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Project No: 18094

Sheet No: D/01 'A'

Date: May '18

Project: Sack Lane.

By: [Signature]

Rev 'A' - 01.06.18.

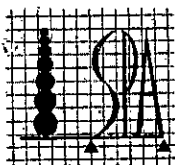
Main Water Drainage Design for New Development
of 5 n^o. 2 Bedroomed Properties @ Sack Lane,
Udsey, West Sussex.

Note:-

The site is currently occupied by existing
barricade, out buildings and tanks and has
not experienced any historic flooding.
Currently storm water from the site
discharges into the ground and possibly
into drainage ditch on northern side of
Sack Lane.

The proposal is to adopt permeable
gravel (with permeable paving to disabled
car park space) for car park and access,
with permeable paving to footpath and
paths, thus significantly reducing the
impermeable areas of the site by 34%.

Storm water from roof, to be
collected to discharge to drainage ditch
on northern side of Sack Lane, as
clients/architects instructions.



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Project No: 10094

Sheet No: D/02

Date: May '18

Project: Sack Lane

By: SP

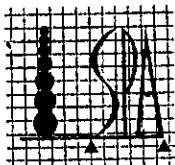
Design Drainage Ditch & Open Storage Channel,
discharging to ditch wall.

for Construction Evaluation and Investigation
Report No. 18.9862 dated May 2018, grad
infiltration rate = 2.3×10^{-6} m/s.

Calculation of Run-off -

Assumptions:- Fig A1 - $M5-10 = 20m$
Fig A2 - $v = 0.35$

<u>D</u>	<u>Z1</u>	<u>Z2</u>	<u>M100-D</u>	<u>+3% Chute Chage</u>
10	0.50	1.91	19.1m	24.8m
15	0.62	1.95	24.2m	31.4m
30	0.80	2.00	32.0m	41.6m
60	1.00	2.03	40.6m	52.8m
120	1.23	2.01	49.5m	64.3m
240	1.55	1.97	61.1m	79.9m
360	1.65	1.94	64.0m	83.2m
600	1.90	1.90	72.2m	92.9m
1440	2.50	1.81	90.5m	117.7m



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Project No: 10094

Sheet No: D/03

Date: May '18

Project: Jack Lin -

By: SP

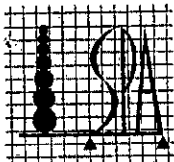
Average Rainfall Intensities -

<u>D</u>	<u>i</u>
10	$24.8 \times \frac{60}{10} = 148.8 \text{ mm/hour}$
15	$31.4 \times \frac{60}{15} = 125.6 \text{ mm/hour}$
30	$41.6 \times \frac{60}{30} = 83.2 \text{ mm/hour}$
60	$52.8 \times \frac{60}{60} = 52.8 \text{ mm/hour}$
120	$64.3 \times \frac{60}{120} = 32.2 \text{ mm/hour}$
240	$79.4 \times \frac{60}{240} = 19.8 \text{ mm/hour}$
360	$83.2 \times \frac{60}{360} = 13.9 \text{ mm/hour}$
600	$93.9 \times \frac{60}{600} = 9.4 \text{ mm/hour}$
1440	$117.7 \times \frac{60}{1440} = 4.9 \text{ mm/hour}$

$$\begin{aligned}
 \text{Impermeable Area} &= 2(19\text{m} \times 7.5\text{m}) = 285\text{m}^2 \\
 &+ (20.5\text{m} \times 7.5\text{m}) = 154\text{m}^2 \\
 &\underline{\underline{439\text{m}^2}}
 \end{aligned}$$

Inflow, I, for varying duration, D -

<u>D</u>	<u>I</u>
10	$\frac{148.8}{10} \times \frac{10}{60} \times 439\text{m}^2 = 10.9\text{m}^3$
15	$\frac{125.6}{10} \times \frac{15}{60} \times 439\text{m}^2 = 13.8\text{m}^3$
30	$\frac{83.2}{10} \times \frac{30}{60} \times 439\text{m}^2 = 18.3\text{m}^3$
60	$\frac{52.8}{10} \times \frac{60}{60} \times 439\text{m}^2 = 23.2\text{m}^3$



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Project No:

18094

Sheet No:

5/04

Date:

May '18

Project:

Sack Lau.

By:

SP.

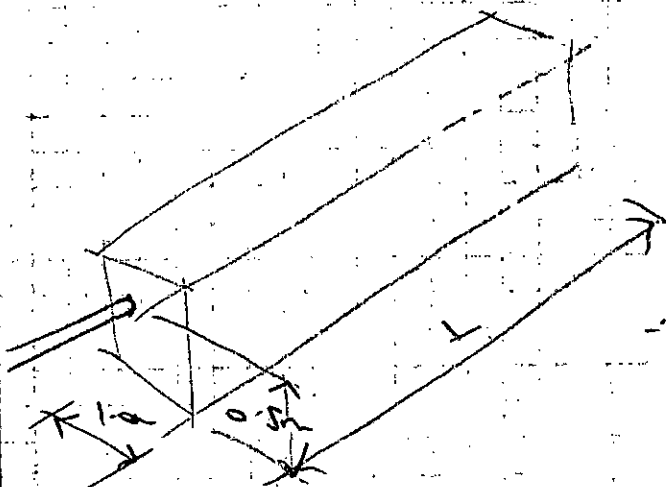
120	$\frac{32.2}{10} \times \frac{120}{60} \times 439 \text{ m}^2 = 28.3 \text{ m}^3$
240	$\frac{19.8}{10} \times \frac{240}{60} \times 439 \text{ m}^2 = 34.8 \text{ m}^3$
360	$\frac{13.9}{10} \times \frac{360}{60} \times 439 \text{ m}^2 = 36.6 \text{ m}^3$
600	$\frac{9.9}{10} \times \frac{600}{60} \times 439 \text{ m}^2 = 41.3 \text{ m}^3$
1440	$\frac{4.9}{10} \times \frac{1440}{60} \times 439 \text{ m}^2 = 51.6 \text{ m}^3$

Outflow, O -

$$O_{SS} = 2(1.0 + L) \frac{0.5L}{2}$$

$$= 0.5 + 0.5L$$

$$Y = \frac{2.30 \times 10^{-6} \text{ m/s}}{1}$$



$$O = (0.5 + 0.5L) \times 2.30 \times 10^{-6} \times (O \times 60)$$

$$= \frac{6.9 \times 10^{-5} O}{6.9 \times 10^{-5} L}$$

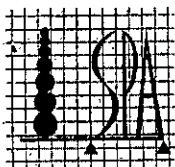
Storage, S -

$$(1.0 \text{ m} \times L \times 0.5L) = 0.5L$$

$$I - O = S$$

For varying duration, D -

D	O	$I - O = S$	L
10	$1.38 \times 10^{-3} L$	$10.9 - (1.38 \times 10^{-3} L) = 0.5L$	22m
15	$2.07 \times 10^{-3} L$	$13.8 - (2.07 \times 10^{-3} L) = 0.5L$	27m



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Project No: 18094

Sheet No: D/05

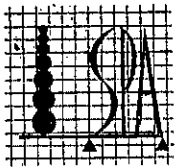
Date: May '18

Project: Jack Lane

By: JP

30	$7.14 \times 10^{-3} L$	$18.3 - (7.14 \times 10^{-3} L) = 0.5L$	36m
60	$0.20 \times 10^{-3} L$	$23.2 - (0.20 \times 10^{-3} L) = 0.5L$	46m
120	0.02L	$28.3 - 0.02L = 0.5L$	54m
240	0.03L	$34.8 - 0.03L = 0.5L$	66m
360	0.05L	$36.6 - 0.05L = 0.5L$	67m
600	0.08L	$41.3 - 0.08L = 0.5L$	71m
1440	0.20L	$51.6 - 0.20L = 0.5L$	74m

Use drainage trench for long x 1m
wide x 0.5m deep than current
ditch



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Project No: 10094

Sheet No: F/01 'A'

Date: May '18

By: J.P.

Project: Sack Lane.

Rev 'A' - 01.06.18.

Calculation of Drains Field for New Development
of 5.12 2 Bedroom Properties @ Sack Lane,
Widney, West Sussex.

$$\text{Population} = 5.12 \times 4P = 20P$$

As > 12 Multiply by 0.90

$$\therefore \text{Design } P = 20P \times 0.90 = 18P$$

from Constructive Valuation and Investigator Report
Nº. 18-9862 dated May 2018

$$v_p = 56$$

$$\text{Drains Field Size} = 0.2 \times v_p \times P \\ = 0.20 \times 56 \times 18P = 202m^2$$

$$\begin{aligned} \text{Using } 3/3 \text{m} \times 1 \text{m} \text{ Tiles} &= 102m^2 \\ \text{+ } 4/25 \text{m} \times 1 \text{m} \text{ Tiles} &= 100m^2 \\ \hline &202m^2 \end{aligned}$$