

Sediment Basin Calculation summary

Site area	Site				Remarks
	Stg 1a	Stg 1b	Stg 1c	Stg 2	
Total catchment area (ha)	2.63	1.05	2	2.29	
Disturbed catchment area (ha)	2.5	1.05	2	2.29	

Soil analysis						
% sand (fraction 0.02 to 2.00 mm)	30	30	30	30		Soil texture should be assessed through mechanical dispersion only. Dispersing agents (e.g. Calgon) should not be used
% silt (fraction 0.002 to 0.02 mm)	50	50	50	50		
% clay (fraction finer than 0.002 mm)	20	20	20	20		
Dispersion percentage	25.0	25.0	25.0	25.0		E.g. enter 10 for dispersion of 10%
% of whole soil dispersible	11.25	11.25	11.25	11.25		See Section 6.3.3(e)
Soil Texture Group	D	D	D	D		See Section 6.3.3(c), (d) and (e)

Rainfall data						
Design rainfall depth (days)	5	5	5	5		See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	85	85	85	85		See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	38.9	38.9	38.9	38.9		See Section 6.3.4 (h)
Rainfall intensity - 2-year, 6-hour storm	10.89	10.89	10.89	10.89		See IFD chart for the site

RUSLE Factors						
Rainfall erosivity (R-factor)	2580	2580	2580	2580		Automatic calculation from above data
Soil erodibility (K-factor)	0.037	0.037	0.037	0.037		
Slope length (m)	365	130	175	200		
Slope gradient (%)	1.71233	2.30769	2	1.5		RUSLE data can be obtained from Appendixes A, B and C
Length/gradient (LS-factor)	0.6	0.56708	0.55	0.41		
Erosion control practice (P-factor)	1.3	1.3	1.3	1.3	1.3	1.3
Ground cover (C-factor)	1	1	1	1	1	1

Calculations						
Soil loss (t/ha/yr)	74	73	68	51		
Soil Loss Class	1	1	1	1		See Section 4.4.2(b)
Soil loss (m ³ /ha/yr)	57	56	53	39		
Sediment basin storage volume, m ³	24	10	18	15		See Sections 6.3.4(i) and 6.3.5 (e)

Peak flow calculations, 1									
Site	A (ha)	tc (mins)	Rainfall intensity, I, mm/hr						C ₁₈
			1 _{yr,1%}	5 _{yr,1%}	10 _{yr,1%}	20 _{yr,1%}	50 _{yr,1%}	100 _{yr,1%}	
Stg 1a	2.63	11	63.11	99.99	117.245	134.8	157.755	175.21	0.46
Stg 1b	1.05	8	72.895	115.945	135.155	155.32	181.67	201.7	0.46
Stg 1c	2	10	65.59	100.04	121.79	140.01	163.83	181.94	0.46
Stg 2	2.29	11	63.11	99.99	117.245	134.8	157.755	175.21	0.46

Peak flow calculations, 2							
ARI (yrs)	Frequency factor (F _r)	Peak flows					Comment
		Stg 1a (m ³ /s)	Stg 1b (m ³ /s)	Stg 1c (m ³ /s)	Stg 2 (m ³ /s)	5 (m ³ /s)	
1 yr, 1%	0.62	0.132	0.061	0.104	0.115		
5 yr, 1%	0.88	0.296	0.137	0.225	0.258		
10 yr, 1%	1	0.394	0.181	0.311	0.343		
20 yr, 1%	1.12	0.508	0.234	0.401	0.442		
50 yr, 1%	1.25831420	0.667	0.306	0.526	0.580		
100 yr, 1%	1.39148	0.820	0.377	0.647	0.714		

Sediment Storage Zone Volume
In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 50 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Select)

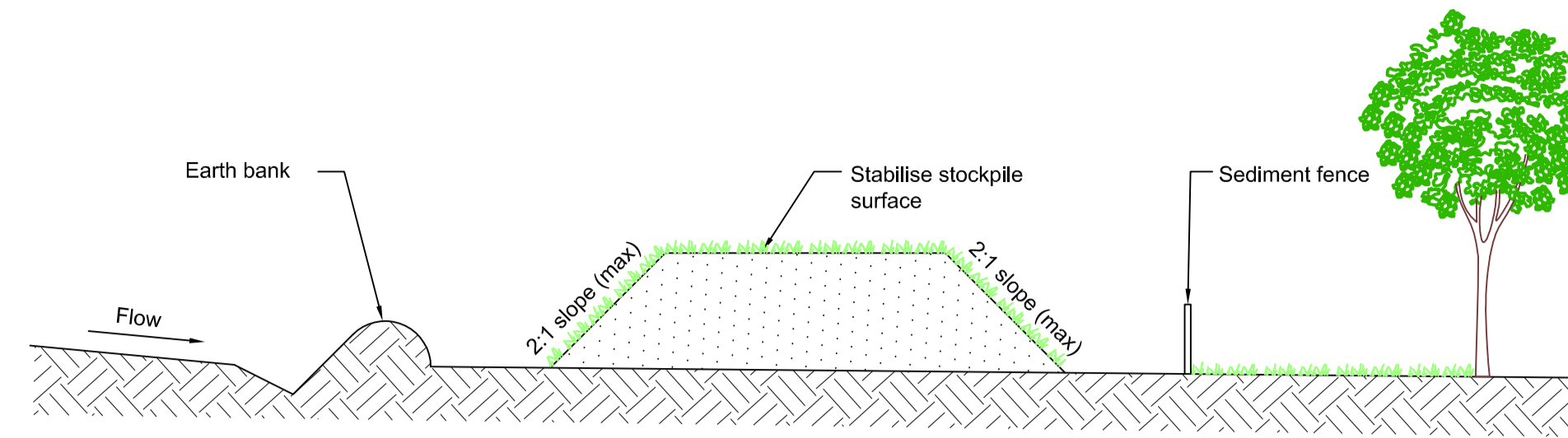
Place an "X" in the box below to show the sediment storage zone design parameters used here:

<input type="checkbox"/>	x	50% of settling zone capacity.
<input type="checkbox"/>		2 months soil loss calculated by RUSLE

Total Basin Volume						
Site	C _r	R _{5-day, yr, 1%}	Total catchment area (ha)	Settling zone volume (m ³)	Sediment storage volume (m ³)	Total basin volume (m ³)
Stg 1a	0.10	38.9	2.63	102,307	51	153,4605
Stg 1b	0.10	38.9	1.05	40,845	20	61,2675
Stg 1c	0.10	38.9	2	77.8	39	116.7
Stg 2	0.10	38.9	2.29	89,061	45	133,6215

Topsoil Handling Notes

- Ideally, handle topsoil only when it is moist (not wet or dry) to avoid decline of soil structure;
- Undertake stripping and stockpiling of topsoil immediately before starting bulk earthworks. Before stripping:
 - Identify and mark out those areas of vegetation or trees that are to be retained on the site. Commence clearing of trees and shrubs that are within the areas designated for berm drains, roadworks, interallotment drainage, etc. and stockpile the cut vegetative materials for mulching on site. Separate other debris including fence posts, wire, rocks, etc., or alternatively
 - Slash or graze the site where vegetative growth is dense.
- Where necessary, thin plant growth outside the construction zone by hand or rubber-tyred implement. Retain small branches, leaf litter and other residues as mulch.
- Take particular care when handling noxious plants that viable parts are not transported offsite by machines.
- Strip topsoil usually to a depth of 100 to 150 millimetres.
- Where maintaining seed viability is desirable, ensure stockpiles of topsoil and leaf litter from remnant native bushland areas are no greater than 2 metres deep and kept weed-free. Structural decline in topsoil is likely in deeper stockpiles.
- Ensure stockpiles are:
 - constructed on the contour at least 2 (preferably 5) metres from hazard areas, particularly likely areas of concentrated water flows, e.g. waterways, roads, slopes steeper than 10 percent, etc.;
 - stabilised if they are to be in place for more than 10 days;
 - protected from run-on water by installing water diversion structures upslope; and
 - formed with sediment filters placed immediately downslope to protect other lands and waterways from pollution.
- Use topsoil on all lands to be rehabilitated by vegetative means
- Normally, rehabilitate constructed slopes steeper than 2(H):1(V) by non-vegetative means such as riprap.
- Before spreading topsoil, scarify the ground surface along the line of the contour to break any compacted and/or smooth materials and enable key bonding of the materials to one another. Do not apply topsoil to batters where keying is not possible.
- Where possible, replace topsoil to a depth of 40 to 60mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.



CONSTRUCTION NOTES

- Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
- Construct on the contour as low, flat, elongated mounds
- Where there is sufficient area, topsoil stockpiles shall be less than 2m in height
- Where there are to be in place for more than 10 days, stabilise following the approved escp or swmp to reduce the c-factor to less than 0.10
- Construct earth banks (standard drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (standard drawing 6-8) 1m to 2m downslope

Stockpiles NTS

Waste Management Condition

Acceptable bins shall be provided by the contractor for any concrete and mortar slurries, paints, acid washings, lightweight waste materials and litter. Clearance services to be provided at least weekly.

Site Inspection and Maintenance

- A self-auditing program will be established based on a Check Sheet. A site inspection using the Check Sheet will be made by the site manager:
 - at least weekly
 - immediately before site closure
 - immediately following rainfall events greater than 5-mm in any one 24-hour period.
- The self audit to include:
 - recording the condition of every Best Management Practice (BMP) employed
 - recording maintenance requirements (if any) for each BMP
 - recording the volumes of sediment removed from sediment retention systems, where applicable
 - recording the site where sediment is disposed
 - forwarding a signed duplicate of the completed Check Sheet to the project manager/developer for their information.
- In addition, a suitably qualified person will be required to oversee the installation and maintenance of all soil and water management works on the site. The person will be required to spend a minimum of two hours onsite each fortnight and to provide a short monthly written report.
- The responsible person will ensure that:
 - the Plan is being implemented correctly
 - repairs are undertaken as required
 - essential modifications are made to the Plan if and when necessary.
- The report shall carry a certificate that certifies that works have been carried out following the approved plans.
- Waste bins will be emptied as necessary. Disposal of waste will be in a manner approved by the Site Superintendent.
- Location of waste disposal to be confirmed by the site superintendent.
- Proper drainage of the site will be maintained. To this end drains (including inlet and outlet works) will be checked to ensure that they are operating as intended, especially that:
 - no low points exist which can overtop in a large storm event;
 - areas of erosion are repaired (e.g. lined with a suitable material) and/or velocity of flow is reduced appropriately through construction of small check dams or installing additional diversions upslope; and
 - blockages are cleared (these might occur because of sediment pollution, sand/soil/spoil being deposited in or too close to them, breached by vehicle wheels, etc.).
- Sand/soil/spoil materials placed closer than 2 metres from hazard areas will be removed. Such hazard areas include any areas of high velocity water flows (e.g. waterways and gutters), paved areas and driveways.
- Recently stabilised lands will be checked to ensure that the erosion hazard has been effectively reduced. Any repairs will be initiated as appropriate.
- Excessive vegetative growth to be controlled through mowing or slashing.
- All sediment detention systems will be kept in good, working condition. In particular, attention will be given to:
 - recent works to ensure that they have not resulted in diversion of sediment laden water away from them;
 - degradable products to ensure they are replaced as required; and
 - sediment removal, to ensure the design capacity or less remains in the settling zone.
- Any pollutants removed from sediment basins or litter traps will be disposed in areas where further pollution to downslope lands and waterways should not occur.
- Additional erosion and/or sediment control works to be constructed as appropriate to ensure the desired protection is given to downslope lands and waterways, i.e. make ongoing changes to the SWMP where it proves inadequate in practice or is subjected to changes in conditions at the work site or elsewhere in the catchment.
- Erosion and sediment control measures will be maintained in a functioning condition until all earthwork activities are completed and the site stabilised.

Notes

Key to symbols

Reference drawings

P1	07.11.2014	DW	Issued for DA	JG	CJA
Rev	Date	Drawn	Description	Chk'd	App'd



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Client **Masters Home Improvement**

Title **Masters Windale
Soil and Water Management
Details Sheet 2**

Designed	D Reilly	Eng check	D Reilly
Drawn	D Wilmott	Coordination	J Gilligan
Dwg check	G Collins	Approved	C Avis
Scale at A1	1:500	Status	PRE
		Rev	P1

Drawing Number
MMD-302816-C-DR-XX-00-0214