



# Community Information Paper

## Ecology – Flora and Fauna

March 2011

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### Key points

- Ecological due diligence surveys are undertaken at all proposed exploration drill sites.
- Seventeen threatened fauna species have been identified within, or in proximity to, the Caroona Exploration Licence (EL) area.
- Exploration activities have not resulted in significant impacts to threatened species, populations or ecological communities.
- Detailed ecological assessments will be undertaken as part of the environmental assessment if BHP Billiton decides to proceed with a project application.
- It is necessary to conduct surveys over a number of years and over different seasons to ensure an environmental assessment addresses the impacts of the activity on all relevant flora and fauna species and communities.
- The results of the ecological assessments will be discussed with the community and relevant government agencies throughout the preparation of an environmental assessment.





## Introduction

The area covered by the Caroona Exploration Licence (EL) is approximately 344 square kilometres and is predominately flat open plains (floodplains) with hilly outcrops associated with Doona State Forest, Nicholas Ridge and Georges Island Hill (ridge country).

The environment within the Caroona EL area has been historically modified to form agricultural lands and is mostly cleared with scattered trees. The floodplains are dominated by a mixture of cropping and, to a lesser extent, grazing land uses.

The Doona State Forest is the largest area of remnant native woodland within the Caroona EL area and supports a variety of native flora and fauna species. Areas within the EL which are not used for agricultural purposes, including road reserves, comprise small extents of modified native grasslands with scattered eucalypts and shrubs.

A number of threatened fauna species and ecological communities are known to be present in the Caroona EL area. There is the potential for threatened flora and other threatened fauna species that have not yet been recorded to also be present.

BHP Billiton has engaged environmental consultants Umwelt (Australia) Pty Limited (Umwelt) to provide environmental consulting services to the Caroona Coal Project and to gather information about the existing ecological values.

## Flora and fauna of the Caroona EL area

Floodplain areas which are not subject to intensive agricultural activities generally comprise native grassland or open woodlands. The lower slopes of Doona Ridge, Nicholas Ridge and George's Island Hill generally contain native grassland and open woodland dominated by white box (*Eucalyptus albens*), where these areas have not been historically cleared for cropping and improved pastures. The higher areas of the ridge country, on less fertile soils, contain woodland dominated by ironbarks and white cypress pine.

The following threatened ecological communities listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are known, or have potential, to occur in the Caroona EL area:

- Native Vegetation on Cracking Clay Soils of the Liverpool Plains (TSC Act);
- Natural Grasslands on Basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland (EPBC Act);
- White Box - Yellow Box - Blakely's Red Gum Woodland (TSC Act);
- White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland (EPBC Act);

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes Bioregions (TSC Act);
- Weeping Myall Woodlands (EPBC Act);
- Inland Grey Box Woodland in the Riverina, NSW Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (TSC Act).

These native vegetation communities are listed as threatened under the State and Commonwealth legislation as they have been extensively cleared for agricultural and other purposes over the past two centuries and their extent has been significantly reduced.

The white box and yellow box dominated woodlands on the ridge country and the native grassland and open woodland areas on the plains areas have a very high likelihood of comprising one of the threatened ecological communities listed under the TSC Act and EPBC Act.

A number of threatened fauna species have been recorded in the Caroona EL area through field surveys and others have been identified as potentially occurring through searches of databases maintained by the NSW Department of Environment, Climate Change and Water (DECCW), the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPoC) and Birds Australia. Seventeen threatened fauna species have been identified within, or in proximity to,

the Caroona EL area. This includes nine bird species and eight mammals, including the koala which is known to occur throughout the Caroona EL area. The following threatened species records within the Caroona EL area were identified from the DECCW Atlas of NSW Wildlife and the Birds Australia database:

- Brown treecreeper - eastern subspecies (*Climacteris picumnus victoriae*) (Vulnerable under the TSC Act (TSC - V));
- Diamond firetail (*Stagonopleura guttata*) (TSC - V);
- Hooded robin - south-eastern form (*Melanodryas cucullata cucullata*) (TSC - V);
- Varied sittella (*Daphoenositta chrysoptera*) (TSC - V);
- Little eagle (*Hieraaetus morphnoides*) (TSC - V);
- Speckled warbler (*Pyrrholaemus sagittata*) (TSC - V);
- Koala (*Phascolarctos cinereus*) (TSC - V);
- Spotted-tailed quoll - SE mainland (*Dasyurus maculatus maculatus*) (EPBC - V) (TSC - V).

Threatened fauna species that have been recorded by Umwelt to date include:

- spotted harrier (*Circus assimilis*) (TSC - V);
- little lorikeet (*Glossopsitta pusilla*) (TSC - V);
- turquoise parrot (*Neophema pulchella*) (TSC - V);
- brown treecreeper - eastern subspecies (*Climacteris picumnus victoriae*) (TSC - V);
- speckled warbler (*Pyrrholaemus sagittata*) (TSC - V);
- diamond firetail (*Stagonopleura guttata*) (TSC - V);
- grey-crowned babbler - eastern subspecies (*Pomatostomus temporalis temporalis*) (TSC - V);
- koala (*Phascolarctos cinereus*) (TSC - V);
- eastern freetail-bat (*Mormopterus norfolkensis*) (TSC - V);
- large-eared pied bat (*Chalinolobus dwyeri*) (TSC - V) (EPBC - V);
- large-footed myotis (*Myotis adversus*) (TSC - V);
- greater broad-nosed bat (*Scoteanax rueppellii*) (TSC - V);
- eastern cave bat (*Vespadelus troughtoni*) (TSC - V).

Thirty nine migratory and marine species listed under the EPBC Act have also been recorded during the field surveys conducted to date by Umwelt.

No threatened flora species or populations have been recorded within the Caroona EL area to date, although there are threatened flora species that have potential to occur.

## Managing flora and fauna during exploration drilling

Ecological due diligence surveys are undertaken at all proposed exploration drill sites. The ecological due diligence surveys are undertaken to assess the potential of the exploration activity to impact on threatened species, populations or ecological communities listed under the TSC Act or the EPBC Act. The surveys target potentially occurring threatened flora species, populations or ecological communities. To assess the potential impact on threatened fauna species, the surveys target and record significant fauna habitat features such as hollow-bearing trees, feed trees, hollow logs and other potential habitat sites.



More extensive ecological assessment is undertaken as part of a detailed review of environmental factors if the exploration activities are to involve more extensive works such as a seismic program.

The results of the assessments are used to determine what steps should be undertaken to manage the potential impacts of the exploration activities if threatened species, populations or ecological communities, or other significant ecological values are present. Management measures that have been implemented include:

- locating exploration activities and access roads in areas that will require only minimal ground disturbance to carry out the activities;
- where possible, identifying previously disturbed areas such as paddocks or road verges to minimise native vegetation disturbance;
- re-locating exploration boreholes if they have the potential to significantly impact on threatened species, populations or ecological communities;
- designing exploration activities to minimise surface disturbance;
- fencing work areas to define the area of disturbance;
- cleaning machinery to remove mud and seed prior to leaving each location;
- rehabilitating each site including re-spreading of topsoil to allow natural regeneration;
- monitoring rehabilitated sites to ensure that rehabilitation has been successful and undertaking further rehabilitation action where necessary.

The exploration activities undertaken in the Caroona EL area to date are not considered to have resulted in significant impacts to threatened species, populations or ecological communities. The drilling and seismic survey activities undertaken to date have required the small-scale slashing of mostly groundcover plant species, which are expected to regenerate



following disturbance. No significant fauna habitat has been removed as a result of the exploration activities and no threatened flora species or populations have been recorded at any of the drilling or seismic survey locations. The rehabilitation of sites has been successful to date with only minor subsequent action required to control weed growth.

All future locations subject to exploration activities will continue to be inspected through due diligence surveys to ensure that flora and fauna issues are adequately assessed and managed.

### Where to from here?

If BHP Billiton decides to proceed with a project application for the Caroona Coal Project, detailed ecological assessments will be undertaken as part of the environmental assessment. To ensure that the environmental assessment addresses the impacts of the activity on all relevant flora and fauna species and communities, it is necessary to conduct surveys over a number of years and over different seasons. Surveys undertaken in this manner are more likely to identify the range of flora and fauna species occurring within the Caroona EL area, including migratory bird species that may only occur for part of the year or plant species, such as orchids, that may only be identifiable for a few months of the year.

Umwelt has already undertaken some seasonal surveys of areas within the Caroona EL area where BHP Billiton has access. Further ecological surveys targeting potentially occurring

threatened species, populations and ecological communities will be undertaken over the coming years.

The results of the ecological assessments will be discussed with the community and the relevant government agencies throughout the preparation of an environmental assessment. The project design will incorporate mitigation measures to deal with any impacts that are considered to be unacceptable. The measures will include consideration of ecological values in underground mine planning and the design and location of pit top facilities and associated mining infrastructure.

The results of the ecological assessment will be published in the environmental assessment.

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