

# Wonthaggi North East Precinct Structure Plan

Targeted  
Growling Grass Frog,  
Swamp Skink and  
Latham's Snipe Surveys

**Bass Coast Shire Council**

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**Nature  
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# 1 Introduction

Bass Coast Shire Council engaged Nature Advisory to conduct a targeted survey of the threatened Growling Grass Frog (GGF), Swamp Skink (SS) and the migratory Latham's Snipe (LS) within suitable habitat in approximately 675-hectare area of land in the north-eastern part of Wonthaggi. The specific area investigated, referred to herein as the 'study area', was the area of land defined as the Wonthaggi North East Precinct Structure Plan (PSP) area.

This investigation was commissioned to provide information on the possible presence of any of the three threatened species and extent and condition under which they utilise the study area. This report outlines any implications under relevant national, state and local legislation and policy frameworks.

Specifically, the scope of the investigation included:

- A review of existing information on the relevant targeted fauna species
- site visits incorporating specified survey methods for the threatened Swamp Skink, Growling Grass Frog and Latham's Snipe.
- Preparation of maps for the site showing survey point locations and any results.

This investigation was undertaken by a team from BL&A, comprising, Andrew McVinish (Zoologist, GGF), Peter Lansley (Senior Zoologist, GGF), Khalid Al-Dabbagh (Senior Zoologist, GGF, SS, LS) and Inga Kulik (Ecologist and Project Manager).

## 2 Study Area

The study area for this investigation was approximately 675 hectares of land located immediately to the east of the existing Wonthaggi township. The study area was bounded by Heslop Road in the north, Fullers Road to the north-east, and Carneys Road to the west. Two other main roads dissect the study area, namely the Bass Highway (B460) in the southern part of the study area, and Korumburra-Wonthaggi Road (C437) in the north. Three minor roads cross the study area, Wentworth Road and Oates Road in the north and McGibbony's Road runs diagonally north of the Bass Highway.

The study area is mostly comprised of several large agricultural lots, that are either used for crop (predominantly Rye Grass), the production of hay or grazing by cattle. South of the Bass Highway, the study area comprises a number of smaller residential and industrial lots.

Vegetation in the study area consisted largely of introduced pasture, which was present throughout the large agricultural lots within the study area. Native scrub vegetation, distinguished by a dense canopy and mid layer of Swamp Paperbark occurred commonly along roadsides throughout the study area as identified during the Flora and Fauna Assessment for the PSP, undertaken by Nature Advisory in 2016 and 2018 (Report 16188(1.6)). Scrub vegetation was generally low in native species diversity and comprised a high cover of introduced flora including several high threat species, namely Blackberry, Montpellier Broom and Sweet Pittosporum. Native scrub was also found within properties, along fences or in drainage lines. The largest areas of scrub occurred along Korumburra-Wonthaggi Road, and McGibbon's Road, north of the intersection of Bass Hwy and Carneys Road.

Native woodland was located in linear patches along roadsides or property boundaries. South of the Bass Highway, several small patches of woodland were mapped within larger grassy paddocks. One area of Lowland forest, dominated by Messmate Stringybark was also recorded south west of the intersection of Bass Hwy and Carneys Road.

Scattered native canopy trees were also recorded throughout the study area and included Swamp Paperbark and Swamp Gum, which were mostly found north of McGibbony's Road and Coast Manna-gum, which was recorded mostly to the south, and included several large old trees.

Fauna habitat within the study area suitable for the threatened Swamp Skink was mainly limited to roadside vegetation areas (namely Korumburra-Wonthaggi Road and McGibbony's Road), and the small patches of remnant woodlands still standing in the southern section of the study area. Although generally low in native flora species diversity and high in weed cover, provide the main habitat corridors throughout the study area, connecting with other woody habitats beyond the study area boundary.

Growling Grass Frog habitat was mainly limited to a deep inundated waterbody east of Mullin Parade that was previously identified as having potential to support a population of GGF. The water body covered approximately 65 x 55 metres, with some emergent Narrow-leaf Cumbungi (*Typha domingensis*) in its eastern half, no noticeable floating vegetation and was densely fringed with Swamp Paperbark. Other aquatic habitat within the study area was largely limited to farm dams and a number of narrow drainage lines.

The study area lies within the Gippsland Plain bioregion and falls within the West Gippsland catchment.

## 3 Swamp Skink

### 3.1 Background information for Swamp Skink

#### *Description*

The Swamp Skink (*Lissolepis coventryi*) is a deep-bodied but elongate lizard, with well-developed pentadactyl limbs and a long thick tail. This species is pale yellowish or greenish brown to dark olive-brown on the back, head and tail. Usually there are two broad, jagged-edged black stripes along the back, head and tail, not extending on to the tail. The ventral scales are pale greenish yellow-brown to grey or cream. The Swamp Skink grows to a snout-vent length of 100 mm (Robertson and Coventry 2019)).



Swamp Skink (Source: Nature Advisory 2011)

#### *Distribution and Habitat*

The Swamp Skink is widely but disjunctly distributed throughout southern Victoria (see Figure 1). A species of the cool and warm temperate Bassian sub-zones, it is restricted to swampy habitats within damp sclerophyll forests, riparian forests, heathland and saltmarsh ecosystems. Specialized for life in dense, damp vegetation often dominated by sedges, reed or melaleuca.

Swamp Skink is largely terrestrial species, capable swimmer and often climb up to 2 m high in dense sedge to reach suitable basking sites. It is diurnal, sheltering in burrows when inactive (Robertson and Coventry 2019).

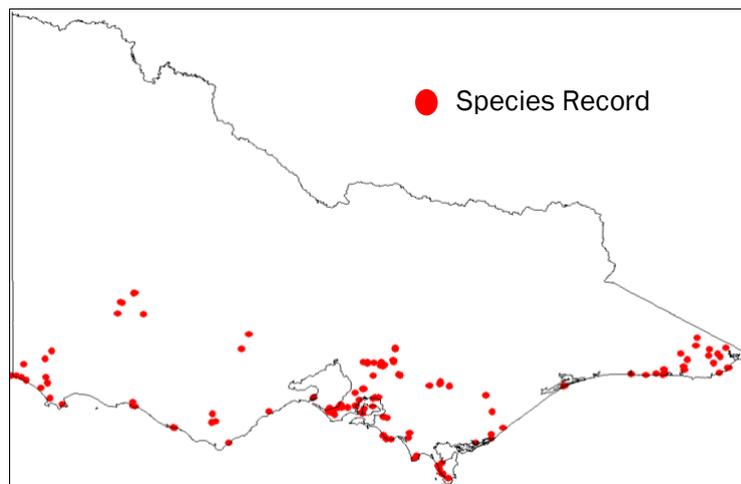


Figure 1: Distribution of Swamp Skink in Victoria

### Threats

Possible threats to the Swamp Skink include habitat loss through urban development and drainage of swamps for agriculture purposes. Other threats include pollution and sedimentation (including storm water runoff) and alterations to hydrological regimes (through construction of roads, tracks, plantations). Weed invasion, visitor disturbance (trail bikes, 4WD) and predation by cats and foxes all play a role in the decline of this species.

### Legislative protection

The Swamp Skink is listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988* and is considered to be *vulnerable* under the DSE advisory list (DSE 2013).

## 3.2 Existing information

A list of the Swamp Skink recorded within a 10 km buffer from the centre of the study area was obtained from the Victorian Biodiversity Atlas (VBA, last revised Aug. 2020), a database administered by DELWP (2016).

Information on suitable habitat was obtained from earlier studies of the flora and fauna of the area (Nature Advisory 2020). Additional information was obtained from another study which investigated the threatened fauna species in the Wonthaggi Area (BL&A 2011).

### Previous records within the search region

There are 12 records of the Swamp Skink from the VBA within the search region, and they are all within the past 10 years. The exact location of the records was not given by the VBA, as they were described as sensitive locations, but judging from the GPS locations, they could have been taken from an area approximately 7 to 8 km south of Wonthaggi. The majority of the records were probably from Heathland reserves with undisturbed vegetation. Connectivity to the study area from any Heathland is limited and it is unlikely that the Swamp Skink would disperse from these reserves to the study area.

## 3.3 Field methodology

The field assessment was conducted on three separate field trips on the 13<sup>th</sup> and 28<sup>th</sup> October and the 4<sup>th</sup> November, 2020. A number of techniques were used to detect the Swamp Skink inhabiting the study area, these included:

- Placement of Digital Game Cameras (M-Series-Moultrie) throughout suitable skink habitat at the study area (Figure 2), and
- Active searches for the skinks in the early morning and late afternoon, with concentration on suitable habitats.

The cameras were set up to scan the presence of the skink throughout the survey period as follows:

- Ten camera positions were used over the period 13 to 28 October and were placed in positions (position 1 to 10) within suitable remnant swamp scrub and woodlands at the southern section of the study area (Figure 2). Recording was continuous over 14 days.
- Nine cameras were then used over the second period from the 28<sup>th</sup> October until the 4<sup>th</sup> November on other positions (position 11 to 19) scattered throughout the central and north to north-eastern sections of the study area (Fig. 2). Recording lasted for seven days and, as was the case in the first period, scanning for the skink was mainly within road side swamp scrub.

To attract the skinks, bait was placed within the motion area that trigger the camera sensors. A bait station was secured to the ground approximately 1.5 metres from each camera, and vegetation around the camera cleared to avoid setting off the remote sensor. Each camera was set to take infrared still pictures with a 10 second interval between successive photos. The date, time and species recorded within each picture were recorded.

Images from the Compact discs from each camera was later downloaded on a computer and the frames pictured was examined for the presence of skinks and other wildlife.

#### *Limitations of field assessment*

The skink assessments were undertaken during spring with suitable weather conditions. These conditions were considered suitable for detecting reptiles likely to occur in the study area.

Wherever appropriate, a precautionary approach has been adopted in the discussion of implications. That is, where insufficient evidence is available on the occurrence or likelihood of occurrence of a species, it is assumed that it could be in an area of suitable habitat. The implications under legislation and policy are considered accordingly.

### **3.4 Assessment results**

#### **3.4.1 Active searches**

Incidental searches for the Swamp Skink were undertaken on warm sunny days (total of 20 hours), where tracks, signs and possible burrows were examined. The search was mainly concentrated on habitats, such as swamp scrub and edges of wetlands and drainage or creek lines, most likely to harbour the species. Care was also taken to search for basking skinks, as they are known to ascend up to over one metre on sedges or exposed logs.

The active search did not record any of the threatened Swamp Skinks.

#### **3.4.2 Results from Camera images**

Images (pictures) obtained from the two periods of camera deployments did not record any Swamp Skink, despite the fact that the cameras were placed in the most suitable habitat within the study area, mostly Swamp Scrub along roadsides (Figure 2).

Other common fauna species were recorded some of which in large numbers of the recorded frames. Since recording was continuous, both diurnal and nocturnal fauna was evident in the recordings. The fauna recorded included the followings:

### Mammals

- House Mouse
- Unidentified Rats (probably both of the Brown and Black Rats)
- Short-beaked Echidna
- European Rabbit
- Red Fox
- Common Wombat
- Swamp Wallaby
- House Cat
- Domestic Dog

### Birds

- Common Blackbird
- Superb Fairywren
- White-browed Scrubwren
- Spotted Turtle-Dove
- Yellow-faced Honeyeater
- New Holland Honeyeater
- Unidentified Thornbill

### Reptiles

- Common Blue-tongue Lizard

The majority of the fauna was recorded during the first 14 days of recording at the southern section of the study area. The number of faunas seen during the second period from the central and northern section of the study area was very poor. Such a difference was a reflection of the conditions of habitats where the recording took place. In the southern section of the study area the roadside remnant habitats were more diverse and protected within private properties compared to the road side habitats in the remaining sections of the study area where these habitats were along public roads and highly disturbed.

#### **3.4.3 Impacts on the Swamp Skink**

The current proposal involves the future development of the study area for the purpose of the North East Wonthaggi Precinct Structure Plan (PSP). Development within this area will include residential, business and industrial use.

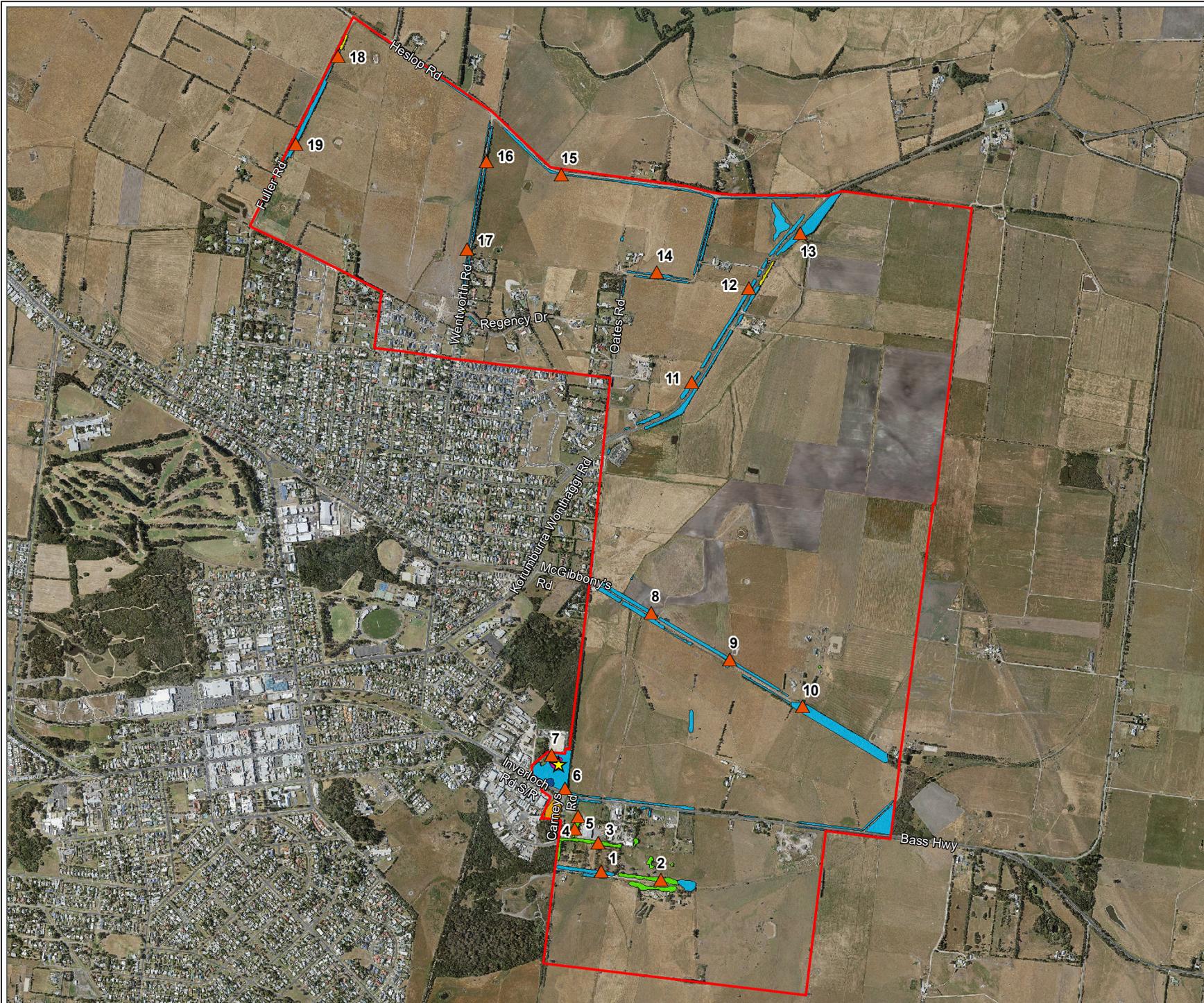
Under the plan, the main fauna habitat linkages are to be retained. Residual fauna habitats likely to be affected are low quality linear patches of scrub along roadsides.

The lack of the threatened Swamp Skink from the area indicate that the risk on this threatened skink is very low.

**Figure 3: Targeted threatened species survey points**

**Project:** North East Wonthaggi PSP  
**Client:** Bass Coast Shire Council  
**Date:** 20/11/2020

- Study area
- ★ Growling Grass Frog survey point
- ▲ Swamp Skink survey points
- Native vegetation**
- Lowland Forest (EVC 16)
- Grassy Woodland (EVC 175)
- Damp Sands Herb-rich Woodland (EVC 3)
- Swamp Scrub (EVC 53)
- Tall Marsh (EVC 821)
- Swampy Woodland (EVC 937)



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## 4 Growling Grass Frog

### 4.1 Background information for Growling Grass Frog

#### Description

The Growling Grass Frog (*Litoria raniformis*) is a large frog species growing to a size of approximately 85 millimetres. It is dull green to bright emerald green with blotches of brown or rich golden bronze and numerous large warts above and whitish below. It has a narrow stripe from the nostrils along each side to the groin, which is bright blue or blue-green (Cogger 2000).

#### Habitat

The Growling Grass Frog is predominantly an aquatic species. Core habitat for the species includes permanent water bodies such as streams, lagoons, farm dams and old quarry sites supporting fringing aquatic vegetation (Cogger 2000; Organ 2002). Waterbodies supporting the Growling Grass Frog usually support floating and emergent flora species such as Common Reed (*Phragmites australis*), Bulrush (*Typha spp.*) and Water Ribbon (*Triglochin spp.*).

This species hides by day under debris and in vegetation and is active at night (Turner 2004).

#### Distribution

Historically the Growling Grass Frog was known to be common throughout most of Victoria except the Mallee and Alpine regions. Presently the species is found along Kororoit Creek and associated nearby wetlands, including the water feature associated with the Caroline Springs development, Merri, Edgars and Darebin Creeks (north of the Western Ring Road), Little River and Western Treatment Plant, Pakenham area and in wetlands adjacent to the Yarra River at Yarra Glen (Organ 2002; Nature Advisory Pty Ltd, unpublished information).

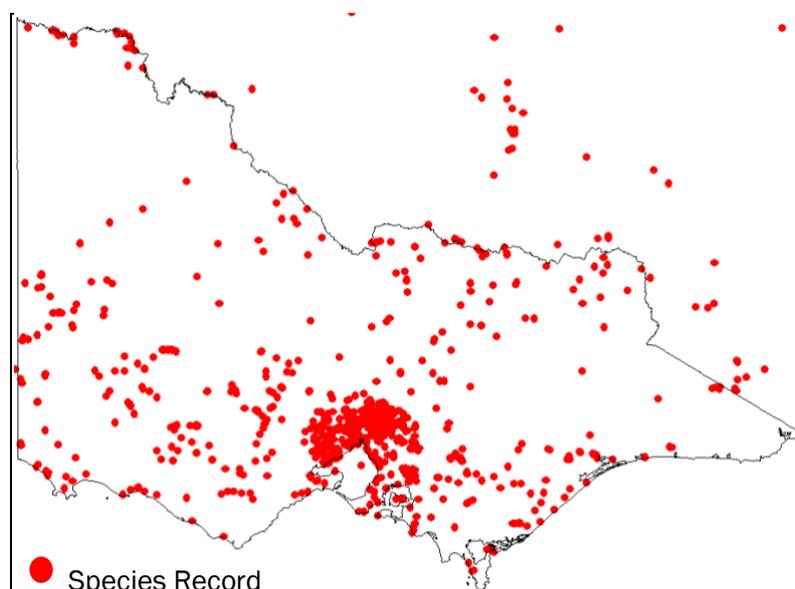


Figure 3: Distribution of Growling Grass Frog in Victoria (Source: Viridans 2011)

#### Threats

The species has undergone a dramatic decline since the 1970s (Tyler 1997; Flora and Fauna Guarantee – Scientific Advisory Committee 1999). The reasons for this decline are not completely understood but a number of factors are believed to be contributing to the species' decline. These

factors include habitat loss and fragmentation through land clearing for agricultural and urban development, drainage and degradation of wetlands, increasing salinity and water pollution (e.g. glyphosate), and increased predation of tadpoles by the introduced Mosquito Fish (*Gambusia spp.*) (Tyler 1997; Flora and Fauna Guarantee – Scientific Advisory Committee 1999).

#### *Legislative protection*

The Growling Grass Frog is listed as *vulnerable* under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is also listed as threatened under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) and *endangered* in Victoria under the Department of Environment, Land, Water and Planning (DELWP) threatened species advisory list (DSE 2013).

## 4.2 Existing information

A list of the Growling Grass Frog recorded within a 10 km buffer from the centre of the study area was obtained from the Victorian Biodiversity Atlas (VBA, last reviewed Aug. 2020), a database administered by DELWP (2020).

Some information on earlier studies of the flora and fauna of the area was obtained from earlier reports (BL&A 2011 and Nature Advisory, 2020).

#### *Previous records within the search region*

There are 14 records of the Growling Grass Frog from the VBA 10km radius search region, but only two are dated since 1990, in February 1991 and October 2012. One of these records is from the Wonthaggi Heathland and Coastal Reserve, where there is extensive wetland habitat. The remaining records were not specified to an accuracy of less than 900 metres but were dated 1961 or prior. Connectivity to the study area from the Heathland and Coastal Reserve limited and it is unlikely that the Growling Grass Frog would disperse from these reserves to the study area.

## 4.3 Methodology

### *Survey Guidelines*

Surveys for Growling Grass Frog were undertaken in accordance to the survey guidelines outlined in the *Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (DEWHA 2009). Call playback and visual active search surveys were undertaken by two zoologists at one wetland over two nights. Surveys were conducted on the following dates:

- 9 November 2020 and
- 19 November 2020.

The sites were surveyed when weather conditions were considered appropriate to detect Growling Grass Frog – i.e. warm evenings with an air temperature of 14 °C or higher, and light to no wind. Under these conditions, frogs are more likely to be calling and active. During each survey, approximately 45 minutes was spent looking for frogs. They took place between 20:15 and 21:30 (AEDT). At the beginning of each survey, a period of 5 minutes was spent at the water's edge listening, also while recording frog species and the abundance of frogs calling. This was immediately followed by 5 minutes of playback of a recorded male GGF advertisement call to encourage any frogs that were present to respond. A further 5 minutes was then spent listening for a response before active searching began.

Following call playback and listening time, the site was systematically searched for frogs with a spotlight and visual inspection for up to 30 person-minutes (i.e. two people separately for 15 minutes). Due to the dense waterside vegetation of this site, such a visual search was necessarily limited. Call recognition and limited active searching (turning surface debris) was also conducted if and where such habitat elements were found. The number of all frog species seen and/or heard at each survey site was recorded.

#### *Limitations of field assessment*

Nature Advisory was requested to conduct surveys at “up to 5 sites” in the Wonthaggi North East Precinct Structure Plan area. Given the limited extent of potential inundated Tall Marsh habitat suitable for GGF, measuring approximately 65 x 55 metres and located east of Mullin Parade within dense Swamp Paperbark scrub, we combined two survey sites to form one. Any response to call playback or spontaneously calling frogs could be heard from anywhere along the perimeter of the water body that was surveyed, so that the two sites could not be surveyed independently, but instead the results from each call playback site was pooled. The site was not large enough and access too difficult in view of the dense waterside vegetation, to warrant more than two-point survey locations.

The GGF assessments were undertaken during spring with suitable weather conditions. These conditions were considered suitable for detecting frogs likely to occur in the study area.

Wherever appropriate, a precautionary approach has been adopted in the discussion of implications. That is, where insufficient evidence is available on the occurrence or likelihood of occurrence of a species, it is assumed that it could be in an area of suitable habitat. The implications under legislation and policy are considered accordingly.

## **4.4 Results**

### *Habitat assessment*

An updated habitat assessment was conducted on 9 November 2020 to determine suitable habitat within the development site. It was concluded that the water body held potential Growling Grass Frog habitat of low to moderate quality, present in the form of tall marsh dominated by emergent Narrow-leaf Cumbungi (*Typha domingensis*). Water was permanent, quite deep (>0.5 metres) and apparently of good quality. Most of the perimeter of the water body was vegetated by dense Swamp Paperbark (*Melaleuca ericifolia*) which shaded the shoreline, limiting basking opportunities for GGF. Little or no floating vegetation of the type favoured by GGF (Water Ribbons (*Triglochin procera*), Floating Pondweed (*Potamogeton* sp.)), was observed. There was also a lack of wintering habitat elements such as rocks or logs in close proximity of the wetland (within 20 metres of the perimeter). Some possible wintering habitat for GGF existed in the form of concrete slabs among overgrown pasture grass and weeds some 50 metres west of the water body towards Mullin Parade, which were indicative of former anthropogenic disturbance.

#### **4.4.1 Active searches**

During the two surveys, no Growling Grass Frogs were recorded at the site. Three other species of frog was detected. Survey details are outlined in Table 1.

Table 1. Call playback and visual search survey results

Date	Start time	Weather conditions	Temp. (°C)	Call Playback/listening	Spotlighting
9/11/20	20:15	0% cloud cover, calm	20-18	No response/ Common Froglet 4+, Whistling Tree Frog 1 & Eastern Banjo Frog 1 (all heard)	No GGF observed
19/11/20	21:10	30% cloud cover, warm, calm	28-30	No response/ Common Froglet 10+, Whistling Tree Frog 1 & Eastern Banjo Frog 5+ (all heard)	No GGF observed

The active search did not record any threatened Growling Grass Frogs.

#### 4.4.2 Impacts on the Growling Grass Frog

The current proposal involves the future development of the study area for the purpose of the North East Wonthaggi Precinct Structure Plan (PSP). Development within this area will include residential, business and industrial use.

Based on additional detail provided in September 2018, it is understood that a roundabout is proposed as part of the PSP development, namely at the intersection of Bass Highway and Carneys Road. Impacts from the development have now also been considered.

Under the plan, the main fauna habitat linkages are to be retained. Residual fauna habitats likely to be affected are low quality linear patches of scrub along roadsides, combined with shallow ditches periodically providing a narrow movement corridor for frogs.

The lack of the threatened Growling Grass Frog from the area indicates that the risk to this threatened frog from the Precinct development is low.

## 5 Latham's Snipe

### 5.1 Biology and status

Latham's Snipe is a migratory species that visits south-eastern Australia from August to February. The species is a very agile and inconspicuous and generally feeds in low light. Occurs in wide variety of permanent and ephemeral wetlands; it prefers open freshwater wetlands with dense cover nearby, such as the edges of rivers and creeks, bogs, swamps, waterholes. The species is widespread in southeast Australia and most of its population occurs in Victoria except in the northwest of the state (Higgins and Davies 1996).

Like many other threatened fauna, the main threat to the snipe is habitat loss through urban development and drainage of fresh water swamps and wetlands.

The Latham's Snipe is listed as threatened as a migratory species under the EPBC Act and considered as near threatened under the Victorian advisory list (DSE 2013).

Information on the presence of the Latham's Snipe in the area was obtained from the Victorian Biodiversity Atlas (VBA), there were 91 records of the species within 10 km radius from the centre of the study area. Records were taken between 1980 and 2019. Some of the locations of the sightings of the snipe were close or within the study area.

The species is highly mobile and abundant and highly likely to occur in any suitable wetland habitat. It was present at a vegetated dam in the southern section of the study area (south of Bass Highway) during earlier surveys in February and September 2018 (Nature Advisory 2020).

### 5.2 Field surveys and assessment results

The study area, with concentration on the wetlands and swampy area, was searched for the Latham's Snipe during the three field trips described above in the Swamp Skink methods section. Search was undertaken on the 14<sup>th</sup> and 28<sup>th</sup> October and on the 5<sup>th</sup> of November 2020.

On none of the searches the snipe was observed. Currently, most of the habitats in the study area are unsuitable to support the species. This mobile species will most likely not be affected by the development proposal, particularly if certain mitigation is implemented to preserve as much as possible of the wetland habitats south of Bass Highway.

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