



## Pink-tailed Worm-lizard Monitoring 2020

Ginninderry Conservation Trust  
&  
Woodlands and Wetlands Trust

Revision Number	Date	Prepared by	Revised by
Draft 1.0	16/11/2020	Rachel Eland	Millie Sutherland Saines
Draft 1.1	5/02/2021	Millie Sutherland Saines	Jason Cummings
Draft 1.2	16/02/2021	Rachel Eland Millie Sutherland Saines	Ange Calliess
Final	4/03/2021	Rachel Eland Millie Sutherland Saines	

## 1. Executive Summary:

The Ginninderry Conservation Trust worked together with the Woodlands and Wetlands Trust to survey the whereabouts and relative abundance of *Aprasia parapulchella* – Pink-tailed Worm-lizards within the Ginninderry conservation corridor. Staff from both Trusts worked together along with volunteers from the community and the Canberra Institute of Technology (CIT) to turn rocks in medium-high quality habitat. In 2020 we detected 0.47 lizards per hour of sampling effort, which was not greatly dissimilar to the rate of detection in 2019 of 0.71 lizards per hour.

## 2. Introduction:

The Ginninderry Conservation Trust (GCT/The Trust) developed as a strategic initiative of the Ginninderry Joint Venture (the JV), to manage, enhance and conserve the Ginninderry Conservation Corridor (the Corridor), to deliver Environment Protection and Biodiversity Conservation Act (EPBC) commitments and restore the landscape. The landscape management and restoration process will be coordinated by the GCT with support from and guidance from experts and partner organisations. As a community-focused organisation, the GCT looks to harness community support for ecosystem management and aims to be known as a contemporary leader in the conservation space.

The Trust's on-ground operations are guided by a Plan of Management for the Corridor (dated 2018-2023). This document was prepared pursuant to the requirements of the Environment Protection and Biodiversity Conservation (EPBC) Act approval for the Ginninderry Project. In 2018, the Plan of Management was endorsed by the ACT Conservator and the Minister for the Environment. The aim of this ongoing project is to provide Canberrans with a historically significant, recovering ecosystem for the community to explore, learn and connect in.

Within the Plan of Management, Pink-tailed Worm-lizards (*Aprasia parapulchella*) are specifically listed in as a threatened species present in the Corridor. Previous work on them determined almost 163 hectares of suitable habitat within the Corridor region including surrounding public and private land (Capital Ecology 2019). The Plan and related Offset plans include commitments for ongoing surveys to monitor the Pink-tail Worm-lizard population in the Conservation Corridor.

### 2.1. Background

The EPBC Act approval for the Ginninderry urban development program includes a raft of commitments to protect, enhance and offset the vulnerable Pink-Tailed Worm Lizard (PTWL).

The [Program Report](#) - by AT Adams Consulting (2017) - commits to the protection of 125.3 ha of high-quality/ suitable PTWL habitat be conserved in the corridor . Approval condition 11 required the resurveying of PTWL habitat within the ACT and NSW portions of the Corridor and Program

area. Capital Ecology (2019) resurveyed the area and determined there is a total of 162.8 hectares of PTWL habitat, comprising 152.1 ha of suitable habitat (moderate and high quality habitat combined as a mapping unit) and 10.7 ha of low-quality habitat (highly disturbed and degraded habitat that is likely to no longer support the species)” within the Project area (Figure 1). The development area for Ginninderry has been designed to retain and conserve 146.4 ha of the mapped PTWL habitat within the Ginninderry Conservation Corridor, which is 21.1 ha more than the original stated Program Report. The remaining 16.4 ha (10.2ha of suitable habitat and 6.2ha of low-quality habitat) is located within the development area and will likely be cleared in due course. The PTWL inhabiting this development area will be caught and translocated to alternative suitable habitat in Spring 2021. Animals may be marked or have their DNA sampled before release into the Conservation Corridor, to enable them to be re-identified at a later date to monitor the translocation success.

Approval conditions require monitoring be undertaken every two years as per the stated monitoring schedule in the Offset Management Plan (2018), by lifting suitably sized rocks within medium-high quality habitat.

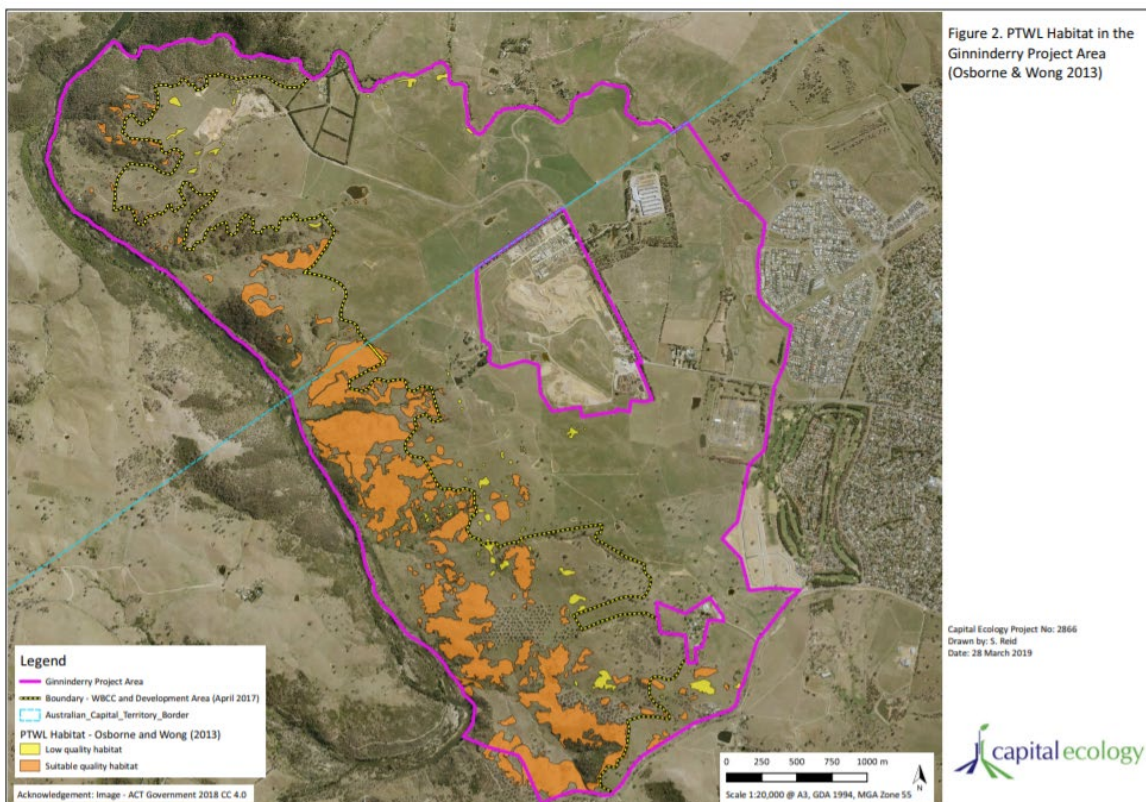


Figure 1: PTWL Suitable and Low-Quality Habitat in the Ginninderry Project Area as documented by Osbourne & Wong 2013

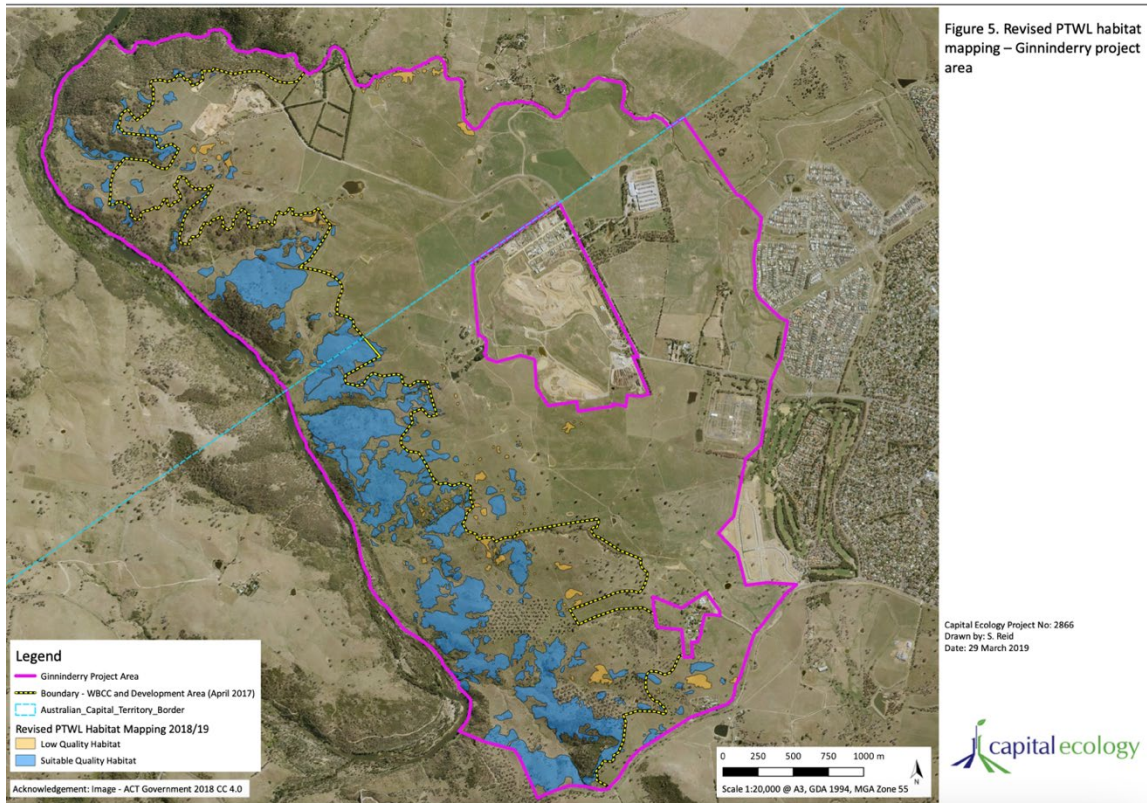


Figure 2 Updated map of PTWL habitat as documented by Capital Ecology 2019

## 2.2. Scope

The purpose of the study was to monitor the population via a presence or absence survey of PTWL throughout the determined habitat area, previously mapped by Osborne and Wong (2013) and Capital Ecology (2018/19).

## 3. Methods

The surveys were undertaken over the week of the 28<sup>th</sup> of September to the 2<sup>nd</sup> of October 2020 from 8-11 am. Further surveying was undertaken on the 19<sup>th</sup> October. The minimum temperature and maximum over the duration of the study was -1.3° C and 22° C. (Bureau of Meteorology records for nearest weather station, Canberra Airport). 2mm of rain occurred on the night of the 29<sup>th</sup> September, making conditions wet on the morning of the 30<sup>th</sup>.

Prior to the surveys being conducted, the potential and confirmed PTWL habitat aerial maps were consulted and portioned off into sections to be surveyed on each day to help with the monitoring effort, GCT engaged a total of 25 volunteers which consisted of Canberra Institute of Technology (CIT) Science and Horticulture students and local community members. The survey sites focused on 27 ha of suitable PTWL habitat (moderate and high quality) within the Conservation Corridor as identified by Osborne and Wong (2013).

Volunteers were given gloves and separated into small teams lead by a GCT staff member to search sections of habitat. Rocks small enough to be lifted without strain (“football-sized” or smaller) were turned to search for PTWL. Volunteers were trained on best practice for safety to turn the rocks towards the body in case a venomous snake was found. Rocks between the size of 10-40cm were targeted.

When located, the *Survey 123* application was used to map the individual PTWL’s location. Information recorded was location, date, time, number of PTWL in that location and an option to upload an image. The detection of skins was also recorded.

#### 4. Results

During the whole survey period, 71 individual PTWL and 10 skin sheds (sloughs) were recorded during the survey, all found under rocks – 81 records in total. The number of lizards found proved high in comparison to previously conducted surveys, across almost half of the area being surveyed, but with a higher number of person-hours survey effort (see Table 1, Table 2 and Figure 3).

Table 1. number of PTWL found on each survey

Survey year	2009	2013	2018/19	2020
PTWL found	66	96	57	81

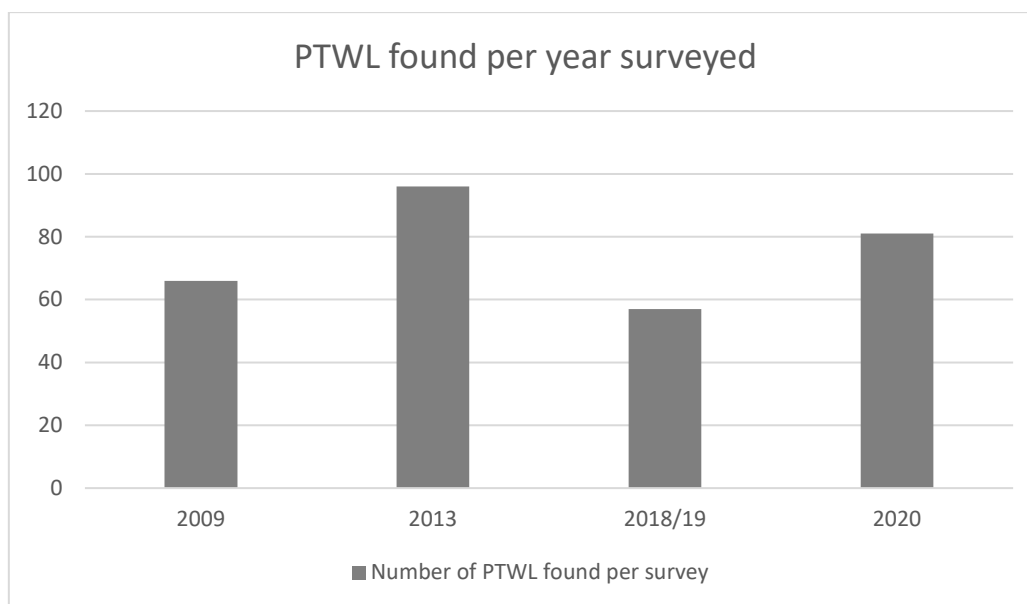


Figure 3 Number of *A. parapulchella* found in each survey year. Data from Osbourne & Wong (2013), Capital Ecology (2019) and this study.

These numbers could indicate the PTWL respond well to higher rainfall, however, more research would need to be conducted to prove this as the 2020 survey was only conducted in the ACT portion of the corridor.

The 2020 survey also proved a higher number of lizards sighted per hectare surveyed in comparison to other surveys but lower per man hours spent surveying (see Table 2 and Figure 4).

Table 2. Number of PTWL found per hectare per survey

Year of survey	2009	2013	2018/19	2020
Number of PTWL found	66	96	57	81
Number of hectares surveyed	580	580	580	360
Average number of PTWL found per hectare	0.114	0.166	0.098	0.225
Number of man hours spent	Unknown	unknown	80	150
Number of PTWL detected per hour	Unknown	unknown	0.71	0.47

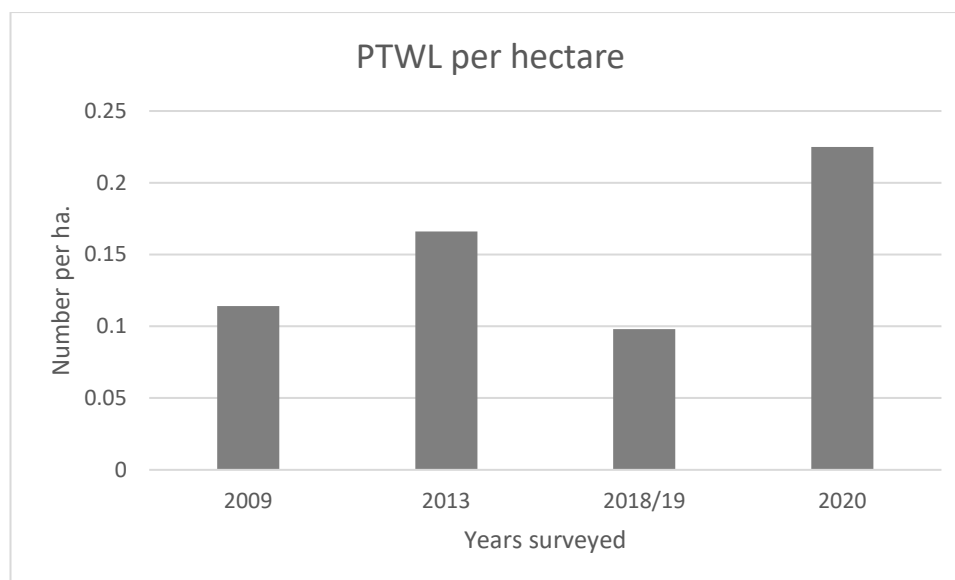


Figure 4 Number of *A. parapulchella* per hectare over four survey years.

### 3.1 Habitat selection:

All PTWL were found in moderate to high quality habitat as previously mapped by Osborne and Wong (2013). Areas with a higher density of native grasses proved to be preferable to PTWL than areas of introduced grasses. Rocks covered in a thick layer of grass did not have PTWL present underneath, this potentially indicates rocks need to be in full sun to heat up enough for a PTWL to bask under it. Rock size varied from 8 cm (see Figure 5) to 40 cm wide. No rocks were lifted that were too thick to prevent injuries - these would require higher temperatures to heat up enough for the PTWL to use. The average size of rocks where PTWL were found was roughly 15-20 cm wide.



Figure 5 The smallest rock PTWL was found under

### 3.2 Cohabiting:

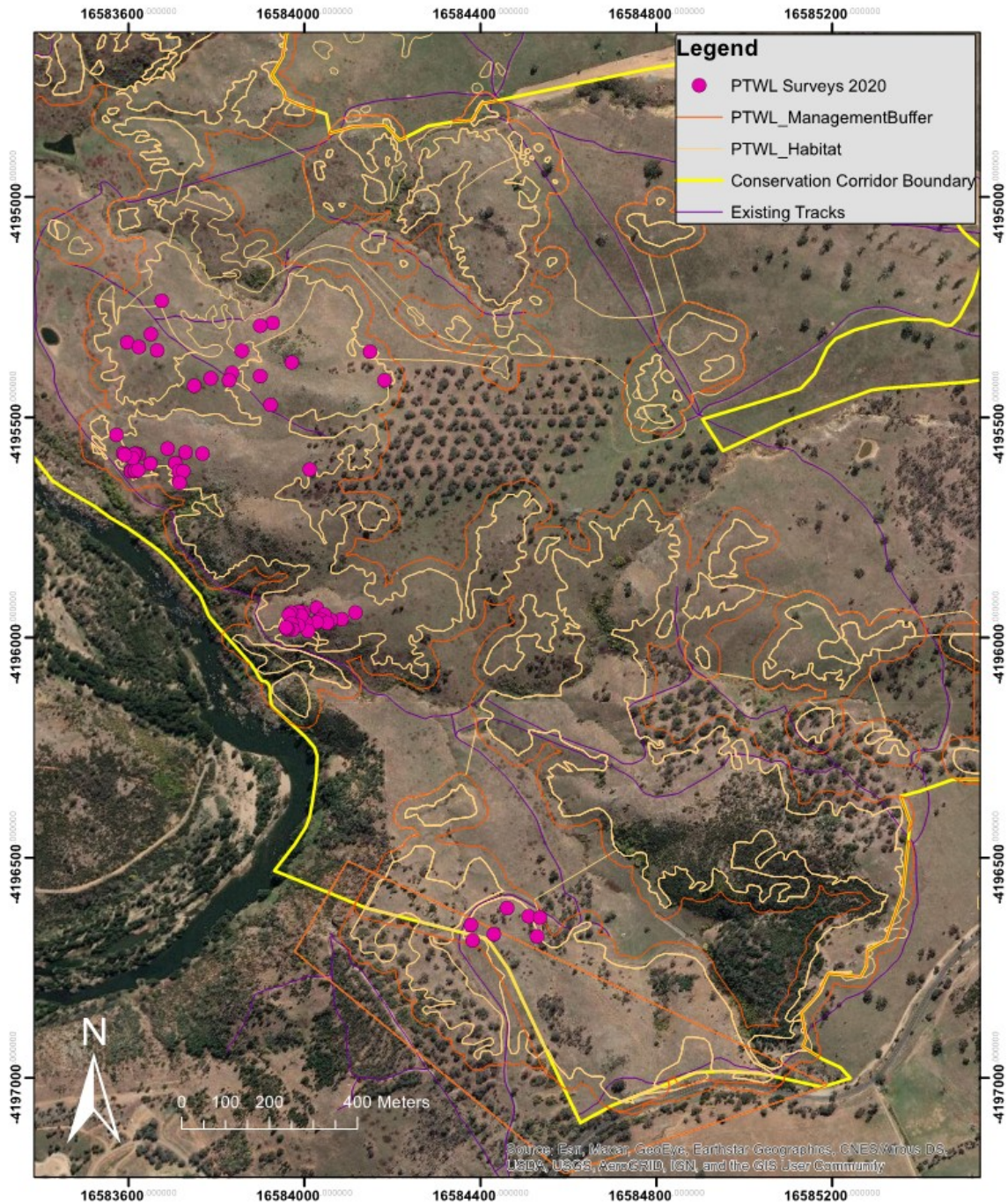
Interestingly, on 11 different occasions two PTWL were found under the same rock. Similarly, on two occasions, three PTWL were found under the same rock. One record showed the Aprasia was coexisting under the same rock as a Copper-tailed Skink (*Ctenotus taeniolatus*). Other species recorded using the same habitat during the survey were; Eastern brown snake (*Pseudonaja textilis*), various wolf spider species (family: *Lycosidae*), Native cockroaches (order: *Blattodea*), various centipedes (*Cormocephalus sp.* and *Scolopendra sp.*) and the Black Rock-Scorpion (*Urodacus manicatus*).



Figure 6: Copper-tailed Skink (*Ctenotus taeniolatus*)

### 3.3 Size:

The surveying did not record the approximate size of each PTWL, however there were 8 anecdotal recordings of PTWL being 15-20cm long in the extra notes section on Survey123. Size can be used as an indicator of age so ideally to get an idea of new animals born in that season. Going forward, snout to vent length should be recorded (Capital Ecology, 2019).



**Pink-tailed Worm-lizard Surveys**

Data provided by Knight Frank. Map prepared by Ginninderry Conservatoon Trust 18 November 2020

Figure 6 PTWL locations from Sep 2020 study



## 5. Discussion

During the 2020 surveys a higher number of PTWL was found within the ACT portion of the conservation corridor. Leading researcher in the ACT on *A. parapulchella*, Richard Milner, determined that approximately 1 PTWL will be found per 100 rock turns in suitable habitats (Milner 2020 pers comm). The monitoring survey within the Ginninderry Conservation Corridor had a greater rate of finds per 100 rock turns, which indicates a good population of PTWL. More PTWL were found per hectare in this survey in comparison to other surveys conducted in the past. This could be for a number of reasons; the higher-than-average rainfall over the year may have supported the growth of Kangaroo grass *Themeda triandra* – the major food source for the ants consumed by PTWL. This could have provided them with more larvae to feed on and increasing their probability of breeding. This, however, is hard to prove as no age-data was recorded.

Another factor could have been the sheer number of man-hours that were helping during the survey times. More hands searching the medium and high-quality habitat areas at the ideal time of day may have increased the chances of us finding them under the rocks when they are basking. The GCT 2020 survey all up was 150 hours of surveying in comparison to the 80 hours spent by Capital Ecology in previous years. Not only is engaging the community a great opportunity to pass on knowledge, but also helped share the load and potentially increased the rate of detection.

This type of survey method while currently the only way to determine numbers of PTWL and their presence, is also listed as a threatening process for them due to the disturbing nature of moving their habitat. To combat this, GCT plans to lay permanent brick-based monitoring plots to avoid regularly disturbing surface rocks in the Corridor during monitoring surveys. Additional rock will also be placed throughout the Corridor to improve the connectivity between habitat patches within the Corridor. With an expansion of available habitat and an introduction of bricks to conduct future surveys on, we can expect to see an increase in the number of Pink-tailed Worm-lizards recorded within the Conservation Corridor.

## 6. Recommendations

- Recording of sizes – size can give an indication of the animals age. Future surveys conducted should include a snout to vent measurement
- Possible future surveying measurements: dominant plant species found around site, tail length, soil and burrow temp, underside rock temp, rock size (length x height x width) and the presence/ absence of ants (recommendations from Osbourne & McKergow report 1993)
- Rock-turning surveys should only be conducted every 2-5 years. It's recommended this type of survey only be conducted at a minimum of every five years. In the meantime, the bricks and new rocks should be placed and grasses to establish. Surveying should commence in Spring 2022 of the new areas.

- Rocks collected for habitat expansion should be between 10-40cm or around the size of a football. Rocks should cover approximately 30% of ground cover in expansion areas.
- Exotic grasses to be controlled. Glyphosate (1:100 glyphosate:water) herbicide has been shown to reduce grass density in areas of high exotics (McDougall et. al 2016)

## 7. References

- Capital Ecology (2018). Ginninderry – Pink-tailed Worm-lizard survey and habitat mapping. Project 2772. 29 May 2018.
- Capital Ecology (2019). Ginninderry – Pink-tailed Worm-lizard survey and habitat mapping of NSW Land. Project 2866. 02 April 2019
- McDougall A, Milner R, Driscoll D and Smith A, (2016) 'Restoration rocks: integrating abiotic and biotic habitat restoration to conserve threatened species and reduce fire fuel load. *Biodiversity Conservation*. 25, pg 1529–1542.
- Osbourne W and McKergow F (1993). Distribution, population density and habitat of the Pink-tailed Legless Lizard *Aprasia parapulchella* in Canberra Nature Park. Department of the Environment, Land & Planning, ACT Government.
- Osborne W and Wong D (10 May 2013). The extent of habitat for the vulnerable Pink-tailed Worm Lizard (*Aprasia parapulchella*) in the West Belconnen-Ginninderra Creek investigation areas – confirmatory distribution surveys and mapping. Institute for Applied Ecology, University of Canberra. Report commissioned by The Riverview Group Pty Ltd.
- SMEC Australia Pty Limited (October 2018). Ginninderry Development Offset Management Plan. Prepared for The Riverview Group (ACT) Pty Ltd.
- TRC Tourism Ltd (September 2018). Ginninderry Conservation Corridor 2018- 2023 Management Plan. Prepared for The Riverview Group (ACT) Pty Ltd.