ENVIRONMENTAL PROTECTION NOTES

1. INDUCTION AND TRAINING

1.1. THE PERSON RESPONSIBLE FOR THE SITE SHOULD ENSURE THEIR EMPLOYEES AND SUBCONTRACTORS ARE APPROPRIATELY INDUCTED/TRAINED TO IMPLEMENT AND MONITOR THE APPROVED ESC PLAN AND OTHER POLLUTION CONTROL MEASURES.

1.2. THE TRAINING SHOULD INCLUDE:

1.2.1. OVERVIEW OF THE APPROVED ESC PLAN AND OTHER POLLUTION CONTROL MEASURES (E.G. NOISE, AIR AND WASTE CONTROLS)

1.2.2. ANY SITE-SPECIFIC CONSTRAINTS (E.G. HERITAGE SITES, ECOLOGICAL COMMUNITIES)

1.2.3. THE LOCATION AND TYPE OF EROSION AND SEDIMENT CONTROLS

1.2.4. SPILL PREVENTION AND CLEAN UP MEASURES

1.2.5. MAINTENANCE PROCEDURES FOR EACH OF THE EROSION AND SEDIMENT CONTROLS (AND COMPLETION OF THE DAILY ENVIRONMENTAL CHECKLIST, FOUND AT SCHEDULE 2)

1.2.6. INSPECTION AND MAINTENANCE RECORD KEEPING REQUIREMENTS

1.2.7. THEIR LEGAL RESPONSIBILITIES AND DUTY TO PROTECT THE ENVIRONMENT.

2. INSTALLATION OF CONTROLS

2.1. INSTALL EROSION AND SEDIMENT CONTROLS PRIOR TO COMMENCING ANY EARTHWORKS OR CONSTRUCTION WORK.

2.2. PROTECT AREAS THAT ARE TO REMAIN UNDISTURBED (E.G., FENCING).

2.3. REGARDLESS OF WHETHER THE MEASURES ARE TEMPORARY OR PERMANENT, EROSION AND SEDIMENT CONTROL MEASURES ARE THE FIRST ITEMS CONSTRUCTED PRIOR TO WORK COMMENCING AND MUST BE COMPLETELY FUNCTIONAL BEFORE LAND DISTURBANCE TAKES PLACE.

3. INSPECTION AND MONITORING

3.1. THE PERSON RESPONSIBLE FOR THE SITE APPOINTS A STAFF MEMBER TO:

3.1.1. BE RESPONSIBLE FOR INSPECTING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES

3.1.2. INSPECT THE CONTROLS AT THE END OF EACH DAY AND AFTER ANY RAINFALL EVENT

3.1.3. MONITOR CONTROLS AND COMPLETE THE DAILY ENVIRONMENTAL CHECKLIST

3.1.4. MAINTAIN AND STORE THESE RECORDS UNTIL THE CONCLUSION OF THE PROJECT AND PROVIDE THEM WHEN REQUESTED BY EPA OFFICERS.

4. MAINTENANCE

4.1. MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES UNTIL THE SITE IS FULLY STABILISED.

4.2. MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES FOR EACH STAGE OF THE DEVELOPMENT UNTIL THE ENTIRE SITE IS FULLY STABILISED.

4.3. IF EROSION AND SEDIMENT CONTROL MEASURES ARE DESIGNED FOR MULTIPLE STAGES THEY MUST BE MAINTAINED UNTIL THE WHOLE AREA THEY WERE DESIGNED TO MANAGE IS FULLY STABILISED.

4.4. IF CONTROLS ARE DAMAGED OR NOT FUNCTIONAL, REPAIR THEM IMMEDIATELY.

5. SITE HANDOVER

5.1. THE TIMING OF SITE HANDOVER IS A KEY FEATURE IN EFFECTIVE EROSION AND SEDIMENT CONTROL.

5.2. HAND RESPONSIBILITY FOR EROSION AND SEDIMENT CONTROL TO THE RELEVANT PARTIES WHEN RESPONSIBILITY FOR A SITE (OR STAGE OF DEVELOPMENT) IS TRANSFERRED.

5.3. ENSURE THE SITE IS PROGRESSIVELY STABILISED AND ALL CONTROLS ARE FULLY FUNCTIONAL AT TIME OF HANDOVER.

5.4. MAKE THE NEW RESPONSIBLE PARTY (WHETHER THEY ARE LANDOWNERS, INDIVIDUAL BUILDERS OR A GOVERNMENT AGENCY) FULLY AWARE OF THEIR OBLIGATIONS TO MAINTAIN EROSION AND SEDIMENT CONTROLS UNTIL THE SITE IS FULLY STABILISED.

5.5. WHERE THE PUBLIC LAND ASSETS ARE TRANSFERRED FROM THE LAND DEVELOPER TO THE TERRITORY, THE RELEVANT TERRITORY LAND CUSTODIAN IS RESPONSIBLE FOR MAINTAINING THE CONTROLS UNTIL THE SITE IS FULLY STABILISED.

5.6. FOR INDIVIDUAL BUILDING SITES WITHIN A LARGER DEVELOPMENT SITE, THE OWNER/BUILDER IS RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS UNTIL THE INDIVIDUAL SITE IS FULLY STABILISED.

6. SITE STABILISATION

6.1. SITE STABILISATION MEASURES INCLUDE:

6.1.1. STABILISATION PLANNING

6.1.2. STABILISED ACCESS POINTS AND GRID/VEHICLE WASH BAYS

6.1.3. VEGETATIVE COVER

6.1.4. OTHER STABILISATION MEASURES, SUCH AS THE USE OF STABILISING POLYMERS, BINDING AGENTS, STRAW MULCH ETC.

6.2. REQUIREMENTS

6.2.1. ALL SITES ARE TO HAVE A FUNCTIONAL STABILISED ACCESS POINT.

6.2.2. STABILISATION MEASURES SHOULD BE APPROPRIATE FOR THE TIME OF YEAR, SITE CONDITIONS, ESTIMATED DURATION OF USE AND POTENTIAL WATER QUALITY IMPACTS THAT STABILISATION AGENTS MAY HAVE ON DOWNSTREAM WATERS OR GROUND WATER.

6.2.3. FOLLOWING EARTHWORKS, LEAVE SOIL SURFACES ON DISTURBED SLOPES IN A ROUGHENED CONDITION (CONTOURED STRIATIONS OR FURROWS) AND CONSTRUCT A WATER DIVERSION AT THE TOP OF THE SLOPE. ROUGH SOIL SURFACES DO NOT ERODE AS EASILY AS SMOOTH SOIL SURFACES.

6.2.4. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO REMAIN IN PLACE UNTIL THE SITE IS FULLY STABILISED.

6.3. STABILISATION PLANNING

6.3.1. ASSESS THE PHYSICAL CHARACTERISTICS OF THE SITE TO DETERMINE HOW IT CAN BE DEVELOPED WITH THE SMALLEST RISK OF ENVIRONMENTAL HARM. MINIMISE LAND RESHAPING BY USING EXISTING TOPOGRAPHY WHERE POSSIBLE.

6.3.2. WHEN UNDERTAKING SITE LAYOUT PLANNING, ENSURE APPROPRIATE PLACEMENT OF SITE COMPOUNDS AND SHEDS, STABILISED ACCESS POINTS AND MATERIAL LAY DOWN AREAS, WASH AREAS, CUTTING AREAS, STOCKPILE PLACEMENT AND WASTE ENCLOSURE AREAS.

6.3.3. LIMIT THE EXTENT OF EXPOSED AND UNPROTECTED AREAS BY PRESERVING EXISTING GROUNDCOVER WHERE POSSIBLE.

6.3.4. BEFORE COMMENCING WORK, PROTECT ALL AREAS TO REMAIN UNDISTURBED (E.G FENCING OR OTHER BARRIER CONTROLS IF REQUIRED)

6.3.5. USE PROGRESSIVE/STAGED CLEARING AND CONSTRUCTION IN PREFERENCE TO MASS CLEARING AND CONSTRUCTION PARTICULARLY FOR GREENFIELD LAND DEVELOPMENTS.

6.4. STABILISED ACCESS POINTS AND GRID/VEHICLE WASH BAYS

6.4.1. A STABILISED ACCESS POINT CONSISTS OF A STABILISED PAD OF COARSE AGGREGATE, ROCK OR RECYCLED CONCRETE (MIN 40MM IN SIZE) UNDERLAIN WITH GEOTEXTILE FABRIC LOCATED AT ANY POINT WHERE TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE, INCLUDING A PUBLIC ROAD, STREET, OPEN SPACE OR PARKING AREA.

6.4.2. REQUIREMENTS

6.4.2.1. LIMIT TO ONE SITE ENTRY/EXIT POINT WHERE POSSIBLE.

6.4.2.2. WHERE THERE IS HEAVY TRAFFIC, A GRID OR VEHICLE WASH BAY MAY BE NECESSARY.

6.4.2.3. EARTHMOVING EQUIPMENT AND TRAFFICKING BY HEAVY EQUIPMENT EXPOSES THE SOIL AND SUBJECTS IT TO HIGH EROSIVE POTENTIAL. ALL ACCESS MUST BE CONTROLLED ON THE SITE AND VEHICLES AND PLANT MUST KEEP TO WELL-DEFINED HAUL ROADS TO MINIMISE GROUND DISTURBANCE AND COMPACTION.

6.4.2.4. A STABILISED ACCESS POINT IS TEMPORARY AND MUST BE DECOMMISSIONED AT THE CONCLUSION OF CONSTRUCTION.

6.5. DESIGN CRITERIA- STABILISED ACCESS POINT

6.5.1. WHERE POSSIBLE, CHOOSE AN ACCESS POINT IN AN ELEVATED POSITION WITH LITTLE OR NO WATER RUN-OFF FROM UPSLOPE.

6.5.2. THE APPROPRIATE LOCATION FOR CONSTRUCTION ACCESS MAY NOT ALWAYS BE THE PROPOSED DRIVEWAY LOCATION.

6.5.3. REMOVE TOP LAYER OF SOIL AT LEAST 3 METRES WIDE FROM THE ROAD TO THE CONSTRUCTION SITE.

6.5.4. USE MINIMUM 40MM AGGREGATE OR RECYCLED CONCRETE OR EQUIVALENT TO A DEPTH OF 200MM WITH AN UNDERLAY OF HEAVY-DUTY GEOTEXTILE FABRIC CLOTH.

6.5.5. WHERE THE PAD SLOPES TOWARD THE ROAD, INSTALL A 300MM HIGH BUND (HUMP) ACROSS THE PAD TO DIVERT STORMWATER RUN-OFF TO A SEDIMENT FENCE FOR FILTERING.

6.5.6. ACCESS ARRANGEMENTS ARE TO HAVE A MINIMUM LENGTH OF APPROXIMATELY 15 METRES OR FOUR TO FIVE VEHICLE WHEEL REVOLUTIONS OVER THE ROCK.

6.6. REQUIREMENTS

6.6.1. THE STABILISED ACCESS POINT IS TO BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO ROADS.

6.6.2. IF SEDIMENT DOES TRACK ONTO THE ROAD FOR ANY REASON, REMOVE IT IMMEDIATELY.

6.6.3. MONITOR FOR COMPACTION FROM VEHICLES AND ADD AGGREGATE OR EQUIVALENT AS REQUIRED.

6.6.4. CHECK THE STABILISED ACCESS AT THE END OF EACH DAY AND BEFORE AND AFTER A RAIN EVENT.

6.7. DESIGN CRITERIA - GRID/VEHICLE WASH BAY

6.7.1. WHERE THERE IS HEAVY TRAFFIC, A GRID OR VEHICLE WASH BAY MAY BE NECESSARY.

6.7.2. DESIGN THE GRID OR VEHICLE WASH BAY SO WATER LEAVING THE AREA DOES NOT ENTER THE STORMWATER SYSTEM.

6.7.3. PERIODICALLY LIFT AND CLEAR OUT THE GRID OR VEHICLE WASH BAY.

6.7.4. GRIDS AND VEHICLE WASH BAYS SHOULD BE PRECEDED AND FOLLOWED BY STABILISED MATERIAL TO REDUCE MATERIAL LOAD ENTERING GRID OR WASH BAY AND ENSURE THAT VEHICLES DO NOT CARRY MUD/DIRT OFF-SITE.

7. VEGETATIVE COVER

7.1. THE MAINTENANCE AND RE-ESTABLISHMENT OF VEGETATION ARE THE MOST IMPORTANT FACTORS IN MINIMISING EROSION DURING DEVELOPMENT. PERMANENT VEGETATIVE COVER OVER EXPOSED SOIL AREAS WILL STABILISE THE SOIL, SLOW THE MOVEMENT OF STORMWATER RUN-OFF AND INCREASE INFILTRATION TO HELP PROTECT NEARBY WETLANDS, STREAMS OR OTHER ENVIRONMENTALLY SENSITIVE AREAS.

7.2. VEGETATION SHIELDS THE SOIL SURFACE FROM RAINDROP IMPACT WHILE THE ROOT MASS HOLDS SOIL PARTICLES IN PLACE. GRASS BUFFER STRIPS CAN BE USED TO FILTER SEDIMENT FROM SURFACE RUN-OFF AND TO PREVENT WIND DISPERSION.

8. VEGETATIVE BUFFERS

8.1. THE MAINTENANCE OF VEGETATION ADJACENT TO WATER BODIES, WETLANDS AND OTHER AREAS OF NATURAL RESOURCE VALUE IS ESSENTIAL TO ENSURE SUCH AREAS ARE NOT ADVERSELY AFFECTED BY CONSTRUCTION OR BY STORMWATER RUN-OFF ONCE CONSTRUCTION IS COMPLETED.

9. REVEGETATION

9.1. STABILISATION MEASURES (EITHER TEMPORARY OR PERMANENT) ARE TO BE APPLIED WITHIN SIX DAYS OF DISTURBANCE AND/OR FINAL EARTHWORKS SHAPING, DURING NOVEMBER TO FEBRUARY INCLUSIVE AND UP TO 14 DAYS DURING THE REST OF THE YEAR.

9.2. FOR STABILISATION BEYOND SIX MONTHS, A MIXTURE OF PERENNIAL AND ANNUAL SPECIES IS BEST. THE ANNUAL SPECIES ARE FAST GROWING AND USEFUL TEMPORARILY; THE PERENNIAL SPECIES ARE USUALLY SLOWER TO ESTABLISH AND WILL GROW UNDER THE ANNUAL SPECIES AND SUCCEED THEM TO PROVIDE A PERMANENT SURFACE PROTECTION.

9.3. USE SPECIES APPROPRIATE FOR THE SEASON AND CLIMATE.

10. SPECIALISED METHODS OF ESTABLISHING VEGETATION.

10.1. WHERE SITES ARE UNLIKELY TO BE SUCCESSFULLY VEGETATED USING BROAD AREA TECHNIQUES, ADOPT SPECIALISED METHODS TO ESTABLISH VEGETATION. THESE METHODS INCLUDE STRAW MULCHING AND BITUMEN SPRAYING, HYDROMULCHING, HYDROSEEDING, TURFING AND THE USE OF OTHER MESHES AND MATTINGS.

10.2. EXAMPLES OF SITUATIONS WHERE SPECIALISED METHODS WOULD BE APPLICABLE ARE:

10.2.1. EXCESSIVELY STEEP SLOPES

10.2.2. DRAINAGE LINES CURRENTLY OPERATING AND REQUIRING IMMEDIATE COVER

10.2.3. AREAS WHERE TOPSOIL IS ABSENT AND CANNOT BE APPLIED

10.2.4. SOWING DURING UNFAVOURABLE SEASONAL CONDITIONS.

11. OTHER STABILISATION MEASURES

11.1. TEMPORARY STABILISATION MEASURES

11.1.1. MULCH COVERS: THE USE OF TEMPORARY MULCH COVERS SUCH AS STRAW, PROPERLY ANCHORED WITH A BINDER, IS AN EFFECTIVE WAY TO PROTECT THE SOIL FROM EROSION UNTIL A PERMANENT VEGETATIVE COVER CAN BE ESTABLISHED. MULCH COVERS CAN BE USED DURING THE NON-GROWING SEASON, BUT ARE ALSO EFFECTIVE WHEN APPLIED AFTER AN EXPOSED SOIL AREA HAS BEEN SEEDED. THE MULCH HELPS RETAIN SOIL MOISTURE AND PROTECT THE SEED BEFORE GERMINATION.

11.1.2. RIP RAP

11.1.3. GEOTEXTILES

11.1.4. POLYMERS

11.1.5. HYDRA MULCH.

12. OTHER NON-TEMPORARY STABILISATION MEASURES

12.1. GABIONS

12.2. CONCRETE OR ASPHALT PAVING

12.3. QUARRY SPALLS USED AS DITCH LINING

12.4. GRAVEL BASE (ENSURE IT IS CLEAN).

13. SPOIL MANAGEMENT

13.1. SPOIL MANAGEMENT INCLUDES STOCKPILES AND ACCEPTANCE AND DISPOSAL OF SOIL.

14. STOCKPILES

14.1. IF STOCKPILES AND BATTERS WILL REMAIN BARE FOR MORE THAN 14 DAYS, THEY ARE REQUIRED TO BE STABILISED. MANAGE STOCKPILES TO PREVENT DUST EMISSIONS.

14.2. STORE STOCKPILES OUTSIDE HAZARD AREAS SUCH AS DRAINAGE LINES. IF NECESSARY, INSTALL UP-SLOPE DIVERSIONS.

14.3. PLACE STOCKPILES NEAR THE STABILISED ACCESS POINT TO REDUCE DAMAGE TO THE SITE.

14.4. WHEN ORDERING MATERIALS, GIVE CLEAR INSTRUCTIONS ABOUT WHERE THEY SHOULD BE PLACED ON SITE.

14.5. CLEARLY MARK THE STOCKPILE AREA.

14.6. LIMIT THE AMOUNT OF MATERIAL STOCKPILED ON SITE IF POSSIBLE.

14.7. DO NOT PLACE STOCKPILES ON NATURE STRIPS OR VERGES.

TO PROTECT STOCKPILES AND BUILDING MATERIALS FROM ENTERING THE STORMWATER SYSTEM:

14.8. STORE THEM BEHIND SEDIMENT CONTROL BARRIERS

14.9. COVER THEM WHERE NECESSARY

14.10. LOCATE THEM AWAY FROM HIGH WATER FLOW AREAS

14.11. KEEP STOCKPILE HEIGHT BELOW 2 METRES.

15. ACCEPTANCE AND DISPOSAL OF SOIL

15.1. ACCEPTANCE OF SOIL - BEFORE ACCEPTING SOIL ON SITE, FOLLOW THESE STEPS TO REDUCE THE RISK OF RECEIVING CONTAMINATED MATERIAL:

15.1.1. ENSURE ALL FILL USED IS VIRGIN EXCAVATED MATERIAL (E.G. CLAY, GRAVEL, SAND, SOIL OR ROCK) THAT IS NOT MIXED WITH ANY OTHER WASTE OR FROM A CONTAMINATED SITE.

15.1.2. REQUEST THE SUPPLIER PROVIDE FORMAL CERTIFICATION THAT FILL IS CLEAN.

15.1.3. REQUEST THE SUPPLIER PROVIDE INFORMATION ON CURRENT AND PAST ACTIVITIES ON THE SITE THE FILL HAS BEEN SOURCED FROM.

15.1.4. DELIVERY SHOULD BE SUPERVISED TO ENSURE THE APPROPRIATE MATERIAL IS RECEIVED.

15.1.5. CHECK FOR SIGNS OF CONTAMINATION, SUCH AS ODOURS (CHEMICAL/PETROL), STAINING FROM CHEMICALS, AND RUBBISH SUCH AS BRICKS, TIMBER, METAL, ASBESTOS, ETC.

15.1.6. MAINTAIN ALL DOCUMENTS AND RECORDS.

15.2. DISPOSAL OF SPOIL

15.2.1. SPOIL SHOULD ONLY BE TAKEN TO A LOCATION LAWFULLY ABLE TO ACCEPT IT, AND IN ACCORDANCE WITH AN ENVIRONMENTAL AUTHORISATION, IF ONE IS IN PLACE.

16. REUSE OF EXCAVATED NATURAL MATERIAL (ENM) AND OTHER RECYCLED MATERIALS

16.1. ACCEPTANCE OF ENM AND OTHER RECYCLED MATERIAL - BEFORE ACCEPTING ENM OR ANY OTHER RECYCLED MATERIALS ON SITE, FOLLOW THESE STEPS TO REDUCE THE RISK OF RECEIVING CONTAMINATED MATERIAL:

16.1.1. ENSURE ALL FILL USED IS APPROPRIATE RECYCLED MATERIAL AGGREGATES MATERIAL THAT IS NOT MIXED WITH ANY OTHER WASTE OR FROM A CONTAMINATED SITE.

16.1.2. REQUEST THE SUPPLIER PROVIDE FORMAL CERTIFICATION THAT RECYCLED MATERIAL AGGREGATES ARE CLEAN, INCLUDING ANY APPROPRIATE RECORD-KEEPING OF THE TYPE, AMOUNT AND SOURCE OF RECYCLED AGGREGATES.

16.1.3. REQUEST THE SUPPLIER PROVIDE INFORMATION ON CURRENT AND PAST ACTIVITIES ON THE SITE THE FILL HAS BEEN SOURCED FROM.

16.1.4. DELIVERY SHOULD BE SUPERVISED TO ENSURE THE APPROPRIATE MATERIAL IS RECEIVED.

16.1.5. CHECK FOR SIGNS OF CONTAMINATION, SUCH AS ODOURS (CHEMICAL/PETROL), STAINING FROM CHEMICALS, AND RUBBISH SUCH AS BRICKS, TIMBER, METAL, ASBESTOS, ETC.

16.1.6. MAINTAIN ALL DOCUMENTS AND RECORDS.

17. SEDIMENT BARRIER INFRASTRUCTURE

17.1. SEDIMENT BARRIER INFRASTRUCTURE INCLUDES:

17.1.1. CHECK DAMS FOR CHANNELLED RUN-OFF

17.1.2. SEDIMENT FENCE

17.1.3. STORMWATER INLET PROTECTION.

SEDIMENT BARRIERS ARE RELATIVELY EFFECTIVE AT RETAINING SUSPENDED SOILS COARSER THAN 0.02 MM, HOWEVER FINER PARTICLES AND SOLUBLE MATERIALS PASS THROUGH THEM.

GIVEN THE FINE PARTICLE NATURE OF ACT SOILS, IT IS RECOMMENDED THAT, WHERE POSSIBLE, NODAL TREATMENT OF SEDIMENT LADEN STORMWATER SHOULD OCCUR DOWNSTREAM FROM SEDIMENT BARRIER INFRASTRUCTURE.

17.2. CHECK DAMS FOR CHANNELED RUN-OFF

17.2.1. A CHECK DAM IS A SEDIMENT CONTROL DEVICE TO INTERCEPT AND RETAIN SEDIMENT FROM CHANNELLED SEDIMENT LADEN RUN-OFF. IT IS DESIGNED TO BE PLACED ALONG THE CHANNEL CONTAINING CONCENTRATED FLOW IN ORDER TO REDUCE VELOCITY, HOWEVER DOES NOT ADDRESS SEDIMENT IN WATER.

17.2.2. A CHECK DAM IS REQUIRED WHERE CHANNEL GRADES ARE BETWEEN 2% AND 10%.

17.2.3. A GUIDE TO CHECK DAM SPACING IS THAT THE TOP OF THE UPSTREAM CHECK DAM IS EQUIVALENT TO THE ELEVATION OF THE CREST OF THE DOWNSTREAM CHECK DAM.

17.2.4. CHECK DAMS ARE A TEMPORARY CONTROL THAT MUST BE DECOMMISSIONED AND REMOVED AT THE CONCLUSION OF CONSTRUCTION.

17.2.5. SPACING OF CHECK DAMS ALONG THE CENTRELINE AND SCOUR PROTECTION BELOW EACH CHECK DAM IS TO BE SPECIFIED ON THE EROSION AND SEDIMENT CONTROL PLAN.

17.3. ROCK BUND/GABION CHECK DAMS

17.3.1. ROCK BUND/GABION (CHECK DAMS CONSISTS OF A TRAP FORMED BY ROCK, 50 MM AGGREGATE OR EQUIVALENT, WRAPPED IN GEOTEXTILE FABRIC, WIRE MESH OR EQUIVALENT.

17.4. RIP-RAP OUTLET CHECK DAMS

17.4.1. RIP-RAP OUTLET CHECK DAMS CONSIST OF A TRAP FORMED BY THE PLACEMENT OF ROCK.

17.4.2. RIP-RAP OUTLET CHECK DAMS MAY BE USED FOR CATCHMENT AREAS OF UP TO A MAXIMUM OF 5 HECTARES.

17.5. WHEN TO USE

17.5.1. A CHECK DAM IS USUALLY INSTALLED IN EITHER A FLOODWAY, AT A STORM DRAIN INLET OR OTHER POINTS OF DISCHARGE FROM A DISTURBED AREA.

17.6. CLEANOUT

17.6.1. REMOVE SEDIMENT AND RESTORE THE DAM TO THE ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO HALF OF THE DESIGN DEPTH OF THE DAM.

17.7. OUTLET

17.7.1. DESIGN, CONSTRUCT AND MAINTAIN THE OUTLET IN SUCH A MANNER THAT UNDER OPERATING CONDITIONS SEDIMENT DOES NOT LEAVE THE DAM AND THAT EROSION DOES NOT OCCUR.

17.7.2. CHECK DAMS MAY OUTLET ONTO STABILISED (PREFERABLY UNDISTURBED) GROUND.

17.7.3. IF THERE IS NO AREA AVAILABLE, IT IS PERMISSIBLE TO DISCHARGE TO THE STORMWATER SYSTEM WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW 50 NTU FOR URBAN AREAS AND FOR OTHER AREAS ON THE ADVICE OF THE EPA.

17.7.4. GYPSUM DOSING RATE SHOULD BE APPLIED AT ABOUT 30 KG/100 M3 OF STORED WATER. IN SOME INSTANCES HIGHER RATES MAY APPLY, TYPICALLY LESS THAN 50 MG/LITRE.

18. SEDIMENT FENCE

SEDIMENT FENCES ARE DESIGNED TO RUN ALONG A CONTOUR AND ARE NOT RECOMMENDED TO CAPTURE ANY CONCENTRATED FLOWS.

A SEDIMENT FENCE IS A TEMPORARY ASSET AND MUST BE DECOMMISSIONED AND REMOVED AT THE CONCLUSION OF CONSTRUCTION.

18.1. GEOTEXTILE SEDIMENT FENCE

18.1.1. A TEMPORARY BARRIER OF GEOTEXTILE FABRIC CAN BE USED TO INTERCEPT SEDIMENT LADEN RUN-OFF FROM SMALL DRAINAGE AREAS OF DISTURBED SOIL.

18.1.1.1. DESIGN CRITERIA

18.1.1.1.1. IDENTIFY LOW POINT OF SITE.

18.1.1.1.2. CONSTRUCT A SEDIMENT FENCE PARALLEL TO THE SITE CONTOURS OR AS CLOSE AS POSSIBLE.

18.1.1.1.3. PUT 1.5 M STAR PICKETS NO MORE THAN 2.5-3 M APART AND 600 MM DEEP.

18.1.1.1.4. PUT A STAR PICKET 1.5 M UPSLOPE OF THE OTHERS EVERY 20 M (IF THE FENCE IS LONGER THAN 20 M). THIS SPREADS THE VOLUME OF WATER THAT FLOWS THROUGH EACH SECTION OF FENCE.

18.1.1.1.5. DIG A TRENCH AND BURY THE BASE OF THE SEDIMENT CONTROL FABRIC. THE TRENCH SHOULD BE 150 MM DEEP. ALTERNATIVELY, USE BACKFILL OR AGGREGATE TO MAKE SURE THE FABRIC IS TIGHT ON THE GROUND.

18.1.1.1.6. USE WIRE TIES TO ATTACH THE FABRIC TO THE UPSLOPE SIDE OF THE FENCE POSTS.

18.1.1.1.7. IF YOU NEED TO JOIN TWO PIECES OF FABRIC, OVERLAP THE FABRIC AT LEAST 150 MM AND SUPPORT WITH A STAR PICKET

18.2. STRAW BALES

18.2.1. STRAW BALE SEDIMENT CONTROLS MAY BE USED UPSTREAM OF OTHER CONTROLS AS A COMPLEMENTARY MEASURE OR ON MINOR DRAINAGE LINES OF LESS THAN 0.5 HECTARE AND LOCATED AT SPECIFIED INTERVALS TO MINIMISE EROSION. IT IS ESSENTIAL THESE CONTROLS ARE EFFECTIVELY MAINTAINED.

18.2.1.1. DESIGN CRITERIA FOR STRAW BALE INSTALLATION:

18.2.1.1.1. DIG A TRENCH 100 MM DEEP TO STOP WATER RUNNING UNDER THE STRAW BALE. THE TRENCH SHOULD BE AS WIDE AS THE STRAW BALE AND AS LONG AS NEEDED ALONG THE CONTOUR LINES OF THE BLOCK.

18.2.1.1.2. PUT THE BALES LENGTHWAYS ALONG THE TRENCH. USE STRAW TO FILL ANY GAPS BETWEEN BALES. BIND BALES ALONG THE SIDE RATHER THAN TOP AND BOTTOM AS THEY WILL HOLD TOGETHER BETTER WHEN WET.

18.2.1.1.3. FIX THE BALES IN PLACE USING TWO 1.2 M STAR PICKETS AT EACH END OF EACH BALE. ANGLE ONE STAKE TOWARDS THE PREVIOUSLY LAID BALE BEFORE DRIVING IT 600 MM INTO THE GROUND. PUT THE OTHER STAKE IN VERTICALLY.

18.2.1.1.4. BACKFILL AND COMPACT THE TRENCH TO GROUND LEVEL ON THE DOWNSLOPE SIDE OF THE STRAW BALES. ON THE UPSLOPE SIDE, BUILD UP THE SOIL TO 100 MM. THIS WILL SLOW THE SPEED OF THE WATER FLOWS AND TRAP COARSE SEDIMENTS.

18.2.1.1.5. MAINTAIN AND REPLACE STRAW BALES REGULARLY.

19. VEGETATED FILTER STRIP

19.1. A VEGETATED FILTER STRIP MAY BE USED ALONGSIDE SEDIMENT FENCES TO HELP FILTER STORMWATER RUN-OFF.

19.2. DO NOT USE NATIVE VEGETATION AS A FILTER STRIP

20. STORMWATER INLET PROTECTION

20.1. AN INLET PROTECTION DEVICE PREVENTS SEDIMENT-LADEN WATER FROM ENTERING A STORMWATER DRAINAGE SYSTEM.

20.2. USE STORMWATER INLET PROTECTION WHERE THE DRAINAGE AREA TO AN INLET IS DISTURBED AND IT IS NOT POSSIBLE TO TEMPORARILY DIVERT THE STORMWATER DRAIN OUTFALL INTO WATER RETAINING INFRASTRUCTURE AND WATERTIGHT BLOCKING OF INLETS IS NOT ADVISABLE.

21. DUST CONTROL MEASURES

WHERE CONSTRUCTION WORK GENERATES DUST, ALL REASONABLE AND PRACTICABLE MEASURES SHOULD BE TAKEN TO MINIMISE THAT DUST.

21.1. REQUIREMENTS

21.1.1. RETAINING EXISTING VEGETATION WHERE POSSIBLE.

21.1.2. STRIPPING AREAS PROGRESSIVELY AND ONLY WHERE IT IS NECESSARY FOR WORKS TO OCCUR.

21.1.3. EMPLOYING STABILISATION METHODS SUCH AS MATTING, GRASSING OR MULCH.

21.1.4. DAMPENING THE GROUND WITH A LIGHT WATER SPRAY (CONTACT THE EPA FOR REQUIREMENTS DURING EXTREME DROUGHT CONDITIONS). IF ADDITIVES IN THE WATER ARE USED TO INCREASE ITS DUST SUPPRESSION PROPERTIES, THE CHEMICAL SHOULD HAVE NO ADVERSE IMPACT ON ADJACENT WATER BODIES.

21.1.5. ROUGHENING THE SURFACE OF EXPOSED SOIL.

21.1.6. COVERING STOCKPILES AND LOCATING THEM WHERE THEY ARE PROTECTED FROM THE WIND.

21.1.7. RESTRICTING VEHICLE MOVEMENTS.

21.1.8. COVERING THE LOAD WHEN TRANSPORTING MATERIAL.

21.1.9. CONSTRUCTING WIND BREAKS SUCH AS WIND FENCES IN ACCORDANCE WITH THE NSW BLUE BOOK.

21.1.10. IMMEDIATELY REVEGETATING THE AREA WHEN AN AREA OF WORKS IS COMPLETED TO INHIBIT THE GENERATION OF DUST.

22. NOISE

22.1. ENSURE ALL CONSTRUCTION WORK THAT GENERATES NOISE IS CONDUCTED WITHIN THE TIME PERIODS DETAILED IN SCHEDULE 2 OF THE ENVIRONMENT PROTECTION REGULATION 2005 (TABLE 8).

22.2. SCHEDULE NOISY ACTIVITIES FOR THE LEAST SENSITIVE TIMES OF THE DAY, SUCH AS MID- MORNING AND MID-AFTERNOON

22.3. SELECT MACHINERY THAT PRODUCES LESS NOISE

22.4. ENSURE MACHINERY IS WELL MAINTAINED.

22.5. IF WORK MAY UNAVOIDABLY EXCEED THE NOISE LIMITS DURING THE TIMES SET, SEEK WRITTEN APPROVAL FROM THE EPA AND INFORM NEARBY RESIDENTS.

23. AIR QUALITY

23.1. MISMANAGEMENT OF AIR QUALITY ON SITE HAS THE POTENTIAL TO RESULT IN DETRIMENTAL EFFECTS ON THE HEALTH AND AMENITY OF NEIGHBOURS AND EMPLOYEES, REDUCED VISIBILITY ON SITE, INCREASED WEAR ON MACHINERY AND EQUIPMENT AND COMPLAINTS FROM NEIGHBOURS.

23.2. INCORPORATE MEASURES TO LIMIT THE EFFECT ON AIR QUALITY BY MINIMISING DUST FROM CONSTRUCTION ACTIVITIES AND SMOKE FROM FIRES.

24. FIRE

24.1. A FIRE MAY BE PERMITTED FOR HEATING PURPOSES PROVIDED IT IS IN A BRAZIER OR CONSTRUCTED FIREPLACE. ONLY SEASONED, UNTREATED TIMBER CAN BE BURNT FOR HEATING PURPOSES.

25. VEHICLE AND EQUIPMENT EXHAUST

25.1. ENSURE ALL VEHICLES AND MACHINERY ARE FITTED WITH APPROPRIATE EMISSION CONTROL EQUIPMENT, ARE MAINTAINED FREQUENTLY AND ARE SERVICED TO THE MANUFACTURERS' SPECIFICATIONS.

25.2. SMOKE FROM INTERNAL COMBUSTION ENGINES SHOULD NOT BE VISIBLE FOR MORE THAN TEN SECONDS.

26. WASTE MANAGEMENT

26.1. PRINCIPLES OF WASTE MANAGEMENT:

26.1.1. OPERATE A MATERIAL COLLECTION AND DISPOSAL SYSTEM.

26.1.2. FOLLOW THE WASTE MINIMISATION HIERARCHY OF REDUCE, REUSE, RECYCLE AND DISPOSE APPROPRIATELY.

26.2. REDUCE--USE REUSABLE OR RECYCLED PRODUCTS WHERE PRACTICABLE.

26.3. REUSE--REUSE CONSTRUCTION, DEMOLITION OR GREEN WASTE MATERIALS ON SITE WHERE PRACTICABLE.

26.4. RECYCLE--WHERE DISPOSAL OF MATERIALS IS REQUIRED, PROVIDE WASTE TO CONSTRUCTION MATERIAL RECOVERY FACILITIES WHERE POSSIBLE.

26.5. DISPOSE APPROPRIATELY--MATERIALS THAT CANNOT BE RECYCLED SHOULD BE DISPOSED TO A LICENSED FACILITY.

27. HAZARDOUS SUBSTANCES

27.1. STORE ALL POSSIBLE POLLUTANT MATERIALS (E.G. CHEMICALS AND FUEL) WELL CLEAR OF ANY POORLY DRAINED AREAS, FLOOD PRONE AREAS, STREAMBANKS, CHANNELS AND STORMWATER DRAINAGE AREAS.

27.2. STORE POLLUTANT MATERIALS IN A DESIGNATED AREA, UNDER COVER WHERE POSSIBLE.

27.3. CONSTRUCT CONTAINMENT BUNDS WITH PROVISION FOR COLLECTION AND STORAGE OF ANY SPILT MATERIAL.

27.4. IMPLEMENT A CONTINGENCY PLAN TO HANDLE SPILLS SO ENVIRONMENTAL HARM IS AVOIDED.

27.5. DISPOSE OF ANY LIQUID WASTE (FUEL, WET PAINT, SOLVENTS ETC.) THROUGH A HAZARDOUS WASTE CONTRACTOR.

27.6. PAINTS:

27.6.1. WASH WATER-BASED PAINTS IN SMALL AMOUNTS OF WATER OVER NEWSPAPER TO COLLECT RESIDUE. PLACE PAPER IN A SOLID WASTE BIN.

27.6.2. WASH OIL-BASED PAINTS IN A SERIES OF SOLVENT BATHS. SOLVENT CAN BE REUSED SEVERAL TIMES AND MUST BE STORED IN LABELLED, SEALED CONTAINERS. YOU MUST DISPOSE OF WASTE SOLVENT THROUGH A HAZARDOUS WASTE CONTRACTOR. DO NOT PLACE IN A NORMAL BIN OR ON THE GROUND.

27.7. DO NOT BURN WASTE MATERIALS ON THE SITE, SUCH AS PLASTICS, CHEMICALS OR WOOD THAT IS PAINTED, CHEMICALLY TREATED OR CONTAMINATED WITH CHE