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Job No.	
Sheet no.	1
Date	24/09/10
By	IJ
Checked	
Approved	

MasterDrain  
SW 7.0

Project	
Title	Initial sizing of runoff rate for BATTLE

Site characteristics:-

Hydrological region	(R)	<input type="text" value="7"/>		Note 1
SOIL type	(S)	<input type="text" value="4"/>		Note 2
Catchment size - ha	(A)	<input type="text" value="2.500"/>	ha	Note 3

Green field analysis:-

Area	(A)	<input type="text" value="2.500"/>	ha	Note 4
Annual rainfall	(SAAR)	<input type="text" value="800"/>	mm	Note 5
Soil runoff coefficient	(SPR)	<input type="text" value="0.47"/>		Note 6

For areas less than 50Ha, a modified calculation which multiplies the 50Ha runoff value by the ratio of the site area to 50Ha is used  
Reducing factor used for these calculations is 0.050

Catchment mean annual peak flow	(Q <sub>BAR</sub> )	<input type="text" value="0.0000"/>	l/s	Note 7
Mean annual peak flow/unit area	(Q <sub>BAR</sub> /A)	<input type="text" value="1.000"/>	l/s/ha	Note 8
Minimum limit of discharge	(Q <sub>throttle</sub> )	<input type="text" value="0.00"/>	l/s	Note 9
100year flow rate/unit area	(Q <sub>throttle</sub> /A)	<input type="text" value="0.00"/>	l/s/ha	
Equiv. mean annual peak flow rate/unit area.	(Q <sub>throttle</sub> /3.5.A)	<input type="text" value="0.0000"/>	l/s/ha	Note 10

Growth curve factors :-

(GC <sub>1yr</sub> )	<input type="text" value="0.9"/>	Note 11
(GC <sub>30yr</sub> )	<input type="text" value="2.2"/>	
(GC <sub>100yr</sub> )	<input type="text" value="3.2"/>	

1yr, 30yr and 100yr peak discharge rate of runoff per unit area:-

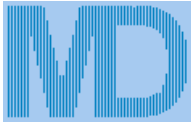
Using 1.0001/s/ha

(Q <sub>BAR</sub> /A) x 0.85	(Q <sub>1yr</sub> )	<input type="text" value="0.85"/>	l/s/ha	Note 12
(Q <sub>BAR</sub> /A) x GC <sub>30yr</sub>	(Q <sub>30yr</sub> )	<input type="text" value="2.23"/>	l/s/ha	
(Q <sub>BAR</sub> /A) x GC <sub>100yr</sub>	(Q <sub>100yr</sub> )	<input type="text" value="3.15"/>	l/s/ha	

1yr, 30yr and 100yr peak discharge rate of runoff from site:-

1 year	(Q <sub>100yr</sub> * A)	<input type="text" value="2.13"/>	l/s
30 years	(Q <sub>100yr</sub> * A)	<input type="text" value="5.58"/>	l/s
100 years	(Q <sub>100yr</sub> * A)	<input type="text" value="7.88"/>	l/s

Q<sub>BAR</sub> value above is factored from the 50 hectare value to the area specified above (2.5 ha).



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**Notes:-**

References to Appendix 1 refer to 'R&D Technical Report W5-074/A - Preliminary rainfall runoff management for developments (Revision B) Defra/EA

Note 1 - UK is divided into 10 Hydrological regions reflecting the different flood frequency growth curves (Appendix 1, fig 1.1). This data is included in the database.

Note 2 - Refer to Wallingford WRAP map or FSR maps. This data is included in the database.

Note 3 - The size of the gross catchment excluding large parkland areas being allocated as public open space which remain unmodified.

Note 4 - Excluding public open spaces not modified by the proposed development.

Note 5 - SAAR - the FSR value is used in this application. This data is included in the database.

Note 6 - SPR value for SOIL - this is not the FSR index class value for SOIL (1 - 5), but its corresponding runoff coefficient. This data is derived in the program.

Note 7 - For sites of 50 ha or less, use 50 ha when applying the formula. Subsequently factor the resulting value by the ratio of the site area to 50 ha.

Note 8 - This calculated value may be less than unity. If this is so, then a value of 1.0 is used, as very low values can result in excessive storage volumes.

Note 9 - Minimum sizes of an orifice may limit the minimum hydraulic control flow rate.

Note 10 - This value is used if it is greater than the mean annual peak flow rate per unit area.

Note 11 - Growth curve ratios for the 30 and 100 year events are found in Appendix 1, fig 1.2.

Note 12 - Peak flow rate multiplied by the growth curve ratios for the 30 and 100 year events.