Soil and Water Management Plan

KEE01 – 02 – Mr. Murray Walsh

Version 4.0 - Amended for Stage 1 Expansion

12 Mar 25

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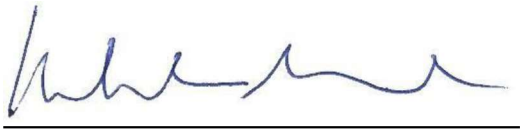
Preliminaries

Scope

Document Control

Prepared	**Approved**
	
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Revision/Issue	Comments	Date	Author Initial	Approver Initial
1.0	Issue 01	28 Apr 22	SM	MB
2.0	Amended for removal of Phase 2	29 Jun 23	OB	MV
3.0	Amended for 2024.109 RFI	25 Nov 24	OB	MV
4.0	Amended for Stage 1 Expansion	12-Mar-25	OB	MV

Contents

1 Introduction

The Soil and Water Management Plan has been prepared to ensure all site erosion and water runoff is managed properly and does not impact the surrounding environment. This is a subordinate document to the OEMP, consisting of project description and detailed steps to follow in order to comply legislative and regulatory requirements for effective drainage and basin design.

2 Description of the project

The existing quarry is located at 28 Coral Park Rd, Wolumla, 2550. The main objective of the quarry is the extraction of hard rock for gravel production. The project involves using blasting and frontend loader to extract gravel from the site.

The project site layout is shown within Appendix A

3 Site characteristics and constraints

The site constraints and characteristics criteria are presented in table 1.

Table 1 Constraints and characteristics

Site	Basin #1
Rainfall	R factor = 3500 (from vol. 1: appendix B) 621.8mm mean annual rainfall (BoM)
Rainfall zone	Zone 1 (from vol. 1: figure 4.9)
Slope gradient	Up to 2.5:1 on existing slope. Generally 2:1
Potential erosion hazard	High Erosion Hazard (Fig. 4.6)
Soil erodibility	K= 0.013 Fig. A3 (calculation included at Appendix D)
Calculated soil loss	269.91 m^3/year
Soil loss class	1
Soil texture group	C
Soil depressiveness	Class 6, non-dispersive Complete flocculation.
Runoff coefficient	0.42
Disturbed site area	5.9 Ha

4 Soil loss calculation

Soil loss is calculated using the Revised Universal Soil Loss Equation (RUSLE) as detailed in appendix A of Managing urban stormwater: soils and construction, volume 1, 4th edition (Landcom 2004). This publication is referred to as vol. 1 throughout this SWMP. Appendix B contains the full calculations.

5 Sediment retention basins

Basins are required to be constructed in stages prior to recommencement of extraction from the extraction zone.

5.1 Basin 1

Basin 1 is the existing (requiring modification) basin located to the south of the extraction area. This basin currently treats approximately half of the run-off of the quarry. The proposed extraction will change the landform such that Basin 1 will be required to treat the whole of the quarry's extraction area, until the floor of the quarry is excavated to a final floor level of 152AHD.
Basin 1 requires substantial expansion in order to accommodate the whole of the run-off from the quarry. This expansion should be staged proportionally in line with the 3 extraction stages and the increase of the catchment for basin 1. The expansion of basin 1 will occupy some of the area currently used for processing. Basin 1 should be a Dry-basin in order to accommodate ease of sediment removal and progressive expansion.

Basin Name: Basin 1
Basin Type: Wet/Dry Basin
Construction Detail: SD6-3.
Minimum Volume: 1415m^3.
Minimum Surface Area: 881m^2.
Geometry Limitations: Surface area of 4,100 m^2/m^3/sec in the 3-month ARI flow, minimum depth of 0.6m, and Length: Width ratio of >3:1. Use baffle to achieve required flow path.
Sequencing: Existing basin requiring expansion. Spillway and riser to be in-place prior to commencement of Phase 1. Storage capacity may be gradually increased proportionally with the increase of the catchment during the three extraction stages of Phase 1.
Possible configuration as shown:

Stage 1 Extraction (1st to 14th year):	Minimum Volume: 1007m^3. L: 48m W:15m D: 1.4m Slope: 1:1
Stage 2 Extraction (15th to 22nd year):	Minimum Volume: 1182m^3. L: 51m W:17m D: 1.4m Slope: 1:1
Stage 3 Extraction (23rd to 30th year):	Minimum Volume: 1415m^3. L: 52m W:19m D: 1.4m Slope: 1:1

5.2 Basin 2

Basin 2 is a new basin to be located to the north of extraction area. This basin is required during Phase 1 only and will be removed once phase 1 reaches the northern most areas of the extraction

zone. The water shed will progressively move north as Phase 1 excavation occurs. This will reduce the load on Basin 2 as the run-off is diverted to the south. Basin 2 will become obsolete and will need to be removed as the benching back at the quarry floor level, 152 AHD, approaches the area of Basin 2.

Basin Name: Basin 2
Basin Type: Wet/Dry Basin
Construction Detail: SD6-3.
Minimum Volume: 438m^3.
Minimum Surface Area: 247m^2.
Geometry Limitations: Surface area of 4,100 m^2/m^3/sec in the 3-month ARI flow, minimum depth of 0.6m, and Length: Width ratio of >3:1. Use baffle to achieve required flow path.
Sequencing: Basin 2 to be in-place prior to commencement of Phase 1.
Possible configuration as shown:

L: 29m
W:11m
D: 1.4m
Slope: 1:1

5.3 Basin 3

Basin 3 is an existing wet-basin located outside of the extraction zone in the agricultural land to the immediate north of the site. This basin handles run-off from the highway, paddock and, currently, the north half of the quarry. Basin 3 is in an unserviceable state as it has a build-up of sediment. Basin 3 is only required until Basin 2 is brought on-line. Basin 3 works should be limited to sedimentation removal.

Basin Name: Basin 3
Basin Type: Wet Basin
Construction Detail: nil – existing.
Minimum Volume: 438m^3.
Minimum Surface Area: 247m^2.
Geometry Limitations: Existing basin
Sequencing: Basin 3 is only required until Basin 2 is brought on-line. Basin 3 works should be limited to sedimentation removal.

6 Maintenance

6.1 Inspection/Monitoring

The site manager will undertake regular general environmental inspections to ensure that all the water management controls are functioning as designed and required. The site manager will also ensure that any contractors on site are operating within the environmental controls required for their activities. Site drainage and sediment control structures will be inspected regularly after runoff events (greater than 10 mm in 24 hours) to check for scouring of diversion drains and accumulation of materials in sediment traps, such as sediment fences and sandbags, and sediment basins. If a failure of the controls has occurred and dirty water (>50PPM TSS) has left the site, the EPA (131 555) must be notified of a pollution event.

6.2 Controls

Where these are not functioning correctly, the surface will be restored to meet the required standard. Where significant erosion is occurring regularly, additional controls will be constructed in general accordance with those presented in "Blue book vol. 1".

6.3 Haul roads

Haul roads will be water sprayed in order to mitigate dust generation. Haul roads will be visually inspected to ensure that the appropriate mitigation measures are functioning to convey the surface flows from the road and work areas without causing erosion on the adjacent land. Where significant erosion is occurring regularly, additional controls, such as mitre drains, scour protection of road drainage, and re-grading of the road surface, will be constructed. In the event of excess dust produced on haul roads (or at the request of BVSC), dust suppression measures will be enforced.

6.4 Basins

Regular visual checks will be made of the basins to ensure that there is no noticeable increased discoloration or undesirable sediment build-up, and that basins are in a stable condition. Appropriate coagulation, usually (50mg/L), of sediment basins is required if the contained water does not achieve a specified water quality standard. Water quality should be analysed as per section 7 of this report. Accumulated sediment should be cleaned out periodically, every two months, as per soil basin sizing calculations, ensuring a minimum 0.6m water settling zone above sediment storage zone in basins. During cleanout basins should be restored to their original storage volume. Sediment should be placed in a bunded disposal area to dry out or mixed with dry soil on site where appropriate. Sediment must be disposed of in a manner that will not create an erosion or pollution hazard. Any signs of erosion at the points of discharge will be noted and remedial works undertaken as required. Where significant erosion is observed, additional erosion controls will be constructed such as new rock scour protection at the discharge locations.

6.5 Sediment fences

All sediment fencing and sandbag sediment filters will be inspected to ensure that they are functioning adequately.

6.6 Drainage channels

These will be inspected to ensure that they are continuing to convey the flows in accordance with design. Any signs of erosion along the length of the banks and at the points of discharge will be noted and remedial works undertaken as required. Where significant erosion is observed, additional erosion controls will be constructed. This may include establishment of further vegetation cover, armouring of the channel surface and construction of new-rock scour protection at the entry and discharge locations. Inspection will continue for at least two years after the initial rehabilitation works.

6.7 Diligence and care

As part of the statutory 'diligence and care' responsibilities, the site manager will keep a log book, making entries at least weekly, immediately before forecast rain, and after rainfall. Entries will include:

- The volume and intensity of any rainfall events
- The condition of any soil and water management work
- The condition of vegetation and any need to irrigate
- The need for dust prevention strategies
- Any remedial works to be undertaken.

The book will be kept on-site and made available to any authorised person on request. It will be given to the project manager at the conclusion of the works. The local authority (BVSC) is to be

advised of the outcomes of any such inspections within 24 hours of a runoff event (i.e More than 10mm in 24 hours).

7 Monitoring

Surface water quality will be monitored quarterly while active extraction is in progress, with samples taken from the existing site and also from the new sediment basin (see Appendix A). Water samples will be analysed for key parameters, including:

- pH
- Electrical conductivity
- Suspended solids.

Opportunistic grab samples may also be taken periodically from streams during significant rainfall events. These samples will be analysed for the same parameters as above.
Reporting For each sampling event, water quality results will be compared against the assessment criteria and any other relevant criteria that may be defined in the development consent. Any exceedance of criteria will trigger an immediate investigation to determine the cause of the exceedance and preparation of a corrective action plan to re-establish appropriate controls as necessary. The reporting of all monitoring and measurement data will be undertaken in accordance with the requirements of the development consent, including notification of monitoring/ investigation results to external organisations if required. All results will be reported in an annual environmental management report (ERMP). The proponent will also report results to DECC as soon as practicable after any incident with actual or potential significant off-site impacts on people or the biophysical environment. Confirmation of civil works shall be certified by a Professional Engineer prior to recommencement of gravel extraction.

8 Schedule of works

8.1 Phase one

1) Clean out of Basin 3, prior to commencing extraction.
2) Construction of Basin 2, prior to commencing extraction.
3) Construction drainage channels and installation of new channels
4) Installation of silt fences and straw bale barriers.
5) Expansion of Basin 1 – Stage 1.
6) Extraction operation – Stage 1 (1st to 14th year).
7) Expansion of Basin 1 – Stage 2.
8) Extraction operation – Stage 2 (15th to 22nd year).
9) Decommission of Basin 2
10) Expansion of Basin 1 – Stage 3.
11) Extraction operation – Stage 3 (23rd to 30th year).
12) Adjust drainage channels as needed.
13) Erosion and sediment control works (permanent and temporary)
14) Maintenance program

8.2 Post extraction

15) Implementation of rehabilitation works
16) Monitoring rehabilitation of the land and adjusting as required

9 References

Department of Environment and Climate Change NSW, 2004. *Managing Urban Stormwater: Soils and Construction 4th edition (aka Blue Book Vol 1),* PARRAMATTA: New South Wales Government.

Department of Environment and Climate Change NSW, 2004. *Managing Urban Stormwater: Soils and Construction 4th edition (aka Blue Book Vol 1),* PARRAMATTA: New South Wales Government.

Department of Environment and Climate Change NSW, 2008. *Managing Urban Stormwater: Soils and Construction Mines and Quarries (aka Blue Book Vol 2E),* Parramatta: NSW Department of Environment and Climate Change.

Department of Environment and Climate Change NSW, 2008. *Managing Urban Stormwater: Soils and Construction Mines and Quarries (aka Blue Book Vol 2E),* Parramatta: NSW Department of Environment and Climate Change.

NSW, S., 2015. *Safework.* [Online]
Available at: https://www.safework.nsw.gov.au/notify-safework/incident-notification
[Accessed 14 January 2019].

Appendix A Plans

See KEE01-02 Soil and Water Control Plan.

Appendix B Calculations

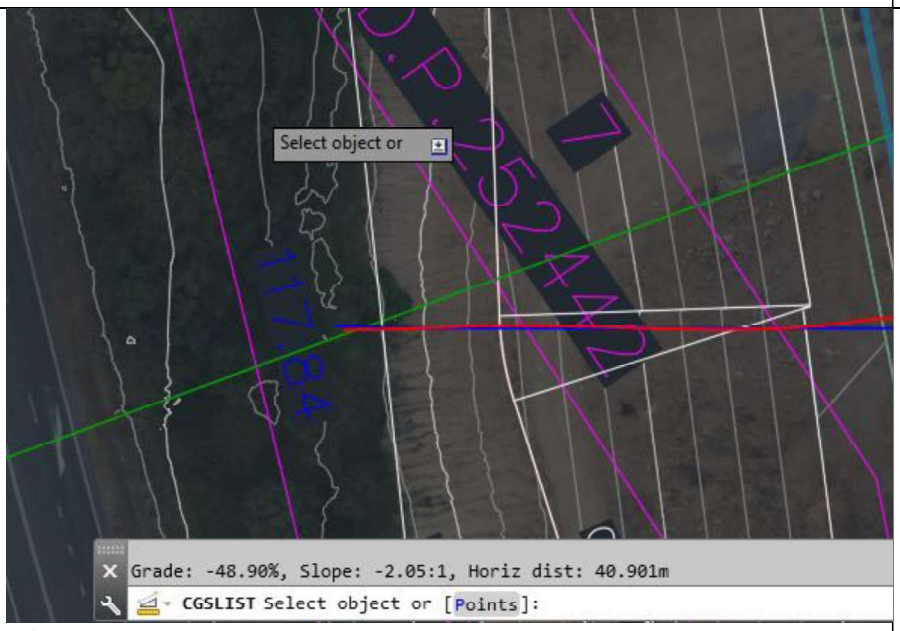
The following calculations for the sedimentation basin are an example of the process used. Comprehensive calculation outputs for the entire quarry catchment are provided at B.2.

B.1 Sedimentation basin

B.1.1 Site conditions

Ref.	Calculation	Output
	Disturbed area 5.9Ha The design for the basin is based on the disturbed area prior to operations (current landform phase)	5.9Ha
Blue book Vol.1 Table 6.1	Soil type to Table 6.1: 30.7<33% soil particles are <0.02mm. Emerson Aggregate class = 6; non-dispersive, full flocculation.	C

B.1.2 Erosion hazard

Ref.	Calculation	Output
Blue Book Vol.1		
Appendix B.	R-factor = 3500	R = 3500
Appendix A. Table A1	 $LS = 10.42$	LS = 10.42
Fig. A3	k=0.013 (See Appendix D for full caluctations)	K = 0.013

Appendix A. Table A2	*Table A2 Pfactors for construction sites (Goldman et al., 1986)* Surface condition / P-factor Compacted and smooth 1.3 Track-walked along the contour[6] 1.2 Track-walked up and down the slope[7] 0.9 Punched straw[8] 0.9 Loose to 0.3 metres depth 0.8 Varies for sub-areas of catchment. Gererally 1.2 in rehab areas and 0.8 in active areas.	P = 1.2-0.8
Appendix A. Figure A5.	Soil recently disturbed, 0-5% grass cover. C = 1 – 0.95	C = 1 – 0.95
Appendix A. A1.	RUSLE $A = R \times K \times LS \times P \times C$ $A = 123.5\ tonnes/ha/yr$	Sum of soil loss over the site= 123.5tonnes/ha/yr
Section 4. Table 4.2.	$A < 150$ ∴ Soil loss class = 1 (very low erosion hazard)	Very low

B.1.3 Rainfall

Ref.	Calculation	Output
Blue Book Vol.2e. Table 6.1 Table 6.2	Type C sediment retention basin. Designed to achieve required water quality for flows >3years. Standard receiving environment. Table 6.2 relates the 1:1 ARI event to 2-4 spills per year. 5-day 90th percentile event	ARI 1:1yr 5-Day 90th percentile event
Table 6.3a	5-Day 90th percentile rainfall for Bega, NSW = 46.2 mm $R_{y\%ile,5day} = 46.2\ mm$	46.2 mm
Table 6.3a (pg. 144)	*Table 6.3a 75th, 80th, 85th, 90th and 95th-percentile 2 and 5-day rainfall depths for 59 sites in New South Wales*	

Location	2-day rainfall depths (mm)					5-day rainfall depths (mm)				
	75th %ile	80th %ile	85th %ile	90th %ile	95th %ile	75th %ile	80th %ile	85th %ile	90th %ile	95th %ile
Illawarra/South Coast										
Albion Park	16.5	21.1	27.9	39.1	67.4	25.2	31.8	41.9	59.8	101.2
Batemans Bay	13.7	17.8	24.1	34.2	54.9	22.1	28.0	37.4	52.4	84.4
Bega	12.6	16.1	21.3	30.5	51.1	19.5	24.6	32.5	46.2	77.2
Cooma	7.6	9.8	13.0	17.8	27.2	12.5	15.8	20.0	25.8	39.1

B.1.4 Basin size

<table>
<tr><th>Ref.</th><th>Calculation</th><th>Output</th></tr>
<tr><td>Blue Book vol.1</td><td></td><td></td></tr>
<tr><td></td><td>Design Philosophy
Basin design capacity = Settling zone + Sediment storage zone

Settling zone=
Surface area of 4,100 m2/m3/sec in the 3-month ARI flow, minimum depth of 0.6m, and length:width ratio of >3:1.

Sediment storage zone=
Normally taken as 100 percent of the capacity of the settling zone. However, it can be taken as two
months soil loss as calculated by the RUSLE.</td><td></td></tr>
<tr><td>Appendix F. Table F2.</td><td>Table F2. Runoff coefficients (Cv) for volumetric data in disturbed (adapted from USDA, 1996)
<table><tr><th rowspan="2">Soil Hydrologic Group</th><th colspan="7">Design Rainfall depth (mm)</th></tr><tr><th><20</th><th>21-25</th><th>26–30</th><th>31–40</th><th>41-50</th><th>51-60</th><th>61-80</th></tr><tr><td>A</td><td>0.01</td><td>0.05</td><td>0.08</td><td>0.15</td><td>0.22</td><td>0.28</td><td>0.37</td></tr><tr><td>B</td><td>0.10</td><td>0.19</td><td>0.25</td><td>0.34</td><td>0.42</td><td>0.48</td><td>0.57</td></tr><tr><td>C</td><td>0.25</td><td>0.35</td><td>0.42</td><td>0.51</td><td>0.58</td><td>0.63</td><td>0.70</td></tr><tr><td>D</td><td>0.39</td><td>0.50</td><td>0.56</td><td>0.64</td><td>0.69</td><td>0.74</td><td>0.79</td></tr></table></td><td>$C_V = 0.42$</td></tr>
<tr><td></td><td>$A = 5.9Ha$</td><td>$A = 5.9Ha$</td></tr>
<tr><td></td><td>$R_{y\%ile,5day} = 46.2\ mm$</td><td>$R_{y\%ile,5day} = 46.2\ mm$</td></tr>
<tr><td>Section 6.3.4</td><td>Settling Zone Volume
$= 10 \times C_V \times A \times R_{95th\%ile,5day}$
$= 10 \times 0.42 \times 5.9 \times 46.2$
$= 1144.84\ m^3$</td><td>$1144.84\ m^3$</td></tr>
<tr><td>Section 6.3.4</td><td>2 Month soil loss (example only)
$= \frac{0.17 \times A(R \times K \times L_s \times 1.3 \times 1)}{1.3}$
$= \frac{0.17 \times 0.184(3500 \times 0.05 \times 8.75 \times 1.3 \times 1)}{1.3}$
$= 47.9m^3$
Repeat for other segmented areas
Total = $210.17m^3$</td><td>$total\ 269.9m^3$</td></tr>
<tr><td>Section 6.3.4</td><td>Total basin volume
$V = Settling\ zone\ volume + 2\ month\ soil\ loss$
$V = 1144.84 + 296.9 = 1414.75m^3$</td><td>$V = 1414.75\ m^3$</td></tr>
</table>

B.2 Basin Sizing results

B.2.1 Basin 1

	Basin	**1**												
Reference					Calculations								Output	
"Blue book"	**Setteling Zone Volume**													
Vol.1	R:		46.2	mm	90th%il 5day storm event									
Section:	C_v:		0.42		runoff factor									
6.3.4	Area:		5.9	Ha										
	Volume:		10 X C_v X A X R											
	Volume:		1144.836	**m^3**									1144.836	**m^3**
"Blue book"	**RUSLE**													
Vol.1	R:	Rainfall erosivity												
Section:	K:	Soil erodibility factor												
Appendix A	LS:	gradient factor												
	P:	erosion control practice factor												
	C:	ground cover and management factor												
	RUSLE:	A1	A2	A3	A4						Rhab area			
	R	3500	3500	3500										
	K	0.013	0.013	0.013										
	LS	10.42	0.52	3.28										
	P	1.3	1.3	1.3										
	C	1	1	1										
	=	616.343	30.758	194.012										
	Area (Ha)	2.31	0.38	3.24								5.93		
6.3.4	**2 month soil loss**													
	Sediment Storage Zone Volume: (0.17 X A (R X K X LS X P X C))/1.3													
		A1	A2	A3	A4	A5	A6	A7	A8	A9	Rhab			
	Volume:	186.18	1.53	82.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
	Total	269.91	**m^3**										269.91	**m^3**
6.3.4	Basin Size													
	Sediment Storage Zone Volume + Setteling Zone Volume:													
	Volume:													
	Volume:	1414.75	**m^3**										1414.75	**m^3**
"Blue book"	**Min Basin Surface Area**													
Vol.1	R:		59.3	mm	4EY 120 duration (ie 3month ARI-5day duration).									
Table 6.1	C_v:		0.42		runoff factor									
	Area:		5.9	Ha										
	Volume:		10 X C_v X A X R											
	Volume:		1469.454	**m^3**	Design Flow Rate								1469.454	**m^3**
	Duration		5	days										
			432000	sec										
	Rate		0.003402	m3/sec										
	Min surface are		4100	m2/m3/sec	for 3month ARI									
	Area		13.94621	m2	Min basin area									
	sq root		3.734462	m	min sq. lengths.									
	Basin Design Depth		1.3	m										
	Area		880.6431	m2	Min. Surface Area								880.643077	**m2**
	sq root		29.67563	m	min sq. lengths, but L=>3w.									
	L=3W													
	w		17.13323	m										
	L		51.3997	m										
	Check area		880.6431	m2										

Figure 1 Basin 1 sizing results + Basin RUSLE results.

B.2.2 Basin 2

	Basin	**2**												
Reference					Calculations								Output	
"Blue book"	**Setteling Zone Volume**													
Vol.1	R:		46.2	mm	90th%il 5day storm event									
Section:	C_v:		0.42		runoff factor									
6.3.4	Area:		1.756	Ha										
	Volume:		10 X C_v X A X R											
	Volume:		340.7342	**m^3**									340.7342	**m^3**
"Blue book"	**RUSLE**													
Vol.1	R:	Rainfall erosivity												
Section:	K:	Soil erodibility factor												
Appendix A	LS:	gradient factor												
	P:	erosion control practice factor												
	C:	ground cover and management factor												
	RUSLE:	A1	A2	A3	A4						Rhab area			
	R				3500									
	K				0.013									
	LS				3.07									
	P				1.3									
	C				1									
	=				181.5905									
	Area (Ha)				1.756							1.76		
6.3.4	**2 month soil loss**													
	Sediment Storage Zone Volume: (0.17 X A (R X K X LS X P X C))/1.3													
		A1	A2	A3	A4	A5	A6	A7	A8	A9	Rhab			
	Volume:	0.00	0.00	0.00	41.70	0.00	0.00	0.00	0.00	0.00	0.00			
	Total	41.70	**m^3**										41.70	**m^3**
6.3.4	Basin Size													
	Sediment Storage Zone Volume + Setteling Zone Volume:													
	Volume:													
	Volume:	382.43	**m^3**										382.43	**m^3**
"Blue book"	**Min Basin Surface Area**													
Vol.1	R:		59.3	mm	4EY 120 duration (ie 3month ARI-5day duration).									
Table 6.1	C_v:		0.42		runoff factor									
	Area:		1.756	Ha										
	Volume:		10 X C_v X A X R											
	Volume:		437.3494	**m^3**	Design Flow Rate								437.3494	**m^3**
	Duration		5	days										
			432000	sec										
	Rate		0.001012	m3/sec										
	Min surface are		4100	m2/m3/sec for 3month ARI										
	Area		4.150769	m2	Min basin area									
	sq root		2.037344	m	min sq. lengths.									
	Basin Design Depth		1.38	m										
	Area		246.9089	m2	Min. Surface Area								246.9089	**m2**
	sq root		15.71333	m	min sq. lengths, but L=>3w.									
	L=3W													
	w		9.072098	m										
	L		27.21629	m										
	Check area		246.9089	m2										

Figure 2 Basin 2 sizing results + Basin RUSLE results.

B.3 Basin Geometry

Rainfall data for 3-month ARI (4EY) 5-day duration event used for calculation of the minimum surface area and flow path length.

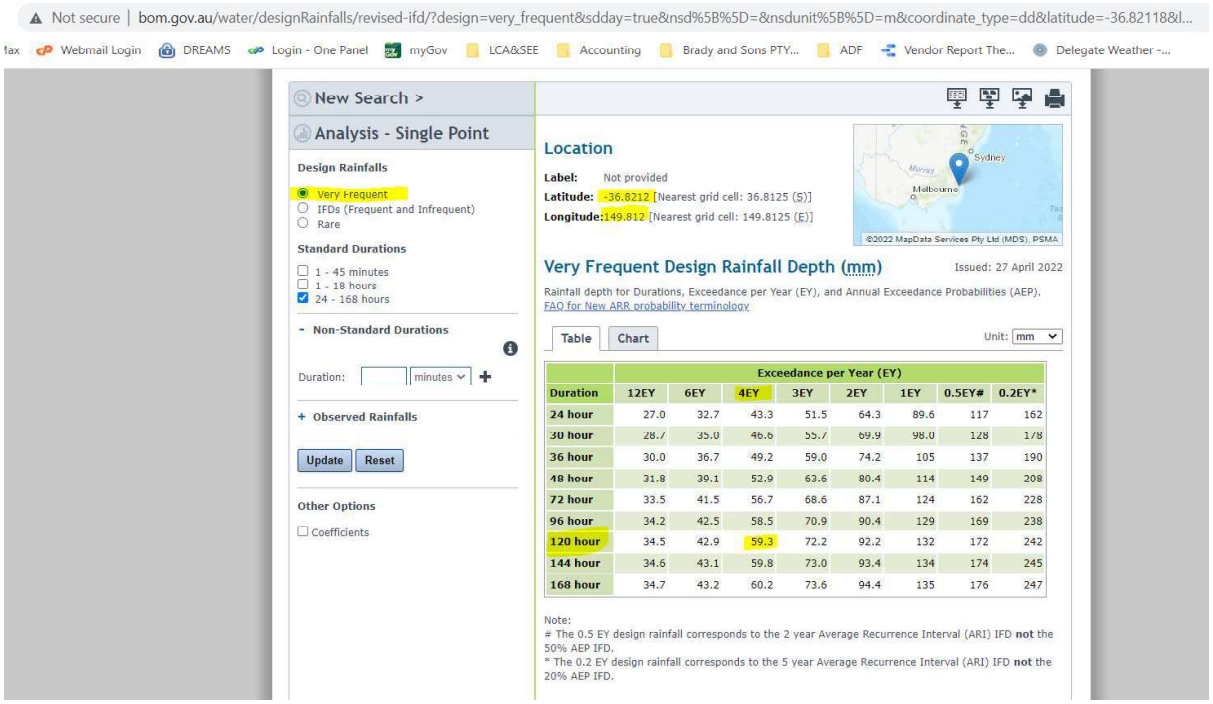
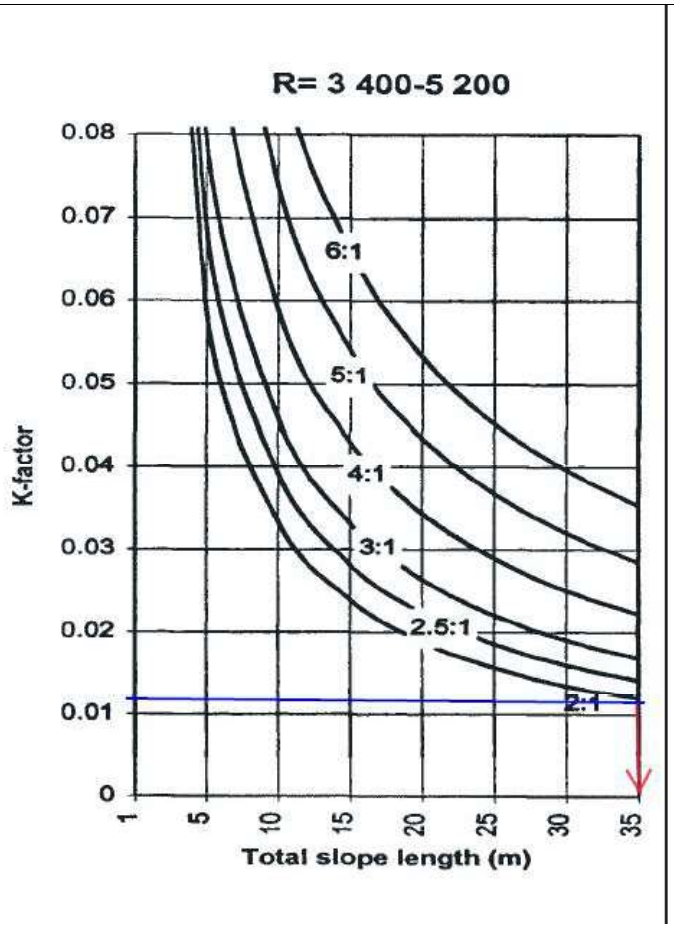
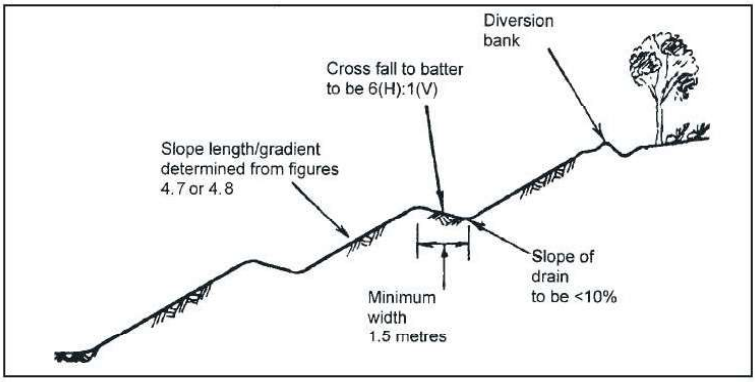


Figure 3 - IFD Data. Source: BOM.

B.4 Max. Slope and back slope Length

Ref.	Calculation	Output
Blue Book vol.1		
Fig. 4.8 R=3500 K=0.013		For slopes of 2:1; Max slope length = 35m For slopes less than 2:1; No max. length.
Fig 4.2	 *Figure 4.2 Construction of a berm drain.*	Back slope 6:1, min 1.5m width.

Appendix C Lab results

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ANALYSIS REPORT

PROJECT NO: EW220714 **Location: Site Soil Evaluation / Land Capability**

				CLIENT SAMPLE ID	KEE01-02-01-A	KEE01-02-02-A		
				DEPTH				
Test Parameter	Method Description	Method Reference	Units	LOR	220714-1	220714-2		
pH (1:5 in H20)	Electrode	R&L 4A2	pH units	na	7.83	6.14		
Electrical Conductivity	Electrode	R&L 3A1	dS/m	0.01	0.02	0.05		
Mod Emerson Agg Test (SAR5)	513.01	PMS-21	Class	na	6	6		
Gravel 2.36-4.75mm	Sieve	AS1289.3.6.3	%	na	36.5	25.5		
Very Coarse Sand 1.18-2.36mm	Sieve	AS1289.3.6.3	%	na	14.2	11.8		
Coarse Sand 0.6-1.18mm	Sieve	AS1289.3.6.3	%	na	11.1	11.4		
Medium Sand 0.3-0.6mm	Sieve	AS1289.3.6.3	%	na	8.6	9.7		
Fine Sand 0.15-0.30mm	Sieve	AS1289.3.6.3	%	na	5.6	6.4		
Very Fine Sand 0.075-0.15mm	Sieve	AS1289.3.6.3	%	na	3.8	4.5		
Coarse Silt 0.02-0.075mm	Hydrometer	AS1289.3.6.3	%	na	1.4	4.2		
Fine Silt 0.002-0.020mm	Hydrometer	AS1289.3.6.3	%	na	5.8	7.3		
Clay <0.002mm	Hydrometer	AS1289.3.6.3	%	na	12.9	19.2		

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Soils are air dried at 40°C and ground <2mm.
NB: LOR is the Lowest Obtainable Reading.

DOCUMENT END

Appendix D Calculation of K-Factors

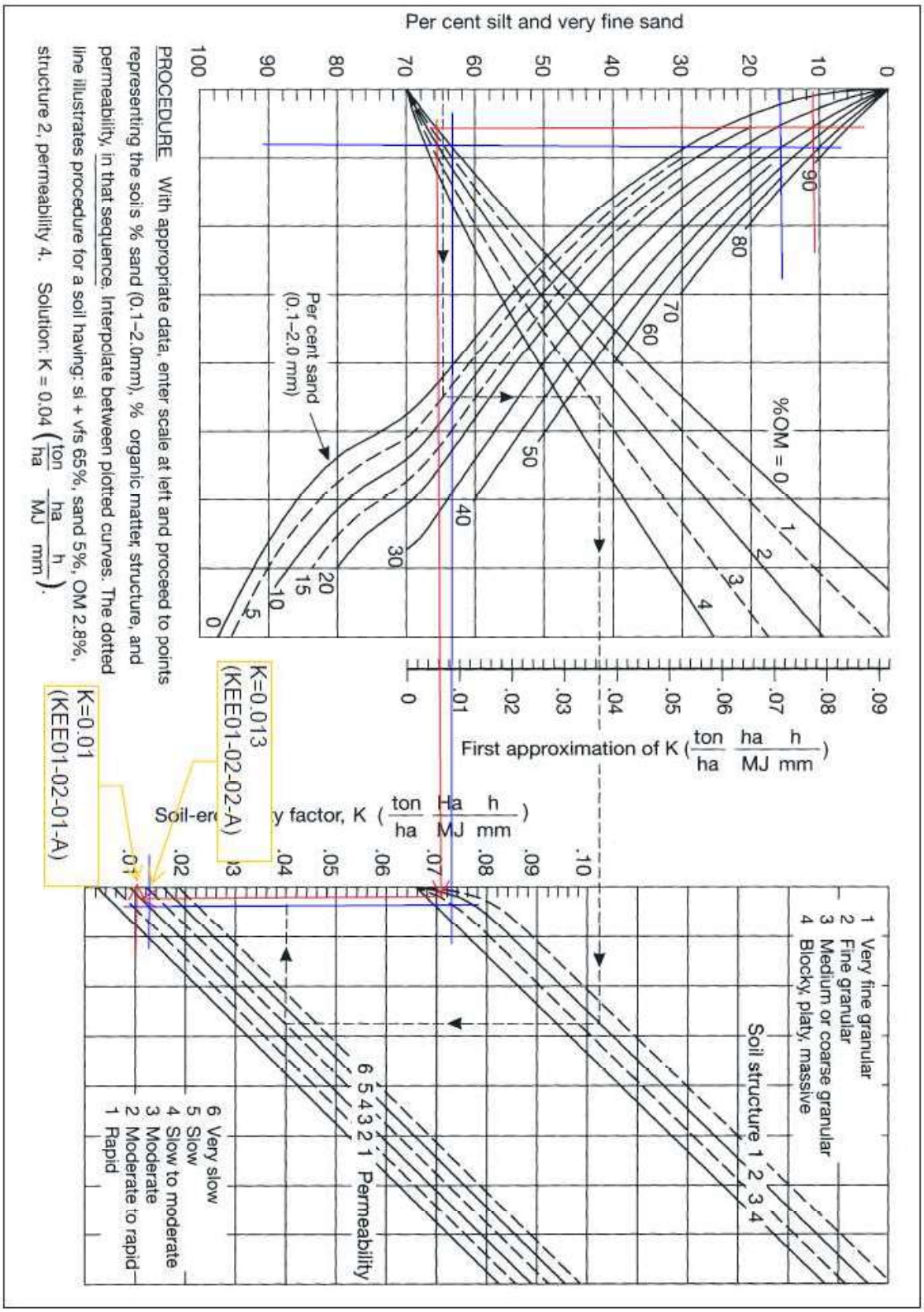

Figure A3 Soil erodibility nomograph in SI units (Foster et al., 1981)