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**GREEN AND GOLDEN BELL FROG SURVEY REPORT - WALLGROVE
ROAD, HORSLEY PARK**

Dear Andrew,

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The purpose of this letter is to document the results of a targeted survey for the Green and Golden Bell Frog (*Litoria aurea*) within the Austral Brickworks Property at 780 Wallgrove Road, Horsley Park. The surveys were conducted in accordance with the NSW *Threatened Species and Assessment Guidelines: Amphibians* as well as the more comprehensive *Survey Guidelines for Australia's Threatened Frogs*, for species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Surveys were carried out over four nights in December, during favourable conditions as recommended in the guidelines and during a time of peak activity for the species. No Green and Golden Bell Frogs were recorded. Appendix A of this letter presents the details of the surveys.

If you have any questions please contact me at our Sydney office on (02) 9868 1933.

Yours sincerely,



Cecilia Phu
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Appendix A

Green and Golden Bell Frog Survey

A.1 Background

Cumberland Ecology was commissioned by Willowtree Planning to conduct targeted surveys for the Green and Golden Bell Frog (*Litoria aurea*) within the December period, at the Austral Brickworks property (780 Wallgrove Road, Horsley Park, the “subject site”).

The Green and Golden Bell Frog is a Vulnerable species protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is also listed as Endangered under the NSW *Threatened Species Conservation Act 1995* (TSC Act). The species has been recorded in a range of permanent/ephemeral and natural/manmade aquatic habitats including excavated areas capable of capturing water, such as brickpits and constructed dams (TSSC, 2014).

The Green and Golden Bell Frog is known to breed during late winter to early autumn; however, it generally breeds between September and February with a peak around January–February after heavy rain or storms (DEC (NSW), 2005; DEWHA, 2009). Field surveys are generally recommended between September and March, which corresponds to the peak activity period for the species (DEWHA, 2009).

Targeted surveys for the Green and Golden Bell Frog were previously undertaken in March 2015 by Travers Bushfire and Ecology (Sheather-Reid *et al.*, 2015) and involved diurnal habitat searches and call-playback techniques. The subject site contains one dam that is fringed on one side by *Typha orientalis*. This dam was subject to a habitat assessment by Travers Bushfire and Ecology (Sheather-Reid *et al.*, 2015).

The purpose of the current Green and Golden Bell Frog survey program conducted by Cumberland Ecology is to undertake surveys during the December period and to augment the Travers Bushfire and Ecology survey effort undertaken earlier in the year in March. The December surveys undertaken are considered to be appropriate as they align with recent warm weather and rain associated with survey conditions recognised to be ideal for the detection of the Green and Golden Bell Frog.

A.2 Methodology

Nocturnal surveys were undertaken by two fauna ecologists from 15 – 17 December and 21 December, 2015. Nocturnal surveys were carried out a manner consistent with the following policy / guideline documents:

- NSW Threatened Species and Assessment Guidelines: Amphibians (DECC, 2009);
- Survey Guidelines for Australia’s Threatened Frogs (DEWHA, 2010); and
- Significant impact guidelines for the vulnerable green and golden bell frog (*Litoria aurea*)(DEWHA, 2009):

The survey was conducted over a minimum of four nights to increase the detection rate and generally during warm and windless weather conditions following rainfall. Surveys were conducted in and around the dam, with particular focus on the northern edge where species of *Typha orientalis* was present.

For each night of survey, the targeted surveys comprised a ten minute listening period for calling frogs, during which lights were not used to avoid deterring any frogs from calling. This was followed by a ten minute period whereby Green and Golden Bell Frog breeding and territorial calls were broadcasted at the subject site using a loudhailer to elicit a response from resident frogs.

A ten minute period of active searching using hand held spotlights was then carried out and any frogs heard or seen were recorded.

Approximately 3mm of rain had been recorded within 1 week of each of the surveys (BOM, 2015), and the temperature had been consistently warm during the day and evening.

Table 1 Survey for Green and Golden Bell Frog

Date	Time	Survey Effort	Weather Conditions (at 15:00)	Survey Type
15/12/2015	20:45 - 21:15	1 person hours	29.7°C, no rain, wind 19km/h	Nocturnal call playback and spotlight search
16/12/2015	20:30 - 21:00	1 person hours	17.7°C, 4.6mm rain, wind 11 km/h	Nocturnal call playback and spotlight search
17/12/2015	21:00 - 21:30	1 person hours	27.2°C, 0.2mm rain, wind 4 km/h	Nocturnal call playback and spotlight search
21/12/2015	20:30 - 21:00	1 person hours	22.1°C, no rain, wind 17 km/h	Nocturnal call playback and spotlight search

A.3 Key Findings

Despite conditions being favourable, no Green and Golden Bell Frogs were detected at the subject site for the duration of the survey. Only one other species of frog was recorded during surveys. This was the Peron's Tree Frog (*Litoria peronii*).

A.4 References

- BOM (2015). "New South Wales Weather Observations." 2015, from <http://www.bom.gov.au/nsw/observations/index.shtml>.
- DEC (NSW) (2005). *Draft Recovery Plan for the Green and Golden Bell Frog (Litoria aurea)*. Department of Environment and Conservation (NSW), Hurstville, NSW.
- DECC (2009). *Threatened species survey and assessment guidelines: field survey methods for fauna - Amphibians*. Department of Environment and Climate Change, Sydney.
- DEWHA (2009). *Significant Impact Guidelines for the vulnerable green and golden bell frog (Litoria aurea)*. Department of the Environment, Water, Heritage and the Arts, Canberra.
- DEWHA (2010). *Survey guidelines for Australia's threatened frogs*. Commonwealth Department of Environment, Heritage, Water and the Arts, Canberra, ACT.
- Sheather-Reid, M., Holmes, L. and Mead, C. (2015). *Flora and Fauna Assessment - 780 Wallgrove Road, Horsley Park*. Travers Bushfire and Ecology, Kariong, NSW.
- TSSC (2014). "Approved Conservation Advice for *Litoria aurea* (green and golden bell frog)." s266B of the *Environment Protection and Biodiversity Conservation Act 1999*, from http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1870.