Tropicana Gold Project
Construction Environmental Management Strategy

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1 OVERVIEW

The Construction Environmental Management Strategy (CEMS - this document) provides the framework for the management of environmental issues throughout the construction and commissioning phases of the Tropicana Gold Project (the Project). The CEMS forms part of the Project's Integrated Management System (IMS) that ensures the effective management of all health, safety, environment, community and construction issues associated with the Project. AngloGold Ashanti Australia (AngloGold) on behalf of the Tropicana Joint Venture (the Joint Venture) has developed this IMS to effectively manage its activities associated with the Project which is located approximately 330 km east-north-east of Kalgoorlie. The Joint Venture is a partnership between AngloGold (AngloGold; 70% stakeholder and manager) and Independence Group NL (30% stakeholder).

The IMS (including the CEMS) establishes the environmental framework and standards that must be achieved for all activities associated with the Project. It includes the development and management of policies, management strategies, procedures and reporting requirements as shown in Figure 1.

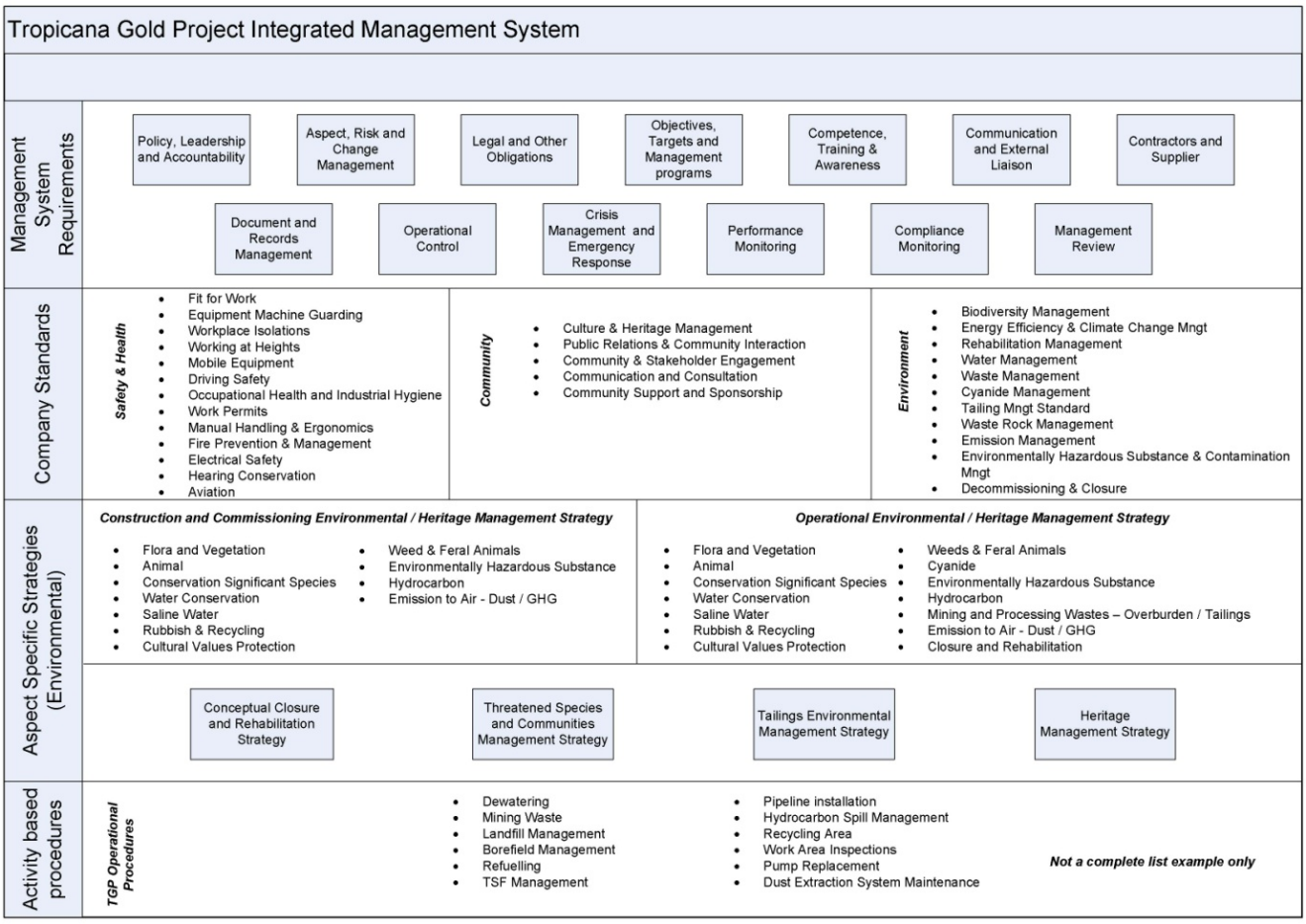

Figure 1 Tropicana Gold Project Integrated Management System

2 PURPOSE OF THIS STRATEGY

The purpose of the CEMS is to:

- Provide an overall framework for environmental management for the construction phase of the Project;
- Identify key environmental aspects to be addressed and the supporting procedures;
- Clearly articulate the management objectives and strategies;
- Articulate responsibilities
- Identify the monitoring and reporting requirements; and
- Document the performance indicators and targets.

3 SCOPE

This CEMS is applicable to all activities undertaken by the Project team (employees and contractors) within the Project management area. The Project management area is defined as:

- The Operational Area – including pits, waste landforms, processing plant, power facility, village, offices and associated facilities as well as the aerodrome;
- The Infrastructure Corridor/s - for access roads, power and communication; and
- Water Supply Area – consisting of a borefield, power facility and pipeline corridor.

This document is focused on establishing the construction environmental management strategies for the Project, details on all other aspects of the Project IMS can be located in the Project Integrated Management System Manual.

This CEMS will guide environmental management during the construction and commissioning phases of the Project. Upon completion of construction and commissioning at the Project, the Operational Environmental Management System will become the active document.

4 BACKGROUND

The Project IMS framework of process and procedures has been developed to ensure that the Project Team can identify and manage all their activities to achieve the desired outcome, which in the case of this CEMS case is best practise environmental management. The Project IMS has been designed around the requirement of the international environmental management and safety standards ISO14001 and OHSAS18001 respectively. ISO14001 and OHSAS18001 are based on the continuous improvement model of Plan, Do, Check, Act as illustrated in Figure 2.

Utilising a Plan – Do – Check – Act methodology the Project IMS contains the following elements:

- Planning
    - o Aspects/impact register
    - o Register of legal and other obligation

- Clearly defined objectives and targets

- Doing
  - Providing the resources required to manage an IMS
  - Establishing roles, responsibilities and authorities
  - Providing training and awareness
  - Providing communication procedures
  - Providing emergency procedures
  - Preparing and controlling key documents
- Checking
  - Monitoring and measuring against objectives and targets
  - Dealing with non-conformities
  - Undertaking audits to an audit schedule
- Review
  - Periodically review of the performance of each part of the IMS recognizing areas for improvement and feeding back into planning.

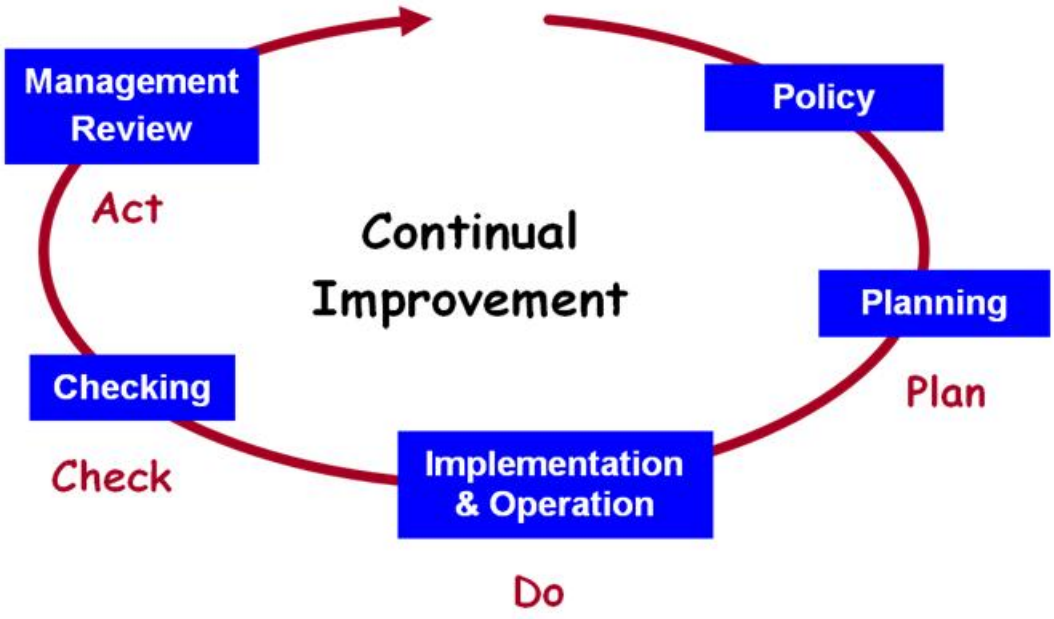

Figure 2 IMS Cycle

5 RESPONSIBILITIES

Position	Responsibilities
Project Manager	• Overall responsibility for developing the IMS. • Responsible for ensuring the requirement of the CEMS are incorporated into all aspects of the Project.
Line Managers	• Ensures CEMS requirements are incorporated into applicable procedures or tasks. • Ensures implementation and regular review of relevant environmental management measures. • Liaises with environmental staff as required.
Senior Environmental Specialist	• Assist Line Management to incorporate CEMS requirements into designs, procedures and tasks. • Ensures CEMS is prepared, implemented uniformly, revised and maintained. • Assesses the suitability and effectiveness of the CEMS. • Ensures that contractors fulfil their contractual obligations relevant to Environmental Management. • Undertakes internal site Environmental Audits. • Liaises with stakeholders. • Ensures implementation and regular review of environmental management measures. • Contributes to the management of progressive environmental rehabilitation and completion planning.

6 ENVIRONMENTAL MANAGEMENT STRATEGIES

This chapter outlines the potential areas of impact during construction and commissioning of the Project and the management strategies to be implemented. The potential areas of impact are activity based; Table 1 identifies the activities relevant to each Project aspect.

Table 1 Areas of Impact Addressed in this Construction Environmental Management Strategy

		Project Aspect														
		Access Rd	Water Supply Area / Pipeline	Pit	Tailings Storage Facility / Pipeline	Communication Corridor	Internal Roads	Quarry / Borrow Pits	Aerodrome	WML/ ROM/ Stockpiles	Processing Plant	Ancillary Buildings	Power Supply	Landfill	Water Dames	Village
Activity	Detailed Design	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Clearing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Transport	✓					✓									
	Rehabilitation		✓*		✓*	✓										
	Onsite Invasive Flora and Fauna	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Earthworks, drill and blast	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Internal traffic						✓									
	Dust	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Groundwater		✓												✓	✓
	Wastes/ Disposal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Hydrocarbon/ Controlled Water	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sewerage								✓		✓	✓	✓			
	Fire	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* Pipeline only

The following tables outline the management strategies developed to manage environmental issues throughout the construction and commissioning of the Project. The tables are activity based and document the designed outcome, management strategies, performance indicators, monitoring requirements and reporting obligations.

DETAILED DESIGN / ENGINEERING / PROCUREMENT		
Management Objective	• To maintain the abundance, diversity, broad scale geographic distribution and productivity of flora species, fauna species and ecological communities through the avoidance or management of adverse impacts from construction and commissioning activities. • To maintain the integrity, ecological functions and environmental values of soil and landform.	
	Actions	**Timing**
Management Strategies	• Ensure that all activities and facilities are designed such that they are contained within the disturbance footprint approved under the *Environmental Protection Act 1986*	Detailed design
	• Design the Operational Area surface water containment system to manage up to a 1:100ARI 72hr event to prevent the release of potentially contaminated water leaving the cleared area	During construction.
	• Communicate environmental and heritage constraints and approved area boundary to the Project team	Detailed design
	• Ensure that all infrastructure is designed to prevent disruption to known populations of Declared Rare Flora in the Project area.	Detailed design
	• Ensure that all infrastructure is designed to prevent disruption to conservation significant flora and fauna and associated habitats	Detailed design
	• Ensure that all infrastructure is designed to prevent disruption to surface water flow and vegetation	Detailed design
	• Include provision for minimising land disturbance within all earthmoving contracts	Procurement
	• Ensure that all contracts for goods and/or services include appropriate clauses to ensure accountability for environmental management by all contractors	Procurement
	• Ensure site design includes stockpile areas for growth medium and cleared vegetation for use later in rehabilitation.	Detailed design
	Performance Indicator	**Target**
Performance Indicators	• Compliance with legislative requirements (e.g. EP Act)	• All facilities and infrastructure within approved area
	Actions	**Timing**
Monitoring	• Infrastructure / facility location tracked via Geographic Information System (GIS) and remote sensing	GIS – ongoing Remote sensing – 6 monthly
Reporting	• Monthly Project team report	Monthly
	• Reporting to government agencies or relevant authorities as required	As required

CLEARING		
Management Objective	• To maintain the abundance, diversity, broad scale geographic distribution and productivity of flora species, ecological communities and fauna habitat through the avoidance or management of adverse impacts from construction and commissioning activities. • To maintain the integrity, ecological functions and environmental values of soil and landform.	
	Actions	**Timing**
Management Strategies	• Develop and implement a ground disturbance and vegetation clearing procedure with an internal approval process for all clearing and ground disturbance	Prior to clearing.
	• Potential habitat trees will be marked prior to clearing with a view of retaining the trees	Prior to clearing.
	• Location of conservation significant species and habitats will to be incorporated into site/project map and communicated to personnel working nearby to ensure protection	Prior to clearing.
	• Known locations of DRF within 50 m of the disturbance area will be visibly demarcated.	Prior to clearing.
	• During clearing, where large tree (> 300 mm) are removed they will be salvage and stockpile for use during rehabilitation	During construction.
	• Limit clearing to only the area necessary and where possible use proposed clearing area to establish laydown areas rather than clearing areas just for construction laydown areas	Throughout project.
	• Clearing areas are to be clearly marked, to ensure no accidental clearing. No clearing or disturbance during construction outside of pre-defined clearing areas	Throughout project.
	• Clearing controls to be communicated through the environmental awareness program for contractor and site staff	Throughout project.
	• All management requirements include within external approvals and the ground disturbing procedures shall be compiled with. Any breaches will constitute an environmental incident	Throughout project.
	• Any vegetation removed is placed either directly on disturbed areas to reduce erosion or stockpiled for use in rehabilitation	Throughout project.
	• Cleared vegetation and growth medium will be stockpiled away from drainage lines	Throughout project.
	• No deliberate burning of vegetation spoil to occur (natural fires may occur)	Throughout project.
	• Manage dust to prevent environmental and safety issues while ensuring that soil resources and adjacent vegetation is not adversely affected	Throughout project.
	• Flora and fauna conservation will be included in the environmental awareness program	Throughout project.

CLEARING			
	• The time that unconsolidated soils and stockpiles are exposed will be minimised to prevent run-off and sedimentation		As required.
	Performance Indicator	**Target**	
Performance Indicators	• Adherence to delineated clearing areas	• Zero unauthorized clearing & clearing no greater than the approved	
	• Adherence to ground disturbance and vegetation clearing procedure	• 100% compliance with the project clearing procedure	
	• Determine conservation significant species locations prior to disturbance	• No unapproved impact on known conservation significant species	
	• Available soil/s and vegetation directly returned or stockpiled for later use	• Quantity of soil stockpiled meets the identified rehabilitation requirements	
	• No discharge of water outside the approved clearing envelope except where velocity and quality are suitable	• No change in vegetation condition or composition attributable to the Joint Venture activities	
	Actions		**Frequency**
Monitoring	• Inspections of clearing boundaries to ensure clearing is within approved areas during construction		Opportunistically
	• Undertake cleared area reconciliation		Annually
	• Inspections will be undertaken ensure that soil/growth medium is being removed and stockpiled in appropriate locations		Opportunistically
	• Monitor vegetation condition and composition adjacent to the Project's cleared area to assess changes. Monitoring method will be developed in consultation with the Department of Environment and Conservation and Department of Mines and Petroleum.		Annually
	• Soil/growth medium volumes will be monitored to ensure the volume necessary to meet rehabilitation requirements		Annually
	Actions		**Frequency**
Reporting	• Non-compliance with clearing procedure will be reported internally		Within 24 hours of observation
	• Reporting to government agencies or relevant authorities as required		As required
	• Vegetation monitoring information will be reported to the relevant authorities via the site annual environmental report		Annually

REHABILITATION			
Management objective	• To ensure that environmental rehabilitation achieves an acceptable standard compatible with the intended land use and consistent with approvals and other requirements. • Progressively rehabilitate disturbed area as they become available.		
	Actions		**Timing**
Management Strategies	• Ensure that soil/growth medium and cleared vegetation are retained for later use in rehabilitation		Prior to Construction
	• Soil/growth medium will be applied immediately to areas being rehabilitated. Where this is not possible, soil/sand shall be stockpiled away from work areas for later use.		As required
	• When possible, soil/growth medium will not be stripped or stockpiled in wet conditions.		As required.
	• Soil/growth medium recovered for rehabilitation will not be exposed to hypersaline water		Throughout construction
	• Compacted area will be deep-ripped and re-contoured to restore normal drainage patterns		Throughout construction
	• Conduct rehabilitation progressively where appropriate		Throughout construction
	• Where necessary, stockpiled soil/growth medium will be re-vegetation with local native species to reduce wind and water erosion		As required
	• Protection of newly rehabilitate areas and rehabilitation resources from fire		Throughout construction
	• An invasive flora hygiene procedure for light vehicles and mobile heavy equipment will be developed		Throughout construction
	Performance Indicator	**Targets**	
Performance Indicators	• Soil/growth medium stockpiles appropriately constructed, placed and maintained	• No stockpile requires re-handling prior to use and negligible loss of soil/growth medium through erosion	
	• Successful rehabilitation at closure	• Rehabilitation meet completion criteria and bonds relinquished	
	Actions		**Frequency**
Monitoring	• Soil volumes will be monitored to ensure the volume available meet rehabilitation requirements		Annually
	• Monitor vegetation establishment in rehabilitated areas. Monitoring technique to be developed in consultation with relevant statutory authorities		Annually
	• Monitor rehabilitation area to assess ripping effectiveness		As required following rain
	Actions		**Frequency**
Reporting	• Rehabilitation activities will be reported internally.		Annually
	• Reporting to government agencies or relevant authorities as required.		As required

ONSITE INVASIVE FLORA AND FAUNA CONTROL		
Management Objectives	• To prevent the introduction and/or spread of invasive flora and fauna within the Project area. • To maintain the abundance, diversity, geographic distribution and productivity of native flora and fauna species and ecosystems.	
	Actions	**Timing**
Management Strategies	• Develop a documented procedure/s for the management of invasive flora and fauna	Prior to Construction
	• Any new infestations of invasive flora within the Project area will be reported	As required.
	• Undertake invasive flora hygiene practices i.e. all machinery, vehicles and plant to be free of soil and vegetative matter upon arrival on site. An inspection of machinery/ vehicle/ plant will be conducted upon arrival on site to confirm	Throughout project.
	• Minimising soil disturbance during clearing.	Throughout project.
	• Gravel and borrow material will be sourced locally, therefore free of *Phytophthora cinnamomi* (Dieback)	Prior to Construction
	• Implement an invasive fauna recording system	Prior to Construction
	• All waste materials (particularly putrescible waste) shall be appropriately disposed of to prevent habituation by fauna	Throughout construction
	• Areas infested with invasive flora to be clearly demarcated and soil/sand or borrow material collection will be avoid if possible. Where not possible potentially infested material will only be used in already infested areas	As required.
	• No employee or contractor will be allow to bring domestic pets to the Project	Throughout construction
	• Soil/sand stockpiles contaminated with invasive flora (or their propagules) are to be quarantined from uncontaminated/clean soil/sand stockpiles and identified accordingly. Contaminated stockpiles shall be clearly signed in the field and identified on a site plan	As required.
	• Landfill facilities will be fenced	Prior to commissioning.
	• Maintenance of taps and other water infrastructure to prevent leaks	Throughout project.
	• The feeding of non-native fauna will be banned	Throughout construction
	• Availability of surface water will be minimised to avoid the pooling of storm water (and associated attraction of fauna)	Prior to construction and throughout the project.
	• Invasive flora and fauna eradication programs aimed at reduce impacts or reduce numbers of individuals will be developed and implemented (in consultation with appropriate Statutory Authority).	Prior to construction and throughout the project.

ONSITE INVASIVE FLORA AND FAUNA CONTROL			
	• Recreational activities by employee and contractor out of the approved Project area will not be permitted		Throughout construction
	• No unauthorised off-track driving		Throughout construction
	• Invasive flora and fauna will be included in the environmental awareness program. Staff inductions to include information on the identification of invasive flora and fauna, reporting procedures and procedures to prevent the spread of invasives		Throughout construction
	• No invasive flora will be allowed onsite by either employee or contractor or used within gardens at the village or office areas		Throughout construction
	• If landscaping material is required onsite it will be certified as disease and invasive free		Throughout construction
	Performance Indicator	**Targets**	
Performance Indicators	• Invasive flora and fauna management procedure/s	• Develop and implement prior to commencing ground disturbing activities	
	• Introduction or spread of invasive flora	• No new invasive flora introduced and no new population of invasive flora will be created within the Project area	
	• Introduction of invasive fauna	• No new invasive fauna will be introduced	
	• Spread of invasive fauna	• No increase in invasive fauna species known within the Project	
	• Vehicle restriction	• No unapproved vehicle traffic outside the Project area of disturbance	
	Actions		**Frequency**
Monitoring	• Monitor the distribution, abundance and density/cover of invasive flora populations		Annually or after rainfall events during construction
	• Review of invasive fauna sightings		Six-monthly
Reporting	• New invasive flora infestations to be reported and mapped		Within 24 hr of observation.
	• Incidents relating to failure of invasive flora management processes will be reported		Within 24 hr of observation.
	• Invasive fauna sightings will be recorded		Within 24 hr of observation.

EARTHWORKS, DRILL AND BLAST		
Management Objectives	• To ensure that fauna are not caused undue stress or death due to entrapment in excavated areas • To ensure that construction activities do not adversely affect Indigenous or European cultural sites and that any site disturbance complies with relevant legislation • To maintain the quality and quantity of surface water so that existing and potential environmental values, including ecosystem maintenance, are protected • To maintain the integrity, ecological functions and environmental values of drainage systems • To minimise the impacts of noise on sensitive receptors during construction activities • To minimise the impacts of vibration on sensitive receptors during construction activities • To minimise the impacts of dust on sensitive receptors during construction activities • To minimise the impacts of traffic on sensitive receptors during construction activities • To minimise the impacts of laydown on sensitive receptors during construction activities	
	Actions	**Timing**
Management Strategies	• Fauna management procedure will be developed and fauna management will be incorporated in to all applicable activity procedures	Prior to Construction
	• Excavation, drill holes and trenches shall be covered, barricaded or otherwise capped to prevent fauna entrapment, where trenches need to be left open they will be inspected regularly and trapped fauna will be removed .	During construction.
	• Trenches/ excavation established during construction will remain open for the minimum time practicable and no more than 7 days. Trenches/ excavation will be checked for fauna prior to backfill and trapped animals will be removed	During construction.
	• Trapped fauna within open trenches should be cleared and recorded by a suitably trained fauna-clearing person no later than three hours after sunrise. The clearing and recording shall be repeated before sunset.	During construction.
	• Open trench lengths shall not exceed a length capable of being inspected and cleared by the fauna-clearing person.	During construction
	• Relocated fauna will be relocated a minimum distance of 50 m from the trench.	As required during construction
	• Fauna refuges and/or egress ramps should be placed in the trench at intervals not exceeding 50 m.	Daily during construction
	• Procedures for capturing, relocating, handling, housing and caring for significant fauna will be established	Prior to Construction

EARTHWORKS, DRILL AND BLAST		
	• All deceased fauna will be removed from the trench to prevent further fauna entering (e.g. to scavenge)	As required.
	• A report on fauna management should be produced including; details of all fauna inspections; the number of fauna cleared from trenches; fauna interactions; fauna mortalities and all actions taken.	Quarterly
	• Fauna deaths associated with Project activity will be recorded and if appropriate the specimen will be logged with the WA Museum	Immediately - as required.
	• Ensure that all known "No Go" areas are clearly demarcated and protected from damage. "No go" areas will include conservation significant habitats, heritage sites or protected flora species populations that are not to be cleared. The demarcation will be removed at the end of construction to discourage people from investigating the areas.	As required.
	• The discovery of any previously unrecorded heritage sites or artefacts will stop work and will be managed in accordance with the Heritage Management Strategy and other applicable site procedures	Immediate response.
	• The clearing corridor will be marked in sections with pegs and flagging tape	Prior to construction.
	• Dust will be managed to prevent environmental and safety issues while ensuring that soil resources and adjacent vegetation is not affected	Throughout construction
	• Undertake visual inspections of construction areas to ensure dust control measures are implemented and effective	Throughout construction
	• Reduce the risk of flooding on site through drainage design such as installing bunding and other drainage diversion measures around work areas as necessary	As required during construction
	• All surface water run-off from construction work activities to be contained within the cleared area	During construction.
	• All activities will be conducted in compliance with the *Environmental Protection (Noise) Regulation 1997* and *Mines Safety Inspections Regulations 1995*	Throughout project.
	• Ensure all equipment is appropriately fitted, maintained or substituted with noise reduction devices if necessary, to comply with the Project noise levels	Prior to mobilisation of equipment to site.
	• Manage construction activities according to weather conditions and proximity to noise sensitive areas to minimise the impacts of noise and vibration	Daily.

EARTHWORKS, DRILL AND BLAST		
	• Hydrocarbon management will be incorporated in to all applicable activity procedures where hydrocarbon spill could occur. If required a site wide Hydrocarbon Management Procedure will be developed	Prior to Construction and ongoing
	• Hydrocarbon releases will be reported and cleaned up	Within 24hr of observing.

	Performance Indicator	**Target**
Performance Indicators	• Fauna mortalities	• No mortalities of conservation significant species
	• Cultural heritage site	• No heritage sites negatively affected by the Joint Venture activities
	• Area of clearing	• Zero unauthorised clearing and clearing no greater than the approved area
	• Surface water management	• Surface water drainages and sediment collection point are regularly maintained
	• Dust	• No impact on vegetation adjacent to the Joint Venture activities directly attributable to dust
	• Contaminated Sites	• Any sites that are considered contained under the *Contaminated Sites Act 2003* are remediated to an acceptable level

	Actions	**Frequency**
Monitoring	• Inspections of trenches and other high risk areas to identify entrapped fauna	Daily or more frequently if the weather requires
	• Sites Inspections will be undertaken to ensure compliance with the *Aboriginal Heritage Act 1972*	Periodically and post construction
	• Monitor vegetation condition and composition adjacent to the Joint Venture cleared area to assess changes. Monitoring method will be developed in consultation with the relevant Statutory Authority/ s	Annually
	• Keep records relating to native fauna injury/mortality	Throughout project.
Reporting	• Statistics reported in quarterly and annual environmental reports, including fauna sightings and mortality data	Quarterly and annually.
	• Any new or suspected heritage sites will be reported immediately in accordance with the site Heritage Management System	Immediately.
	• Unauthorised interference with identified cultural sites will be reported	Immediately.

EARTHWORKS, DRILL AND BLAST		
	• All fauna removed from the trench to be recorded in a Fauna Removal Log	As required.
	• All native and invasive fauna mortalities will be recorded	Within 24 hours of identifying death.

INTERNAL TRAFFIC		
Management Objective	• To maintain normal environmental function in the presence of vehicle traffic and associated infrastructure	
	Actions	**Timing**
Management Strategies	• Develop and implement a traffic management plan	Prior to project start-up and throughout project.
	• All vehicles to stay on designated roads and tracks and to drive to defined speed limits	Prior to project start-up and throughout project.
	• Restricted road speeds in areas of conservation significant species habitats and sign posted	Throughout project.
	• Utilise existing tracks or disturbed areas for new Project roads where possible	Throughout project.
	• Restrict the private vehicle access to site and prevent petrol vehicle use onsite	Throughout project.
	• Prohibit off-road driving and movement of personnel outside of the area of disturbance, unless approved	Throughout project.
	• Road kills of native fauna shall be removed from the road and reported to Site Environmental Manager	As required. Reporting within 24 hr of incident.
	• Incorporate drains in the road designs to prevent impacts from road run-off on adjacent vegetation	As required
	• Manage dust to prevent environmental and safety issues while ensuring that soil resources and adjacent vegetation is not affected	Throughout project.
	• Off road / track driving restriction will be included in environmental awareness program	Throughout project.
	• Driver training to include information on conservation significant species issue and preferred habitats	As required

INTERNAL TRAFFIC			
	Performance Indicators	**Target**	
Performance Indicators	• Vehicle restriction	• No unauthorised off-track use • No petrol vehicle onsite	
	• Threatened fauna protection	• No threatened fauna species injured / killed by vehicles	
	• Traffic management	• Traffic management plan developed and implemented	
	• Dust management	• No impact on vegetation adjacent to the Joint Venture activities directly attributable to dust	
	• Sediment control	• No sediment release in to vegetation adjacent to roads and tracks	
	Actions		**Frequency**
Monitoring	• Monitor track establishment		Quarterly.
	• Regular inspections to ensure access roads/ paths are properly maintained and clearly marked		Monthly.
	• Monitor vegetation condition adjacent to the road to assess effectiveness of drain and dust management		Six-monthly
Reporting	• Major erosion events associated with road will be reported		Within 24 hr of observation.
	• Unapproved access tracks shall be reported and investigated by Site Environmental Manager		Within 24 hr of observation.

DUST MANAGEMENT		
Management Objective	• To ensure that the effects of dust generation on native flora and fauna are minimised. • To ensure that the effects of dust generation on the general public are minimised. • To ensure that dust has no adverse impacts outside of the Project footprint	
	Actions	**Timing**
Management Strategies	• Develop a dust management procedure and ensure that all applicable operational procedures incorporate dust management strategies	Prior to construction and throughout project.
	• Dust control strategies will be used to manage dust generation in area identified as being potentially dust generating. Frequency will be determined based on weather conditions and level of activity	As required.
	• Hypersaline water not to be used for dust suppression on soil/growth medium stockpile	Throughout project.
	• If hypersaline water is to be used for dust suppression, control systems will be established to prevent salinisation of adjacent vegetation	Throughout project.
	• Instances of excessive dust (outside allowable or safe limits) to be reported	Within 24 hr of observation.
	• Implement management strategies to limit dust generation from construction material (such as cement, aggregate and, stockpiled overburden) and equipment (such as crushing and screening equipment and mining fleet)	Throughout project.
	• Limit road speeds near dust sensitive vegetation and ensure road speeds are manage to on other road to reduce dust generation and safety issues	Throughout project.
	• Limit cleared area to only what is necessary and rehabilitated surplus areas as soon as practical to reduce dust generation	Throughout project.
	• Surface stabilisation methods such as sealing, sheeting, shielding and chemical treatments, will be employed in areas where dust emissions are likely to cause OSH issues	Throughout project.

DUST MANAGEMENT			
	Performance Indicators	**Target**	
Performance Indicators	• Dust management	• No adverse impacts of dust (on vegetation, fauna or cultural heritage) outside the Disturbance Zone. • Dust management procedure implemented • No work stoppages as a result of excessive dust	
	• Rehabilitation resource	• All stockpiles seed within 12 months of establishment	
	Actions		**Frequency**
Monitoring	• Monitor dust emission from construction in dusty area		Monthly
	• Installation of dust monitors around the site		Prior to construction
	• Monitor vegetation condition adjacent to road to assess effectiveness of drain and dust management		Six-monthly
Reporting	• Any non-conformance with management strategies and any adverse impacts of dust will be reported. Reportable incidents in relation to dust management include: o Complaint from the public in relation to dust; and o Adverse impact from dust on vegetation, fauna or Cultural heritage outside of the Disturbance Zone		Within 24 hr of observation.

GROUNDWATER, WATER STORAGE AND SURFACE WATER MANAGEMENT		
Management Objective	• To maintain the quality and quantity of groundwater so that environmental values, including ecosystem maintenance, are protected. • To ensure that emissions to groundwater do not adversely affect environmental values. • To avoid groundwater contamination. • To maintain surface water flow and quality so that environmental values are protected.	
	Actions	**Timing**
Management Strategies	• Incorporate surface water management issue into applicable site operating procedures	Prior to construction
	• Stormwater diversion drains will be installed within the Operational Area	Prior to commissioning.
	• Diversion system installed across the Operational Area will separate clean and potentially dirty stormwater	Prior to commissioning.
	• Retention of site generated stormwater onsite through the creation of a gravity drainage network and storages	Prior to commissioning.
	• Implement water recycling practice during construction	During construction
	• Store all surplus water generated during construction dewatering activities for future use onsite	During construction
	• Abide by the conditions of the groundwater extraction licenses for each bore (or bore array)	Throughout project
	• Fit flow meters to all production bores, install leakage detection system, one-way valves and automatic cut-off system	Prior to commissioning
	• Groundwater contamination shall be prevented by appropriate secondary containment and management of waste, environmentally hazardous materials, and the management of surface water	Throughout project
	• Design the Operational Area surface water containment system to manage up to a 1:100ARI 72hr event to prevent the release of potentially contaminated water leaving the cleared area	Throughout project
	• Protect water storage facilities from pollution (i.e. Turkey's nests) to minimise the need to extract unnecessary water	Prior to commissioning and throughout project
	• Water storage facilities will be appropriately lined/ bunded to prevent leakage and impact on the adjacent environment (such as substrate/surface water/groundwater)	Prior to commissioning
	• Waste water from the site Reverse Osmosis plant will be directed to the processing plant for use	Throughout project

GROUNDWATER, WATER STORAGE AND SURFACE WATER MANAGEMENT		
	• Restrict animal access to water storage facilities (clean and recycled water)	Prior to commissioning.
	• Include water storage facilities in weekly inspections for evidence of leakage, algal blooms and holes in fencing	Weekly.
	• Ensure that environmentally hazardous chemical storage vessels area either self-bunding or located in a low permeability bund with 110% capacity maintained at all times	Throughout project.
	• Ensure all pipelines are either buried or bunded and are properly maintained	Throughout project.
	• Sustainable water use and water contamination will be included in the sites environmental awareness program	Throughout project.
	• Develop procedures for the management of environmentally hazardous substances and incorporate in to applicable operational procedures	Prior to construction.
	• All non-compliance with site procedures and license conditions will be treated as an non-compliance and internally reported	Throughout project.
	• Environmentally hazardous substance spills will be incorporated into an applicable operation procedures and the emergency response plans for significant releases	Prior to construction.
	• Installation of a groundwater monitoring network	Prior to construction.

	Performance Indicators	**Target**
Performance Indicators	• Groundwater quality	• No incidence of groundwater quality outside baseline ranges
	• Sustainable abstraction	• Abstraction rates at or below predicted sustainable abstraction rates (or as approved by DoW)
	• Fauna protection	• No animal death in water storage facilities
	• Surface water discharge	• No discharge to the environment under normal operating conditions
	• Contamination / pollution	• No release of environmentally hazardous substances outside containment facilities
	• Compliance with relevant licences (e.g. DEC, DoW)	• All activities undertaken in compliance with license conditions

GROUNDWATER, WATER STORAGE AND SURFACE WATER MANAGEMENT		
	Actions	**Timing**
Monitoring	• Groundwater flow meter reading	Monthly
	• Groundwater quality adjacent to the pit, processing are, tailings storage facility and production bores	Monthly
	• Monitor vegetation condition within and adjacent to the water supply area/ s and dewatering area	Six-monthly
Reporting	• Groundwater flow meter readings	Annually
	• Non-compliance with requirements will be reported	Within 24 hr of observation.

WASTE GENERATION AND DISPOSAL		
Management Objective	• To maintain the integrity, ecological function and values of the environment and to ensure that emissions do not adversely affect health, welfare and amenity of people and land uses. • Manage wastes in accordance with the Waste Hierarchy. • All reasonable and practical measures to be taken to minimise generation of wastes and discharge into the environment. • Manage wastes such that wastes do not cause pollution	
	Actions	**Timing**
Management Strategies	• Develop and implement a waste management procedure that manages waste in accordance with the waste hierarchy: avoidance, reuse, recycling, recovery of energy, treatment, containment and disposal.	Prior to construction.
	• Establish a location for the collection of recyclable material for either onsite or off-site recycling	During construction.
	• Putrescible waste and non-recoverable material are to be disposed of at the approved landfill	Throughout project.
	• The landfill will be used as follows: o Only for putrescible and non-recoverable waste o Waste material will be removed regularly to prevent animal habituation and windblown rubbish problem o No waste oil or contaminated material will be disposed off o All windblown rubbish will be recovered	Throughout project.
	• The landfill will be managed in accordance with the *Environmental Protection (Rural landfill) Regulations 2002*	Throughout project.
	• Construction the landfill in accordance with the Works Approval for Landfills	Construction
	• Ensure waste skips and bins are managed to prevent windblown rubbish (lids, suitable located and emptied regularly)	Throughout project.
	• Littering discouraged	Throughout project.
	• Waste stations will be established around the work areas, including all bin types required for appropriate segregation of all waste types generated in the area. All bins shall be clearly labelled.	Prior to construction. Throughout the project.
	• Waste will be stored in a neat and orderly manner and clearly signed as waste materials	Throughout construction
	• Properly constructed cigarette butt containers to be provided around offices, crib rooms and workshops etc.	Throughout project.
	• Industrial waste to be recycled if practicable	Throughout project.

WASTE GENERATION AND DISPOSAL			
	• Controlled Wastes will be removed from site by an appropriately licensed operator to an approved waste disposal location		Throughout project.
	• Hydrocarbon contaminated soil will be collected and disposed of or remediated at an approved site		Throughout project.
	• Waste management will be included in the site environmental awareness program		Throughout project.
	• Implement a system to track onsite and offsite waste disposal and recycling		Prior to construction.
	• Develop an audit inspection program		Prior to construction and quarterly.
	Performance Indicators	**Target**	
Performance Indicators	• Recyclable material	• No economically recyclable material disposed of onsite	
	• Contaminated material	• No contaminated material will be disposed off in the onsite landfill	
	• Controlled Waste	• All Controlled Waste leaving site will be transported via a license operator	
	• Waste management	• All waste will be disposed off in accordance with the site waste management procedure and waste disposal hierarchy and DEC Licence	
	• Spills	• No spills outside the containment facilities	
	Actions		**Timing**
Monitoring	• Landfill and recycling facilities will be audited and inspected		Weekly and monthly respectively
	• Record volumes of recyclable material leaving site		Monthly or as required
	• Record volume of Controlled Waste leaving site		As removed
Reporting	• Non-conformances with procedures / Environmental Incidents		Quarterly and annually
	• Waste disposal statistics		Quarterly and annually

ENVIRONMENTALLY HAZARDOUS SUBSTANCES		
Management Objective	• Ensure all environmental hazardous substances are stored in a manner that meets the requirements of legislation and guidelines, reflects industry best practice, and minimises the risk to the environment. • Ensure environmental hazardous substances are transported on, and to, site in a manner that reduces the risk of environmental pollution arising from an accident or incident and in accordance with the *Dangerous Goods (Road and Rail) Regulations 1999*. • Ensure that the use and disposal of environmental hazardous substances does not cause pollution to the environment.	
	Actions	**Timing**
Management Strategies	**General** • Manage environmentally hazardous substances in accordance with relevant legislation and standards (e.g. *Dangerous Goods Safety Act 2004*; Australian Standard1940-2004)	Throughout project.
	• A system will be developed and implemented to manage the use of environmentally hazardous substances and Controlled Waste onsite. This system will include a register of substances, procedures for use, storage, transport and disposal and associated emergency response issues	Prior to construction & throughout the project.
	• A system will be developed to record unplanned release of environmentally hazardous substances onsite or during transport	Prior to construction.
	Spill Response • Spill of environmental hazardous substances (i.e. chemical or hydrocarbons) shall be contained and cleaned up using appropriate techniques such as absorbent material. All high risk spillage areas will have a readily accessible supply of absorbent material.	Throughout project.
	• Site emergency response plans will contain procedures for managing significant spills of environmentally hazardous substance during transport and onsite. The transport procedures will address management of spill in a lake / clay pan environment as well as a woodland / sand plain environment	Prior to construction.
	Storage • All environmentally hazardous substances shall be stored in accordance with statutory requirements or where no requirements are legislated in low permeability bunded area that hold 110% of volume being stored or 25% of any interconnected tanks	During construction.
	• All bunded areas will be located within a secondary containment area to prevent pollution in the event that primary containment systems are breached	During construction.
	• Consideration will be given to double skinning buried pipelines that contain environmentally hazardous substance that are located in saline or corrosive soils to reduce the risk of pipeline failure	During construction.

ENVIRONMENTALLY HAZARDOUS SUBSTANCES		
	• As a minimum, ensure that bulk storage facilities meet specifications of Australian Standard 1940 and any Dangerous Good licence requirements	During construction.
	• Ensure that any doubled skinned tanks have bollards and / or appropriate bunding in place around the tank to prevent rupture due to collision	During construction.
	• Ensure that re-fuelling bays (including double skinned tanks) contain all spills through the use of concrete aprons, suitable lining or dedicated drainage	During construction.
	• Ensure that environmentally hazardous substance storage vessels (e.g. drums & chemical cabinets) are sealed and any spillage contained when being transported around site	Throughout project.
	• Contain, and appropriately treat, contaminated or potentially contaminated stormwater that collects in storage bunds, prior to release to the environment. All treated water must meet legal requirements and discharge limits	Throughout project.
	• Ensure that all drains, valves or discharge point associated with containment facilities are secured at all time and only appropriately trained or authorised personnel are able to open and release the contents area	Throughout project.
	Chemical and Hydrocarbon Use and Disposal • Any specific environmental controls and disposal conditions identified in the material safety data sheet shall be complied with	Throughout project.
	• Dispose of hydrocarbon contaminated material from any site at a licensed facility. Where the material has been assessed as Controlled Waste, it shall be transported and disposed of by a licensed operator	Throughout project.
	• Ensure that all mobile re-fuelling vehicle use either double skinned vessel or an equivalent containment system	Throughout project.
	• Store all equipment (e.g. chainsaws, welders, small generators) that hold <10 L of hydrocarbon or chemical in a containment area when not being used	Throughout project.
	• Appropriate spill containment and clean-up equipment shall be located in close proximity to all activities where environmentally hazardous substances are being used	Throughout project.
	• Controlled Waste shall be separated from general waste and stored in an appropriately designated area and transported from site for disposal via a licensed contractor	Throughout project.
	• The storage, transport and disposal of environmentally hazardous substances and Controlled Waste will be included in the site environmental awareness program	Throughout project.
	• A tracking system will be established to maintain waste disposal receipts as verification of type and amount of Controlled Waste, waste oil and oily materials removed from site	Throughout project.

ENVIRONMENTALLY HAZARDOUS SUBSTANCES		
	Performance Indicators	**Target**
Performance Indicators	• Environmentally hazardous substance management	• Develop and implement the management system
	• Events management	• All spills, accidents and incidents are reported
	• Dangerous Goods and Controlled Waste	• All dangerous goods and Controlled Waste are transported and stored in accordance with statutory requirements
	• Emergency response	• Procedures / processes are established to manage significant events onsite or in transport
	• Storage	• All environmentally hazardous substances are stored onsite to prevent an impact to on the environment or peoples health
	Actions	**Timing**
Monitoring	• Monitoring of spills through the site incident tracking system and follow-up inspections	Monthly.
	• Confirmation that transport contractors meet licensing requirements and have appropriate spill equipment	Prior to arrival onsite.
	• Annual dangerous goods depot inspections are to be carried out to ensure structural integrity, safety and compliance with regulations and licences	Annually.
Reporting	• Report any area discovered as a Contaminated Site via the site incident reporting system	Within 24 hr of observation.
	• Report all releases of environmentally hazardous substance via the site reporting system	Immediately.
	• Reporting to government agencies or relevant authorities as required	As required.
	• Internal reporting on effectiveness of spill response	Quarterly.

FIRE			
Management Objective	• To prevent fire occurring as a result of construction activities.		
	Actions		**Timing**
Management Strategies	• An emergency response system will be established and fire fighting equipment will be available at all times		Prior to construction
	• Open fires will only be allowed in designated area and no fires will be allowed during fire ban periods. Unauthorised fire use will be a dismissible offence		Throughout project.
	• Fire breaks shall be established around the site in agreement with the Department of Environment and Conservation/ FESA		Prior to construction.
	• All flammable materials will be stored as specified by the manufacturer of the product and in accordance with the *Dangerous Goods Safety Act 2004*		Throughout project.
	• All fuels and chemicals to be stored in bunded areas, with a surrounding buffer zone, that has appropriate drainage systems in accordance with Australian Standards		Throughout project.
	• Ensure that dry vegetation material does not build up on equipment involved in vegetation clearing increasing the risk of fires		During Clearing.
	• All vehicles to remain on dedicated routes, unless an off-track driving authorisation has been obtained		Throughout project.
	• Hot works permits will be required for work that has the potential to create ignition sources. Hot works shall not occur within three metres of vegetation without approval from the Environmental Team		Throughout project.
	• Policies will be established onsite to ensure the effective management of cigarette butts and litter to reduce the risk of fire		Prior to construction.
	• All vehicles will run on diesel		Throughout project.
	Performance Indicator	**Target**	
Performance Indicators	• Fire management	• No fires as a direct result of the Project activities	
	Actions		**Timing**
Monitoring	• Test emergency response procedure to monitor the site preparedness.		Quarterly
Reporting	• All fires occurring within and around the Project footprint are to be reported via the site incident reporting system		Immediately.
	• All fires will be investigated to prevent re-occurrence		As required.

SEWAGE			
Management Objective	• To ensure that biological waste is managed to acceptable standards and criteria		
	Actions		**Timing**
Management Strategies	• Ensure sewage management facilities, septic tanks and / or leach drains are approved by the relevant authorities (Local Council, Department of Health, Department of Environment and Conservation).		Prior to installation.
	• Facilities will be managed in a manner that complies with legislative conditions, prevents pollution and preserves the amenity of the area		Throughout project.
	• Installation of warning system such as alarms or flashing lights to all demountable toilet blocks to indicate that the facility is nearing capacity		Prior to commissioning.
	Performance Indicator	**Target**	
Performance Indicators	• Compliance with design, reporting and maintenance requirements	• Zero unauthorised discharge to the environment	
	Actions		**Timing**
Monitoring	• The integrity of the system shall be inspected to ensure load capacity and system clean outs are at appropriate levels		Monthly.
Reporting	• All wastewater spills or leaks to be reported as Environmental Incidents, regardless of volume.		Within 24 hr of observation.
	• Reporting to government agencies or relevant authorities as required		As Required.

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