



Drainage Erosion and Sediment Control Plan: Pipeline Works and Construction Footprint

Prepared for

Northern Midlands Irrigation Scheme

This is a sub plan of the Construction Environmental Management Plan

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REVISION REGISTER

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1 EMP Scope and Purpose

1.1 Scope

This document is to be read in conjunction with Tasmanian Irrigation's (TI) Construction Environment Management Plan Northern Midlands Irrigation Scheme EPBC Number:2022/09295 (TIs CEMP). The Drainage Erosion and Sediment Control Plan (ESCP) addresses the environmental aspects and impacts of the Northern Midlands Irrigation Scheme. The ESCP applies to the scope of work described in the Project Integrated Construction Management Plan (ICMP) and complies with the TI *Environmental Protection Guideline - EPG 2 Erosion, Sedimentation and Surface Run-off* and the commitments made in the Northern Midlands Irrigation Scheme Preliminary Documentation (EPBC Act Ref: 2022/09295), report for Tasmanian Irrigation Pty Ltd by North Barker Ecosystem Services.

The ESCP contains measures to prevent erosion, sedimentation, and surface run-off within or from the project area.

2 Project Environmental Aspects and Impacts

Rivers and creeks within the NMIS are generally classified as cobble and gravel-based rivers. They tend to have some locations of bedrock base resulting in shallow river profiles and rocky rapids. The main risk to this watercourse type is coarse sediment and silt entering the watercourse. The result of these incursions would be the smothering of essential bed vegetation, damage to aquatic habitats, causing the conversion of gravel creeks into clay-based creeks and damage to riffle systems.

Table 1: TI Environmental Protection Guideline – EPG 2 Erosion, Sedimentation and Surface Run-off

Soil erosion	Impacts of soil erosion and sediment runoff	Risk to the Project – Low, Medium, High	Primary Control Measure
Raindrop	The release of fine sediments and turbid water into waterways can:	High	Erosion control
Sheet erosion		High	Erosion control
Rill erosion		High	Drainage control
Gully erosion	- adversely affect the health and biodiversity of aquatic life. - Adversely affect fish numbers and fish breeding. - Increase the concentration of nutrients and metals within permanent waters. - Reduce light penetration into pools. - Increase the frequency, cost and damage of de-silting operations. - Increase rehabilitation costs.	Low	Permanent stormwater management
Tunnel erosion		High	Erosion Control Soil management
Mass movement		Low	Vegetation and land management
Watercourse erosion		Low	Permanent stormwater management
Coastal erosion		N/A	Land use Management
Wind erosion	Dust generation on construction sites can cause significant problems to neighbouring properties	Medium	Erosion control

3 Objectives and Targets

The goal of the ESCP is to prevent and mitigate harm to protected matters by minimising the potential for erosion within the construction corridor and the avoidance of sedimentation in waterways, adjoining properties, dams and drains. Note that sediment and other environmental controls regarding major water crossings are included in the project Construction Water Quality Management (CWQMP) Water Crossing Management Plans.

Environmental objectives are assigned based on project environmental aspects. Environmental targets assist in providing verifiable evidence the environmental objectives have been achieved.

The environmental objectives and targets for this project are:

Table 2: Environmental Objective and Targets for Drainage, Erosion and Sediment Control

Environmental Aspect	Objective	Target
Surface Water	Minimise construction impacts on aquatic ecosystems	Prevent erosion and sedimentation of waterways. Occurrences of increase in turbidity due to construction activities of less than 10 NTU.
Groundwater	Protect groundwater resources	Spills contained, cleaned up immediately and reported.
Contaminated Soils	Contain and manage identified contamination	Contamination reported immediately, classified and disposed of as per regulatory requirements.
Acid Sulphate Soils	Prevent environmental harm from ASS or PASS	Report occurrences of ASS and PASS and treat as per expert recommendations

4 Environmental Management Measures

Erosion and sediment controls will be established as part of the staging of project earthworks.

The environmental management practices are to be in accordance with the APGA Code of Environmental Practice (2017), relevant approvals and permits and Australian Standards, including *Erosion and Sediment Control – A Field Guide for Construction Site Managers*, and *Erosion & Sediment Control Field Guide*.

Priority should be given to prevent erosion over sediment control wherever practicable.

Erosion control aims to prevent soil being displaced by erosive forces (e.g. rainfall) causing soil erosion and transporting sediment into streams and water bodies.

Erosion control strategies include:

- Minimise vegetation clearing wherever practicable.
- Stage vegetation clearing to minimise the time ground is disturbed and exposed to erosive forces.
- Install perimeter drainage to direct clean water away from disturbed ground.
- Install rock check drains, coir logs or similar structures in areas of concentrated flow to reduce water velocity.
- Place rock spalls/beaching at culvert outlets and in other areas of concentrated flow to protect the soil surface.
- Protect at risk areas with anything that will provide groundcover e.g. temporary mulch, rock, gravel, geotextile, shotcrete.
- Rehabilitate and re-establish all disturbed areas with an appropriate groundcover progressively once work is completed.
- Monitor rehabilitation works and treat failed areas as required.

Drainage controls prevent or reduce soil erosion caused by the movement of clean and dirty water through the site. Sediment controls aim to capture displaced soil and treat suspended soil particles to minimise the risk of environmental harm to waterways from elevated stream turbidity. Drainage and sediment controls are generally less effective than erosion controls and include:

- Temporary sediment traps at culvert outlets
- Drainage diverting dirty water from disturbed ground to a sediment control pond.
- Simple or engineered sediment ponds designed to capture runoff from a nominated rainfall event as required by the project specification.
- Flocculation to remove suspended clay particles from ponds prior to discharge.
- Silt fences (not recommended for areas of concentrated flow)
- Sediment barriers for instream works or in marine/estuarine projects.

Work activities within the construction corridor will typically be structured as per the below images to prevent clean water entering the site and control drainage of run-off. Refer [HB Construction Water Quality Management Plan](#) for typical application of erosion and sediment control structures. The specific location of control structures will be progressively submitted to TI for approval prior to implementation.

Erosion and sediment controls will be monitored daily as part of general site supervisory requirements and inspected weekly during formal, documented HSE inspections.

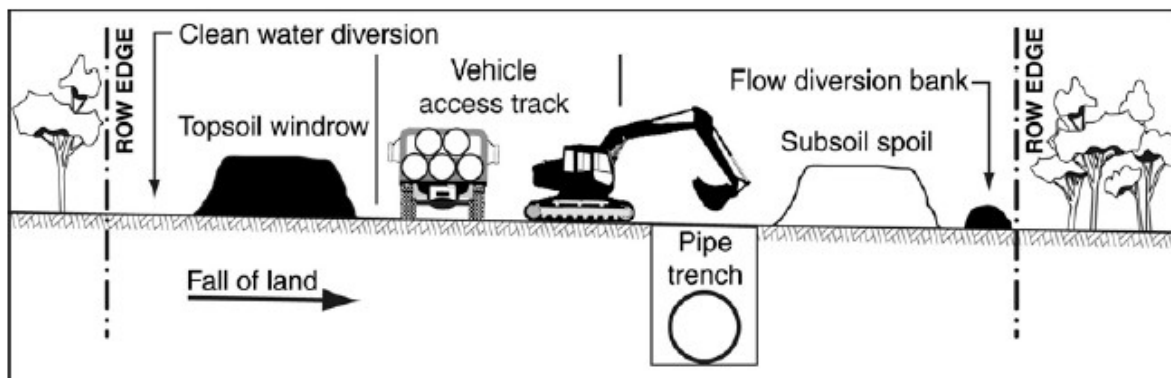


Figure 1: 'Figure P2 – Typical RoW with trench down-slope of the vehicle access track' from Best Practice Erosion and Sediment Control Appendix P: Land-based Pipeline Construction

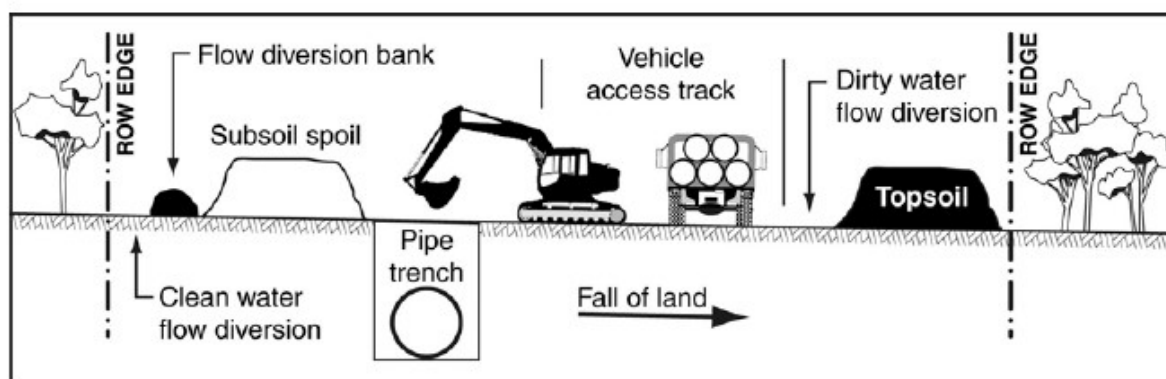


Figure 2: 'Figure P3 - Typical RoW with trench up-slope of the vehicle access track' from Best Practice Erosion and Sediment Control Appendix P: Land-based Pipeline Construction

Drainage Erosion and Sediment Control Plan



Northern Midlands Irrigation Scheme

PLA-CST-003-C21150

Table 3: Erosion and sediment control measures

Works activity	Value/issue	Impact	Risk	Management Control Actions
Operation and movement of vehicles, equipment and machinery	Site access	Vehicle, machinery and weather damage to existing roads and tracks	Low	i) Minimise number of site access points ii) Site accesses will be restricted to a corridor of no more than 6 m
	Vehicle use	Excessive soil disturbance contributing to erosion and sedimentation	Low	i) Vehicles to stay on designated roads and tracks wherever practicable.
Clearing	Removal of vegetation	Excessive soil disturbance contributing to erosion and sedimentation	Medium	i) Clearing activities maintained within the construction corridor. ii) Minimise clearing to extent required for work activities. iii) Stage vegetation clearing to minimise the time ground is disturbed and exposed to erosive forces.
Topsoil removal	Erosion of disturbed areas	Sediment in waterways	Medium	i) Topsoil removal maintained within the construction corridor. ii) Minimise topsoil removal to extent required for work activities. Minimise period of time between completing topsoil removal and subsequent works activities. Keep topsoil and backfill separated. This allows retention of the soil seed bank, which will provide the greatest opportunity for natural regeneration.
Trenching	Acid Sulphate Soils	With disturbance ASS can cause decreased water and soil pH, increased heavy metal mobilisation, decreased dissolved oxygen levels, damaged	Low	A desktop assessment (Listmap) has found that the occurrence of ASS within the works area is unlikely. It is HB responsibility to confirm the presence/absence of ASS to their own satisfaction prior to undertaking works that cause soil disturbance. If ASS soils are suspected, the testing and

Works activity	Value/issue	Impact	Risk	Management Control Actions
		ecosystems and infrastructure.		management control actions outlined in TI's Acid Sulphate Soils Management Protocol (February 2022) should be undertaken.
	Threatened fauna & flora	Erosion of riparian zones & sediment in waterways may impact on the habitat & existing values of flora and fauna.	Medium	i) Minimise trenching of watercourse crossings. Where practicable, complete trenched watercourse crossings in no-flow conditions. ii) Erosion and sediment controls to be implemented as per approved crossing methodology. iii) Additional measures may be implemented to prevent erosion of the stream bed during natural regeneration. iv) Water quality monitoring as described in the CWQMP is undertaken in association with all works activities that cause soil disturbance.
	Stockpiling and storage of soil	Loss of stockpiled material Sediment in waterways	Medium	i) Ensure stockpiled soil is not transferred across waterways or placed on the opposite side of a drain, waterway or trench by any method that provides potential for the soil to contaminate the drain or waterway. ii) If required, and where appropriate, protect soil stockpiles with sediment fences and cutoff drains.
	Erosion of disturbed areas	Sediment in waterways	Medium	i) Monitor weather conditions and consider timing of works i.e. minimise opening new excavations prior to forecast wet or windy weather. ii) Ensure drainage and sediment controls are implemented during forecast wet weather.

Works activity	Value/issue	Impact	Risk	Management Control Actions
				iii) Minimise area of open excavation iv) Erect temporary fencing to exclude stock from the works areas. v) Undertake all works causing soil disturbance in compliance with APIA Guidelines (2013) and the associated <i>Erosion Sediment Control - A field guide for construction</i>. vi) Water quality monitoring as described in the CWQMP is undertaken in association with all works activities that cause soil disturbance near water.
Rehabilitation	Erosion of disturbed areas	Sediment in waterways	Medium	i) Rehabilitate areas progressively, as soon as practicably possible following construction activities. ii) Monitor rehabilitated areas for effective remediation monthly and/or following rain events. See HB <u>Rehabilitation and Reinstatement Plan</u> for additional information.

5 Environmental Monitoring & Reporting

5.1 Environmental Monitoring and Inspections

Environmental monitoring will be conducted as follows:

- Inspect erosion and sediment control devices weekly (during dry weather) or daily (during wet weather) to ensure correct functioning and placement and that available capacity is adequate.
- Waterways will be monitored in accordance with the *NMIS Turbidity Management Framework* (Refer HB Construction Water Quality Management Plan). Water quality monitoring results are to be provided to TI in the same week that monitoring occurs.
- The Contractor must ensure that the erosion and sediment controls are complied with as outlined within the CEMP, and that the compliance is documented. Compliance will be outlined in:
 - Daily Site Diary
- Weekly environmental checklists (submitted to TI at the end of the month with a monthly report)

5.2 Records

The project is subject to internal and external audits as determined by the Hazell Bros Audit Schedule. Written records must be kept showing:

- The date and reason for each inspection (daily/weekly inspection, concerns identified/raised etc).
- Details and the condition of the erosion and sediment control works at each inspection.
- Details of any erosion or sedimentation sighted during each inspection.
- The date and time of any notification of any failure of the erosion and sediment control works.

Copies of the records are to be provided to TI at the completion of the project.

5.3 Project Audits

The project is subject to internal and external audits as determined by the Hazell Bros Audit Schedule. The aim is to conduct an internal management system audit on all projects within three months of project commencement and six monthly thereafter. Projects may also be subject to external surveillance and recertification audits depending on project size, funding and duration. Client audits will be scheduled as per the requirements of section 2.2.2 in the technical specification.

6 Environmental Incidents

An environmental incident will include, but will not necessarily be limited to the following events for reporting and investigation purposes:

- Hazardous material spills to ground or water.

- A notifiable incident that results in actual or potential environmental nuisance or harm.

6.1 Emergency Response

In the event of any potentially significant failure of erosion and sediment control devices, HB environmental representative will:

- Immediately notify the Superintendent and the TI Project Manager
- Reinstate the erosion and sediment controls as soon as practicable.
- Determine whether the failure constitutes a threat to any adjoining waterway.
 - If it is not considered a threat to waterways, procedures are to be reviewed and the Superintendent to be advised of, and approve, any alterations or installation of additional more effective erosion control devices.
- If the failure constitutes a threat to any adjoining waterway, drainage or dam, the Superintendent will be notified as soon as practicable and within 24 hours.
 - Additional and more effective erosion control devices to be installed as soon as practicable.
 - Any instructions provided by the Superintendent must be implemented as soon as practicable.