



**Mistletoe Farm
Climping**

***Green Field Run Off
and***

***Micro Drainage Calculations
for***

Permeable Paved Areas and Open Ditch

Prepared by:
Kazys Narbutas Consulting Limited

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

Tel: 01794 522903

KNC1820/MDC-B

Kazys Narbutas Consulting Limited © Copyright 2020. No part of this publication may be reproduced by any means without the prior permission of Kazys Narbutas Consulting Limited.

Prepared by

Kazys Narbutas
BSc (Hons) CEng
MICE, MCIHT, AaPS

Signed:



Date: 20th October 2020

Revision	Description	Date	Initials
A	Initial issue	20 th October 2020	KN
B	Calculations amended to orifice outfall	28 th October 2020	KN

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: Mistletoe Farm, Climping					
Client : Domusea					
Date: October 2020	Job No. KNC1820	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 0.34Ha Q_{bar} discharge from 50Ha site = 186.1lits/sec (see MicroDrainage IH124 results) Applying ratio of existing site to this discharge: $0.34/50 \times 186.1 = 1.3 \text{ lit/sec}$; assume practical discharge 2.0lit/sec Take 2.0 lits/sec final discharge to outfall ditch. See MicroDrainage model for constituent parts of drainage system.					

Escher Silverman		Page 1
Lone Barn Studios Stanbridge Lane Romsey SO51 0HE	Mistletoe Farm Climping Green Field Run Off	
Date October 2020 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)	756.000	Region Number	7

Results 1/s

QBAR Rural	186.1
QBAR Urban	186.1
Q 100 years	593.8
Q 1 year	158.2
Q 2 years	164.0
Q 5 years	238.3
Q 10 years	301.6
Q 20 years	372.9
Q 25 years	399.8
Q 30 years	421.9
Q 50 years	487.7
Q 100 years	593.8
Q 200 years	698.0
Q 250 years	731.5
Q 1000 years	960.5

Kazys Narbutas Consulting Limited		Page 1
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Littlehampton Plot 1 Drive Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Summary of Results for plot 1 attenuation with orifice.src

Upstream Structures	Outflow To	Overflow To
open ditch.src road 3 attenuation with orifice.src	(None)	(None)

Half Drain Time : 97 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 (m ³)	Status
15 Summer	0.3	0.0	0.3	4.8573	0.1273	6.7	0 K
30 Summer	1.1	0.0	1.1	4.8923	0.1622	8.7	0 K
60 Summer	1.5	0.0	1.5	4.9148	0.1847	9.9	0 K
120 Summer	1.8	0.0	1.8	4.9337	0.2037	11.0	0 K
180 Summer	1.8	0.0	1.8	4.9392	0.2092	11.3	0 K
240 Summer	1.8	0.0	1.8	4.9397	0.2097	11.3	0 K
360 Summer	1.8	0.0	1.8	4.9362	0.2062	11.1	0 K
480 Summer	1.7	0.0	1.7	4.9302	0.2002	10.8	0 K
600 Summer	1.7	0.0	1.7	4.9243	0.1942	10.5	0 K
720 Summer	1.6	0.0	1.6	4.9183	0.1882	10.1	0 K
960 Summer	1.4	0.0	1.4	4.9083	0.1782	9.6	0 K
1440 Summer	1.2	0.0	1.2	4.8963	0.1663	8.9	0 K
2160 Summer	0.9	0.0	0.9	4.8858	0.1558	8.3	0 K
2880 Summer	0.7	0.0	0.7	4.8788	0.1488	7.9	0 K
4320 Summer	0.5	0.0	0.5	4.8708	0.1408	7.5	0 K
5760 Summer	0.4	0.0	0.4	4.8648	0.1348	7.1	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	128.96	23
30 Summer	86.66	36
60 Summer	55.54	56
120 Summer	34.34	86
180 Summer	25.52	120
240 Summer	20.52	154
360 Summer	15.10	218
480 Summer	12.13	280
600 Summer	10.23	338
720 Summer	8.89	398
960 Summer	7.12	514
1440 Summer	5.20	754
2160 Summer	3.79	1108
2880 Summer	3.02	1476
4320 Summer	2.19	2208
5760 Summer	1.74	2936

Kazys Narbutas Consulting Limited		Page 2
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Littlehampton Plot 1 Drive Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Summary of Results for plot 1 attenuation with orifice.src

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
7200 Summer	0.4	0.0	0.4	4.8613	0.1313	6.9	0 K
8640 Summer	0.3	0.0	0.3	4.8593	0.1293	6.8	0 K
10080 Summer	0.3	0.0	0.3	4.8573	0.1273	6.7	0 K
15 Winter	0.6	0.0	0.6	4.8718	0.1418	7.5	0 K
30 Winter	1.5	0.0	1.5	4.9092	0.1792	9.6	0 K
60 Winter	1.8	0.0	1.8	4.9362	0.2062	11.2	0 K
120 Winter	2.0	0.0	2.0	4.9537	0.2237	12.1	0 K
180 Winter	2.0	0.0	2.0	4.9542	0.2242	12.2	0 K
240 Winter	1.9	0.0	1.9	4.9497	0.2197	11.9	0 K
360 Winter	1.8	0.0	1.8	4.9377	0.2077	11.2	0 K
480 Winter	1.7	0.0	1.7	4.9263	0.1962	10.6	0 K
600 Winter	1.6	0.0	1.6	4.9163	0.1862	10.0	0 K
720 Winter	1.4	0.0	1.4	4.9083	0.1782	9.6	0 K
960 Winter	1.2	0.0	1.2	4.8983	0.1682	9.0	0 K
1440 Winter	0.9	0.0	0.9	4.8868	0.1568	8.4	0 K
2160 Winter	0.7	0.0	0.7	4.8768	0.1468	7.8	0 K
2880 Winter	0.5	0.0	0.5	4.8708	0.1408	7.5	0 K
4320 Winter	0.4	0.0	0.4	4.8628	0.1328	7.0	0 K
5760 Winter	0.3	0.0	0.3	4.8588	0.1288	6.8	0 K
7200 Winter	0.3	0.0	0.3	4.8568	0.1268	6.7	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
7200 Summer	1.46	3664
8640 Summer	1.26	4392
10080 Summer	1.12	5136
15 Winter	128.96	22
30 Winter	86.66	35
60 Winter	55.54	58
120 Winter	34.34	92
180 Winter	25.52	128
240 Winter	20.52	162
360 Winter	15.10	228
480 Winter	12.13	290
600 Winter	10.23	348
720 Winter	8.89	404
960 Winter	7.12	522
1440 Winter	5.20	760
2160 Winter	3.79	1128
2880 Winter	3.02	1500
4320 Winter	2.19	2188
5760 Winter	1.74	2944
7200 Winter	1.46	3632

Kazys Narbutas Consulting Limited		Page 3
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Littlehampton Plot 1 Drive Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Summary of Results for plot 1 attenuation with orifice.src

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
8640 Winter	0.2	0.0	0.2	4.8553	0.1253	6.6	0 K
10080 Winter	0.2	0.0	0.2	4.8538	0.1238	6.5	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
8640 Winter	1.26	4328
10080 Winter	1.12	4992

Kazys Narbutas Consulting Limited		Page 4
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Littlehampton Plot 1 Drive Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Rainfall Details for plot 1 attenuation with orifice.src

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	19.600	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) = 0.031

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.000	4	8	0.031

Kazys Narbutas Consulting Limited		Page 5
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Littlehampton Plot 1 Drive Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Storage Controls for plot 1 attenuation with orifice.src

Porous Car Park Details

Infil Coef - Base (m/hr)	0.000000	Invert Level (m)	4.730
Membrane Percolation (mm/hr)	1000	Cover Level (m)	5.565
Safety Factor	3.0	Slope (1:x)	1000.0
Porosity	0.40	Max Percolation (l/s)	39.0
Length (m)	15.6	Depression Storage (mm)	5
Width (m)	9.0	Evaporation (mm/day)	3

Orifice Outflow Control

Diameter (m)	0.053	Invert Level (m)	4.830
Discharge Coefficient	0.650		

Kazys Narbutas Consulting Limited		Page 1
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Ditch Attenuation	
Date October 2020 File Cascade 1.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Summary of Results for open ditch.src

Upstream Structures	Outflow To	Overflow To
road 3 attenuation.src	(None)	plot1 attenuation.src

Half Drain Time exceeds 7 days

Storm Duration (mins)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
15 Summer	0.0	0.0	5.1197	0.3197	8.4	0 K
30 Summer	0.0	0.0	5.2037	0.4037	11.9	0 K
60 Summer	0.0	0.0	5.2847	0.4847	15.7	0 K
120 Summer	0.0	0.0	5.3623	0.5623	19.8	0 K
180 Summer	0.0	0.0	5.4053	0.6053	22.2	0 K
240 Summer	0.0	0.0	5.4338	0.6338	23.9	0 K
360 Summer	0.0	0.0	5.4758	0.6758	26.5	0 K
480 Summer	0.0	0.0	5.5063	0.7063	28.5	0 K
600 Summer	0.0	0.0	5.5298	0.7298	30.0	0 K
720 Summer	0.0	0.0	5.5488	0.7488	31.3	0 K
960 Summer	0.0	0.0	5.5793	0.7793	33.4	0 K
1440 Summer	0.0	0.0	5.6218	0.8218	36.5	0 K
2160 Summer	0.0	0.0	5.6638	0.8638	39.6	0 K
2880 Summer	0.0	0.0	5.6923	0.8923	41.8	0 K
4320 Summer	0.0	0.0	5.7298	0.9298	44.8	0 K
5760 Summer	0.0	0.0	5.7543	0.9543	46.8	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	128.96	280
30 Summer	86.66	338
60 Summer	55.54	402
120 Summer	34.34	482
180 Summer	25.52	536
240 Summer	20.52	582
360 Summer	15.10	662
480 Summer	12.13	738
600 Summer	10.23	812
720 Summer	8.89	888
960 Summer	7.12	1056
1440 Summer	5.20	1482
2160 Summer	3.79	2192
2880 Summer	3.02	2904
4320 Summer	2.19	4340
5760 Summer	1.74	5776

Kazys Narbutas Consulting Limited		Page 2
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Ditch Attenuation	
Date October 2020 File Cascade 1.CAS	Designed By KN Checked By	
Micro Drainage		Source Control W.11.2

Cascade Summary of Results for open ditch.src

Storm Duration (mins)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
7200 Summer	0.0	0.0	5.7713	0.9713	48.2	0 K
8640 Summer	0.0	0.0	5.7843	0.9843	49.3	0 K
10080 Summer	0.0	0.0	5.7943	0.9943	50.1	0 K
15 Winter	0.0	0.0	5.1507	0.3507	9.6	0 K
30 Winter	0.0	0.0	5.2397	0.4397	13.5	0 K
60 Winter	0.0	0.0	5.3258	0.5258	17.8	0 K
120 Winter	0.0	0.0	5.4078	0.6078	22.4	0 K
180 Winter	0.0	0.0	5.4538	0.6538	25.1	0 K
240 Winter	0.0	0.0	5.4838	0.6838	27.0	0 K
360 Winter	0.0	0.0	5.5288	0.7288	30.0	0 K
480 Winter	0.0	0.0	5.5608	0.7608	32.1	0 K
600 Winter	0.0	0.0	5.5858	0.7858	33.9	0 K
720 Winter	0.0	0.0	5.6063	0.8063	35.4	0 K
960 Winter	0.0	0.0	5.6388	0.8388	37.8	0 K
1440 Winter	0.0	0.0	5.6843	0.8843	41.2	0 K
2160 Winter	0.0	0.0	5.7293	0.9293	44.8	0 K
2880 Winter	0.0	0.0	5.7603	0.9603	47.3	0 K
4320 Winter	0.0	0.0	5.8023	1.0023	50.8	0 K
5760 Winter	0.0	0.0	5.8293	1.0293	53.2	0 K
7200 Winter	0.0	0.0	5.8488	1.0488	54.9	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
7200 Summer	1.46	7216
8640 Summer	1.26	8656
10080 Summer	1.12	10088
15 Winter	128.96	299
30 Winter	86.66	359
60 Winter	55.54	430
120 Winter	34.34	514
180 Winter	25.52	572
240 Winter	20.52	618
360 Winter	15.10	698
480 Winter	12.13	770
600 Winter	10.23	842
720 Winter	8.89	914
960 Winter	7.12	1074
1440 Winter	5.20	1466
2160 Winter	3.79	2168
2880 Winter	3.02	2888
4320 Winter	2.19	4328
5760 Winter	1.74	5768
7200 Winter	1.46	7208

Kazys Narbutas Consulting Limited		Page 3
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Ditch Attenuation	
Date October 2020 File Cascade 1.CAS	Designed By KN Checked By	
Micro Drainage		Source Control W.11.2

Cascade Summary of Results for open ditch.src

Storm Duration (mins)	Maximum Filtration (l/s)	Maximum Outflow (l/s)	Maximum Water Level (m OD)	Maximum Depth (m)	Maximum Volume (m³)	Status
8640 Winter	0.0	0.0	5.8643	1.0643	56.3	0 K
10080 Winter	0.0	0.0	5.8763	1.0763	57.4	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
8640 Winter	1.26	8648
10080 Winter	1.12	10088

Kazys Narbutas Consulting Limited		Page 4
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Ditch Attenuation	
Date October 2020 File Cascade 1.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Rainfall Details for open ditch.src

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	19.600	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) = 0.007

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.000	4	8	0.007

Kazys Narbutas Consulting Limited		Page 5
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Ditch Attenuation	
Date October 2020 File Cascade 1.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Storage Controls for open ditch.src

Swale Details

Infil Coef - Base (m/hr)	0.000000	Length (m)	23.0
Infil Coef - Sides (m/hr)	0.000000	Side Slope (1:x)	1.5
Safety Factor	3.0	Invert Level (m)	4.800
Porosity	1.00	Cover Level (m)	5.900
Base Width (m)	0.8	Slope (1:x)	440.0

Kazys Narbutas Consulting Limited		Page 1
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Road 3 Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Summary of Results for road 3 attenuation with orifice.src

Upstream Structures **Outflow To** **Overflow To**
 (None) open ditch.src (None)

Half Drain Time : 161 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	0.7	0.0	0.7	5.3118	0.0818	6.3	0 K
30 Summer	0.7	0.0	0.7	5.3293	0.0993	8.8	0 K
60 Summer	0.8	0.0	0.8	5.3458	0.1158	11.1	0 K
120 Summer	0.9	0.0	0.9	5.3563	0.1263	12.6	0 K
180 Summer	0.9	0.0	0.9	5.3588	0.1288	13.0	0 K
240 Summer	0.9	0.0	0.9	5.3593	0.1293	13.0	0 K
360 Summer	0.9	0.0	0.9	5.3583	0.1283	12.9	0 K
480 Summer	0.9	0.0	0.9	5.3558	0.1258	12.5	0 K
600 Summer	0.8	0.0	0.8	5.3523	0.1223	12.0	0 K
720 Summer	0.8	0.0	0.8	5.3483	0.1183	11.5	0 K
960 Summer	0.8	0.0	0.8	5.3408	0.1108	10.4	0 K
1440 Summer	0.7	0.0	0.7	5.3273	0.0973	8.5	0 K
2160 Summer	0.7	0.0	0.7	5.3123	0.0823	6.4	0 K
2880 Summer	0.6	0.0	0.6	5.3013	0.0713	4.9	0 K
4320 Summer	0.5	0.0	0.5	5.2868	0.0567	3.1	0 K
5760 Summer	0.5	0.0	0.5	5.2778	0.0477	2.2	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	128.96	22
30 Summer	86.66	37
60 Summer	55.54	66
120 Summer	34.34	118
180 Summer	25.52	148
240 Summer	20.52	178
360 Summer	15.10	248
480 Summer	12.13	316
600 Summer	10.23	384
720 Summer	8.89	452
960 Summer	7.12	584
1440 Summer	5.20	842
2160 Summer	3.79	1212
2880 Summer	3.02	1564
4320 Summer	2.19	2256
5760 Summer	1.74	2944

Kazys Narbutas Consulting Limited		Page 2
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Road 3 Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage		Source Control W.11.2

Cascade Summary of Results for road 3 attenuation with orifice.src

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
7200 Summer	0.4	0.0	0.4	5.2728	0.0427	1.8	0 K
8640 Summer	0.3	0.0	0.3	5.2693	0.0392	1.5	0 K
10080 Summer	0.3	0.0	0.3	5.2663	0.0362	1.3	0 K
15 Winter	0.7	0.0	0.7	5.3188	0.0888	7.3	0 K
30 Winter	0.8	0.0	0.8	5.3388	0.1088	10.1	0 K
60 Winter	0.9	0.0	0.9	5.3573	0.1273	12.7	0 K
120 Winter	0.9	0.0	0.9	5.3703	0.1403	14.5	0 K
180 Winter	0.9	0.0	0.9	5.3723	0.1423	14.8	0 K
240 Winter	0.9	0.0	0.9	5.3723	0.1423	14.8	0 K
360 Winter	0.9	0.0	0.9	5.3698	0.1398	14.5	0 K
480 Winter	0.9	0.0	0.9	5.3648	0.1348	13.8	0 K
600 Winter	0.9	0.0	0.9	5.3593	0.1293	13.0	0 K
720 Winter	0.9	0.0	0.9	5.3533	0.1233	12.2	0 K
960 Winter	0.8	0.0	0.8	5.3423	0.1123	10.6	0 K
1440 Winter	0.7	0.0	0.7	5.3238	0.0938	8.0	0 K
2160 Winter	0.6	0.0	0.6	5.3038	0.0738	5.2	0 K
2880 Winter	0.5	0.0	0.5	5.2908	0.0607	3.5	0 K
4320 Winter	0.4	0.0	0.4	5.2758	0.0457	2.0	0 K
5760 Winter	0.3	0.0	0.3	5.2693	0.0392	1.5	0 K
7200 Winter	0.3	0.0	0.3	5.2653	0.0352	1.2	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
7200 Summer	1.46	3672
8640 Summer	1.26	4408
10080 Summer	1.12	5136
15 Winter	128.96	22
30 Winter	86.66	36
60 Winter	55.54	64
120 Winter	34.34	120
180 Winter	25.52	156
240 Winter	20.52	190
360 Winter	15.10	268
480 Winter	12.13	342
600 Winter	10.23	414
720 Winter	8.89	486
960 Winter	7.12	622
1440 Winter	5.20	884
2160 Winter	3.79	1256
2880 Winter	3.02	1592
4320 Winter	2.19	2256
5760 Winter	1.74	2992
7200 Winter	1.46	3632

Kazys Narbutas Consulting Limited		Page 3
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Road 3 Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Summary of Results for road 3 attenuation with orifice.src

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 (m ³)	Status
8640 Winter	0.3	0.0	0.3	5.2623	0.0322	1.0	0 K
10080 Winter	0.2	0.0	0.2	5.2598	0.0297	0.8	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
8640 Winter	1.26	4360
10080 Winter	1.12	5088

Kazys Narbutas Consulting Limited		Page 4
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Road 3 Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Rainfall Details for road 3 attenuation with orifice.src

Region	ENG+WAL	Shortest Storm (mins)	15
Return Period (years)	100	Longest Storm (mins)	10080
M5-60 (mm)	19.600	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) = 0.035

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.000	4	8	0.035

Kazys Narbutas Consulting Limited		Page 5
Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Mistletoe Farm Climping Road 3 Attenuation	
Date October 2020 File Cascade Orifice.CAS	Designed By KN Checked By	
Micro Drainage	Source Control W.11.2	

Cascade Storage Controls for road 3 attenuation with orifice.src

Porous Car Park Details

Infil Coef - Base (m/hr)	0.000000	Invert Level (m)	5.230
Membrane Percolation (mm/hr)	1000	Cover Level (m)	5.515
Safety Factor	3.0	Slope (1:x)	1000.0
Porosity	0.40	Max Percolation (l/s)	97.3
Length (m)	73.0	Depression Storage (mm)	5
Width (m)	4.8	Evaporation (mm/day)	3

Orifice Outflow Control

Diameter (m)	0.034	Invert Level (m)	5.230
Discharge Coefficient	0.650		



SEL Environmental Ltd
Canal House
Bonsall Street
Blackburn, BB2 4DD
Tel: 01254 589987
Web: www.selel.co.uk

Data Sheet

Outfall CF1

44mm Sharp Edged Orifice Flow Control

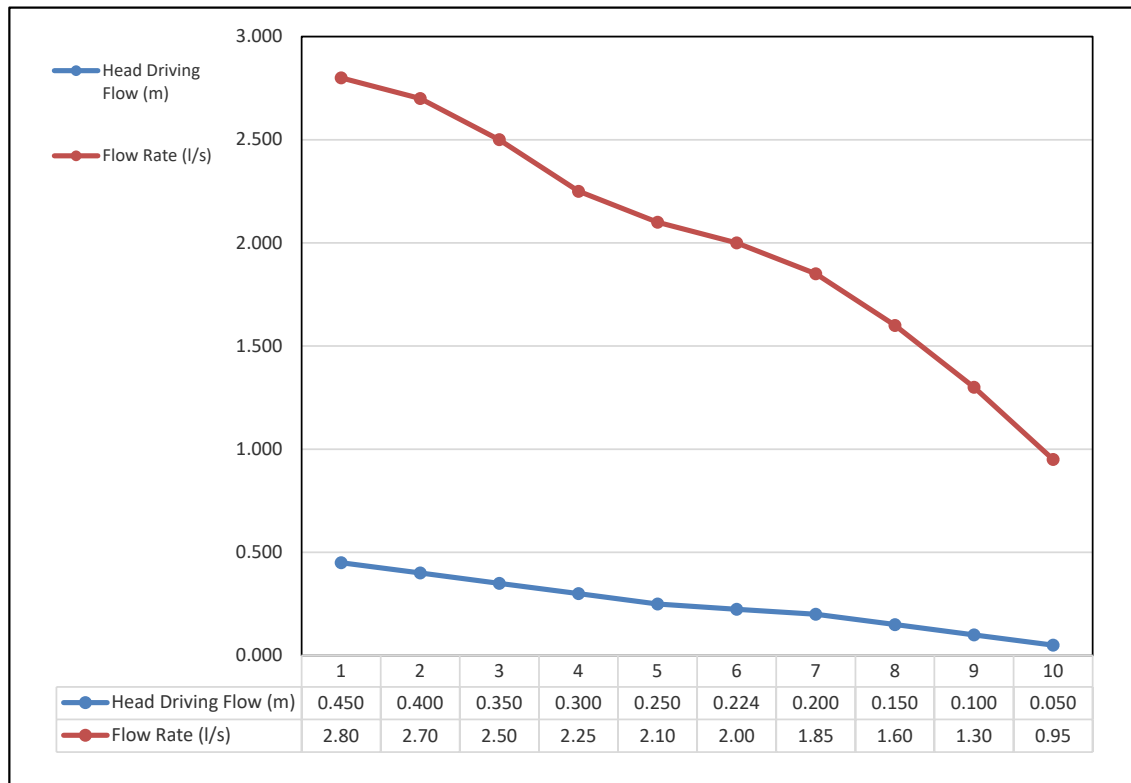
Project Name: Mistletoe
Farm, Climping

Client: Kazys Narbutas
Consulting

Date: 29/10/2020

Flow Rate (l/s)	Head Driving Flow (m)	Orifice Diameter (mm)
2.80	0.450	44
2.70	0.400	44
2.50	0.350	44
2.25	0.300	44
2.10	0.250	44
2.00	0.224	44
1.85	0.200	44
1.60	0.150	44
1.30	0.100	44
0.95	0.050	44

Calculations based on the standard equation for sharp edged small orifices using a CD of 0.65



Note: For Surface Water Only



SEL Environmental Ltd
Canal House
Bonsall Street
Blackburn, BB2 4DD
Tel: 01254 589987
Web: www.selel.co.uk

Data Sheet

Outfall CF2

33mm Sharp Edged Orifice Flow Control

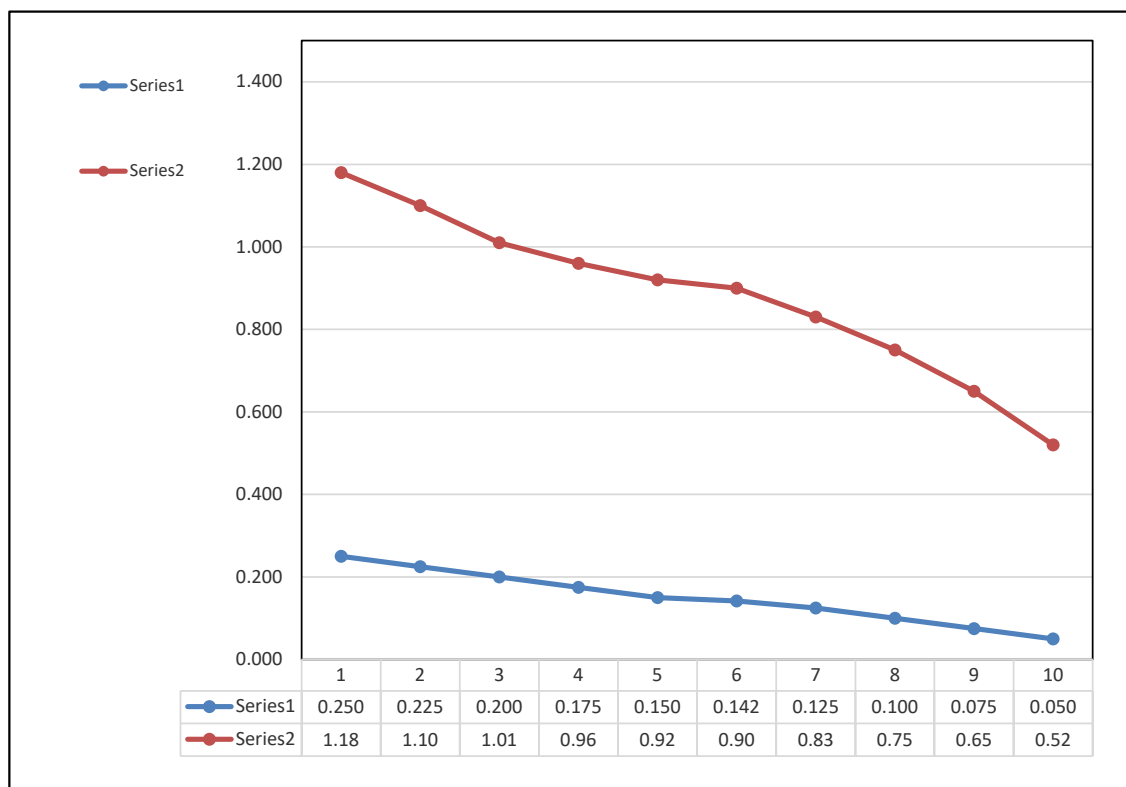
Project Name: Mistletoe
Farm, Climping

Client: Kazys Narbutas
Consulting

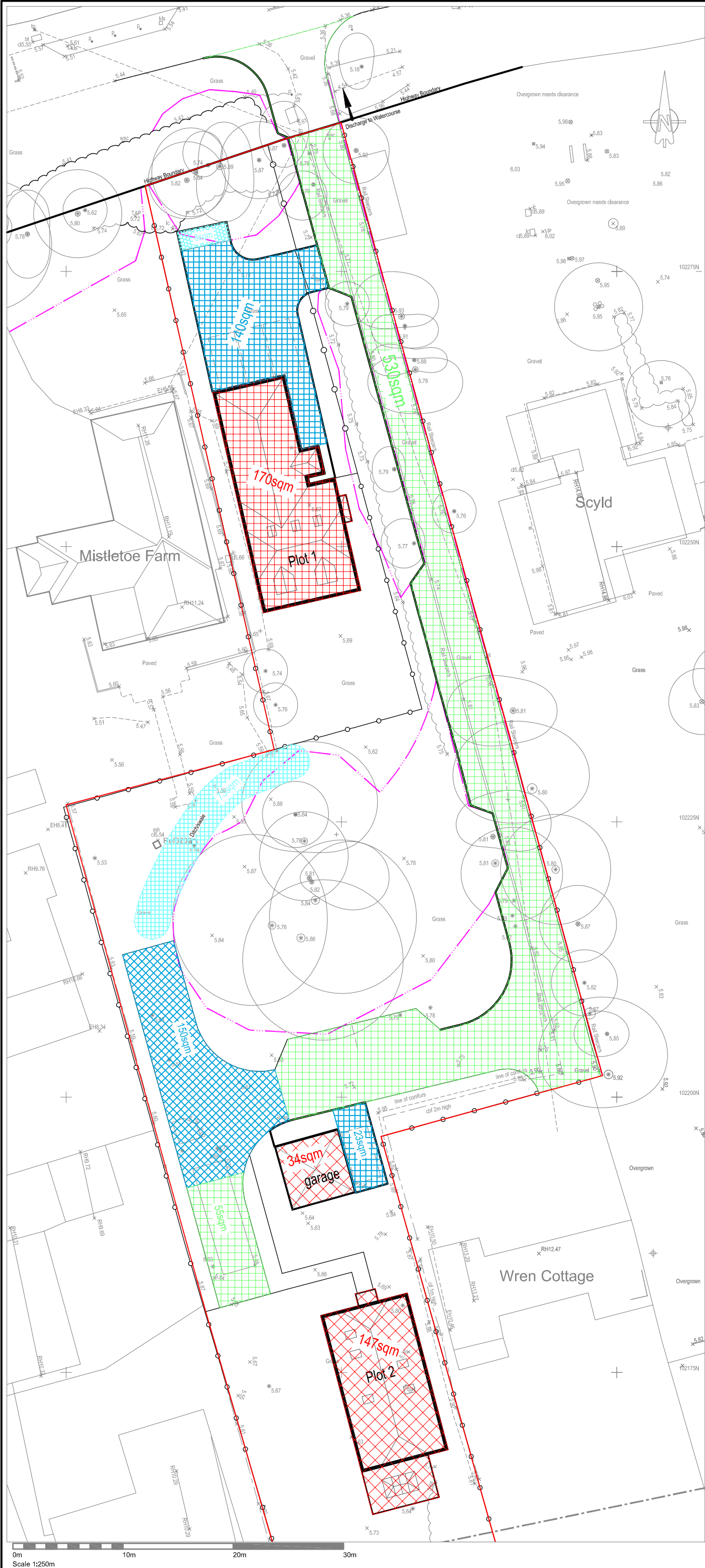
Date: 29/10/2020

Flow Rate (l/s)	Head Driving Flow (m)	Orifice Diameter (mm)
1.18	0.250	33
1.10	0.225	33
1.01	0.200	33
0.96	0.175	33
0.92	0.150	33
0.90	0.142	33
0.83	0.125	33
0.75	0.100	33
0.65	0.075	33
0.52	0.050	33

Calculations based on the standard equation for sharp edged small orifices using a CD of 0.65



Note: For Surface Water Only



Undeveloped Site Area.....0.34Ha	
Proposed Area Draining to Watercourse	
	Buildings.....351sqm
	Drives & Parking313sqm
	Area of Open Ditch.....73sqm
Total.....737sqm	

Areas not discharging to watercourse	
	Gravel Access Road.....585sqm
	'No dig' construction.....8sqm

A	14.10.20	Initial Issue.		KN
Rev.	Date	Details		Initials
Drawing Status				
FOR INFORMATION				
Project				
MISTLETOE FARM LITTLEHAMPTON				
Client				
JAMIE ORTON				
Drawing Title				
Engineering Details Drained Areas				
Drawn	Checked	Scales	Paper Size	Date
KN		1:250	A2	10.20
Job No.	Drawing No.		Revision	
KNC1820	505-01		A	