The Striped Legless Lizard is a pale-grey lizard up to 30 centimetres in length, with a maximum snout-vent length (SVL) of approximately 12 centimetres. Striped Legless Lizards have a long thin body and the tail, when unbroken, is about twice the length of the body. They have a series of stripes on their sides and the sides of their back, becoming diagonal bands on the tail (Cogger 1996). These stripes are dark-brown or blackish and extend the whole length of the individual from the neck to the tail. However, in some individuals, particularly juveniles, these stripes may be very faint or absent (Cogger 1996).

Striped Legless Lizards generally feed only on invertebrate prey and are considered a selective arthropod feeder. While the main prey types of the species in Victoria were found to be crickets and noctuid moth larvae, spiders were found to be the predominant prey type within the ACT (O'Shea 2005).

Distribution

Before European settlement, the species was presumed to be common across many grassland areas in north-eastern, central and south-western Victoria, south-eastern NSW, the ACT, and, possibly, south-eastern South Australia (Smith and Robertson 1999), but it has suffered a substantial contraction in both geographic range and abundance over the past 100 years. A combination of factors, including clearing of grasslands for urban development, more intense agricultural practices (e.g. pasture improvement, cropping, and prolonged grazing), inappropriate fire regimes and weed invasion (e.g. Chilean Needle-grass) threaten the long-term survival of the species (Cogger *et al.* 1993).

The range contraction and resultant reduction in population size is likely to continue, due to the ongoing removal, fragmentation and deterioration of suitable grassland habitat (Smith and Robertson 1999). Current populations in Victoria persist primarily in the basalt plains to the west of Melbourne, and areas around Ballarat and Bendigo (DSE 2011; DSE 2003; Hadden 1995).

Habitat

The Striped Legless Lizard inhabits lowland native grasslands, typically dominated by native tussock-forming grass species. In Victorian populations, the species frequents habitats with exposed basalt rocks in grassland and areas of cracking clay soils, where the species can seek refuge under rocks and in earth cracks (Dorrough *et al.* 1995).

Although Striped Legless Lizards have been reported from areas of relatively undisturbed native grasslands, with a dense cover of perennial tussock grasses (Kukolic 1991; Kukolic and Osborne 1993), they are also known to inhabit areas of non-native grassland (Smith and Robertson 1999). This has been shown at several sites throughout the Basalt Plains in western Victoria, which are currently grazed at various stock densities (Rohr and Peterson 2003).

Within the study area, potential habitat for Striped Legless Lizard comprises native grasslands and derived grasslands located within the rail corridor in Element 1b, with some areas containing embedded rock and cracking soils.

Growling Grass Frog Litoria raniformis

Growling Grass Frog is listed as Vulnerable under the Commonwealth EPBC Act, Threatened under the FFG Act, Vulnerable under the National Action Plan for Australian Frogs (Tyler 1997) and Endangered on the *Advisory List of Threatened Vertebrate Fauna in Victoria* (DSE 2013a).

Plate 9 Growling Grass Frog (Aaron Organ, Ecology and Heritage Partners Pty Ltd)

Description

Growling Grass Frog is one of the largest frog species in Australia. It reaches up to 100 mm in length, with females usually larger (60–100 mm) than males (55–65 mm) (Cogger 2000). Growling Grass Frogs vary in colour and pattern, but in general are olive to bright emerald green, with irregular gold, brown, black or bronze spotting.

Although formerly widely distributed across south-eastern Australia, including Tasmania (Littlejohn 1963; 1982), the species has declined markedly across much of its former range. This has been most evident over the past two decades and in many areas, particularly in south and central Victoria, populations have experienced apparent declines and local extinctions (Mahony 1999; Organ pers. obs.).

Habitat

The Growling Grass Frog is largely associated with permanent or semi-permanent still or slow flowing waterbodies (i.e. streams, lagoons, farm dams and old quarry sites) (Hero et al. 1991; Barker et al. 1995; Cogger 1996; Ashworth 1998). This species can also utilise temporarily inundated waterbodies for breeding purposes providing they contain water over the breeding season (Organ 2003).

Based on previous investigations there is a strong correlation between the presence of the species and key habitat attributes at a given waterbody. For example, the species is typically associated with waterbodies supporting an extensive cover of emergent, submerged and floating vegetation (Robertson et al. 2002, Organ 2004, 2005). Emergent vegetation provides basking sites for frogs and protection from predators, while floating vegetation provides suitable calling stages for adult males and breeding and oviposition (egg deposition) sites. Terrestrial vegetation (grasses, sedges), rocks and other ground debris around wetland perimeters also provide foraging, dispersal and over-wintering sites for frogs.

Recent studies have revealed that the spatial orientation of waterbodies across the landscape is one of the most important habitat determinants influencing the presence of the species at a given site (Robertson *et al.* 2002; Heard *et al.* 2004; Hamer and Organ 2008). For example, studies have shown there is a positive correlation between the presence of the species and the distance of freestanding waterbodies to another occupied site. This is comparable to the spatial dynamics of many amphibian populations, including the closely related Green and Golden Bell Frog *Litoria aurea* (Hamer *et al.* 2002).

During a study on Growling Grass Frog movement, an individual frog moved 427 metres from a pool on the Merri Creek to a pool on the Curley Sedge Creek in Somerton, following its inundation by heavy rainfall in February 2005 (Heard *et al.* 2010). Overland movements of up to 490 metres were also

documented (Heard *et al.* 2010). Other examples of frog movements have been documented in a study in Pakenham, where tagged frogs have moved at least 200 metres between waterbodies (Hamer and Organ 2008).

During radio-telemetry studies in southern Victoria frogs have been recorded moving up to one kilometre in one night (K. Jarvis cited in Robertson 2003), and frogs have been documented moving several kilometres from permanent watercourses and channels to recently flooded wetlands in the Murray River floodplain (Wassens 2005; Schultz 2006, 2007, 2008).

Frogs are often located at the waterline, or in the nearby terrestrial zone (<100 metres from the waterline) (Heard *et al.* 2008; Heard *et al.* 2010; A. Organ pers. obs.), which highlights the importance of adequate buffers around wetlands and creeks. Dispersal is thought to occur primarily along drainage lines or other low-lying areas between waterbodies, and unhindered movement between and within waterbodies is considered important for population viability.

Golden Sun Moth Synemon plana

The Golden Sun Moth is listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), listed as threatened under the *Flora and Fauna Guarantee Act 1999* (FFG Act) and is considered to be Critically Endangered in Victoria (DSE 2013a)

Plate 10 Golden Sun Moth (Ecology and Heritage Partners Pty Ltd)

Description

The Golden Sun Moth is a medium-sized, day-flying moth. Golden Sun Moth larvae spend up to three years underground, feeding on the roots of perennial native grasses including; wallaby-grasses (*Rytidosperma* spp.) and spear grasses (*Austrostipa* spp.). They then emerge from underground during the breeding season, between mid-October and early January, depending on climate and location (DEWHA 2009b). Adult moths survive between one and four days from pupal emergence and are unable to feed because they lack functional mouthparts (Clarke and O'Dwyer 2000). Males spend their adult life patrolling approximately one metre above the grass in search of females for breeding. Females have reduced hind wings and are reluctant to fly and will only do so when disturbed.

Distribution

Prior to European settlement, Golden Sun Moth was widespread and relatively continuous throughout its range, inhabiting grassy open woodlands and grassland (Dear 1996, DSE 2004). Habitat loss, disturbance and fragmentation due to preferential agricultural expansion and urbanization of open woodland and grasslands, has led to many populations sizing now being small, isolated and fragmented.

As a result, it is difficult for this relatively immobile species to recolonise areas in the event of local extinctions (females are almost entirely immobile while males are usually found less than 100 metres from suitable habitat) (Endersby and Koehler 2006).

Furthermore, the small size of these habitat patches and the lack of genetic exchange between them, may result in an inability to maintain genetically viable populations and increase the risk of local extinctions. As a result of their highly fragmented distribution and lack of dispersal ability, all populations of this moth are considered to be important to the long-term survival and recovery of the species (DEWHA 2009b).

Habitat

Golden Sun Moths typically occurs in native grassland, Grassy Woodland, dominated by greater than 40% cover of wallaby grass *Austrodanthonia* spp. (DSE 2004), but is also known to inhabit areas dominated by Kangaroo Grass *Themeda triandra* (Endersby and Koehler 2006) and introduced species such as Chilean Needle-grass *Nassella neesiana* (DEWHA 2009b).

Dwarf Galaxias

Dwarf Galaxias *Galaxias pusilla* is listed as Vulnerable under the EPBC Act, listed as Threatened under the FFG Act and endangered in Victoria (DSE 2007). Dwarf Galaxias typically occur in slow flowing and still waters, as well as shallow waters with abundant aquatic vegetation and is typically only detectable by capture, and seeks cover in aquatic vegetation or in silt substrates when disturbed. The species is distinctive, particularly when in breeding colouration. Females and juveniles are less distinctive than males, however, they cannot be easily confused with any other species and within their natural distribution, their small size alone is enough to differentiate them from other Galaxid species.

The breeding season is May to October and it is possible to directly observe newly hatched Dwarf Galaxias on the water surface along shallow bank edges. However, the most effective methods for detecting the species are dip-nets and bait traps. Dip-netting through aquatic vegetation provides a very quick method for detection, but is less reliable than overnight setting of bait traps when the species is present in lower abundances. Overnight traps baited with phosphorescent chemical sticks have proved highly effective in surveying Dwarf Galaxias in areas of heavy cover.

Methods

The surveys were conducted in accordance with the guidelines for each species (DEWHA 2009a, 2009b; DSEWPaC 2011a, 2011b, 2011c).

Striped Legless Lizard

Targeted surveys involved the deployment of artificial refuge structures, through establishing tile grids in areas of suitable grassland habitat within the study area (Figure 2 of the main report). Ecology and Heritage Partners Pty Ltd has successfully used this technique to survey for Striped Legless Lizard at several sites in western Victoria, including within the Caroline Springs Station Offset Site in 2015 and 2016. The intention of establishing a grid of roof tiles is that individuals will use the artificial habitat for shelter, and to assist in thermoregulation. The set of artificial refuges provide a target for zoologists to focus search attempts in which tiles are lifted to check for the presence of lizards. This survey method is widely accepted as the primary survey technique for this species, particularly in areas with surface rock (DSE 2010; DSEWPaC 2011a, 2011b).

In accordance with the referral guidelines for Striped Legless Lizard (DSEWPaC 2011a), tile grids were established within identified 'patches' of habitat likely to be impacted, with each consisting of a grid of 2 x 25 terracotta roof tiles (measuring approximately 10 metres x 125 metres).

Ten tile grids were laid on 1 and 2 August 2016 (Figure 2 of the main report). Tiles were checked on six occasions during spring 2016: 14, 21 October, 4, 11, 18, 21 November.

Growling Grass Frog

Targeted surveys for Growling Grass Frog were completed on 20 December 2016 and 11 January 2017 within the study area (Figure 2). Detailed active-searching surveys were conducted at the following two railway bridge crossings:

- Toolern Creek, Melton (between Element 1b and 1c); and,
- Bostock Reservoir on the Moorabool River (Element 4).

Identification of any nearby potential refuge sites formed an integral part of the targeted survey to assist in determining the presence / absence of local Growling Grass Frog populations to better understand the potential impacts on the species. Auditory surveys were conducted at waterbodies and watercourses located immediately adjacent and in proximity to the study area in Element 6, in order to survey for determine presence / absence of any local populations. The exact survey locations for the targeted Growling Grass Frog survey are provided in Figure 2 of the main report.

The surveys were undertaken during the species' active season (October – March) and in weather conditions consistent with recommended national guidelines (DEWHA 2009a), that is, night time air temperatures greater than 12 degrees Celsius with moderate to no wind. The weather conditions during the surveys are provided below (Table 1).

Detailed Growling Grass Frog Survey

Two Zoologists experienced in amphibian surveys, including significant species such as the Growling Grass Frog, conducted nocturnal surveys during suitable conditions. Spotlighting and active searching was undertaken during each survey, both of which are reliable techniques used to detect the species.

The margins of the creeks were carefully searched for active frogs using 30 watt 12 volt hand-held spotlights. The advertisement call was broadcast to elicit a response from any adult males present. Suitable refuge sites such as logs, rocks and other ground debris were lifted opportunistically to locate inactive frogs.

Detailed habitat assessments were undertaken during daylight hours on the 17 January 2017 to further assess the suitability of habitats at the accessible waterbodies within the study area. The following attributes of habitat quality for the Growling Grass Frog were recorded:

- The hydroperiod;
- The location and extent of instream pools and offstream waterbodies;
- Habitat values including the type (e.g. dam, creek etc.) flow (still, slow rapid), depth and presence of terrestrial refuge sites (e.g. rocks, logs, debris);
- Aquatic vegetation cover (% cover of emergent, submergent and floating aquatic plants);
- Presence/ absence of predator fish (opportunistic); and

- Barriers to frog movement between waterbodies.

Auditory Survey

For all potential Growling Grass Frog habitat located outside of the rail reserve and public access areas (i.e. within private properties), auditory surveys were conducted. These areas were identified as having suitable habitat based on a visual inspection from the roadside and/or rail reserve, where possible, and/or aerial imagery. The assessed waterbodies and watercourses, including farm dams, drainage lines, and wetlands, were located within 600 metres of the study area. The objective of the auditory survey was to identify local populations that may be indirectly affected by the works.

The advertisement call was broadcast to elicit a response from any adult males present. Surveyors undertook auditory surveys for approximately 15-20 minutes per site, recording all frog species heard calling.

Golden Sun Moth

Targeted surveys for Golden Sun Moth were undertaken at the study area on four separate occasions on 19, 23 December 2016 and 6, 17 January 2017. The Golden Sun Moth 2016/17 flight season was delayed (not commencing around areas west of Melbourne CBD until December) probably due to continued rainfall and cooler temperatures (Fabian Douglas, pers. comm.).

Areas of suitable habitat were traversed by foot or vehicle, where access to the railway corridor was obtained. Surveys were undertaken during suitable times for the detection of Golden Sun Moth (i.e. when adult males are flying), and when the species was observed flying at nearby reference sites.

The surveys followed the recommendations for surveys contained within the relevant significant impact guidelines for the Golden Sun Moth (DEWHA 2009), and where possible, were undertaken during the following optimal conditions (DEWHA 2009)

- On warm to hot days (above 20 degrees Celsius by 1000 hrs);
- During the warmest part the day (that is, 1000 to 1400 hrs);
- When there was clear or mostly cloudless skies;
- When there was still or relatively still wind conditions during the survey period; and,
- At least two days since rain.

Dwarf Galaxias

Two sites were surveyed, Toolern Creek at Melton South, and upstream of Bostock Reservoir at Ballan (a tributary of the Moorabool River).

The surveys were conducted and conformed with the *Guidelines for detecting fish listed as threatened under the EPBC Act* prepared by DoEE (DSEWPaC 2011c) and included:

- Direct observation;
- Dip netting; and
- Baited fish traps.

Baited traps (light sticks) will be left out for four consecutive nights and checked daily. A total of 16 bait traps were set in the creek upstream of Bostocks Reservoir and ten bait traps were set at Toolern

Creek, Melton South. Dip netting and direct observations of each water body way were undertaken for an hour each day. All individuals captured were identified, counted and then released. Noxious species were euthanised.

Assessment Qualifications

It is important to note that in some areas Striped Legless Lizard can often be difficult to detect even with the use of targeted survey methods such as tile grids and active searching (due to the species' often cryptic nature).

The location and number of sites at which detailed habitat assessments were undertaken for Growling Grass Frog was limited by landholder access. Areas that are most likely to be directly impacted by the proposed development, that is Toolern Creek and upstream of Bostock Reservoir, were accessed, and this was considered suitable in order to determine the direct impacts to Growling Grass Frog habitat and to understand any indirect impacts to any nearby resident populations. The surveys were undertaken when males were known to be calling (October and November), and when evidence of reproductive activity (i.e. tadpoles, metamorphs, juveniles) can be detected (January and February).

The survey effort, timing and results presented in this report provide sufficient information to support an EPBC Act referral.

Results

Striped Legless Lizard

Despite a number of previous records within the local area, the presence of potentially suitable habitat in the form of native grassland, and the optimal conditions under which the targeted surveys were undertaken, no Striped Legless Lizards were detected within the study area.

Six locally common reptile species; Eastern Brown Snake *Pseudonaja textilis*, Little Whip Snake *Rhinoplocephalus flagellum*, Blue-tongue Lizard *Tiliqua scincoides scincoides*, Bougainvillii's Skink *Lerista bougainvillii*, Eastern Three-lined Skink *Bassiana duperreyi*, Southern Grass Skink *Pseudemoia entrecasteauxii*, one unidentified skink, and one mammal (House Mouse *Mus musculus*) were recorded under tiles during the tile checks (Table A3.1.1 and 3; Plates 11 and 14).

Plate 11 Eastern Brown Snake (Ecology and Heritage Partners Pty Ltd 18/11/2016).

Plate 12 Blue-tongue Lizard (Ecology and Heritage Partners Pty Ltd 21/10/2016).

Plate 13 Bougainvillii's Skink (Ecology and Heritage Partners Pty Ltd 21/10/2016).

Plate 14 Southern Grass Skink (Ecology and Heritage Partners Pty Ltd 14/10/2016).

Table A3.1.1 Striped Legless Lizard Targeted Survey Results

Survey	Date (2016)	Weather Conditions (Mean Average)				Grids									
		Temp C°	Relative Humidity (%)	Above Tile Temp C°	Under Tile Temp C°	1	2	3	4	5	6	7	8	9	10
1	14/10	13.1	81	12.5	13.5	BtL x 1	-	-	-	ETS x 2	GS x 1	-	-	-	-
2	21/10	14.9	51	15.6	14.7	-	-	-	-	ETS x 3	BtL x 1	EBS x 1 ETS x 2	-	BS x 8	GS x 1
3	04/11	12.0	74	16.8	14.0	BtL x 1	-	-	-	-	-	EBS x 1	LWS x 1	BS x 6 US x 1	-
4	11/11	8.7	91	15.8	14.5	-	BtL x 2	-	-	-	-	-	ETS x 2	BS x 8	-
5	18/11	17.0	73	22.5	17.8	-	-	-	BtL x 1	-	GS x 2	ETS x 2 HM x 1	-	BS x 9 EBS x 1	US x 1
6	21/11	22.0	48	23.0	19.9	-	-	-	-	-	-	GS x 1	-	BS x 10	EBS x 1

Note: Species codes: HM = House Mouse; BtL = Blue-tongue Lizard; LWS = Little Whip Snake; EBS = Eastern Brown Snake; ETS = Eastern Three-lined Skink; BS = Bougainville's Slider; GS = Grass Skink; US = Unidentified Skink.

Growling Grass Frog

Despite several previous records within the local area, the presence of suitable habitat (albeit low quality), and the optimal survey conditions under which the targeted surveys were undertaken, no evidence of Growling Grass Frog (adults, juveniles and tadpoles) was detected at the detailed survey sites during the targeted nocturnal surveys. Furthermore, Growling Grass Frog was not heard calling during auditory surveys adjacent and in proximity to the study area.

Five locally common frog species were recorded throughout the study area, including Common Froglet *Crinia signifera*, Eastern Banjo Frog *Limnodynastes dumerilii,* Spotted Marsh Frog *Limnodynastes tasmaniensis*, Brown Tree Frog *Litoria ewingii*, and Whistling Tree Frog *Litoria verreauxii.* The survey results and weather conditions are provided below (Table A3.1.2; A3.1.3).

Table A3.1.2 Growling Grass Frog Survey Conditions

Date	Air temp @ beginning of survey	Air temp @ end of survey	Wind @ beginning of survey	Wind @ end of survey	Average humidity over duration of survey	Post rain
20/12/2016	17°C	15°C	SW, 18km/hr	W, 17km/hr	59%	No
11/01/2017	19°C	17°C	S, 22km/hr	SW, 20km/hr	58%	No

Table A3.1.3 Growling Grass Frog Survey Results

Site #	Habitat Type	Survey #	Date	Frog species detected
1	Toolern Creek	1	20/12/2016	**No Frogs**
		2	11/01/2017	**No Frogs**
2	Upstream of Bostock Reservoir	1	20/12/2016	*Crinia signifera* *Litoria ewingii*
		2	11/01/2017	**No Frogs**
3	Dam	1	20/12/2016	*Crinia signifera* *Limnodynastes dumerilii*
		2	11/01/2017	*Limnodynastes tasmaniensis* *Crinia signifera*
4	Dam	1	20/12/2016	**No Frogs**
		2	11/01/2017	**No Frogs**
5	Dam	1	20/12/2016	*Limnodynastes tasmaniensis* *Crinia signifera*
		2	11/01/2017	*Limnodynastes tasmaniensis*
6	Dam	1	20/12/2016	*Limnodynastes tasmaniensis*
		2	11/01/2017	**No Frogs**
7	Dam	1	20/12/2016	*Limnodynastes tasmaniensis* *Litoria ewingii*
		2	11/01/2017	*Litoria ewingii*
8	Dam	1	20/12/2016	*Crinia signifera* *Litoria ewingii* *Litoria verreauxii*
		2	11/01/2017	**No Frogs**
9	Dam	1	20/12/2016	*Litoria ewingii*
		2	11/01/2017	**No Frogs**
10	Dam	1	20/12/2016	**No Frogs**
		2	11/01/2017	**No Frogs**

Detailed Habitat Assessments

Detailed habitat assessments undertaken at Toolern Creek and upstream of the Bostock Reservoir are provided below.

Toolern Creek

Toolern Creek provides low quality habitat for Growling Grass Frog. The creek is 3-4 meters wide and approximately 1 meter deep at the site of the survey, with slow flowing water. The creek is a collection of small pools and runs, the substrate is a mix gravel, cobble, large boulders and possible some bedrock (submerged). The creek bank comprises a mix of fringing vegetation (70%), including of native Rushes *Juncus* spp. and grass species and exotic Drain Flat-sedge *Cyperus eragrostis* and pasture grasses, and exposed rocks (25%), and bare ground (5%). The creek is partially shaded by a riparian overstorey of River Red-gum *Eucalyptus camaldulensis*. There is evidence of pollution and rubbish waste in the

creek, and the water quality is moderate. Although the site does contain some characteristics of the species preferred habitat, the shading and disturbance levels reduce the likelihood that the species occurs in this area.

Plate 15 Bridge crossing at Toolern Creek

Plate 16 Overstorey vegetation at Toolern Creek

Bostock Reservoir

Upstream of Bostock Reservoir provides moderate quality habitat for Growling Grass Frog. The creek is 1 – 6 meters wide in the survey area and forms a series of pools up to 0.5 meters deep and riffles before flowing over a small falls basalt ledge and entering Bostock Reservoir. The substrate is primarily bedrock, boulders and cobbles with some deposition of fine silts. The bank consists of fringing vegetation (50%), exposed rock (40%) and bare ground (10%). The creek supports a range of fringing (Tall Sedge *Carex appressa*, Rushes *Juncus* spp., Slender Knotweed *Persicaria decipiens*), emergent, floating and submerged vegetation (Common Spike-sedge *Eleocharis acuta*, Narrow-leaf Cumbungi *Typha domingensis*, Upright Water-milfoil *Myriophyllum crispatum*, Water Ribbons *Triglochin procera)*. There are a number of weeds including the Weed of National Environmental Significance Blackberry *Rubus fruticosus,* and the environmental weed Drain Flat-sedge *Cyperus eragrostis*. The site contains some characteristics of the species preferred habitat.

Plate 10 Bridge crossing at Bostock Reservoir

Plate 11 Vegetation upstream of Bostock Reservoir

Golden Sun Moth

Despite a number of previous records within the local area, the presence of suitable habitat, albeit low, in the form of native grassland, and the optimal conditions under which the targeted surveys were undertaken, no Golden Sun Moth were detected within the study area. The survey results and weather conditions are provided below (Table A3.1.4).

Table A3.1.4 Golden Sun Moth Targeted Survey Results

Survey number	Date	Time checked	Temperature (9am and 3pm)^	Wind (km/h)	Cloud cover	Moths flying
1	19 December 2016	1100 - 1520	16.5°C, 24.8°C	17	Clear	No
2	23 December 2016	1200 - 1600	22.2°C, 30.6°C	17	Clear	No
3	6 January 2017	1145 - 1600	26.0°C, 31.4°C	15	Partly Cloudy	No
4	17 January 2017	1100 - 1545	26.1°C, 37.0°C	30	Partly Cloudy	No

^ Temperature for the study area taken from Ballarat weather station (approximately 15 kilometres west of the western most survey location [Element 5: Spreadeagle {new Bungaree} Loop].

Dwarf Galaxias

Toolern Creek in Melton South Site Description

Toolern Creek in Melton South is located in a residential area. The creek has a riparian overstorey River Red-gums and an understory of sedges (*Cyperus* sp.), rushes (*Juncus* sp.) and native grasses interspersed with weeds. Instream vegetation was limited to Water Ribbons *Triglochin procera*. The riparian zone is heavily modified and substantial revegetation efforts are ongoing.

The creek is 3-4 metres wide and approximately a metre deep at the site of the survey. The creek is a collection of small pools and runs, the substrate is a mix gravel, cobble, large boulders and possible some bedrock (submerged). A large amount of restoration work has been completed in the area and there was evidence of resent revegetation works.

Trash and other waste typical of urbanised catchments (i.e. spray cans, bottles, shopping trolleys) were observed. A visual inspection of the water quality suggests that the water quality is very poor; the water was a dark almost black colour typical of water discharged from a residential storm water system.

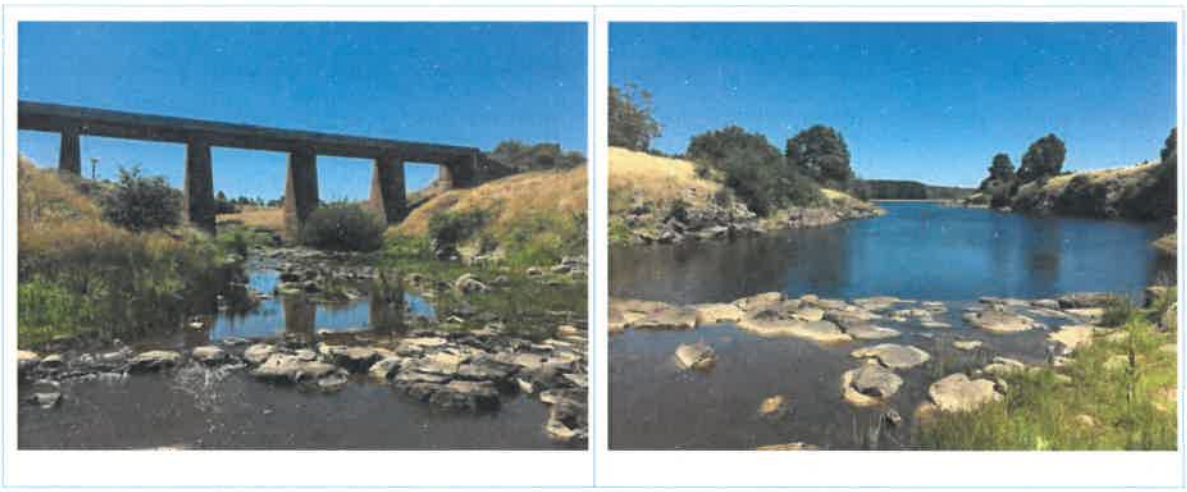
Plate 12: Toolern Creek, Melton South (February 2017).

Plate 13: Toolern Creek, Melton South (February 2017).

Bostocks Reservoir Site Description

Bostocks Reservoir is located near Ballan and the creek drains into Bostocks Reservoir (Table A3.1.6). There is little riparian overstorey on the creek which passes through an agricultural area prior to discharging into Bostocks Reservoir immediately downstream of the site. Riparian vegetation includes pasture species and weed species (i.e. blackberries) with sedges (*Carex* sp, *Cyperus* sp.) and rushes (*Juncus* sp.) present on the margins of the creek. Instream vegetation includes extensive stands of emergent species (sedges *Eleocharis* sp., Cumbungi *Typha* sp., and Knotweed *Persicaria* sp.) around the margins of the creek and a small cover of instream vegetation (Parrots feather *Myriophyllum* sp., Arrowgrass *Triglochin* sp., and invasive Waterweed *Elodea* sp.).

The substrate is primarily bedrock, boulders and cobbles with some deposition of fine silts. The creek is 1 – 6 metre wide in the survey area and forms a series of pools up to 0.5m deep and riffles before flowing over a small falls basalt ledge and entering Bostock Reservoir. There is a gauging station immediately upstream of the railway bridge.



Plates 16 – 17: Upstream of Bostocks Reservoir, near Ballan.

Toolern Creek (Melton South) Survey Results

Only exotic species were identified in Toolern Creek (Melton South); including Eastern Gambusia, Common Carp and Redfin Perch (Table A3.1.5). Eastern Gambusia and Redfin perch were less abundant. The large number of Eastern Gambusia were identified while dip netting and undertaking observations. The observations of Eastern Gambusia were estimates of abundance only due to the large numbers present (Table A3.1.5).

Table A3.1.5 Fish species and abundance captured using baited box traps during the survey.

Date	9 February	10 February	11 February	12 February	Total
Toolern Creek					
Eastern Gambusia	16	5	14	2	37
Common Carp	0	1	1	0	2
Redfin Perch	0	6	0	2	8
Upstream of Bostock Reservoir					
Maribyrnong Galaxias	3	1	7	3	14
Flathead Gudgeon	0	1	1	0	2
Tench	0	2	2	2	6
Eastern Gambusia	24	27	31	6	89
Yabbie	19	15	24	6	64
Spotted Marsh Frog/tadpole	4	5	0	1	10

Bostocks Reservoir Survey Results

A total of four fish species, one crustacean and one frog species were identified (Table 3.1.5). The exotic Eastern Gambusia was the most abundant species encountered. Native species were present in low numbers with the Maribyrnong Galaxias and Flathead Gudgeon present. Yabbies were abundant. Tench are an exotic species that was also detected in low numbers. A number of tadpoles (Spotted

Marsh Frog) and frogs were also captured. Large numbers of Eastern Gambusia were also identified through direct observation and dip netting (Table 3.1.6). Yabbies, tadpoles and Maribyrnong Galaxias were also observed.

Table A3.1.6. Fish species and abundance data pooled for observed fish and fish captured during dip netting during the survey.

Date	9 February	10 February	11 February	12 February	Total
Toolern Creek					
Eastern Gambusia	30	20	35	50	135
Common Carp	0	0	0	0	0
Redfin perch	0	0	0	0	0
Upstream of Bostock Reservoir					
Maribyrnong Galaxias	1	3	6	1	11
Flathead Gudgeon	0	0	0	0	0
Tench	0	0	0	0	0
Eastern Gambusia	28	30	35	26	119
Yabbie	2	0	3	2	7
Spotted Marsh frog/tadpole	1	0	0	1	2

Conclusion

Striped Legless Lizard

Striped Legless Lizards was not detected within Element 1b of the study area during targeted surveys. Six other reptile species and one introduced mammal were recorded whilst checking the tiles and through incidental observations. Based on the available information (current survey results, and previous records and studies within the local area), there is a low likelihood that a resident Striped Legless Lizard population occurs within the study area, particularly given the lack of suitable habitat through Elements 1c-6.

Growling Grass Frog

Growling Grass Frog was not detected within Element 1c, 4 and 6 of the study area during targeted surveys. Potential habitat for Growling Grass Frog, albeit low to moderate quality, was identified within the study area at Toolern Creek and Bostock Reservoir, and in proximity to the study area in the form of artificial farm dams and wetlands near Element 6. However, given the extensive nature of the surveys across all areas likely to be directly and/or indirectly impacted by the proposed development, it is unlikely the study area provides permanent and/or important habitat for the species. As such, based on the results of this survey, an important population of the species is not likely to occur within the study area and will not be impacted as a result of the project.

Whilst there is a low likelihood of Growling Grass Frog occurring in the BLU works area, procedures should be included in the project Environment Management Plan to address the potential unexpected discovery of this species.

Golden Sun Moth

Golden Sun Moth was not detected within Elements 1c, 4 and 5 of the study area during targeted surveys. The habitat present is also not of high quality for the species, with fragmented patches of suitable habitat (i.e. Plains Grasslands and Plains Grassy Woodland) interspersed by less suitable exotic pasture grasses. The study area is not likely to support a resident population of the species. .

Dwarf Galaxias

Dwarf Galaxias was not detected in Toolern Creek or the site upstream of Bostock Reservoir. Based on the available information (current survey results, and previous records and studies within the local area), there is a low likelihood that a resident Dwarf Galaxias population occurs within the study area.

Appendix 3.2 – Fauna Results

Table A3.2. Fauna recorded within the study area, and previously recorded within 10 kilometres of the study area.

Common Name	Scientific Name	Hollow Use	Mi/ Ma	Present Survey
MAMMALS				
House Mouse*	*Mus musculus*	-	-	S
European Rabbit*	*Oryctolagus cuniculus*	-	-	S
BIRDS				
Australian Wood Duck	*Chenonetta jubata*	Total	-	S
Spotted Turtle-Dove*	*Streptopelia chinensis*	-	-	S
Common Bronzewing	*Phaps chalcoptera*	-	-	S
Black-shouldered Kite	*Elanus axillaris*	-	-	S
Black Kite	*Milvus migrans*	-	-	S
Nankeen Kestrel	*Falco cenchroides*	Partial	Ma	S
Masked Lapwing	*Vanellus miles*	-	-	S
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*	Total	-	S
Little Corella	*Cacatua sanguinea*	Total	-	S
Sulphur-crested Cockatoo	*Cacatua galerita*	Total	-	S
Rainbow Lorikeet	*Trichoglossus haematodus*	Total	-	S
Crimson Rosella	*Platycercus elegans*	Total	-	S
Eastern Rosella	*Platycercus eximius*	Total	-	S
Red-rumped Parrot	*Psephotus haematonotus*	-	-	S
Laughing Kookaburra	*Dacelo novaeguineae*	Total	-	S
Superb Fairy-wren	*Malurus cyaneus*	-	-	S
White-browed Scrubwren	*Sericornis frontalis*	-	-	S
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	-	-	S
Striated Pardalote	*Pardalotus striatus*	Partial	-	S
Yellow-faced Honeyeater	*Lichenostomus chrysops*	-	-	S
White-plumed Honeyeater	*Lichenostomus penicillatus*	-	-	S
Noisy Miner	*Manorina melanocephala*	-	-	S
Little Wattlebird	*Anthochaera chrysoptera*	-	-	S
Red Wattlebird	*Anthochaera carunculata*	-	-	S
New Holland Honeyeater	*Phylidonyris novaehollandiae*	-	-	S
White-naped Honeyeater	*Melithreptus lunatus*	-	-	S
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	-	Ma	S
Grey Shrike-thrush	*Colluricincla harmonica*	Partial	-	S
Crested Pigeon	*Ocyphaps lophotes*	-	-	S

Common Name	Scientific Name	Hollow Use	Mi/ Ma	Present Survey
Grey Butcherbird	*Cracticus torquatus*	-	-	S
Grey Currawong	*Strepera versicolor*	-	-	S
Willie Wagtail	*Rhipidura leucophrys*	-	-	S
Little Raven	*Corvus mellori*	-	Ma	S
Magpie-lark	*Grallina cyanoleuca*	-	-	S
Eastern Yellow Robin	*Eopsaltria australis*	-	-	S
European Skylark*	*Alauda arvensis*	-	-	S
Golden-headed Cisticola	*Cisticola exilis*	-	-	S
Brown Songlark	*Cincloramphus cruralis*	-	-	S
Australasian Pipit	*Anthus novaeseelandiae*	-	Ma	S
Common Blackbird*	*Turdus merula*	-	-	S
Common Starling*	*Sturnus vulgaris*	Partial	-	S
Common Myna*	*Acridotheres tristis*	-	-	S
House Sparrow*	*Passer domesticus*	-	-	S
Eurasian Tree Sparrow*	*Passer montanus*	-	-	S
European Goldfinch*	*Carduelis carduelis*	-	-	S
REPTILES				
Large Striped Skink	*Ctenotus robustus*	-	-	T
Bougainville's Skink	*Lerista bougainvillii*	-	-	S
Southern Grass Skink	*Pseudemoia entrecasteauxii*	-	-	S
Eastern Three-lined Skink	*Acritoscincus duperreyi*	-	-	S
Common Blue-tongued Lizard	*Tiliqua scincoides*	-	-	T
Eastern Brown Snake	*Pseudonaja textilis*	-	-	S
Little Whip Snake	*Parasuta flagellum*	-	-	S
AMPHIBIANS				
Common Froglet	*Crinia signifera*	-	-	H
Eastern Banjo Frog	*Limnodynastes dumerilii dumerilii*	-	-	H
Spotted Marsh Frog	*Limnodynastes tasmaniensis*	-	-	H
Brown Tree Frog	*Litoria ewingii*	-	-	H
Whistling Tree Frog	*Litoria verreauxii*	-	-	H

Notes: * = Introduced Species, H=Heard, S = Seen, I = Incidental, T = Trapped / handheld, Mi = Migratory, Ma = Marine

Data Sources: Number and Date of records = Victorian Biodiversity Atlas (DEPI 2014), Hollow Use: Victorian Fauna Database (Viridans 2014b), Migratory and Marine: *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Taxonomic order: Mammals (Strahan 1995 in Menkhorst and Knight 2004); Birds (Christidis and Boles, 2008); Reptiles and Amphibians (Cogger *et al.* 1983 in Cogger 1996); Fish (Nelson 1994); Mussels and Crustaceans (Alphabetical); Invertebrates (Alphabetical).

Appendix 3.3 – Significant Fauna Species

Table A3.3. Significant fauna within 10 kilometres of the study area.

Likelihood: Habitat characteristics of significant fauna species previously recorded within 10 kilometres of the study area, or that may potentially occur within the study area were assessed to determine their likelihood of occurrence. The likelihood of occurrence rankings are defined below.

1 - High Likelihood
- Known resident in the study area based on site observations, database records, or expert advice; and/or,
- Recent records (i.e. within five years) of the species in the local area (DELWP 2016d); and/or,
- The study area contains the species' preferred habitat.

2 - Moderate Likelihood
- The species is likely to visit the study area regularly (i.e. at least seasonally); and/or,
- Previous records of the species in the local area (DELWP 2016d); and/or,
- The study area contains some characteristics of the species' preferred habitat.

3 - Low Likelihood
- The species is likely to visit the study area occasionally or opportunistically whilst en route to more suitable sites; and/or,
- There are only limited or historical records of the species in the local area (i.e. more than 20 years old); and/or,
- The study area contains few or no characteristics of the species' preferred habitat.

4 - Unlikely
- No previous records of the species in the local area; and/or,
- The species may fly over the study area when moving between areas of more suitable habitat; and/or,
- Out of the species' range; and/or,
- No suitable habitat present.

EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
FFG	*Flora and Fauna Guarantee Act 1988* (FFG Act)
DSE	Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2013a); Advisory List of Threatened Invertebrate Fauna in Victoria (DSE 2009b)
NAP	National Action Plan (Cogger *et al.* 1993; Duncan *et al.* 1999; Garnet and Crowley 2000; Lee 1995; Maxwell *et al.* 1996; Sands and New 2002; Tyler 1997, Woinarski *et al.* 2014)

EX	Extinct
RX	Regionally extinct
CR	Critically endangered
EN	Endangered
VU	Vulnerable
RA	Rare
NT	Near threatened
CD	Conservation dependent
LC	least concern
DD	Data deficient (insufficiently or poorly known
L	Listed as threatened under FFG Act
I	Invalid or ineligible for listing under the FFG Act
#	Listed on the Protected Matters Search Tool
*	Additional information from the Victorian Fauna Database

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
NATIONAL SIGNIFICANCE												
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	-	-	-	2015 (1)	2015 (1)	-	EN	L	EN	VU	4
Eastern Barred Bandicoot	*Perameles gunnii*	1883 (15)	1883 (10)	1883 (15)		-	-	EN	L	EX	CR	4
Greater Glider	*Petauroides volans*	PMST	PMST	PMST	2005 (26)	PMST	PMST	VU	-	VU	VU	4
Grey-headed Flying-fox	*Pteropus poliocephalus*	2010 (6)	2010 (3)	1968 (2)	PMST	PMST	PMST	VU	L	VU	VU	2 (flyover most Elements)
Smoky Mouse	*Pseudomys fumeus*	-	-	-	PMST	PMST	PMST	EN	L	EN	RA	4
Australasian Bittern	*Botaurus poiciloptilus*	1973 (1)	1973 (1)	1970 (1)	PMST	PMST	PMST	EN	L	EN	VU	4
Plains-wanderer	*Pedionomus torquatus*	1979 (14)	1974 (3)	1988 (3)	PMST	1911 (2)	1911 (3)	CR	L	CR	EN	3
Australian Painted Snipe	*Rostratula australis*	1977 (1)	PMST	1989 (2)	PMST	PMST	PMST	VU	L	CR	VU	4
Eastern Curlew	*Numenius madagascariensis*	PMST	PMST	PMST	PMST	PMST	PMST	CR	-	VU	-	4
Curlew Sandpiper	*Calidris ferruginea*	1990 (2)	1988 (1)	PMST	PMST	PMST	2010 (1)	CR	-	EN	-	4
Red-tailed Black-Cockatoo	*Calyptorhynchus banksii graptogyne*	-	-	-	-	-	1896 (1)	EN	L	EN	EN	4
Superb Parrot	*Polytelis swainsonii*	1881 (2)	1881 (2)	1881 (1)		-	-	VU	L	EN	VU	4
Swift Parrot	*Lathamus discolor*	2008 (16)	2008 (15)	2008 (12)	1957 (1)	1977 (2)	1977 (2)	CR	L	EN	EN	2 (flyover most Elements)
Orange-bellied Parrot	*Neophema chrysogaster*	1977 (1)	-	-		-	-	CR	L	CR	CR	4

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
Regent Honeyeater	*Anthochaera phrygia*	1933 (3)	1933 (2)	PMST	PMST	PMST	1980 (4)	CR	L	CR	EN	4
Painted Honeyeater	*Grantiella picta*	PMST	PMST	PMST	PMST	PMST	PMST	VU	L	VU	NT	4
Pink-tailed Worm-Lizard	*Aprasia parapulchella*	PMST	PMST	PMST	-	-	-	VU	L	EN	-	4
Striped Legless Lizard	*Delma impar*	2014 (439)	2010 (19)	PMST	PMST	PMST	PMST	VU	L	EN	VU	3
Grassland Earless Dragon	*Tympanocryptis pinguicolla*	1960 (1)	PMST	PMST		-	-	EN	L	CR	VU	4
Growling Grass Frog	*Litoria raniformis*	2011 (248)	2011 (28)	2007 (20)	2010 (1)	1962 (4)	2011 (10)	VU	L	EN	VU	2 (not recorded during targeted surveys)
Flat-headed Galaxias	*Galaxias rostratus*	-	-	-	-	-	PMST	CR	-	VU	RA	4
Dwarf Galaxias	*Galaxias pusilla*	PMST	PMST	PMST	PMST	PMST	PMST	VU	L	EN	VU	3 (not recorded during targeted surveys)
Australian Grayling	*Prototroctes maraena*	2015 (7)	PMST	PMST	PMST	PMST	PMST	VU	L	VU	VU	4
Murray Cod	*Maccullochella peelii*	PMST	1930 (4)	-		-	PMST	VU	L	VU	-	4
Macquarie Perch	*Macquaria australasica*	1970 (6)	-	-		-	1970 (2)	EN	L	EN	DD	4
Golden Sun Moth	*Synemon plana*	2012 (418)	2012 (339)	2012 (334)	PMST	PMST	PMST	CR	L	CR	-	4 (not detected during targeted surveys, and therefore the study area is not likely to support a resident population)

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
STATE SIGNIFICANCE												
Brush-tailed Phascogale	*Phascogale tapoatafa*	1988 (7)	1988 (6)	1988 (9)	1988 (2)	1933 (1)	1991 (2)	-	L	VU	NT	4
Common Dunnart	*Sminthopsis murina murina*	1984 (2)	1984 (2)	1987 (3)	-	1964 (1)	1964 (1)	-	-	VU	-	4
Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*	2000 (2)	2010 (20)	-	-	-	-	-	L	DD	LC	2 (flyover)
Common Bent-wing Bat	*Miniopterus schreibersii GROUP*	-	-	1988 (1)	-	-	1962 (1)	-	L	-	CD	4
King Quail	*Coturnix chinensis victoriae*	-	-	-	1995 (2)	1995 (2)	-	-	L	EN	-	4
Magpie Goose	*Anseranas semipalmata*	-	-	1977 (1)	-	-	-	-	L	NT	-	4
Musk Duck	*Biziura lobata*	2010 (26)	-	2003 (22)	1978 (4)	2009 (39)	2008 (92)	-	-	VU	-	4
Freckled Duck	*Stictonetta naevosa*	2006 (5)	2006 (4)	2006 (5)	-	2009 (1)	2007 (6)	-	L	EN	-	4
Australasian Shoveler	*Anas rhynchotis*	2010 (32)	2010 (26)	2006 (16)	-	2009 (9)	2008 (15)	-	-	VU	-	2 (Toolern Creek, Bostock Reservoir, and other adjacent waterbodies)
Hardhead	*Aythya australis*	2006 (33)	2006 (25)	2006 (23)	1980 (1)	2009 (24)	2008 (42)	-	-	VU	-	2 (Toolern Creek, Bostock Reservoir, and other adjacent waterbodies)

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
Blue-billed Duck	*Oxyura australis*	2006 (16)	2006 (13)	2006 (4)	-	2009 (12)	2006 (38)	-	L	EN	-	4
Diamond Dove	*Geopelia cuneata*	1905 (1)	1905 (1)	1905 (2)	-	-	-	-	L	NT	-	4
White-throated Needletail	*Hirundapus caudacutus*	2005 (14)	1994 (10)	1994 (10)	1986 (4)	1986 (5)	2000 (3)	-	-	VU	-	1 (flyover)
Little Bittern	*Ixobrychus minutus dubius*	1980 (1)	-	-	-	-	2000 (9)	-	L	EN	-	4
Eastern Great Egret	*Ardea modesta*	2001 (24)	2001 (18)	2001 (11)	1977 (1)	2001 (9)	2006 (18)	-	L	VU	-	3 (Toolern Creek, Bostock Reservoir, and other adjacent waterbodies)
Intermediate Egret	*Ardea intermedia*	1980 (3)	1980 (3)	-	-	-	2006 (1)	-	L	EN	-	4
Little Egret	*Egretta garzetta nigripes*	-	-	1990 (2)	-	-	-	-	L	EN	-	4
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	2012 (11)	2012 (11)	1995 (3)	-	-	-	-	L	VU	-	4
Square-tailed Kite	*Lophoictinia isura*	-	-	-	-	-	2000 (2)	-	L	VU	-	4
Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*	2006 (1)	2006 (1)	-	1995 (2)	2001 (2)	2010 (6)	-	L	VU	-	4
Black Falcon	*Falco subniger*	2009 (11)	2000 (6)	1988 (10)	-	2000 (1)	2000 (1)	-	-	VU	-	3 (flyover or may forage over the study area and land adjacent)
Brolga	*Grus rubicunda*	2013 (3)	1989 (2)	-	-	-	2006 (1)	-	L	VU	-	4

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
Lewin's Rail	*Lewinia pectoralis pectoralis*	1988 (4)	1889 (2)	1880 (1)	1896 (1)	1896 (1)	1995 (5)	-	L	VU	NT	4
Baillon's Crake	*Porzana pusilla palustris*	2003 (4)	-	1987 (1)	-	-	2001 (11)	-	L	VU	-	4
Australian Bustard	*Ardeotis australis*	-	-	1911 (1)	-	-	-	-	L	CR	NT	4
Bush Stone-curlew	*Burhinus grallarius*	1889 (2)	1889 (2)	1880 (1)	-	-	-	-	L	EN	NT	4
Common Sandpiper	*Actitis hypoleucos*	1990 (1)	1990 (1)	-	-	-	1988 (1)	-	-	VU	-	4
Common Greenshank	*Tringa nebularia*	2008 (4)	1988 (1)	-	-	-	2010 (1)	-	-	VU	-	4
Marsh Sandpiper	*Tringa stagnatilis*	1994 (2)	1988 (1)	-	-	-	2010 (2)	-	-	VU	-	4
Wood Sandpiper	*Tringa glareola*	-	-	-	-	-	2010 (1)	-	-	VU	-	4
Gull-billed Tern*	*Gelochelidon nilotica macrotarsa*	-	-	1986 (1)	-	-	-	-	L	EN	-	4
Caspian Tern*	*Hydroprogne caspia*	-	-	2000 (1)	-	-	-	-	L	NT	-	4
Red-chested Button-quail	*Turnix pyrrhothorax*	1990 (5)	1974 (2)	-	-	-	-	-	L	VU	-	4
Major Mitchell's Cockatoo	*Lophocroa leadbeateri*	2004 (1)	2004 (1)	-	-	-	-	-	L	VU	-	4
Elegant Parrot	*Neophema elegans*	-	-	-	-	1886 (1)	1886 (1)	-	-	VU	-	4
Powerful Owl	*Ninox strenua*	2011 (6)	2011 (6)	2011 (7)	1997 (6)	1997 (4)	2008 (4)	-	L	VU	-	4
Barking Owl	*Ninox connivens connivens*	2002 (26)	2002 (26)	2002 (23)	1995 (2)	1995 (2)	1989 (1)	-	L	EN	NT	4
Masked Owl	*Tyto novaehollandiae novaehollandiae*	1989 (1)	1989 (1)	-	1995 (1)	1995 (1)	-	-	L	EN	NT	3

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	2011 (104)	2011 (97)	2010 (78)	1996 (2)	2000 (4)	2000 (2)	-	-	NT	NT	4
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	2004 (4)	2004 (4)	2004 (6)	-	-	-	-	L	VU	-	4
Speckled Warbler	*Chthonicola sagittatus*	2014 (88)	2014 (88)	2014 (87)	1977 (1)	-	-	-	L	VU	NT	4
Grey-crowned Babbler	*Pomatostomus temporalis temporalis*	1987 (7)	1987 (5)	1880 (1)	-	-	-	-	L	EN	NT	4
Crested Bellbird	*Oreoica gutturalis gutturalis*	2003 (21)	2003 (20)	2003 (18)	-	-	-	-	L	NT	NT	4
Hooded Robin	*Melanodryas cucullata cucullata*	1999 (15)	1999 (14)	1990 (8)	-	-	1975 (1)	-	L	NT	NT	4
Diamond Firetail	*Stagonopleura guttata*	2011 (91)	2000 (87)	2011 (70)	1996 (3)	1996 (3)	-	-	L	NT	NT	3
Lace Goanna	*Varanus varius*	1968 (1)	1968 (1)	1968 (1)	-	-	-	-	-	EN	-	4
Tussock Skink	*Pseudemoia pagenstecheri*	2009 (69)	2009 (9)	-	-	2007 (5)	2004 (1)	-	-	VU	-	2 (Element 1b, 2, 5)
Brown Toadlet	*Pseudophryne bibronii*	2010 (6)	2004 (4)	1990 (5)	2008 (18)	-	-	-	L	EN	DD	3 (Element 4 drainage lines along rail corridor)
Western Burrowing Crayfish	*Engaeus merosetosus*	-	-	-	-	2009 (1)	2006 (1)	-	-	EN	-	4
Bullant	*Myrmecia sp. 17*	2009 (2)	2009 (2)	2009 (1)	-	-	-	-	L	VU	-	4
Caddisfly	*Archaeophylax canarus*	-	-	1982 (1)	-	-	-	-	L	DD	-	4

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
Caddisfly	*Plectrotarsus gravenhorstii*	-	-	-	1954 (1)	-	-	-	-	VU	-	4
REGIONAL SIGNIFICANCE												
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	2005 (18)	1990 (2)	2000 (2)	-	-	-	-	-	NT	-	3 (Element 1a and 1b, however not detected during targeted surveys in Element 1b)
Eastern Pygmy-possum	*Cercartetus nanus*	1933 (2)	1933 (2)	-	-	-	1970 (4)	-	-	NT	-	4
Pied Cormorant	*Phalacrocorax varius*	2011 (7)	2006 (6)	2000 (4)	1977 (1)	2001 (3)	2001 (7)	-	-	NT	-	4
Nankeen Night Heron	*Nycticorax caledonicus hillii*	2000 (24)	2000 (13)	2000 (11)	1987 (1)	1987 (1)	2008 (5)	-	-	NT	-	2 (Toolern Creek, Bostock Reservoir, and other adjacent waterbodies)
Glossy Ibis	*Plegadis falcinellus*	1986 (1)	1986 (1)	1986 (2)	-	-	1986 (1)	-	-	NT	-	4
Royal Spoonbill	*Platalea regia*	2006 (12)	2006 (10)	1991 (7)	1995 (2)	1995 (3)	2006 (3)	-	-	NT	-	4
Spotted Harrier	*Circus assimilis*	2007 (9)	1988 (4)	2008 (5)	-	-	1985 (1)	-	-	NT	-	2 (flyover)
Latham's Snipe	*Gallinago hardwickii*	2013 (15)	1997 (9)	1990 (7)	1986 (2)	2001 (5)	2010 (9)	-	-	NT	-	3 (flyover)
Pectoral Sandpiper	*Calidris melanotos*	1990 (1)	-	-	-	-	-	-	-	NT	-	4
Little Button-quail	*Turnix velox*	2011 (3)	2011 (3)	2011 (2)	-	-	-	-	-	NT	-	4
Australian Pratincole	*Stiltia isabella*	1990 (1)	-	-	-	-	-	-	-	NT	-	4

Common Name	Scientific Name	Last Documented Record (No. VBA Records)						EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood
		Element 1	Element 2	Element 3	Element 4	Element 5	Element 6					
Whiskered Tern	*Chlidonias hybridus javanicus*	1990 (4)	1990 (3)	1987 (1)	-	-	-	-	-	NT	-	4
Pacific Gull	*Larus pacificus pacificus*	1979 (1)	-	-	-	-	-	-	-	NT	-	4
Black-eared Cuckoo	*Chrysococcyx osculans*	2000 (13)	2000 (12)	2000 (12)	-	2001 (5)	2001 (5)	-	-	NT	-	3
Azure Kingfisher	*Alcedo azurea*	1988 (1)	1988 (1)	1988 (1)	1995 (2)	2001 (4)	2001 (2)	-	-	NT	-	4
Red-backed Kingfisher	*Todiramphus pyrropygia pyrropygia*	1986 (1)	1986 (1)	-	-	-	-	-	-	NT	-	4
Spotted Quail-thrush	*Cinclosoma punctatum*	1968 (2)	1968 (2)	2004 (5)	1993 (4)	-	-	-	-	NT	-	4

Data source: Victorian Biodiversity Atlas (DELWP 2016a); Victorian Fauna Database (Viridans 2011b); Protected Matters Search Tool (DoEE 2017).

Taxonomic order: Mammals (Strahan 1995 *in* Menkhorst and Knight 2004); Birds (Christidis and Boles, 2008); Reptiles and Amphibians (Cogger *et al.* 1983 *in* Cogger 1996); Fish (Nelson 1994).