



Cinders Nursery- Phase 2
Cinders Lane
Yapton

Green Field Run Off & Micro Drainage Calculations
For
Surface Water Attenuation into Sub Base

Prepared by:
Kazys Narbutas Consulting Limited

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

Tel: 01794 522903

KNC2006/MDC-B

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Unit 5B Tanners Court Tanners Lane, East Wellow Romsey SO51 6DP	Cinders Nursery Ph2 Yapton Greenfield 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)	748.000	Region Number	7

Results 1/s

QBAR Rural	183.8
QBAR Urban	183.8
Q 100 years	586.5
Q 1 year	156.3
Q 2 years	162.0
Q 5 years	235.3
Q 10 years	297.8
Q 20 years	368.3
Q 25 years	394.9
Q 30 years	416.6
Q 50 years	481.7
Q 100 years	586.5
Q 200 years	689.4
Q 250 years	722.5
Q 1000 years	948.6

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: Cinders Lane- Phase 2					
Client : Crayfern Homes					
Date: October 2020	Job No. KNC2006	Page No. 1	Chk:	By: KHN	Rev: B
Reference	Calculation Existing Site Discharge & Attenuation				Result
Existing Green Field Run off from IH124 Existing site area 0.51Ha Q_{bar} discharge from 50Ha site = 183.8lits/sec (see MicroDrainage IH124 results) Applying ratio of existing site to this discharge: $0.51/50 \times 183.8 = 1.87 \text{ lit/sec}$; assume practical discharge 2.0lit/sec Take 2.0 lits/sec limiting discharge through new surface water drainage network. Proposed impermeable area draining through attenuated discharge = 0.276Ha MicroDrainage Calculations: Volume of storage required in sub base attenuation with no infiltration and discharge 2.0 lits/sec for 1 in 100yrs storm +40% = 164.1 cu.m. Area of sub base attenuation = 816sqm Sub base porosity of 0.4 requires sub base depth of 0.672m.					

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Lone Barn Studios Stanbridge Lane Romsey SO51 0HE	Cinders Nursery Ph2 Yapton Sub Base Attenuation	
Date January 2021	Designed By KN	
File Sub Base Attenuation+2 100yrs+...	Checked By	
Micro Drainage		Source Control W.11.2

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

Half Drain Time : 751 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	5.1547	0.3447	57.1	0 K
30 Summer	1.6	0.0	1.6	5.2167	0.4067	77.4	0 K
60 Summer	1.7	0.0	1.7	5.2817	0.4717	98.5	0 K
120 Summer	1.8	0.0	1.8	5.3442	0.5342	119.0	0 K
180 Summer	1.9	0.0	1.9	5.3753	0.5652	129.1	0 K
240 Summer	1.9	0.0	1.9	5.3923	0.5823	134.6	0 K
360 Summer	1.9	0.0	1.9	5.4083	0.5983	139.8	0 K
480 Summer	1.9	0.0	1.9	5.4123	0.6023	141.2	0 K
600 Summer	1.9	0.0	1.9	5.4103	0.6003	140.5	0 K
720 Summer	1.9	0.0	1.9	5.4063	0.5963	139.3	0 K
960 Summer	1.9	0.0	1.9	5.3968	0.5868	136.1	0 K
1440 Summer	1.9	0.0	1.9	5.3758	0.5658	129.2	0 K
2160 Summer	1.8	0.0	1.8	5.3457	0.5357	119.5	0 K
15 Winter	1.5	0.0	1.5	5.1777	0.3677	64.5	0 K
30 Winter	1.7	0.0	1.7	5.2477	0.4377	87.4	0 K
60 Winter	1.8	0.0	1.8	5.3212	0.5112	111.4	0 K
120 Winter	1.9	0.0	1.9	5.3928	0.5828	134.9	0 K
180 Winter	2.0	0.0	2.0	5.4298	0.6198	146.9	0 K
240 Winter	2.0	0.0	2.0	5.4503	0.6403	153.6	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
15 Summer	124.63	23
30 Summer	83.79	38
60 Summer	53.78	68
120 Summer	33.34	126
180 Summer	24.83	186
240 Summer	20.01	246
360 Summer	14.71	366
480 Summer	11.82	484
600 Summer	9.97	564
720 Summer	8.67	618
960 Summer	6.94	744
1440 Summer	5.07	1012
2160 Summer	3.70	1428
15 Winter	124.63	23
30 Winter	83.79	37
60 Winter	53.78	66
120 Winter	33.34	124
180 Winter	24.83	184
240 Winter	20.01	242

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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 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	5.4723	0.6623	160.8	0 K
480 Winter	2.0	0.0	2.0	5.4813	0.6713	163.7	0 K
600 Winter	2.0	0.0	2.0	5.4823	0.6723	164.1	0 K
720 Winter	2.0	0.0	2.0	5.4793	0.6693	163.0	0 K
960 Winter	2.0	0.0	2.0	5.4663	0.6563	158.9	0 K
1440 Winter	2.0	0.0	2.0	5.4393	0.6293	150.1	0 K
2160 Winter	1.9	0.0	1.9	5.3963	0.5863	135.9	0 K

Storm Duration (mins)	Rain (mm/hr)	Time-Peak (mins)
360 Winter	14.71	356
480 Winter	11.82	468
600 Winter	9.97	576
720 Winter	8.67	682
960 Winter	6.94	776
1440 Winter	5.07	1086
2160 Winter	3.70	1540

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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	0.350	Winter Storms	Yes
Cv (Summer)	0.750	Climate Change %	+40
Cv (Winter)	0.840		

Time / Area Diagram

Total Area (ha) = 0.267

Time from:	(mins) to:	Area (ha)	Time from:	(mins) to:	Area (ha)
0	4	0.000	4	8	0.267

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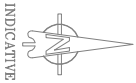
Porous Car Park Details

Infil Coef - Base (m/hr)	0.000000	Cover Level (m)	6.200
Membrane Percolation (mm/hr)	1000	Slope (1:x)	500.0
Safety Factor	13.0	Max Percolation (l/s)	226.9
Porosity	0.40	Depression Storage (mm)	5
Length (m)	170.2	Evaporation (mm/day)	3
Width (m)	4.8	Cap Volume (m)	6.200
Invert Level (m)	4.810		

Hydro-Brake Outflow Control

Design Head (m)	0.675	Hydro-Brake Type	MD4	Invert Level (m)	4.800
Design Flow (l/s)	2.0	Diameter (mm)	56		

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	2.2	2.00	3.5	4.00	5.0	7.00	6.6
0.20	1.2	1.00	2.5	2.20	3.7	4.50	5.3	7.50	6.8
0.30	1.4	1.20	2.7	2.40	3.8	5.00	5.5	8.00	7.0
0.40	1.6	1.40	2.9	2.60	4.0	5.50	5.8	8.50	7.2
0.50	1.8	1.60	3.1	3.00	4.3	6.00	6.1	9.00	7.4
0.60	1.9	1.80	3.3	3.50	4.6	6.50	6.3	9.50	7.6



Existing Site Area.....5084sqm
Sub base attenuation storage Area.....816sqm

AREAS DRAINING TO ATTENUATION

Buildings (inc 10% UO).....1157sqm
Drives & Parking525sqm
Access Roads.....900sqm
Total.....2672sqm

Area of Domestic Residence

Area of Access Road

Area of Domestic Drive

Drawn	Checked	Scales	Page Size	Date
KN	KN	1:250	A1	10/20
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INFORMATION FOR PLANNING

Project
CINDER'S NURSERY-PHASE 2
VAPTON



Engineering Details

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