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Dear Matt

Re: Survey and Habitat Assessment for the Pink-tailed Worm-lizard (*Aprasia parapulchella*) on the Rockwood Quarry Expansion.

Background

Ecotone Wildlife and Habitat Assessments was engaged by Habitat Planning and A.P. Delaney & Co. to conduct a habitat assessment and survey for the threatened Pink-tailed Worm-lizard (PTWL) *Aprasia parapulchella* on the proposed Rockwood Quarry expansion, Tabletop, NSW.

The PTWL is a fossorial legless lizard which feeds principally on the eggs and larval stages of various ant species, particularly *Iridomyrmex* sp. (Robinson 1996). It is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995* and vulnerable under the *Commonwealth Environmental Protection and Biodiversity Conservation Act* 1999.

It inhabits small rocky clearings in open woodland (Osborne *et al.* 1993), especially in areas with sparse tree cover and good cover of native grass (Robinson 1996). A relationship between PTWL sites and the presence of Kangaroo Grass *Themeda australis* and shallowly embedded metamorphic or granite rocks has been documented across its range (Wong 2011).

The most effective method for detecting this species is by searching beneath all rocks that can be turned. 150 – 200 rocks need to be turned to be reasonably confident of determining the species presence (Commonwealth of Australia 2011). The species is often detected beneath rocks in association with various ant species between August and November, or on clear sunny days during autumn and winter (Commonwealth of Australia 2011). The nearest records of this species in the Albury Local Government Area (LGA) are approximately 10 km to the south on the Nail Can Hill (NCH) range (ALA 2018, Michael and Herring 2005).

Known PTWL Habitat within the Albury LGA

Within the Albury LGA, the PTWL was first recorded on the Nail Can Hill Flora and Fauna Reserve in August 2002 (Michael 2004). This species has since been recorded from a number of locations along the NCH range (ALA 2018, Michael and Herring 2005, Michael 2007). Detection rates range from 1-2 individuals/1 ha (five sites), 17 individuals/1.5 ha (one site) and 82 individuals/2.4 ha (one site). Detections are usually made between August and early November, although occasional individuals have been encountered during autumn (Michael pers. obs. 2012). All individuals in the Albury LGA have been detected on flat or gentle slopes beneath 'dinner-plate-sized' shallowly-embedded, metamorphosed rock, and particularly a type of granitised schist. Where this species is present on NCH, slough skins are often encountered at a rate of one skin/50 rocks turned.

Methodology

On 1 June 2018, between 10.30 am – 12.30 pm, a survey was conducted along the north-western facing slope of the proposed quarry expansion, an area covering 2.25 ha (measuring 450 m x 50 m). Weather conditions were clear, sunny and the temperature ranged between 14 – 16°C. A total of 293 surface rocks were turned and inspected for signs of host ant species, the PTWL and its sloughed skin. The number of rocks inspected represents the majority of rocks that were able to be turned in this particular search area. The area was selected due to the aspect and potential habitat suitability.

Previous reptile surveys have been conducted at this same location. A reptile survey covering the rocky sections of the Rockwood expansion was conducted by D. Michael during November 2008 as part of a post-graduate research program on rock-dwelling species. No PTWLs were recorded on the site during this survey.

Survey Results

No individuals of the PTWL or slough skins were detected. Slough skins of this species were encountered three weeks prior to the survey on known sites on the NCH range (D. Michael pers. obs.), suggesting that if present, site occupancy may be determined by the presence of slough skins at this time of year.

Of the rocks that were lifted, 15 individuals of the Eastern Striped Skink *Ctenotus spaldingi* were detected. The PTWL is not known to occupy rocks that are used by this large lizard species.

Several ant species along with their brood were detected beneath rocks, although only three five rocks were found to support *Iridomyrmex* sp. a species generally associated with the PTWL on NCH.

Habitat Assessment

- Geology. The geology of the site comprises large granite tors, deeply embedded granite boulders and approximately 120 surface rocks / ha over the area surveyed. The species is not known to be associated with granite rocks in the LGA, although across its range it is associated various rock types, including exfoliated granodiorite, rhyodacite, rhyolite, basalt, trachyte and metasedimentary rocks (Wong 2011).

- Geomorpholgy. The majority of surface rocks on site were associated with decomposed granite tors or detached exfoliations. Of the rocks that were able to be turned, more than 80% were deeply embedded. In regards to thermally suitable rocks, the site supports low density (24 rocks/ha) of shallowly-embedded surface rocks that are of a similar size and structure to those of known PTWL sites within the Albury LGA.

- Aspect. The species of often found on gentle slopes with a north or north-western aspect. The Rockwood site has a suitable aspect to support the species but some sections are relatively steep, prone to soil erosion caused by rabbits and livestock.

- Ground cover condition. The upper slopes of the site support a good cover of native grass species, although Kangaroo Grass *Themeda australis* was not detected.

Conclusion and recommendations

The Rockwood sites supports low density of suitably-sized surface rocks and low numbers of host ant species. Based on this survey, habitat assessment and available information on PTWL ecology in the Albury LGA, the probability of the PTWL being present on this site is low.

A recommendation of this report is to install a transect line of 40 roofing tiles in clusters of four extending every 40 metres along the north-west facing rocky slope of the proposed expansion site. Tiles should be checked for host ant species and sheltering PTWLs on a monthly basis between August and November for a minimum of three years, in conjunction with searches of suitable rocks.

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