



ACT
Government

EROSION & SEDIMENT CONTROL 00C

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INFRASTRUCTURE
TECHNICAL
SPECIFICATION
00 - PRELIMINARIES

Transport Canberra and
City Services

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1 CONTROL OF EROSION AND SEDIMENTATION

1.1 General

1.1.1 Responsibilities

1.1.1.1 General

Requirement: Provide the works and implement measures to control erosion and sedimentation, as documented and in accordance with the approved ESCP.

1.1.1.2 Design

Requirements: Design the control measures for erosion and sedimentation to comply with statutory requirements. Preclude any potential hazard to persons or property.

Conform to the *Environment Protection Guidelines for Construction and Land Development in the ACT*.

1.1.2 Cross references

1.1.2.1 Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act

1.1.2.2 ACT Legislation

Environment Protection Act

Lakes Act

Water Resources Act

Waste Minimisation Act

Work Health and Safety Act

1.1.2.3 ACT Government Strategic Documents

ACT Weed Strategy

1.1.2.4 Specifications

General: The following Specifications are related to this Specification:

MITS 00 Preliminaries

MITS 01 Traffic Management

MITS 02 Earthworks

MITS 16 WSUD features

1.1.2.5 TCCS Reference documents

General: The following TCCS reference documents are related to this Specification:

Reference Document 4 Protection of public landscape assets

Reference Document 6 Design Acceptance submissions

Reference Document 10 Landscape consolidation

1.1.3 Referenced documents

1.1.3.1 Other publications

Proprietary products: To *TCCS Products previously considered for use list*

Institute of Public Works Engineering

IPWEA Local Government Salinity Management: a resource guide for the public works professional.

1.1.3.2 EPA reference documents

ACT EPA Environment Protection Guidelines for Construction and Land Development in the ACT

1.1.4 Interpretation

1.1.4.1 Abbreviations

General: For the purposes of this work section the following abbreviations apply:

CEMP: Construction Environmental Management Plan

EPA: ACT Environment Protection Authority, ACT Government, and its successors

EPBC Act: Environment Protection and Biodiversity Conservation Act 1999

ESCP: Erosion and Sediment Control Plan.

LMPP: Landscape Management and Protection Plan

NTU: The units of turbidity from a calibrated nephelometer are called Nephelometric Turbidity Units.

TCCS: Territory and Municipal Services, ACT Government, and its successors

VENM: Virgin Excavated Natural Material

WWL: Waterway Works License

1.1.4.2 Definitions

General: For the purpose of this Specification, the definitions of terms used to define the components of the road reserve are in conformance with *AS 1348, Glossary of Austroads Terms* and *AGRD03*, the definitions given below also apply:

Authorised Person: The Authorised Person as defined by the contract.

Crossfall drainage: Drainage which occurs when the surface of a track has sufficient cross slope to cause water to flow across and off the surface, rather than along it. Stormwater drainage for unsealed tracks can be classified as follows:

Crown: Where water sheds from both sides.

Infall: Where water flows into the hillside

Outfall: Where fall is away from the hillside.

Erosion: The wearing away of land by the action of rainfall, running water, wind, moving ice or gravitational creep. Soil detachment (erosion) occurs when the erosive forces exceed the soil's resistance, causing the soil particles to move.

Environment Protection Officer: EPA appointed person authorised to determine specific environmental matters under the *Environment Protection Act and Water Resources Act*.

Environmental Authorisation: A license for land development or construction activities on sites greater than 0.3Ha provided by the EPA under the *Environment Protection Act*. The endorsement addresses erosion and sediment control, noise pollution, air pollution and spoil management issues.

Environmental Protection Agreement: A 3 year agreement between the EPA and contractors undertaking land development or construction activities on sites greater than 0.3 Ha provided by the EPA under the *Environment Protection Act*. The endorsement addresses erosion and sediment control, noise pollution, air pollution and spoil management issues.

Landscape Management and Protection Plan (LMPP): Is a drawing with detailed notes that describe assets on Road Reserves, street verges, public open space and unleased territory land adjacent to development.

Open drains: All drains other than pipe and box culverts and include catch drains, channels (gutters) and kerbs and channels (gutters).

Sedimentation: Sedimentation is the result of erosion, and consists of small detached soil particles. Sedimentation occurs when the transportation of detached soil particles ceases or slows and the sediment falls out of suspension.

Topsoil: The surface soil reasonably free from subsoil, refuse, clay lumps, stones and timber fragments and capable of growing and supporting vegetation.

Waterway: A waterway includes both the bed and banks of the following features:

- > A river, creek, stream or other natural channel, in which water flows,
- > The stormwater system, and
- > A lake, pond, lagoon or marsh in which water collects.

Waterway Works License: An approval granted by the EPA related to working in or on a defined Waterway, as determined by the *Water Resources Act*.

1.1.5 Hold points

General: Give written notice to the Authorised person so that the documented inspection and submissions may be made to the **Hold point table**.

Table OC-1 Hold point table

Item	Clause title	Requirement	Notice for inspection	Release by
Pre-construction planning				
OC.1	Erosion and sediment control plan - General	Provide copy of EPA endorsed ESCP to Authorised Person.	1 working days before site disturbance on each stage	Authorised Person
OC.2	Erosion and sediment control plan - General	Provide copy of Waterway Works Licence after issued by EPA	1 working days prior to undertaking any works within the waterway	Authorised Person
OC.3	Erosion and sediment control plan - General	Provide copy of EPA endorsed amended ESCP to Authorised Person.	1 working days before implementation of amendments on site	Authorised Person

1.2 Pre-construction planning

1.2.1 Erosion and sediment control plan

1.2.1.1 General

Requirement: The Contractor shall prepare and submit an ESCP to the EPA in accordance with the requirements of the *EPA Environment Protection Guidelines for Construction and Land Development in the ACT* and the Contractor's Environment Protection Agreement or Environmental Authorisation.

Submission: Provide the EPA endorsed ESCP to the Authorised Person. This is a **HOLD POINT**

Sites 0.3Ha or larger: The Contractor requires an Environmental Protection Agreement or an Environmental Authorisation with the EPA for any land development or construction activities on a site more than 0.3 hectare. This must be obtained prior to commencement of any work.

Sites smaller than 0.3Ha: Works must be undertaken in accordance with the requirements of *EPA Environment Protection Guidelines for Construction and Land Development in the ACT*.

Waterway Works Licence (WWL): Where required by the scope of the ESCP, the Contractor is to obtain a WWL from the EPA for any works in a Defined Waterway provide a copy to the Authorised Person.

This is a **HOLD POINT**.

1.2.1.2 Responsibilities

Concept plans: The Concept ESCP should be endorsed by the EPA and provided within tender documentation. The Concept ESCP is not required to show all ESCP measures required by the Environment Protection Guidelines for Construction and Land Development in the ACT. A Concept ESCP must include:

- > Existing contours.
- > Existing waterways.
- > Identify if a Waterways Works license is required.
- > Approximate pond size based on the requirements of the *EPA Environment Protection Guidelines for Construction and Land Development in the ACT*.
- > Proposed pond and discharge location.
- > Any site facilities proposed that are external to the site.

The Contractor is responsible for the submission of the ESCP to the EPA. Where the Contract documents include a Concept ESCP, the Contractor may choose to adopt those concept arrangements as the basis for applying for approval, or alternatively the Contractor may propose its own measures as the basis for approval.

Responsibility: Unless specified elsewhere within the Contract, or directed otherwise by the Authorised Person, then the sediment and erosion control measures will be provided, operated and managed, maintained or replaced as necessary by the Contractor for the period of the contract, from contract commencement until practical completion, as defined in the Contract and as required to fulfil the requirements of the EPA approved ESCP and the requirements of the Contractor's Agreement/ Authorisation or License with the EPA.

Adherence: Adhere to the approved ESCP. Submit a revised ESCP to the EPA for approval and provide a copy of the amended approved ESCP to the Authorised Person prior to implementing the changes on site.

This is a **HOLD POINT**.

1.3 Execution

1.3.1 Site establishment

1.3.1.1 Survey

Requirement: Confirm site surface and benchmarks. Conform to *MITS 00 Preliminaries*.

1.3.2 Provision for traffic

1.3.2.1 General

Requirement: Conform to *MITS 01 Traffic Management*.

1.3.3 Erosion and sedimentation control measures

1.3.3.1 Control Measures

Requirement: To the ESCP, the Drawings and the CEMP (if applicable). Provide temporary erosion and sedimentation control measures where the natural surface is disturbed by construction, including roads, depot, temporary car parks and stockpile sites.

Objectives: Adopt appropriate control measures as outlined in the *EPA Environment Protection Guidelines for Construction and Land Development in the ACT* to achieve the following objectives:

- > Erosion: Minimise the quantity of soil lost during construction due to land clearing and earthworks. Limit areas or erodible material exposed at any time to those areas being actively worked.
- > Soil and water management: Minimise the generation of contaminated stormwater. Install permanent drainage structures before the removal of topsoil and before the commencement of earthworks.
- > Sediment controls: Minimise the impact of contaminated water on receiving waters.
- > De-watering work sites: Ensure that de-watering operations do not result in turbid water entering natural waterways.
- > Dust: To ensure there is no health risk, loss of amenity or pollution due to emission of dust to the environment.
- > Stockpiles and batters: Manage soil stockpiles to ensure dust and sediment in runoff is minimised.
- > Salinity prevention: In known salt affected areas, seek advice from EPA to ensure that the proposed ESCP conforms to the current salinity prevention
- > Waterways: Minimise stress on aquatic communities when working in a waterway in accordance with the Waterway Works License.
- > Existing flow paths: Provide for the passage of uncontaminated water through the site without mixing with contaminated runoff from the site. Construct diversion and catch drains to direct uncontaminated runoff from outside the site, clear of the site. Construct and line catch drains before the adjacent ground is disturbed and the excavation is commenced.
- > Vehicles: Limit unnecessary movement of vehicles and equipment within the site where possible. Provide stabilised entrances and parking areas for construction workers and site visitors.
- > Embankments: Minimise sediment loss during construction by means such as temporary or reverse superelevation during fill placement, construction of berms along the edge of the formation leading to temporary batter flumes and provision of short term sediment traps.
- > Protection: Clearly mark, fence off or otherwise protect any areas not approved for clearing or disturbance.

- > Maintenance: Inspect and restore drainage and sedimentation control measures Temporary erosion and sedimentation control on a daily basis. Provide and maintain slopes, crowns and drains on all excavations and embankments to ensure satisfactory drainage at all times. Do not allow water to pond on the works unless such ponding is part of an approved ESCP.
- > Reinstatement: Progressively revegetate the site, in accordance with *MITS 09 Landscape*

1.3.3.2 Existing Waterways

Dams and diversions: Do not dam up or divert existing watercourses (either temporarily or permanently) without EPA approval.

1.3.3.3 Stockpile sites

Location: To the ESCP.

Protection: Protect all stockpiles from erosion and contamination of the surrounding area by use of the measures approved in the ESCP.

1.3.3.4 Access and exit areas

Decontamination: Include shake-down or other methods approved for the removal of spoil materials from construction plant or vehicles.

1.3.3.5 Site drainage

Temporary drains: Control runoff from areas exposed during the work by construction of temporary contour drains and temporary diversion drains. These take the form of a channel constructed across a slope with a ridge on its lower side and may require progressive implementation and frequent alteration as the work progresses.

Contour drains: Where required by the ESCP, provide contour drains across the natural surface at approximately the same elevation. Immediately after a construction site is cleared, intercept and divert runoff from the site to nearby stable areas at non erosive velocities. Construct as shown on the Drawings and as follows:

- > Formed with a grade of not less than 1% or greater than 1.5%. Where drains are required to be greater than 1.5% due to existing topography, provide appropriate surface stabilisation.
- > Spaced at intervals of not less than 20m or greater than 50m.
- > Diversion drains: Provide diversion drains across haul roads and access tracks when such roads and access tracks are identified as constituting an erosion hazard due to their steepness, soil erodibility or potential for concentrating runoff flow, constructed as follows:
 - Formed to intercept and divert runoff from the road or track to stable outlets.
 - Spacing of diversion drains not greater than 50m or that required to maintain runoff at non erosive velocities.

Temporary sediment traps: Provide devices during construction to remove sediment from runoff flowing from areas of 0.3 ha or more before the runoff enters stormwater drainage systems, natural water courses or adjacent land.

Trash barriers: Provide and maintain trash barriers to prevent debris from entering natural watercourses.

Batter protection: Take all necessary action to protect batters from erosion during the contract. Minimise scour of newly-formed fill batters during and after embankment construction by diverting runoff from the formation away from the batter until vegetation is established.

1.3.3.6 Sediment control ponds

Requirement: Where the EPA approved control measures include sediment control ponds, and notwithstanding the requirements arising elsewhere in the Contract documents, ponds shall be managed in accordance with *ACT EPA Environment Protection Guidelines for Construction and Land Development in the ACT* and the Environmental Protection Agreement, Environmental Authorisation or license with the EPA.

1.3.4 Earthworks

1.3.4.1 Permanent erosion and sedimentation control basins

Planned levels: Construct earthworks for permanent erosion and sedimentation control basins to the documented levels and dimensions shown on the Drawings or such levels and dimensions as determined by the Superintendent.

Site preparation: Clear the entire storage and embankment foundation area of permanent erosion and sedimentation control basins in accordance with *MITIS O2B Bulk earthworks*. Strip topsoil and any unsuitable material under embankments to conform to *MITIS O2B Bulk Earthworks*.

1.3.4.2 Embankments and sediment removal

Embankments: To *MITIS O2B Bulk Earthworks*.

1.3.5 Protection of the works

1.3.5.1 General

General: When rain is likely or when work is not proposed to continue in a working area on the following day, precautions shall be taken to minimise ingress of any excess water into earthworks material. Ripped material remaining in cuttings and material placed on embankments shall be sealed off by adequate compaction to provide a smooth tight surface.

Responsibility: Should in situ or stockpiled material become over wet as a result of the Contractor not providing adequate protection of earthworks, the Contractor shall be responsible for replacing and/or drying out the material and for any consequent delays to the operations.

Road work: Grade earthworks and particularly subgrades to drain at all stages without ponding. Where run-off must cross the subgrade, minimise the likelihood of subgrade softening.

Work sequence: In areas where earthworks, including open drains, have been completed and no further treatment is specified other than topsoiling and grassing or hydro seeding, then the topsoiling and seeding shall be carried out as specified at the earliest practicable date.

Temporary stabilisation: Areas of exposed completed earthworks shall, if directed by the Authorised Person, be stabilised using temporary grassing, within 28 days of formation.

1.3.5.2 Maintenance

Maintenance and inspection: To the ESCP, the *EPA Environment Protection Guidelines for Construction and Land Development in the ACT* and the Contractor's Environmental Protection Agreement or Environmental Authorisation.

Access: Provide and maintain access from within the road reserve, or from other acceptable locations, for clearing out sedimentation control works.

1.3.6 Reinstatement

1.3.6.1 General

Specification: To *MITS 02B Bulk Earthworks*.

Reinstatement: Fill temporary drains and remove structures when no longer required. Place and compact fill as specified. Reinstatement surfaces, including areas formerly occupied by stockpiles, as follows:

- > Within the area of the permanent works: Finish as specified.
- > Areas outside the permanent works: Areas which were developed in any way shall be reinstated to their condition at commencement of the Contract.
- > Undeveloped areas: Areas outside the permanent works shall be reinstated as specified for "Dryland Grassing".

Timing: remove all temporary erosion and sedimentation control works when revegetation is established on formerly exposed areas before the end of the contract. Remove from the site, or otherwise dispose, all materials and components used for the temporary erosion and sedimentation control works.

Spoil: Silt excavated shall be stockpiled on site with appropriate pollution protection to dry out and works carried out in accordance with the Environment Protection Agreement or Authorisation. Once dried, the silt shall be removed and disposed of offsite by the Contractor.

Removal of material: Dispose of material off-site to the requirements of the relevant Authorities.

2 MEASUREMENT AND PAYMENT

2.1 Measurement

2.1.1.1 General

Payments made to the Bill of Quantities: To *MITS 00 Preliminaries*, this Specification, the Drawings and **Pay Items**.

2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Allow for all work, materials, testing and quality assurance requirements in each Pay Item.
- > Clearing and grubbing is measured and paid in accordance with *MITS 02A Clearing and grubbing*.
- > Landscaping works are measured and paid in accordance with *MITS 09 Landscape*.
- > Topsoil stripping and removal of unsuitable material are measured and paid in accordance with *MITS 02B Bulk Earthworks*.
- > Permanent ponds and water quality control measures to *MITS 16 WSUD features*.

2.2 Pay items

Table OC-2 Pay items table

Item No	Pay items	Unit of Measurement	Schedule of rates scope
OC.1	Erosion and sediment control	Lump Sum	<p>All activities associated with erosion & sediment control measures including designing, obtaining approval, establishment, maintenance, spoil and removal of protection measures upon completion.</p> <p>All fees and charges associated with any approval process shall be included in this item.</p> <p>A separate pay item shall be included in the Contract for each stage.</p> <p>OC.1.1 Establishment</p> <p>OC.1.2 Maintenance for the duration of the Contract</p> <p>OC.1.3 Disestablishment</p>
OC.2	Waterways license	Lump Sum	All activities, including all fees and charges, associated with obtaining a Waterways Works license.
OC.3	Temporary ponds	Lump Sum	<p>All activities associated with the construction of temporary ponds, where the in situ cut material for temporary ponds has not included within Bulk Earthworks Cut to MITS 02B Bulk earthworks.</p> <p>A separate pay item shall be included for each pond as shown in the concept ESCP.</p>



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