1. Erosion Hazard and Sediment Basins Site Name: Site Location: Precinct/Stage: Other Details: **Sub-catchment or Name of Structure** Site area **Notes** Total catchment area (ha) Disturbed catchment area (ha) Soil analysis (enter sediment type if known, or laboratory particle size data) Sediment Type (C, F or D) if known: From Appendix C (if known) % sand (fraction 0.02 to 2.00 mm) Enter the percentage of each soil % silt (fraction 0.002 to 0.02 mm) fraction. E.g. enter 10 for 10% % clay (fraction finer than 0.002 mm) E.g. enter 10 for dispersion of 10% Dispersion percentage See Section 6.3.3(e). Auto-calculated % of whole soil dispersible Soil Texture Group Automatic calculation from above Rainfall data Design rainfall depth (no of days) See Section 6.3.4 and, particularly, Design rainfall depth (percentile) Table 6.3 on pages 6-24 and 6-25. x-day, y-percentile rainfall event (mm) Rainfall R-factor (if known) Only need to enter one or the other here IFD: 2-year, 6-hour storm (if known) **RUSLE Factors** Rainfall erosivity (R-factor) Auto-filled from above Soil erodibility (K-factor) Slope length (m) Slope gradient (%) RUSLE LS factor calculated for a high Length/gradient (LS-factor) rill/interrill ratio. Erosion control practice (P-factor) 1.3 1.3 1.3 1.3 1.3 1.3 Ground cover (C-factor) Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins) Storage (soil) zone design (no of months) Minimum is generally 2 months Cv (Volumetric runoff coefficient) See Table F2, page F-4 in Appendix F Calculations and Type D/F Sediment Basin Volumes Soil loss (t/ha/yr) See Table 4.2, page 4-13 Soil Loss Class Soil loss (m³/ha/yr) Conversion to cubic metres

Sediment basin storage (soil) volume (m³)

Sediment basin settling (water) volume (m³)
Sediment basin total volume (m³)

See Sections 6.3.4(i) for calculations

See Sections 6.3.4(i) for calculations

2. Flow Calculations

Peak flow is given by the Rational Formula: Qy = $0.00278 \times C_{10} \times F_Y \times I_{y, tc} \times A$

where: Q_v is peak flow rate (m³/sec) of average recurrence interval (ARI) of "Y" years

C₁₀ is the runoff coefficient (dimensionless) for ARI of 10 years.

 F_{y} is a frequency factor for "Y" years.

A is the catchment area in hectares (ha)

 $I_{y, tc}$ is the average rainfall intensity (mm/hr) for an ARI of "Y" years

and a design duration of "tc" (minutes or hours)

Time of concentration $(t_c) = 0.76 \text{ x } (A/100)^{0.38} \text{ hrs}$

Note: For urban catchments the time of concentration should be determined by more precise calculations or reduced by a factor of 50 per cent. Place an x in the appropriate row below to automatically halve the time of concentration for that sub-catchment.

automatically halve the time of concentration for that sub-catchment. **Structure Details Notes** Name Catchment Area (ha) Place an x here to halve to Place an x if disturbed catchment Time of concentration (tc) minutes **Rainfall Intensities** 1-year, to Enter the relevant rainfall intensities (in mm/hr) for each of 2-year, to the nominated rainfall events. 5-year, to The time of concentration (tc) 10-year, to determines the duration of the 20-year, tc event to be used 50-year, to 100-year, to C10 runoff coefficient Use AR&R or Table F3, pg F-6 **Frequency Factors** FF, 1-year 0.8 0.8 0.8 8.0 0.8 0.8 0.8 Can use 0.8 for a construction site FF, 2-year 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 Can use 0.85 for a construction FF, 5-year 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Can use 0.95 for a construction FF, 10-year 1 1 1 Generally always 1 1 1 1 1 FF, 20-year 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1.05 Can use 1.05 for a construction FF, 50-year 1.15 1.15 1.15 1.15 1.15 1.15 1.15 1.15 Can use 1.15 for a construction FF, 100-year 1.2 1.2 1.2 1.2 1.2 1.2 1.2 Can use 1.2 for a construction site 1.2 **Notes Flow Calculations** 1-year, tc (m3/s) 2-year, tc (m3/s) 5-year, tc (m3/s) 10-year, tc (m³/s) 20-year, tc (m3/s) 50-year, tc (m3/s) 100-year, tc (m3/s)

NB for flow calculations on sediment basin spillways, see Worksheet 3 (if required).

3. Sediment Basin Spillway Design

Structure Details

Structure Name				Auto-filled from Worksheet 1
Catchment Area (ha)				Auto-filled from Worksheet 1
Time of concentration (tc)				Auto-calculated assuming tc is halved

₁ year, tc							
2 year, tc							Enter the relevant rainfall intensities (in
5 year, tc							mm/hr) for each of the nominated rainfall
10 year, tc							events.
20 year, tc							The time of concentration (tc) determines
50 year, tc							the duration of the event to be used
100 year, tc							
C ₁₀ runoff coefficient							Use AR&R or Table F3, pg F-6
Design ARI event (select):	100	100	100	100	100	100	Select design ARI (years) from dropdowr
Frequency Factor	1.2	1.2	1.2	1.2	1.2	1.2	Auto-filled based on selected ARI
Flow Calculation			<u> </u>	<u> </u>	1		Auto-calculated based on selected ARI

4. Volume of Type C (Coarse) Sediment Basins

Type C Basin Design Criteria

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Structure Name							Auto-filled from Worksheet 1
Catchment Area (ha)							Auto-filled from Worksheet 1
Sediment type (C, F or D)							Auto-filled from Worksheet 1
Design rainfall event							Choose design event from dropdown
Flow volume (m ³ /s)							Calculated from IFD values above
Area Factor	4100	4100	4100	4100	4100	4100	Default is 4,100. See pg 6-12
Depth of settling (water zone) (m)	0.6	0.6	0.6	0.6	0.6	0.6	Minimum is 0.6m (pg 6-12)

Type C Basin Volume Calculations

| Basin Surface Area (m²) | Not Type C | Auto-calculated |
|--|------------|------------|------------|------------|------------|------------|-----------------|
| Settling (water) zone volume (m ³) | Not Type C | Auto-calculated |
| Storage (soil) zone volume (m³) | Not Type C | Auto-calculated |
| Total basin volume (m³) | Not Type C | Auto-calculated |

Basin Shape

Enter length:width ratio	3	3	3	3	3	3	E.g. for 3:1 (L:W) enter 3.
Length (m)	N/A	N/A	N/A	N/A	N/A	N/A	These figures should be taken as a quide
Width (m)	N/A	N/A	N/A	N/A	N/A	N/A	only. Detailed calcs might be required.