

**Attachment 2 Environmental Risk Action Plan (ERAP) for Water Quality,
Erosion and Sedimentation**

ERAP Water Quality, Erosion and Sedimentation

Environmental Risk Action Plans	
Water Quality, Erosion, and Sedimentation	
Objective	<ul style="list-style-type: none"> Compliance with contractual and legislative requirements to ensure effective management of erosion and sedimentation are planned and implemented. To establish Erosion and Sediment Control (ESC) measures prior to and during excavations and associated construction activities so that negligible environmental, infrastructure and social impact results. To implement procedures and drainage designs prior to, and during site activities, so that water quality, stormwater discharge and site drainage is maintained at standards that preserve the natural hydrology and water quality in the Project area.
Targets	<ul style="list-style-type: none"> Maintain or improve surface and groundwater quality, and prevent deterioration due to erosion and/or sedimentation
Legislation and Guidelines, and other requirements	<ul style="list-style-type: none"> <i>Environmental Protection Act 1986.</i> <i>Waterways Conservation Act 1976.</i> <i>Soil and Land Conservation Act 1945.</i> <i>Country Areas Water Supply Act 1947.</i> <i>Right in Water and Irrigation Act 1914.</i> <i>Waters and Rivers Commission Act 1995.</i> Environmental Protection Regulations 1987 (WA). Environmental Protection (Unauthorised Discharges) Regulations 2004. Australian and New Zealand Environment Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australian and New Zealand (ARMCANZ) (2000) Australian Water Quality Guidelines (AWQG) Fresh water aquatic ecosystem. Australian Standard AS5667.11:1998 Water Quality-Sampling - Guidance on Sampling of Groundwater's. Department of Water (DOW, 2009) Field Sampling Guidelines: A guideline for Field Sampling for Surface Water Quality Monitoring Programs. Department of Water, Environment and Regulation (DWER, 2015) Treatment and Management of Soil and Water in Acid sulphate Soil Landscapes. Department of Water, Environment and Regulation (DWER, 2014) Contaminated Sites Guidelines: Assessment and Management of Contaminated Sites. National Environmental Protection Council 1999 (amended 2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM), Schedule B2: Guideline on Data Collection, Sample Design and Reporting. National Health and Medical Research Council (NHMRC) and National Resource Management Ministerial Council (NRMMC) (2011) Australian Drinking Water Guidelines. Stormwater Management Manual for Western Australia: Best Management Practice. The Importance of Western Australia's Waterways. Western Australia Development Design Specification D7 – Erosion Control and Storm Water Management.
Site-specific planning, approval conditions and licence conditions	<p>[Note: To be updated as approvals are issued]</p> <ul style="list-style-type: none"> Obtain relevant licences under the <i>Rights in Water and Irrigation Act</i> (1914) or other applicable legislation Bed and Banks Permit from DWER (<i>if there is disturbance to the bed or banks of a watercourse or wetland</i>) Consent from DWER for any temporary structures that will impact on a riverbed and obtain relevant approvals under the <i>Swan and Canning Rivers Management Act 2006</i>. Comply with conditions outlined in WAPC Development Approval (DA) Decision Note 21-50710-1 and all subsidiary plans submitted in compliance with the DA conditions A Permit to Pump must be obtained to pump water from open excavations, standing water or dewatering
Controls (means and resources)	<ul style="list-style-type: none"> Erosion of slopes must be controlled in accordance with the performance requirements of clause 3.1 of the SWTC

- There are no areas where run-off from disturbed areas can leave site without sediment controls
- Sediment controls are maintained and have a minimum of 70% sediment storage capacity
- Water diversion drains are in place to prevent clean water from entering site from upstream/offsite areas
- Temporary drains are in place to divert construction run-off to sediment basins and have been designed to convey the design rainfall event. This is typically the 1 in 10 year, critical time of concentration rainfall event
- Temporary erosion controls are provided for areas disturbed by the project within waterways
- Where required, sediment basins are the required size and have stabilised emergency spillways (note: design criteria for spillways is 20-year average recurrence interval event)
- Where required, sediment basins have provision for identifying the level of accumulated sediment within the basin and water level
- Where required, sediment basins are treated using approved flocculants and discharged within 5 days of the cessation of rain
- Wheel wash/shaker grid and hardstand are installed at site exits to prevent tracking sediment onto roadways. Roadways are clear of tracked sediment
- Stormwater pits that receive site runoff and all stockpile areas have functioning sediment controls in place. Erosion control provided for long term stockpiles
- Where required, sediment basins are sized in accordance with the requirements of the Blue Book, Best Practice ESC (IECA 2008) guidelines, the environmental licence and the relevant conditions of approval
- Silt fences is to be installed around stockpiled materials if erosion and sediment movement is observed
- Soil, vegetation and mulch to be located in areas already cleared, away from surface water sources, potential sources of erosion and areas of traffic
- Soil, vegetation and mulch to be stockpiled separately
- Construction during rainfall is to be avoided where practicable.
- Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion.
- Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.
- The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.
- Erosion and sediment controls are installed including for all clearing areas, waterways / drainage areas
- Untreated stormwater prevented from draining directly to waterways, wetlands, or sensitive areas without erosion and sediment controls
- Obtain an Excavation Permit approved by the Statutory Approvals and Environment Manager and Construction Manager
- Existing natural drainage paths and channels along the road or the vicinity of the Project area will not be unnecessarily blocked or restricted.
- Temporary drainage systems may be installed to carry surface water away from the areas where excavation and foundation construction work is taking place or from any other area where the accumulation of water could cause delay or damage to the work.
- Maintain these drainage systems in proper working order at all times.
- Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties.
- Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts.
- Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue).
- Disturbed areas will be stabilised soon after construction activities are completed.

	<ul style="list-style-type: none"> • Prior to backfilling the completed pipe work certify that the entire system is flushed clean and tested • Culvert and drainage structures will be free of all grass, weeds, silt and debris • Compliance with the drainage requirements detailed in clause 4.7 of the SWTC. Unless otherwise approved, no temporary structures that require disturbance of the Helena River riverbed are to be installed • Adverse impacts of runoff to surrounding vegetation, watercourses, and properties are to be minimised until surfaces are stabilised by vegetation • Water flows in all natural or artificial watercourses is to be maintained during construction • Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts • Obtain a dewatering licence from the Department of Water and Environmental Regulation (DWER) and comply with all approval conditions • Establish, implement, and maintain a Dewatering Management Plan to the satisfaction of the DWER (<i>if applicable</i>) • Avoid impact or damage to surrounding buildings, vegetation, existing water bores or any other feature caused by changes to groundwater flow or water table height, both during construction and during the Defects Correction Period of Separable Portion 2. The Contractor must rectify any damage caused by dewatering or changes to the underground flow • Discharge from any dewatering system during construction must comply with the requirements of all relevant Authorities and must not cause damage or nuisance to adjacent properties.
Responsibilities	<ul style="list-style-type: none"> • All sub-contractors are required to ensure appropriate erosion and sediment control devices are in place (<i>if required</i>) and managed • Construction Supervisor/Construction Manager • Statutory Approvals and Environment Manager • HSE Manager
Timeframe	<ul style="list-style-type: none"> • Duration of construction/site works • Defects correction period
Monitoring and reporting	<ul style="list-style-type: none"> • Monthly environmental performance reporting • Environmental approvals reporting against the Conditions Register and monitoring requirements in accordance with the ISCA Surface Water Sampling and Analysis Quality Plan (GEHBI-GCA-PLN-A000-EN-00024)