

APA Transmission Pty Limited

Southern Toadlet Targeted Survey Report

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3 September 2018

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TABLE OF CONTENTS

Executive Summary.....	vi
Executive Summary.....	vi
Scope of Works.....	vi
Results.....	vi
1 Introduction	7
1.1 Project Overview	7
1.2 Purpose of this Report	7
1.3 Study Area	7
1.4 Scope of Works.....	8
1.5 Limitations.....	8
2 Background	9
2.1 Species Status	9
2.2 Species Characteristics	9
2.3 Habitat preferences.....	9
2.4 Species distribution	9
3 Methodology	10
3.1 Desktop Assessment	10
3.2 Survey conditions.....	11
3.3 Targeted Surveys	11
4 Results	12
4.1 Survey Conditions.....	12
4.2 Habitat Descriptions	12
4.2.1 CPT009 (KP2.25)	12
4.2.2 CPT014 (KP4.9 - 5.2)	12
4.2.3 CPT024 (KP9.2).....	12
4.2.4 CPT040NW (N of KP13.77).....	12
4.2.5 CPT040N (N of KP14.0).....	13
4.2.6 CPT044 (KP15.1)	13
4.2.7 CPT061 (KP22.87).....	13

4.2.8	CPT062 (KP23.05)	13
4.3	Amphibian Species Recorded	14
4.3.1	CPT009 Jacks Beach Pastoral (KP2.25)	14
4.3.2	CPT014 Warringine Park (KP4.9 - 5.2)	14
4.3.3	CPT024 Graydens Road (KP9.2)	14
4.3.4	CPT040NW Bluescope Steel (KP13.77)	14
4.3.5	CPT040N Bluescope Steel (KP14.0)	14
4.3.6	CPT044 Bluescope Steel (KP15.1)	14
4.3.7	CPT061 Vowell Drive West (KP22.87)	14
4.3.8	CPT062 Vowell Drive East (KP23.05)	15
5	Summary	16
6	References	17

ANNEXURES

Tables

Table 1. Southern Toadlet targeted survey locations	10
Table 2: Field conditions during targeted surveys.	22
Table 3: Amphibian species recorded during targeted surveys.	23

Figures

- Figure 1: Overview of Pipeline Alignment
- Figure 2: Southern Toadlet Targeted Survey Location Map
- Figure 3: Photographic Log

Executive Summary

APA Transmission Pty Limited, a wholly owned subsidiary of the APA Group (together referred to as APA) is proposing to construct and operate a 56.2 km in length high pressure gas pipeline which will connect AGL's proposed Gas Import Jetty at Crib Point to the Victorian Transmission System (VTS), east of Pakenham.

Monarc Environmental (Monarc) is providing ecological and environmental services to support the regulatory approval process for the CPP Pipeline on behalf of APA Transmission Pty Limited, including undertaking of targeted fauna surveys to inform State and Commonwealth Referral applications.

This report summarises the findings from targeted surveys of the Southern Toadlet *Pseudophryne semimarmorata* undertaken during their breeding season in May 2018. The aim of the surveys was to determine if the Southern Toadlet was present or is likely to be present in the habitats within or adjacent to the alignment. Presence or likelihood of presence will inform future management actions for the project.

Scope of Works

Monarc completed the following scope of works:

- A search of the Victorian Biodiversity Atlas (DELWP 2018) to develop a list of eight sites that may provide suitable habitat for Southern Toadlet within the vicinity of the alignment.
- Nocturnal surveys at the eight locations identified within the study area on 23 May and 24 May 2018. Nocturnal surveys combined listening, call playback (using the advertising calls of male Southern Toadlet), recording and active searching with spotlights in appropriate habitat.
- Preparation of this report, summarising the works undertaken, the findings and recommendations.

Results

The eight survey sites comprised three wetlands (identified as CPT009, CPT040 NW and CPT062), three creeks (identified as CPT014, CPT024 and CPT044), one farm dam (CPT061) and one drainage line (CPT040 N). Seven amphibian species, including the Southern Toadlet, were recorded from the eight locations surveyed, as follows:

- The Southern Toadlet was heard calling from under leaf litter at survey site CPT009 (Jacks Beach Pastoral, Bittern).
- The Common Eastern Froglet *Crinia signifera* was recorded at all eight survey sites.
- Survey sites CPT009 and CPT062 had the most amphibian species (four species recorded at each site).

1 Introduction

1.1 Project Overview

APA Transmission Pty Limited, a wholly owned subsidiary of the APA Group (together referred to as APA) is proposing to construct and operate a high pressure gas pipeline which will connect AGL's proposed Gas Import Jetty at Crib Point to the Victorian Transmission System (VTS), east of Pakenham.

Refer to the Flora and Fauna Assessment - Crib Point Pakenham Pipeline (Monarc 2018) for a full description of the project.

1.2 Purpose of this Report

Monarc Environmental (Monarc) is providing ecological and environmental services to support the regulatory approval process for the CPP Pipeline on behalf of APA, including undertaking of targeted fauna surveys to inform State and Commonwealth Referral applications.

This report summarises the findings from targeted surveys of the Southern Toadlet *Pseudophryne semimarmorata* undertaken during their breeding season in May 2018. This report outlines the methodology used to conduct surveys, describes the habitat characteristics of each site surveys, and presents the results of the surveys in terms of species presence.

The overall aim of this survey was to determine if the Southern Toadlet was present or is likely to be present in the habitats within or adjacent to the alignment. Presence or likelihood of presence will inform future management actions for the project.

1.3 Study Area

The proposed pipeline is to be installed between Crib Point, approximately 63km south-south-east of Melbourne on Victoria's Mornington Peninsula and Pakenham, about 56km east-south-east of Melbourne. Refer to **Figure 1** for an overview of the pipeline alignment.

The total alignment will be approximately 56.2km in length, with a project corridor up to 30 metres in width. In environmentally sensitive areas, subject to the results of studies undertaken for the project, the project corridor may be reduced to avoid or minimise impacts to sensitive features.

The following is a brief description of the proposed route:

- From the Crib Point jetty, the route heads in a westward direction, crossing The Esplanade and entering private property (BP owned) where it turns north heading towards Woolleys Road. It then travels north-west, adjacent to Woolleys Road within the Esso/APA easement (PL11/46) before crossing Woolleys Road. It continues in a north-westerly direction through private property and entering Warringine Park at approximately KP3.25.
- The route travels in a north-westerly direction until approximately KP3.8 where it turns and heads directly north. It travels in this direction through the park for approximately 1.1km before turning westwards inside the park, along Reid Parade, before exiting Warringine Park, (KP 5.2). From here it turns northwards to follow the Frankston-Flinders Road service lane for approximately 900 metres. At this point it turns east into High St where it enters the Stony Point rail easement for 500 metres before heading turning left into Cool Store Road at KP6.8. It then

turns back into Frankston-Flinders Road to continue northwards for a further two kilometres on the eastern side of the road.

- The route crosses Graydens Road then heads northwards, then east through private land, crossing the Stony Point Rail line and Frankston-Flinders Road to the north of Hastings at approximately KP9.8 to travel in a north-easterly direction for the remainder of the route through to Pakenham.
- As it heads north-easterly, the route follows Esso's pipeline easement (PL27/35) from KP10.4, south of Denhams Road, Hastings to KP29.7 near the South Gippsland Highway. The route is directly adjacent to the Esso easement for this component and travels through private land parcels, crossing several major and minor road easements and key drainage lines connected to the Western Port Ramsar Wetland.
- From the South Gippsland Highway, the route branches away from the Esso easement, travelling north-easterly through private land parcels, major and minor road easements and drainage lines before crossing the Princes Freeway and Princes Highway to meet PL75 within private land.

1.4 Scope of Works

The scope of works comprised the following:

- A search of the Victorian Biodiversity Atlas (DELWP 2018) to develop a list of locations that may provide suitable habitat for Southern Toadlet within the vicinity of the alignment.
- Nocturnal surveys at the eight locations of potential habitat identified within the study area on 23 May and 24 May 2018. Nocturnal surveys combined listening, call playback (using the advertising calls of male Southern Toadlet), recording and active searching with spotlights in appropriate habitat.
- Preparation of this report, summarising the works undertaken, the findings and recommendations.

1.5 Limitations

Refer to the Flora and Fauna Assessment - Crib Point Pakenham Pipeline (Monarc 2018) for a discussion of limitations associated with all flora and fauna assessments undertaken for the project by Monarc.

2 Background

2.1 Species Status

The Southern Toadlet *Pseudophryne semimarmorata*, is listed as Vulnerable under the DELWP *Advisory List of Threatened Vertebrate Fauna in Victoria* (DSE 2013). The species is not listed under the *Environment Protection and Biodiversity Conservation Act 1999 Act* or the *Flora and Fauna Guarantee Act 1988*.

Although there have been no comprehensive surveys in Victoria, the population trend is suspected to be decreasing (Gillespie, Robertson & Cogger 2004). In South Australia, the species has not been recorded in frog census since 1996 (Walker 2003) while surveys conducted in areas affected by the 2009 Kilmore East-Murrindindi Black Saturday fires in Victoria revealed that the Southern Toadlet was detected in only one of 106 survey sites, which covered burnt and unburnt areas known to previously support the species (Howard, Cleeland & Clemann 2010).

2.2 Species Characteristics

The Southern Toadlet grows to approximately 25-35mm in length with the females being the larger of the sexes (Tyler & Knight 2011).

They are dark olive green to dark brown coloured above, with irregular darker flecks. The chest and anterior part of the belly are boldly marbled with black and white; while throat, posterior part of belly and lower surfaces of limbs are flesh-coloured to orange. The skin has numerous warts above. In females, the underside is smooth but in males it is granular. Its toes are not webbed and its movement tends to be by walking rather than hopping. Tadpoles are dark brown with clear fins and dark flecks. (Cogger 2014).

Southern Toadlets are nocturnal, active at night between the months March to June. Breeding occurs over autumn for this species. Male calling starts from February and may go until June and tends to be after heavy rain or when water is available. Tadpoles can be observed between April to June (Frogs of Australia 2013).

2.3 Habitat preferences

Southern Toadlets are found in a variety of damp situations in sclerophyll forests under logs, rocks and leaf litter where it lives in small tunnels during the breeding season (Cogger 2014). They are associated with forest, woodlands, heaths and grasslands but not necessarily near permanent water (SWIFFT 2018).

They tend to inhabit areas that are inundated after rain such as ephemeral wetlands or drainage lines allowing for ideal spawning conditions. Eggs are spawned in shallow burrows or nests under litter with tadpoles hatching when the area is flooded. Tadpoles can be found in ponds, dams, flooded grassland or even roadside ditches and drainage lines (Frogs of Australia 2018).

2.4 Species distribution

The Southern Toadlet is endemic to south-east Australia. They are restricted to southern Victoria, eastern and northern Tasmania and south-eastern South Australia. In Victoria, it has been recorded

on and south of the Great Dividing Range and scattered populations between the Otway Ranges and the South Australian border (SWIFFT 2018).

3 Methodology

3.1 Desktop Assessment

A search of the Victorian Biodiversity Atlas (DELWP 2018) was conducted for the general area of the alignment (approximately 56km) to ascertain potential presence of the Southern Toadlet based on known records in the area.

A total of 94 sightings have been recorded for Southern Toadlets within 5km of the alignment since 1971. A number of these sightings were in proximity to the proposed pipeline. Notable were sightings in 2010 at Warrangine Park and Bluescope Steel in Hastings.

This information was used to develop a preliminary list of locations that may provide suitable habitat for Southern Toadlet within the vicinity of the alignment. A combination of desktop assessments and on-ground habitat assessments were then undertaken to confirm habitat suitability. A total of eight locations were identified, at the time, for targeted surveys and are listed in Table 1 and presented as Figure 2 below.

Table 1. Southern Toadlet targeted survey locations

Site No.	Easement Number	KP	Location	Description
1	CPT009	2.25	Jacks Beach Pastoral Wolleys Road, Bittern	Wetland
2	CPT014	4.9 - 5.2	Warrangine Park Reid Parade, Hastings	Creek Line
3	CPT024	9.2	Grayden's Road, Tyabb	Creek Line
4	CPT040 NW	NW 13.77	Bluescope Steel (Esso Easement) McKirdy's Road, Tyabb	Wetland
5	CPT040 N	N 14.0	Bluescope Steel (Esso Easement) McKirdy's Road, Tyabb	Drainage Line
6	CPT044	15.08	Bluescope Steel (Esso Easement) McKirdy's Road, Tyabb	Creek Line
7	CPT061	22.87	Private property west of Vowell Drive, Pearcedale	Farm Dam
8	CPT062	23.05	Private property east of Vowell Drive, Pearcedale	Wetland

3.2 Survey conditions

Southern Toadlet surveys were undertaken in accordance with the methodology prescribed in the Biodiversity Precinct Structure Planning Kit (DSE 2010) which include the following survey condition requirements:

- Survey from March to July,
- Survey techniques include listening for calls/call-playback/active searching/spotlighting,
- Survey two areas for 90 minutes in areas of suitable habitat.

3.3 Targeted Surveys

Experienced field zoologists and ecologists from Monarc Environmental conducted nocturnal surveys within the study area on 23 May and 24 May 2018 at the eight locations identified in Error! Reference source not found..

Surveys were conducted between 5:30pm and 01:00am on the days indicated, using a combination of listening, call playback (using the advertising calls of male Southern Toadlet), recording and active searching with spotlights in appropriate habitat. This included a search of banks and emergent vegetation where appropriate.

Surveys commenced with a period of listening at each survey point to determine if any amphibians were active in the area (minimum 10 mins). Howard *et al* (2010) states that they used call playback while acknowledging that “males tend to be non-chorusing, not responding to other individual’s calls, call play back was still attempted to encourage the commencement of calling”. This was also undertaken for these surveys with call-playback played several times to encourage other males to begin calling (minimum 2 mins). Calls were broadcasted along the creeks and drainage lines and at least two locations within each of the smaller waterbodies. After playback, ten minutes was spent listening for any evidence of Southern Toadlet response. This was followed by another call-playback and a recording of the amphibians audible during the survey (minimum 2 mins), for later confirmation against reference recordings of calls. After the recording, at least 15 minutes per location was spent actively searching for Southern Toadlets using a handheld spotlight in suitable habitats, including under rocks, logs, and leaf litter. All species detected during the surveys were noted.

Habitat features such as vegetation composition and structure, presence of refuge or shelter sites and suitable dispersal sites were also noted. Features noted about each of the survey sites included availability of habitat (e.g. leaf litter) and location in the landscape (e.g. proximity to other Southern Toadlet sites). Weather conditions during the surveys were also recorded.

Each survey site was assessed twice (except for CPT061 Vowell Drive West and CPT062 Vowell Drive East) during moderate climatic conditions within the available timeframe (refer Section 5.2). Howard *et al* (2010) states that “When conditions are suitable for calling, there is a greater than 90% chance of detecting calling within two minutes, and greater than 99% chance within four minutes” so the level of survey undertaken was considered sufficient to maximise the probability of detecting Southern Toadlets within the study area at this time.

4 Results

4.1 Survey Conditions

Targeted surveys for the Southern Toadlet were conducted on 23 and 24 May 2018 between 5:00pm - 01:00am (see **Figure 3** for Site Photos). The temperature ranged between 12°C and 14.2°C. **Table 2** summarises the field conditions during the nocturnal surveys.

4.2 Habitat Descriptions

4.2.1 CPT009 (KP2.25)

CPT009 is within the private property of Jacks Beach Pastoral adjacent to Woolleys Rd, Bittern.

This site was a patch of Damp Heathy Woodland (EVC793) on a rural property, with a small wetland amongst tall eucalypts and shrubs including Swamp Paperbark *Melaleuca ericifolia*, Hedge Wattle *Acacia paradoxa* and Coastal Woolly Tea-tree *Leptospermum lanigerum*. The vegetation around the dam was quite dense with only the sloping banks of the dam being clear of vegetation. The ground beneath the shrubs had a layer of leaf litter over an uneven surface, with many small depressions and rills leading into the dam. Outside of this patch of vegetation was open pasture.

4.2.2 CPT014 (KP4.9 - 5.2)

CPT014 is within Warringine Park south of Reid Parade, Hastings.

The location is along Warringine Creek and supported a Swampy Riparian Woodland (EVC83). This area is a mixture of shrubs and aquatic vegetation under some taller eucalypts and wattles. There is fallen timber and other suitable cover adjacent to the creek and up slope that provides potential habitat for the toadlet.

4.2.3 CPT024 (KP9.2)

CPT024 is within private property at 12 Graydens Road, Tyabb near the corner with Frankston-Flinders Road.

This site is on a rural allotment adjacent to a farm dam and a tributary of Oliver's Creek. The position and size of the actual creek line is unclear as the dam has altered the natural course. The survey area consisted of Swampy Riparian Woodland (EVC83) with canopy trees and little native understorey although there was significant vegetation cover on the ground.

The main area of interest was a depression sloping toward the Oliver's Creek tributary, with a substantial amount of fallen timber and leaf litter providing potential habitat for toadlets.

4.2.4 CPT040NW (N of KP13.77)

CPT040NW is located within Swamp Scrub (EVC53) on the existing Esso pipeline easement within the private property of Bluescope Steel at 12-18 McKirdys Road, Tyabb.

The Swamp Scrub area is upstream and adjacent to a large wetland and was characterised by thick Swamp Paperbark and small patches of sedge *Carex* sp., Common Reed *Phragmites australis*, and Fireweed *Senecio* sp. on the edge and along the easement, however the ground surface was mostly bare soil. The ground surface through this area was also heavily pugged, due to cattle, with many of these pugs containing leaf litter or small pools of water.

4.2.5 CPT040N (N of KP14.0)

CPT040N is the drainage line connecting to the large wetland within the Bluescope Steel property in Tyabb. The Swamp Scrub supported a more diverse ground layer than described above with Spiny-headed Mat-rush *Lomandra longifolia*, sedges, various herbs and exotic grasses with the canopy dominated by Swamp Paperbark. Fallen paperbark branches also provide potential habitat.

4.2.6 CPT044 (KP15.1)

CPT044 is a drainage line of Swampy Riparian Woodland with Heathy Woodland up slope on both sides, adjacent to the Esso pipeline easement within the Bluescope Steel property in Tyabb. The area supported Rough-barked Manna Gum *Eucalyptus viminalis pryoriana* and Swamp Gum *E. ovata*, while the midstorey was comprised of Prickly Tea Tree *Leptospermum continentale*, and Swamp Paperbark with an understorey characterised by a mix of Austral Bracken *Pteridium esculentum*, Grey Tussock-grass *Poa sieberiana*, Blady Grass *Imperata cylindrica* and Thatch Saw-sedge *Gahnia radula*.

The Heathy Woodland contained on overstorey of Rough-barked Manna Gum and Narrow-leaved Peppermint *Eucalyptus radiata* along with the some exotic Radiata Pine *Pinus radiata*. The shrub layer was a good mix of wattles, tea-tree and other small to large shrubs with a very diverse groundlayer of bracken, graminoids, orchids and a mixture of herbs. There was an abundance of fallen timber and leaf litter within close proximity to the drainage line.

4.2.7 CPT061 (KP22.87)

CPT061 is located on the western side of Vowell Drive, Pearcedale within private property.

This location, a small, depauperate patch of Swampy Riparian Woodland (EVC83), was characterised by a canopy of Swamp Gums. The mid-storey, where present, were mostly invasive Gorse *Ulex europaeus* and the invasive Sallow Wattle *Acacia longifolia*. Groundcover was dominated by Austral Bracken and the exotic Sheep Sorrel *Acetosella vulgaris* with leaf litter, scattered dead branches and a fallen tree trunk. There were ample potential sheltering sites within this area. This patch of native vegetation was adjacent to a farm dam which only supported 10% fringing vegetation cover and no emergent aquatic vegetation.

4.2.8 CPT062 (KP23.05)

CPT062 is located on the eastern side of Vowell Drive, Pearcedale within private property. This location is across the road from CPT061.

A wetland complex is located east of this site, which is next to the driveway and adjacent to patches of Swampy Riparian Woodland and Swamp Scrub. The driveway was lined with exotic *Agapanthus Agapanthus praecox* subsp. *orientalis*. Similar to CPT061, the area supported eucalypts, wattles and bracken but had significantly less dead branches and leaf litter as the area had been recently cleared and burnt at the time of the survey.

4.3 Amphibian Species Recorded

A total of seven amphibian species, including the Southern Toadlet, were recorded from the eight locations surveyed. Photos of the survey sites and some frog species recorded can be found in **Figure 3**.

The Southern Toadlet was heard calling from under leaf litter on the western side of the pond bank at CPT009 (Jacks Beach Pastoral, Bittern). The other six species recorded are relatively common throughout the greater south-eastern Melbourne area. The Common Eastern Froglet *Crinia signifera* was the most common amphibian and was recorded at all eight locations. CPT009 and CPT062 had the most amphibian species recorded (four species each). The survey results are discussed below and summarised in **Table 3**.

4.3.1 CPT009 Jacks Beach Pastoral (KP2.25)

The Southern Toadlet was recorded from this location on 24 May 2018. It was heard calling from under leaf litter on the western side of the pond, amongst Swamp Paperbark and Hedge Wattle.

The following amphibians were also recorded from this location - Common Eastern Froglet, Southern Brown Tree Frog *Litoria ewingii*, and Whistling Tree Frog *L. verreauxii verreauxii*.

4.3.2 CPT014 Warringine Park (KP4.9 - 5.2)

The Common Eastern Froglet was the only amphibian recorded from this location.

4.3.3 CPT024 Graydens Road (KP9.2)

The Common Eastern Froglet was the only amphibian recorded from this location.

4.3.4 CPT040NW Bluescope Steel (KP13.77)

The Common Eastern Froglet was the only amphibian recorded from this location.

4.3.5 CPT040N Bluescope Steel (KP14.0)

The following amphibians were recorded from this location - Common Eastern Froglet, Southern Brown Tree Frog with Whistling Tree Frog heard in the distance.

4.3.6 CPT044 Bluescope Steel (KP15.1)

The following amphibians were recorded from this location - Common Eastern Froglet, Pobblebonk *Limnodynastes dumerilii*, and Southern Brown Tree Frog.

4.3.7 CPT061 Vowell Drive West (KP22.87)

The following amphibians were recorded from this location - Common Eastern Froglet, Spotted Marsh Frog *Limnodynastes tasmaniensis*, and Striped Marsh Frog *L. peronii*.

No further surveys were conducted at this location after the survey on 23 May 2018.

4.3.8 CPT062 Vowell Drive East (KP23.05)

The following amphibians were recorded from this location - Common Eastern Froglet, Spotted Marsh Frog, Striped Marsh Frog, and Whistling Tree Frog.

A more thorough search of this site was not possible due to access and survey restrictions imposed by the landowner. A second survey was not conducted at this location after the survey on 23 May 2018

5 Summary

Eight locations were selected for Southern Toadlet Targeted Surveys in May 2018, in line with the Biodiversity Precinct Structure Planning Kit recommended survey guidelines (DSE, 2010).

A total of seven amphibian species, including the Southern Toadlet, were recorded across the locations surveyed on the nights of 23 and 24 May 2018 (Refer to **Figure 3** for Photos).

The Southern Toadlet was observed under leaf litter on the western side of the pond at CPT009 (Jacks Beach Pastoral, Bittern). The pond at this location was devoid of aquatic vegetation, however, shrubby vegetation such as Swamp Paperbank and Hedge Wattle, adjacent to the pond, supplied leaf litter on the pond's edge.

While no reference sites were investigated in the immediate area during the survey, the level of survey undertaken is considered sufficient to maximise the probability of detecting adult Southern Toadlet within the study area during this period.

Recommendations to mitigate potential impacts to the Southern Toadlet are described in the Flora and Fauna Assessment - Crib Point Pakenham Pipeline (Monarc 2018).

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Figure 1: Overview of Pipeline Alignment



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Crib Point Pakenham Pipeline Project
Figure 1: Overview of Pipeline Alignment

WORK REQUEST NUMBER: 31-02984.00

DATA SOURCES:
 Service Layer Credits: Reference/World_Boundaries_and_Places: Esri, HERE, Garmin
 DeLorme World Basemap: Copyright:© 2018 Garmin
 World Imagery: Earthstar Geographics, CNES/Airbus DS

LEGEND

— Pipeline Alignment

ISSUE DATE	AUTHOR	QA CHECK	APPROVED	MAP REV.	REVISION NOTE
20/08/2018	AB	JH	MV	B	Issued for Review
09/07/2018	KH	JH	CC	A	Issued for Review

LOCATION DIAGRAM

monarc ENVIRONMENTAL
 apa

0 1 2
 Kilometres
 1:120,000
 (A3) GDA 1994 MGA Zone 55

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Figure 2: Southern Toadlet Targeted Survey Location Map



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Crib Point to Pakenham Pipeline Project
Figure 2: Southern Toadlet Targeted Survey Location Map

WORK REQUEST NUMBER: 31-02984.00

DATA SOURCES:
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LEGEND

Targeted Survey Locations

- ST present
- ST absent
- Pipeline Alignment

ISSUE DATE	AUTHOR	QA CHECK	APPROVED	MAP REV.	REVISION NOTE
28/08/2018	AB	JH	MV	B	Issued for Review
10/07/2018	KH	JH	CC	A	Issued for Review

LOCATION DIAGRAM

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 apa

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 Kilometres
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(A3) GDA 1994 MGA Zone 55

Path: L:\Monarc\ESR\Clients\APA\Gasnet\Crib Point to Pakenham\Ecological Assessments\ST Report.aprx

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Figure 3: Photographic Log



Photo 1: CPT009: Jacks Beach Pastoral (KP2.25)



Photo 2: CPT014 - Warringine Creek (KP4.9)



Photo 3: CPT024 Graydens Road - Oliver's Creek tributary (KP9.25)



Photo 4: CPT040 NW Bluescope Steel (NW KP14.0)



Photo 5: CPT040 N Bluescope Steel (N KP14.0)



Photo 6: CPT044 Bluescope Steel (KP15.1)



Photo 7: CPT061 Vowell Drive West (KP22.87)



Photo 8: CPT062 Vowell Drive East (KP23.05)



Photo 9: Common Eastern Froglet *Crinia signifera*, recorded at all survey locations.



Photo 10: Pobblebonk *Limnodynastes dumerilii* observed on the Bluescope Property (KP15.1)

Table 2: Field conditions during targeted surveys.

Field conditions	CPT009 Survey1	CPT009 Survey 2	CPT014 Survey 1	CPT014 Survey 2	CPT024 Survey 1	CPT024 Survey 2	CPT040NW Survey1	CPT040NW Survey2	CPT040N Survey1	CPT040 Survey2	CPT044 Survey1	CPT044 Survey2	CPT061 Survey1	CPT062 Survey1
Timing	23 May 11:00 - 12:00pm	24 May 8:30 - 9:45pm	23 May 12:00pm - 01:00am	24 May 9:45 - 11:00pm	23 May 7:15 - 8:15pm	24 May 8:00 - 9:00pm	23 May 8:30- 11:00pm	24 May 6:00 - 6:45pm	23 May 8:30- 11:00pm	24 May 6:45 - 7:30pm	23 May 8:30- 11:00pm	24 May 7:30 - 8:00pm	23 May 5:30- 7:00pm	23 May 5:00- 6:00pm
Night time air temp* (°C) (Start - End)	13.2 - 13.1	12.0 - 13.0	12.9 - 12.9	13.0 - 13.0	13.0 - 13.0	13.0 - 13.0	14.2-13.3	13.0 - 13.0	14.2 - 13.3	13.0 - 13.0	14.2 - 13.3	14.0 - 13.0	13.0 - 13.0	13.0 - 13.0
Wind direction* & speed*	7km/h WNW		7km/h WNW		<1km/h WNW		10-17 km/h WNW		10-17 km/h WNW		10-17 km/h WNW		<1 WNW	<1 WNW
Relative Humidity* (%)	83		85		75		76		76		76		72	72
Cloud cover (%)	60	80	60	100	80	80	60	90	60	90	60	90	80	80
Rainfall in previous 24 hours (mm)	<5		<5		<5		<5		<5		<5		<5	<5
Moon Phase		3 rd Quarter		3 rd Quarter		3 rd Quarter		3 rd Quarter		3 rd Quarter		3 rd Quarter		

*Source: Bureau of Meteorology Mobile App

Table 3: Amphibian species recorded during targeted surveys.

Common Name	Scientific Name	CPT009	CPT014	CPT024	CPT040NW	CPT040N	CPT044	CPT061	CPT062
Common Eastern Froglet	<i>Crinia signifera</i>	X	X	X	X	X	X	X	X
Pobblebonk	<i>Limnodynastes dumerilii</i>						X		
Striped Marsh Frog	<i>Limnodynastes peronii</i>							X	X
Spotted Marsh Frog	<i>Limnodynastes tasmaniensis</i>							X	X
Southern Brown Tree Frog	<i>Litoria ewingii</i>	X				X	X		
Whistling Tree Frog	<i>Litoria verreauxii verreauxii</i>	X				X			X
Southern Toadlet	<i>Pseudophryne semimarmorata</i>	X							
	Total	4	1	1	1	3	3	3	4