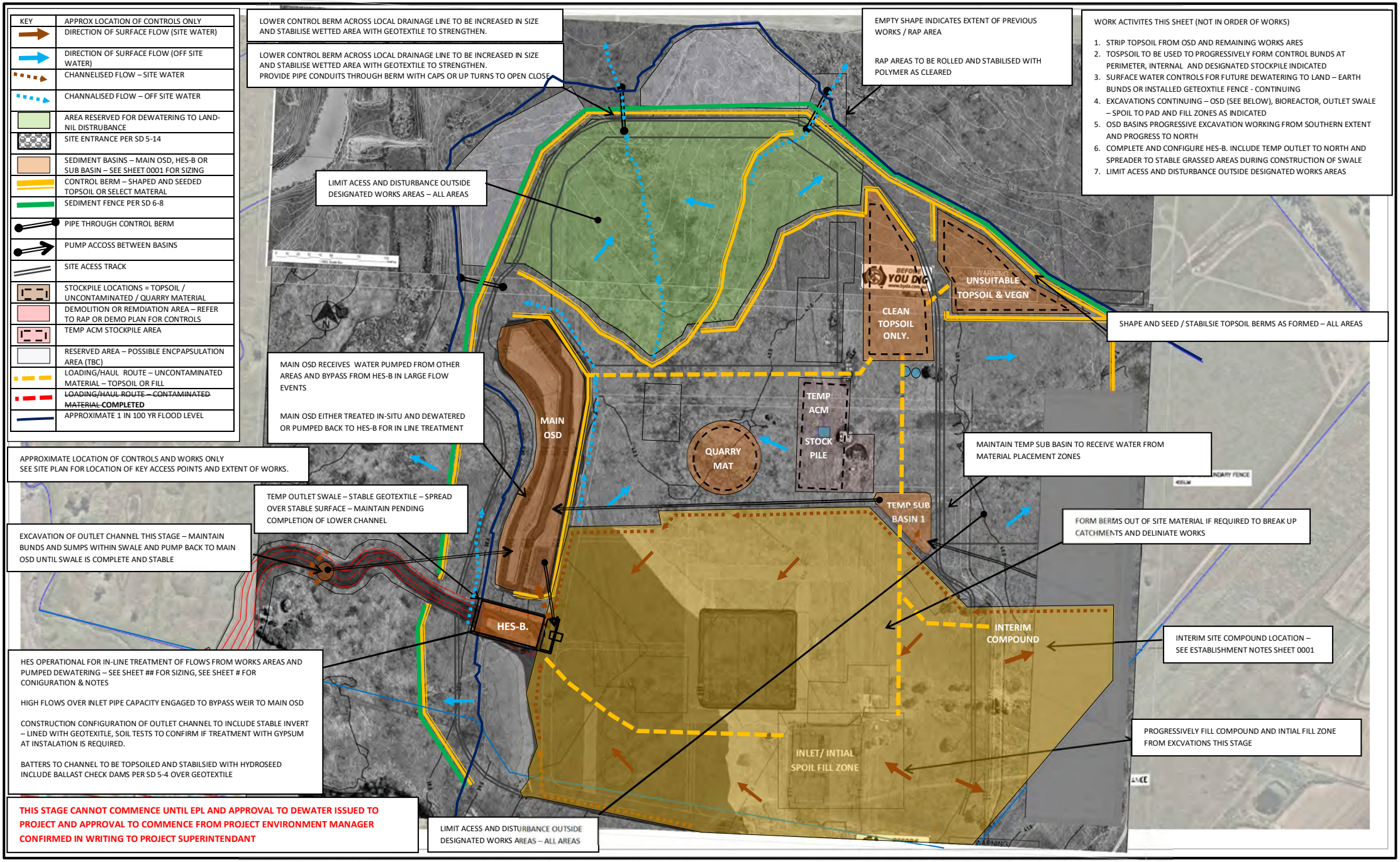
Upper South Creek

Advanced Water Recycling Centre and Pipelines PART F

CoA E92 Construction Water Reuse Strategy

Document No: USCP-JHG-PLN-ENV-0001
Revision No: A

Appendix E: Stage 4 - AWRC Erosion and Sediment Control Plans



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PLAN PREPARED BY

C VINCENT (CPESC # 2385)

SHEETS IN THIS PLAN SET

1. GENERAL ARRANGMENT – STAGE 4 (SHEET 1401)
2. GENERAL ARRANGMENT HES B CONTROL (SHEET 1402)
3. NOTES AND DETAILS TO ESC – STAGE 4 (SHEET 0401)
4. NOTES AND DETAILS TO HES-B SIZING (SHEET 0402)
5. NOTES AND DETAILS TO HES-B SIZING CONSTRUCTION (0403)
6. STANDARD DETAILS TO ESC – STAGE 4 (SHEET 0404)

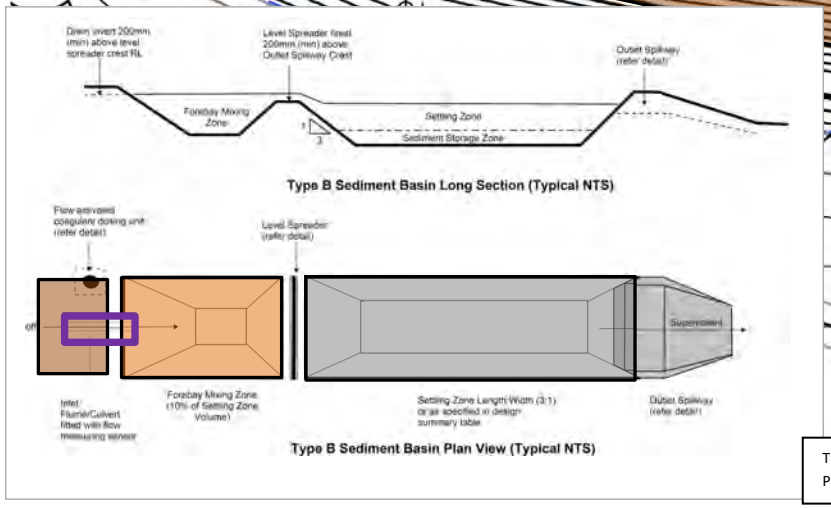
CLIENT BASE PLAN: NA

CLIENT	JHLOR	PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN				
DRAWN	CV	KEMPS CREEK SEWERAGE NETWORK WATER RESOURCE RECOVERY FACILITY GENERAL ARRANGEMENT - STAGE 4				
CREATED	AUG 2023					
-	**22025**	**ESC**	**EW**	**0401**	**0**	**18/08/23**
SHEET	ERSED REF	PLAN	PREFIX	SHEET NUMBER	AMDT	DATE

NIL DISTURBANCE OUTSIDE WORKS CATCHMENTS – WATER FROM STABLE GRASS TO BE DIRECTED OFFSITE

SEE STAGE 4 ESCP AND GENERAL ARRANGMENT FOR CONFIRMATION OF SURFACE WATER CONTROLS LEADING TO HES-B

KEY	APPROX LOCATION
	DIRECTION OF SURFACE FLOW (SITE WATER)
	DIRECTION OF SURFACE FLOW (OFF SITE WATER)
	CHANNELISED FLOW – SITE WATER
	CHANNALISED FLOW – OFF SITE WATER
	WORKS CATCHMENTS – SEE ESCPS AND GENERAL ARRANGEMENTS FOR CONTROLS
	PIPE INLET TO HES-B
	SEDIMENT SETTLING ZONE – MAIN BASIN WITHIN HES-B
	FOREBAY TO HES-B
	STILLING BASIN TO PIPE INLET / MAIN OSD
	PUMP LINE



TEMP DIVERSION AT OUTLET – TO TEMP OUTLET SWALE PENDING COMPLETION OF MAIN CHANNEL WORKS

HIGH EFFICIENCY SEDIMENT BASIN – TYPE B (HES-B) – PER IECA: APPENDIX B (2018)

1. SEE GENERAL SCHEMATIC THIS SHEET AND SIZING & CONTRUCTION NOTES, (SHEETS 0402, 0403).
2. CONSTRUCTION AND ARRANGEMENT OF BASIN TO BE CONFIRMED WITH SITE ENGINEERS & BASED ON MODIFICATION OF SPECIFICATIONS FOR CHANNEL INLET AND HES-B SIZING REQUIREMENTS
3. TEMPORARY OUTLET FROM BASIN TO BE GEOTEXTILE LINED SWALE INSTALLED PER LEADING TO LEVEL SPREADER SD 5-6 & SD 5-7. SPREADER OVER STABLE GRASS.
4. SURFACE WATER DIRECTED BY CONTROLS TO INLET STILLING BASIN
5. INLET STILLING BASIN PRIMARY OUTLET VIA HDPE PIPE TO FOREBAY OF HES (TYPE B) BASIN. – SEE PEAK DISCHARGE REQUIREMNTS SHEET 0402 FOR PIPE SIZING REQUIREMENTS
6. EXCEEDANCES OF CAPACITY OF PIPE TO HES DIVERTED BY WEIR TO MAIN DETENTION BASIN
7. FOREBAY TO HES-B TO SETTLING ZONE CONSTRUCTED WITHIN HEAD OF CHANNEL
8. HES OUTLETS TO FINAL SWALE FROM MAIN BASIN. INVERT OF SWALE TO BE LINED WITH PINED GEOTEXTILE. SUBGRADE TESTED AND TREATED FOR POTENTIAL DISPERSIBILITY IF REQUIRED
9. AS REQUIRED THE MAIN DETENTION BASIN CAN BE DEWATERED BY PUMP TO THE INLET STILLING BASIN FOR TREATMENT THROUGH THE HES OR OTHERWISE TREATED IN THE BASIN AND DEWATERED TO THE OUTLET CHANNEL

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CLIENT BASE PLAN: 1501-1002

CLIENT	JHLOR	PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN				
DRAWN	CV	KEMPS CREEK SEWERAGE NETWORK WATER RESOURCE RECOVERY FACILITY GENERAL ARRANGMENT HES-B CONTROL				
CREATED	AUG 2023					
-	22025	ESC	EW	1402	0	18/08/23
SHEET	ERSED REF	PLAN	PREFIX	SHEET NUMBER	AMDT	DATE

CONSTRUCTION STAGING FOR EROSION AND SEDIMENT CONTROL

1. **SEDIMENT BASIN AND PRIMARY CONTROLS TO BE INSTALLED AND OPERATIONAL PRIOR TO COMMENCEMENT OF EARTHWORKS -THIS STAGE– CERTIFICATION TO BE PROVIDED BY CPESC**

   THIS IS A REQUIREMENT FOR APPROVAL

2. SEE NOTES TO SEDIMENT BASINS HES-B (SHEET 0402) FOR CONSTRUCTION AND DESIGN OF HES-B PRIMARY CONTROL.
3. SITE ENTRANCE AND OTHER PRIMARY ACCESS CONTROLS TO BE IN PLACE PRIOR TO SITE ENTRY/EXIT BY HV
4. STRIPPED TOPSOIL TO CREATE SURFACE WATER CONTROLS. THESE ARETO BE INSPECTED AND CONFIRMED IN ACCORDANCE WITH THE ESCP AT COMMENCEMENT BY PM /PE/ SUPERINTENDENT AND CPESC
5. FOLLOWING REGULAR INSPECTIONS AND WORKS CONFIRMATION WITH PROJECT TEAM – THIS ESCP MAY BE REVISED / UPDATED

FOR PREVIOUS STAGES – STAGES 1-3 –

6. SUB BASINS TO BE MANAGED AS TYPE D (BATCH AND TREAT) CONTROLS AND PUMPED TO MAIN OSD UNTIL OUTLET IS ALLOWED WITH ISSUE OF EPL
7. SUB BASINS FOR EACH SUB CATCHMENT TO BE MAINTAINED AND MANAGED TO MAIN BASIN/OSD UNTIL EARTHWORKS PROGRESS AND ALL CATCHMENTS CAN NATURALLY REPORT TO MAIN BASIN/OSD
8. MAIN OSD TO BE DEWATERED TO LAND ONLY UNDER DRY CONDTIONS – SEE NOTES FOLLOWING WITH NIL DISCHARGE OFF SITE PRIOR TO ISSUE OF EPL AND WRITTEN CONFIRMATION BY ENVIRONMENT MANAGER

SHEET SEPARATE ESCPS FOR STAGES 1-3
FOR THIS STAGE -STAGE 4

9. FOLLOWING ISSUE OF EPL – MAIN SITE BASIN TO BE HES-B – SEE SHEETS 1402, 0402 & 0403

GENERAL NOTES TO SOIL AND WATER MANAGEMENT

LIMITED DISTURBANCE

1. NIL ACCESS OUTSIDE LIMIT OF APPROVED WORKS/DEFINED PROJECT BOUNDARIES.
2. PRIOR TO ISSUE OF EPL – LIMITED DISTURBANCE TO DEFINED STOCKPILE AREAS AND WORKS AREAS INDICATED WITHIN RELEVENT ESC
3. NIL DISTURBANCE TO NORTHEN RESERVED AREA FOR DEWATERING TO LAND

SEPARATION OF WATERS

1. MAINTAIN SURFACE WATER CONTROLS INSTALLED AT COMMENCEMENT OF PROJECT
2. NO SURFACE WATER FROM EXTERNAL CATCHMENTS TO ENTER CONSTRUCTION AREAS
3. DIRECT SITE WATERS TO SITE SEDIMENT CONTROLS
4. DO NOT REMOVE ANY SURFACE WATER DRAINAGE MEASURES UNTIL REPLACED BY CONTROLS DETAILED IN REVISED ESCPS FOR FUTURE STAGES
5. SEPARATE SEDIMENT CONTROL BUNDS AND SUB BASINS MAINTAINED FOR STOCKPILE AREAS UNTIL THESE HAVE BEEN COVERED, STABILISED AND SIGNED OFF BY PROJECT CPESC.

EROSION CONTROL

1. NIL DISTURBANCE OUTSIDE DEFINED LIMIT OF WORKS AREA.
2. KEEP EXPOSED FILL SURFACES SMOOTH AND COMPACTED AT SHUT DOWN TO REDUCE GENERATION OF DUST AND SEDIMENT RUNOFF.
3. KEEP STOCKPILES CONSOLIDATE AND WITHIN DEFINED STOCKPILE AREAS
4. KEEP STOCKPILES SMOOTH AND SEALED. STABILISE WITH POLYMER STOCKPILES NOT ACTIVE FOR >10 DAYS
5. STABILISE DISTURBED SURFACES WITH POLYMER APPLICATION – AREAS NOT ACTIVE FOR >20 DAYS
6. ALLOCATE AREAS WHICH MAY NOT BE DISTURBED – ROLL AND STABILISE WITH POLYMER TO REDUCE GENERATION OF DUST OR OTHERWISE SEED WITH SEED MIX AS ISSUED BY ENVIRONMENT TEAM
7. MAINTAIN CHECK DAMS WITHIN SURFACE WATER SWALES.
8. FOR SHUT DOWN AND IN ADVANCE OF LARGE RAIN EVENTS – SHAPE AND ROLL ACCESS WAYS – SHAPE AND DRAIN AWAY FROM MAIN ACCESS ROUTES TO LIMIT SATURATION.

SEDIMENT CONTROL

1. SHAPE ALL WORKS AREA TO SURFACE CONTROLS AND ENGAGE TO BASINS/SUB BASINS OR OVERLAND TO HEAD OF HES-B
2. SITE WATER DIRECTED TO SEDIMENT CONTROLS PER ESCPS
3. A REVISED ESCP IS TO BE PREPARED FOR WHEN SURFACE WATER CONTROLS ARE MODIFIED
4. STABLE SITE ENTRANCE AT ACCESS POINTS – FOR EXIT POINTS PROVIDE ACCESS CONTROL PER SD 6-14
5. FOR MAIN ACCESS ESTABLISH CONCRETE SLAB WITH WASH DOWN TO ADJACENT SWALE DRAIN. USE FOR WHEEL WASH FOR HV PRIOR TO LEAVING LOT TO CONSTRUCTION ACCESS ROAD.
6. DEWATERING PER NOTES THIS SHEET OR OTHERWISE AS DETAILED WITHIN CEMP
7. FOR SHUT DOWN AND IN ADVANCE OF SIGNIFICANT RAIN EVENTS – -CONFIRM HES-B IS OPERATIONAL AND SUFFICENT FLOCCULANT IS AVAILABLE FOR DOSING REQUIREMENTS.

SURFACE WATER MANAGEMENT & DEWATERING

1. WATER DETAINED WITHIN EXCAVATIONS AND SUMPS TO BE TRANSFERRED TO MAIN BASIN FOR MANAGEMENT/TREATMENT OR MAIN OSD
2. SUB BASINS TO BE MANAGED TO MAIN BASIN OR OSD WITHIN 48HRS. SUB BASINS MAY BE DEWATERED TO STILLING BASIN AT HES-B OR OSD DURING RAINFALL
3. NO SURFACE WATER FROM CONCRETE WASHOUT TO INTERACT WITH SITE SURFACE WATER MANAGEMENT
4. WATER IS ONLY TO BE ACTIVELY (EG PUMPED) DISCHARGED WHEN IT IS TESTED AND CONFIRMED TO SATISFY THE FOLLOWING MINIMUM CRITERA (UNLESS OTHERWISE SPECIFIED IN THE ENVIRONMENT PROTECTION LICENCE)
   A. NO VISIBLE OIL GREASE
   B. PH 6-5-PH8.5
   C. TSS <50 PPM OR BELOW CORRELATED NTU
5. ALL DEWATERING ACTIVITIES ARE TO BE SIGNED OFF BY APPROVED SITE PERSONEL (SUPERINTENDENT, PM OR PE).
6. DEWATERING RECORDS TO BE RETAINED BY PE/ENVIRONMENT MANAGER AND PROVIDED TO PRINCIPLE/ER AS REQUESTED.
7. ONLY AUTHORISED AND INDUCTED PERSONNEL TO OPERATE PUMPS
8. PUMPING ACTIVITIES TO BE CONTINUALLY MONITORED/OBSERVED
9. NO WATER TO PASS OUTSIDE PROJECT BOUNDARY PRIOR TO ISSUE OF EPL

DUST CONTROL

1. SEE ALSO PROJECT AQMP FOR MITIGATION MEASURES
2. EXPOSED SURFACES ARE TO BE MAINTAINED ROLLED AND SMOOOTHED
3. MAINTAIN ACCESS TO ALL AREAS THROUGH EFFECTIVE HOUSEKEEPING AND MATERIALS MANAGEMENT
4. DUST TO BE CONTROLLED WITH WATER CART OR APPLICATION OF POLYMER OVER AREAS NOT TO BE DISTURBED FOR >20DAYS
5. SEE GENERAL MANAGEMENT OF STOCKPILES

GENERAL STOCKPILES

1. STOCKPILE MATERIALS ONLY AT DESIGNATED STOCKPILE AREAS – LOCATIONS AND EXTENT OF STOCKPILE AREAS TBC ON SITE
2. STABILISE STOCKPILES NOT WORKED FOR >20 DAYS.
3. SHAPE AND SMOOTH STOCKPILES AS FORMED
4. SEDIMENT CONTROLS AT PERIMTER OF STOCKPILES TO CONSIST OF STABILISED TOPSOIL BUNDS 500MM HIGHER OR GREATER. INCLUDE 1M+ OFFSET TO PERIMTER BERM – SEE DETAIL THIS SHEET

ACCESS CONTROL

1. ESTABLISH PREFERRED ACCESS ROUTES AT ESTABLISHEMENT WITH CONSIDERATION TO LAYDOWN AREAS AND STOCKPILE AREAS
2. WHERE POSSIBLE KEEP ACCESS ROUTES IN RAISED LOCATION AND FREE DRAINING AWAY TO SURFACE WATER /SWALE DRAINS
3. ESTABLISH AND MAINTAIN STABLE ACCESS AT MAIN SITE ENTRANCE AND WHERE ACCESS LEADS ONTO AND FROM PAVED SURFACES
4. LIMIT ACCESS IN WET CONDTIONS TO REDUCE TRACKING AND REQUIREMENTS FOR ONGOING WHEEL WASH DOWN.
5. LOCATE CONCRETE WASH DOWN FACILITES FOR READY ACCESS AND MANAGEMENT

SHUTDOWN PROCEDURE IN PREPARATION OF RAIN EVENTS >50% CHANCE OF >10MM

6. CONFIRM SITE ACESS IS CLEAN OF SEDIMENT AND STABLE
7. OBSERVE AND RECORD CAPACITY WITHIN BASINS
8. INSPECT SEDIMENT CONTROLS/SURFACE WATER DIVERSIONS AND CONFIRM THEY ARE CORRECTLY INSTALLED AND MAINTAINED
9. INSPECT PRIMARY INTERNAL ACCESS ROUTS AND CONFIRM THEY ARE SHAPPED AND ROLLED TO FREE DRAIN
10. CONFIRM HES-B IS OPERATIONAL AND SUFFICENT FLOCCULANT IS AVAILABLE FOR DOSING REQUIREMENTS.

MONITORING AND REVIEW

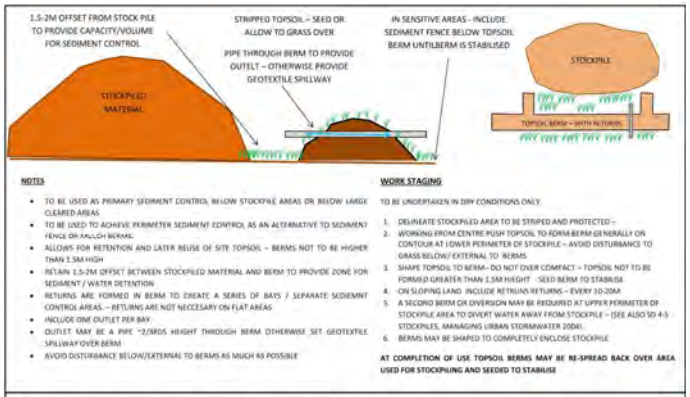
1. THIS ESCP IS AN ACTIVE DOCUMENT REVIEW AND AMEND AS REQUIRED
2. ESCP IS TO BE INSPECTED BY SITE CPESC , ENVIRONMENTAL CONSULTANT AND PROJECT ENVIRONMENTAL REPRESENTATIVE
3. RECORDS OF INSPECTIONS ARE TO BE RETAINED ON SITE AND PROVIDED TO APPROPRATE PERSONNEL FOR ACTION AND CLOSE OUT
4. ADDITIONAL INSPECTIONS OF CONTROLS TO BE CARRIED OUT PRIOR AND FOLLOWING EXTENDED SHUT DOWN & FOLLOWING RAINFALLS EVENT >10MM REVISE ESCP PRIOR TO ANY SUBSTANTIAL AMMENDMENTS OR CHANGES TO SURFACE WATER MANAGEMENT AND REMOVAL OF DRAINAGE INFRASTRUCTURE
5. APPROXIMATE LOCATION OF CONTROLS ONLY – LOCATION TO BE CONFIRMED BY SITE SUPERINTENDANT OR NOMINATED ENVIRONMENTAL STAFF/CPESC
6. ALL INCIDENTS TO BE MANAGED AND REPORTED IN ACCORDANCE WITH THE CEMP AND IMMEDIATELY NOTIFIED TO THE CONSTRUCTION SUPERINTENDENT.

GENERAL SITE MANAGEMENT

1. ALL SITE CHEMICALS FUELS AND OTHER PRODUCTS TO BE MANAGED AND STORED IN ACCORDANCE WITH THE CEMP
2. NO UN-ATTENDED FUEL CONTAINERS TO BE LEFT ON SITE
3. CONCRETE WASH OUT AND WASTE MANAGEMENT AT DESIGNATED MANAGEMENT AREAS ONLY
4. SITE WASTE TO BE MANAGED IN ACCORDANCE WITH CEMP – SEPARATE BINS AND SKIPS TO BE PROVIDED
5. ALL INCIDENTS TO BE MANAGED AND REPORTED IN ACCORDANCE WITH THE CEMP AND IMMEDIATELY NOTIFIED TO THE CONSTRUCTION SUPERINTENDENT.

NOTES TO SEDIMENT BASIN

1. SEDIMENT BASINS TO BE CONSTRUCTED AND OPERATIONAL PRIOR TO COMMENCEMENT OF CONSTRUCTION
2. MINIMUM CAPACITY TO BE INDICATED WITH MARKER POLE AND CONFIRMED WITH SURVEY
3. ONCE AND EPL IS ISSUED THE PRIMARY HES-B CONTROL IS TO BE OPERATED
4. SEE SIZING AND CALCULATIONS WITHIN BASIN SCHEDULE



TOPSOIL BERM AND PIPE SEDIMENT CONTROL ("RETICULATED BERM") AROUND STOCKPILES

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GUIDELINES

THIS ESCP HAS BEEN PREPARED TO BE IN ACCORDANCE WITH THE FOLLOWING BEST MANAGEMENT GUIDANCE DOCUMENTS.

- MANAGING URBAN STORMWATER – VOLUME 1 (LANDCOM 2004) (THE BLUE BOOK) AND VOLUMES 2 WHERE RELEVANT
- BEST PRACTICE EROSION AND SEDIMENT CONTROL (IECA 2008).
- TECHNICAL GUIDANCE FOR ACHIEVING WIANAMATTA-SOUTH CREEK STORMWATER MANAGEMENT TARGETS (EPA 2022)

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CREATED	AUG 2023					
-	**22025**	**ESC**	**EW**	**0401**	**0**	**18/08/23**
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ASSESSMENT OF EROSION RISK

SOIL LOSS CALCULATION/RUSLE (REVISED UNIVERSAL SOIL LOSS EQUATION)				
R_1 = 2500	K=0.05*	LS = 1.0	C= 1.0	P= 1.3
GIVES: SOIL LOSS AT 162.5 TONNES /HA (EROSION CLASS - VERY LOW) STORAGE VOLUME = 125 M3/HA/YR AT 1.3 T/M3				

TYPE D BASIN SIZING CALCULATIONS (FOR COMPARISON ONLY)			
A	STORAGE ZONE M3/HA	2 MONTH STORAGE VOLUME =125/6= 20.83	
B	SETTLING ZONE M3/HA	CV=0.6	**R_2(85%/5 DAY) =35.0**
		10 X CV X $R_{2=}$	210
TOTAL BASIN VOLUME (A+B)=		231 M3/HA M3/HA	
ESTIMATED CATCHMENT AREA =		11.1 HA	
TOTAL BASIN VOLUME		**3075 M3**	
VALUE REFERENCES			
FACTOR		NOTES	
R_1	RAINFALL EROSIVITY	BLUE BOOK APPENDIX B	
K	SOIL ERODABILITY	DEFAULT CONSERVATIVE VALUE FOR GENERAL FILL	
LS	LENGTH SLOPE	100M@4% OR EQUIVALENT – BLUE BOOK APPENDIX A4	
C	COVER	MAXIMUM VALUE FOR ZERO COVER – BLUE BOOK APP A6	
P	EROSION CONTROL PRACTICE	COMPACTED/SMOOTH – BLUE BOOK APPENDIX A5	
Cv	RUNOFF COEFFICENT	HYDROLOGICAL GROUP D – BLUE BOOK APPENDIX F	
R_2	DESIGN RAINFALL DEPTH X%ILE/5DAY	BLUE BOOK TABLE 6a – VALUE FOR **BLACKTOWN**	

TYPE D BASIN SIZING CALCULATIONS (FOR COMPARISON ONLY)			
A	STORAGE ZONE M3/HA	2 MONTH STORAGE VOLUME =125/6= 20.83	
B	SETTLING ZONE M3/HA	CV=0.6	R_2(95%/20 DAY) =160.4MM
		10 X CV X $R_{2=}$	962.4 M3
TOTAL BASIN VOLUME (A+B)=		982 M3/HA M3/HA	
ESTIMATED CATCHMENT AREA =		11 HA	
TOTAL BASIN VOLUME		**13096 M3**	
VALUE REFERENCES			
FACTOR		NOTES	
R_1	RAINFALL EROSIVITY	BLUE BOOK APPENDIX B	
K	SOIL ERODABILITY	DEFAULT CONSERVATIVE VALUE FOR GENERAL FILL	
LS	LENGTH SLOPE	100M@4% OR EQUIVALENT – BLUE BOOK APPENDIX A4	
C	COVER	MAXIMUM VALUE FOR ZERO COVER – BLUE BOOK APP A6	
P	EROSION CONTROL PRACTICE	COMPACTED/SMOOTH – BLUE BOOK APPENDIX A5	
Cv	RUNOFF COEFFICENT	HYDROLOGICAL GROUP D – BLUE BOOK APPENDIX F	
R_2	DESIGN RAINFALL DEPTH X%ILE/5DAY	BLUE BOOK TABLE 6a – VALUE FOR **BLACKTOWN**	

DESIGN PROCEDURE FOR TYPE B BASINS (SEE IECA 2008 APPENDIX B)

DESIGN PROCEDURE FOR TYPE B OPTION 1B			
STEP	NOTES	VALUES KS=12000	VALUES KS = 8000
1B (EQ B18)	DETERMINE DESIGN DISCHARGE Q **Q=0.5Q1** WHERE Q1= 1 IN 1YR ARI OR 63% AEP 1. TOC = 25 MIN • MAX OVERLAND FLOW = 125M AT 0.5% (18MIN) • MAX CHANNEL LENGTH = 925 M AT 2M/SEC (7 MIN) 2. DESIGN RAINFALL = 41.1MM/HR (BOM IFD TABLES) 3. Q1 = • CATCHMENT AREA = 11.0 • SOIL HYDROLOGICAL GROUP D • RUNOFF COEFFICIENT = 0.60* • 2712M3/HR OR 0.75 M3/SEC *NOTE: APPLICATION OF RUNOFF COEFFICIENT C10 FOR 1YR ARI RAINFALL GIVES 0.48 X 0.8 OR = 0.34. CV OF 0.6 USES AS CONSERVATIVE VALUE AND CONSISTENT WITH TYPE D BASIN CALCULATIONS	Q1=0.76Q1 **Q=0.38 M3/SEC**	Q1=0.76Q1 **Q=0.38 M3/SEC**
2B	DETERMINE SETTLEMENT COEFFICENT (KS) • DEFAULT VALUE IN ABSENCE OF JAR TEST = KS=12000 • JAR TEST VALUE =8000	**Ks=12000**	**KS=8000**
3B (EQ B19)	CALCULATE MIN SURFACE AREA AS OF THE SETTLING ZONE **A_S=K_S.Q** • WS= =SQRT(A_S/3) & • L_S =3 X W_S	**A_S=4540M2** **W_S=39M** **L_S=117M**	**A_S=3026M2** **W_S=32M** **L_S=95M**
4B	ADOPT SETTLING ZONE D_S (FROM TABLE) (FOR OPION 1B D_S MIN = 0.5 & FOR OPTION 2B, D_S MIN = 0.6 – ADOPT 0.6 FOR BOTH)	D_S =0.5	D_S =0.68
5B (EQ B21)	CHECK FOR RE-SUSPENSION OF SETTLED SEDIMENT • D_S =0.6 (SEE STEP 4B) • K_S = 8000 • L_S = 95.1 (SEE STEP 3B) • $L_{S\ (CRITICAL)}$ =0.015. L_S = 72 $L_{S\ (CRITICAL)}$ < L_S THEREFORE, THE LARGER SEDIMENT DESIGN METHOD IS REQUIRED. **APPLY EQUATION B22**	$L_{S\ (CRITICAL)}$ =90M L_S =117M	$L_{S\ (CRITICAL)}$ =81.6M L_S =95M
EQ B22 NOW EQ B20	**D_S.W_S =66.7(Q) OR D_S. =(66.7(Q))/ W_S** • Q=0.38M3/SEC • W_S=38.8M (FROM 3B) • D_S =0.65M THEN **VELOCITY** **V_C=Q/(DS.WS)**=0.38/(0.8X0.31.7)=<0.015 = **OK**	D_S.W_S =66.7(Q) **W_S=39M** **DS=0.65**	D_S.W_S =66.7(Q) **W_S=32M** **DS=0.79**
ALTERNATIVE DESIGN PROCEDURE FOR TYPEB OPTION 2B			
1B	DETERMINE DESIGN DISCHARGE Q **SAME AS DESIGN OPTION 1B ABOVE**	Q1=0.76Q1 **Q=0.38 M3/SEC**	Q1=0.76Q1 **Q=0.38 M3/SEC**
2B	NOMINATE $D_{S(SETTLING\ ZONE)}$ & $D_{F(DEPTH\ TO\ FLOCC)}$ WHERE: • D_F >= 0.6 (EQ B24) & • D_S >= D_F (EQ B25) • D_S <= 2M (FOR CALCULATIONS ONLY – CAN BE DUG DEEPER ON SITE)	D_{SF} = 0.8 & D_S = 2M	D_{SF} = 0.9 & D_S = 2M
3B (EQ B26)	**CALCULATE A_S=(D_F /D_S) K_S.Q** **A_S=(D_F /D_S) K_S.Q** W_S = =SQRT(A_S/3) & L_S =3 X W_S	**A_S= 1816M2** **W_{SF}=24.6** **L_{SF}= 73.8 M**	**A_S= 1362M2** **W_{SF}=21.3M** **L_{SF}= 63.9 M**
4B (EQ B27)	CHECK FOR RE-SUSPENSION OF SETTLED SEDIMENT USING **VELOCITY V_C=Q/(D_{SF}. W_{SF})** • D_F =0.6 (SEE STEP 2B) • Q = 0.38 • W_{SF}=17.4M (FROM 3B) GIVES V_C= – WHICH IS GREATER THAN 0.015M3 **THEREFORE - USE PERMEABLE BAFFLES TO SLOW FLOW AND MITIGATE RE-SUSPENSION OF FLOCCULANT**	D_F =0.8 Q = 0.38 W_{SF}=24.6M GIVES V_C=0.019	D_F =0.9 Q = 0.38 W_{SF}=21.3M GIVES V_C=0.020
SIZING SUMMARY		D_{SF} =0.8 D_S = 2M **W_{SF}=24.6M** **L_{SF}= 73.8 M** $VOL_{SETTLING}$=3995M3 $VOL_{FOREBAY}$400 M3	D_{SF} =0.9 D_S = 2M **W_{SF}=21.3M** **L_{SF}= 63.9 M** $VOL_{SETTLING}$=2996M3 $VOL_{FOREBAY}$=300 M3

TYPE B - BASIN SCHEDULE AND SIZING

SEE THIS SHEET FOR

- **DESIGN PROCEDURE FOR TYPE B BASINS (FROM IECA 2008 APPENDIX B OPTION 1B)**

SEE SHEET 0403 FOR

- **BASIN STANDARD (HES-B) DETAILS**
- **NOTES ON HES-B BASIN CONSTRUCTION**

TYPE B BASIN CALCULATION SEE NOTES TO DESIGN PROCEDURE THIS SHEET	
DESIGN PROCEDURE FOR TYPE B OPTION 2B	
CATCHMENT AREA	11.0 HA
Q1	PEAK DISCHARGE 1YR ARI DESIGN STORM
Q	=0.5Q1 0.38M3/SEC

Ks	12000	ASSUMED DEFAULT IN ABSENCE OF JAR TESTS			
D_s	2.0M	FOR LARGE BASIN	D_F		08.M
D_{SS} (MIN)	0.2 M	(DEFAULT)			
A_S	1816 M2	PREFERRED L:W	3:1	LENGTH	73.8 M
				WIDTH	24.6 M
VOLUME TOTAL (MIN)	=AS.(DS+DSS)	=1816 X 2.2 M3		3995 M3	
FOREBAY (MIN)	=10% VOLUME			400 M3	
TOTAL				4400 M3	
USE PERMEABLE BAFFLES TO SLOW FLOW & MITIGATE RE-SUSPENSION OF FLOCCULANT AS REQUIRED					

Ks	8000	RATE FROM ADJACENT PROJECTS – TO BE CONFIRMED WITH JAR TESTS			
D_s	2.0M	FOR LARGE BASIN	D_F		0.9M
D_{SS} (MIN)	0.2 M	(DEFAULT)			
A_S	1362 M2	PREFERRED L:W	3:1	LENGTH	63.9 M
				WIDTH	21.3 M
VOLUME TOTAL (MIN)	=AS.(DS+DSS)	=1362 X 2.2 M3		2996 M3	
FOREBAY (MIN)	=10% VOLUME			300 M3	
TOTAL				3300M3	
USE PERMEABLE BAFFLES TO SLOW FLOW & MITIGATE RE-SUSPENSION OF FLOCCULANT AS REQUIRED					

STANDARD NOTES TO BASIN CONSTRUCTION (FROM IECA 2008)		
1.	SEDIMENT BASIN TYPE	TYPE B
2.	LENGTH TO WIDTH RATIO	3:1 PREFERRED – USE OF BAFFLES AS REQUIRED
3.	MIN DEPTH SETTLING ZONE D_S	0.5M (TYPE D AND TYPE B)
4.	INLET CONTROL	PINNED MEDIUM GRADE GEOTEXTILE PER SD 5-7 - EXTEND TO 1M BELOW WETTED AREA INTERNAL FACE
5.	OUTLET CONTROL	PINNED MEDIUM GRADE GEOTEXTILE PER SD 5-7 - EXTEND TO 1M BELOW WETTED AREA INTERNAL FACE. REINFORCE WITH 150MM+ BALLAST AS SCOUR PROTECTION
	CAPACITY OF OUTLET TO BE MIN TO ACCOMMODATE 1:20 ARI AS MINIMUM SIZING TO BE CONFIRMED AT CONSTRUCTION	
6.	MIN FREEBOARD	450MM (BETWEEN MAX WATER LEVEL AND TOP OF BASIN WALL 300MM (WITHIN OUTLET CHANNEL)
7.	MIN EMBANKMENT/DAM WALL CREST WIDTH	2.5M (FOR BASINS WITH COMPACTED FILL WALL)
8.	MAX GRADIENT ACCESS RAMP	6:1 IF REQUIRED FOR MAINTENANCE
9.	MAX GRADIENT INTERNAL BATTERS	3:1 FOR STABLE CLAY MATERIAL OTHERWISE CONFIRM WITH SITE ENGINEER OR GEOTECHNICAL ENGINEER
10.	FLOCCULATION/TREATMENT (TYPE D OR OTHER DETAINED WATERS)	GYPSUM AT 30-50KG PER 100M3 OF WATER OR OTHER FLOCCULANT PER DEWATERING SPECIFICATION/SUPPLIER RECOMMENDATIONS
11.	FLOCCULATION/TREATMENT (TYPE B)	ALUMINIUM CHLOROHYDRATE OR OTHER FLOCCULANT AT RATES PER SUPPLIERS' SPECIFICATION FOLLOWING JAR TESTS (ASSUMED~6-10L / 100M3: FOR PLANNING PURPOSES ONLY)

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PLAN PREPARED BY

C VINCENT (CPESC # 2385)

SHEETS IN THIS PLAN SET

1. GENERAL ARRANGMENT – STAGE 4 (SHEET 1401)
2. GENERAL ARRANGMENT HES B CONTROL (SHEET 1402)
3. NOTES AND DETAILS TO ESC – STAGE 4 (SHEET 0401)
4. NOTES AND DETAILS TO HES-B SIZING (SHEET 0402)
5. NOTES AND DETAILS TO HES-B SIZING CONSTRUCTION (0403)
6. STANDARD DETAILS TO ESC – STAGE 4 (SHEET 0404)

CLIENT BASE PLAN: NA

CLIENT	JHLOR
DRAWN	CV
CREATED	AUG 2023

PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN

KEMPS CREEK SEWERAGE NETWORK
WATER RESOURCE RECOVERY FACILITY
NOTES AND DETAILS TO HES-B CONTROL – STAGE 4

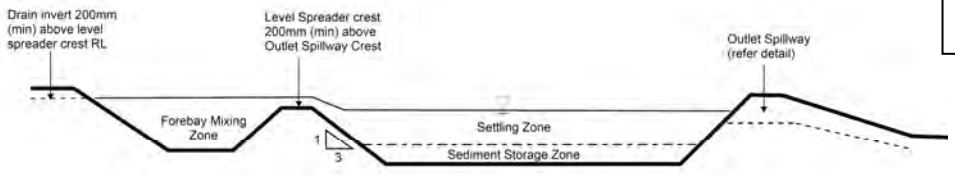
-	**22025**	**ESC**	**EW**	**0402**	**0**	**18/08/23**
SHEET	ERSED REF	PLAN	PREFIX	SHEET NUMBER	AMDT	DATE

DETAILS AND NOTES ON CONSTRUCTION OF TYPE B BASINS ON THIS SHEET TAKEN FROM
WWW.TURBID.COM.AU
Turbid-HES-Basin-Std-Design-for-TypeB_iFod-Flow.pdf

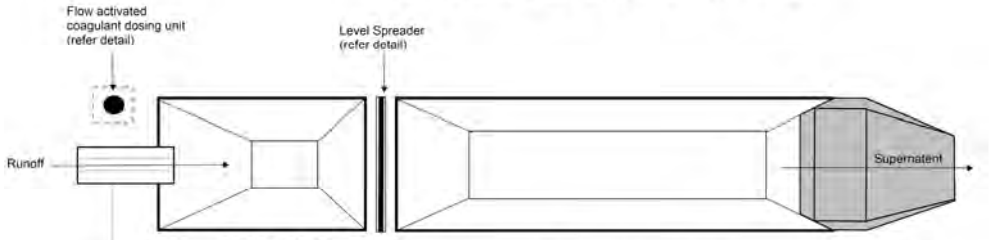
THIS ESCP HAS BEEN PREPARED IN ACCORDANCE WITH THE FOLLOWING BEST MANAGEMENT DOCUMENTS.

- MANAGING URBAN STORMWATER – VOLUME 1 (LANDCOM 2004) (THE BLUE BOOK) AND VOL 2
- BEST PRACTICE EROSION AND SEDIMENT CONTROL (IECA 2008).
- TECHNICAL GUIDANCE FOR ACHIEVING WIANAMATTA-SOUTH CREEK STORMWATER MANAGEMENT TARGETS (EPA 2022)

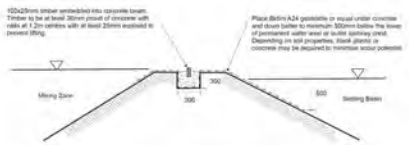
TYPE B STANDARD DETAILS (TAKEN FROM WWW.TURBID.COM.AU)



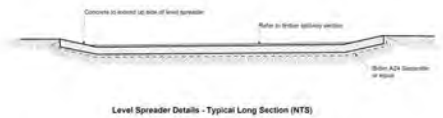
Type B Sediment Basin Long Section (Typical NTS)



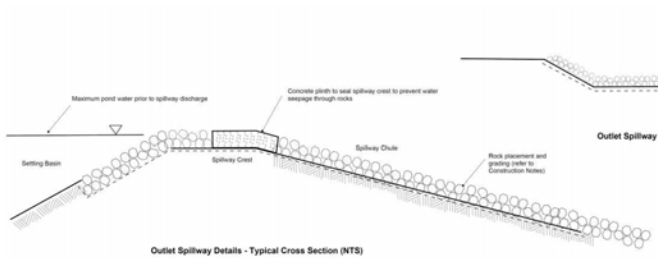
Type B Sediment Basin Plan View (Typical NTS)



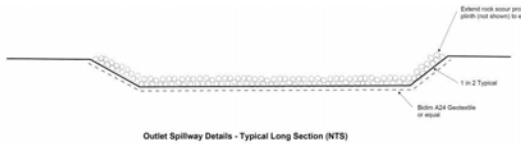
Level Spreader Details - Typical Cross Section (NTS)



Level Spreader Details - Typical Long Section (NTS)



Outlet Spillway Details - Typical Cross Section (NTS)



Outlet Spillway Details - Typical Long Section (NTS)

NOTES:
AUTO DOSER
1. PROVIDED AS IFOD-FLOW TO MANUFACTURERS SPECIFICATION.
2. DOSER AND SUPPLY OF FLOCCULANT TO BE PROVIDED ON LEVEL PAD 4MX4M WITHIN 10M OF DOSING POINT.
3. ALL-WEATHER ACCESS TRACK TO BE PROVIDED TO DOSER.
4. FLOCCULANT PROVIDED AS TURBICLEAR (ACH). IF ALTERNATIVE FLOCCULANT USED THEN THE BASIN SIZE IS TO BE INCREASED ACCORDING TO JAR SETTLEMENT TEST (REFER TO TABLE BELOW).

JAR SETTLEMENT AFTER 15 MINUTES (MM)	MULTIPLICATION FACTOR TO SETTLING ZONE VOLUME
50	X 3
75	X 2
100	X 1.5
150	X 1

BASIN CONSTRUCTION:

MATERIALS-

5. EARTH FILL: CLEAN SOIL WITH EMERSON CLASS 2(1), 3, 4 OR 5 AND FREE OF ROOTS, WOODY VEGETATION, ROCKS AND OTHER UNSUITABLE MATERIAL. SOIL WITH EMERSON CLASS 4 AND 5 MAY NOT BE SUITABLE DEPENDING ON PARTICLE SIZE DISTRIBUTION AND DEGREE OF DISPERSION. CLASS 2(1) SHOULD ONLY BE USED UPON RECOMMENDATION FROM GEOTECHNICAL SPECIALIST.

6. SPILLWAY ROCK: HARD, ANGULAR, DURABLE, WEATHER RESISTANT AND EVENLY GRADED ROCK WITH 50% BY WEIGHT LARGER THAN THE SPECIFIED NOMINAL (D50) ROCK SIZE. LARGE ROCK SHOULD DOMINATE, WITH SUFFICIENT SMALL ROCK TO FILL THE VOIDS BETWEEN LARGER ROCK. THE DIAMETER OF THE LARGEST ROCK SHOULD BE NO LARGER THAN 1.5 TIMES THE NOMINAL ROCK SIZE. THE SPECIFIC GRAVITY SHOULD BE AT LEAST 2.5.

7. GEOTEXTILE FABRIC: HEAVY DUTY, NEEDLE-PUNCHED, NON-WOVEN CLOTH, MINIMUM 'BIDIM' A24 OR EQUIVALENT.

CONSTRUCTION-

8. NOTWITHSTANDING ANY DESCRIPTION CONTAINED WITH APPROVED PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SATISFYING THEMSELVES AS TO THE NATURE AND EXTENT OF THE SPECIFIED WORKS AND THE PHYSICAL AND LEGAL CONDITIONS UNDER WHICH THE WORKS WILL BE CARRIED OUT. THIS SHALL INCLUDE MEANS OF ACCESS, EXTENT OF CLEARING, NATURE OF THE MATERIALS TO BE EXCAVATED, TYPE AND SIZE OF MECHANICAL PLANT REQUIRED, LOCATION AND SUITABILITY OF WATER SUPPLY FOR CONSTRUCTION AND TESTING PURPOSES, AND ANY OTHER LIKELY MATTERS AFFECTING THE CONSTRUCTION OF THE WORKS.

9. REFER TO APPROVED PLANS FOR LOCATION, DIMENSIONS, AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.

10. BEFORE STARTING ANY CLEARING OR CONSTRUCTION, ENSURE ALL THE NECESSARY MATERIALS AND COMPONENTS ARE ON THE SITE TO AVOID DELAYS IN COMPLETING THE SEDIMENT BASIN ONCE WORKS BEGIN.

11. INSTALL REQUIRES SHORT TERM SEDIMENT CONTROL MEASURES DOWNSTREAM OF THE PROPOSED EARTHWORKS TO CONTROL SEDIMENT RUNOFF DURING CONSTRUCTION OF THE BASIN.

12. THE AREA TO BE COVERED BY THE EMBANKMENT, BORROW PITS AND INCIDENTAL WORKS, TOGETHER WITH AN AREA EXTENDING BEYOND THE LIMITS OF EACH FOR A DISTANCE NOT EXCEEDING FIVE (5) METRES ALL AROUND MUST BE CLEARED OF ALL TREES, SCRUB, STUMPS, ROOTS, DEAD TIMBER AND RUBBISH AND DISPOSED OF IN A SUITABLE MANNER. DELAY CLEARING THE MAIN BASIN AREA UNTIL THE EMBANKMENT IS COMPLETE.

13. ENSURE ALL HOLES MADE BY GRUBBING WITHIN THE EMBANKMENT FOOTPRINT ARE FILLED WITH SOUND MATERIAL, ADEQUATELY COMPACTED, AND FINISHED FLUSH WITH THE NATURAL SURFACE.

CUT-OFF TRENCH-

14. BEFORE CONSTRUCTION OF THE CUT-OFF TRENCH OR ANY ANCILLARY WORKS WITHIN THE EMBANKMENT FOOTPRINT, ALL GRASS GROWTH AND TOPSOIL MUST BE REMOVED FROM THE AREA TO BE OCCUPIED BY THE EMBANKMENT AND MUST BE DEPOSITED CLEAR OF THIS AREA AND RESERVED FOR TOPDRESSING THE COMPLETED EMBANKMENT.

15. EXCAVATE A CUT-OFF TRENCH ALONG THE CENTRE LINE OF THE EARTH FILL EMBANKMENT. CUT THE TRENCH TO STABLE SOIL MATERIAL, BUT IN NO CASE MAKE IT LESS THAN 600MM DEEP. THE CUT-OFF TRENCH MUST EXTEND INTO BOTH ABUTMENTS TO AT LEAST THE ELEVATION OF THE OUTLET SPILLWAY CREST. MAKE THE MINIMUM BOTTOM WIDTH WIDE ENOUGH TO PERMIT OPERATION OF THE EXCAVATION AND COMPACTION EQUIPMENT, BUT IN NO CASE LESS THAN 600MM. MAKE THE SIDE SLOPES OF THE TRENCH NO STEEPER THAN 1:1 (H:V).

16. ENSURE ALL WATER, LOOSE SOIL, AND ROCK ARE REMOVED FROM THE TRENCH BEFORE BACKFILLING COMMENCES. THE CUT-OFF TRENCH MUST BE BACKFILLED WITH SELECT EARTH-FILL OF THE TYPE SPECIFIED FOR THE EMBANKMENT, AND THIS SOIL MUST HAVE A MOISTURE CONTENT AND DEGREE OF COMPACTION THE SAME AS SPECIFIED FOR THE CORE ZONE.

17. MATERIAL EXCAVATED FROM THE CUT-OFF TRENCH MAY BE USED IN THE CONSTRUCTION OF THE EMBANKMENT PROVIDED IT IS SUITABLE AND IT IS PLACED IN THE CORRECT ZONE ACCORDING TO ITS CLASSIFICATION.

EMBANKMENT-

18. SCARIFY AREAS ON WHICH FILL IS TO BE PLACED BEFORE PLACING THE FILL.

19. ENSURE AL FILL MATERIAL USED TO FORM THE EMBANKMENT MEETS THE SPECIFICATIONS CERTIFIED BY A SOIL SCIENTIST OF GEOTECHNICAL SPECIALIST.

20. THE FILL MATERIAL MUST CONTAIN SUFFICIENT MOISTURE SO IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN 150 TO 200MM CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL AREA AND THEN COMPACT BEFORE PLACEMENT OF FURTHER FILL.

21. UNLESS SPECIFIED ON THE APPROVED PLANS, COMPACT THE SOIL AT ABOUT 1% TO 2% WET OPTIMUM AND TO 95% MODIFIED OR 100% STANDARD COMPACTION. EMBANKMENT TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLING

22. WHERE BOTH DISPERSIVE AND NON-DISPERSIVE CLASSIFIED EARTH-FILL MATERIALS ARE AVAILABLE, NON-DISPERSIVE EARTH-FILL MUST BE USED IN THE CORE ZONE. THE REMAINING CLASSIFIED EARTH-FILL MATERIALS MUST ONLY BE USED AS DIRECTED BY THE SITE SUPERINTENDENT.

23. WHERE SPECIFIED, CONSTRUCT THE EMBANKMENT TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLING; OTHERWISE FINISHED DIMENSIONS OF THE EMBANKMENT AFTER SPREADING OF TOPSOIL MUST CONFORM TO THE DRAWING WITH A TOLERANCE OF 75MM FROM SPECIFIED DIMENSIONS.

24. ENSURE DEBRIS AND OTHER UNSUITABLE BUILDING WASTE IS NOT PLACED WITHIN THE EARTH EMBANKMENT.

25. AFTER COMPLETION OF THE EMBANKMENT ALL LOOSE UNCOMPACTED EARTH-FILL MATERIAL ON THE UPSTREAM AND DOWNSTREAM BATTER MUST BE REMOVED PRIOR TO SPREADING TOPSOIL

26. TOPSOIL AND RE-VEGETATE/STABILISE ALL EXPOSED EARTH AS DIRECTED WITHIN THE APPROVED PLANS.

SPILLWAY CONSTRUCTION-

27. THE SPILLWAY MUST BE EXCAVATED AS SHOWN ON THE PLANS, AND THE EXCAVATED MATERIAL IF CLASSIFIED AS SUITABLE, MUST BE USED IN THE EMBANKMENT, AND IF NOT-SUITABLE IT MUST BE DISPOSED OF INTO SPOIL HEAPS.

28. ENSURE EXCAVATED DIMENSIONS ALLOW ADEQUATE BOXING-OUT SUCH THAT THE SPECIFIED ELEVATIONS, GRADES, CHUTE WIDTH, AND ENTRANCE AND EXIT SLOPES FOR THE EMERGENCY SPILLWAY WILL BE ACHIEVED AFTER PLACEMENT OF THE ROCK OR OTHER SCOUR PROTECTION MEASURES AS SPECIFIED IN THE PLANS

29. PLACE SPECIFIED SCOUR PROTECTION MEASURES ON THE EMERGENCY SPILLWAY. ENSURE THE FINISHED GRADE BLENDS WITH THE SURROUNDING AREA TO ALLOW A SMOOTH FLOW TRANSITION FROM SPILLWAY TO DOWNSTREAM CHANNEL.

30. IF A SYNTHETIC FILTER FABRIC UNDERLAY IS SPECIFIED, PLACE THE FABRIC DIRECTLY ON THE PREPARED FOUNDATION. IF MORE THAN 1 SHEET OF FILTER FABRIC IS REQUIRED, OVERLAP THE EDGES BY AT LEAST 300MM AND PLACE ANCHOR PINS AT MINIMUM 1M SPACING ALONG THE OVERLAP. BURY THE UPSTREAM END OF THE FILTER FABRIC A MINIMUM 300MM BELOW GROUND AND WHERE NECESSARY, BURY THE LOWER END OF THE FABRIC OR OVERLAP A MINIMUM 300MM OVER THE NEXT DOWNSTREAM SECTION AS REQUIRED. ENSURE THE FILTER FABRIC EXTENDS AT LEAST 1000MM UPSTREAM OF THE SPILLWAY CREST.

31. TAKE CARE NOT TO DAMAGE THE FABRIC DURING OR AFTER PLACEMENT. IF DAMAGE OCCURS, REMOVE THE ROCK AND REPAIR THE SHEET BY ADDING ANOTHER LAYER OF FABRIC WITH A MINIMUM OVERLAP OF 300MM AROUND THE DAMAGED AREA.3IF EXTENSIVE DAMAGE IS SUSPECTED, REMOVE AND REPLACE THE ENTIRE SHEET.

32. WHERE LARGE ROCK IS USED, OR MACHINE PLACEMENT IS DIFFICULT, A MINIMUM 100MM LAYER OF FINE GRAVEL, AGGREGATE, OR SAND MAY BE NEEDED TO PROTECT THE FABRIC.

33. PLACEMENT OF ROCK SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER FABRIC. PLACE ROCK SO THAT IT FORMS A DENSE, WELL GRADED MASS OF ROCK WITH A MINIMUM OF VOIDS. THE DESIRED DISTRIBUTION OF ROCK THROUGHOUT THE MASS MAY BE OBTAINED BY SELECTIVE LOADING AT THE QUARRY AND CONTROLLED DUMPING DURING FINAL PLACEMENT.

34. THE FINISHED SLOPE SHOULD BE FREE OF POCKETS OF SMALL ROCK OR CLUSTERS OF LARGE ROCKS. HAND PLACING MAY BE NECESSARY TO ACHIEVE THE PROPER DISTRIBUTION OF ROCK SIZES TO PRODUCE A RELATIVELY SMOOTH, UNIFORM SURFACE. THE FINISHED GRADE OF THE ROCK SHOULD BLEND WITH THE SURROUNDING ARE. NO OVERFALL OR PROTRUSION OF ROCK SHOULD BE APPARENT.

35. ENSURE THAT THE FINAL ARRANGEMENT OF THE SPILLWAY CREST WILL NOT PROMOTE EXCESSIVE FLOW THROUGH THE ROCK SUCH THAT THE WATER CAN BE RETAINED WITHIN THE SETTLING BASIN AT THE ELEVATION NO LESS THAN 50MM ABOVE OF BELOW THE NOMINATED SPILLWAY CREST ELEVATION.

ESTABLISHING THE SETTLING POND-

36. THE AREA TO BE COVERED BY THE STORED WATER OUTSIDE OF THE LIMITS OF THE BORROW PITS MUST BE CLEARED RUBBISH. TREES MUST BE CUT DOWN STUMP HIGH AND REMOVED FROM THE IMMEDIATE VICINITY OF THE WORK.

37. ESTABLISH ALL REQUIRED INFLOW CHUTES AND INLET BAFFLES, IF SPECIFIED, TO ENABLE WATER TO DISCHARGE INTO THE BASIN IN A MANNER THAT WILL NOT CAUSE SOIL EROSION OR THE RE-SUSPENSION OF SETTLED SEDIMENT.

38. INSTALL A SEDIMENT STORAGE LEVEL MARKER POST WITH A CROSS MEMBER SET JUST BELOW THE TOP OF THE SEDIMENT STORAGE ZONE (AS SPECIFIED ON THE APPROVED PLANS). USE AT LEAST A 75MM WIDE POST FIRMLY SET INTO THE BASIN FLOOR.

39. IF SPECIFIED, INSTALL INTERNAL SETTLING POND BAFFLES. ENSURE THE CREST OF THESE BAFFLES IS SET LEVEL WITH, OR JUST BELOW, THE ELEVATION OF THE EMERGENCY SPILLWAY.

40. INSTALL ALL APPROPRIATE MEASURES TO MINIMISE SAFETY RISK TO ON-SITE PERSONNEL AND THE PUBLIC CAUSED BY THE PRESENCE OF THE SETTLING POND. AVOID STEEP, SMOOTH INTERNAL SLOPES. APPROPRIATELY FENCE THE SETTLING POND AND POST WARNING SIGNS IF UNSUPERVISED PUBLIC ACCESS IS LIKELY OR THERE IS CONSIDERED TO BE AN UNACCEPTABLE RISK TO THE PUBLIC.

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PLAN PREPARED BY

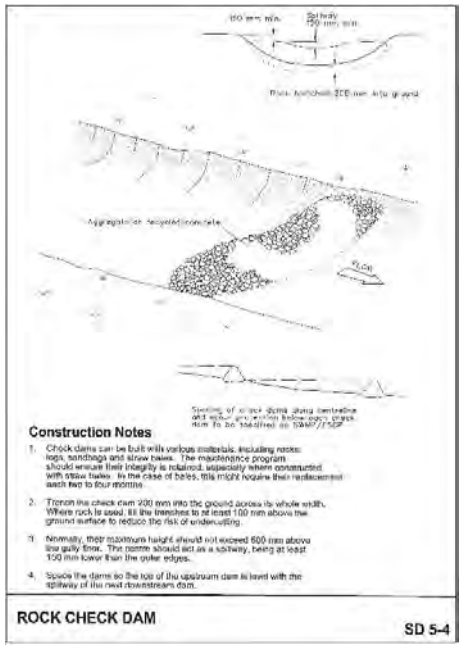
C VINCENT (CPESC # 2385)

SHEETS IN THIS PLAN SET

1. GENERAL ARRANGMENT – STAGE 4 (SHEET 1401)
2. GENERAL ARRANGMENT HES B CONTROL (SHEET 1402)
3. NOTES AND DETAILS TO ESC – STAGE 4 (SHEET 0401)
4. NOTES AND DETAILS TO HES-B SIZING (SHEET 0402)
5. NOTES AND DETAILS TO HES-B SIZING CONSTRUCTION (0403)
6. STANDARD DETAILS TO ESC – STAGE 4 (SHEET 0404)

CLIENT BASE PLAN: NA

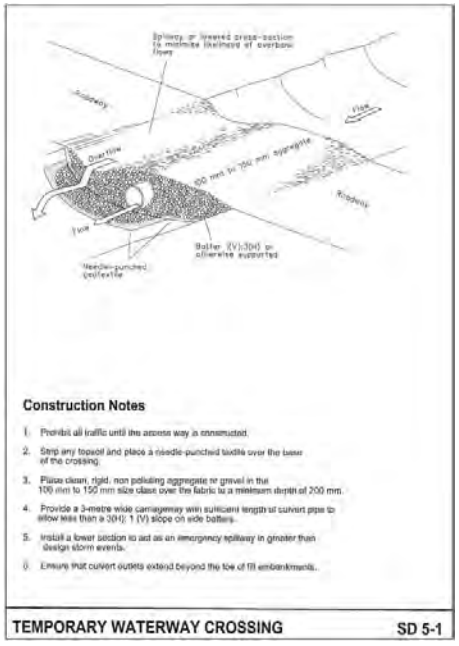
CLIENT	JHLOR	PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN				
DRAWN	CV	KEMPS CREEK SEWERAGE NETWORK WATER RESOURCE RECOVERY FACILITY NOTES AND DETAILS TO HES-B CONTROL CONSTRUCTION				
CREATED	AUG 2023					
-	**22025**	**ESC**	**EW**	**0403**	**0**	**18/08/23**
SHEET	ERSED REF	PLAN	PREFIX	SHEET NUMBER	AMDT	DATE



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the top of the upstream dam is level with the spillway of the next downstream dam.

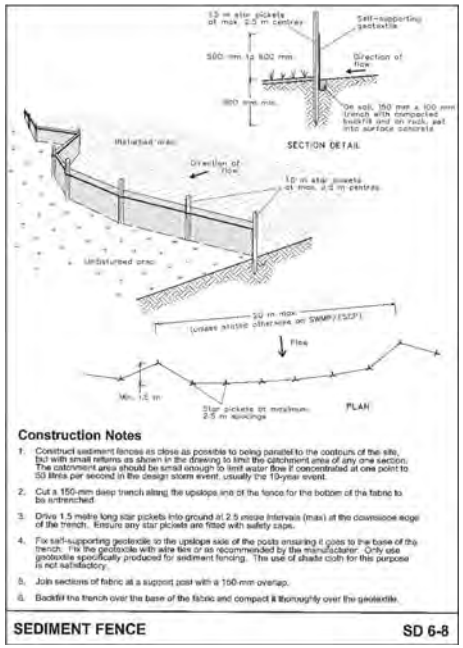
ROCK CHECK DAM SD 5-4



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.

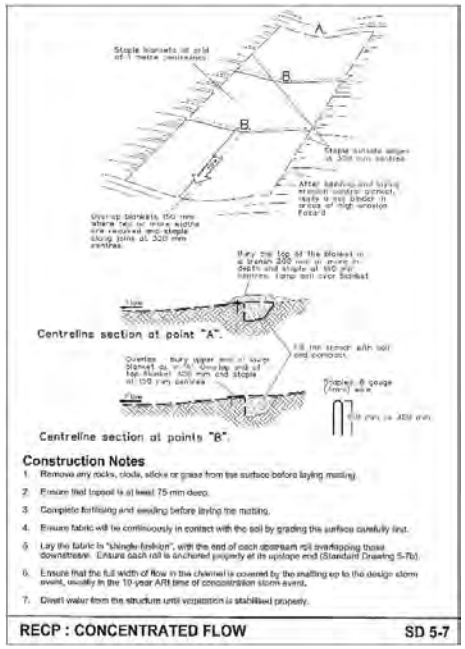
TEMPORARY WATERWAY CROSSING SD 5-1



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.

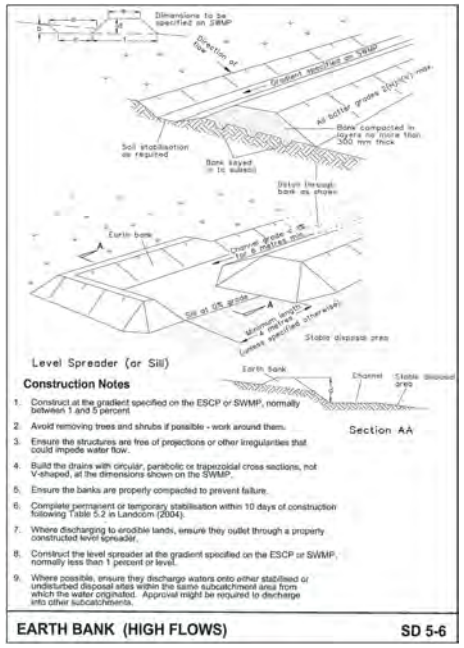
SEDIMENT FENCE SD 6-8



Construction Notes

1. Remove any rocks, clods, sticks or grass from the surface before laying matting.
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will lie continuously in contact with the soil by grading the surface carefully first.
5. Lay the fabric in "shingle fashion", with the end of each downslope roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end (Standard Drawing 5-7b).
6. Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
7. Divert water from the structure until vegetation is stabilised properly.

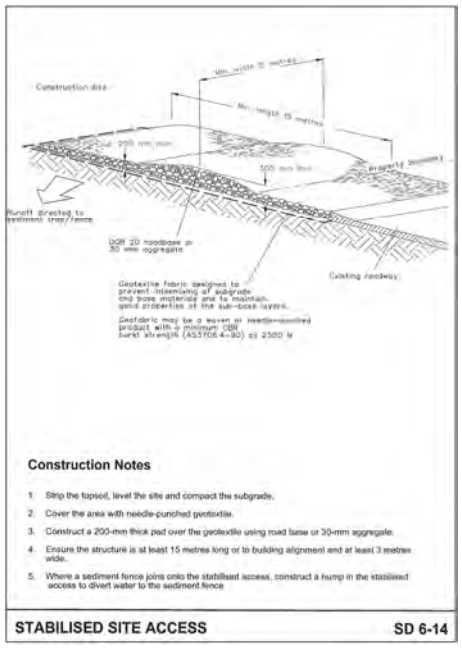
RECP : CONCENTRATED FLOW SD 5-7



Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

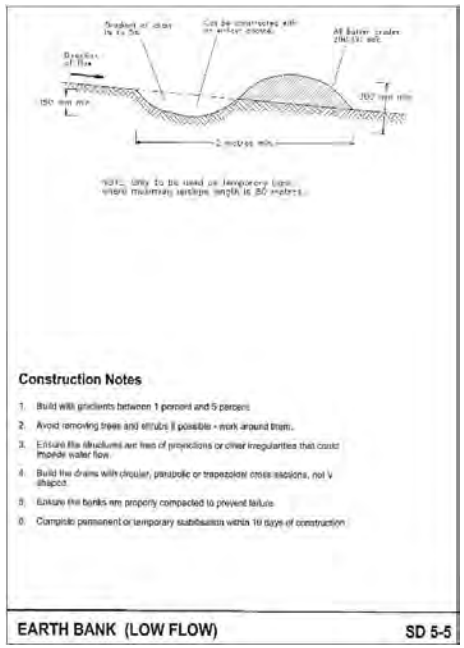
EARTH BANK (HIGH FLOWS) SD 5-6



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence.

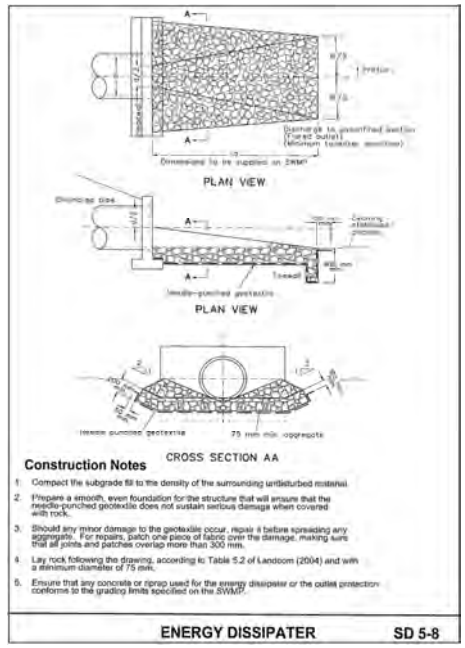
STABILISED SITE ACCESS SD 6-14



Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) SD 5-5



Construction Notes

1. Compact the subgrade fill to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punched geotextile does not sustain serious damage when covered with rock.
3. Should any minor damage to the geotextile occur, repair it before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.
4. Lay rock following the drawing, according to Table 5.2 of Landcom (2004) and with a minimum diameter of 75 mm.
5. Ensure that any concrete or riprap used for the energy dissipater or the outlet protection conforms to the grading limits specified on the SWMP.

ENERGY DISSIPATER SD 5-8

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PLAN PREPARED BY

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SHEETS IN THIS PLAN SET

1. GENERAL ARRANGMENT – STAGE 4 (SHEET 1401)
2. GENERAL ARRANGMENT HES B CONTROL (SHEET 1402)
3. NOTES AND DETAILS TO ESC – STAGE 4 (SHEET 0401)
4. NOTES AND DETAILS TO HES-B SIZING (SHEET 0402)
5. NOTES AND DETAILS TO HES-B SIZING CONSTRUCTION (0403)
6. STANDARD DETAILS TO ESC – STAGE 4 (SHEET 0404)

CLIENT BASE PLAN: NA

CLIENT	JHLOR	PROGRESSIVE EROSION AND SEDIMENT CONTROL PLAN				
DRAWN	CV	KEMPS CREEK SEWERAGE NETWORK WATER RESOURCE RECOVERY FACILITY STANDARD DETAILS TO ESC – STAGE 4				
CREATED	AUG 2023					
-	22025	ESC	EW	0404	0	18/08/23
SHEET	ERSED REF	PLAN	PREFIX	SHEET NUMBER	AMDT	DATE