

These tables set out the operational controls required to achieve the objectives and targets set out in Environmental Program 01 Erosion and Sediment Control. BBA will, as a minimum, implement the control activities and performance measures set out below.

Table OCO 1.1 Erosion and Sediment Control

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| Ref | Subject | Reference | Control Activity | Responsibility | Timing | Performance Measure | Audit Check |
|-------------------------------|--|--------------------|--|---|--|---------------------------------------|-------------|
| INDUCTION AND TRAINING | | | | | | | |
| 1. | Design Consultant briefing | CEMP 10 | The Design Consultants will be briefed on the design aspects of this Control Document | Design Director | Prior to start of design. | Briefing record | |
| 2. | Project and site induction | CEMP 10 CEMP 13 | All employees, consultants and subcontractors involved will be inducted into the environmental aspects and controls related to this Control Document. | Construction Director or Project Manager, as applicable Start up Manager for early works | Prior to personnel commencing work on site | Induction records | |
| 3. | Staff Construction Environmental Management Plan induction | CEMP 13 | All relevant staff will be inducted into the requirements of the Construction Environmental Management Plan and all associated documents. | Construction Director or Project Manager, as applicable | Prior to staff commencing work on site | Induction records | |
| 4. | Awareness training | CEMP 13 CEMP 14 | Conduct awareness instruction of relevant BBA staff, contractors and field personnel. Objectives of Erosion and Sediment Control awareness training include: <ul style="list-style-type: none"> Basics of prevention of soil erosion. | Project Manager | As per Training Plan | Training records | |
| 5. | Briefings | CEMP 14 | Environmental briefings shall emphasize site-specific control requirements. | General Superintendent | Prior to working in a specific area | Record of Briefing. (eg SEP Briefing) | |

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|---------------|--|---|--|-----------------|--------------|-------------------------------------|-------------|
| DESIGN | | | | | | | |
| 6. | Design of permanent sediment controls. | LU1, Part 3, Sect 3, 3SW5.1, pg 123, (Seq pg 136) | In the design of drainage systems for the project, including sedimentation basins, adopt 'water sensitive' design principles in the development of the stormwater treatment system, as specified in the Urban Stormwater Best Practice Environmental Management Guidelines, and in consultation with DTAE. Design the project so that runoff from work areas is isolated from catchment run-off and treated using 'water sensitive' design practices prior to discharging into receiving waterways. | Design Director | Design phase | Design verification and validation | |
| 7. | Batter treatment prior to topsoiling. | LU, Part 3, 2ER 1.1 (b(i & iv), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 315) | To provide a bond for topsoil and to reduce the chance of topsoil slippage, relevant design drawings shall include a note that cut batters that are to be topsoiled are to be left in a rough condition prior to placement of topsoil such that topsoil will be keyed to the batter. | Design Director | Design phase | Design verification and validation. | |
| 8. | Stable batter design. | LU, Part 3, 2ER 1.1 (b(i & iv), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 315) | The design shall provide batters that are stable against slipping. | Design Director | Design phase | Design verification and validation. | |

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|-------------------------|--|--|--|----------------------------|--------------------------|--------------------------|-------------|
| PRE-CONSTRUCTION | | | | | | | |
| 9. | Progressive and minimal land disturbance | LU1, Part 3, Sect 2, 2ER1.1, pg 66, (Seq pg 79) LU1, Part 3, Sect 5, 5GN4.1, pg 147, (Seq pg.160) LU3, Part 3, GN9.1, pg 16, (Seq pg 255) LU3, Part 3, CN6.1, pg 20, (Seq pg 259) LU4, Part 3, GN9.1, pg 17, (Seq pg 306) LU4, part 3, CN6.1, pg 21, (Seq pg 310) | Plan to disturb work areas progressively to minimise the time between disturbance and rehabilitation, and keep the area of disturbance to a practical minimum | General Superintendent | Initial site preparation | Site Environmental Plans | |
| 10. | Landslip and/or slumping and sodic soils | LU, Part 3, 2ER 1.1(a), pg 66 (seq pg 79) LU3, Part 3, ER 1.1(a), pg 26 (seq pg 264) LU4, Part 3, ER 1.1(a), pg 26 (seq pg 315) | Undertake mapping of areas of severe erosion risk and sodic soils | Environmental Manager | Initial site preparation | Site Environmental Plans | |
| 11. | Acid sulphate soils | LU1, Part 3, Sect 2, 2SL1.1, pg 65 (Seq pg 78) LU3, Part 3, AS1.1, pg 24, (Seq pg 263) LU4, Part 3, AS1.1, pg 25, (Seq pg 314) | Undertake a soil assessment to identify the presence of any acid sulphate soils and where they are present implement measures to minimise exposure of those soils to air | Environmental Manager | Initial site preparation | Site Environmental Plans | |
| 12. | Drainage planning | Project Requirement | Site drainage must be planned appropriately before any clearing commences | Site Environmental Officer | Initial site preparation | Site Environmental Plans | |

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| 13. | Design of temporary short-term sediment controls | Vic EPA Pub 275 and 480 LU1, Part 3, Sect 3, 3SW3.1, pg 122, (Seq pg 135) LU1, Part 3, Sect 3, 3SW4.1, pg 122, (Seq pg 135) LU1, Part 3, Sect 3, 3SW4.3, pg 122, (Seq pg 135) LU1, Part 3, Sect 4, 4SW2.1, pg 142, (Seq pg 155) LU1, Part 3, Sect 5, 5ER1.1, pg 149, (Seq pg 162) LU2, Part 3, SW5.1, pg 19, (Seq pg 233) | The location, type and size of sediment controls (basins, catch drains, etc) shall be designed by evaluating the upstream catchments, topography, magnitude of the flows, water quality parameters and storage capacity. The design storm event will generally be a 1 in 2 year Average Recurrence Interval (ARI) event for temporary sediment controls with a life of 1 year or less. | Site Environmental Officer | Ongoing | Achievement of water quality targets. | |
| 14. | No discharge to municipal system | LU3, Part 2, 2.15, pg 9, (Seq pg 248) LU 4, Part 2, 2.17, pg 10, (Seq pg 299) | No construction stormwater will be discharged into municipal stormwater system | General Superintendent | Ongoing | Site Environmental Plans | |
| 15. | Design of temporary long-term sediment controls | Vic EPA Pub 275 and 480 DIIS LU1, Part 3, Sect 3, 3SW2.2, pg 121, (Seq pg 134) LU1, Part 3, Sect 7, 7SW2.1, pg 168, (Seq pg 181) LU2, Part 3, SW3.1, pg 19, (Seq pg 233) | The design of long-term temporary sedimentation basins shall have a design storm of 1 in 20 years. | Environmental Manager | Ongoing | Achievement of water quality targets | |
| 16. | Design of sedimentation basin outlets | LU, Part 3, 2ER 1.1 (b(ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(ii), c & d), pg 26 (seq pg 315) | Sedimentation basins shall be designed with a riser pipe or flexible pipe and spillway that allows for the gradual discharge of the clearest water during an event. | Site Environmental Officer | Initial site preparation | Site Environmental Plans | |

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| 17. | Stable inlets and outlets | LU, Part 3, 2ER 1.1 (b(ii & vi), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(ii & vi), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(ii & vi), c & d), pg 26 (seq pg 315) | The inlets and outlets of temporary drainage structures shall be stabilised with rock, concrete, geofabric, energy dissipation, or similar and sediment control measures. | Site Environmental Officer | Initial site preparation | Site Environmental Plans | |
| 18. | Protection in place before work starts | Vic EPA Publication 480 LU1, Part 3, Sect 3, 3SW4.4, pg 123, (Seq pg 136) | All erosion and sediment controls must be implemented prior to the commencement of clearing and grubbing, earthworks, or other work that could lead to sediment discharge. | General Superintendent | Initial site preparation | Inspection records | |
| CONSTRUCTION | | | | | | | |
| 19. | Topsoil | LU1, Part 3, Sect 7, 7DR1.1, pg 169, (Seq pg 182) LU3, Part 3, VG4.1, pg 32, (Seq pg 271) LU4, Part 3, VG4.1, pg 33, (Seq pg 322) | Strip and stockpile topsoil separately for reuse during rehabilitation and design and protect stockpiles to minimise wind and water erosion | General Superintendent | Ongoing | Inspection records | |
| 20. | Preconstruction drainage | Project Requirement | Install preconstruction drainage where necessary | General Superintendent | Ongoing | Inspection records | |
| 21. | Temporary erosion and sediment controls | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | Temporary erosion and sediment controls will be installed prior to and during construction and reinstalled after completion of each major activity, including trenching and backfill. Temporary erosion and sediment controls that are practical and easy to install along the right-of-way will include diversion drains and silt fences. | General Superintendent | Ongoing | Inspection records | |

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|-----|------------------------|---|---|------------------------|---------|---------------------|-------------|
| 22. | Unconsolidated batters | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | All unconsolidated batters (cut and fill) greater than 1 m in length will be covered with the geotextile 'Jute Soil Saver' pinned at 3 x 150 mm pins/m ² to prevent surface erosion. | General Superintendent | Ongoing | Inspection records | |
| 23. | Windrow diversions | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | An earth windrow will be installed and maintained by the Contractor along the top of any fill batter to direct runoff flowing over unconsolidated fill. Windrows will be a minimum of 300 mm high. | General Superintendent | Ongoing | Inspection records | |
| 24. | Silt fences | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | Sediment fences will be installed by the Contractor below major soil and trench spoil stockpiles, the outlets of diversion drains and points of construction zone discharge. Fences will be inspected weekly and maintained as necessary. Silt fences will be perpendicular to the direction of flow and shall be erected in a U shape, trenched in and staked. | General Superintendent | Ongoing | Inspection records | |
| 25. | Erosion control berms | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | Where vegetation has been removed, construct erosion control berms across the easement at regular intervals (Table 1). Their frequency will be determined at each site by considering rainfall frequency and intensity, catchment area, degree of slope, soil type and ground cover. Generally, higher rainfall, larger catchments and steeper slopes will require more frequent berms, a result of increased runoff volume and velocity. | General Superintendent | Ongoing | Inspection records | |

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|-----|--|---|---|----------------------------|---------|------------------------------------|-------------|
| 26. | Design of erosion control berms and diversion drains | Project Requirement | Berms and diversion drains will be installed according to the guidelines in Table 2. | General Superintendent | Ongoing | Inspection records | |
| 27. | Sediment retention ponds, basins and check dams | LU, Part 3, 2ER 1.1 (b(ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(ii), c & d), pg 26 (seq pg 315) | Sediment retention ponds, basins and check dams will be used where removal of suspended silt is required prior to discharge | General Superintendent | Ongoing | Inspection records | |
| 28. | Clean out of sediment retention ponds, basins and check dams | LU1, Part 3, Sect 3, 3SW3.1, pg 122, (Seq pg 135) LU1, Part 3, Sect 3, 3SW6.1, pg 124, (Seq pg 137) | Sediment retention ponds, basins and check dams shall be cleaned out when the accumulated sediment has reduced the basin's capacity by more than 30% as indicated by depth pegs. Removed sediment will be returned to upslope areas to counter erosion loss from those areas. | General Superintendent | Ongoing | Inspection and maintenance records | |
| 29. | Discharges | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | Any surface water flows, discharge from drainage pipes, or natural seepage will be prevented from flowing down the easement by the construction of surface drainage channels or contour banks. | General Superintendent | Ongoing | Inspection records | |
| 30. | Discharge monitoring | LU, Part 3, 2ER 1.1 (e), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (e), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (e), pg 26 (seq pg 315) | Monitoring will include daily visual inspections. If a sediment basin appears likely to overflow within the next 24 hours, turbidity measurements will be made. If turbidity indicates a suspended solids concentration greater than 40 mg/L, flocculation will be used unless downstream filtration systems (eg. filter socks) are in place. | Site Environmental Officer | Ongoing | Inspection records | |

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| 31. | Control of dirty construction water | LU2, Part 3, SW5.1, pg 19, (Seq pg 233) LU1, Part 3, Sect 3, 3SW11.1, pg 125, (Seq pg 138) | Construction water contaminated by sediment shall be controlled using filters and temporary drains that are graded to fall to sedimentation basins for storage and treatment prior to discharge to receiving waters. Discharge concentrations must not exceed 50 mg/L TSS, 15 mg/L BOD, 0.5 mg/L TPH, 5 mg/L O&G. Prior to discharge <i>BBA-FRM-1000-1400-0001 internal permit to discharge from pond</i> must be signed by the Site Environmental Officer and a copy given to pump operator. | General Superintendent | Ongoing | Inspection records | |
| 32. | Use dirty water for construction purposes | Project Requirement | To reduce the chance of dirty water flowing off site, water collected in sedimentation basins will be used as much as possible for dust suppression and other construction needs. | General Superintendent | Ongoing | Inspection records | |
| 33. | Batter treatment prior to topsoiling | LU, Part 3, 2ER 1.1 (b(i & iv), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 315) | To provide a bond for topsoil and to reduce the chance of topsoil slippage, cut batters that are to be topsoiled are to be left in a rough condition prior to placement of topsoil such that topsoil will be keyed to the batter. | General Superintendent | Ongoing | Inspection records | |
| 34. | Drain capacity protection | Project Requirement | Breaks in topsoil and excavated trench material stockpiles will be installed to minimise the risk of blocking diversion drainage lines. | General Superintendent | Ongoing | Inspection records | |
| 35. | Vegetation protection of drains | LU, Part 3, 2ER 1.1 (b(i & ii), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & ii), c & d), pg 26 (seq pg 315) | Vegetation cover shall be maintained or established in drains as soon as practicable. | General Superintendent | Ongoing | Inspection records | |
| 36. | Limit the area of exposed soil | Vic EPA Publication 480. | Limit the area of disturbed land - progressively clear the site in accordance with construction needs and rehabilitate as soon as possible. | General Superintendent | Ongoing | Inspection records | |

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|-----|---|--|--|----------------------------|---------|------------------------------------|-------------|
| 37. | Culverts scour protection | LU, Part 3, 2ER 1.1 (b(ii & vi), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(ii & vi), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(ii & vi), c & d), pg 26 (seq pg 315) | All culverts constructed under access tracks will be formed at a grade of not more than 1% and will have scour protection at the outlet to dissipate the erosive force of any discharge. | General Superintendent | Ongoing | Inspection records | |
| 38. | Properly constructed haul roads | Vic EPA Publication 480. | Haul roads shall be free draining and graded to divert surface water to sediment basins. | General Superintendent | Ongoing | Inspection records | |
| 39. | Inspect and maintain sedimentation basins and drainage controls | LU1, Part 3, Sect 3, 3SW3.1, pg 122, (Seq pg 135) LU1, Part 3, Sect 3, 3SW6.1, pg 124, (Seq pg 137) LU, Part 3, 2ER 1.1 (e), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (e), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (e), pg 26 (seq pg 315) | All drains, sedimentation basins and other water and drainage management facilities shall be regularly inspected and maintained as required. | General Superintendent | Ongoing | Inspection records | |
| 40. | Review adequacy of controls | LU, Part 3, 2ER 1.1 (e), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (e), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (e), pg 26 (seq pg 315) | The adequacy of all drains, sedimentation basins and other water and drainage management facilities shall be regularly inspected and reviewed for adequacy having regard for changing circumstances. | Site Environmental Officer | Ongoing | Inspection records | |
| 41. | Only clean water can be pumped off site | Vic EPA Publication 480 LU1, Part 3, Sect 3, 3SW11.1, pg 125, (Seq pg 138) | Sedimentation basins shall be monitored and pumped-out or flocculated, as required. Note: Only water meeting the quality requirements shall be discharged into existing waterways. | General Superintendent | Ongoing | Inspection and maintenance records | |

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| 42. | Sand stabilisation | LU, Part 3, 2ER 1.1 (b(i & iv), c & d), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (b(i & iv), c & d), pg 26 (seq pg 315) | Areas of pure sand or light sandy loams are generally highly erodible and thus more susceptible to sheet, rill and wind erosion. Care must be taken to manage these soil types on sloping ground (e.g. old dune faces) and the guidelines in Table 3 will be followed. | General Superintendent | Ongoing | Inspection records | |
| 43. | Complete permanent drains early | Vic EPA Publication 480. | Complete permanent drains as early as possible to provide stable flow paths for concentrated runoff. | General Superintendent | Ongoing | Inspection records | |
| 44. | Backfilling | Project Requirement | Undertake compaction testing during backfilling to achieve 90-110% and maintain records of tests | General Superintendent | Ongoing | Inspection records | |
| 45. | Complete rehabilitation early | Project Requirement | Minimise the time between stripping, construction and rehabilitation, and revegetate as soon as seasonally practical. | General Superintendent | Ongoing | Inspection records | |
| INCIDENTS | | | | | | | |

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|-----|------------------------------|-----------------------------------|---|-----------------------|---------|---------------------------|-------------|
| 46. | Potential environmental harm | CEMP incident response procedures | <p>Class 1: <i>An actual adverse effect on the health or safety of human beings that is of a high impact or on a wide scale; an actual adverse effect on the environment that is of a high impact or on a wide scale; an actual loss or property damage of an amount, or amounts in aggregate, exceeding ten times the threshold amount (\$5,000); an environmental nuisance of a high impact or on a wide scale; an actual adverse effect on the health or safety of human beings that is not negligible; an actual adverse effect on the environment that is not negligible</i> - cease relevant activities across all sites until the problem is fully understood and rectified; follow incident response procedures</p> <p>Class 2: <i>The emission of a pollutant that unreasonably interferes with, or is likely to unreasonably interfere with, a person's enjoyment of the environment; any emission specified in an environment protection policy to be an environmental nuisance; an actual loss or property damage of an amount, or amounts in aggregate, exceeding the threshold amount (\$5,000)</i> - cease relevant activities at the site of occurrence until the problem is rectified; follow incident response procedures</p> | Environmental Manager | Ongoing | Incident response records | |

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| 47. | Potential permit breach | CEMP incident response procedures | <p><i>Class A: A permit condition has been breached and either the environmental consequences are significant or the breach is due to a wilful or negligent failure to attempt to satisfy the condition – cease relevant activities across all sites until the problem is fully understood and rectified; follow incident response procedures</i></p> <p><i>Class B: A permit condition has been technically breached but the intent of the condition has been or will be achieved and environmental consequences of the breach are not significant – cease relevant activities at the site of occurrence until the problem rectified; follow incident response procedures</i></p> <p><i>Class C: Compliance with the permit has been raised as an issue but the intent and requirements established by the permit condition have been met – examine the significance and potential for corrective action; follow incident response procedures</i></p> | Environmental Manager | Ongoing | Incident response records | |
| EVALUATING PERFORMANCE | | | | | | | |
| 48. | Monitoring | CEMP 16 | Conduct construction monitoring as per BBA-PLN-1000-1400-001H Construction Monitoring Plan | Environmental Manager | Ongoing | Reports | |
| 49. | Inspections | CEMP 16 LU, Part 3, 2ER 1.1 (e), pg 66 (seq pg 79) LU3, Part 3, ER 1.1 (e), pg 26 (seq pg 264) LU4, Part 3, ER 1.1 (e), pg 26 (seq pg 315) | Inspect the condition of protection and control measures and arrange maintenance, as required and particularly after heavy rain. | Site Environmental Officer | Daily | Weekly Checklist | |

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| 50. | Photographic record | Project Requirement | Maintain a photographic record of activities throughout the construction. The photographic record must record regular inspection of structures, contour banks and drains and be date-stamped. | Site Environmental Officer | Monthly | Inspection Records | |
| 51. | Reporting | CEMP 17 | Report on the implementation of this ENP in the environmental section of the monthly Project Report. | Environmental Manager | Ongoing | Monthly Report | |
| 52. | Assess monitoring results | CEMP 19 | Evaluate and assess monitoring results against specified targets. | Environmental Manager | Ongoing | Reports | |
| 53. | Corrective action | CEMP 19 | Take corrective action, where required. | Project Manager | As required | Action taken | |

Table 1. Soil erosion potential and slope

| Slope | Soil erosion Potential | |
|-----------|---|--|
| | Low – Moderate Consolidated clays, silty clays, clay loams | High – Very High Unconsolidated sands, gravels, sandy silts/loams |
| 0° - 3° | NIL | 40 m |
| 3° - 15° | 100 m | 30 m |
| 15° – 20° | 70 m | 20 m |
| 20° - 25° | 30 m | 15 m |
| > 25° | 20 m | 10 m |

Note. The above table is indicative and should be used as a guide. It is unlikely that berms will be required in cleared land where the landowner is preparing to re-seed. However, this will be dependent on slope and soil type and if the area is situated on agricultural land or within native vegetation. Flat areas (< 5 degrees) in areas of sandy soils are also unlikely to require berms due to the typical high infiltration rates within this soil type. The final spacing of berms will also be subject to direction from BBA inspectors and landowner requirements.

Table 2. Design guidelines for erosion control berms and diversion drains

| | |
|------------------|---|
| Direction | Drainage should be to the down slope side of the easement to prevent water from flowing over disturbed surfaces of the easement. |
| Gradient maximum | Care should be taken to ensure that a gentle slope is produced to slowly channel any runoff and minimise the risk of erosion. Gradient of the diversion drain should not exceed 2 degrees |
| Depth | Diversion drains should have a depth of between 200 – 400 mm |
| Trafficability | All structures should be trafficable |
| Steep slopes | Should consist of a bank and drain in steep slope sections |
| Outlet | Should outlet past any topsoil stockpile |
| Extent | Should extend beyond the work area to drain into stable vegetated areas or if this is not possible energy dissipation measures (eg. rip rap) should be installed. |

Table 3. Design guidelines for sand stabilisation

| | |
|----------------------|---|
| Drainage controls | Immediate installation of on-site drainage controls (berms and sediment traps) |
| Stockpile protection | Protecting stockpiles with upslope diversion mounds and protect downslope with sediment fencing |
| Surface cover | Rapid rehabilitation and establishment of surface cover, including the re-spreading of organic surface layers, brushing, mulching, and using geotextile covers such as 'Jute Soil Saver' |
| Vegetation cover | Establish a vegetation cover as soon as practical in conjunction with re-seeding and fertilising programs to accelerate the process. Rye corn at 40 kg/ha can be used as a temporary stabiliser |
| Wetting | Wetting of exposed sand in summer dry periods will prevent wind erosion and dust generation |

Definitions

Erosion control berms/diversion drains - are shallow excavations typically 40-50 cm deep with the excavated material often placed as a mound on the downslope side placed across disturbed areas at an angle of no more than 2 degrees

Geotextiles – are available in a wide range of styles for different applications. They include temporary erosion control mats, organic blankets, weed control blankets and mats, spray on material, geosynthetic blankets, reinforced blankets and sediment filters.

Sediment Traps – comprise a range of structures designed to slow or hold sediment laden waters so that suspended particles become deposited and clear water is released.

Silt fences – are lengths of synthetic geotextile fastened to wooden/metal stakes often in a 'U-shape' and tied into the ground by excavating and burying a lower flap of material to prevent under-scouring and to collect sediment



Revision Status

| Revision | Date | Revision Description | Prepared | Reviewed | Approved |
|----------|-----------------|---|----------|----------|----------|
| A0 | 27 April 2007 | Draft for BBA review | IW | | |
| A1 | 9 May 2007 | Draft for DTAE review | IW | | |
| B0 | 22 October 2007 | Revised for submission to DTAE following auditor's comments | IW | JD | JC |
| B3 | 7 January 2008 | Revised following DTAE comments | IW | JD | JC |
| B4 | 18 January 2008 | Revised following DPIW and DTAE comments | YE | JD | CF |