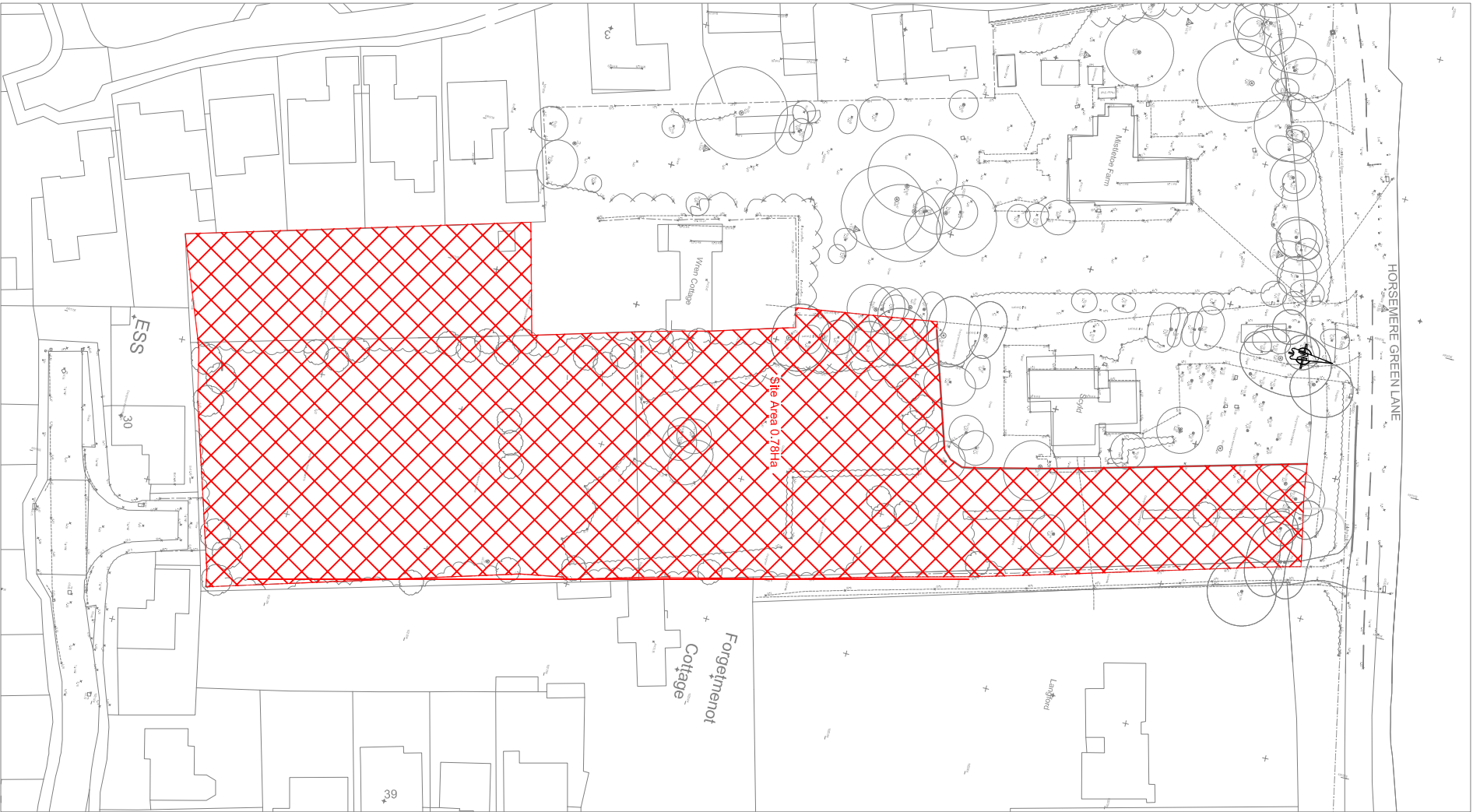
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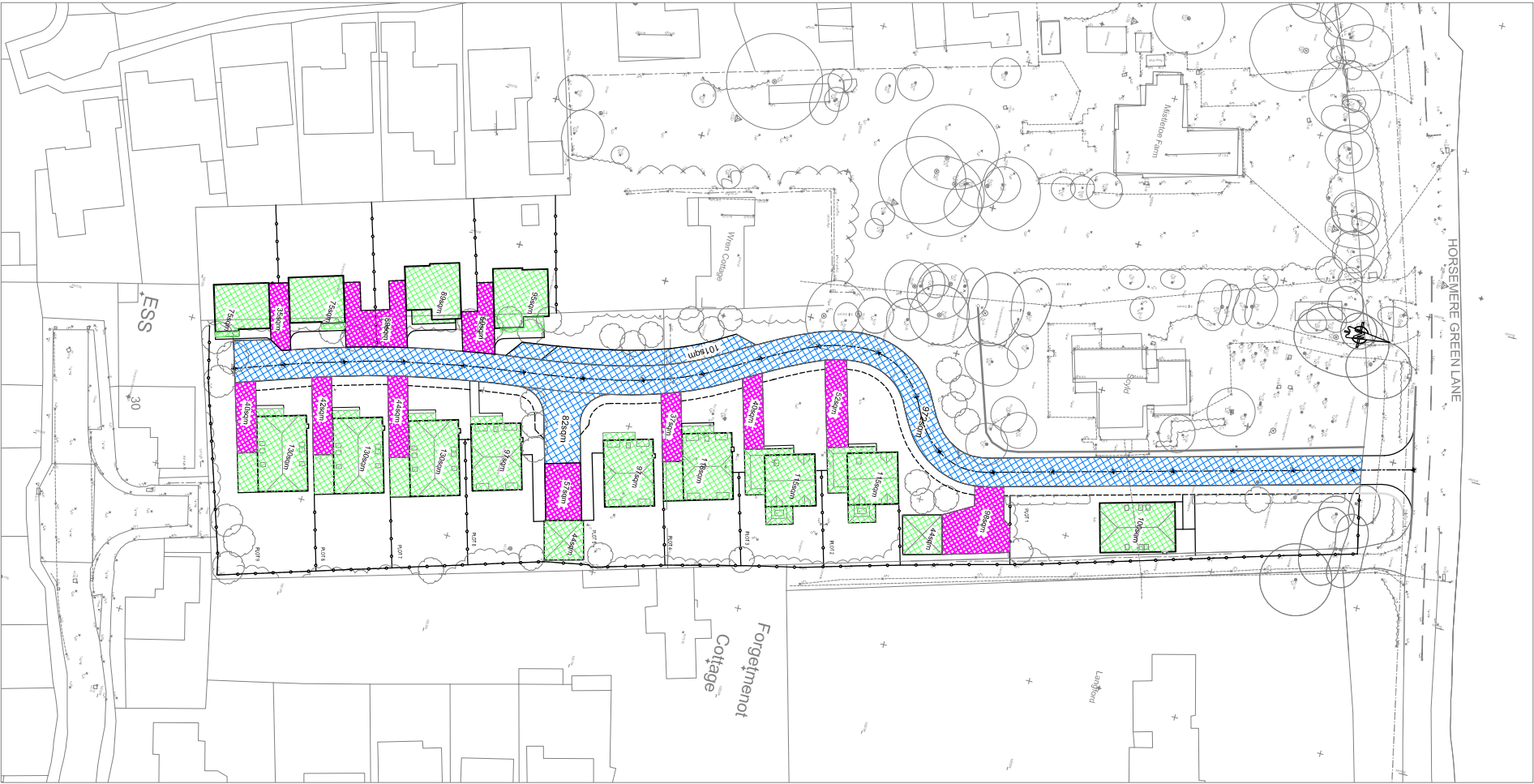
Date:

23rd February 2021

Revision	Description	Date	Initials
A	Initial issue	23 rd February 2021	KN



Existing Development Area - Scale 1:500



Proposed Impermeable Areas - Scale 1:500

Impermeable Areas Draining to Attenuation	
Buildings.....	1454sqm
10% Urban Creep.....	150sqm
Drives & Parking	584sqm
Access Roads.....	1155sqm
Total.....	2813sqm

Site Area.....0.78ha

Greenfield Run Off Discharge 2.9lit/sec

Storage Required 196.4 cu m

A 23/02/21 First Issue		KN
Rev	Desc	Notes
Information for Planning		
SC01D, HORSEMER GREEN LANE CLIMPING		
HERRINGGATE UK LTD.		
Drawing Title		
Engineering Details		
Drainage Areas		
Drawn	Checked	Scales
KN		1:500
Job No.	Drawing No.	Page Size
KN02103	500-01	A1
		Date
		02/21
		Revision
		A



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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: February 2021	Job No. KNC2103	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 0.78Ha Q_{bar} discharge from 50Ha site = 187.0lits/sec (see MicroDrainage IH124 results) Applying ratio of existing site to this discharge: $0.78/50 \times 187.0 = 2.9 \text{ lit/sec}$ Take 2.9 lits/sec 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 an additional 10% for urban creep = 196.4 cu.m. Sub-base attenuation 1155 sq.m x 0.523m deep			

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Date February 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 : 610 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	2.4	0.0	2.4	5.2717	0.2717	79.7	0 K
30 Summer	2.5	0.0	2.5	5.3327	0.3327	108.1	0 K
60 Summer	2.6	0.0	2.6	5.3967	0.3967	137.7	0 K
120 Summer	2.8	0.0	2.8	5.4577	0.4577	166.0	0 K
180 Summer	2.8	0.0	2.8	5.4872	0.4872	179.8	0 K
240 Summer	2.9	0.0	2.9	5.5027	0.5027	187.0	0 K
360 Summer	2.9	0.0	2.9	5.5167	0.5167	193.3	0 K
480 Summer	2.9	0.0	2.9	5.5187	0.5187	194.4	0 K
600 Summer	2.9	0.0	2.9	5.5162	0.5162	193.2	0 K
720 Summer	2.9	0.0	2.9	5.5127	0.5127	191.6	0 K
960 Summer	2.9	0.0	2.9	5.5037	0.5037	187.3	0 K
1440 Summer	2.8	0.0	2.8	5.4822	0.4822	177.4	0 K
2160 Summer	2.8	0.0	2.8	5.4497	0.4497	162.2	0 K
15 Winter	2.4	0.0	2.4	5.2717	0.2717	79.6	0 K
30 Winter	2.5	0.0	2.5	5.3332	0.3332	108.1	0 K
60 Winter	2.6	0.0	2.6	5.3972	0.3972	137.9	0 K
120 Winter	2.8	0.0	2.8	5.4582	0.4582	166.3	0 K
180 Winter	2.9	0.0	2.9	5.4887	0.4887	180.3	0 K
240 Winter	2.9	0.0	2.9	5.5047	0.5047	187.7	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	126
180 Summer	24.87	186
240 Summer	20.04	246
360 Summer	14.74	364
480 Summer	11.85	484
600 Summer	9.99	538
720 Summer	8.69	596
960 Summer	6.97	724
1440 Summer	5.09	988
2160 Summer	3.71	1408
15 Winter	124.38	23
30 Winter	83.70	37
60 Winter	53.78	66
120 Winter	33.37	124
180 Winter	24.87	182
240 Winter	20.04	240

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Date February 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	2.9	0.0	2.9	5.5192	0.5192	194.6	0 K
480 Winter	2.9	0.0	2.9	5.5232	0.5232	196.4	0 K
600 Winter	2.9	0.0	2.9	5.5207	0.5207	195.2	0 K
720 Winter	2.9	0.0	2.9	5.5147	0.5147	192.4	0 K
960 Winter	2.9	0.0	2.9	5.5032	0.5032	187.2	0 K
1440 Winter	2.8	0.0	2.8	5.4747	0.4747	173.8	0 K
2160 Winter	2.7	0.0	2.7	5.4272	0.4272	151.9	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	14.74	354
480 Winter	11.85	464
600 Winter	9.99	570
720 Winter	8.69	660
960 Winter	6.97	748
1440 Winter	5.09	1058
2160 Winter	3.71	1516

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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)	5.700
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)	5.700
Invert Level (m)	5.000		

Hydro-Brake Outflow Control

Design Head (m)	0.525	Hydro-Brake Type	MD5	Invert Level (m)	5.000
Design Flow (l/s)	2.9	Diameter (mm)	82		

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	2.1	0.80	3.6	2.00	5.7	4.00	8.1	7.00	10.7
0.20	2.4	1.00	4.1	2.20	6.0	4.50	8.6	7.50	11.1
0.30	2.4	1.20	4.4	2.40	6.3	5.00	9.1	8.00	11.5
0.40	2.6	1.40	4.8	2.60	6.5	5.50	9.5	8.50	11.8
0.50	2.9	1.60	5.1	3.00	7.0	6.00	9.9	9.00	12.2
0.60	3.1	1.80	5.4	3.50	7.6	6.50	10.3	9.50	12.5