Woodsyde Developments Ltd
The Poppies, Lower Road, Harmer Hill, Shropshire, SY4 3QX
Email: andrew@awgough.co.uk
Tel: 01939 290483

Land to the Rear of Rhosnesni Lane.

		Revision	
Job No:	206	Page:	1.00
Section: Units 1+2	Prepared By: KG	Date:	05/03/2025

SUMMARY OF CALCULATIONS

critical design rainfall duration 't_{crit}' =	360	*min*
required storage volume 'V_{req}' =	12.30	m^3
provided storage volume 'V_{prov}' =	12.54	m^3
utilisation factor =	**0.98**	***.OK***
required time to discharge 50% 't_{50}' =	6.21	*hours*
utilisation factor =	**0.26**	***.OK***

GENERAL DATA

site location: **England and Wales**
soakaway type: **geocellular units**

impermeable area drained to soakaway 'A' *[m^2]* =	**160**
60 min rainfall depth of 5 year return period 'R' *[mm]* =	**20**
M5-60 to M5-2d rainfall ratio 'r' =	**0.19**
allowance for climate change:	**40%**

SOAKAWAY DATA

soakaway width 'W' [m] =	**3.00**
soakaway length 'L' [m] =	**11.00**
total depth from ground level 'D_b' *[m]* =	**3.20**
depth to drain invert level 'D_d' *[m]* =	**2.80**
soakaway effective depth 'D_{eff}' *[m]* =	0.40
free volume in infill aggregate *[%]* =	**95**

SOIL INFILTRATION DATA

allowance for infiltration through soakaway base: **30%**
available on-site infiltration test results: (●) Yes ( ) No
use soakage trial pit table below

internal surface area of trial pit 'a_{p50}' [m^2] =	6.60
storage volume between 75-25% 'V_p' [m^3] =	0.97
time for water to fall from 75-25% 't_p' [min] =	135.00
soil infiltration rate 'f' [m/s] =	1.81E-05

SOAKAGE TRIAL PIT DATA

soakage trial pit width 'W_t' *[m]* =	**2.20**
soakage trial pit length 'L_t' *[m]* =	**2.20**
total depth from ground level 'D_{tb}' *[m]* =	**3.20**
depth to pipe invert level 'D_{tp}' *[m]* =	**2.80**
soakage trial pit effective depth 'D_{teff}' *[m]* =	0.40
free volume in infill aggregate *[%]* =	**100**

NOTE: faces of excavation assumed to be vertical

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	**M10-D** Z2	**M10-D** rainfalls *[mm]*	**M10-D** inflow *[m^3]*	**M50-D** Z2	**M50-D** rainfalls *[mm]*	**M50-D** inflow *[m^3]*	**M100-D** Z2	**M100-D** rainfalls *[mm]*	**M100-D** inflow *[m^3]*	outflow from soakaway *[m^3]*	required storage *[m^3]*
5	0.28	5.53	1.19	9.24	1.48	1.57	12.16	1.95	1.80	13.97	2.23	0.08	2.15
10	0.42	8.33	1.21	14.12	2.26	1.62	18.90	3.02	1.87	21.82	3.49	0.17	3.32
15	0.52	10.40	1.22	17.79	2.85	1.65	24.08	3.85	1.92	27.90	4.46	0.25	4.21
30	0.72	14.33	1.24	24.83	3.97	1.69	33.98	5.44	1.98	39.72	6.35	0.51	5.85
60	1.00	20.00	1.24	34.72	5.56	1.73	48.44	7.75	2.03	56.84	9.09	1.01	8.08
120	1.35	27.00	1.23	46.57	7.45	1.71	64.71	10.35	1.99	75.37	12.06	2.02	10.04
240	1.83	36.60	1.20	61.50	9.84	1.66	85.08	13.61	1.92	98.24	15.72	4.04	11.68
360	2.21	44.13	1.18	73.02	11.68	1.62	99.80	15.97	1.86	114.73	18.36	6.06	**12.30**
600	2.78	55.60	1.16	90.55	14.49	1.56	121.07	19.37	1.77	137.93	22.07	10.10	11.96
1440	4.07	81.33	1.14	129.52	20.72	1.45	165.36	26.46	1.61	183.86	29.42	24.25	5.17

** Z2 is growth factor from M5 rainfalls*

SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS

	water level measurement N°:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Soakage Trial 1	time *[min]* =	0	30	60	90	120	150	180	210	240	270									
	depth to water *[m]* =	2.80	2.87	2.94	3.01	3.06	3.10	3.12	3.15	3.18	3.20									
Soakage Trial 2	time *[min]* =	0	30	60	90	120	150	180	210	240	270	300	330							
	depth to water *[m]* =	2.80	2.86	2.92	3.00	3.02	3.08	3.10	3.12	3.16	3.18	3.19	3.20							
Soakage Trial 3	time *[min]* =	0	30	60	90	120	150	180	210	240	270	300	330	360	375					
	depth to water *[m]* =	2.80	2.84	2.90	2.98	3.02	3.05	3.09	3.11	3.13	3.15	3.17	3.18	3.19	3.20					

Woodsyde Developments Ltd
The Poppies, Lower Road, Harmer Hill, Shropshire, SY4 3QX
Email: andrew@awgough.co.uk
Tel: 01939 290483

Land to the Rear of Rhosnesni Lane.

		Revision	
Job No:	206	Page:	1.00
Section: Units 3-7	Prepared By: KG	Date:	05/03/2025

SUMMARY OF CALCULATIONS

critical design rainfall duration 't_{crit}' =	600	*min*
required storage volume 'V_{req}' =	36.20	m^3
provided storage volume 'V_{prov}' =	38.00	m^3
utilisation factor =	**0.95**	***.OK***
required time to discharge 50% 't_{50}' =	7.63	*hours*
utilisation factor =	**0.32**	***.OK***

GENERAL DATA

site location: **England and Wales**
soakaway type: **geocellular units**

impermeable area drained to soakaway 'A' *[m^2]* =	**443**
60 min rainfall depth of 5 year return period 'R' *[mm]* =	**20**
M5-60 to M5-2d rainfall ratio 'r' =	**0.19**
allowance for climate change:	**40%**

SOAKAWAY DATA

soakaway width 'W' [m] =	**8.00**
soakaway length 'L' [m] =	**12.50**
total depth from ground level 'D_b' *[m]* =	**3.20**
depth to drain invert level 'D_d' *[m]* =	**2.80**
soakaway effective depth 'D_{eff}' *[m]* =	0.40
free volume in infill aggregate *[%]* =	**95**

SOIL INFILTRATION DATA

allowance for infiltration through soakaway base: **30%**
available on-site infiltration test results: (●) Yes ( ) No
use soakage trial pit table below

internal surface area of trial pit 'a_{p50}' [m^2] =	6.60
storage volume between 75-25% 'V_p' [m^3] =	0.97
time for water to fall from 75-25% 't_p' [min] =	135.00
soil infiltration rate 'f' [m/s] =	1.81E-05

SOAKAGE TRIAL PIT DATA

soakage trial pit width 'W_t' *[m]* =	**2.20**
soakage trial pit length 'L_t' *[m]* =	**2.20**
total depth from ground level 'D_{tb}' *[m]* =	**3.20**
depth to pipe invert level 'D_{tp}' *[m]* =	**2.80**
soakage trial pit effective depth 'D_{teff}' *[m]* =	0.40
free volume in infill aggregate *[%]* =	**100**

NOTE: faces of excavation assumed to be vertical

REQUIRED STORAGE CAPACITY PER RAINFALL DURATION

rainfall duration *[min]*	rainfall factor Z1	**M5-D** rainfalls *[mm]*	**M10-D** Z2	**M10-D** rainfalls *[mm]*	**M10-D** inflow *[m^3]*	**M50-D** Z2	**M50-D** rainfalls *[mm]*	**M50-D** inflow *[m^3]*	**M100-D** Z2	**M100-D** rainfalls *[mm]*	**M100-D** inflow *[m^3]*	outflow from soakaway *[m^3]*	required storage *[m^3]*
5	0.28	5.53	1.19	9.24	4.09	1.57	12.16	5.39	1.80	13.97	6.19	0.21	5.98
10	0.42	8.33	1.21	14.12	6.25	1.62	18.90	8.37	1.87	21.82	9.66	0.42	9.25
15	0.52	10.40	1.22	17.79	7.88	1.65	24.08	10.67	1.92	27.90	12.36	0.62	11.74
30	0.72	14.33	1.24	24.83	11.00	1.69	33.98	15.05	1.98	39.72	17.60	1.25	16.35
60	1.00	20.00	1.24	34.72	15.38	1.73	48.44	21.46	2.03	56.84	25.18	2.49	22.69
120	1.35	27.00	1.23	46.57	20.63	1.71	64.71	28.67	1.99	75.37	33.39	4.98	28.41
240	1.83	36.60	1.20	61.50	27.24	1.66	85.08	37.69	1.92	98.24	43.52	9.96	33.56
360	2.21	44.13	1.18	73.02	32.35	1.62	99.80	44.21	1.86	114.73	50.83	14.94	35.89
600	2.78	55.60	1.16	90.55	40.11	1.56	121.07	53.63	1.77	137.93	61.10	24.90	**36.20**
1440	4.07	81.33	1.14	129.52	57.38	1.45	165.36	73.26	1.61	183.86	81.45	59.76	21.69

** Z2 is growth factor from M5 rainfalls*

SOAKAGE TRIAL PIT INFILTRATION TEST RESULTS

	water level measurement N°:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Soakage Trial 1	time *[min]* =	0	30	60	90	120	150	180	210	240	270									
	depth to water *[m]* =	2.80	2.87	2.94	3.01	3.06	3.10	3.12	3.15	3.18	3.20									
Soakage Trial 2	time *[min]* =	0	30	60	90	120	150	180	210	240	270	300	330							
	depth to water *[m]* =	2.80	2.86	2.92	3.00	3.02	3.08	3.10	3.12	3.16	3.18	3.19	3.20							
Soakage Trial 3	time *[min]* =	0	30	60	90	120	150	180	210	240	270	300	330	360	375					
	depth to water *[m]* =	2.80	2.84	2.90	2.98	3.02	3.05	3.09	3.11	3.13	3.15	3.17	3.18	3.19	3.20					