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A REVIEW OF THE GHD

SUPPLEMENTARY SPRING FAUNA SURVEYS REPORT

FOR THE

**PROPOSED HILL TOP REGIONAL SHOOTING COMPLEX,
NSW SOUTHERN HIGHLANDS**

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INTRODUCTION

Part of the consent conditions for an approval granted by the NSW Minister for Planning to the Department of Sport and Recreation for a Regional Shooting Complex at Hill Top, NSW Southern Highlands included the requirement for the preparation of a Construction and Environmental Management Plan and an Ecological Management Plan prior to commencement of works. These plans were to be informed by the results of further spring fauna surveys that were to include, but not be limited to, “additional surveys for koalas, owls and microbats”.

The results and reporting of spring surveys undertaken by GHD in October 2008 (GHD 2008) were provided to the Hill Top Residents Action Group (HTRAG) in June 2009 as meeting the consent requirements for additional spring fauna surveys.

This review has resulted from a request by the HTRAG (July 2009) for an independent assessment of the GHD (2008) report.

FIELD SURVEY PERSONNEL

No information is provided on the qualifications or experience of the field investigators who undertook the GHD surveys, as stipulated in the current Department of Environment and Climate Change guidelines for threatened biodiversity survey and assessment (DEC 2004). However, a number of facts and omissions evident in the GHD report suggest that investigators lacked the necessary experience with survey methods and relevant identification skills required for comprehensive vertebrate impact surveys. Apart from the use of methods in inappropriate weather conditions and the inadequacy of survey effort detailed below, no data are provided on the frog species identified from tadpole searches, of herpetofauna recorded during searches for the Broad-headed Snake or of bird species detected during diurnal surveys. The failure to capture any microchiropteran bats in harp traps indicates that these traps were not set in appropriate locations.

SPECIES TARGETED

The GHD (2008) spring surveys targeted the Koala *Phascolarctos cinereus*, large forest owls and microchiropteran bats. Surveys were also reported to have been undertaken for the Giant Burrowing Frog *Heleioporus australiacus*, Red-crowned Toadlet *Pseudophryne australis*, other amphibians, Rosenberg's Goanna *Varanus rosenbergi*, the Broad-headed Snake *Hoplocephalus bungaroides*, nocturnal birds, the Squirrel Glider *Petaurus norfolcensis* and other arboreal marsupials, presumably to satisfy the consent clause that spring surveys "not be limited to, koalas, owls and microbats".

However, a number of other threatened species (as listed under the *TSC Act 1995*) likely to occur in the area of the Shooting Complex were not targeted. These comprise the Glossy Black-cockatoo *Calyptorhynchus lathami*, Gang-gang Cockatoo *Callocephalon fimbriatum*, Spotted-tailed Quoll *Dasyurus maculatus* and Eastern Pygmy-possum *Cercartetus nanus*.

SURVEY METHODS, EFFORT AND WEATHER CONDITIONS

Giant Burrowing Frog and Red-crowned Toadlet

No detailed information is provided on the search methods and effort expended on frogs but a total of only 1.5 person hours (Table 1, GHD 2008) for the Giant Burrowing Frog and Red-crowned Toadlet, including tadpole searches, is clearly inadequate.

The minimum search effort recommended by DECC (2009) for the Giant Burrowing Frog is one 200m transect per water body conducted on two separate nights under favourable weather conditions. Giant Burrowing Frogs are normally active at temperatures ranging from 10-23°C (DECC 2009), but as temperatures were restricted to a range between 2.9-11.9°C during the GHD surveys, conditions appeared unsuitable for detecting this species.

Loud shouting may sometimes be an effective method for detecting the Red-crowned Toadlet, but this method needs to be conducted in suitable habitat, not along ridges as was undertaken by the GHD investigators. The minimum search effort recommended by DECC (2009) for the Red-crowned Toadlet is one 200m transect per water body conducted on two separate nights, but such searches were not undertaken for this species. In addition, normal activity usually occurs within a temperature range of 17-25°C (DECC 2009), which was not reached during the GHD surveys.

Broad-headed Snake

As with amphibians, the 1 person-hour search effort for reptiles (Table 1, GHD 2008) was inadequate.

Approximately one person-hour per ha is required to survey for the Broad-headed Snake in suitable habitat (M. Fitzgerald pers. comm.) and a number of ha of such habitat exists for this species in and adjacent to the Shooting Complex footprint. In addition, the temperature range during the GHD surveys (2.9-6.9°C (min) to 10.7-11.9°C (max)) would have made detection difficult because Broad-headed Snakes would most likely have been sheltering in deep crevices and under large unliftable rock slabs in such conditions. No information is provided on the number (if any) of Lesueur's Velvet Geckoes *Oedura lesueurii* found during searches, important because this gecko is an indicator of the likely presence of the Broad-headed Snake (M. Fitzgerald pers. comm.).

Large Forest Owls

The three-night period spent surveying for large forest owls is insufficient effort to provide confidence that the most likely species were not using the site. Three survey nights only give a 50% probability of detecting the Powerful Owl *Ninox strenua* and Sooty Owl *Tyto tenebricosa* (if present in a site, DEC 2004), and 7, 9 and 8 nights of survey respectively have been demonstrated as necessary to provide a 90% probability of detection for the Powerful Owl, Masked Owl *T. novaehollandiae* and Sooty Owl (DEC 2004). The wet and windy weather conditions that prevailed during the GHD surveys were also unsuitable for large owl surveys (DEC 2004).

Koala

Restricting the searches for Koala sign (scats, scratches) to only 27 feed trees (*Eucalyptus punctata*, Table 2, GHD 2008) in a limited section of the site severely limited the chances of detecting this species, particularly as searches were not undertaken in areas where Koalas had previously been recorded (Close *et al.* 2008, Milledge 2008).

Microchiropteran bats

The use of only two fixed-location Anabat detectors and two harp traps represented inadequate effort for microchiropteran bat recording in the site, given its size and micro-topography. A minimum of 6 detectors and 6 traps should have been used and hand-held targeted Anabat recording should also have been employed (DEC 2004). As noted in the GHD report (2008), the unseasonal weather conditions during surveys were unsuitable for microchiropteran bat activity and DEC (2004) recommend that surveys should be avoided in cold temperatures, strong wind and heavy rain.

SUMMARY

The GHD (2008) spring survey report provides little more than a perfunctory treatment of the threatened species listed in the NSW Planning Minister's consent conditions for additional surveys. The report fails to provide any useful information to assist the preparation of a Construction and Environmental Management Plan and an Ecological Management Plan for the Regional Shooting Complex.

The GHD surveys suffered from the omission of key species, poor application of some methods, inadequate survey effort and inadequate site coverage. However, probably most significantly, the surveys were undertaken in adverse weather conditions that are known to severely restrict the efficiency of the methods used. This was reflected by the lack of conclusive records obtained for any of the targeted threatened species.

Although the GHD report makes reference to the unfavourable weather conditions, it fails to qualify statements that the targeted surveys provided no evidence of the presence of nominated threatened species. The report also omits to recommend any additional

surveys to remedy these deficiencies and to satisfy consent conditions for the Shooting Complex.

A reasonable conclusion from the results presented in the GHD report is that spring surveys for all the targeted threatened species, together with those for omitted species, should be repeated under favourable weather conditions using appropriate methods and recommended minimum survey effort. The information from such surveys is likely to be crucial in formulating management plans to mitigate impacts from the construction and operation of the Shooting Complex.

REFERENCES

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