

Review of GHD Report on Fauna Impacts of Southern Highlands Regional Shooting Complex

Dr Stephen Ambrose

Director, Ambrose Ecological Services Pty Ltd, PO Box 246, Ryde, NSW 1680

Email: stephen@ambecol.com.au

EXECUTIVE SUMMARY

The GHD Fauna Assessment is grossly inadequate. It is based on an inadequately performed fauna habitat assessment, with rudimentary fauna surveys which are not in accordance with the *Draft Threatened Biodiversity Survey and Assessment Guidelines for Developments and Activities* [Department of Environment & Climate Change (DECC), 2005].

The study area has a high conservation value for native fauna, as evidenced by the presence of at least one threatened fauna species (Yellow-bellied Glider) and an extremely high incidence of tree hollows that are suitable for use by a range of hollow-dependent fauna species. Therefore, it is essential that a comprehensive fauna survey be conducted, rather than just a fauna habitat assessment.

There have been no systematic surveys for threatened amphibians, reptiles, ground-dwelling mammals or bats, listed under the schedules of the NSW *Threatened Species Conservation Act, 1995* (TSC) and Commonwealth *Environment Protection and Biodiversity Act, 1999* (EPBC Act) despite these species occurring in the locality and the authors recognition that they are likely to occur in the study area.

Survey efforts associated with targeted nocturnal surveys for Yellow-bellied Gliders and threatened owl species are inadequate and do not meet the minimum survey efforts that are recommended in DECC (2005). For instance, targeted surveys were conducted for only two threatened owl species (the Powerful Owl and Masked Owl), whereas two other threatened owl species (the Sooty Owl and Barking Owl) are likely to occur in the study area. Owl surveys (call playbacks) were conducted for only one hour in total (30 minutes for the Powerful Owl and 30 minutes for the Masked Owl, on one night). DECC (2005) recommends call playback trials to be conducted for at least three consecutive nights for Powerful, Sooty and Barking Owls and four consecutive nights for Masked Owls.

Only 20 fauna species were recorded in the study, all of them except the Yellow-bellied Glider, were listed as incidental sightings. Such a list is useless in assessing the value of the subject site as habitat for native fauna. Sites (such as this one) which contain threatened fauna species, are usually rich and diverse in fauna species. I would expect to find at least 150 protected fauna species in the study area if a systematic survey of fauna was conducted. Consequently, the richness and diversity of fauna on the subject site, important environmental attributes that must be considered in assessing the potential impacts of development, have not been considered in the report.

Hollow-bearing trees have only been mapped in less than 7% of the area that has been proposed for habitat clearance. Tree hollows should have been mapped and described across the entire 16 ha of land to be cleared, rather than along transects. More detailed data about tree hollows should have been collected and presented in the ecological report (see detailed comments below).

Key data for the SEPP-44 (Koala Habitat) Assessment are not presented in the report. For instance, there are no flora quadrat data presented in the report that demonstrate that one food tree species of Koalas, *Eucalyptus punctata*, constitute less than 50% of the trees the canopy and mid-canopy.

The authors say that the study area is not Potential Koala Habitat under SEPP-44. However, members of the Hilltop Resident's Action Group have collected scats from the study area and have taken photographs of scratchings on tree trunks, which Associate Professor Robert Close of the University of Western Sydney has identified as belonging to Koalas. Associate Professor Close is a recognised expert on Koalas.

No seven-part tests of significance for Threatened NSW Fauna species (under the EP&A Act) have been conducted. These tests are not required for a Part 3A project, but most ecological consultants do perform them for such projects, and it would have been prudent for GHD to have included them in the report, given the high conservation value of the study area.

The authors have only considered the areas to be cleared (16 ha) when assessing the impacts of habitat clearance and modification on the status of fauna species and their habitats. There is likely to be a requirement for the establishment of an Asset Protection Zone (APZ) for bushfire management purposes, meaning that the total area to be cleared or modified would be greater than 16 ha. The creation and maintenance of the APZ and its likely impacts on fauna and their habitats have not been considered by the authors.

There has been no assessment of the impacts of the proposed development on migratory species listed under the schedules of the EPBC Act and regionally-significant fauna species. Therefore, the report is in violation of the requirements of assessment under the EPBC Act.

The authors of the report indicate that there is potential habitat in the study area for at least four nationally-threatened fauna species listed under the EPBC Act (Giant Burrowing Frog, Broad-headed Snake, Swift Parrot and Spotted-tailed Quoll). Therefore, it is a requirement for the applicants to seek approval from the Commonwealth Minister for the Environment, for their proposal, which has not been done. It is not correct for the authors to claim in the report that such a referral to the Commonwealth is not required.

The study area is near the Blue Mountains World Heritage Area. It is very likely that native fauna (e.g. bird species, bats, and arboreal and ground-dwelling mammals) move between the Blue Mountains World Heritage Area and the study area. The authors of the report have not assessed the impacts of the proposal on world heritage properties, a requirement under the EPBC Act.

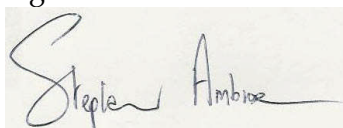
Proposed mitigation measures are generally sound, but additional measures are very likely to be realised once a comprehensive fauna survey and assessment has been completed.

More specific comments on the fauna issues associated with this report are provided overleaf.

CONCLUSION

As a result of the inadequacies of the fauna impact statement, especially in relation to the absence of crucial fauna and habitat data, and insufficient referral to the EPBC and TSC Acts, no reasonable person would approve the development application.

Signed:

A handwritten signature in black ink on a light-colored rectangular background. The signature is written in a cursive style and reads "Stephen Ambrose".

Dr Stephen Ambrose

19 March 2008

SPECIFIC COMMENTS ON FAUNA ISSUES RAISED IN THE GHD REPORT

Section of Report	Issue	Comment	Recommendations
METHODOLOGY			
General comment	Timing of fauna surveys	There is no mention in the report of when the fauna surveys were conducted. The report mentions that flora surveys were conducted in October 2006 and October 2007. Presumably, fauna surveys were conducted at that time, too.	Fauna survey periods to be stated in the ecological report.
Page 7, paragraph 2; Figure 2.1	Hollow-bearing tree methodology	<p>1. Insufficient survey effort for hollow-bearing trees. The investigators state that they randomly chose several transects of c. 10 m width and varying length within the study sites. The locations of these transects are shown in Figure 2.1 of the GHD report. From this figure I have calculated the total survey area to be 10,000 m² (1x500 m transect, 1x200 m transect, 3x100 m transects). The proposed area of clearing is up to 16 ha. Therefore, only 6.25% of the total area was surveyed for hollow-bearing trees.</p> <p>2. What is meant by “hollow diameter”? The width and length of an entrance to a hollow can be quite different. For instance, you can have a long and narrow hollow entrance <i>cf.</i> a relatively round entrance where the width and length are approximately equal.</p> <p>3. Recording <u>average</u> hollow diameters has little value in assessing the potential impacts of a development on hollow-dependent fauna species. It is more important to record the abundance in a range of size-classes of hollows.</p>	Hollow-bearing trees should be mapped across all of the 16 ha of land that is proposed to be cleared.
Page 7, paragraph 3; Table 2.1 (p. 9)	Call playback methodology	<p>1. Insufficient survey effort for threatened owl species. Table 2.1 indicates that only 1 hour was spent on owl call playbacks. On p7 it is stated that “Calls were broadcast for approximately 5 minutes and followed by a 10 minute listening</p>	Conduct threatened owl surveys (Powerful, Masked, Sooty and Barking Owls) using the methods that are in accordance with the <i>Draft Guidelines to Surveys and Assessment of Threatened</i>

Section of Report	Issue	Comment	Recommendations
		<p><i>and intermittent spotlighting period. Calls were then played again and another 10 minute listening period undertaken. Each species was targeted separately with only one species broadcast during each period". This amounts to only 30 minutes of call playback per species (Masked Owl and Powerful Owl).</i></p> <p>The home range of a Powerful Owl varies from 300 to 1500 ha. Masked Owls maintain a core home range of up to 155 ha when nesting, but can move several kilometres each night outside the breeding season. Therefore, individuals of these species that could potentially use the subject site may not have been close to locations where playback calls were broadcast and, consequently, either did not hear the broadcast calls or took more than one hour to respond to and reach the broadcast site. Under such circumstances, threatened owls would not have been detected by the observers.</p> <p>The minimum survey effort required to increase the likelihood of threatened owl detection requires: (a) <u>three</u> (instead of two) call playback cycles per species per night (5 minutes of call broadcast and 10 minutes of listening/intermittent spotlighting) conducted over three consecutive nights.</p> <p>2. Surveys for other threatened owl species. Potential habitat also occurs on the subject site for Barking Owls and Sooty Owls and the site is within the range of these two species. Sooty Owls have been recorded in the locality according to the databases used by GHD. Barking Owls were not recorded in databases consulted by GHD, but this may be due to lack of adequate surveys in the locality or non-reporting of observations. Therefore, there should have been targeted surveys for both Sooty Owls</p>	<p><i>Species (DECC 2005).</i></p>

Section of Report	Issue	Comment	Recommendations
		and Barking Owls on the subject site.	
Page 7, paragraph 4	Amphibians	<p>1. The authors state that “<i>habitat assessments were carried out to determine suitability (sic) for a number of threatened frog species</i>”.</p> <p>What were these habitat assessments, and the habitats of what threatened frog species were investigated?</p> <p>2. The authors also state that playback surveys were not undertaken for frog species because of the lack of rain in the days preceding the survey period.</p> <p>While this may be a valid reason for not surveying some frog species (e.g. the threatened Giant Burrowing Frog), other species (e.g. adults of the threatened Red-crowned Toadlet) respond to call playbacks throughout most of the year. They would have certainly responded to call playbacks in October or November, if present on the subject site. Therefore, the investigators should have conducted targeted surveys for frogs.</p>	
Page 7, paragraph 5	Glossy Black-Cockatoo	The Glossy Black-Cockatoo feeds on the <u>seeds</u> , rather than the cones, of <i>Allocasuarina</i> species.	
Page 7, paragraph 6	Yellow-bellied Glider Habitat surveys	What is the point of recording the location of potential feed and den trees of Yellow-bellied Gliders with a GPS only in surveyed transects? Potential and actual habitat trees should be mapped accurately across all of the subject site.	See above comment
General Comment	Threatened Bat Surveys	No surveys were conducted for threatened bats. At least one threatened bat species has been recorded in the locality (Eastern Bentwing Bat), which may potentially forage on the subject site. Given the relatively high incidence of tree hollows there are likely to be roosting and/or nesting sites of bats (including threatened bat species) occurring on the subject site. If fauna surveys were conducted in October 2006 and October 2007, then these would have been suitable times	Bat surveys should be conducted in accordance with the <i>Draft Guidelines to Surveys and Assessment of Threatened Species</i> (DECC 2005).

Section of Report	Issue	Comment	Recommendations
		to conduct bat surveys. The suitability of the subject site as roosting habitat for bat species is acknowledged on p.19 (para. 1) p. 20 (para. 7) of the ecological report.	
General Comment	Spotted-tailed Quoll	No trapping for the Spotted-tailed Quoll was conducted on the subject site. Given that this species has been recorded within the locality and there is suitable habitat on the subject site, then targeted surveys (including the use of baited cage traps) should have been conducted. The suitability of the subject site as habitat for the Spotted-tailed Quoll is acknowledged on p. 18 (para. 6) of the ecological report.	Mammal surveys should be conducted in accordance with the <i>Draft Guidelines to Surveys and Assessment of Threatened Species</i> (DECC 2005).
Page 8, Section 2.5.1	Weather conditions	The ambient temperature range during nocturnal surveys were stated, but not for the daytime surveys.	Provide maximum and minimum temperatures for each survey day.
Page 19, paragraph 4	Avifauna	The authors state that there was limited habitat for birds of prey because there were no open areas within the study area, with the exception of roads and old trails. This statement is too general. While most raptors prefer to soar over open areas in search of prey, there are others, such as Collared Sparrowhawks and Brown Goshawks, which inhabit forested areas. These two species, in particular, are occur in the locality and are likely to occur in the study area.	
RESULTS			
Pages 20-21	Hollow-bearing Trees	1. The incidence of hollows within each surveyed transect area is extremely high. The authors mention that many of the hollows have formed as a result of bushfires and storm damage. How representative are the transects in describing the incidence of hollows in the remainder of the study site? For instance, have past bushfires and storm trails gone through the entire study site (thus creating lots of hollows throughout the area) or have these natural events (especially bushfires) been concentrated in particular areas (thus producing more hollows in some areas of the site)?	Add a comment in the ecological report on the relative homogeneity/heterogeneity of the incidence of tree hollows throughout the subject site.

Section of Report	Issue	Comment	Recommendations
		<p>The data suggest a heterogeneous spread of tree hollows. For instance, the numbers of stags and hollow-bearing trees in the proposed pistol range and proposed shotgun range are considerably less than in the proposed rifle ranges.</p> <p>2. Insufficient presentation of tree hollow data (Table 3.2). Average values (tree height, number & diameter of hollows) do not mean much without providing standard errors and ranges.</p> <p>It would also be useful to have quantitative data on the incidence of hollow types (e.g. basal scars, trunk hollows, limb hollows, etc) and the range in heights above ground to get a feel for what hollows and how many of them would be suitable for different fauna species (especially threatened fauna).</p>	
Page 21, Section 3.4.3	Koala Habitat Assessment	The report needs to provide quantitative evidence that the Koala food tree species, <i>Eucalyptus punctata</i> , was less than 15% of the total number of trees in the upper or lower tree strata.	Collect and present tabulated data showing the number/proportion of food trees in surveyed flora quadrats.
Page 22, paragraph 3	Threatened Species: Yellow-bellied Glider	<p>The authors state: <i>“a number of feed trees would be removed as a result of clearance within the study sites, however feed trees will remain in the surrounding vegetation”</i>.</p> <p>The authors imply that the proposed clearing would not have a significant impact on the status of the local Yellow-bellied Glider population, but there are no data on the size and distribution of that population, the numbers of food trees that would be removed from the study site and how many would be retained within the surrounding bushland area.</p>	Conduct Yellow-bellied Glider survey on the subject site and in surrounding forested areas in accordance with the <i>Draft Guidelines to Surveys and Assessment of Threatened Species</i> (DECC 2005).
Pages 25-30	Other threatened species	1. The authors acknowledge that Sooty Owls are likely to occur in the study area (table 3.4, p. 28), but did not	

Section of Report	Issue	Comment	Recommendations
		<p>conduct targeted surveys (e.g. call playbacks).</p> <p>2. There is no comment on whether or not there are suitable nesting hollows for threatened owl species within the areas proposed to be cleared.</p> <p>3. The authors state that suitable habitat exists for the Red-crowned Toadlet on the subject site, but does not say where.(Table 3.4, page 26)</p>	Targeted surveys for threatened frog species should be conducted at appropriate times if the year and in accordance with the <i>Draft Guidelines to Surveys and Assessment of Threatened Species</i> (DECC 2005).
General Comment	Migratory Species	There is no comment on the potential of migratory species, listed under the schedules of the EPBC Act, occurring on the subject site.	Identify listed migratory species that may be impacted by the proposed development and assess the impacts in the ecological report.
General Comment	Regionally-significant species	There is no comment on the potential of regionally-significant fauna species occurring on the subject site.	Identify regionally-significant species that may be impacted by the proposed development and assess the impacts in the ecological report.
Appendix B (Table 7.2)	Fauna Species List	The fauna species list is rudimentary. Although the authors state that it is an “incidental” species list, it is more likely to reflect the investigators’ limited abilities to identify fauna species (especially bird species) rather than an accurate record of species encountered, given the apparent amount of time (several days) spent at the study site.	Conduct a more comprehensive fauna survey to gain an appreciation of the fauna species and richness of the subject site.
Impact Assessment			
Page 35, Section 4.1.8	Alteration of Light, Noise & Dust Levels	The authors have not considered impacts on breeding success of native fauna, especially hollow-dependent species. For instance, in my experience, Powerful Owls nesting close to construction areas often fail to complete the breeding cycle because of disturbance from increased noise, light and dust.	
Page 36, paragraph 3	NSW Threatened Species Assessment	1. The authors state that the ecological impact assessment was done in accordance with the <i>Draft Guidelines for Threatened Species Assessment</i> (DECC 2005).	

Section of Report	Issue	Comment	Recommendations
		<p>This is incorrect. The survey effort for threatened fauna species does not conform with these guidelines.</p> <p>2. DECC (2005) also requires an assessment of the impacts of a proposal on the status of locally viable populations of threatened species, as well as the overall status of the species. GHD's report does not consider the impacts on locally viable populations. This is probably because there have been no fauna surveys as part of the assessment process that have established the size and extent of local threatened species populations.</p> <p>3. No 7-part tests of significance were conducted in relation to proposal.</p>	<p>Conduct 7-part tests of significance for threatened fauna species whose status may potentially be impacted by the proposed development.</p>
Page 42	Commonwealth Threatened Species Assessment	There is no assessment of the impacts of the proposal on the status of migratory species, listed under the schedules of the EPBC Act.	See above comments
General Comment	Regionally-significant Species	There is no assessment of the impacts of the proposal on the status of regionally-significant species.	See above comments
Mitigation Measures			
Page 43	Recommended Mitigation Measures: Threatened Fauna	<p>1. The authors state that vegetation clearance and tree-felling should be undertaken outside the critical spring/summer period (November-May).</p> <p>While I generally concur with this recommendation, Powerful Owls and Masked Owls nest between April and July. If after adequate targeted surveys for threatened owls have been conducted on the subject site, that Powerful Owls and/or Masked Owls occur on or adjacent to the site, then it is recommended that vegetation clearance be restricted to August-October (inclusive) if the proposal is given approval.</p>	

Section of Report	Issue	Comment	Recommendations
		<p>2. The authors indicate the need for compensatory planting of Yellow-bellied Glider food trees in the surrounding area at a minimum ratio of 2:1.</p> <p>There is no explanation as to how the authors arrived at this planting ratio. Where would the trees be planted given that the surrounding area is already heavily forested?</p>	
Page 44	Management	<p>1. In addition to minimisation of night-time shooting, shooting may also need to be minimised during the day if and when Yellow-bellied Gliders and/or threatened owl species are breeding in or around the shooting complex.</p> <p>2. I agree that vegetation debris should be removed from the subject site. However, hollow logs removed from the cleared areas should be placed in the surrounding forested areas for potential use by native ground-dwelling animals.</p>	
Pages 44-45	Proposed Offsets	No information is provided on the fauna habitat value of the land provided for offsetting.	The ecological value of bushland proposed for offsetting should be assessed by a DECC-approved methodology (e.g. such as the biobanking assessment methodology)