

Appendix H – Flora and Fauna (Biodiversity) Management Plan Summary

Ashton Coal Operations Ltd has revised its site-wide Flora and Fauna (Biodiversity) Management Plan (FFMP), which includes the PG LW6B Extraction Area. This plan describes the measures that will be implemented by Ashton Coal Operations Ltd (ACOL) to monitor, manage and mitigate impacts to threatened species, terrestrial and aquatic ecosystems across the entire ACP and provides a site-wide approach to biodiversity management and the application of habitat management and corridors.

The revised FFMP was prepared in consultation with relevant government agencies and was approved by the Director General (DP&I) under condition 3.36 to Schedule 2 of DA 309-11-2001-i on 10 August 2012. This plan has also been approved under condition 3.12(h) to Schedule 2 of DA 309-11-2001-i as part of the approved Extraction Plan for ULD LW1 – 4.

The approved revised FFMP is included electronically as an attachment to this Extraction Plan and:

- Outlines the objectives of the management plan and sets out the performance measures and performance indicators relevant to the management of threatened species, populations and their habitats within the ACP.
- Describes the threatened species and populations known, or considered likely to occur within the ACP and includes a brief description of existing habitats.
- Details the proposed methodology for the monitoring of flora and fauna within the ACP.
- Details the principles of threatened species habitat management within the ACP.
- Outlines the proposed management and monitoring actions relevant to the management of habitat and monitoring of impacts.
- Summarises the responsibilities, reporting and auditing processes under this FFMP.

Objectives under the ACOL EMS and development consent for the ecological values of the site are to:

- Maintain existing areas of vegetation not affected by surface mining as viable habitat through the control of weeds, feral animals and management of grazing regimes to promote natural regeneration.
- Rehabilitate the study area to provide an environment that is equal to, or better than, the pre-mining environment and is available for threatened species that may inhabit the area by improving connectivity between remnants, rehabilitating mined areas and controlling feral animals.
- Minimise impacts or environmental consequences to threatened species, threatened populations, endangered ecological communities and their habitats.
- Manage and, where possible, enhance habitat quality of the aquatic and riparian ecosystem within Bowmans Creek (existing and diversion).

The FFMP provides detailed performance indicators for subsidence impacts to threatened flora and fauna and biodiversity values and have been developed for the ACP in accordance with consent condition 3.9.

Monitoring will be used to assess the impact of the ACP against the performance measures and indicators identified within the FFMP. If monitoring and assessment indicates that a performance indicator has been exceeded, or likely to be exceeded, ACOL will implement contingency measures as approved and detailed within the FFMP.

The actions that ACOL undertakes under the FFMP are summarised in **Table H.1**. These actions have been categorised into:

- Monitoring;
- Management; and
- Incident Response.

In addition to these actions a set of protocols has been developed to establish the circumstances under which mitigation measures would be required. A proposed Trigger Action Response Plan (TARP) for biodiversity is presented in **Table H.2**.

Further detail on ACOL's responsibilities, notification procedures and contingency response measures is provided in the Flora and Fauna (Biodiversity) Management Plan, included electronically on CD as an attachment to this EP.

Table H.1 Summary of Flora and Fauna (Biodiversity) Management Actions and Responsibilities (as relevant to LW6B)

ACTION	TRIGGER/TIMING	RESPONSIBILITY
Monitoring		
Establish additional long-term stream monitoring sites in the excised sections of Bowmans Creek and in each of the diversion channels to monitor developing aquatic habitat attributes against existing habitat attributes.	Prior to commencement of the Bowmans Creek diversion works.	Environment and Community Relations Manager
Management		
If subsidence induced pond formation occurs in the excised creek sections, riparian vegetation will be managed.	Detection of pond formation in excised creek sections.	Environment and Community Relations Manager/ UG Mining Engineer
Incident Response		
Where perceptible impacts to terrestrial and aquatic habitat are noted, the following procedure will be followed and reported in accordance with the FFMP and Table 6: <ul style="list-style-type: none"> ▪ Undertake additional investigation to ascertain the actual cause (mine related or other); ▪ Assess the impact against the performance measures and indicators detailed in the FFMP; ▪ If mine related, consult relevant government agencies; ▪ Develop and implement a specific response plan to prevent further impacts; and ▪ Undertake remediation as required. 	Perceptible impacts noted during monitoring activities or exceedance of Performance Indices.	Underground Mining Engineer / Environment and Community Relations Manager
In the event that it is not practical to maintain a free draining landform, an assessment will be undertaken into the suitability of creating a permanent wetland or stock watering point with due consideration given to the: <ul style="list-style-type: none"> ▪ Overall rehabilitation and final land use objectives of the ACP; ▪ Use of riparian revegetation techniques (stock exclusion and provision of edge and emergent vegetation); ▪ Feasibility of providing sustainable wetland habitat and its potential to support threatened species; ▪ Impacts to terrestrial threatened species and /or loss of agricultural land; and ▪ Risk of inrush into the underground workings. 	Areas of ponding that are unable to be practically drained or filled to create a free-draining landform.	Underground Mining Engineer, Environment Officer
Restoration of creek water quality/quantity using a supply of good quality make-up water.	If any significant deterioration in water quality or quantity is identified as a result of monitoring.	Underground Mining Engineer / Environment and Community Relations Manager

Table H.2 Summary of Flora and Fauna (Biodiversity) Trigger Action Response Plan (TARP) (as relevant to LW6B)

ASPECT	METHOD /PARAMETERS / FREQUENCY	PURPOSE	TRIGGER	RESPONSE	RESPONSIBILITY
Flora and Fauna – Terrestrial					
Rehabilitation Monitoring	Any revegetated areas will be monitored following the methodologies outlined within the annual Rehabilitation Monitoring Program which compares the progress of the rehabilitation sites against a set of completion criteria obtained from measurement made in areas of remnant woodland and grassland communities in the local area.	To monitor the health and viability of revegetated areas over time and obtain data to assist with the long term rehabilitation of the site.	Vegetation cover is insufficient to control erosion. If data shows that future structural and diversity goals will not be met. Negative trends in heterogeneity against land function metrics including: vegetation mosaics; ground cover; leaf litter and organic matter; soil depth and quality; shading; water flow paths and microhabitats.	Additional planting and safeguarding will be implemented in the area of impact. An adaptive reworking of the planting program will be undertaken to incorporate a wider range of species. The benefits of introducing additional growing material or providing additional soil ameliorants will also be investigated. Measures will be put into place, with the goal of increasing cover and diversity as compared with reference sites.	Environment and Community Relations Manager
Aquatic Ecology					
Site water quality	Field water quality (both chemical and physical) monitoring during the bi-annual aquatic ecology monitoring program including depth profile monitoring of EC, Temp, pH, turbidity, DO. The monthly water quality monitoring at the existing 'whole of mine' sites will also be utilised.	To monitor long-term seasonal and site related changes/trends in specific aquatic site water quality, pre- during and post mining, to aid in identifying possible water quality impacts related to mining.	Any deterioration or significant changes in site specific water quality parameters.	Investigate site specific changes against upstream and downstream reference sites. If changes mirrored in reference sites, investigate possible regional, climatic or seasonal basis for deterioration based in the first instance. If regional, seasonal or climatic - no further action other than reporting in biannual reports and AEMR. If site specific deterioration is not able to be linked to other site changes (i.e. not regional, seasonal, climatic), investigate links between site changes, water quality and habitat quality changes and check against groundwater monitoring trends. If causes determined to be site specific initiate reporting procedures. Investigate possible links with mining then develop mitigation measures and/or action plan as necessary.	Environment and Community Relations Manager