

Appendix 4 Draft Environmental Management Plan provisions

<p>EPA factor and objective: to protect flora and vegetation so that biological diversity and ecological integrity are maintained</p> <p>Objective: the project is managed in a manner that does not significantly impact Priority Flora and vegetation communities</p> <p>Key environmental values: Priority Flora (<i>Tephrosia andrewii</i>, <i>Polymeria distigma</i> and <i>Triodia caelestialis</i>); vegetation in excellent condition</p> <p>Key impacts and risks: loss of habitat for Priority Flora; introduction and spread of cultivation species into remnant vegetation</p>			
Management actions	Management targets	Monitoring	Reporting
<p>Avoid removal of Priority Flora as far as practicable</p> <p>Demarcate Priority Flora populations to be protected, prior to ground disturbance</p> <p>Undertake additional targeted flora survey to determine local population size of <i>Polymeria</i> sp. Broome</p> <p>Maintain spatial data set of all Priority Flora locations</p>	<p>Retain at least 30% of all local records of <i>Polymeria</i> sp. Broome, as defined by targeted survey</p> <p>Retain at least 50% of all local records of <i>Tephrosia andrewii</i></p>	<p>Audit of areas cleared/disturbed. Monthly, during clearing phase</p>	<p>Annual reporting</p>
<p>Establish buffer zones between pivots and remnant vegetation</p> <p>Undertake control of Rhodes Grass, other irrigation crops or weeds in remnant vegetation outside pivots, if management target exceeded</p>	<p>Spread of Rhodes Grass, other irrigation crops or weeds into remnant vegetation is limited to isolated occurrences of non-vigorous plants, no more than 300 m from pivots</p>	<p>Weed monitoring. Monitoring sites to be established once project layout is finalised. Annual wet/post-wet season survey.</p>	<p>Annual monitoring report</p>
<p>EPA factor and objective: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained</p> <p>Objective: the project is managed in a manner that does not significantly impact significant fauna species</p> <p>Key environmental values: Greater Bilby</p> <p>Key impacts and risks: loss or displacement of Bilby due to clearing or increase in feral predators</p>			
Management actions	Management targets	Monitoring	Reporting
<p>Pre-clearance survey for Bilby and translocation if required</p>	<p>No Bilby mortality or active burrow destruction</p>	<p>Pre-clearance survey</p>	<p>Annual monitoring report</p>
<p>Undertake feral animal control (rabbits, cats, foxes, or other species as required) if monitoring indicates an increase in abundance</p>	<p>No observed increase in feral animals (rabbits, cats, foxes or other species) in proximity to project area</p>	<p>Feral animal monitoring in vicinity of project area</p>	<p>Annual monitoring report</p>

<p>EPA factor and objective:</p> <ul style="list-style-type: none"> - To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected <p>Outcomes:</p> <ul style="list-style-type: none"> - Groundwater drawdown does not adversely affect Injudinah Swamp and its associated PECs and vegetation - Groundwater quality is maintained <p>Key environmental values: Injudinah Swamp and associated PECs and wetlands, Broome Sandstone Aquifer</p> <p>Key impacts and risks: impacts to groundwater dependent communities/vegetation/wetlands as a result of groundwater abstraction; changes to water quality due to abstraction and/or fertiliser application</p>			
Environmental criteria:	Response actions:	Monitoring ¹	Reporting
<ul style="list-style-type: none"> • Trigger criteria • Threshold criteria 	<ul style="list-style-type: none"> • Trigger level actions • Threshold contingency actions 		
<p>Trigger criterion 1</p> <p>Groundwater levels at Injudinah Swamp monitoring bores fall below baseline specified in the DWER Operating Strategy.</p>	<ul style="list-style-type: none"> • Reassess drawdown prediction • Review data against climate factors to determine cause of trigger exceedance • Commence annual vegetation monitoring and report to DWER on vegetation condition 	<ul style="list-style-type: none"> • Groundwater pressure by pressure transducer logged data. Hourly, ongoing. • Groundwater levels (depth to groundwater). Quarterly (Dec/Jan, Mar/Apr, Jun/Jul, Sep/Oct). • Vegetation monitoring of established transects (potential impact and control sites) at Injudinah Swamp. Baseline² and annual if water level triggered, end of dry season. 	<ul style="list-style-type: none"> • Annual monitoring report.
<p>Threshold criterion 1</p> <p>Groundwater levels at Injudinah Swamp monitoring bores fall below baseline specified in the DWER Operating Strategy, or evidence of tree stress</p>	<ul style="list-style-type: none"> • Conduct additional vegetation condition and stress assessment (predawn pressure test) • If vegetation is stressed and threshold criterion is considered attributable to the project either: <ul style="list-style-type: none"> - consider the need to apply to DWER for a vegetation clearing permit or - reduce, move or cease abstraction until water levels recover 	<ul style="list-style-type: none"> • Groundwater pressure by pressure transducer logged data. Hourly, ongoing. • Groundwater levels (depth to groundwater). Quarterly (Dec/Jan, Mar/Apr, Jun/Jul, Sep/Oct). • Vegetation monitoring of established transects at Injudinah Swamp to monitor for vegetation recovery. 	<ul style="list-style-type: none"> • Notification to DWER within required timeframe specified in DWER Operating Strategy • Annual monitoring report
<p>Trigger criterion 2</p> <p>TN, TP, pH and EC exceed trigger 1 values for each monitoring bore as specified in the DWER Operating</p>	<ul style="list-style-type: none"> • Repeat sampling if analysis results deemed spurious • Review data to assess seasonal fluctuations and trends • Initiate internal investigation regarding causes for 	<ul style="list-style-type: none"> • Comprehensive water quality analysis of pumped groundwater sampled from all production bores and monitoring bores specified in DOS. Annual (Sept/Oct). • pH and EC monthly for production bores; daily or 	<ul style="list-style-type: none"> • Annual monitoring report.

Strategy	<p>exceedances</p> <ul style="list-style-type: none"> • Report findings in Annual monitoring report • If required by DWER, develop water quality management plan for approval by DWER 	<p>quarterly (Dec/Jan, Mar/Apr, Jun/Jul, Sep/Oct) for monitoring bores (as specified in DOS).</p> <ul style="list-style-type: none"> • TN at monitoring bores specified in DOS. Quarterly for first year (Dec/Jan, Mar/Apr, Jun/Jul, Sep/Oct). 	
<p>Threshold criterion 2</p> <p>TN, TP, pH and EC do not exceed trigger 2 values for each monitoring bore as specified in the DWER Operating Strategy</p>	<ul style="list-style-type: none"> • Invoke management actions stipulated in water quality management plan which may include a change in <ul style="list-style-type: none"> - types of fertilisers used - fertiliser application rates - methods of fertiliser application - irrigation practices - monitoring regime (locations, frequency and parameters) 	<ul style="list-style-type: none"> • As per trigger criterion 2. 	<ul style="list-style-type: none"> • Notification to DWER within required timeframe specified in DWER Operating Strategy. • Annual monitoring report.
<p>Trigger criterion 3</p> <p>Surface water quality at Injudinah Swamp does not exceed trigger 1 values as specified in the DWER Operating Strategy.</p>	<p><i>To be developed after baseline established</i></p>	<ul style="list-style-type: none"> • Electrical conductivity and pH (logged data). Hourly, ongoing. • Field electrical conductivity and pH, TN. Quarterly for first year (Dec/Jan, Mar/Apr, Jun/Jul, Sep/Oct) • Comprehensive water quality analysis. Annual (Sep/Oct) 	<ul style="list-style-type: none"> • Annual monitoring report
<p>Threshold criterion 3</p> <p>Surface water quality at Injudinah Swamp does not exceed trigger 2 values as specified in the DWER Operating Strategy.</p>	<p><i>To be developed after baseline established</i></p>	<ul style="list-style-type: none"> • As per trigger criterion 3 	<ul style="list-style-type: none"> • Notification to DWER within required timeframe specified in DWER Operating Strategy. • Annual monitoring report

¹Monitoring bore locations are not yet finalised with DWER. ²To be established during baseline survey of Injudinah Swamp in October 2017.