

Soil and Water Management Plan

Proposed Residential Subdivision

133 Mary's Mount Road, Goulburn NSW

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Introduction

FRAISH Consulting Pty Ltd have been engaged by Cappello developments No 10 to prepare this Soil and Water Management Plan (SWMP) as part of Development Application engineering documentation for the subdivision of 133 Marys Mount Road in Goulburn NSW.

2.0 Purpose and Scope

The purpose of this Soil and Water Management Plan is to identify erosion, sedimentation and water quality issues potentially arising from the subdivision works at 133 Marys Mount Road NSW and to minimise the adverse impacts of activities associated with the construction phase on local waterways and surrounding land.

The key principles of this Plan are to:

- Integrate erosion and sediment control issues into the site and construction planning;
- Minimise the extent and duration of soil disturbance;
- Control water movement around and through the site;
- Minimise soil erosion;
- Promptly stabilise disturbed areas;
- Maximise sediment retention on site;
- Maintain all ESC measures in proper working order at all times; and,
- Monitor the site and adjust ESC practices where necessary.

These processes shall be implemented by all parties either directly or subcontracted and will apply to all activities related to soil erosion, sediment control and water quality protection.

3.0 Proposed Development

The proposed development involves subdividing the land into 393 new urban lots and one residual, large, agricultural node as shown on the plan in Appendix 1. The urban lots would vary slightly in size but typically they would be 750 m². The construction works will consist of the construction of roads and services to service the newly created lots.

New houses would be connected to reticulated water and sewer, although rainwater tanks would be used to augment domestic supply by collecting roof runoff. The new lots would be accessed by a new road network from Mary's Mount Road. The site would be developed in a single stage.

4.0 The Site

4.1 Location

The development area is at 133 Mary's Mount Road, Goulburn NSW. The site is north of Goulburn town centre, near the western end of Mary's Mount Road (Refer Figure 1)



Figure 1 Locality Plan

4.2 Land Use

There is an existing rural homestead on the site currently which is known as “Tenerife”. The existing gravel drives and buildings are estimated to form less than 1% of the total site area. At least 90% of this land has been previously cleared for agriculture. Cattle and sheep grazing occur on both improved and voluntary pastures.

The adjacent properties are of a similar nature. They too have been rezoned for urban development. It is anticipated that the entire area will be developed for urban development in the coming years.

4.3 Landform and Topography

The landform consists of low hills and footslopes within low hills. Local relief 20-40m. Altitude 646-685m. Slopes 4-10%. Rock Outcrop <1%. Extensively cleared woodland.

4.4 Soils & Geology

According to OEH eSPADE web site the mapped soil landscape for the south of this site which includes the ridgeline is The Sooley Soil Landscape. The remainder of the site being the area to the north is contained within the Monastery Hill Soil Landscape. (Refer Figure 2)

The Sooley landscape has formed on Silurian and Devonian Metasediments and Volcanics (metamorphic) in the Sooley Rises. Soils consist of Brown Kurosols (Yellow Podzolic Soils), Brown Chromosols (Soloths), Red and Brown Dermosols (No Suitable Group) and minor Yellow Sodosols (Solodic Soils).

The Monastery Hill landscape has formed on teschenite (dolerite) intrusions. On crests and sideslopes are duplex orange coloured soils with acid to alkaline reaction, no development of A2 horizons and massive to moderately structured upper B horizons. These are similar to yellowish Chocolate Soils. Below about 1 m an alkaline mottled grey clay occurs.

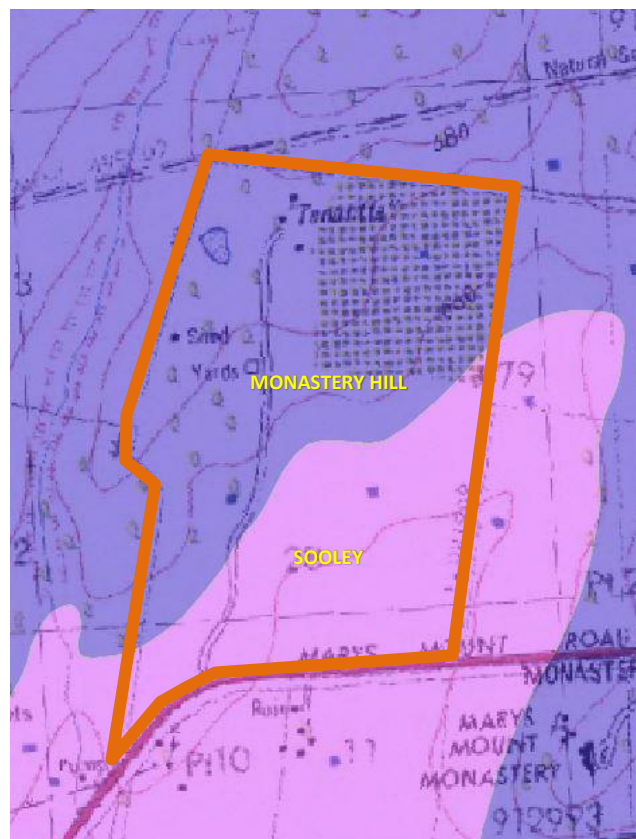


Figure 2 Soil Landscapes

4.5 Climate and Rainfall

Annual average rainfall for Goulburn city is around 640 mm and 1277mm mean annual evaporation. Rainfall is fairly evenly distributed throughout the year, but with a peak in November and trough in July. Evaporation is greater in late spring and summer.

4.6 Surface Drainage

The majority of the site drains south towards an existing culvert under Mary's Mount Road. There is a 1.08 ha portion of the site in the far northwest that drains offsite to the west; this would remain as agricultural land. There is also about 10ha of land (mostly to the north but some to the west) offsite that drains onto this site; runoff from it would become entrained in the site's stormwater system. There are two farm dams in the northwest of the site that would remain on the residual agricultural lot. The overflow from one feeds the second with any flow ultimately staying on this site. Appendix 1 shows the existing and proposed catchments.

5.0 Guidelines and Standards

This SWMP was prepared in accordance with the requirements of the Best Practice guidelines contained within Soils and Construction Vol. 1 (Landcom 2004) (Blue Book). Examples of standard drawings from the Blue Book are contained in Appendix B. The following principles will apply to this SWMP and Erosion & Sediment Control Plans (ESCP's) prepared as part of this plan :

- Sediment traps would be installed wherever there is potential for sediment to be released from site.
- Stockpiles generated as a result of construction activities would be bunded with silt fencing, (hay bales or similar) to reduce the potential for runoff from these areas.
- Stabilisation would be undertaken as soon as practicable during construction.

Furthermore, rehabilitation of disturbed ground would be carried out at the completion of construction works. Devices will be used to disperse rather than concentrate run-off. Soil and water management practices would be guided by the Blue Book

6.0 Assessment of the Site

6.1 Assess Erosion Risk of the Site

In order to assess the erosion risk from the site it is necessary to determine the Revised Universal Soil Loss Equation (RUSLE) in accordance with Appendix A of the *Blue Book*. The equation is written :-

$$A = R.K.LS.P.C$$

Where

A	=	Soil Loss (tonnes / Ha / year)
R	=	Rainfall Erosivity Factor
K	=	Soil Erodibility Factor
LS	=	Slope Length / Gradient Factor

P = Erosion Control Practice Factor
C = C-Factor

Rainfall Erosivity Factor (R-Factor)

From Appendix A in the blue book it can be determined that the R-Factor for Goulburn is **1280**.

Soil Erodibility Factor (K-Factor)

Appendix C of the *Blue Book* has K-Factors for several areas of NSW. For soils at the study site locality a K factor of **0.083** has been adopted.

Slope Length / Gradient Factor (LS-Factor)

From Table A1 of the Blue Book, and using a slope length of 80m and slope ration of 1:10 it can be determined that the LS-Factor for the site is **2.81**

Erosion Control Practice Factor (P-Factor)

Assuming that the disturbed area will be compacted, track-walked from earthmoving plant and rolled with a smooth drum roller to seal the surface prior to approaching rainfall events it can be assumed that the P-Factor in accordance with Table A2 of the Blue Book is **1.3**

Cover Factor (C-Factor)

Assuming that the disturbed site will be bare soil it can be interpolated that the C-Factor in accordance with Figure A5 of the Blue Book is **1.0**

So therefore $A = 1280 \times 0.083 \times 2.81 \times 1.3 \times 1.0 = 388$ tonnes/Ha/year

From Table 4.2 of the Blue Book it can be determined that a site with a Soil Loss Value of 388 tonnes/Ha/year is of a Soil Class 3 and is a Moderate Erosion Hazard.

According to SCA/DLWC (2002) the soils are not dispersive but they are fine grained (Type F). They are hydrological group C which means runoff would occur under moderate to heavy rainfall events.

6.2 Assess Requirement for Sediment Basins

In accordance with Clause 6.3.2 of the Blue Book we see that sites which have and Annual Average Soil Loss of less than 150m³ (200t) do not require a sedimentation basin. It can be seen from the calculation below that a Sedimentation Basin is required for this site.

Disturbance Area = 42 Ha

Annual Average Soil Loss = $42 \times 388 \times 1 = 16,296\text{t} = 10,000\text{m}^3$

There are two upstream agricultural catchments CA1 18.07Ha and CA6 12.8 Ha that will remain undisturbed. It is intended that the “Clean Water” flows from these catchments will be diverted through the site and around the sedimentation basin to the existing culvert at Marys Mount Road.

According to table 6.1 of the Blue book for Type F Soils :-

Treatment Process

Slow settling in wet basins.

Basin Design capacity (Settling Zone)

Capacity to contain all runoff expected from the 75th percentile, 5-day rainfall depth

$$V = 10 \times C_v \times A \times R \text{ 75\% 5day}$$

$$V = 10 \times 0.5 \times 42 \times 14.2 = 2982 \text{m}^3$$

Basin Design capacity (Sediment Storage Zone)

Normally taken as 50 percent of the capacity of the settling zone. However, it can be taken as two months soil loss as calculated by the RUSLE

$$V = (10,000/12) \times 2 = 1666 \text{m}^3$$

In the Water cycle management study there is a requirement for a 1880m³, 1000m² Sediment forebay and 3,000m³, 2500m² Wetland. It is proposed that the excavations for the Sediment Forebay be increased to a capacity of 3,000m³ to act as a Sediment Basin for the entire development.

Whilst the calculations have been carried out to accommodate full disturbance of the development area. It will be recommended that construction works are progressively undertaken and stabilised to try and minimise the disturbed area.

6.3 Diversion Drains for Clean Water and Dirty Water

In Appendix 1 there is an ERCP that identifies the Diversion Drains required. Calculations for these drains are given below.

Diversion Drain label Label	Clean Water or Dirty Water Diversion Drain	Design ARI Storm Event (Years)	Time of Concentration (Mins)	Rainfall Intensity (mm/hr)	Contributing Area (Ha)	Runoff Coefficient (C10)	Design Flow (m ³ /s)	Bottom width (m)	Side slopes (1:?)	Longitudinal Gradient (%)	Lining Material	Mannings (n)	Flow Depth (m)	Velocity (m/s)
CD1	Clean Water	10	5	111	7	0.35	0.8	1.0	3	2.4	Geofabric	0.022	0.23	2.06
CD2	Clean Water	10	N/A	CD1 & Eastern Development			3.8	3.0	3	2.4	Geofabric	0.022	0.338	2.87
CD 3	Clean Water	10	5	111	11	0.35	1.2	1.0	3	2.5	Geofabric	0.022	0.28	2.34
CD 4	Clean Water	10	5	111	22.8	0.35	2.5	2.0	3	3.3	Geofabric	0.022	0.291	2.99
CD 5	Clean Water	10	5	111	1	0.35	0.1	1.0	3	1	Geofabric	0.022	0.1	0.84
CD 6	Clean Water	10	5	111	22.8	0.35	2.5	2.0	3	1	Geofabric	0.022	0.4	1.96
DD 1	Dirty Water	10	5	111	0.7	0.35	0.1	1.0	3	1	Geofabric	0.022	0.1	0.84
DD 2	Clean Water	10	5	111	6.3	0.35	0.7	1.0	3	1	Geofabric	0.022	0.268	1.45
DD 3	Clean Water	10	5	111	12.8	0.35	1.4	1.0	3	2.4	Geofabric	0.022	0.305	2.4
DD 4	Clean Water	10	5	111	26.5	0.35	2.9	2.0	3	2.4	Geofabric	0.022	0.343	2.79

7.0 Erosion & Sediment Control

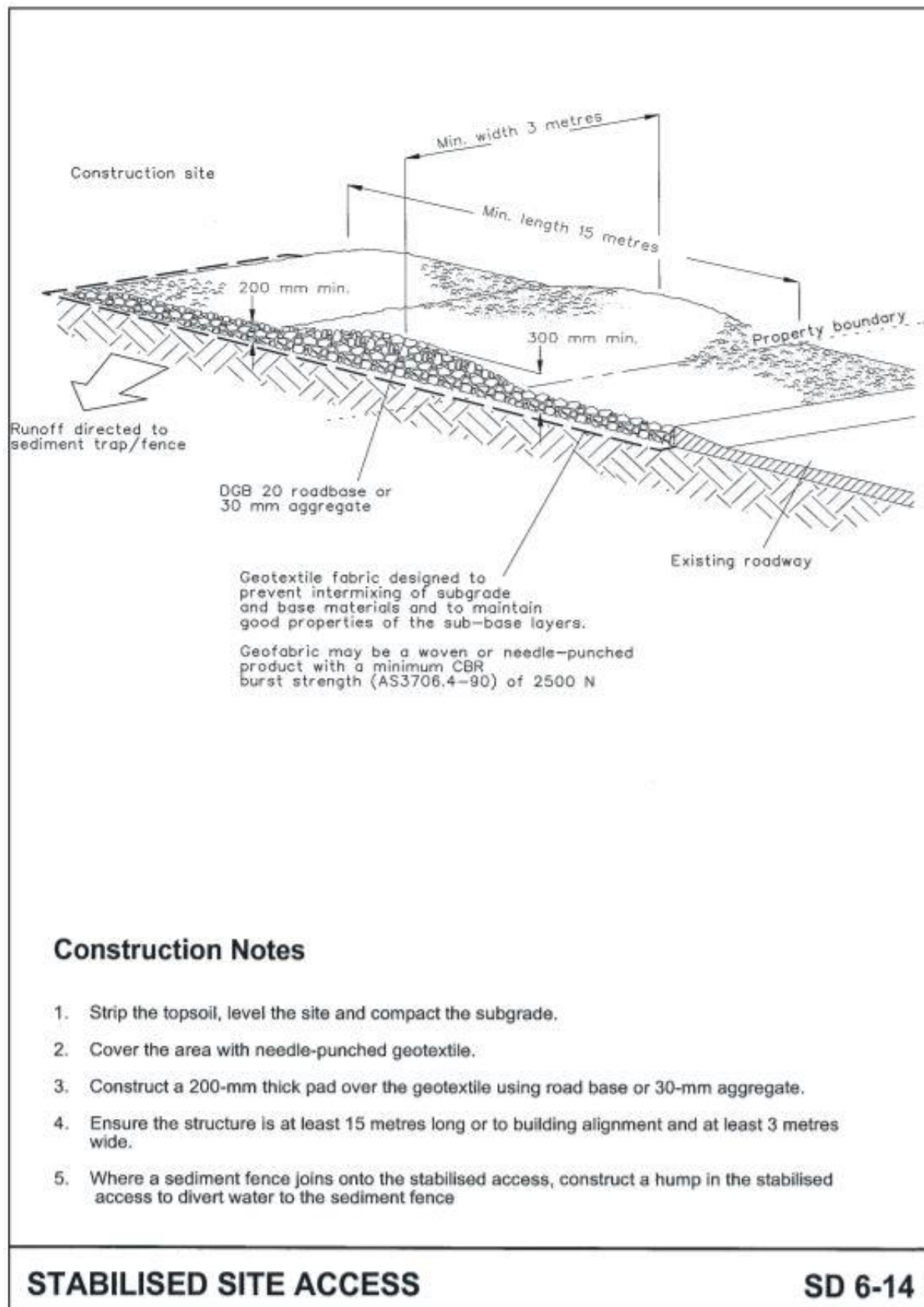
Erosion control is the first priority for the prevention of sedimentation off-site. A proactive approach to erosion control will minimise the sediment generated from the site and lessen the chance of off-site impacts. Effective and practical erosion control will be achieved through:

- Limiting area of disturbance and implementing progressive stabilisation;
- Integrating measures that reduce the volume of water moving over exposed surfaces;
- Implementing measures which slow the velocities water over exposed areas to prevent scour of the surface; and
- Providing additional protection, cover or stability to exposed surfaces so that it is less readily eroded such as additional compaction, mulches, jute mesh, temporary vegetation.

Erosion & Sediment Control Plans have been prepared as part of this SWMP. They are included in Appendix 1. The plans refer to Erosion Control Measure details that are provided below as extracted from the Blue book.

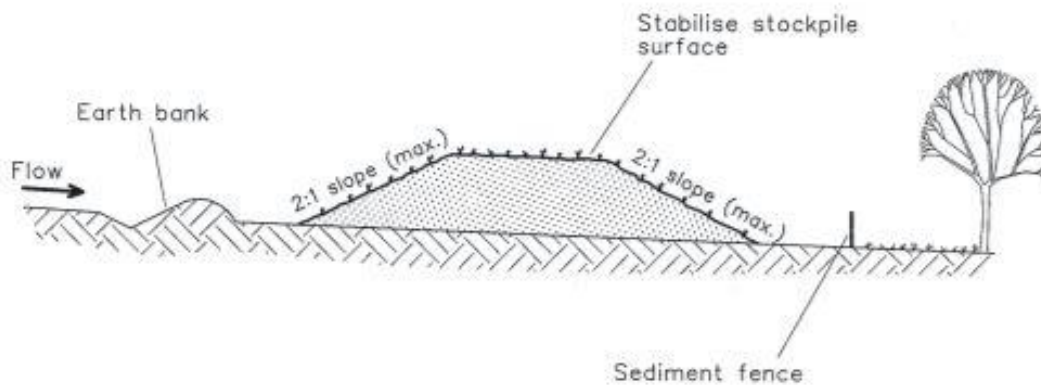
7.1 Stabilised Site Access

Stabilised Site Access should be installed at the locations shown on the ESCP's. They should be constructed in accordance with Standard Drawing SD 6-14 Stabilised Site Access.



7.2 Topsoil Stockpiles

Topsoil Stockpiles should be installed at the locations shown on the ESCP's. They should be constructed in accordance with Standard Drawing SD 4-1 Stockpiles.



Construction Notes

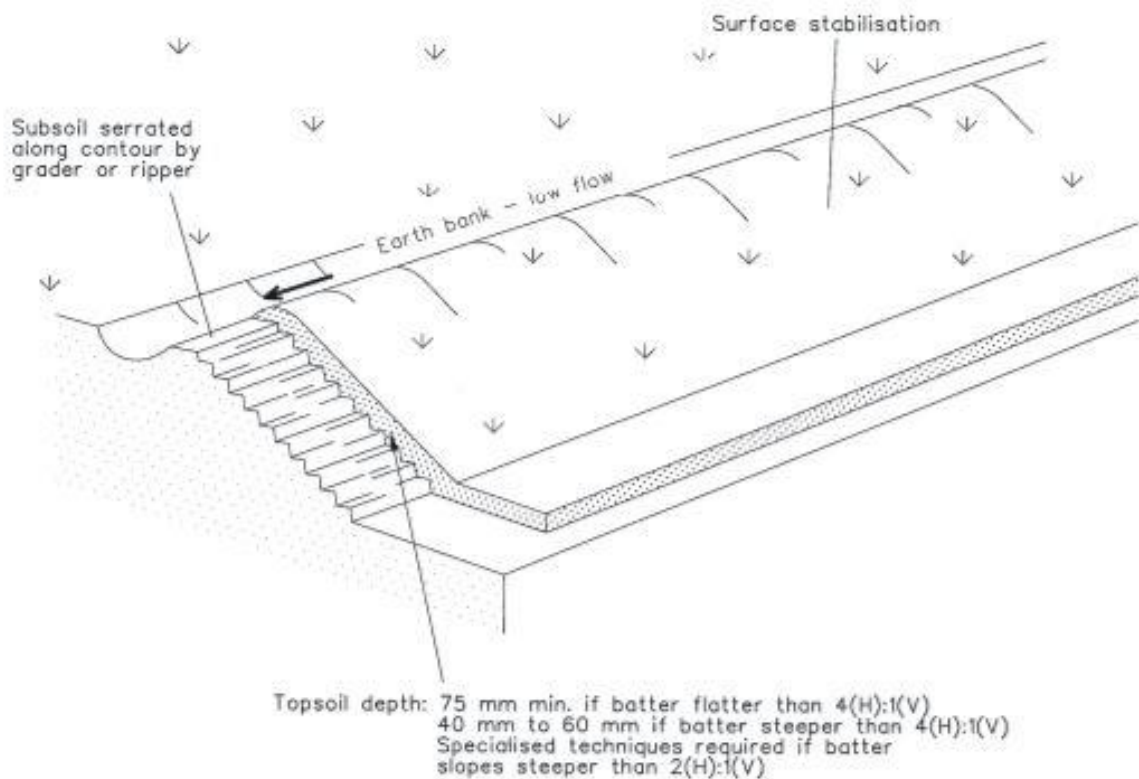
1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to 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.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES

SD 4-1

7.3 Replacing Topsoil

Topsoil should be placed to a depth of 100mm on all constructed earthworks surfaces. Topsoil should be placed in accordance with Standard Drawing SD 4-2 Replacing Topsoil and prepared in accordance with Standard Drawing SD 7-1 Seedbed Preparation.

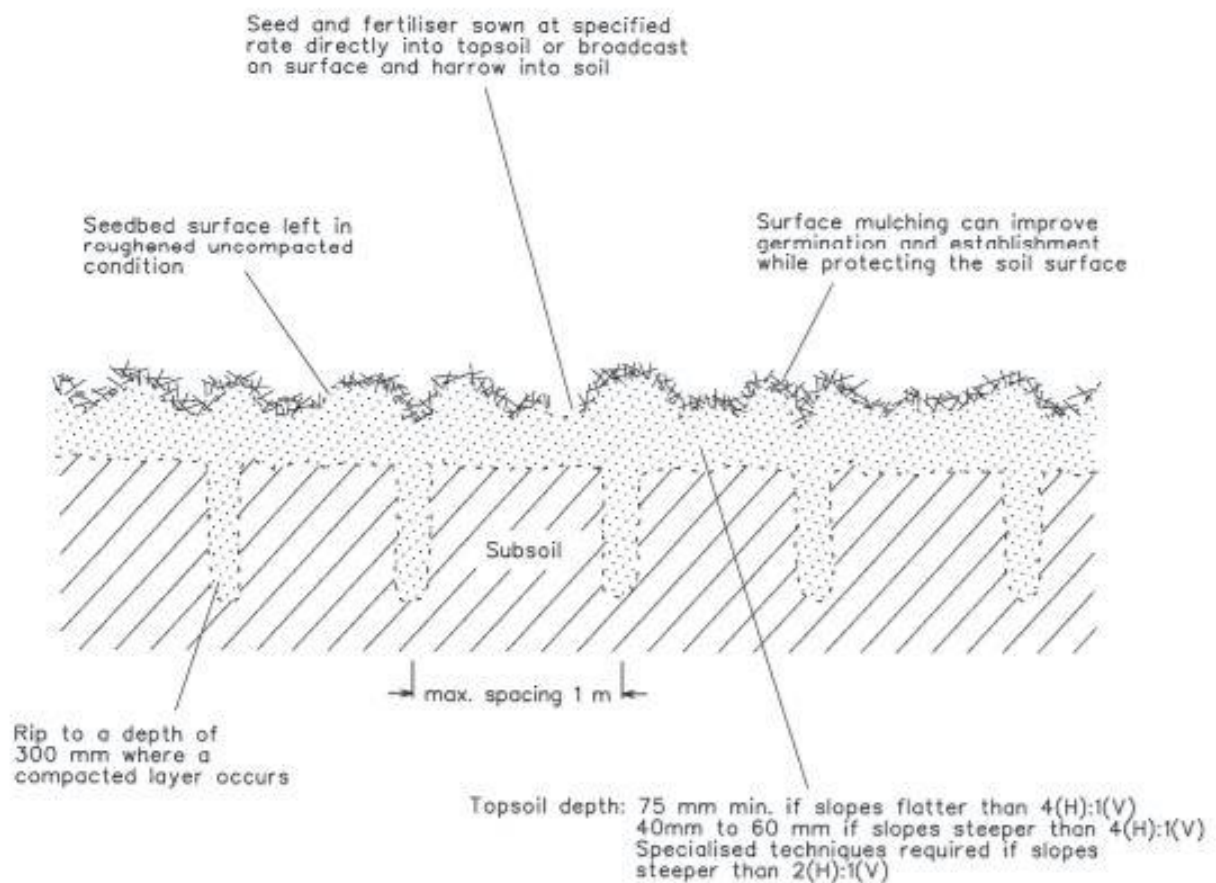


Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

REPLACING TOPSOIL

SD 4-2



Construction Notes

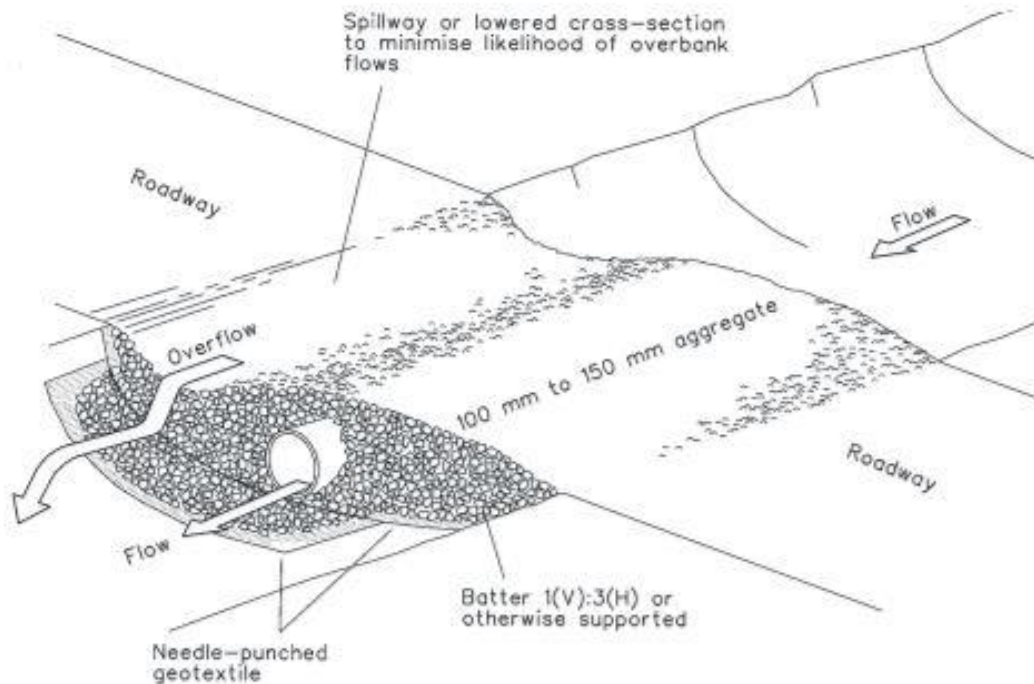
1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm. Avoid rotary hoe cultivation.
2. Work the ground only as much as necessary to achieve the desired tilth and prepare a good seedbed.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

SEEDBED PREPARATION

SD 7-1

7.4 Temporary Crossing of Swale or Waterway

Temporary Crossing should be constructed at the locations on the ESCP's. They should be constructed in accordance with Standard Drawing SD 5-1 Temporary Waterway Crossings.



Construction Notes

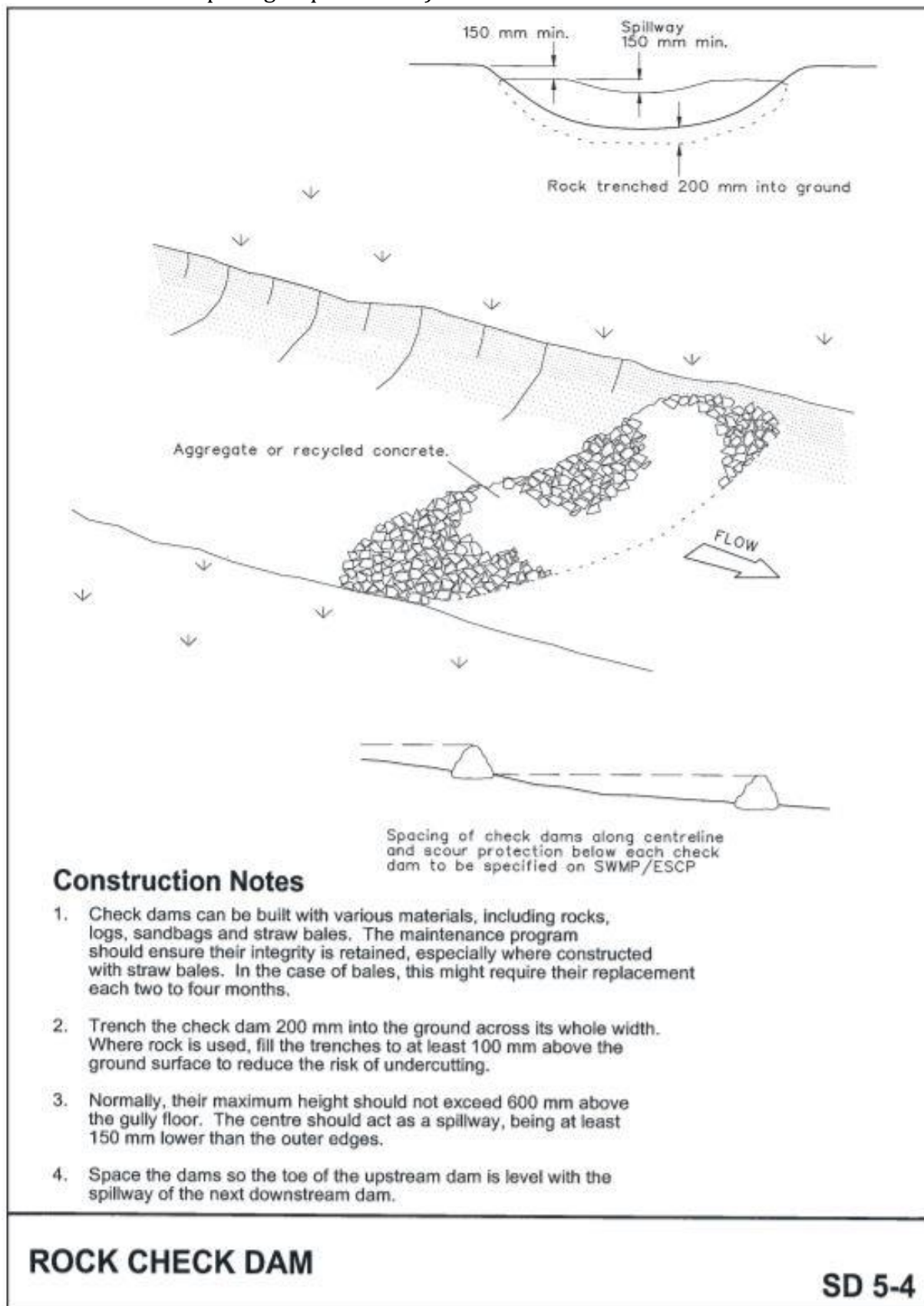
1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punched textile over the base of the crossing.
3. Place clean, rigid, non polluting aggregate or gravel in the 100 mm to 150 mm size class over the fabric to a minimum depth of 200 mm.
4. Provide a 3-metre wide carriageway with sufficient length of culvert pipe to allow less than a 3(H): 1 (V) slope on side batters.
5. Install a lower section to act as an emergency spillway in greater than design storm events.
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

TEMPORARY WATERWAY CROSSING

SD 5-1

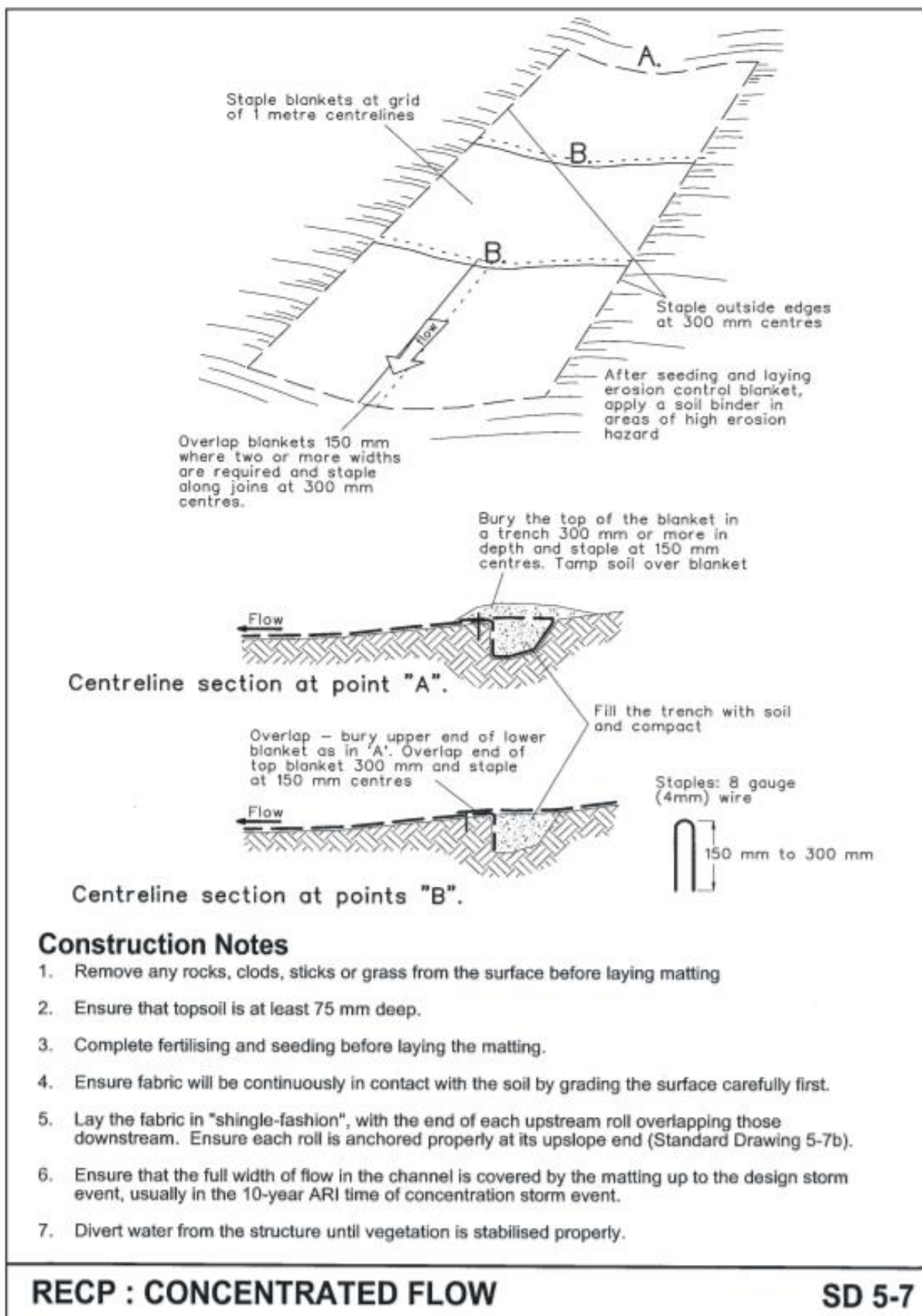
7.5 Rock Check Dams (Alternative is Coarse Mulch Check Dams)

Check Dams should be constructed at the locations on the ESCP's. They should be constructed in accordance with Standard Drawing SD 5-4 Rock Check Dam. Note that the Rocks can be substituted for the coarse mulch that has been generated on the site. (refer to next section for spacing requirements)



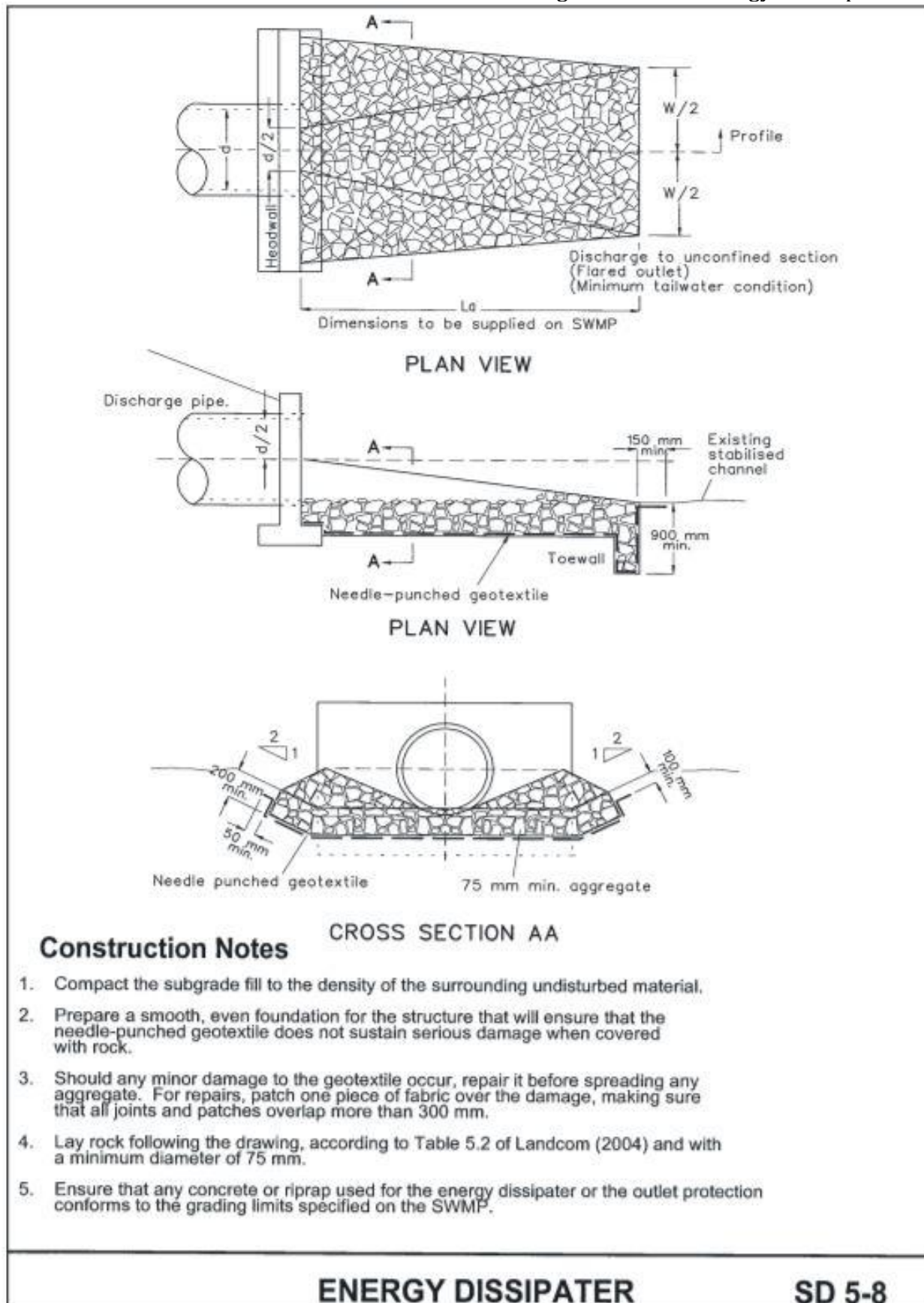
7.6 Lining of Swales / Channels Subject to Concentrated Flows.

Stabilise the inverts of Swales and Channels with fabric where any erosion is detected in swales and channels. They should be constructed in accordance with Standard Drawing SD 5-7 RECP : Concentrated Flow.



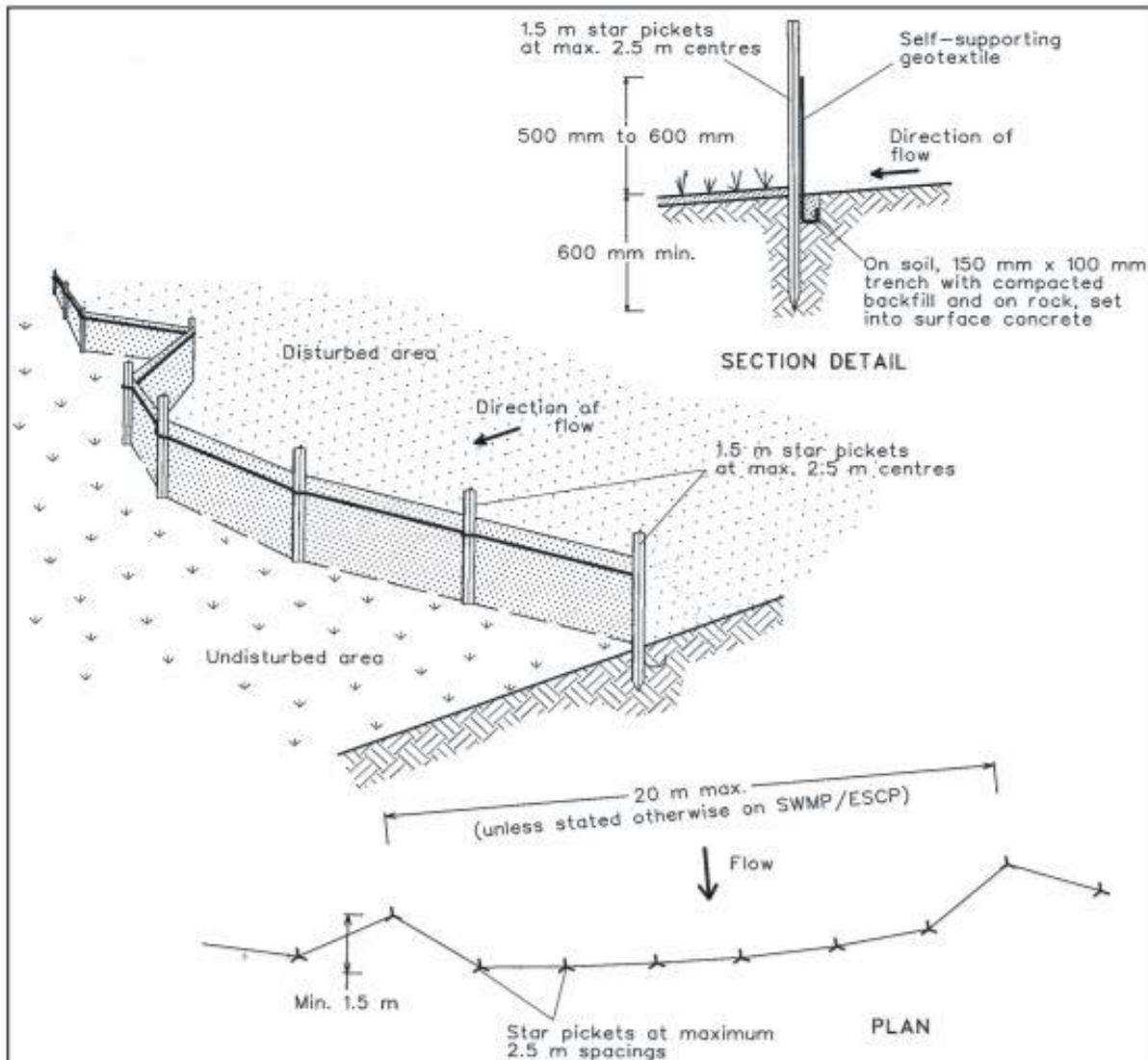
7.7 Energy Dissipaters

Energy Dissipaters have been designed by the Civil Design Consultant. Where there is insufficient information in the civil design drawings. The Energy Dissipaters should be installed in accordance with Standard Drawing SD 5-8 Energy Dissipater.



7.8 Sediment Fences

Sediment Fences should be constructed at the locations on the ESCP's. They should be constructed in accordance with Standard Drawing SD 6-8 Sediment Fence.



Construction Notes

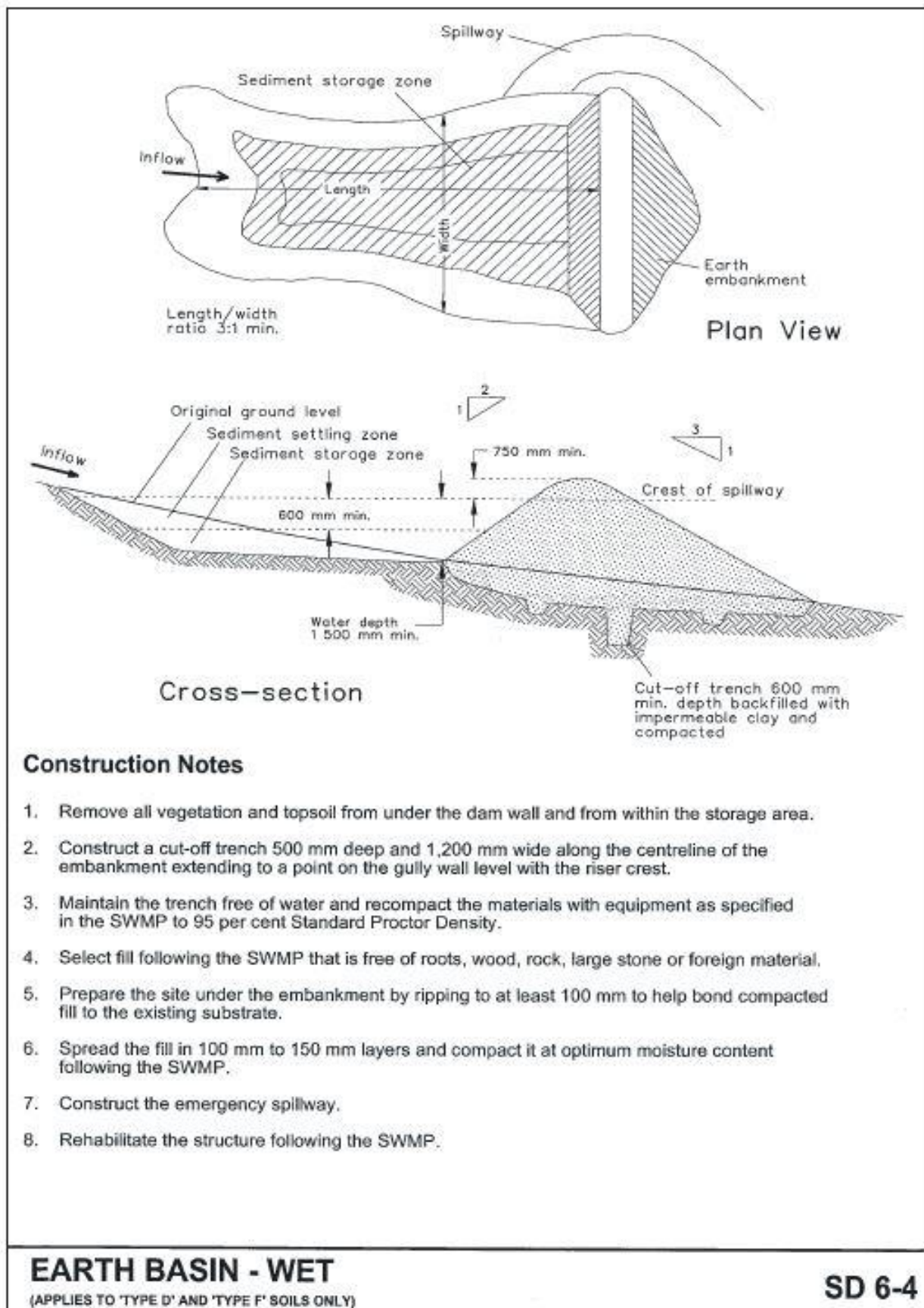
1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE

SD 6-8

7.9 Sediment Basin

Sediment Basins should be constructed at the locations on the ESCP's. They should be constructed in accordance with Standard Drawing SD 6-4 Earth Basin - Wet



8.0 Inspection & Maintenance

Planning and installation are only the first parts in the treatment train. One of the most important is the inspection and monitoring of the Erosion Control Measures. A weekly inspection should be undertaken and a Weekly Erosion Control measures Checklist completed. A copy of a Weekly Erosion Control Measure Checklist is below. An additional checklist should be completed after each rainfall event.

	WEEKLY EROSION CONTROL MEASURE CHECKLIST
---	---

Project _____ Stage/Area _____
 Inspection Date _____ Inspection Time _____
 Inspection By (Name) _____ Signature _____

ITEM	INSPECTION DESCRIPTION	N/A	NO	YES	REMARKS		
1.	Soil and Water Management						
a	Are all Erosion Control Measures installed at the locations as per the project Erosion & Sediment Control Plans.						
b	Are modifications required to the Erosion & Sediment Control Plans.						
c	Has there been a rainfall event since the last inspection?						
d	Is there any uncontrolled runoff being discharged from the site?						
e	Sediment Basins -Has Settlement Zone sufficient capacity? -Is flocculation Required? -Does sediment require removal? -Is the Outflow Structure installed correctly? -Are the embankments protected from erosion?						
f	Straw Bales -Are they installed in trenches? -Are they tightly abutting? -Are they staked? -Has backfill been placed on the upstream side? -Is runoff running around, between bales? -Does sediment require removal?						
g	Sediment Fences -Is the filter fabric in a trench and backfilled? -Are stakes installed at correct spacing? -Has sediment accumulated to 300mm from top? -Does sediment require removal? -Is runoff running around or below the fence?						
h	Stabilized Site Access -Has geofabric been placed prior to rock? -Is rock >30mm been used? -Is SSD stopping sediment from tracking off site?						
i	Check Dams -Are check dams installed correctly? -Does sediment require removal? -Is runoff running around or below the dam?						
j	Stockpiles -Are there stockpiles in place longer than 10 days that are not stabilized. -Are stockpiles less than 2m high?						
List of Maintenance / Improvements Required:							
DESCRIPTION				ACTION BY			
SIGN OFF (Once all Maintenance / Improvements Completed)							
Signed:.....			Position:.....				

Appendix 1 - Drawings

Diversion Drain label Label	Clean Water or Dirty Water Diversion Drain	Design ARI Storm Event (Years)	Time of Concentration (Mins)	Rainfall Intensity (mm/hr)	Contributing Area (Ha)	Runoff Coefficient (C10)	Design Flow (m³/s)	Bottom width (m)	Side slopes (1:?)	Longitudinal Gradient (%)	Lining Material	Mannings (n)	Flow Depth (m)	Velocity (m/s)
CD1	Clean Water	10	5	111	7	0.35	0.8	1.0	3	2.4	Geofabric	0.022	0.23	2.06
CD2	Clean Water	10	N/A		CD1 & Eastern Development		3.8	3.0	3	2.4	Geofabric	0.022	0.338	2.87
CD3	Clean Water	10	5	111	11	0.35	1.2	1.0	3	2.5	Geofabric	0.022	0.28	2.34
CD4	Clean Water	10	5	111	22.8	0.35	2.5	2.0	3	3.3	Geofabric	0.022	0.291	2.99
CD5	Clean Water	10	5	111	1	0.35	0.1	1.0	3	1	Geofabric	0.022	0.1	0.84
CD6	Clean Water	10	5	111	22.8	0.35	2.5	2.0	3	1	Geofabric	0.022	0.4	1.96
DD1	Dirty Water	10	5	111	0.7	0.35	0.1	1.0	3	1	Geofabric	0.022	0.1	0.84
DD2	Clean Water	10	5	111	6.3	0.35	0.7	1.0	3	1	Geofabric	0.022	0.268	1.45
DD3	Clean Water	10	5	111	12.8	0.35	1.4	1.0	3	2.4	Geofabric	0.022	0.305	2.4
DD4	Clean Water	10	5	111	26.5	0.35	2.9	2.0	3	2.4	Geofabric	0.022	0.343	2.79

LEGEND

- 

NO GO AREA
- 

SEDIMENT FENCE
- 

BARRIER FENCE
- 

SEDIMENT BASIN
- 

CLEAN WATER DIVERSION DRAIN
- 

DIRTY WATER DIVERSION DRAIN
- 

PROPOSED STORMWATER DRAINAGE LINE
- 

DIVERSION MOUND
- 

STOCKPILE
- 

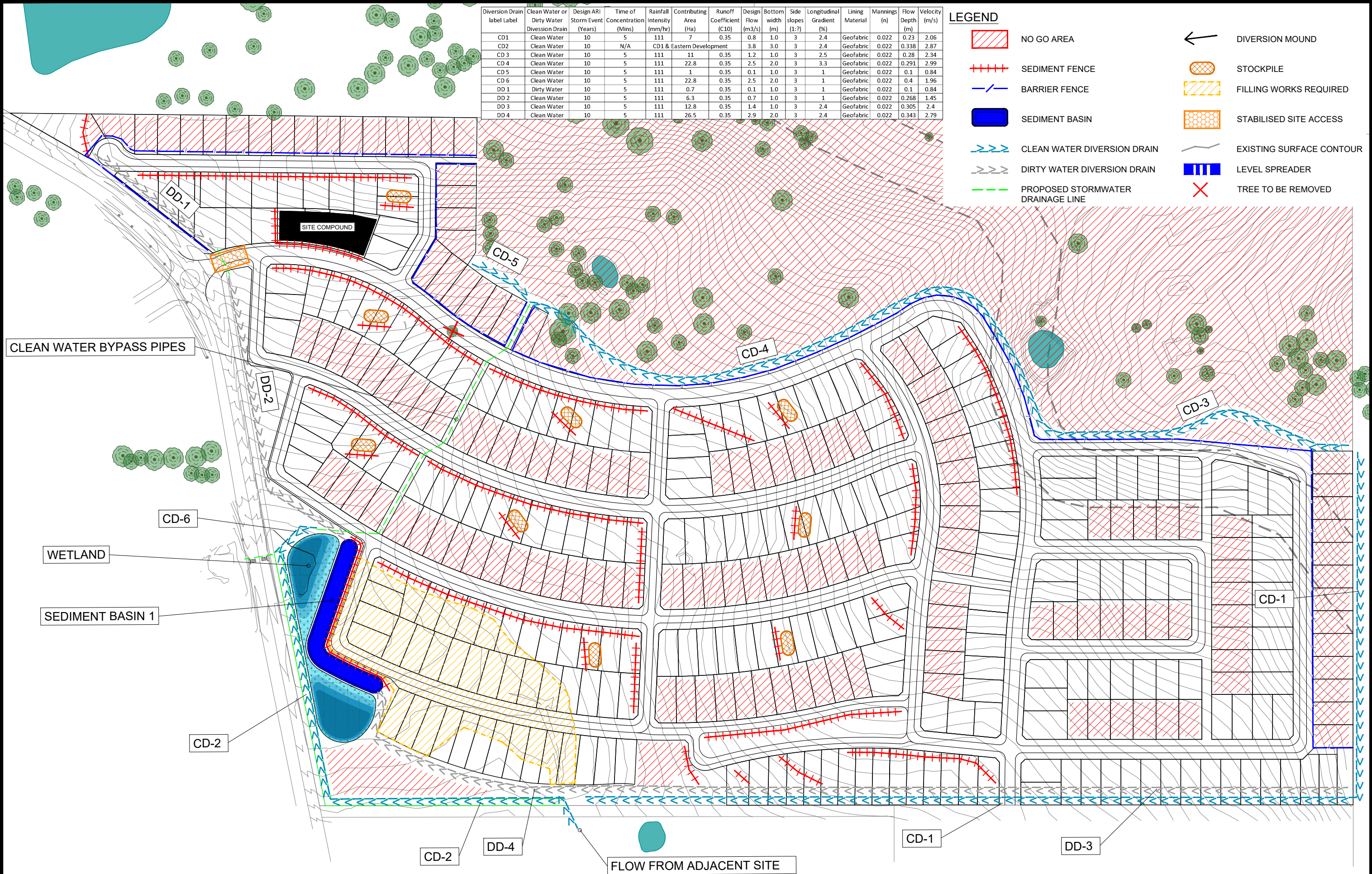
FILLING WORKS REQUIRED
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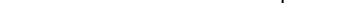
STABILISED SITE ACCESS
- 

EXISTING SURFACE CONTOUR
- 

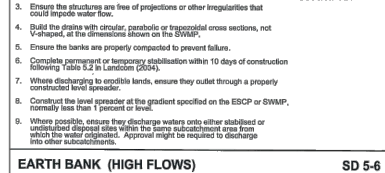
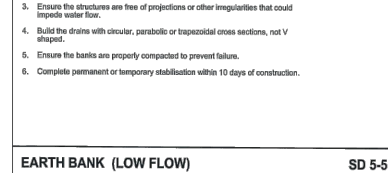
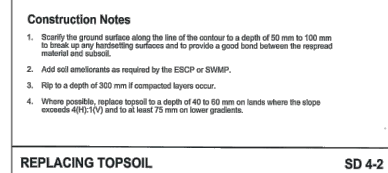
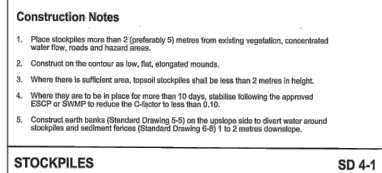
LEVEL SPREADER
- 

TREE TO BE REMOVED



REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN	TITLE	NAME	SCALE	DESIGNER	CLIENT	PROJECT TITLE
A	20/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK	DRAWN DESIGNER DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK. The concepts and information contained in this document are copyright of Fraish Consulting Pty Ltd. Use or copying of this document in whole or in part without written permission constitutes an infringement of copyright.	LKK AJB	  SCALE: A1 1:1500, A3 1:3000	 1/8 Victoria Street, Hall ACT PO Box 310, Hall ACT 2618 02 6230 2823 • 0418 585 774 info@fraish.com.au • www.fraish.com.au	CAPPELLO DEVELOPMENTS NO.10	SUBDIVISION OF LOT 28, DP479 MARY'S MOUNT ROAD, GOULBURN, NSW SEDIMENT & EROSION CONTROL PLAN SHEET 1
						SCALE	PHASE	DRAWING No.	REV
						AS SHOWN	DA	C211	A

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Class	Type	Suitable for Vegetation Type:					Relative Impact	Notes					
		Design Life (years)	Use in Concentrated Flow	Availability (region)	Relative Cost Bracket	Relative Impact		C-factor <25%, <6m	C-factor <25%, 6-1m	C-factor <25%, >1m	C-factor 30-50%, <6m	C-factor 30-50%, 6-1m	C-factor 30-50%, >1m
BIODEGRADABLE MULCHES ²¹													
Straw (anchored)	4.5 tonnes per hectare	Grass	1 to 6	No	<5days	Low	Moderate	0.17	0.17	0.20	0.20	0.20	0.20
	Wood Chip	16 tonnes per hectare	Grass/Strata	1 to 6	No	<5days	Low	0.08	0.08	0.08	No data	No data	No data
	Wood Chip	27 tonnes per hectare	Strata	1 to 6	No	<5days	Low	0.05	0.05	0.05	No data	No data	No data
	Wood Chip	66 tonnes per hectare	Strata	1 to 6	No	<5days	Low	0.02	0.02	0.02	0.02	0.02	0.02
	Hydromulching	1.5 tonnes mulch + 300 litres binder per hectare	Grass	1 to 3	No	<5days	Low	0.03	0.03	0.07	0.03	0.06	0.10
	Bonded Fibre	5 tonnes fibre per hectare	Grass	1 to 6	No	<5days	Low	0.02	0.03	0.07	0.03	0.06	0.10
HOLLED EROSION CONTROL PRODUCTS (HECPs) ²¹													
Biodegradable	Joist mesh	Grass	6 to 12	Yes	<5days	Low	Moderate	0.10	0.20	0.40	0.20	0.40	0.60
	Coconut fibre mesh	Grass	6 to 12	Yes	<5days	Low	Moderate	0.10	0.20	0.40	0.20	0.40	0.60
	Curled wood fibre	Grass	6 to 12	Yes	<5days	Medium	Moderate	0.01	0.05	0.10	0.10	0.10	0.20
	Joist matting (~350 gsm)	Grass	6 to 12	Yes	<5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
	Joist matting (~600 gsm)	Strata	6 to 12	Yes	<5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
	Coconut fibre matting (~450 gsm)	Grass	6 to 12	Yes	<5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
Photodegradable	Coconut fibre matting (~900 gsm)	Strata	6 to 12	Yes	<5days	Medium	Moderate	0.00	0.03	0.07	0.03	0.06	0.10
	Mesh (~ 5 mm openings)	Grass	1 to 6	Yes	<5days	Low	Moderate	0.01	0.05	0.10	0.10	0.15	0.20
Non Biodegradable	Plastic fibres with netting	Grass	> 12	Yes	<5days	High	High	0.00	0.05	0.10	0.03	0.05	0.10
	Composite with biodegradable	Grass/Strata	> 12	Yes	<5days	High	High	0.00	0.03	0.07	0.03	0.06	0.10
HYDRAULIC SOIL STABILISERS ²¹													
Polymers/Polysaccharide (rate depends on type)	Bulmers emulsion (12,000 litres)	Grass	1 to 6	No	<5days	Low	Low	0.01	0.05	0.10	0.10	No data	No data
		Grass	1 to 6	No	<5days	Low	Low	0.01	0.05	0.10	0.10	No data	No data
TEMPORARY SEEDING	Annual	NA	6 to 12	No	<5days	Low	Low	0.05	0.05	0.10	0.10	No data	No data
	Perennial	NA	> 12	No	<5days	Low	Low to moderate	0.05	0.05	0.10	0.10	No data	No data
INSTANT TURF ²¹													
Kikuyu	Grass	> 12	Yes	<5days	Medium	Low	Low	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Bioderived turf (non-moss)	Grass	> 12	Yes	6-15 days	High	High	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Erosion control practice	Type	Effect on vegetation				Controlling erosion and pollution						Constraints			
		enhances germination of grass seeds	controls weeds	enhances growth of herbicidal	enhances root-holding ability	protects soil surfaces	reduces runoff	filters or traps sediment	traps silt/sediment	minimises sheet erosion	reduces weeds	stable in low to mid-moisture channel flows	stable in high to mid-moisture channel flows	stabilises pavements	
ORGANIC PRODUCTS (non bio-recycled)															
Composted Domestic Manure	15 tonnes per hectare	1	1	1	0	3	3	2	0	0	0	0	0	0	0
Composted Domestic Manure	25 tonnes per hectare	0	2	3	0	3	3	3	0	0	0	0	0	0	0
Composted Domestic Manure	40 tonnes per hectare	0	3	0	3	0	3	0	0	0	0	0	0	0	0
Composted soil conditioner	100 L per m ² (max)	3	1	3	2	1	1	0	0	0	0	0	0	0	0
Composted soils	100 L per m ² (max)	3	1	3	2	1	1	0	0	0	0	0	0	0	0
GRAIN OR PRODUCTS															
Hydro mulching	1.5 tonnes mulch + 300 litres binder per hectare	3	0	0	0	3	1	1	0	0	0	0	0	0	0
Banded fibres	9 tonnes fibre per hectare	3	1	1	0	3	2	1	0	0	0	0	0	0	0
ROLLER DRUMS CONTROL PRODUCTS (RCPs)															
Biodegradable RCP's	John mow	2	1	0	1	2	1	0	0	0	0	1	1	0	0
	Ground fibre mesh	2	1	0	1	2	1	1	0	0	0	0	1	1	0
	Catch weed fibre in plastic mesh	3	1	1	1	3	2	0	0	0	0	1	1	0	0
	John mowing - 500 gms	0	3	0	0	3	2	1	0	0	0	0	2	1	0
	Ground fibre mowing - 400 gms	0	3	0	0	3	2	1	0	0	0	0	2	1	0
	Ground fibre mowing - 300 gms	0	3	0	0	3	2	1	0	0	0	0	2	1	0
Pseudo-biodegradable RCP's	Mesh - 1 mm openings	2	0	0	1	2	1	0	0	0	0	0	1	1	0
	Super light weight non-weave (0.8gms)	2	0	0	1	2	1	0	0	0	0	0	1	1	0
Non Biodegradable TBM's	Plastic fibres with netting	2	1	0	0	3	3	2	1	0	0	0	3	3	0
	Composite with biodegradable	2	1	0	0	3	3	2	1	0	0	0	3	3	0
HYDRAULIC SOIL STABILISERS															
	Polymer/Polyacrylamide (size depends on type)	0	0	0	0	2	0	0	0	0	0	0	1	0	0
	Blumax emulsion (17,000 lbs)	0	0	0	0	2	0	0	0	0	0	0	1	0	0
TEMPORARY EROSION															
	Annual	0	1	0	0	3	2	2	0	0	0	0	1	0	0
	Perennial	0	2	0	0	3	2	2	0	0	0	0	1	0	0
INSTANT TURF															
	Kilgus	0	1	0	0	3	2	2	0	0	1	0	1	0	0
	Reforsoft turf (proprietary)	0	1	0	0	3	3	2	0	0	1	1	2	2	0
OTHER PRODUCTS															
Grass (seeded)	4.5 tonnes per hectare	3	1	1	0	3	3	2	0	0	0	0	0	0	0
Wind and	0	3	1	0	0	3	0	0	0	0	0	0	0	0	0
Geotextile	1	1	1	1	1	2	0	0	0	0	1	0	0	1	0
Geotextile	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geotextile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN	TITLE	NAME	SCALE	DESIGNER	CLIENT	PROJECT TITLE			
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK	DRAWN	LKK	 NOT TO SCALE	FRAISH Consulting Civil & Structural Engineers 1/8 Victoria Street, Hall ACT PO Box 310, Hall ACT 2618 02 6230 2822 • 0438 585 774 Info@fraish.com.au • www.fraish.com.au	CAPPELLO DEVELOPMENTS NO.10	SUBDIVISION OF LOT 28, DP479 MARY'S MOUNT ROAD, GOULBURN, NSW			
			DESIGNER	AJB	SEDIMENT & EROSION CONTROL NOTES							
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									SCALE	PHASE	DRAWING No.	REV
									AS SHOWN	DA	C212	

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GENERAL NOTES

- ALL WORK MUST COMPLY WITH ENVIRONMENT PROTECTION GUIDELINES FOR CONSTRUCTION AND LAND DEVELOPMENT IN NSW.
- ALL EROSION & SEDIMENTATION CONTROLS TO BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BEST PARACTICE GUIDELINES CONTAINED WITHIN SOILS AND CONSTRUCTION VOL .1 (LANDCOM 2004) (BLUE BOOK).
- THE KEY PRINCIPLES OF THIS PLAN ARE TO :-
 - INTEGRATE EROSION AND SEDIMENT CONTROL ISSUES INTO SITE AND CONSTRUCTION PLANNING
 - MINIMISE THE EXTENT AND DURATION OF SOIL DISTURBANCE
 - CONTROL WATER MOVEMENT AROUND AND THROUGH THE SITE
 - MINIMISE SOIL EROSION
 - PROMPTLY STABILISE DISTURBED AREAS
 - MAXIMISE SEDIMENT RETENTION ON SITE
 - MAINTAIN ALL ESC MEASURES IN PROPER WORKING ORDER AT ALL TIMES
- ALL NEW CONSTRUCTION WORK MUST BE CONTAINED WITHIN THE SITE EXCEPT FOR APPROVED SERVICE CONNECTIONS AND ROADWORKS.
- LIMIT ACCESS TO SITE DURING AND IMMEDIATELY AFTER WET WEATHER
- NO STORAGE OF CONSTRUCTION MATERIALS, PARKING OF VEHICLES NOR EQUIPMENT PERMITTED OUTSIDE OF BLOCK WITHOUT COUNCIL APPROVAL.
- NO SITE SHEDS, STORAGE SHEDS, SITE AMENITIES TO BE ERECTED OUTSIDE OF BLOCK WITHOUT COUNCIL APPROVAL.
- ALL SERVICE TRENCHES TO BE BACK FILLED WITHIN 24HOURS OF INSPECTION
- EXCESS SOIL IS TO BE DISPOSE AT A SUPERINTENDENT APPROVED LOCATION.
- THE CONTRACTOR TO CONTACT THE SUPERINTENDENT TO ARRANGE A SITE INSPECTION AND ENDORSEMENT OF SEDIMENT AND EROSION CONTROL MEASURES PRIOR TO WORKS COMMENCING.
- THE CONTRACTOR TO CONTACT THE SUPERINTENDENT TO DISCUSS ANY PROPOSED MAJOR CHANGES TO SEDIMENT AND EROSION CONTROLS ON SITE PRIOR TO IMPLEMENTING THE CHANGES.
- THE CONTRACTOR TO ENSURE CONTRACTORS ACCESS AND EXIT THE SITE USING ONLY APPROVED STABILISED ACCESS/EXIT POINTS AS DETAILED ON ENDORSED SEDIMENT AND EROSION CONTROL PLANS.
- WHERE UNDERGROUND STORMWATER DRAINAGE IS INSTALLED TO ADJACENT ROADWORKS, PROVIDE INLET FILTER IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.

STABILISED SITE ENTRANCE

- STABILISED SITE ENTRANCE TO BE CONSTRUCTED AT THE LOCATION(S) INDICATED ON THE PLANS.
- STABILISED SITE ENTRANCE TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.
- AT THE LOCATION OF THE STABILISED SITE ENTRANCE FIRST STRIP THE TOPSOIL, LEVEL THE AREA AND COMPACT THE SUBGRADE.
- COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
- CONSTRUCT A 200MM THICK PAD OVER THE GEOTEXTILE USING COARSE AGGREGATE MIN SIZE 30MM.
- ENSURE THAT THE STABILISED SITE ENTRANCE IS AT LEAST 15M LONG OR TO THE BUILDING ALIGNMENT AND AT LEAST 3M WIDE.
- WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.
- REGULARLY MAINTAIN THE STABILISED SITE ENTRANCE BY REPLACING AGGREGATE IF INNUNDATED WITH SILT.

STABILISATION

- UNDERTAKE PROGRESSIVE STABILISATION OF DISTURBED GROUND SURFACES AS THEY ARE COMPLETED RATHER THAN AT THE END OF THE WORKS PROGRAM (REFER TO TABLE 1)
- ENSURE THAT DISTURBED LANDS FOR EACH STAGE ARE STABILISED APPROPRIATELY BEFORE COMMENCING WORK ON THE FOLLOWING STAGE
- FINAL STABILISATION IS TO ACHIEVE THE C-FACTORS OUTLINED IN TABLE 1
- BATTERS SHOULD BE STABILISED TO BRING C-FACTORS DOWN TO 0.1 WITHIN 10 WORKING DAYS OF FINAL FORMATION
- STABILISATION OF BATTERS CAN BE ACHIEVED BY PLACING TOPSOIL OVER THEM WITH LOCALLY SOURCED NATIVE MULCH PLACED OVER THE SOIL, OR ALTERNATIVELY, THEY CAN BE HYDROMULCHED (OR EQUIVALENT)
- APPROPRIATE SEEDBED PREPARATION SHOULD BE CARRIED OUT WHEN STABILISING LANDS
- DIVERSION DRAINS AND TABLE DRAINS ARE TO BE STABILISED AS INDICATED IN TABLES 1 & 3
- STOCKPILES ARE TO BE STABILISED AS PER THE REQUIREMENTS OF TABLE 1
- SEDIMENT DAM AND CULVERT OUTLETS ARE TO BE STABILISED IN ACCORDANCE WITH TABLE 1 AND ENERGY DISSIPATERS ARE TO BE PROVIDED
- STABILISATION MEASURES AND PRODUCTS SHOULD BE IN ACCORDANCE WITH TABLES A1 AND A3
- AS SURFACES ARE STABILISED AND PERMANENT DRAINAGE MEASURES ARE INSTALLED, TEMPORARY WATER MANAGEMENT STRUCTURES CAN BE REMOVED (EG. DIVERSION DRAINS)

SEDIMENT BASIN

- SEDIMENT BASIN SIZE AND DETAILS ARE SHOWN ON RELEVANT DRAWINGS
- THE SEDIMENT BASIN IS TO BE BUILT TO INCORPORATE A PRIMARY OUTLET (WEIR OVERFLOW) SIZED TO HAVE A CAPACITY TO PASS THE 100 YEAR PEAK FLOW. THIS MUST BE MINIMUM 3m IN BASE WIDTH BY 0.3m IN DEPTH WITH SIDE SLOPES 1:3
- ENERGY DISSIPATERS ARE TO BE CONSTRUCTED ON THE OUTLETS OF THE WEIR OVERFLOWS. CONSTRUCT OUT OF ROCK RIP-RAP
- SECURITY FENCING AND WATER SAFETY CONTROL MEASURES MUST BE IMPLEMENTED AROUND ALL SEDIMENT BASINS
- ANY RELEASE OF WATER FROM THE SEDIMENT BASIN UP TO THE DESIGN RAINFALL DEPTH (18mm IN 5 DAYS) WILL REQUIRE FLOCCULATION TO ACHIEVE ADEQUATE SETTLING OF DISPERSIBLE FINE MATERIAL (REFER TO FLOCCULATION NOTES FOR MORE DETAILS) HOWEVER IF THE WATER IS GOING TO BE USED WITHIN THE CONSTRUCTION SITE FOR DUST-SUPPRESSION PURPOSES AND WILL DRAIN BACK INTO THE SEDIMENT CAPTURE SYSTEM IT WILL NOT REQUIRE FLOCCULATION
- IF WATER IS PUMPED INTO A TANKER TRUCK TO USE FOR DUST SUPPRESSION AT A LATER STAGE, IT CANNOT BE DISCHARGED FROM THE TANKER INTO A CREEK/DAM WITHOUT FIRST BEING FLOCCULATED
- SEDIMENT BASIN MUST BE EFFECTIVELY FLOCCULATED, SETTLED AND DISCHARGED WITHIN 5 DAYS OR LESS FOLLOWING A RAINFALL EVENT
- SEDIMENT BASIN SHOULD INCORPORATE A "FULL OF SEDIMENT" MARKER TO SHOW WHEN THE SEDIMENT STORAGE CAPACITY HAS BEEN REACHED AND SEDIMENT REMOVAL IS REQUIRED (REFER TO TABLE 4)

FLOCCULATION OF SEDIMENT BASIN

- FLOCCULATION IS TO BE ACHIEVED BY USING GYPSUM AT A RATE OF APPROXIMATELY 40kg/100m³ OF STORMWATER TO ACHIEVE 50mg/l OR LESS OF SUSPENDED SEDIMENT. OTHER FLOCCULANTS ARE PERMISSIBLE.
- IT IS ESSENTIAL THAT THE FLOCCULATING AGENT IS SPREAD EVENLY OVER THE ENTIRE POND SURFACE FOR PROPER TREATMENT OF WATER
- FLOCCULATION MUST OCCUR WHENEVER THE AREA OF A STAGE IS LESS THAN 70% STABILISED
- ONCE FLOCCULATED THE TREATED WATER WILL BE RELEASED TO THE WETLAND

SLOPE LENGTHS

- ENSURE SLOPE LENGTHS ARE MAINTAINED AT 80m ACROSS ALL DISTURBED LANDS DURING ANY RAINFALL EVENT
- DIVERSION BUNDS/DRAINS, LOW FLOW EARTH BANKS OR SANDBAGS/EQUIVALENT SHOULD BE INSTALLED PRIOR TO ANY RAINFALL EVENT TO ACHIEVE THIS

TOPSOIL STOCKPILES

- TOPSOIL STOCKPILES TO BE CONSTRUCTED AT THE LOCATION(S) INDICATED ON THE PLANS.
- TOPSOIL STOCKPILES TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.
- PLACE STOCKPILES MORE THAN 2M (PREFERABLY 5M) FROM EXISTING VEGETATION, CONCENTRATED WATERFLOWS, ROADS AND HAZARD AREAS.
- STOCKPILES ARE NOT TO BE POSITIONED WITHIN A RIPARIAN ZONE (IE. WITHIN 40m OF THE DRAINAGE RESERVE/CREEK).
- CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- BATTERS SHOULD BE NO STEEPER THAN 1:2.
- WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2M IN HEIGHT.
- WHERE TOPSOIL STOCKPILES ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE THEIR SURFACE AREA USING AN APPROVED METHOD. THIS SHOULD REDUCE THE C-FACTOR TO LESS THAN 0.10.
- CONSTRUCT EARTHBANKS ON THE UPSLOPE SIDE OF TOPSOIL STOCKPILES TO DIVERT WATER AROUND.
- CONSTRUCT SEDIMENT FENCES AROUND THE DOWNSLOPE SIDE OF TOPSOIL STOCKPILES. PREFERABLY 1 TO 2M FROM THE EDGE OF THE STOCKPILE.
- REGULARLY INSPECT AND MAINTAIN TOPSOIL STOCKPILE EROSION AFTER RAINFALL EVENTS.

EARTHWORKS, DISPOSAL OF SPOIL & IMPORTING FILL

- PRIOR TO ANY WORKS COMMENCING INVOLVING EXPORT OF SPOIL GREATER THAN 100M³, THE FOLLOWING INFORMATION MUST BE PROVIDED TO THE SUPERINTENDENT:
 - WHERE THE SPOIL WILL ORIGINATE FROM,
 - WHO IS DISPOSING OF THE SPOIL
 - WHERE THE SPOIL WILL BE TAKEN
 - THE AMOUNT OF SPOIL TO BE TAKEN AWAY
 - MOVEMENT DATES AND CONTACT DETAILS
 - DESCRIPTION OF THE TYPE OF SPOIL TAKEN AWAY
 - DETAILS OF HOW RECORDS WILL BE KEPT
 - TIME FRAME TO COMPLETE THE WORKS
- SPOIL MAY BE TAKEN TO AN APPROVED LANDFILL SITE WITHOUT APPROVAL.
- IF THE SPOIL IS TO BE TAKEN TO AN AREA OTHER THAN APPROVED LANDFILL SITE, ENSURE THE ACCEPTOR OF THE SPOIL IS AWARE OF ANY COUNCIL REQUIREMENTS SUCH AS A DA
- THE CONTRACTOR IS NOT TO ACCEPT IMPORTED MATERIAL WITHOUT RECEIVING DOCUMENTED EVIDENCE THAT THE MATERIAL COMPLIES WITH SPECIFICATION REQUIREMENTS.
- WASTE ENCLOSURE(S) ARE TO BE USED FOR ALL RUBBISH ON SITE AND RUBBISH REMOVED FROM ENCLOSURE(S) WHEN REQUIRED OR FULL.

DUST MANAGEMENT

- WHERE BUILDING WORK GENERATES DUST, ALL REASONABLE AND PRACTICABLE MEASURES SHOULD BE TAKEN TO MINIMISE THAT DUST.
- THIS CAN OFTEN BE ACHIEVED BY :-
- RETAIN EXISTING VEGETATION WHERE POSSIBLE
 - STRIPPING ARES PROGRESSIVELY AND ONLY WHERE IT IS NECESSARY FOR WORKS TO OCCUR;
 - EMPLOYING STABILISING METHODS SUCH AS MATTING, GRASSING OR MULCH;
 - DAMPENING THE GROUND WITH A LIGHT WATER SPRAY (CONTACT THE ENVIRONMENT PROTECTION AUTHORITY FOR REQUIREMENTS DURING EXTREME DROUGHT CONDITIONS);
 - ROUGHENING SURFACE OF EXPOSED SOIL;
 - COVERING STOCKPILES AND LOCATING THEM WHERE THEY ARE PROTECTED FROM THE WIND;
 - RESTRICTING VEHICLE MOVEMENTS;
 - COVERING THE LOAD WHEN TRANSPORTING MATERIAL;
 - CONSTRUCTING WIND BREAKS SUCH AS WIND FENCES IN ACCORDANCE WITH THE BLUE BOOK;
 - A WATER CART OR SUFFICIENT WATER SPRAYS SHALL BE MADE AVAILABLE AT ALL TIMES. IN ADVERSE CONDITIONS WHEN DUST CANNOT BE ADEQUATELY CONTROLLED WHEN WORKS ARE BEING UNDERTAKEN, WORKS WILL CEASE IN THESE AREAS UNTIL CONDITIONS IMPROVE;
 - WATER SHALL BE APPLIED TO SUPPRESS DUST FROM OPEN EARTHWORKS AS WELL AS UNPROTECTED STOCKPILES;
 - AREAS OF COMPLETED EARTHWORKS SHALL BE PROGRESSIVELY REHABILITATED WITH DRY LAND GRASS AND FENCED OFF AS SOON AS PRACTICABLE TO PREVENT FURTHER EROSION;
 - THE CONTRACTOR SHALL CONTACT COUNCIL TO OBTAIN WATER FOR CONSTRUCTION WORKS

SEDIMENT FENCING

- SEDIMENT FENCING TO BE CONSTRUCTED AT THE LOCATION(S) INDICATED ON THE PLANS.
- SEDIMENT FENCING TO BE CONSTRUCTED IN ACCORDANCE WITH DETAIL ON EROSION & SEDIMENT CONTROL DETAILS DRAWING.
- CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT BETWEEN RETURNS SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
- CUT A 150MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- DRIVE 1.5M LONG STAR PICKETS INTO GROUND AT 2.5M INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- FIX SELF SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT ACCEPTABLE.
- JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150MM OVERLAP.
- BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOUROUGHLY OVER THE GEOTEXTILE.
- REGULARLY MAINTAIN THE SILT FENCING BY REMOVING SILT AFTER RAINFALL EVENTS.

MAINTENANCE & INSPECTION

DAILY

- SWEEP AND REMOVE DIRT AND ANY OTHER BUILDING MATERIAL FROM GUTTERS, FOOTPATHS OR ROADWAYS ADJACENT TO THE SITE BY CLOSE OF BUSINESS AND OR PRIOR TO RAIN AND WHEN REQUIRED.
- ALL NECESSARY STEPS SHOULD BE TAKEN THAT ARE PRACTICAL AND REASONABLE TO MINIMISE DUST POLLUTION.

WEEKLY

- INSPECT STABILISED CONSTRUCTION ENTRY AND TURN OVER STABILISED CONSTRUCTION ENTRY MATERIAL MONTHLY AND RENEW WHEN REQUIRED.
 - CHECK AND REINSTATE SILT CONTROL FENCES.
- DURING/AFTER WET WEATHER:
- LIMIT CONSTRUCTION VEHICLE ACCESS TO SITE DURING AND IMMEDIATELY FOLLOWING WET WEATHER.

GENERAL NOTES

- WASTE ENCLOSURE(S) ARE TO BE USED FOR ALL RUBBISH ON SITE AND RUBBISH REMOVED FROM ENCLOSURE(S) WHEN REQUIRED OR FULL.
- ALL WORK MUST COMPLY WITH NSW BLUE BOOK

NOISE

ENSURE ALL BUILDING WORK THAT GENERATES NOISE IS CONDUCTED WITHIN THE TIME PERIODS DETAILED IN THE CONTRACT

IN ADDITION:

- SCHEDULE NOISY ACTIVITIES FOR THE LEAST SENSITIVE TIMES OF THE DAY SUCH AS MID-MORNING AND MID-AFTERNOON.
- SELECT MACHINERY THAT PRODUCE LESS NOISE; AND
- ENSURE MACHINERY IS WELL MAINTAINED.

FIRE

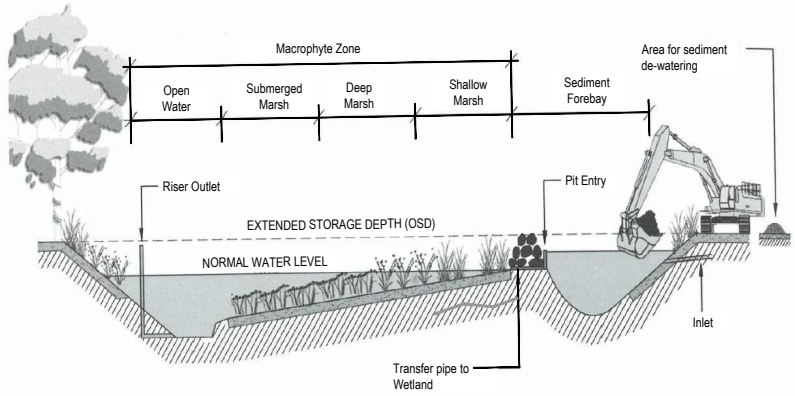
- BURNING OF WASTE MATERIALS ON THE SITE, SUCH AS PLASTICS, CHEMICALS OR WOOD THAT MAY BE PAINTED, CHEMICALLY TREATED OR CONTAMINATED WITH CHEMICALS IS ILLEGAL.
- A FIRE MAY BE PERMITTED FOR HEATING PURPOSES PROVIDED IT IS IN A BRAZIER OR CONSTRUCTED FIREPLACE. ONLY SEASONED, UNTREATED TIMBER CAN BE BURNED FOR HEATING PURPOSES.

TABLE 1 - MAXIMUM ACCEPTABLE C-FACTORS AT NOMINATED TIMES		
LANDS	MAX. C-FACTOR	REMARKS
WATERWAYS AND OTHER AREAS SUBJECTED TO CONCENTRATED FLOWS (EG. TABLE DRAINS), POST CONSTRUCTION AND DURING OPERATION	0.05	APPLIES AFTER TEN WORKING DAYS FROM THE COMPLETION OF FORMATION AND BEFORE THEY ARE ALLOWED TO CARRY ANY CONCENTRATED FLOWS. FLOWS WILL BE LIMITED TO THOSE SHOWN IN TABLE 5.2 OF LANDCOM (2004). FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS
STOCKPILES AND BATTERS, POST CONSTRUCTION AND DURING OPERATION	0.10	APPLIES AFTER TEN WORKING DAYS FROM COMPLETION OF FORMATION. MAXIMUM C-FACTOR OF 0.10 EQUALS 60% GROUND COVER
ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES DURING CONSTRUCTION AND OPERATION	0.15	APPLIES AFTER 20 WORKING DAYS OF INACTIVITY, EVEN THOUGH WORKS MIGHT CONTINUE LATER. MAXIMUM C-FACTOR of 0.15 EQUALS 50% GROUND COVER
ALL LANDS POST CONSTRUCTION	0.05	APPLIES AFTER 60 WORKING DAYS OF COMPLETION OF WORKS. MAXIMUM C-FACTOR OF 0.05 EQUALS 70% GROUND COVER

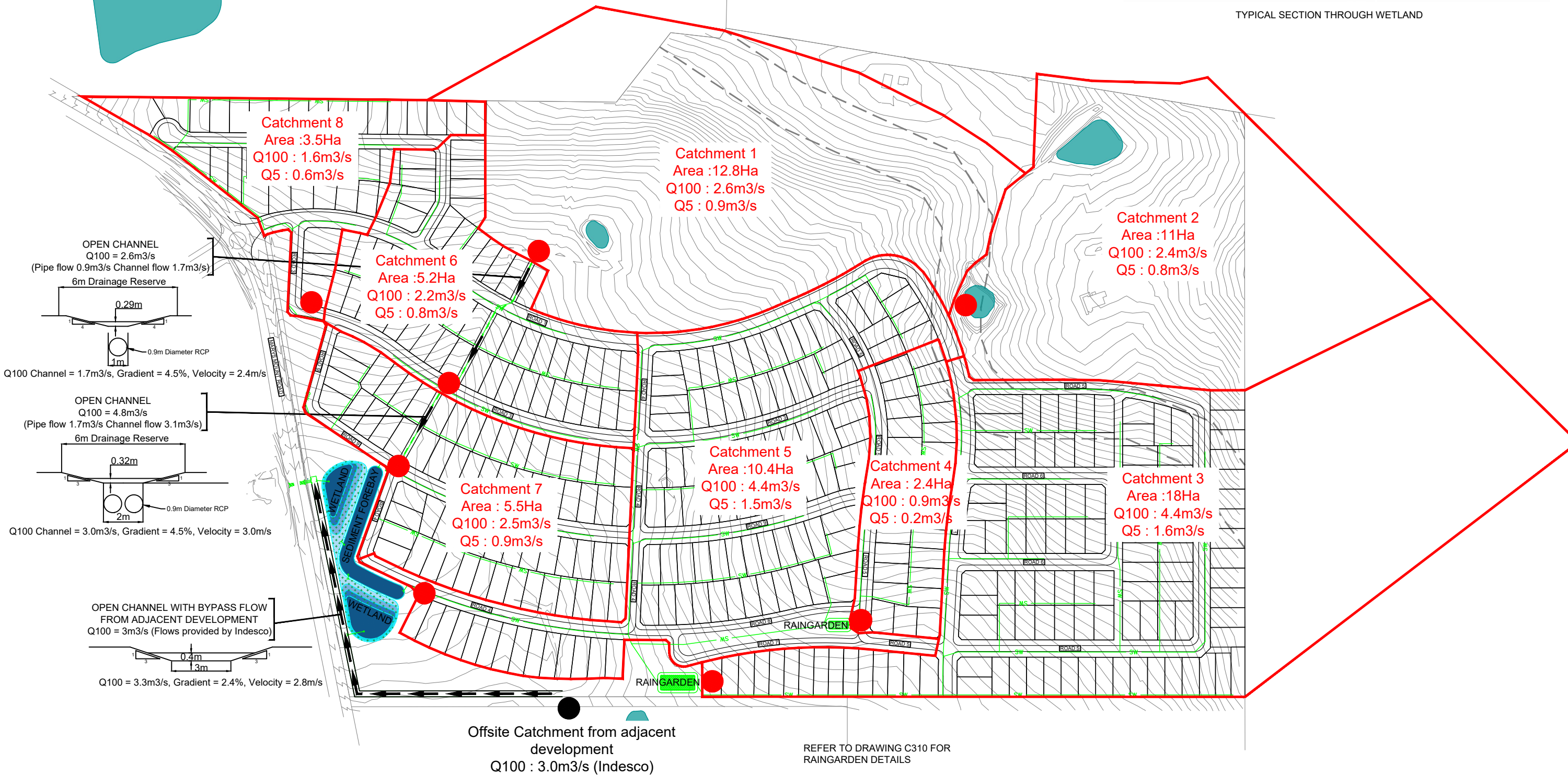
TABLE 2 - LIMITATIONS TO ACCESS DURING CONSTRUCTION		
LAND USE	LIMITATION	REMARKS
CONSTRUCTION AREAS	LIMITED TO 5 (PREFERABLY 2) METERS FROM THE EDGE OF ANY ESSENTIAL CONSTRUCTION ACTIVITY AS SHOWN ON THE ENGINEERING PLANS	ALL SITE WORKERS SHOULD CLEARLY RECOGNISE THESE AREAS THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT (DOWNSLOPE) OR SIMILAR MATERIALS
ACCESS AREAS	LIMITED TO MAXIMUM WIDTH OF 5 METERS	THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON SITE. THEY CAN VARY IN POSITION SO AS TO BEST CONSERVE EXISTING VEGETATION AND PROTECT DOWNSTREAM AREAS WHILE BEING CONSIDERATE OF THE NEEDS OF EFFICIENT WORKS ACTIVITIES. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES
REMAINING LANDS, INCLUDING RE-VEGETATION AREAS	ENTRY PROHIBITED EXCEPT FOR ESSENTIAL MANAGEMENT WORKS	THINNING OF GROWTH MIGHT BE NECESSARY, FOR EXAMPLE, FOR FIRE REDUCTION OR WEED REMOVAL

REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN	TITLE	NAME	SCALE	DESIGNER	CLIENT	PROJECT TITLE						
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK	DRAWN	LKK			CAPPELLO DEVELOPMENTS NO.10	SUBDIVISION OF LOT 28, DP479 MARY'S MOUNT ROAD, GOULBURN, NSW SEDIMENT & EROSION CONTROL NOTES SHEET 1						
				DESIGNER	AJB										
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				1/8 Victoria Street, Hall ACT PO Box 310, Hall ACT 2618 02 6230 2823 • 0418 585 774 info@fraish.com.au • www.fraish.com.au						SCALE	PHASE	DRAWING No.	REV		
									AS SHOWN	DA	C213	A			

WETLAND / RAINGARDEN / SSR DETAILS
TOTAL CONTRIBUTING FLOW = Q100 24m3/s
PERMISSIBLE SITE DISCHARGE = 248l/s/Ha = Q100 16m3/s
SITE STORAGE REQUIREMENT = 56m3/Ha = 3,643m3
SITE STORAGE IN TANKS = 393 @ 5m3 = 1,965m3
SITE STORAGE (OSD) ABOVE WETLAND AND FORBAY = 1,678m3
SEDIMENT FOREBAY SIZING = 1880m3 min, 1000m2 min
(Increased in size for erosion control)
WETLAND SIZING = 3,000m3 min, 2,500m2 min
RAINGARDEN SIZING (Catch 2) = Water Area 800m2 , Treatment Area 500m2
RAINGARDEN SIZING (Catch 4) = Water area 300m2 , Treatment Area 150m2



TYPICAL SECTION THROUGH WETLAND



REVISION	DATE	AMENDMENT / REVISION DESCRIPTION	DRAWN	TITLE	NAME	SCALE	DESIGNER	CLIENT	PROJECT TITLE	SCALE	PHASE	DRAWING No.	REV
A	14/11/17	ISSUED FOR DEVELOPMENT APPLICATION	LKK	DRAWN DESIGNER	LKK AJB	DO NOT SCALE OFF DRAWINGS VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK. The concepts and information contained in this document are copyright of Fraish Consulting Pty Ltd. Use or copying of this document in whole or in part without written permission constitutes an infringement of copyright.	FRAISH Consulting Civil & Structural Engineers 1/8 Victoria Street, Hall ACT PO Box 310, Hall ACT 2618 02 6230 2823 • 0418 585 774 info@fraish.com.au • www.fraish.com.au	CAPPELLO DEVELOPMENTS NO.10	SUBDIVISION OF LOT 28, DP479 MARY'S MOUNT ROAD, GOULBURN, NSW STORMWATER CATCHMENT PLAN SHEET 1	AS SHOWN	DA	C300	A

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