

Biodiversity Assessment and Targeted Flora and Fauna Surveys For the Proposed City Gate Site, Bannockburn Gas Pipeline Project, Victoria: Stage 3

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Introduction 1

Ecology and Heritage Partners Pty Ltd was commissioned by AusNet Services to conduct a Biodiversity assessment for the proposed city gate site as part of the Bannockburn Gas Pipeline Project (Stage 3). It is understood that the land parcel (study area) is being considered for construction of the city gate site, a structure that regulates and measures gas pressure within the pipeline network.

For the purpose of conducting ecological assessments and obtaining relevant planning approvals at the State level, the project is divided into three Stages. Stage 1 incorporates supply main, while Stage 2 incorporates the reticulation network within the township. An additional stage, Stage 3, concerns the city gate gas regulator. This report outlines the results of assessments within Stage 3 of the project. A separate report has been prepared for Stages 1 and 2 (Ecology and Heritage Partners Pty Ltd 2015a).

A brief due diligence assessment was conducted in August 2013 to broadly determine the presence and extent of ecological values throughout the entire project area and recommend further studies where required (Ecology and Heritage Partners Pty Ltd 2013). Information obtained during the due diligence assessment, as well as the current assessment, were used to determine the final alignment of the pipeline to avoid or minimise impact to significant ecological values throughout the project area.

The due diligence assessment identified the potential presence of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP) ecological community and potential habitat within the study area for Spiny Rice-flower Pimelea spinescens subsp. spinescens, Large-headed Fireweed Senecio macrocarpus and Striped Legless-lizard Delma impar.

The purpose of this assessment was to identify the extent and type of remnant native vegetation present within the study area and to determine the presence of significant flora and fauna species and/or ecological communities (including targeted surveys for Spiny Rice-flower, Large-headed Fireweed and Striped Legless Lizard). This report presents the results of the assessment and discusses the potential ecological and legislative implications associated with the proposed action. The report also provides recommendations to address or reduce impacts and, where necessary, highlights components that require further investigation.

The following sections describe our assessment methodology and provide information on the potential regulatory and legislative implications associated with the proposed action.



2 Study Area

The study area is located on private property (Lot 3, PS600595U, Fyansford-Gheringhap Road, Gheringhap) approximately 12 kilometres north-west of the Geelong CBD. The study area is 0.209 hectares in size and is bound by Fyansford-Gheringhap Road to the north-east and private land on the remaining sides.

The study area and surrounding landscape is a flat plain, consisting of heavy clay soils with areas of submerged rocks (basalt floaters). The study area is within an uncultivated area of approximately 4.75 hectares within the land parcel and supports remnant native grassland vegetation (Figures 2 and 3). The surrounding land parcels contain a mixture of crops and cultivated pasture, as well as areas of remnant native vegetation.

According to the Department of Environment, Land, Water and Planning (DELWP) Biodiversity Interactive Map (DELWP 2015a), the study area occurs within the Victorian Volcanic Plain bioregion. It is located within the jurisdiction of the Corangamite Catchment Management Authority (CMA) and the Golden Plains Shire municipality.

2.1 City Gate Description

The permanent city gate site comprises a 0.126 hectare area of a crushed rock hardstand. Key equipment (kiosk, meter installation, bath heater and Remote Telemetry Unit [RTU]) will be located on several concrete slabs on top of the crushed rock hardstand (Attachment 4). The city gate will be surrounded by a security fence which will have a 300 millimetre concrete plinth at the base. A second, outer fence will be installed within 10 metres from the inner fence. The purpose of the buffer area is to allow emergency egress from the site should the main gate be inaccessible, as well as provide access for works associated with connecting the city gate to the transmission pipeline and future city gate maintenance works if required. The city gate will connect to the existing gas transmission pipeline within the easement to the north-west of the city gate site (Figure 3). This area is currently cropped and the current land use will continue post- construction. The connection will be facilitated by installing an additional pipe through trenching between the city gate meter unit and the transmission pipeline will be fenced by an approximate 3x3 metre enclosure to protect any above-ground valves and other minor infrastructure. The work associated the transmission pipe connection will utilise the city gate site for vehicle movement and storage of materials, along with the additional area in the easement as shown in Figure 3.

An access track will be installed to enable vehicle access between Fyansford-Gheringhap Road and the city gate site. The access track will comprise of a concrete culvert and crushed rock within the vicinity of the roadside gutter to allow all-weather vehicle access (Figure 3).

3 Methods

3.1 Desktop Assessment

Relevant literature, online-resources and numerous databases were reviewed to provide an assessment of flora and fauna values associated with the study area. The following information sources were reviewed:



- The Department of Environment, Land, Water and Planning (DELWP) Biodiversity Interactive Map (DELWP 2015a) for:
 - o modelled data for location risk, remnant vegetation patches, scattered trees and habitat for rare or threatened species; and,
 - o the extent of historic and current EVCs.
- Published benchmarks for descriptions of EVCs (DELWP 2015b);
- The Native Vegetation Information Management (NVIM) Tool (DELWP 2015c) for Low Risk pathway assessment under the Guidelines;
- The VBA (DELWP 2015e), Flora Information System (FIS) (Viridans 2014a) and Atlas of Victorian Wildlife (AVW) (Viridans 2014b) for previously documented flora and fauna records within the project locality;
- The Federal Department of the Environment (DoE) Protected Matters Search Tool (PMST) for matters of National Environmental Significance (NES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (DoE 2015);
- The DELWP Planning Maps Online to ascertain current zoning and environmental overlays (DELWP 2015d);
- Aerial photography of the study area;
- Relevant environmental legislation and policies, including:
 - EPBC Act Policy Statement 3.11: Significant Impact Guidelines for the critically endangered Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* (DEWHA 2009);
 - *Flora and Fauna Guarantee Act 1988* (FFG Act) Action Statement No. 132: Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* (DSE 2008);
 - o FFG Act Action Statement No. 68: Large-fruit Fireweed *Senecio macrocarpus* (DSE 2009);
 - o National Recovery Plan for the Large-fruit Groundsel *Senecio macrocarpus* (Sinclair 2010);
 - National Recovery Plan for the Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* (Carter and Walsh 2006);
 - o National Recovery Plan for the Striped Legless Lizard *Delma impar* (Smith and Robertson 1999);
 - o Referral Guidelines for the Striped Legless Lizard Delma impar (DSEWPaC 2011); and,
 - o Advisory lists, in particular the Advisory List of Rare or Threatened Plants in Victoria (DEPI 2014).
- Previous ecological assessments, including:
 - o Ecology and Heritage Partners Pty Ltd 2013. Ecological Due Diligence Assessment: Avoca, Bannockburn and Winchelsea Gas Pipeline Projects. Unpublished report for SP-AusNet; and,



 Ecology and Heritage Partners Pty Ltd 2015a. Detailed Ecological Assessments: Bannockburn Gas Pipeline Project, Bannockburn, Victoria. Stages 1 and 2 (Supply Main and Reticulation Main).

3.2 Field Assessment

The field assessment to determine the quality and extent of ecological values and habitat hectare assessment (DSE 2004) was conducted by a qualified botanist and zoologist on 29 August 2014. The inspections sought primarily to provide ground-truthing of information provided by the desktop assessment, particularly in relation to the following:

- Modelled data for remnant vegetation patches, scattered trees and habitat for rare or threatened species; and,
- Potential habitat for species and ecological communities listed under the EPBC Act and FFG Act.



3.3 Targeted Flora Surveys

The targeted survey for Spiny Rice-flower was conducted on 29 August 2014. The field assessment adhered to the survey guidelines for Spiny Rice-flower outlined in the Biodiversity Precinct Structure Planning Kit (DSE 2010) and in the Significant Impact Guidelines for the species (DEWHA 2009). Although the study area does not occur in a Precinct Structure Plan area to which the guidelines generally apply, they are considered 'best practice' guidelines for conducting Spiny Rice-flower surveys, along with the similar measures specified in the Significant Impact Guidelines (DEWHA 2009).

The targeted survey for Large-headed Fireweed was conducted on 13 October 2014. As survey guidelines for Large-headed Fireweed are not outlined within the Biodiversity Precinct Structure Planning Kit (DSE 2010) or National Recovery Plan for the species (Sinclair 2010), the survey guidelines for Spiny Rice-flower were considered appropriate for Large-headed Fireweed. However, the timing of the surveys was altered to reflect the flowering season of Large-headed Fireweed (September to November).

A summary of the survey effort compared with the survey guidelines is provided in Table 1.

If observed, individual plants were counted and recorded with a hand-held Global Positioning System (GPS) and transposed onto an aerial photograph of the study area.

Survey Guidelines	Comment
Targeted surveys should be done by people familiar with recognising the subspecies.	Yes. Surveys were completed by assessors familiar with the appearance and ecology of the subspecies.
Multiple surveys may be required to identify the species and provide adequate survey effort.	Yes. The study area is relatively small (0.209 hectares) and the surveys were conducted over several hours. Additional transects throughout the site were also walked during subsequent surveys for Striped Legless- lizard by ecologists familiar with the Spiny Rice-flower and Large-headed Fireweed.
Surveys should not be conducted for at least six months after fires and for at least three months after the cessation of grazing (DEWHA Survey Guidelines).	Yes. The assessors are not aware of any fires or grazing within the specified timeframes.
Survey Spiny Rice-flower between April and August and Large-headed Fireweed between September and November while flowering (easily overlooked when not in flower).	Yes. The assessments were conducted within the flowering period for the species by ecologists familiar with the species in and out of flower. Given the survey effort within the small study area, there is reasonable assurance that individuals were not overlooked.
The targeted survey effort should be directed to all potential habitat areas i.e. remnant grassland including degraded grassland.	Yes. The entire study area and immediate vicinity (10 metres surrounding the study area) was traversed in linear transects.
Walk through transects at less than 5m grid intervals are required for all potential habitat.	Yes. Transects of less than two metres apart were utilised throughout the entire study area and adjacent area.
Record the number of plants per land parcel.	Yes.

 Table 1. Survey effort compared with the Biodiversity Precinct Structure Planning Kit (DSE 2010) and the Significant

 Impact Guidelines for the species (DEWHA 2009).



3.4 Targeted Striped Legless Lizard Surveys

Targeted surveys for Striped Legless Lizard were conducted in accordance with the *Biodiversity Precinct Structure Planning Kit* guidelines (DSE 2010) and the EPBC Act referral guidelines (DSEWPaC 2011), in areas of indigenous grassland containing embedded rock and a high cover of native tussock grasses such as Kangaroo Grass *Themeda triandra* and wallaby grasses *Rytidosperma* spp. within the study area.

Five rectangular grids of roof tiles, each 5 x 10 tiles (25 metres x 50 metres), were laid in August and checked six times between October and November 2014. The grids were located within and adjoining the proposed city gate site study area (Tile Grids 1, 2, and 3), and two additional grids were deployed within similar habitat to the north-west of the city gate site (Tile Grids 4 and 5) (Figure 3).

Ecology and Heritage Partners Pty Ltd has successfully used this technique to survey for Striped Legless Lizard at several sites in western Victoria. The purpose of using a grid of roof tiles is that individuals will use the tiles as preferred habitat for shelter, and to assist regulate body temperature.

3.5 Permitted Clearing Assessment (the Guidelines)

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. Under the Biodiversity Assessment Guidelines, native vegetation is classified into two categories, remnant patches of native vegetation and scattered trees (Table 2).

The planning system manages the impacts on biodiversity from native vegetation removal using a risk-based approach. Two factors – extent risk and location risk – are used to determine the risk associated with an application for a permit to remove native vegetation (Table 3). The extent risk is determined by the extent of native vegetation (in hectares) or the number of scattered trees that are proposed to be removed. The location risk (A, B or C) has been determined for all areas in Victoria and is available on DELWP's Native Vegetation Information Management Tool (DELWP 2015c). The risk-based pathway is determined by combining the extent risk and the location risk of the vegetation to be removed.

Category	Definition	Extent	Condition
Remnant Patch	An area of native vegetation where at least 25 per cent of the total perennial understorey plant cover is native plants. OR An area with three or more native canopy trees where the canopy foliage cover is at least 20 per cent of the area.	Measured in hectares. Based on hectare area of the remnant patch.	Vegetation Quality Assessment Manual (DSE 2004).
Scattered Tree	A native canopy tree that does not form part of a patch.	Measured in hectares. Each scattered tree is assigned an extent of 0.071 hectares (30m diameter).	Scattered trees are assigned a default condition score of 0.2.

Table 2. Definition of native vegetation (DEPI 2013).



 Table 3. Risk-based pathways for applications to remove remnant patches of native vegetation and scattered trees

 (DEPI 2013).

Extent*		Location		
		Α	В	С
	< 0.5 hectares	Low	Low	High
Remnant Patch	\geq 0.5 hectares and < 1 hectare	Low	Moderate	High
	≥ 1 hectare	Moderate	High	High
Coattored Tree	< 15 scattered trees	Low	Moderate	High
Scattered free	≥ 15 scattered trees	Moderate	High	High

* For the purpose of determining the risk-based pathway of an application to remove native vegetation the extent includes any other native vegetation that was permitted to be removed on the same contiguous parcel of land with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before an application to remove native vegetation is lodged.

For Low risk-based pathways:

- The extent (in hectares) of native vegetation is determined by a site assessment.
- The condition of native vegetation is based on modelled data (although a proponent may commission on-ground assessments), available on DELWP's NVIM Tool (DELWP 2015c).
- The NVIM Tool is an online user interface that determines biodiversity loss and offset obligations for Low risk-based pathway applications based on user-entered data. The tool then provides a biodiversity offset report summarising this information.

3.6 Limitations

The short duration of the survey meant that migratory, transitory or uncommon fauna species may have been absent from typically occupied habitats at the time of the field assessment. The terrestrial flora and fauna data collected during the field assessment and information obtained from relevant desktop sources is considered adequate to provide an accurate and indicative assessment of the ecological values present within the study area.

Fauna surveys were conducted under the Ecology and Heritage Partners Pty Ltd Research Permit (#10006893) issued by DELWP under the *Wildlife Act 1975*.

4 Results

4.1 Remnant Native Vegetation

Remnant vegetation within the study area predominantly comprises of remnant grassland. Based on the field assessment, grassland within the study area corresponds to the *Heavier-Soils* Plains Grassland EVC (EVC 132_61). This is consistent with extant DELWP mapping which shows this area dominated by this EVC (DELWP 2015b). The study area is also surrounded by approximately 4.75 hectares of Plains Grassland vegetation.



4.1.1 Heavier Soils Plains Grassland

Plains Grassland is a treeless community, mostly less than one metre tall, largely dominated by graminoid and herb life forms. It generally occupies fertile cracking basalt soils prone to seasonal waterlogging (DELWP 2015b).

Plains Grassland was recorded within the majority of the study area (Plates 1 and 2; Figure 2). The community was in moderate to good condition and was dominated by a dense coverage of Kangaroo Grass *Themeda triandra*, with occasional Sheep's Burr *Acaena echinata*, Finger Rush *Juncus subsecundus*, Blue Devil *Eryngium ovinum*, Slender Speedwell *Veronica gracilis*, Kneed Spear-grass *Austrostipa bigeniculata*, Common Rice-flower *Pimelea humilis*, Milky Beauty-heads *Calocephalus lacteus*, Grassland Wood-sorrel *Oxalis perennans* and Blue Bells *Wahlenbergia* spp. Weed cover was low to moderate and was dominated by Toowoomba Canary-grass *Phalaris aquatica*, Wild Oat *Avena fatua*, Larger Quaking-grass *Briza maxima*, Serrated Tussock *Nassella trichotoma* and Cocksfoot *Dactylis glomerata* (Appendix 1.1).

4.1.2 Fauna Habitat

Areas of Plains Grassland are likely to provide high quality habitat for native fauna. Intact areas of remnant grassland provide the highest likelihood of supporting the nationally significant Striped Legless Lizard *Delma impar* based on the presence of native tussock grasses and a high coverage (>40%) of embedded rock and cracking soils. This was confirmed during targeted surveys with the highest numbers of records within areas of high quality habitat within the city gate site (see Section 4.3).

This habitat is also likely to support a variety of small ground dwelling mammal, reptile and frog species given the taller grass coverage associated with the presence of embedded and loose surface rocks. Given the abundance of fauna species which are likely to use this habitat, these habitats may also provide ideal foraging habitat for diurnal raptor species including Brown Falcon *Falco berigora*, Whistling Kite *Haliastur sphenurus* and Black-shouldered Kite *Elanus axillaris* which are common in the local area.







Plate 2. Plains Grassland within the study area, proposed city gate location.

Plate 1. Plains Grassland within the study area, proposed city gate location.

4.2 Introduced Vegetation

Introduced vegetation occurs along the existing gas pipeline easement in the north-west of the study area (Figure 2; Plates 3 and 4). The area contains greater than 80% cover of introduced grass species, in particular Toowoomba Canary-grass, Wild Oat and Serrated Tussock. There are some scattered occurrences of native grasses in the area, however these did not have the required 25% or greater cover to be considered a remnant patch.

4.2.1 Fauna Habitat

Areas of introduced vegetation provide low to high quality habitat for native fauna. While the majority of introduced vegetation is likely to be unsuitable for native fauna on a permanent basis, native fauna (including Striped Legless Lizard) are likely to use such habitats where areas are in proximity to high quality grasslands. Introduced vegetation may also provide important connective and dispersal opportunities for native fauna between preferred habitats within the local area. For example, Striped Legless Lizard may use introduced vegetation within the road reserve or cropped areas within the existing easement as dispersal habitat between higher quality patches of Plains Grassland (A, Organ pers. obs.).

Modified habitats dominated by introduced vegetation are likely to be utilised by a range of more mobile species including birds, mammals, reptiles and frogs which are adapted to such habitats. Species which are likely to use this habitat on a regular basis include; Australian Magpie *Cracticus tibicen*, Little Raven *Corvus mellori*, Magpie-lark *Grallina cyanoleuca*, Australasian Pipit *Anthus novaeseelandiae* and Tiger Snake *Notechis scutatus*. Introduced species noted within this habitat also included; Common Starling *Sturnus vulgaris*, Common Myna *Acridotheres tristis* and House Mouse *Mus musculus* (Appendix 2.1).





Plate 3. Introduced vegetation within the study area, proposed city gate location.



Plate 4. Introduced vegetation within the study area, proposed city gate location.

4.3 Targeted Striped Legless Lizard Surveys

According to the VBA (DELWP 2015e), Striped Legless Lizard has not been recorded from any locations within the local area (Appendix 2.2; Figure 5); however, this is more likely to be associated with a lack of survey effort rather than the species absence within areas of suitable habitat.

Striped Legless Lizard was detected in eight separate locations during targeted surveys with a maximum of four individuals noted (28 November 2014) during the last survey (Plates 5 and 6; Table 4). Given that targeted surveys were aimed at determining presence/absence of the species (i.e. no species marking or head pattern ID noted) within areas of potential habitat, we are unable to conclude with confidence on the number of individuals inside the surveyed areas. However, it is likely to be equal or greater than four based on the survey results (Figure 3).

A total of 5.5 hectares of potential habitat (breeding and/or dispersal) for Striped Legless Lizard was identified in Stages 1 and 3 and adjacent areas, of which 4.75 hectares constitutes the NTGVVP ecological community often associated with Striped Legless Lizard (Figures 2 and 3; SPRAT 2015).

Given there is 4.75 hectares of the NTGVVP ecological community and additional potential non-native habitat in the vicinity of the city gate site which is known habitat for Striped Legless Lizard, the population located at this site meets the criteria of an important population under the '*EBPC Act Referral Guidelines for the vulnerable Striped Legless Lizard, Delma impar*' (DSEWPaC 2011).





Plate 5. Striped Legless Lizard within tile Grid 4.

Table 4: Reptiles detected during targeted surveys.



Plate 6. Striped Legless Lizard within tile Grid 1.

	Tile Grid #				
Date	1	2	3	4	5
3 October 2014	No lizards	No lizards	No lizards	EaThLS (1)	SLL (1)
16 October 2014	No lizards	SLL (1) EaThLS (1)	EaThLS (1)	SLL (1)	SLL (1)
23 October 2014	No lizards	EaThLS (1)	EaThLS (1)	SLL (3)	EaThLS (1)
28 October 2014	SLL Skin (1) SLL (1) EaThLS (1)	EaThLS (3)	EaThLS (2)	EaThLS (4)	EaThLS (1) TS (1)
6 November 2014	SLL (1) EaThLS (3)	EaThLS (2)	No lizards	SLL (1) EaThLS (3)	EaThLS (2)
28 November 2014	SLL (1)	SLL (1)	EaThLS (1)	SLL (1)	SLL (1)

Note: 10-20% of all the tile grids were occupied by House Mice *Mus musculus* nests and/or were observed directly; SLL = Striped Legless Lizard *Delma impar*; EaTLS = Eastern Three-lined Skink *Bassiana duperreyi*; TiSn = Tiger Snake *Notechis scutatus*.

As described in Section 4.1, the city gate site and immediately adjoining areas provide suitable habitat structure for Striped Legless Lizard as it contains a very high cover (>70%) of native tussock grasses dominated by Kangaroo Grass. The site also consist of cracking soils and has a high cover (>40%) of embedded rock.



The majority of the adjoining landscape is highly modified, as a result of previous land use practices including surface rock removal, cultivation and grazing. This was noticed between the two patches of remnant vegetation within an existing gas easement which has been cropped for agricultural purposes during the assessment (Figure 3). However, areas containing predominantly introduced pasture grasses in association with embedded rock and cracking soils may still provide potential habitat for this species (Figure 3). Striped Legless Lizard was recorded in Tile Grids 1 and 4 within areas adjacent to the road reserve with a higher cover of the introduced Toowoomba Canary-grass than native tussock grasses. As such, it is likely that given the site characteristics and the presence of high quality habitat in the immediate locality, areas containing predominantly introduced pasture grasses in association with embedded rock and cracking soils is likely to provide habitat for this species. However, based on the field assessment and results of targeted surveys, areas closer to the road structure (between the drainage line and sealed road surface) which are regularly slashed and do not contain embedded rock are unlikely to support the species on a permanent basis.

In addition, cropped areas between the two patches of remnant native vegetation within the existing gas easement (which are currently being used for agricultural purposes) are unlikely to be permanently occupied by Striped Legless Lizard (i.e. provide breeding habitat for the species)(Figure 3).

However, the easement is not likely to form a permanent barrier to the movement of Striped Legless Lizard between patches, and it is likely that individuals would disperse across the easement between higher quality patches of Plains Grassland (Figure 3). The presence of Striped Legless Lizard within modified vegetation has been noted in areas dominated by exotic grasses such as Toowoomba Canary Grass *Phalaris aquatica*, Serrated Tussock *Nassella trichotoma* and Flatweed *Hypochoeris radicata* and may also include sites which have had significant historical ground disturbance (i.e. clearing for agricultural purposes) (Coulson 1990; O'Shea 1996; O'Shea 2005). This includes habitat which may now be considered as secondary grassland sites, indicating the species is not restricted to native or primary grasslands (SPRAT 2015). The species is also likely to disperse to and between other patches of high quality habitat to the south, west and north-west of the study area (i.e. there is currently habitat permeability through the immediate area), and therefore there are currently opportunities for ongoing population dynamics to occur over the life cycle of the species.

Given there is a high coverage of native tussock grasses at this site within areas of NTGVVP, the availability of shelter sites during disturbance events (such as annual ploughing) may enable individuals to seek refuge and disperse between areas of high quality patches of vegetation following the disturbance (Dorrough 1995). The species are also known to move from 10 to 20 metres in a day, and up to 50 metres over several weeks, therefore, Striped Legless Lizard have the ability to move across the existing easement in short periods of time (SPRAT 2015). Dispersal opportunities and associated sheltering habitat may also consist of the road reserve along Fyansford–Gheringhap Road within cracked soils and arthropod burrows in the short-term. Based on these assumptions, there is considered to be no barriers to dispersal between patches of NTGVVP for this important population.

Given the confirmed presence of Striped Legless Lizard, it is recommended that removal of areas of potential habitat must be accompanied by a qualified Zoologist in accordance with an approved Salvage and Relocation Plan (SRP) and Management Authorisation Permit (No. 10007474) (Appendix 3; Figure 3).



Eastern Three-lined Skink *Bassiana duperreyi* was also recorded regularly during tile inspections (Plates 7 and 8; Table 4) and a Tiger Snake *Notechis scutatus* was noted basking on a pile of open rocks within Tile Grid 5 on 28 October 2014 (Table 4).



Plate 7. Eastern Three-lined Skink within the study area, proposed city gate location.



Plate 8. Eastern Three-lined Skink within the study area, proposed city gate location.

4.4 Permitted Clearing Assessment (the Guidelines)

Based on DELWP's NVIM Tool, the study area is within Location A, with 0.171 hectares of native vegetation proposed to be removed. As such, the permit application falls under the Low Risk-based pathway. All native vegetation within the study area is proposed for removal as part of the development.

The offset requirement for native vegetation removal is **0.029 General Biodiversity Equivalence Units** (BEU). The results of the habitat hectare assessment are presented in Appendix 1.3.

The Biodiversity Impact and Offset Requirements (BIOR) Report containing details of the offset requirements and other relevant information in presented in Appendix 4 (DELWP 2015c). A summary of offsets for proposed vegetation losses is presented in Table 5.



Risk Pathway		Low
	Location	А
Vegetation	Remnant Patch (ha)	0.171
to be	Scattered Trees (no.)	N/A
removed	Total Hectares	0.171
	Total Habitat Hectares	0.065
	Strategic Biodiversity Score	0.294
	General Biodiversity Equivalence Units (BEUs)	0.019
Offsets	General Risk Factor	1.5
	General Offsets Required (BEUs)	0.029
Offset Criteria	Vicinity (catchment / LGA)	Corangamite CMA/Golden Plains Shire
	Minimum Strategic Biodiversity Score	0.235

Table 5. Vegetation proposed to be removed, Permitted Clearing Assessment (the Guidelines).

Note: BEU: Biodiversity Equivalence Units; LGA: Local Government Area. Ha: hectares, N/A: Not applicable.

4.5 Significance Assessment

4.5.1 Flora

The VBA and FIS contain records of eight nationally listed flora species and 28 state listed flora species previously recorded within 10 kilometres of the study area (DELWP 2015e, Viridans 2014a) (Appendix 1.2; Figure 4), while the PMST nominated an additional four nationally significant species which have not been recorded in the locality but have the potential to occur (DoE 2015). The due diligence surveys identified potential habitat within the study area for Spiny Rice-flower and Large-headed Fireweed (Ecology and Heritage Partners Pty Ltd 2013).

Spiny Rice-flower and Large Headed Fireweed were not recorded during subsequent assessments or targeted surveys. Based on the high level of survey effort, small size of the study area and results of the targeted flora surveys, no national or state significant flora species are likely to occur within the study area.

4.5.2 Fauna

The VBA and AVW contain records of 13 nationally listed fauna species previously recorded within 10 kilometres of the study area (DELWP 2015e; Viridans 2014b) (Appendix 2.2; Figure 5). The PMST nominated an additional eight nationally significant species which have not been recorded in the locality but have the potential to occur (DoE 2015). The VBA and AVW contain records of 25 State-significant and 10 regionally significant fauna species within 10 kilometres of the study area (DELWP 2015e; Viridans 2014b) (Appendix 2.2; Figure 5).

There are no previous records of Striped Legless Lizard within a 10 kilometre radius of the study area; however, this is most likely due to a lack of survey effort within the local area.



Striped Legless Lizard was identified within patches of Plains Grassland located adjacent to the proposed city gate works area (see Section 4.3).

Based on the high level of survey effort, small size of the study area and results of the targeted fauna surveys, no additional national, state or regional listed fauna species are likely to occur within the study area.

4.6 Ecological communities

Five nationally listed ecological communities are predicted to occur within 10 kilometres of the study area (DoE 2014):

- Grassy Eucalypt Woodland of the Victorian Volcanic Plain;
- Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP);
- Natural Damp Grassland of the Victorian Coastal Plains;
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; and,
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

The nationally listed NTGVVP ecological community was recorded in the study area (Figure 2). The community is also listed under the *Flora and Fauna Guarantee Act 1988* (FFG Act) as the Western (Basalt) Plains Grassland ecological community.

In accordance with relevant guidelines (DEWHA 2008; DSEWPaC 2011), the identified patch of Plains Grassland meets the following condition thresholds of the EPBC Act-listed NTGVVP:

- At least 50% of perennial native tussock cover consists of *Themeda, Austrostipa, Poa* and/or *Rytidosperma* (synonym *Austrodanthonia*) genera; and,
- For a native vegetation remnant greater than one (1) hectare in size, the contiguous grassland patch should be at least 0.5 hectares in size.

The area is dominated by Kangaroo Grass, which comprises at least 50% of the total vegetation cover in the area. The area of NTGVVP is 0.171 hectares in size within the study area (Figure 2). The NTGVVP in the study area is adjacent to and contiguous with 4.75 hectares of Plains Grassland, which also constitutes the NTGVVP ecological community.

No other nationally significant ecological communities occur in the study area.

5 Legislative and Policy Implications

5.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes a Commonwealth process for the assessment of proposed actions (i.e. project, development, undertaking, activity, or series of activities) likely to have a significant impact on matters of National Environment Significance (NES), or those that are undertaken on Commonwealth Land.



The construction of the city gate will result in the removal of a maximum of 0.171 hectares of the NTGVVP ecological community. The proposed action is not considered to constitute a significant impact to the NTGVVP ecological community given the action will result in a minor reduction in extent of the ecological community, with the proposed removal of a maximum of 0.171 hectares out of approximately 4.75 hectares of the community (DoE 2013; DSEWPaC 2011).

A total of 5.5 hectares of potential habitat (breeding and/or dispersal) for Striped Legless Lizard was identified in the study area, of which 0.270 hectares occurs within the construction zone of Stage 3 of the project (Figure 3). An additional 0.145 hectares of habitat occurs in the preliminary construction zone in the road reserve in Stage 1 (Figure 3). A maximum of 0.415 hectares of Striped Legless Lizard habitat is proposed to be impacted by the project. A maximum rather than an absolute area of impact is given as the final micrositing of the pipeline in the road reserve and lack of soil disturbance in the maintained grass areas of the city gate may result in the retention of Striped Legless Lizard habitat.

While an important population of Striped Legless Lizard is present at the city gate site and surrounding areas, there is considered to be no barriers to dispersal between these patches by the existing easement. Provided appropriate mitigation measures are undertaken (i.e. implementation of *in-situ* salvage and relocation), there is unlikely to be a significant impart to this important population as part of the project.

Further discussions on why a Significant Impact is unlikely to occur to under the Significant Impact Guidelines for ecological communities and Striped Legless Lizard are further provided in Tables 6 and 7.



Table 6. Assessment against the Significant Impact Guidelines for Endangered or Critically Endangered EcologicalCommunities: NTGVVP ecological community.

Significant Impact Guidelines 1.1 — Significant Impact Criteria for Endangered or Critically Endangered Ecological Communities (NTGVVP)			
Significant impact Criteria	Comment		
	The proposed action will result in a minor reduction in extent of the ecological community, with the proposed removal of a maximum of 0.171 hectares out of approximately 4.75 hectares of the community. Due to the very small area of impact and the retention of the remainder of the community adjacent to the study area, the proposed action is not considered to have a significant impact on the ecological community. A recent EPBC Act referral decision approved the removal of 0.775 hectares of NTGVVP, with the proposal being assessed as a non-controlled action (EPBC reference number EPBC 2015/7504, Ecology and Heritage Partners Pty Ltd 2015b).		
1. Reduce the extent of an ecological community.	The study area (0.209 hectares in size) also incorporates a 10 metre buffer around the city gate site to allow adequate space for machinery and storage of equipment to ensure that there are no direct or indirect impacts to adjacent areas supporting the community. All construction activities will be confined to the boundary of the study area as shown in Figure 2 and will not encroach outside of these areas.		
	The ecological community cannot be entirely avoided due to the requirement to connect the city gate to the existing high-pressure gas pipeline easement. The easement is surrounded by areas supporting the ecological community (Figure 2) therefore relocating the city gate is likely to result in similar impacts to the ecological community. The proposed city gate is also located along the north-east property boundary which will enable direct access by machinery into the site, without having to disturb additional areas of the community to access the site. Micrositing the city gate in another location may result in additional impacts to the community, as it may mean that machinery would impact on a greater extent of the ecological community.		
	Relevant mitigation measures in relation to the ecological community are presented in Section 6.		
2. Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.	The overall 4.75 hectare area of the ecological community occurs within a modified agricultural landscape. As such, the proposed action is not likely to result in further fragmentation of the ecological community, given that only a small area of the community is proposed for removal. The small area to be removed occurs on the north-east edge of the community, so the community will not be bisected or its ecological function significantly altered as a result of the proposed action.		
3. Adversely affect habitat critical to the survival of an ecological community.	The proposed action is not likely to adversely affect the long term survival of the ecological community, given that the majority of the community is being avoided by the proposed action (Figure 2).		
4. Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial	The proposed action will result in the removal of surface soil and embedded rock within the study area to facilitate construction of the city gate. Soil and rock removal will only be taken to the extent necessary to level the ground to facilitate construction of the city gate. Soil will not be stockpiled outside of the study area and will be reinstated as soon as possible.		
alteration of surface water drainage patterns.	Given the small, localised nature of the proposed action, groundwater levels, water drainage patterns and nutrient loads are unlikely to be affected by the proposed action.		



Significant Impact Guidelines 1.1 — Significant Impact Criteria for Endangered or Critically Endangered Ecological Communities (NTGVVP)			
5. Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.	The overall functionality of the community is not likely to be affected by the proposed action. This is due to the small, localised nature of the proposed action as well as the 4.75 hectare extent of the community adjacent to the study area that is being retained as part of the proposed action.		
6. Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:			
a. assisting invasive species, that are harmful to the listed ecological community, to become established or;	The overall quality of the ecological community is not likely to be affected by the proposed action. Appropriate management of the construction process and machinery will be used to ensure that any weed species, pollutants and/or pathogens are not inadvertently spread into areas		
b. causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.	supporting the ecological community (see Section 6).		
7. Interfere with the recovery of an ecological community.	The proposed action is not likely to interfere with the ecological processes or recovery of the ecological community, due to the retention of the larger, adjacent patch of the ecological community.		



 Table 7. Assessment against the Significant Impact Guidelines for vulnerable species: Striped Legless Lizard (DSEWPaC 2011; DOE 2013).

Significant Impact Guidelines 1.1 — Significant Impact Criteria for a Vulnerable Species (Striped Legless Lizard)		
Significant Impact Criteria	Comment	
 Disrupt the breeding cycle of an 'important population', defined as: key source populations either for breeding or dispersal populations that are necessary for maintaining genetic diversity 	The study area supports an important population of Striped Legless Lizard based on its occurrence within suitable habitat that is greater than 0.5 hectares in size. However, the proposed action will result in a minor reduction in the extent of potential Striped Legless Lizard habitat, with the proposed removal of a maximum of 0.415 hectares (for Stages 1–3) out of 5.5 hectares of habitat considered to be potentially suitable for the species. The overall area surrounding the construction site is greater than 0.5 hectares and is likely support the species breeding requirements into the	
 iii) populations that are near the limit of the species range. iv) Sites less than 0.5 hectares v) Small isolated areas of habitat which are currently under pressure, or are likely to experience long-term pressures (for expendence sites located within urban 	future, given the presence of connected high quality habitat containing high tussock cover (>70%), embedded rocks and cracking soils. Therefore, the breeding and dispersal capabilities of this population are unlikely to be affected or compromised by the proposed development, given the localised area (<0.5 hectares) of the proposed works. Given the location of the site, this population is not considered to be	
settings, such as adjacent to factories or in residential subdivisions)	In addition, only a small proportion of the population may be affected during the removal of suitable habitat providing appropriate mitigation measures are implemented, which will include the measures outlined within an approved Salvage and Relocation Plan (see Appendix 3).	
2. Lead to a long-term decrease in the size of an important population of a species	Given the small area of proposed disturbance, and the availability of connected habitat that is equally or higher in quality and importance for the species, it is highly unlikely that the action will lead to a long-term decrease in the size of the population. However, it must be acknowledged that the accidental loss of several individuals may occur during habitat removal.	
3. Reduce the area of occupancy of an important population	The 5.5 hectares of potential habitat occurs within a modified agricultural landscape. The proposed action will not result in any further fragmentation of this habitat. The small area to be removed adjoins an area which has been cleared for agricultural purpose (i.e. cropping). There is considered to be suitable dispersal habitat within the road reserve and movement between the patches of higher quality Plains Grassland habitat will also remain possible across the existing easement	
4. Fragment an existing important population into two or more populations	(Figure 3). As such, the construction of the city gate will not form a permanent, long-term barrier to Striped Legless Lizard movement between patches and adjacent areas of potentially suitable habitat. The restoration of the road reserve (through the reinstatement of soils, rock and grass cover) will also allow the species to utilise dispersal opportunities within the road reserve. The existing stone wall fence will only be removed at the point of access to the city gate site and reinstated or used to provide additional refuge along the frontage of the site within the road reserve. The retained/rehabilitated frontage would connect to the maintained grassy buffer in the south-east and south-west of the city gate site.	
5. Adversely affect habitat critical to the survival of	The proposed action will not adversely affect habitat critical to the	



Significant Impact Guidelines 1.1 – Significant Impact Criteria for a Vulnerable Species (Striped Legless Lizard)			
a species	survival of the species.		
	The proposed action will result in the removal of surface soil and embedded rock to facilitate construction of the city gate. Similar or higher quality habitat for the species is present surrounding the proposed impact site. Soil and rock removal will only be taken to the extent necessary to level the ground to facilitate construction of the city gate under the supervision of qualified Zoologist and in accordance with the Salvage and Relocation Plan (Appendix 3). The soil and habitat features such as embedded rocks in the maintained grassed areas will remain intact.		
6. Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Although a maximum of 0.415 hectares of potential habitat is likely to be removed a result of the proposed action, the extent and overall quality of surrounding areas of Striped Legless Lizard habitat is not likely to be affected by the proposed action. Appropriate management during the construction process will be undertaken to ensure that any individuals unearthed / disturbed are relocated safely into areas of suitable grassland habitat in the vicinity of the construction footprint (Appendix 3). Appropriate construction methods will ensure weed species, pollutants and/or pathogens are not inadvertently spread into areas supporting potential Striped Legless Lizard habitat (Section 6).		
7. Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The proposed action is not likely to interfere with the ecological		
8. Introduce disease that may cause the species to decline, or	processes or recovery of areas considered to be potential habitat for Striped Legless Lizard, due to the retention of the larger, adjacent patch of suitable habitat.		
9. Interfere substantially with the recovery of the species.			

5.2 Flora and Fauna Guarantee Act 1988

The FFG Act is the primary legislation dealing with biodiversity conservation and sustainable use of native flora and fauna in Victoria. Proponents are required to apply for an FFG Act Permit to 'take' listed and/or protected¹ flora species, listed vegetation communities and listed fish species in areas of public land (i.e. within road reserves, drainage lines and public reserves). An FFG Act permit is generally not required for removal of species or communities on private land, or for the removal of habitat for a listed terrestrial fauna species.

One ecological community (*Western [Basalt] Plains Grassland*) and one fauna species (Striped Legless-lizard) listed under the FFG Act were recorded within the study area. In addition, two protected flora species (Milky

¹ In addition to 'listed' flora species, the FFG Act identifies 'protected' flora species. This includes any of the Asteraceae (Daisies), all orchids, ferns (excluding *Pteridium esculentum*) and Acacia species (excluding *Acacia dealbata, Acacia decurrens, Acacia implexa, Acacia melanoxylon* and *Acacia paradoxa*), as well as any taxa that may be a component of a listed ecological community. A species may be both listed and protected.



Beauty-heads and Annual Cudweed *Euchiton sphaericus*) and one listed fauna species (Striped Legless Lizard) were recorded within the study area¹. The study area is privately owned, therefore a permit under the FFG Act is unlikely to be required for Stage 3 of the development.

5.3 Planning and Environment Act 1987

The *Planning and Environment Act 1987* outlines the legislative framework for planning in Victoria and for the development and administration of planning schemes. All planning schemes contain native vegetation provisions at Clause 52.17, which require a planning permit from the relevant local Council to remove, destroy or lop native vegetation on a site of more than 0.4 hectares, unless an exemption under clause 52.17-7 of the Victorian Planning Schemes applies or a subdivision is proposed with lots less than 0.4 hectares².

5.3.1 Local Planning Schemes

The study area is located within the Golden Plains Shire municipality. The study area is zoned Farming Zone (FZ) and no planning overlays apply.

A Planning Permit from Golden Plains Shire Council is required to remove, destroy or lop any native vegetation. A planning permit is also required to subdivide land. DELWP is not likely to be a mandatory referral authority due to the proposed removal of less than 0.5 hectares of native vegetation.

5.3.2 Permitted clearing of native vegetation - Biodiversity assessment guidelines

The Victorian Planning Provisions relating to biodiversity protection and native vegetation management was amended in December 2013 to reflect the new permitted clearing of native vegetation and biodiversity policy encapsulated in the 'Permitted clearing of native vegetation - Biodiversity assessment guidelines' (the Guidelines) (DEPI 2013).

Areas of remnant native vegetation must be offset if they are proposed to be disturbed as part of the project. The results of the permitted clearing assessment under the Guidelines are presented in Table 5.

5.4 Wildlife Act 1975 and Wildlife Regulations 2013 (Victoria)

The *Wildlife Act 1975* (and associated Wildlife Regulations 2013) is the primary legislation in Victoria providing for protection and management of wildlife. The Act requires people engaged in wildlife research (e.g. fauna surveys, salvage and translocation activities) to obtain a permit under the Act to ensure that these activities are undertaken in a manner consistent with the appropriate controls.

Authorisation for habitat removal may be obtained under the *Wildlife Act 1975* through a licence granted under the *Forests Act 1958,* or under any other Act such as the *Planning and Environment Act 1987.* Any

 $^{^2}$ In accordance with the Victorian Civil and Administrative Tribunal's (VCAT) decision Villawood v Greater Bendigo CC (2005) VCAT 2703 (20 December 2005) all native vegetation is considered lost where proposed lots are less than 0.4 hectares in area and must be offset at the time of subdivision.



persons engaged to remove, salvage, hold or relocate native fauna during construction must hold a current Management Authorisation under the *Wildlife Act 1975*.

A Management Authorisation Permit under the *Wildlife Act 1975* has been obtained through DELWP for the salvage and relocation of Striped Legless Lizard (Permit No: 10007474). Any salvage and relocation of Striped Legless Lizard must be undertaken in accordance with this permit and the Salvage and Relocation Plan (Appendix 3).

5.5 Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) contains provisions relating to catchment planning, land management, noxious weeds and pest animals.

Essentially the CaLP Act establishes a framework for the integrated management and protection of catchments, and provides a framework for the integrated and coordinated management, which aims to ensure that the quality of the State's land and water resources and their associated plant and animal life are maintained and enhanced.

Noxious weeds listed as under the CaLP Act were recorded within the study area (Serrated Tussock and African Boxthorn *Lycium ferocissimum*). Similarly, there is evidence that the study area is currently occupied by several pest fauna species listed under the CaLP Act (Red Fox *Vulpes vulpes* and European Rabbit *Oryctolagus cuniculus*). Landowners are responsible for the control of any infestation of noxious weeds and pest fauna species. To meet CaLP Act requirements listed noxious weeds should be appropriately controlled throughout the study area to minimise their spread and impact on ecological values. A Weed Management Plan and pest fauna eradication plan may be required to fulfil these obligations as a condition of the planning permit for the project.

6 Mitigation Measures

Specific mitigation measures for the EPBC Act-listed NTGVVP ecological community and associated Striped Legless Lizard habitat include the following:

- The area of the ecological community and potential Striped Legless Lizard habitat within the study area (Figures 2 and 3) proposed for removal should be clearly signposted as a construction zone and delineated with sedimentation fencing or other suitable means as appropriate. This measure must be applied to minimise the risk of inadvertent disturbance, soil stockpiling, encroachment by machinery or damage to the ecological community that occurs adjacent to the study area. This measure must be implemented prior to the commencement of any works on site and fencing and signage must not be removed for the duration of the project;
- All personnel and visitors to the site must be informed of the location and extent of the ecological community and areas of potential Striped Legless Lizard habitat within the study area and adjoining areas prior to the commencement of any works (Figure 3). An on-site meeting with all relevant personnel is recommended prior to the start of works;



- The extent of the ecological community and potential Striped Legless Lizard habitat in the study area and adjacent areas as shown on Figure 3 should be included on all relevant work plans/detailed designs of the pipeline to ensure awareness of the presence of the ecological community;
- Ensure that machinery, soil stockpiles and any other equipment required for the installation of the city gate do not encroach into adjacent areas supporting the ecological community or potential Striped Legless Lizard habitat (Figure 3). Construction personnel should also not encroach into these areas.
- Prior to entering the study area, machinery must be washed down and clear of grass seeds and soil debris to minimise the spread of weed seed and/or pathogens into areas of the ecological community.
- All work associated with the gas pipeline near the ecological community should be confined to the specified study area and should not extent outside of this designated areas; and,
- If required, the implementation of the mitigations measures can be supervised by a qualified ecologist.

Specific mitigation measures for Striped Legless Lizard include the following:

- Avoid direct and/or indirect impacts to retained areas of habitat adjacent to the study area;
- Maintaining a grassed area around the permanent city gate site to contribute to connectivity of Striped Legless Lizard habitat with surrounding habitat. This includes leaving the soil and habitat features such as embedded rock intact. The grassed area around the city gate is adjacent to a permanently grassed area extending approximately five metres from a stone wall in the easement and also connects the two patches of good quality Striped Legless Lizard habitat. The outer boundary fence delineating the city gate site is designed to allow the passage of lizards and small animals;
- Immediate reinstatement of soil, rocks and allowing natural recolonisation of grasses in the disturbed areas of the road reserve during the installation of the pipeline in the road reserve. The combination of these measures would progressively reinstate habitat for Striped Legless Lizard and allow for the area to be used for dispersal of individuals. The restoration of habitat features will encourage dispersal of animals into the road reserve and provide additional connectivity between the two grassland patches.
 - It is important to note that the previous installation of a 675 millimetre diameter water pipeline in the road reserve in the 1970's involved the disturbance of the entire road reserve to install the pipeline via trenching (Golden Plains Shire Council and Barwon Water, pers. comm. 28 September 2015). However, the reinstatement of rock and eventual recolonisation of grasses provided habitat for the species and also allowed for their dispersal. Striped Legless Lizard were recorded in the road reserve during targeted surveys



in 2014, demonstrating that previously disturbed habitat can support Striped Legless Lizard (Ecology and Heritage Partners Pty Ltd 2015a).

- Any rocks removed from the stone wall located between the city gate site and Fyansford– Gheringhap Road during construction will be placed at appropriate locations in the easement and/or road reserve following construction to provide potential shelter for Striped Legless Lizard; and,
- Prior to the commencement of any ground disturbance, an induction on the requirements of the Salvage and Relocation Plan (SRP) must be provided to all staff on site prior to any works commencing (Appendix 3).



7 Further Requirements

Further requirements associated with development of the study area, as well as additional studies or reporting that may be required, are provided in Table 8.

Table 8. Further requirements associated with development of the study area.

Relevant Legislation	Implications	Further Action
Environment Protection and Biodiversity Conservation Act 1999	The construction of the city gate will result in the removal of 0.171 hectares of the NTGVVP ecological community and a maximum removal of 0.415 hectares of potential Striped Legless Lizard habitat. Based on the findings of targeted surveys and proposed impacts, a significant impact to these matters of NES is not likely (Tables 6 and 7).	An EPBC Act referral is recommended to obtain legal certainty that the project will be undertaken in an appropriate manner and under suitably approved conditions.
Flora and Fauna Guarantee Act 1988	One ecological community (<i>Western [Basalt] Plains Grassland</i>) and one fauna species (Striped Legless- lizard) listed under the FFG Act were recorded within the study area. In addition, two protected flora species (Milky Beauty-heads and Annual Cudweed <i>Euchiton sphaericus</i>) and one listed fauna species (Striped Legless Lizard) were recorded within the study area1. The study area is privately owned, therefore a permit under the FFG Act is unlikely to be required for Stage 3 of the development.	No further action required.
Planning and Environment Act 1987	A Planning Permit from Golden Plains Shire Council is required to remove, destroy or lop any native vegetation. A planning permit is also required to subdivide land. DELWP is not likely to be a mandatory referral authority due to the proposed removal of less than 0.5 hectares of native vegetation. Areas of remnant native vegetation must be offset if they are proposed to be disturbed as part of the project. The results of the permitted clearing assessment under the Guidelines are presented in Table 5. The responsible authority may consider the biodiversity objectives of the Corangamite Native Vegetation Plan. Any development within the study area should incorporate these objectives.	Prepare and submit a Planning Permit application.
Catchment and Land Protection Act 1994	Several weed species listed under the CaLP Act were recorded within the study area. To meet requirements under the CaLP Act, listed noxious weeds should be appropriately controlled throughout the study area.	Planning Permit conditions may include a requirement for a Weed Management Plan and/or Pest Fauna Management Plan, although it is likely that these would be incorporated into the relevant documents for the overall project.
Wildlife Act 1975	Any persons engaged to conduct salvage and translocation or general handling of terrestrial fauna species must hold a current Management	A Management Authorisation Permit under the <i>Wildlife Act 1975</i> has been obtained through DELWP for the salvage and



Relevant Legislation	Implications	Further Action
	Authorisation permit.	relocation of Striped Legless Lizard (EHP Permit No: 10007474).
		Any salvage and relocation of Striped Legless Lizard must be undertaken in accordance with this permit and the Salvage and Relocation Plan (Appendix 3).



8 Application requirements under the Guidelines

A checklist of application requirements for the proposed development is provided in Table 9.

Table 9. Application requirements for applications for a permit to remove native vegetation (*Victoria Planning Provisions* Clause 52.17 -3; DEPI 2013a).

Number	Decision Guideline	Further Action
1	The location of the site of native vegetation to be removed. This includes the address of the property.	Lot 3, PS600595U, Fyansford-Gheringhap Road, Gheringhap. Refer to Section 2.
2	 A description of the native vegetation to be removed including: whether the native vegetation is a remnant patch, or scattered trees the area of any remnant patches of native vegetation the number of any scattered trees 	Refer to Section 4 (Results) of this report.
3	 Maps or plans containing the following information: north point and property boundaries all areas of native vegetation, clearly showing the native vegetation to be removed (including any area that the Country Fire Authority has recommended for removal or management for fire protection purposes. all scattered trees to be removed 	Refer to maps in the Biodiversity Impact and Offset Requirements Report (Appendix 4) and Ecological Features (Figure 2).
4	Recent dated photographs of the native vegetation to be removed.	Refer to Section 4 (Results) of this report.
5	The risk-based pathway of the application to remove native vegetation.	Low Risk-based pathway (Refer to Section 4).
6	Where the purpose of removal, destruction or lopping of native vegetation is to create defendable space, a statement is required that explains why removal, destruction or lopping of native vegetation is necessary. The statement must have regard to other available bushfire risk mitigation measures. This requirement does not apply to the creation of defendable space in conjunction with an application under the Bushfire Management Overlay.	Not applicable.
7	A copy of any property vegetation plan that applies to the site.	Not applicable.
8	Details of any other native vegetation that was permitted to be removed on the same property with the same ownership as the native vegetation to be removed, where the removal occurred in the five year period before the application to remove native vegetation is lodged.	0.677 hectares of native vegetation within Stages 1 and 2 of the development is proposed to be removed and is reported on separately (Sections 4.1 and 4.2; Ecology and Heritage Partners Pty Ltd 2015a).
9	The strategic biodiversity score of the native vegetation to be removed.	0.294. Refer to Table 5 in Section 4.4 (Permitted Clearing Assessment) of this report.
10	The offset requirements should a permit be granted to remove	0.029 General Units. Refer to Table 5 in



Number	Decision Guideline	Further Action
	native vegetation.	Section 4.4 (Permitted Clearing Assessment)
		of this report.



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Figures



Fig 1 Study Area



Fig 2 Ecological Features



Figure 3 Striped Legless Lizard Results



Figure 4 Significant Flora



Figure 5 Significant Fauna



Appendices



Appendix 1.1 – Flora recorded within the study area

Legend:

- I Protected under the FFG Act;
- **w** Weed of National Significance; and,
- * Listed as a noxious weed under the Catchment and Land Protection Act 1994 (CaLP Act).

Table A1.1. Flora recorded within the study area.

Scientific Name	Common Name
INDIGENOU	JS SPECIES
Acaena echinata	Sheep's Burr
Austrostipa bigeniculata	Kneed Spear-grass
Calocephalus lacteus l	Milky Beauty-heads
Eryngium ovinum	Blue Devil
Euchiton sphaericus	Annual Cudweed
Juncus subsecundus	Finger Rush
Lythrum hyssopifolia	Small Loosestrife
Oxalis perennans	Grassland Wood-sorrel
Pimelea humilis	Common Rice-flower
Schoenus apogon	Common Bog-sedge
Themeda triandra	Kangaroo Grass
Veronica gracilis	Slender Speedwell
Wahlenbergia spp.	Blue Bells
INTRODUCI	ED SPECIES
Avena fatua	Wild Oats
Briza maxima	Larger Quaking-grass
Dactylis glomerata	Cocksfoot
Holcus lanatus	Yorkshire Fog
Hypochoeris radicata	Cat's Ear
Lycium ferocissimum * w	African Boxthorn
Nassella trichotoma *w	Serrated Tussock
Phalaris aquatica	Toowoomba Canary-grass
Plantago lanceolata	Ribwort
Romulea rosea	Onion Grass
Vulpia bromoides	Squirrel-tail Fescue



Appendix 1.2 – Significant Flora Species

Table A1.1 Significant flora recorded within 10 kilometres of the study area

Х	Extinct	EPBC	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
е	Endangered	FFG	Flora and Fauna Guarantee Act 1988 (FFG Act)
v	Vulnerable	DEPI	Advisory List of Rare or Threatened Plants in Victoria (DEPI 2014)
r	Rare		
k	Poorly Known	1	Known Occurrence: Recorded within the study area recently (i.e. within ten
L	Listed		years)
		2	High Likelihood: Previous records of the species in the local vicinity; and/or
EX	Extinct		the study area contains areas of high quality habitat.
CR	Critically endangered	3	<i>Moderate Likelihood</i> : Limited previous records of the species in the local vicinity; and/or, the study area contains poor or limited habitat.
EN	Endangered	Д	low likelihood. Poor or limited babitat for the species however other
VU	Vulnerable	-	evidence (such as a lack of records or environmental factors) indicates there
К	Poorly Known (Briggs and Leigh 1996)		is a very low likelihood of presence.
#	Records identified from EPBC Act Protected Matters Search Tool.	5	Unlikely: No suitable habitat and/or outside the species range.
*	Records identified from the FIS		

Scientific name	Common name	Total # documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area		
NATIONAL SIGNIFICANCE									
Caladenia calcicola	Limestone Spider-orchid	1	2009	VU	L	е	5		
Caladenia pumila #	Dwarf Spider-orchid	-	-	CR	L	е	5		
Dianella amoena #	Matted Flax-lily	1	2012	EN	L	е	4		
Glycine latrobeana #	Clover Glycine	7	2010	VU	L	V	4		



Scientific name	Common name	Total # documented records	Last documented record	ЕРВС	FFG	DEPI	Likely occurrence in study area
Lachnagrostis adamsonii	Adamson's Blown-grass	8	2002	EN	L	v	5
Leucochrysum albicans subsp. tricolor	White Sunray	13	2010	EN	L	е	5
Pimelea spinescens subsp. spinescens	Spiny Rice-flower	19	2011	CR	L	е	4
Prasophyllum frenchii #	Maroon Leek-orchid	-	-	EN	L	е	5
Pterostylis cucullata #	Leafy Greenhood	-	-	VU	L	v	5
Rutidosis leptorhynchoides	Button Wrinklewort	48	2011	EN	L	е	5
Senecio macrocarpus	Large-headed Fireweed	49	2011	VU	L	е	4
Thelymitra epipactoides #	Metallic Sun-orchid	-	-	EN	L	е	5
	STATE S	GNIFICANCE			<u>.</u>	<u>.</u>	
Acacia verniciflua (1-nerved variant) *	Seymour Wattle	1	1882-	-	-	v	5
Adriana quadripartita	Coast Bitter-bush	2	1885	-	-	v	5
Caladenia sp. aff. fragrantissima (Inverleigh)	Inverleigh Spider-orchid	1	2006	-	-	е	5
Callitriche palustris var. palustris	Swamp Water-starwort	1	1986	-	-	k	5
Convolvulus angustissimus subsp. omnigracilis	Slender Bindweed	2	2012	-	-	k	3
Craspedia sp. 2 *	Derrinallum Billy-buttons	2	1991	-	-	е	5
Cullen parvum	Small Scurf-pea	9	2007	-	L	е	5
Diuris punctata	Purple Diuris	2	2003	-	L	v	5
Eucalyptus leucoxylon subsp. bellarinensis	Bellarine Yellow-gum	1	2011	-	L	е	5
Eucalyptus leucoxylon subsp. connata	Melbourne Yellow-gum	14	2009	-	-	V	5
Eucalyptus yarraensis	Yarra Gum	2	1911	-	-	r	5



Scientific name	Common name	Total # documented records	Last documented record	EPBC	FFG	DEPI	Likely occurrence in study area
Grevillea chrysophaea *	Golden Grevillea	1	1894	-	-	r	5
Lachnagrostis robusta	Salt Blown-grass	1	1997	-	-	r	5
Lomandra micrantha subsp. tuberculata *	Small-flower Mat-rush	1	unknown	-	-	r	5
Nicotiana maritima	Coast Tobacco	1	1986	-	-	е	5
Olearia pannosa subsp. cardiophylla	Velvet Daisy-bush	2	1964	-	L	v	5
Pomaderris halmaturina subsp. continentis	Glenelg Pomaderris	1	1883	-	-	r	5
Prasophyllum sp. aff. validum A	Woodland Leek-orchid	2	2010	-	-	е	5
Prostanthera nivea var. nivea	Snowy Mint-bush	5	2006	-	-	r	5
Ptilotus erubescens	Hairy Tails	22	2002	-	L	V	5
Pultenaea graveolens	Scented Bush-pea	1	1989	-	L	V	5
Rhagodia parabolica	Fragrant Saltbush	11	2006	-	-	r	5
Senecio cunninghamii var. cunninghamii	Branching Groundsel	1	1992	-	-	r	5
Thelymitra circumsepta	Naked Sun-orchid	1	1770	-	-	V	5
Thelymitra X irregularis *	Crested Sun-orchid	1	1938	-	-	r	5
Thelymitra X macmillanii	Crimson Sun-orchid	4	2003	-	-	V	5
Triodia bunicola	Southern Porcupine Grass	1	1770	-	-	k	5
Tripogon loliiformis	Rye Beetle-grass	1	1986	-	-	r	3

Data source: Victorian Biodiversity Atlas (DELWP 2015e); Protected Matters Search Tool (DoE 2015). Taxonomic order: Alphabetical.



Appendix 1.3 – Habitat Hectare Results

 Table A1.2.
 Habitat Hectares results for remnant vegetation recorded within the study area.

Study Area		Bannockburn city gate site, Stage 3		
Vegetation Z	lone	PG1		
Bioregion		VVP		
EVC / Tree	EVC / Tree			
EVC Number	EVC Number			
EVC Conserv	En			
	Large Old Trees /10	N/A		
	Canopy Cover /5	N/A		
	Under storey /25	10		
	Lack of Weeds /15	9		
Patch	Recruitment /10	0		
Condition	Organic Matter /5	3		
	Logs /5	N/A		
	Treeless EVC Multiplier	1.36		
	Subtotal =	29.92		
Landscape V	alue /25	8		
Habitat Poin	ts /100	37.92		
Habitat Scor	e	0.379		
Total Area (h	ia)	0.171		
Area (ha) to l	be removed	0.171		
Area (ha) to l	be retained	0.000		
Total habitat	hectares	0.065		
Habitat hect	ares to be removed	0.065		

Notes: VVP: Victorian Volcanic Plain; PG(HS): Plains Grassland (Heavier Soils); En: Endangered; ha: hectare; N/A: not applicable.



Appendix 2.2 – Fauna results

Table A2.1. Fauna recorded within the study area.

Key:

Н	Heard	Mi	Migratory
S	Seen	Ma	Marine
I	Incidental (feathers, bones, scats etc)	*	Introduced species
-	T 1/1 11 11		

T Trapped / handheld

Common name	Scientific name	Last documented record	Total # of documented records	Hollow use	Mi/ Ma	Present survey			
	MAMMA	\LS							
House Mouse*	Mus musculus	2012	7	-	-	S			
BIRDS									
Brown Falcon	Falco berigora	2004	88	-	-	S			
Common Myna	Acridotheres tristis	2004	43	-	-	S			
Sulphur-crested Cockatoo	Cacatua galerita	2012	114	Total	-	S			
Australian Magpie	Gymnorhina tibicen	2012	289	-	-	S			
Little Raven	Corvus mellori	2007	184	-	Ma	S			
Common Starling*	Sturnus vulgaris	2007	163	Partial	-	S			
House Sparrow*	Passer domesticus	2005	150	-	-	S			
	REPTIL	ES							
Eastern Three-lined Skink	Acritoscincus duperreyi	2007	8	-	-	S			
Striped Legless Lizard	Delma impar	-	-	-	-	S			
Tiger Snake	Notechis scutatus	2002	2	-	-	S			



Source used to determine number of records and year: Victorian Biodiversity Atlas (DELWP 2015e) Source used to determine hollow use: Victorian Fauna Database (Viridans 2014b) Source used to determine migratory and marine: Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)



Appendix 2.2 – Significant Fauna Species

Table A2.2. Significant fauna within 10 kilometres of the study area.

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 for each of the threatened species are:

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 (DEPI 2014d); 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 (DEPI 2014d); 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 a	nd Biodiversity Conservation Act 1999 (EPBC Act)					
FFG	Flora and Fauna Guarant	<i>ee Act 1988</i> (FFG Act)					
DSE	Advisory List of Threatene	ed Vertebrate Fauna in Victoria (DSE 2013); Advisory List of Threatened Invertebrate Fauna in Victoria (DSE 2009)					
NAP	National Action Plan (Cogger et al. 1993, Duncan et al. 1999, Garnett et al. 2011, Lee 1995, Maxwell et al. 1996, Sands and New 2002, Tyler 1997, Woinarski et.al. 2012)						

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

CD Conservation dependent



Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood			
	NATIONAL SIGNIFICANCE										
Southern Brown Bandicoot #	Isoodon obesulus obesulus			EN	L	NT	NT	4			
Eastern Barred Bandicoot	Perameles gunnii	1908	1	EN	L	WX	CR	4			
Long-nosed Potoroo #	Potorous tridactylus tridactylus			VU	L	NT	EN	4			
Grey-headed Flying-fox	Pteropus poliocephalus	1995	2	VU	L	VU	VU	3			
Fairy Prion	Pachyptila turtur	1981	1	VU	-	VU	-	4			
Australasian Bittern #	Botaurus poiciloptilus			EN	L	EN	VU	4			
Plains-wanderer	Pedionomus torquatus	1914	1	CR	L	CR	EN	4			
Australian Painted Snipe #	Rostratula australis			VU	L	CR	VU	4			
Swift Parrot	Lathamus discolor	2002	10	EN	L	EN	EN	4			
Orange-bellied Parrot #	Neophema chrysogaster			CR	L	CR	CR	4			
Regent Honeyeater #	Anthochaera phrygia			CR	L	CR	EN	4			
Painted Honeyeater	Grantiella picta	1995	10	VU	L	VU	NT	4			
Striped Legless Lizard #	Delma impar			VU	L	EN	VU	1			
Grassland Earless Dragon #	Tympanocryptis pinguicolla			EN	L	CR	VU	4			
Growling Grass Frog	Litoria raniformis	2009	5	VU	L	EN	VU	3			
Dwarf Galaxias	Galaxiella pusilla	1978	2	VU	L	EN	VU	4			
Australian Grayling	Prototroctes maraena	1997	34	VU	L	VU	VU	4			
Murray Cod	Maccullochella peelii	1873	1	VU	L	VU	-	4			
Macquarie Perch	Macquaria australasica	1970	2	EN	L	EN	DD	4			
Yarra Pygmy Perch	Nannoperca obscura	2008	8	VU	L	VU	VU	4			



Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood			
Golden Sun Moth	Synemon plana	2009	2	CR	L	CR	-	4			
STATE SIGNIFICANCE											
Brush-tailed Phascogale	Phascogale tapoatafa	1993	1	-	L	VU	NT	4			
Common Dunnart	Sminthopsis murina murina	1964	2	-	-	VU	-	4			
Musk Duck	Biziura lobata	1978	5	-	-	VU	-	4			
Freckled Duck	Stictonetta naevosa	1997	2	-	L	EN	-	4			
Australasian Shoveler	Anas rhynchotis	2001	6	-	-	VU	-	4			
Hardhead	Aythya australis	2001	17	-	-	VU	-	4			
White-throated Needletail	Hirundapus caudacutus	1993	6	-	-	VU	-	4			
Eastern Great Egret	Ardea modesta	2001	25	-	L	VU	-	4			
Intermediate Egret	Ardea intermedia	2001	1	-	L	EN	-				
Little Egret	Egretta garzetta nigripes	2006	9	-	L	EN	-	4			
Square-tailed Kite	Lophoictinia isura	2008	1	-	L	VU	-	3			
Grey Goshawk	Accipiter novaehollandiae novaehollandiae	2004	12	-	L	VU	-	3			
Brolga	Grus rubicunda	1988	3	-	L	VU	-	4			
Baillon's Crake	Porzana pusilla palustris	1985	1	-	L	VU	-	4			
Major Mitchell's Cockatoo	Lophocroa leadbeateri	1999	2	-	L	VU	-	4			
Australian Bustard	Ardeotis australis	1914	1	-	L	CR	NT	4			
Bush Stone-curlew	Burhinus grallarius	1914	1	-	L	EN	NT	4			
Caspian Tern	Hydroprogne caspia	1980	5	-	L	NT	-	4			
Brown Treecreeper (south-eastern	Climacteris picumnus victoriae	2004	12	-	-	NT	NT	4			



Common Name	Scientific Name	Last Documented Record (VBA)	# Records (VBA)	EPBC Act	FFG ACT	DSE (2013)	National Action Plan	Likelihood		
ssp.)										
Chestnut-rumped Heathwren	Calamanthus pyrrhopygius	1907	3	-	L	VU	-	4		
Speckled Warbler	Chthonicola sagittatus	1976	2	-	L	VU	NT	4		
Hooded Robin	Melanodryas cucullata cucullata	1989	2	-	L	NT	NT	4		
Diamond Firetail	Stagonopleura guttata	2000	30	-	L	NT	NT	4		
Southern Pygmy Perch	Nannoperca australis	2008	10	-	-	-	-	4		
Scavenger Water Beetles	supf. Hydrophiloidea fam. Hydrophilidae	1999	1	-	-	-	-	4		
REGIONAL SIGNIFICANCE										
Fat-tailed Dunnart	Sminthopsis crassicaudata	1973	1	-	-	NT	-	3		
Pied Cormorant	Phalacrocorax varius	2001	7	-	-	NT	-	4		
Nankeen Night Heron	Nycticorax caledonicus hillii	2003	22	-	-	NT	-	4		
Royal Spoonbill	Platalea regia	1980	2	-	-	NT	-	4		
Spotted Harrier	Circus assimilis	2001	2	-	-	NT	-	3		
Latham's Snipe	Gallinago hardwickii	1979	3	-	-	NT	-	4		
Little Button-quail	Turnix velox	1971	1	-	-	NT	-	4		
Whiskered Tern	Chlidonias hybridus javanicus	1979	2	-	-	NT	-	4		
Black-eared Cuckoo	Chrysococcyx osculans	1979	3	-	-	NT	-	4		
River Blackfish	Gadopsis marmoratus	2008	9	-	-	-	-	4		

Data source: Victorian Biodiversity Atlas (DELWP 2015e); Victorian Fauna Database (Viridans 2014b); Protected Matters Search Tool (DoE 2015).

Taxonomic order: Mammals (Strahan 1995); Birds (Christidis and Boles 2008); Reptiles and Amphibians (Cogger et al. 1993); Fish (Nelson 1994); Mussels & Crustaceans (Alphabetical); Invertebrates (Alphabetical).



Appendix 3 – Striped Legless Lizard Salvage and Relocation Plan

Background

This Salvage and Relocation Plan (SRP) has been developed to assist AusNet Services with the removal of areas of habitat which are known or likely to provide potential refuge for Striped Legless Lizard *Delma impar* within the development area of the Bannockburn Gas Pipeline Project, Victoria. This SRP provides a step-by-step guide for the relevant contractor to follow during all stages of the project implementation.

This SRP will generally follow the recommendations within the 'Salvage and Translocation Operational Plan' (DSE 2011), which was prepared by the (former) Department of Sustainability and Environment (DSE, now DELWP) to assist with salvaging and relocation of Striped Legless Lizard during habitat removal within the urban growth area of Melbourne.

Objectives

The objectives of the SRP are to ensure that any Striped Legless Lizard individuals are captured and relocated safely within the proposed Bannockburn city gate site and/or adjoining areas containing suitable or potential habitats. This will be achieved through the following steps:

- 1. Identifying areas which are likely to provide known or potential habitat(s) requiring salvage and relocation as part of the city gate works and the Bannockburn Gas Pipeline Project.
- 2. Ensuring habitat areas which are not required to be removed are not impacted through the implementation of appropriate controls (i.e. contractor inductions, signage and clearly marked no-go zones)
- 3. Clearly outlining the procedures to be followed by contractors during the removal of habitat in areas which are known or likely to contain Striped Legless Lizards.
- 4. Clearly providing guidelines on the procedures to be followed if a Striped Legless Lizard is detected during habitat removal.
- 5. Clearly defining the roles and responsibilities of all ecological and construction staff associated with the city gate works and the Bannockburn Gas Pipeline Project.

Striped Legless Lizard Habitat

As outlined in Section 3.4, a total of five (5) tile grids were laid in August and checked six (6) times between October and November 2014 (Figure 3). Based on the results of targeted surveys, two (2) striped legless lizards were identified in proximity (<10 metres) to Grid 1 near the city gate site; however, a further six (6) individuals were detected within 50 metres within Grids 4 and 5 (Figure 3). Given that Striped Legless Lizards were identified within vegetation containing both high (>25%) and low (<25%) native cover, areas of potential habitat have been marked on Figure 3. Accordingly, any areas marked as potential habitat which are proposed to be disturbed will trigger the implementation of the SRP protocols outlined in the sections below during all stages of construction.



Timing

Based on the recommendations outlined in the 'Salvage and Translocation Operational Plan' (DSE 2011), it is preferable for salvage to occur between October and March during a time of the year when Striped Legless Lizards are more active. No construction earthworks may commence until the herpetological consultant provides written confirmation to the Department of Environment, Land, Water and Planning (DELWP) and the developer that the SRP is approved.

Salvage technique

Salvage will entail the use of an excavator provided/hired by the Developer to the specifications outlined below (DSE 2011):

• Hydraulic excavator with the largest **toothed** bucket that can be practically used (usually 900-950mm). Note: mini excavators/backhoes can also be used if an excavator is not available, but the smaller bucket capacity of such machines can be expected to reduce efficiency of the salvage regime.

Two qualified herpetologists will be in attendance during all habitat removal within relevant areas associated with the city gate works and Bannockburn Gas Pipeline Project as shown on Figure 3. Given the cover of rock is high (>40%) and the site is small, only an excavator will be used on site (as opposed to tyning using a grader). The methods detailed below will be implemented during all stages of habitat removal in accordance with the 'Salvage and Translocation Operational Plan' (DSE 2011):

- Prior to any earthworks, all existing tile grids (Grids 1–3) surrounding the city gate site will be checked the same morning as construction works are proposed to capture any individuals seeking refuge under artificial habitats.
- Once all existing artificial habitats have been checked, the excavator will dig the surface layer to a depth of approximately 300 mm into the bucket while two observers watch for Striped Legless Lizards within the excavated plot (DSE 2011).
- The operator will then slowly empty the bucket to the side of the salvage plot using a jerky motion. One of the two observers will search for Striped Legless Lizards within the vegetation which has been removed and placed on the edge of the salvage plot (DSE 2011).
- The excavator bucket will also be used to carefully dislodge and pick up surface and 'floater' rocks in a manner that permits the observers the best opportunity to locate and capture any Striped Legless Lizards that may have been beneath the rock. *Note: it is important that the excavator does not drive over or place excavated soil on an area selected for salvage before salvage has been completed there* (DSE 2011).



Relocation Process

In the event that Striped Legless Lizards are found during salvage, the herpetological consultants will:

- Transfer any Striped Legless Lizard caught during survey or salvage to a clean calico bag (one animal only per bag). Bags containing lizards must be kept in a secure and cool, shaded location where there is no risk of animals being crushed. Cloth bags are to be used inside out to avoid entanglement of Striped Legless Lizard in loose threads (DSE 2011).
- Transfer uninjured Striped Legless Lizard within suitable habitat no greater than 50 metres from where the individual was detected or as pre-determined by the relevant DELWP representative (Nick Jashenko Ballarat Regional Office).
- Any obviously injured individuals will require in-field euthanasia by a sudden crushing blow to the head and decapitation. *Note:* that tail loss (autotomy) as a natural anti-predator mechanism may occur and does not constitute injury (DSE 2011).
- Retain preserved specimen of whole or any part of a Striped Legless Lizard recovered dead, including autotomised tails, and offer to Museum Victoria along with all data for the individual (DSE 2011).
- Document exact location of each survey and salvage operation using hand-held GPS (DSE 2011).
- Document numbers, sexes, age-classes (adults, juveniles), morphometrics, for all Striped Legless Lizards captured (DSE 2011).
- Record key micro-habitat data for soil, vegetation and other micro-habitat parameters to a predetermined set of measurable variables (DSE 2011).
- Document survey and salvage effort, including time spent, number of herpetological consultants, survey method and surface area of habitat disturbed (DSE 2011).

All required data must be recorded for each Striped Legless Lizard captured and all data must be forwarded to DELWP within 10 working days.

Occupational health and safety

All staff involved with salvage operations will employ suitable safety measures applicable to the location and will include (as a minimum):

- Prepare a Safe Working Methods Statement (SWMS) for the proposed salvage operation.
- Undergo a site induction and adhere to all site OH&S requirements, as required.
- Stand back from the point of excavation at a safe working distance from the machine, but sufficiently close to adequately detect any Striped Legless Lizard disturbed (DSE 2011).
- Move to catch animals only after the machine operator has stopped movement of the machine.
- Use only herpetologists proficient in rapid field identification of pygopodids and elapid snakes.
- Be inducted to these safety procedures by the relevant Developer/site manager in consultation with the lead herpetological consultant.



Appendix 3.1 – Salvage and Relocation Plan Permit



Salvage and Relocation Plan Permit 1



Salvage and Relocation Plan Permit 2



Salvage and Relocation Plan Permit 3



Appendix 4 – Biodiversity Impact and Offset Requirements Report (DELWP 2015c)



BIOR Report