10 April 2026

QIC
South Tower
Level 11/80 Collins Street
Melbourne 3000

Watergardens Town Centre Site at 399 Melton Highway, Taylors Lakes, Victoria (EPBC 2012/6479): Offset Strategy
Our ref: Matter 39365

1. Project Background

An assessment of the undeveloped portion of the Watergardens Town Centre was conducted by Brett Lane & Associates (BLA 2015). BLA 2015 provided the biodiversity information for the original approval associated with the EPBC Act referral 2012/6479 and identified the following MNES:

- 2.11 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP);
- A population of 32 Spiny Rice-flower *Pimelea spinescens* subsp. *spinescens* (SRF).

Surveys documented by BLA 2015 failed to detect Golden Sun Moth *Synemon plana* (GSM) within the subject land and the site was considered to be unsuitable habitat for Striped Legless Lizard *Delma impar* (SLL). The site was also assessed as unsuitable for Growling Grass Frog *Litoria raniformis* (GGF).

Offsets approved under the conditions of approval for EPBC 2012/6479 were located at Terrinallum South, Darlington and amounted to:

- 9.1 hectares of NTGVVP;
- A population of 120 SRF within an area of 0.04 hectares of NTGVVP.

In 2017, Biosis conducted a number of investigations within the land covered by EPBC 2012/6479. Biosis 2017 recorded a total of 110 SRF within the subject land and most of this population was subsequently translocated by Biosis to sites within Sydenham Park and Pioneer Park under contract with QIC in response to permit conditions provided by the City of Brimbank for the proposed development.

In 2023, QIC decided to initiate the development of the undeveloped portion of the Watergardens Town Centre. However, as the approval for EPBC 2012/6479 was signed on 14 October 2015 and the project had not commenced before October 2020, Condition 12 of the approval was activated. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) subsequently requested a report to review the Matters of National Environmental Significance associated with the land covered by the referral.

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Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.
We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

Biosis 2023 subsequently reviewed all the biodiversity values of the subject land. Four SRF not translocated in 2016 were relocated as were an additional six plants not recorded by Biosis 2017. Biosis 2017 therefore documented a population of 10 individuals of SRF as the residual population present after the translocation of 106 plants.

The original population of SRF was therefore considered to be 116 plants not 32 as identified by BLA 2015.

Two of the additional SRF plants recorded by Biosis 2023a were in an area of NTGVVP not identified by BLA 2015 and therefore not searched by Biosis 2017, while the other additional four plants were recorded on the margins of previously known habitat and were therefore not detected by Biosis 2017.

The current extent of SRF habitat was assessed by Biosis 2023 as 1.909 hectares, which is based on the extent of NTGVVP.

Biosis 2023b also identified a resident population of SLL on the subject land for EPBC 2012/6479. The extent of habitat for SLL within the referred land was assessed as 4.432 hectares with 2.794 hectares to the north and 1.638 hectares to the south of the circuit road.

Previous surveys conducted by BLA (2015) for GSM were assessed by Biosis (2023a & b) as valid and repeating this assessment was not considered necessary. While the site does represent potential GSM habitat, this MNES is not considered to be present.

BLA (2015) considered the subject land did not provide potential habitat for GGF. That assessment is supported by Biosis (2023a).

2. Project Changes

In 2023 the Department of Transport and Planning (DoTP) indicated it would compulsorily acquire the project area to the south of Watergardens Circuit Road. In doing so DoTP also indicated it would submit its own referral under the EPBC Act (2023/09614) and therefore be responsible for the impact on MNES within the area of its referral and provide any prescribed offsets.

DoTP have assumed responsibility for impacts on MNES (NTGVVP and SRF) to the south of the circuit road. This was initially assessed to be 0.98 ha of NTGVVP (46.44% of the NTGVVP) by BLA 2015, with 1.13 ha of NTGVVP (53.56% of the NTGVVP) occurring to the north of the circuit road.

However, DCCEEW have decided that QIC would be responsible for any offset associated with the translocated SRF population as well as its impact on SLL habitat.

This strategy only needs to define the required offsets for impacts on SLL habitat and SRF beyond what was compensated for by the prior approval, that being the Terrinallum South offset for impacts on 1.909 ha of NTGVVP and 32 SRF plants. This offset amounted to the protection and management of 9.1 hectares of NTGVVP and the protection and management of 0.04 hectares supporting 120 SRF (BLA 2015).

As DoTP will provide an offset for their impact on NTGVVP, the 9.1 hectare NTGVVP offset provided by QIC at Terrinallum South in response to EPBC 2012/6479 is more than the offset requirement for QIC's impact on 1.13 ha of NTGVVP (as assessed by BLA 2015) to the north of the circuit road. Based on this area, QIC's offset requirement would amount to 4.874 hectares of NTGVVP (i.e. 53.56% of the 9.1 hectare offset provided).

The salvage and translocation of the SRF present was not a condition of the approval for EPBC 2012/6479 and ten individuals persist within this approval area: 6 to the south of the circuit road (in the area to be referred by DoTP) and 4 to the north (in the area to be the revised approval area for QIC's existing approval).

3. Current Offset Strategy

As impacts on MNES currently identified for the subject land differ substantially from those assessed by BLA 2015, the proposed offsets associated with these impacts are reassessed under current protocols.

The current protocol for EPBC Act species offsets is for the extent of habitat to be identified and scored out of 10 according to agreed criteria for Site condition, Site Context and Stocking Rates. The actual number of individuals detected contributes to this scoring protocol but individuals themselves are not subject to a specific offset.

This offset strategy therefore utilises previously used assessment protocols for assessing the quality of habitat for SLL (Attachment 1) and a proposed protocol for the assessment of SRF habitat which was prepared by Biosis, reviewed by the *Pimelea spinescens* Recovery Team and supplied to DCCEEW (Attachment 2).

Other protocols for the application of the EPBC Act offset calculator include guidance for deriving 'Risk of Loss' provided by DCCEEW.

Current relevant MNES documented for the revised QIC referral site amount to:

- 1.13 hectares of NTGVVP with a score of 5/10 (BLA 2015, Biosis 2023b);
- 1.909 hectares of SRF habitat supporting 110 plants (Biosis 2017, 2023a); and
- 2.794 hectares of SLL habitat (Biosis 2023a&b).

Note that this offset strategy is not required to describe any offset strategy for NTGVVP as the existing offset provided under EPBC 2012/6479 exceeds the offset prescription for QIC's revised impact on this MNES.

3.1 Spiny Rice-flower

3.1.1 Background

Occupied habitat for SRF is still present both to the north and south of the circuit road and can be scored using the existing information on the known density of SRF within the original referral land.

BLA 2015 recorded 32 SRF within the referral area: 14 SRF (43.75% of the population) to the north of the circuit road and 18 individuals (56.25% of the population) to the south.

Biosis 2017 recorded 110 SRF within the original approval area: 42 SRF (38.18% of the population) to the north of the circuit road and 68 individuals (61.82% of the population) to the south. Of these 110 plants, 4 individuals were observed to persist to the north of the circuit road and 6 additional plants (i.e. not observed during the Biosis 2017 census) were observed to the south of the circuit road.

AECOM 2023 subsequently identified a total of 20 SRF plants to the south of the circuit road. None of these 20 plants were known at the time of the Biosis 2017 translocation and any impact on these plants are the responsibility of DoTP.

DCCEEW have indicated that QIC is responsible for the 68 individuals previously recorded from south of the circuit road impacted by the Biosis 2017 translocation. Of these 68 individuals, 18 were offset by the original 0.04 hectare offset site at Terrinallum South. A total of 50 plants previously known from south of the circuit road have therefore not been subject to offset under the EPBC Act offset policy (DSEWPaC 2012).

The four SRF still known to occur north of the circuit road are part of the original 42 plants recorded by Biosis 2017 in this area. Of these 42 plants, BLA provided offsets at Terrinallum South for 14 individuals. Impacts on a total of 28 plants north of the circuit road have therefore not been subject to offsets under the EPBC Act offset policy (DSEWPaC 2012).

A total of 78 SRF plants have therefore not been subject to offsets under the EPBC Act offset policy (DSEWPaC 2012).

3.1.2 Offset Methods

The original EPBC offset for the occurrence of SRF within Watergardens was to provide an offset site supporting 120 plants within 0.04 hectares (BLA 2014).

This offset of 120 plants was entered into the EPBC Act offset calculator based on the number of individuals impacted, identified in the approved preliminary documentation provided by Brett Lane & Associates as 32 plants (BLA 2014: EPBC Act Offset Calculator, page 26). The offset of 120 plants is identified as the start number, with the population declining to 90 plants if the area was not managed as an offset (Future number without offset) and increasing to 170 plants with the site being managed as an offset (Future number with offset). This was identified as providing a raw gain of 80 plants with 80% certainty (BLA 2014: EPBC Act Offset Calculator, page 26). This represents a growth in in the population of SRF by over 40% within the ten-year implementation period of the approved offset management plan (OMP).

Since the approval was provided for this action (Approval dated 6 October 2015) the approved OMP for this offset has been implemented from approximately the date of approval. Since that time the population of 120 SRF at the offset site has not increased. This means that with nearly 9 years of management, no recruitment of SRF has been recorded within the offset site despite the occurrence of the recent triple *La Nina* weather cycle and ongoing management works guided by the approved OMP.

In order to circumvent any potential future audit of the existing SRF offset at Terrinallum South identifying that the offset was unsuccessful, this offset strategy ignores the offset established by BLA (2015) and seeks to define the current offset to encompass all of the impacts on SRF. This is considered unlikely to have any significant consequences for the proposed management of the offset approved for this species identified by the current offset strategy.

This offset strategy is therefore designed to compensate for impacts on 110 SRF plants found within 1.909 hectares of habitat.

3.1.3 Offset calculations

DCCEEW has determined that both QIC and DoTP will be responsible for providing offsets for protected matters that occur on their own portion of the site (NTGVVP, SRF and SLL habitat) with QIC also being responsible for changes to the SRF habitat as a result of the translocation (Biosis 2017).

The current protocol for EPBC Act species offsets is for the extent of habitat to be identified and scored out of 10 according to agreed criteria for Site condition, Site Context and Stocking Rates. The actual number of individuals detected contributes to this scoring protocol but individuals themselves are not subject to a specific offset. An offset is therefore provided for the SRF habitat lost which is scored based on defined parameters which includes the number of individuals detected. Offsets are therefore provided for the SRF habitat not SRF individuals.

Based on the protocol for assessing SRF habitat (Attachment 2) the original referral area (1.909 hectares) supporting a population of 116 plants was scored as 7/10 and the area of occupied habitat required to offset the loss of all this habitat is assessed as 14.4 hectares of occupied habitat with an initial score of 6/10 (Attachment 3).

The salvage and translocation of the SRF present was not a condition of the approval for EPBC 2012/6479 and ten individuals persist within the approval area, 6 to the south (in the area to be referred by DoTP) and 4 to the north of the circuit road (in the area to be the revised approval area for QIC's existing approval). The habitat for this species is still present and can be scored using the existing information on the known density of SRF within the original referral land.

Based on DCCEEWs September 2023 determination, it is acknowledged that DoTP will only provide offsets for SRF based on the existing extent, condition, context and population size of the SRF population and its habitat present.

Biosis 2023a identified 0.962 hectares of SRF habitat to the south of the circuit road. The SRF habitat assessment protocol (Attachment 2) identifies a habitat condition score of 5/10 for this area (i.e. 2/3 for Site Condition as the vegetation has a habitat hectare Site Score of less than or equal to 45/75 (AECOM 2023, Biosis 2023a), 1/3 for Site Context as the patch of habitat is between 1 and 5 hectares in size and 2/4 for Species Stocking Rate as the population present was assessed as 20 individuals by AECOM 2023). Therefore, the prescribed offset for this impact amounts to 5.2 hectares (Attachment 4).

Therefore, it is proposed that QIC would be responsible for the difference between a current offset assessment for SRF using the original population and extent and condition of habitat (14.4 hectares as defined in Attachment 3) for the original referral area, less the offset required for DoTP's impact on SRF habitat within their portion of the subject land, based on its current population and extent and condition of habitat (assessed as 5.2 hectares with an initial score of 6/10 – see below). In that context the offset provided by both parties would sum to the full offset requirement assessed under current protocols for the original extent, condition, context and population size of the SRF population and its habitat. Otherwise, it is contended that offsets would be provided twice for some portions of the same net impact.

Based on Attachments 2, 3 and 4a summary of offsets prescribed for the abovementioned impacts and the assumptions identified for the scores entered into the offset calculator are as follows.

North of the circuit road (QIC's responsibility – assessed as the revised EPBC 2012/6479):

- 7.2 hectares of occupied SRF habitat with an initial score of 6/10 (Attachment 5);

South of the circuit road (DoTPs responsibility – to be assessed under a new referral):

- 5.2 hectares of SRF habitat with an initial score of 6/10 (Attachment 4).

3.1.4 Proposed QIC offset for SRF

A current offset for impacts on the original SRF population (110 plants) within the 1.909 hectares of habitat identified amounts to 14.4 hectares (Attachment 3). As conditions have changed after the translocation of SRF and DoTP will only be required to offset MNEs in their current condition, QIC's SRF offset (described above) will need to be revised to ensure 100% of the original site condition would be provided.

The current quality of SRF habitat within the DoTP portion of land, using the scoring protocol provided, is assessed 5/10. The offset requirement for this impact is assessed as 5.2 hectares of occupied habitat with an initial score of 6/10 (Attachment 4). This is comparable to the full offset assessment in that the offset sites used for both scenarios utilise identical assumptions. The DoTP offset therefore provides 36.3% (Attachment 6) of the full offset prescription (Attachment 3).

It is therefore proposed that QIC is responsible for 63.7% of the full offset prescription. This amounts to an offset of **9.173 hectares** of occupied habitat with an initial score of 6/10. It is also proposed that this offset site should support a significant population of SRF, being at least double the population impacted (i.e. at least 220 plants).

3.2 Striped Legless Lizard

3.2.1 Background

This MNES was not considered by BLA 2015.

Biosis 2023a identified a resident population of SLL within the subject land for EPBC 2012/6479. The extent of habitat for SLL within the referred land was assessed by Biosis 2023a as 4.432 hectares, with 2.794 hectares to the north and 1.638 hectares to the south of the circuit road.

QIC will be responsible for impacts on the 2.794 hectares of SLL habitat identified to the north of the circuit road.

3.2.2 Habitat condition calculations

The protocol for assessing SLL habitat is outlined in Attachment 1.

Based on Attachment 1, the habitat for SLL to the north of the circuit road is scored as 6/10. This is based on a satisfactory site condition (Score 2/3), the site being greater than 0.5 hectares (Score 2/2), the site being subject to between 1 and 4 of the listed threats (Score 1/2), and the recording of one individual or slough during any of 7 tile grid monitoring events (Score 1/3).

3.2.3 Proposed QIC offset for SLL

Based on the assumptions noted in the relevant offset calculator (Attachment 7) an offset area of 10.7 hectares of occupied SLL habitat with an initial score of 6/10 is proposed.

3.3 SRF Offset Site: Terrinallum South

QIC is negotiating a memorandum of understanding (MOU) to secure additional offsets at the existing Terrinallum South offset property. This area includes part of the originally established offset identified as part of EPBC 2012/6479 but also includes additional nearby areas (Attachment 8). These areas support good quality NTGVVP and significant populations of SRF.

SRF was not documented within the QIC 9.1 hectare NTGVVP offset area defined by BLA 2014 and was only detected within an island of native grassland (see Figure 1 in BLA 2014 and the eastern most green area in Attachment 8). However, Biosis had previously detected numerous individuals of SRF in NTGVVP within Terrinallum South just to the south of the 9.1 hectare QIC NTGVVP offset area in association with EPBC 2011/1167, and an additional two individuals were detected within the QIC 9.1 hectare NTGVVP offset area during a site inspection in February 2023 (the purple bounded area in Attachment 8).

Additional SRF individuals (50 plants) are also noted from a 1.77 hectare area of NTGVVP just east of the 9.1 hectare offset site (the first green area east of the purple area in Attachment 8) and 342 SRF individuals occur within a 2.36 hectare area of NTGVVP which contains the 0.04 hectare offset site defined by BLA 2015 (the northern green area in Attachment 8). Note that areas dedicated to other SRF offsets have been excluded from these area calculations (i.e. EPBC 2009/5255 and 2013/6837). These areas, providing a combined area of 13.2 hectares, therefore support at least 395 SRF individuals.

Based on the known extent, condition, context and population size of these three areas, the contribution of each area to the offset prescription is provided in Attachments 9–11. Based on these offset calculators QIC would provide over 84% of the offset requirements calculated using the original population of SRF and the defined extent and condition of its habitat. Presuming DoTP only provide the minimum extent of their offset requirement (5.2 hectares), over 120% of the offset requirements for SRF will be protected and managed.

Once this strategy is approved by DCCEEW, QIC will prepare an offset management plan (OMP) for NTGVVP to include SRF management and monitoring and to update the overall plan to current standards. The new OMP will encompass the existing 9.1 hectare offset site and the two additional areas of NTGVVP, covering 4.135 hectares, identified in Attachment 8.

Once DCCEEW consents that this offset site provides an appropriate offset, at least in part if not in full, for the proposed impacts on SRF at the Watergardens Town Centre, then more detailed assessments documenting the extent and condition of NTGVVP, the management requirements for this offset site and the proposed security mechanism will be documented in a formal Offset Management Plan for DCCEEW approval.

3.4 SLL Offset Site: Mia Mia

QIC have also identified 10.7 hectares of occupied SLL habitat within a property at Mia Mia (Attachment 12). Securing this offset would satisfy the expected offset prescription for this MNES.

A survey report identifying the broadscale presence of SLL within this property is provided (Attachment 12).

Once DCCEEW consents that this offset site provides an appropriate offset, at least in part if not in full, for the proposed impacts to SLL at the Watergardens Town Centre, then more detailed assessments documenting the extent and condition of SLL habitat, the management requirements for this offset site and the proposed security mechanism will be documented in a formal Offset Management Plan for DCCEEW approval.

3.5 Condition 5B

Condition 5B outlines the requirements of the Offset Strategy. How the proposed offset strategy aligns with this condition of approval is outlined in the compliance table (Table 1) below.

Table 1: Summary of the proposed offset strategy and its compliance with Condition 5B.

Component of Condition 5B	**Outline of Compliance**
a. include an assessment of the **impacts** to **SLL** and **SRF** that will be compensated for by the OS, including the area and quality of **SLL** habitat, **SRF** habitat, and the number of **SRF** individuals impacted.	A summary of the relevant details provided above are as follows: 2.794 hectares of SLL habitat will be impacted within the Project Area. Based on the quality assessment protocol (Attachment 1) this habitat is scored as 6/10 (Section 3.2.2). A total of 110 SF were recorded for the original referral area prior to a translocation undertaken by QIC. The the Project Area for this approval supported 42 SRF prior to the translocation with 4 persisting at this point in time. DCCEEW have indicated that QIC is responsible for an impact to 68 individuals of SRF. Based on the pre-translocation density of plants and the current habitat quality protocol for SRF (Attachment 2), the SRF habitat impacted is scored as 7/10.
b. propose environmental offset(s) to compensate for the **impacts** to **SLL**, and **SRF**.	Separate offset sites are proposed for SLL and SRF. QIC would provide an offset of 13.2368 hectares of occupied SRF habitat with an initial score of 6/10. This habitat will support at least double the population associated with the original approval (i.e. at least 220 plants). The SRF offset is proposed to be located at Terrinallum South (Section 3.3) which is the same location as the offsets for NTGVVP and SRF proposed for the original project. The proposed offset site for SLL encompasses approximately 10.7 hectares at Mia Mia (Section 3.4). SLL has been recorded at this location but the quality of this habitat (Attachment 1) is yet to be confirmed.
c. for proposed offset area(s) for **SLL**, include:	

i. survey results, quantifiable ecological data, and other supporting evidence that demonstrates the presence of **SLL**, and extent and quality of **SLL** habitat, within the proposed offset area(s).	Surveys have identified the presence of SLL at the Mia Mia offset site (Attachment 12). However, the quality of that habitat is yet to be determined and will be confirmed upon approval of the general concept of this offset strategy. Realistic assumptions have been included in the offset calculator but these can only be confirmed one the exact location of the offset has been determined.
ii. an assessment of the area and quality of SLL habitat within the proposed offset area(s).	While the presence of SLL within the Mia Mia offset site has been confirmed, the baseline quality of that habitat and the habitat improvement potential have yet to be confirmed. These parameters will govern the total offset area to be secured (as defined by the offset calculator – Attachment 7) and the final offset area will be defined using the refined inputs into offset calculator upon DCCEEW's broader acceptance of this offset strategy. The final offset area outcome is not particularly sensitive to these input parameters as it largely relies on the anticipated change in these parameters.
iii. a description of the offset area(s) and the offset property or properties, that includes location and size, and current land uses of the offset area(s)	The offset area for SRF is described in Section 3.3. Terrinallum South is a large sheep grazing and cropping property in western Victoria (Attachment 8) located to the north of the township of Darlington. Identified as 775 Darlington-Carranballac Road Darlington 3271, the property covers over 960 hectares. The proposed offset site covers approximately 13.2 hectares on the western shore of a large brackish lake (Attachment 8). The proposed offset site for SLL is part of a grazing property at Mia Mia (Attachment 12: Figure 2). The offset area of 10.7 hectares is part of a broader grazing property covering over 500 hectares. The property supports largely treeless semi-native grasslands derived from the original grassy woodlands that dominated this landscape.
iv. details of the mechanism, process and timing for securement of the proposed offset area(s) within 24-months of OS approval	The Terrinallum South offset site for SRF would be secured under a Section 173 agreement under the *Planning and Environment Act 1987* with the Moyne Shire Council. The Mia Mia offset site for SLL would be secured under a Trust for Nature covenant under the *Victorian Conservation Trust Act 1972*. Both security measures will be in place within 24 months of the approval of the Offset Strategy.
d. for proposed offset area(s) for **SRF**, include:	
I. survey results, quantifiable ecological data, and other supporting evidence that demonstrates the presence and abundance of SRF, and the quality of SRF habitat, within the proposed offset area(s);	A targeted survey for SRF has identified 395 SRF within the SRF offset area at Terrinallum South (Section 3.3, Attachment 8). The three areas identified as the proposed SRF offset area all support high quality NTGVVP. Detailed information on the species composition and quality of this habitat and its associated management requirements will be documented in a formal offset management plan (OMP)

		for DCCEEW approval upon broad acceptance of this offset strategy.
II.	an assessment of the area and quality of SRF habitat within the proposed offset area(s);	The extent of the SRF habitat is identified in Attachment 8. The quality of the SRF habitat will be formally defined once the general offset strategy has been endorsed by DCCEEW.
III.	a description of the offset area(s) and the offset property or properties that includes location and size, and current land uses of the offset area(s);	While broadly outlined in Condition 2 iii above, these parameters will be more comprehensively defined once the general offset strategy have been endorsed by DCCEEW.
IV.	details of the mechanism, process and timing for securement of the proposed offset area(s) within 24-months of OS approval;	The Terrinallum South offset site for SRF would be secured under a Section 173 agreement under the *Planning and Environment Act 1987* with the Moyne Shire Council.
e. include maps for the proposed offset area(s), that clearly show:		
I.	the boundaries of the offset area(s);	A map of the proposed SRF offset at Terrinallum South is provided as Attachment 8. The offset site includes the purple and two yellow areas identified in Attachment 8. The precise location of the SLL offset has yet to be defined. The offset site will encompass an existing survey grid for SLL that has recorded SLL while the site as a whole will only incorporate habitat shown to support this species. The broader extent of the offset property is identified in Attachment 12.
II.	the boundaries of the property or properties on which the offset area(s) exist(s);	The SRF offset is within Terrinallum South which covers approximately 960 hectares (Attachment 8). The SLL offset is within a property at Mia Mia which covers over 500 hectares (Attachment 12: Figure 2). The precise context of both offset sites will be included in formal OMPs to be submitted to DCCEEW upon endorsement of the general offset strategy.
III.	the offset area(s) in a regional context, including proximity to known areas of and habitats for the relevant protected matters, outside of the offset area(s);	The precise context of both offset sites will be included in formal OMPs to be submitted to DCCEEW upon endorsement of the general offset strategy. More broadly, SRF is largely only known from road reserves with no formal reserves supporting this species known from within 50 km of the offset site. While there are records of SLL within 10 km of the proposed Mia Mia offset site there are no formal reserves known to support this species. While there are broad areas of grazing land which could support SLL surrounding the proposed offset site, the condition of this farmland is not known and surveys for SLL are unlikely to occur.

IV. the offset area(s) in the context of other known offset areas for SLL and SRF on the offset property and adjacent properties;	There are no other known offset areas for SLL or SRF within at least 10 kilometres of the proposed offset areas.
V. the areas(s) and quality of protected matters and their habitats within the offset areas(s);	While described broadly above, the precise context of both offset sites will be included in formal OMPs to be submitted to DCCEEW upon endorsement of the general offset strategy.
f. for each proposed environmental offset, detail timebound offset outcomes that:	
i. are specific to the relevant **protected matters**; ii. improve the quality of habitats for the relevant **protected matters**; iii. will be achieved prior to the expiry of this approval to deliver a conservation gain for the relevant **protected matters**;	OMPs to be produced after the endorsement of this general offset strategy will identify and quantify detailed timebound offset outcomes that are specific to both SLL and SRF habitat condition. These offset outcomes will be documented to identify how proposed management actions will improve the quality of habitats for the relevant **protected matters** and outlined in the relevant habitat assessment protocols (Attachments 1 and 2). The management actions defined in each OMP will achieve habitat improvement targets prior to the expiry of this approval and deliver a conservation gain for both SRF and SLL. Each OMP will be subject to approval by DCCEEW prior to the initiation of their implementation.
g. demonstrate how the proposed environmental offset(s), associated outcomes and method of **securement** meet the principles of, the **EPBC Act Offsets Policy**;	Experience in monitoring of offset sites indicates that the application of accepted vegetation management practices will result in improvements to the condition of native vegetation which provides habitat for these species. The offset outcomes of improved habitat condition and the associated improvement in the habitat assessment scores for these species will satisfy the requirements of the **EPBC Act Offsets Policy.** Each OMP will be subject to the approval of DCCEEW prior to their implementation.
h. include an Offset Outcomes Assurance Statement (OOAS) that includes:	
i. evidence of feasible and effective offset management measures that, if implemented as a program of measures, are highly likely to achieve the offset outcomes; ii. evidence of feasible and scientifically robust offset monitoring activities that, if implemented as a program of activities, are capable of demonstrating attainment and maintenance of the offset outcomes;	Each OMP to be produced upon DCCEEW endorsement of this general offset strategy will address all of the components of this condition.

iii. evidence of adaptive management systems capable of responding to reasonably foreseeable events and circumstance that may prejudice attainment and maintenance of the offset outcomes; and iv. a signed statement by an **independent suitably qualified ecologist** verifying the above measures and activities as feasible, effective and reliable programs to implement the offset and achieve the offset outcomes.	

3.6 Offset Outcomes Assurance Statement'

The offset habitat quality objectives outlined above are achievable and the proposed offset management measures will be detailed in the Offset Management Plan.

3.7 Declaration of accuracy

In making this declaration, I am aware that section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed_____

Full name (please print)_____Stephen G. Mueck_____

Organisation (please print)____Steve Mueck Biodiversity Pty Ltd____

Date _10_/_04_/_2026_

Please contact me if you have any enquiries.

Yours sincerely

Stephen Mueck
Principal Botanist
Steve Mueck Biodiversity Pty Ltd
Subconsultant to Biosis

Attachment 1: SLL habitat assessment protocol.

EPBC Offsets Guide: Habitat Quality Scoring Method for the Striped Legless Lizard *Delma impar*

Prepared by Daniel Gilmore and Ian Smales
Draft Version 1.0
6 June 2020

The EPBC Act environmental offsets policy (the policy) outlines the Australian Government's approach to the use of environmental offsets ('offsets') under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The policy is accompanied by the Offsets assessment guide (the Guide) (reference). The Guide has been developed in order to give effect to the requirements of the policy, utilising a balance sheet approach to estimate impacts and offsets for threatened species and ecological communities.

The guide is a tool to assist expert users in the Australian Government's Department of Agriculture, Water and the Environment in determining the suitability of offset proposals. The Guide is also available to proponents to assist with planning for future development proposals and estimating potential future offset requirements.

The Guide is an Excel spreadsheet with embedded formulas. Essentially it is an impact and offset calculator. One of the attributes that is used in the Offsets Guide for listed threatened species and communities is Habitat Quality.

The quality score for an area of habitat or an area of community is a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability. It is important to note that the assessment of quality for threatened species habitat and ecological communities is not simply a scoring of vegetation 'pristineness'. Three components contribute to the calculation of habitat quality, as follows.

- Site condition: This is the condition of a site in relation to the ecological requirements of a threatened species or ecological community. This includes considerations such as vegetation condition and structure, the diversity of habitats present, and the number of relevant habitat features.
- Site context: This is the relative importance of a site in terms of its position in the landscape, taking into account the connectivity needs of a threatened species or ecological community. This includes considerations such as movement patterns of the species, the proximity of the site in relation to other areas of suitable habitat, and the role of the site in relation to the overall population or extent of a species or community.
- Species stocking rate: This is the usage and/or density of a species at a particular site. The principle acknowledges that a particular site may have a high value for a particular threatened species, despite appearing to have poor condition and/or context. It includes considerations such as survey data for a site in regards to a particular species population or, in the case of a threatened ecological community this may be a number of different populations. It also includes consideration of the role of the site population in regards to the overall species population viability or community extent. These components contribute to the final habitat quality score, however the weighting given to each component is dependent on the ecological requirements of the impacted species or ecological community (Figure 1, adapted from the Australian Government's EPBC Offsets Guide). For example, for some species the most important consideration is the location of a site in the landscape, whereas for others the presence of important habitat features on the site itself may be the most important influencing factor.

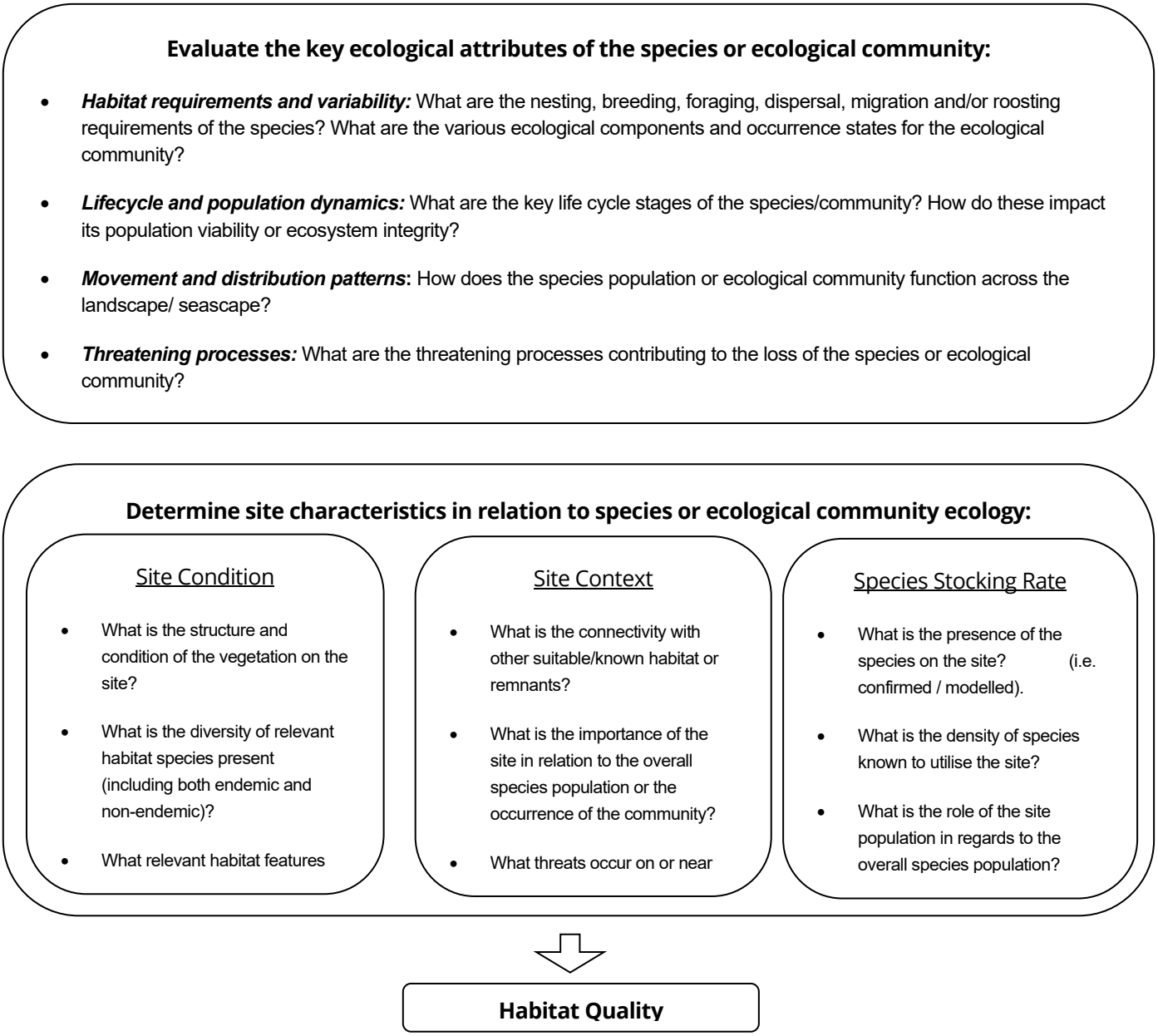


Figure 1 Key considerations in determining the quality of threatened species and ecological community habitat (Adapted from the Australian Government's EPBC Offset Guide).

As the Australian Government has identified the need for consistency between habitat quality assessments for EPBC Act impact and offset calculations, we propose the following scoring method for the vulnerable Striped Legless Lizard. To guide scoring habitat quality of a particular location, we have drawn on relevant available literature, including the Australian Government's Conservation Advice for Striped Legless Lizard (Threatened Species Scientific Committee 2016) and the *Referral guidelines for the striped legless lizard* (DSEWPC 2011).

Three site characteristics shown in Figure 1 contribute to habitat quality:

- Site Condition (scored as X/3)
- Site Context (scored as X/4)
- Species Stocking Rate (scored as X/3)

Where all of the criteria for a score are not met, the score will revert to the next lowest score. Thus, the total score for habitat quality is out of a possible maximum of 10.

Site condition (X/3)

Sites that have the best potential to support viable Striped Legless Lizard populations are located in areas that support or once supported native grasslands or grassy woodlands. These areas must contain suitable tussock structure, appropriate soil type and minimal major disturbance such as ploughing (Coulson 1990, Dorrough & Ash 1999, Hadden 1995, O'Shea 1996). Sites that are rich in native tussock-forming grass species (often >20–50% cover) such as Kangaroo Grass *Themeda triandra*, Spear-grasses *Austrostipa* spp. and Poa tussocks *Poa* spp. provide good habitat for Striped Legless Lizard, although the species can also inhabit areas dominated by introduced grass species where the site has a history of grazing and pasture improvement (Coulson 1990, Smith & Robertson 1999, DEWHA 2011)(Dorrough 1995). The species shelters within grass tussocks, thick ground cover, in soil cracks and under rocks and other debris (Smith & Robertson 1999).

Site condition is scored as follows:

1/3 = Poor – Site (on average) supports a species-poor ground flora with low structural complexity (reflecting inadequate biomass management). Dominated by a few native or predominantly introduced tussock-forming grasses with no or very few native forbs with or without embedded and/or surface rock.

2/3 = Satisfactory – Site (on average) supports a moderately diverse ground flora with good structural complexity (reflecting some biomass management). Dominated by an average diversity of native tussock-forming grasses and average diversity of native forbs with or without embedded and/or surface rock.

3/3 = Good – Site (on average) supports a species-rich and structurally complex ground flora (reflecting appropriate biomass management). Dominated by an above average diversity of native tussock-forming grasses and above average native forbs, together with embedded and/or surface rock.

Site context (X/4)

Site context relates to:

- The connectivity of the site to other suitable habitat.
- The importance of the site in relation to the overall species population.
- The number and severity of threats operating at the site.

The habitat of Striped Legless Lizard (natural temperate grassland and grassy woodland) is severely depleted and fragmented, which means many populations are now functionally isolated. Nevertheless, Striped Legless Lizard populations are known to persist in very small habitat fragments, including sites less than 1 ha. These isolated sites can still support high densities of the species. For example, 86 individuals were trapped in a 0.4 ha grassland remnant in Keilor Downs in Melbourne (Megan O'Shea, pers. comm.). This grassland remnant had been isolated from nearby populations by urban development for at least 40 years.

Low landscape and functional connectivity is now typical for most sites occupied by Striped Legless Lizard. However, surveys and research has demonstrated that in many cases Striped Legless Lizards appear to be able to persist in these isolated remnants. Therefore, connectivity to other populations may not necessarily be essential for the persistence of a population in the medium term, provided habitat structure remains suitable and existing and future threats are appropriately managed.

'Connectivity' has therefore been scored out of 2 according to the size of the habitat remnant, as follows.

1/2 = Site less than 0.5 ha

2/2 = Site equal to or greater than 0.5 ha

The site context assessment includes the total area of known or suspected Striped Legless Lizard habitat within the impact or offset site and connected to that habitat (i.e. including contiguous habitat offsite).

The Conservation Advice for the species states that:

"All populations of the striped legless lizard are likely to be important for the species recovery. The basis for this is the major loss and degradation of its grassland habitat, the ongoing pressures in remaining habitat and the highly fragmented nature of known habitat and populations".

and

"The understanding of fine scale population structure is limited and difficult to assess given the fragmented and disturbed nature of the species habitat and the difficulty in detecting the species due to its cryptic nature. For these reasons it is considered that when one or more individuals are found on a site that they are a member/s of an important population."

Therefore all impact and offset sites with confirmed Striped Legless Lizards are likely to support an important population and 'importance' is not given any weighting for site context.

Threats impacting Striped Legless Lizard and the approximate order of severity of risk are listed in Table 1 of the Conservation Advice for the species. All Striped Legless Lizard populations are likely to be subject to varying levels of cat and fox predation and this threat, which is difficult to compare between sites, is not used when scoring the 'threat' component of Site Context.

Fire and grazing have both been shown to be positively correlated with the persistence of Striped Legless Lizard, by maintaining an appropriate grassland structure and floristic diversity. However, sites that are subject to intensive and concurrent application of these disturbance regimes have been shown to have lower population persistence (Scroggie et al. 2019).

Similarly, low or no biomass reduction is also considered to be a threat to the species, as it can result in a dense sward that has reduced structural complexity and floristic diversity (Scroggie et al. 2019). The buildup of biomass can also lead to more intense and extensive uncontrolled fires, which could lead to increased mortality and habitat deterioration.

Threats have been scored as follows:

- Site currently subject to **continuous, intensive** grazing by livestock or kangaroos, thereby reducing the floristic and structural complexity of the habitat.
- Site subject to **frequent, widespread and intense** fires, including deliberate burns that are not sympathetic to the maintenance of Striped Legless Lizard habitat.
- Site subject to historical or ongoing ploughing, pasture improvement and agricultural intensification.
- Site subject to historical or ongoing removal of surface and/or embedded or rock.

- Site subject to frequent slashing or thereby reducing the structural complexity of the habitat.
- Site dominated by exotic grasses to the extent that the majority of the site is no longer defined as native vegetation.
- Site currently not subject to any form of appropriate biomass reduction (e.g. low–moderate intensity grazing or sympathetic ecological burns to maintain structural and floristic diversity of the habitat.

'Threats' have been scored as follows:

0/2 = Site subject to 5 or more of the above threats.

1/2 = Site subject to between 1 and 4 of the above threats.

2/2 = Site subject to none of the above threats.

Connectivity and threats combine to give a **site context score of 0–4/4.**

Species Stocking Rate (X/3)

The Striped Legless Lizard is a cryptic species that has the potential to go undetected despite presence on a site, even with suitable survey methods outlined by the survey guidelines. Recapture rates can be very low and therefore cannot be a true representation of the size of a population (Smith & Robertson 1999). Population densities are highly variable and have been reported ranging from 0.78 SLL/ha to 155 SLL/ha, but typically less than 30 SLL/ha (O'Shea 2016, Biosis 2012, ARAZPA 1996). The scoring of stocking rate set out here contributes a potential 3 points out of the overall total of 10 points.

Artificial shelter (tile) surveys for Striped Legless Lizards are generally conducted to detect the presence of the species at impact and offset sites. Rarely is the technique used for estimating site level densities to calculate 'stocking rates'. This is because estimating density requires Striped Legless Lizards encountered under the tiles to be captured and photographed so that they can be reliably identified from the unique scale pattern on their head.

The technique necessitates a degree of skill and training. Capturing and processing the animals is time consuming. It also involves a level of risk to Striped Legless Lizards as they sometimes drop their tail during capture and may be unduly stressed.

Therefore, we propose an alternative method using the **maximum number of Striped Legless Lizards detected at a tile grid during any site survey on a particular day** as a surrogate for density. This includes counts of sloughs as well as actual lizards (sloughs are routinely encountered under artificial shelters).

The following rationale has been used to derive an approximate density rate of Striped Legless Lizards per hectare. It assumes that habitat and distribution of Striped Legless Lizards are relatively uniformly distributed across the subject site. While it is recognised that those assumption may not hold across all sites, they are necessary underlying assumption of all survey techniques that involve representative sampling of a site, including the use of tile grids.

A grid of 50 tiles set out at 5 metre intervals has the assumption that each tile has a 'capture' or 'encounter' area for Striped Legless Lizards that covers 25 m^2 (i.e. a tile in the middle of a 5 x 5 metre square), hence the entire 50 tiles covers a total capture area of 1250 m^2 (i.e. including the capture area of each tile on the outside perimeter of the grid). The entire grid of 50 tiles is thus sampling one eighth (12.5%) of a hectare. Hence, for the present purposes, we can assume that the maximum number of Striped Legless Lizards encountered in the tile grid during any one of the minimum seven

required monitoring events can be multiplied by 8 to provide an estimate of lizard density per hectare. By this method, if the maximum number of Striped Legless Lizards encountered during any one monitoring event is one, we can assume a density of between 1 and 8 animals per hectare. If the maximum number encountered during any one monitoring event is two, we can assume a density of between 8 and 16 animals per hectare. If the number encountered as greater than 2, we can assume a density of greater than 16 animals per hectare.

These rates conform quite closely with densities described for eight sites by O'Shea (2016). Four sites had density rates of between 1.2 and 4.9 Striped Legless Lizards per hectare, while the other four sites had densities of 17.5, 18.8, 44 and 156 per hectare.

On this basis the scoring method for 'stocking rate' is as follows:

1/3 = One individual or slough encountered in the tile grid during any of 7 monitoring events.

2/3 = Two individuals or sloughs encountered in the tile grid during any of 7 monitoring events.

3/3 = Three or more individuals or sloughs encountered in the tile grid during any of 7 monitoring events.

Surveys must be carried out as per the survey standards in the referral guidelines, including the minimum number of grids based on the area of the site. This standard requires fortnightly tile grid checks between 1 September and 31 December (a minimum of 7 checks). More frequent checks can be undertaken (e.g. weekly), but this is not mandatory. All sloughs must be removed during each check.

Where surveys at impact and offset sites have not been carried out in accordance with the methods outlined in the referral guidelines for Striped Legless Lizard and those surveys have detected fewer than 3 individuals/sloughs, the stocking rate is assumed to be 3/3. This includes impact sites where no survey has been undertaken for the species. The Commonwealth will generally not accept offset sites for Striped Legless Lizard that have not been subject to a targeted survey for the species.

References

ARAZPA 1996. *Population and Habitat viability assessment (PHVA) for the Striped Legless lizard (*Delmar impar*)*, Final report, prepared by the Workshop participants. Authors: Australasian Regional Association of Zoological Parks and Aquaria, Australian Capital Territory Parks and Conservation Striped Legless Lizard Working Group, Conservation Breeding Specialist Group (SSC/IUCN).

Biosis 2012. *Striped Legless Lizard (*Delma impar*) survey and vegetation assessment report*, Unpublished report to the ACT Government. Biosis Pty Ltd, Fyshwick, ACT.

Coulson G 1990. *Conservation biology of the Striped Legless Lizard (*Delma impar*) an initial investigation*, Arthur Rylah Institute for Environmental Research. Victoria: National Parks & Wildlife Division, Department of Conservation & Environment.

DEWHA 2011. *Survey Guidelines for Australia's Threatened reptiles: Guidelines for detecting reptiles listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*, Department of the Environment Water Heritage and the Arts.

Dorrough J & Ash JE 1999. 'Using past and present habitat to predict the current distribution and abundance of a rare cryptic lizard, *Delma impar* (Pygopodidae)', *Austral Ecology*, 24, 6: 614–624.

DSEWPC 2011. *Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for the vulnerable striped legless lizard* Delma impar, Australian Government The Department of Sustainability, Environment, Water, Population and Communities. Canberra, Australian Capital Territory.

Hadden S 1995. *Distribution, population habitat estimates and habitat requirements for the striped legless lizard* Delma impar *(Kluge)*, Report to the Australian Nature Conservation Agency. Melbourne: Department of Conservation and Natural Resources.

O'Shea M 1996., *An ecological study of the population of Striped Legless Lizards* Delma impar *(Fischer, 1882) inhabiting native and exotic grasslands in the north-east corner of the Albion Explosives Factory site (St. Albans, Victoria)*,Honours Thesis, Victoria University of Technology, St Albans, Victoria.

O'Shea M 2016. Population viability analyses for urban Striped Legless Lizard populations in the western Melbourne management cluster, Victoria University, Melbourne.

Scroggie MP, Peterson GNL, Rohr DH, Nicholson E, & Heard GW 2019. 'Disturbance has benefits as well as costs for fragmented populations of a cryptic grassland reptile', *Landscape Ecology*, 34, 8: 1949–1965.

Smith W & Robertson P 1999. *National Recovery Plan for the Striped Legless Lizard (*Delma impar*): 1999-2003*, Unpublished report to Environment Australia, Canberra.

Threatened Species Scientific Committee 2016. Conservation Advice *Delma impar* striped legless lizard, Australian Government Department of the Environment and Energy. Canberra, ACT.

Kutt, A. (1992). Microhabitat selection and mobility of the Striped Legless Lizard, Delma impar. Hons. Thesis. University of Melbourne. Parkville, Victoria: Department of Zoology, University of Melbourne.

Attachment 2: SRF habitat assessment protocol.

Habitat Scoring System for Spiny Rice-flower (SRF)

This habitat scoring system describes elements indicative of suitable habitat for Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*). It's use must be supported by survey information (i.e. targeted surveys for species presence, vegetation condition assessments), undertaken by suitably experienced experts. Targeted surveys will be performed in accordance with the standard methodology set out in Appendix 4 of Biodiversity Precinct Structure Planning Kit (DSE 2010) while vegetation quality assessments (VQA) assessments must be performed by DELWP accredited assessors to the standards identified by DSE (2004) and DELWP (2018).

Appropriate scores will best fit a description. Where all components of the 'detail' column description are not met, this must be specified and justification provided for that score to be accepted by the Department.

Remaining populations of SRF are mostly small and highly fragmented (DCCEEW in prep.). SRF is known from very few extensive areas of native vegetation outside linear reserves such as road and rail reserves and its extent within the reserves from which it is recorded is not readily identified. Most known populations are small, and no density information has not been collected for any populations. However, experience suggests plants often occur in clusters of relatively high density. Therefore assessments for impacts to a population and commensurate compensatory offsets are based on the extent of suitable habitat.

Species surveys for the life of offset management must be commensurate with the species stocking rate to be maintained or attained. For example, proposing to maintain species stocking rate at a score of 4 (as detailed in the table below) means surveys must be undertaken to demonstrate that recruitment continues to occur at the site.

For an offset site to be considered, it must have a start condition of 1 for each indicator (e.g., there must be a species stocking rate score of at least 1).

Indicator	Score	Detail	Impact site quality	Offset start quality	Quality without offset	Quality with offset
Site Condition: Assessed as a score out of three						
Vegetation condition and structure.	3	**Site Condition:** High Dominated by high quality native vegetation (VQA Site Condition score of 45+/75).				
	2	**Site Condition:** Moderate Dominated by moderate quality native vegetation (VQA Site Condition score of 30-45/75).				
	1	**Site Condition:** Poor Dominated by poor quality native vegetation (VQA Site Condition score up to 6-30/75).				
	0	**Site Condition:** Unacceptable Dominated by introduced vegetation. Vegetation does not qualify as a patch of native vegetation..				
Site Context: Assessed as a score out of three						
Overall extent of habitat.	3	**Site Context:** High Habitat patch[1] size more than 50 ha in a shape which minimises edge effects [2], records of species on site within the past 12 months, site is within known distribution of species.				
	2	**Site Context:** Moderate Habitat patch size 5 ha to 50 ha in a shape which minimises edge effects.				
	1	**Site Context:** Poor Habitat patch size 1 ha and up to 5 ha.				
	0	**Site Context:** Habitat patch size <1 ha				

[1] A patch is considered to be an area of suitable habitat either occupied by the species or habitat that the species could expand into.

[2] Assessed on a case by case basis.

Species Stocking Rate: Assessed as a score out of four base on the number of plants within the population[3]						
Abundance of the species.	4	**Species Stocking Rate**: High More than 100 plants present.				
	3	**Species Stocking Rate**: Moderate 51 -100 plants present.				
	2	**Species Stocking Rate**: Low 11 – 50 plants present.				
	1	**Species Stocking Rate**: Poor At least 1 plant present.				
	0	**Species Stocking Rate**: Unacceptable No record of species presence on site.				
		Totals				

References

DCCEEW in prep. *National Recovery Plan for the Spiny Rice-flower* Pimelea spinescens *Rye. subsp*. spinescens. Department of Climate Change, Energy, the Environment and Water, Canberra.

DSE 2004. Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – Guidelines for applying the Habitat hectares scoring method. Version 1.3, Victorian Government Department of Sustainability and Environment. Melbourne, Victoria

DSE 2010. *Biodiversity Precinct Structure Planning Kit*. Victorian Government Department of Sustainability and Environment Melbourne.

DELWP 2018. Assessor's handbook: Applications to remove, destroy or lop native vegetation. Victorian Government Department of Environment, Land, Water and Planning, Melbourne

[3] A population is considered to be a group of plants where individuals occur within a defined area of native vegetation (DSE 2004) and individuals within an area of native vegetation are not separated from other individuals by more than 200 metres.

Attachment 3: Offset requirement for the full impact to all SRF habitat within the original referral area.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	NTGVVP & Pss
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	Yes	Site remnants	**Area**	1.13	Hectares	site survey
			Quality	**5**	Scale 0-10	
			Total quantum of impact	0.57	Adjusted hectares	
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	1.909	Hectares	Site survey
			Quality	**7**	Scale 0-10	
			Total quantum of impact	1.34	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		112		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)		% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																					
Area of community	Yes	0.57	Adjusted hectares	Terrinallum (Moyne Shire)	**Risk-related time horizon (max. 20 years)**	20	**Start area (hectares)**	9.1	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.85	150.16%	Yes		Previous offset agreements and management plans associated with Trust for Nature covenants.
									Future area without offset (adjusted hectares)	9.1	**Future area with offset (adjusted hectares)**	9.1									
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	0.93					
Threatened species habitat																					
Area of habitat	Yes	1.34	Adjusted hectares	Terrinallum (Moyne Shire)	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	14.4	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	1.34	100.47%	Yes		
									Future area without offset (adjusted hectares)	14.4	**Future area with offset (adjusted hectares)**	14.4									
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	0.93					
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**		**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
Threatened species																					
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	Yes	112	Count		10		420		315		580		265	80%	212.00	109.81		98.04%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	112	109.81	98.04%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	1.3363	1.34	100.47%	**Yes**	$0.00	N/A	$0.00
Area of community	0.565	0.85	150.16%	**Yes**	$0.00	N/A	$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Attachment 4: Current offset requirements calculated for DoTP's SRF impact to the south of the circuit road.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	NTGVVP & Pss
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	0.962	Hectares	DoTP site current conditions
			Quality	**5**	Scale 0-10	
			Total quantum of impact	0.48	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		112		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)		% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																					
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**										
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0									
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**										
Threatened species habitat																					
Area of habitat	Yes	0.48	Adjusted hectares	Yet to be defined offset site (Consistent with full impact offset calculator for SRF)	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	5.2	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00		0.48	100.79%	Yes	
									Future area without offset (adjusted hectares)	5.2	**Future area with offset (adjusted hectares)**	5.2									
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	6	**Future quality without offset (scale of 0-10)**	5	**Future quality with offset (scale of 0-10)**	7	2.00	90%	1.80	0.93					
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**		**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
Threatened species																					
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	Yes	112	Count		10		420		315		580		265	80%	212.00	109.81		98.04%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	112	109.81	98.04%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	0.481	0.48	100.79%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Attachment 5: Current offset requirements calculated for QICs impact to SRF to the north of the circuit road.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	NTGVVP & Pss
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	Yes	Site remnants	**Area**	0.947	Hectares	site survey
			Quality	**5**	Scale 0-10	
			Total quantum of impact	0.47	Adjusted hectares	
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	0.947	Hectares	Site survey
			Quality	**7**	Scale 0-10	
			Total quantum of impact	0.66	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		116		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	Yes	0.47	Adjusted hectares	Terrinallum (Moyne Shire)	**Risk-related time horizon (max. 20 years)**	20	**Start area (hectares)**	5.1	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.48	100.42%	Yes		Previous offset agreements and management plans associated with Trust for Nature covenants.
									Future area without offset (adjusted hectares)	5.1	**Future area with offset (adjusted hectares)**	5.1								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	6	**Future quality without offset (scale of 0-10)**	5	**Future quality with offset (scale of 0-10)**	7	2.00	90%	1.80	0.93				
Threatened species habitat																				
Area of habitat	Yes	0.66	Adjusted hectares	Terrinallum (Moyne Shire)	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	7.2	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.67	101.26%	Yes		
									Future area without offset (adjusted hectares)	7.2	**Future area with offset (adjusted hectares)**	7.2								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	6	**Future quality without offset (scale of 0-10)**	5	**Future quality with offset (scale of 0-10)**	7	2.00	90%	1.80	0.93				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	116	Count		10		450		335		620		285	80%	228.00	118.09	101.80%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	116	118.09	101.80%	**Yes**	$0.00	N/A	$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	0.6629	0.67	101.26%	**Yes**	$0.00	N/A	$0.00
Area of community	0.4735	0.48	100.42%	**Yes**	$0.00	N/A	$0.00
					$0.00	**$0.00**	**$0.00**

Attachment 6: Percentage of the total offset requirement for SRF provided by the DoTP contribution.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	NTGVVP & Pss
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	1.909	Hectares	Site survey
			Quality	**7**	Scale 0-10	
			Total quantum of impact	1.34	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		112		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	1.34	Adjusted hectares	DoTP contribution	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	5.2	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	36.28%	No		
									Future area without offset (adjusted hectares)	5.2	**Future area with offset (adjusted hectares)**	5.2				0.48				
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	0.93				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	112	Count		10		420		315		580		265	80%	212.00	109.81	98.04%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	112	109.81	98.04%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	1.3363	0.48	36.28%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Attachment 7: Current offset requirements calculated for QICs impact to SLL habitat.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	SLL
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**0.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes		**Area**	2.794	Hectares	
			Quality	**6**	Scale 0-10	
			Total quantum of impact	1.68	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		32		Count	

Offset calculator

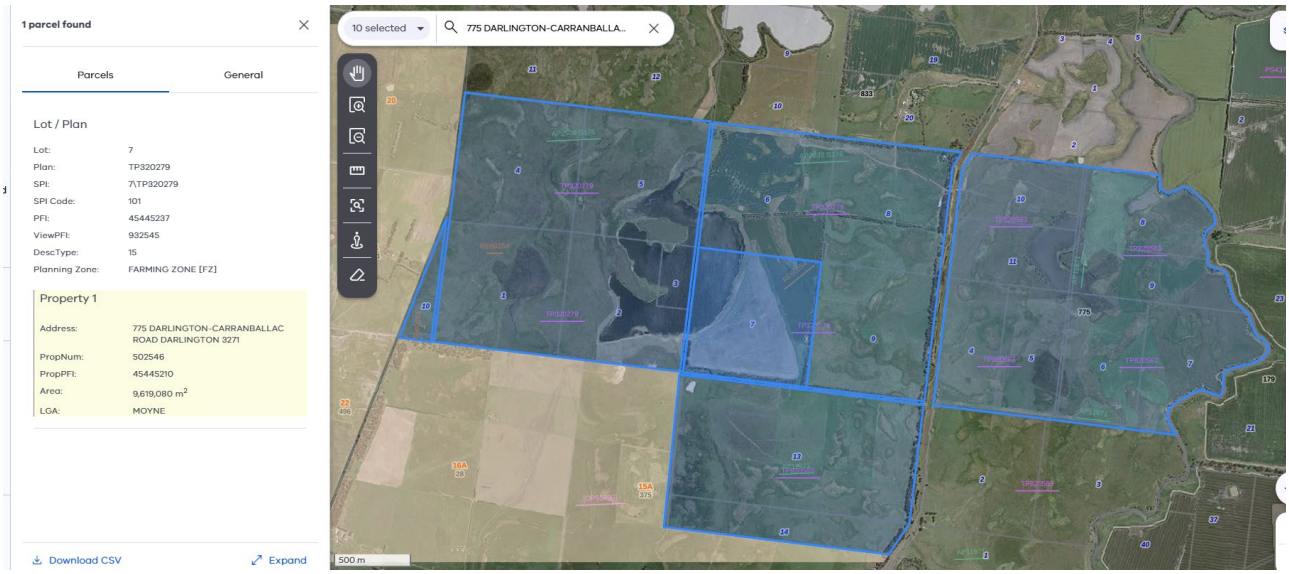
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	1.68	Adjusted hectares	Mia Mia	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	10.7	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	80%	0.00	0.00	100.10%	Yes		
									Future area without offset (adjusted hectares)	10.7	**Future area with offset (adjusted hectares)**	10.7								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	80%	1.60	1.57				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	32	Count		10		120		90		170		80	80%	64.00	62.73	196.04%	Yes		

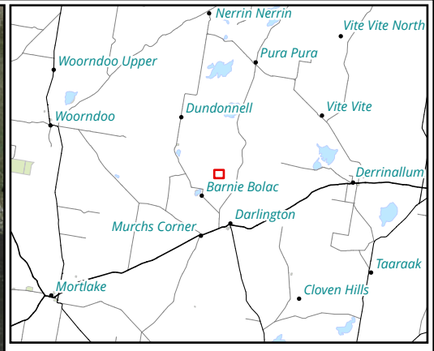
Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	32	62.73	196.04%	**Yes**	$0.00	N/A	$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	1.6764	1.68	100.10%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

Attachment 8: Proposed SRF offset areas within Terrinallum South.

The broader property boundary of this section of Terrinallum South covers over 960 hectares





Legend

- Study area
- Spiny Rice-flower record
- (VVP_0132) Plains Grassland
- Existing Watergardens Offset areas
- Proposed additional Watergardens covenant boundary

Existing covenant EPBC Referral ID

- 2009/5255
- 2011/1167
- 2013/6837

Note: existing covenant boundaries are indicative only and should be confirmed on ground by a licensed surveyor

Proposed and existing covenants

0 25 50 75 100 125

Metres

Scale: 1:3,500 @ A3

Coordinate System: GDA2020 MGA Zone 54

N

biosis
APEM Group

Matter: 39365,
Date: 18 March 2026,
Prepared for: SM, Prepared by: SKM, Last edited by: smitchell
Layout: 39365_Proposed_OffsetSite_update
Project: P:\39300s\39365\Mapping\
39365_WaterGardensTownCentreFFA.aprx

Attachment 9: Contribution of the eastern most area of SRF offset within Terrinallum South to the total offset for SRF.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Pss
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	1.909	Hectares	Site survey
			Quality	**7**	Scale 0-10	
			Total quantum of impact	1.34	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		112		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	1.34	Adjusted hectares	Terrinallum (Moyne Shire)	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	9.1	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.85	63.49%	No	
									Future area without offset (adjusted hectares)	9.1	**Future area with offset (adjusted hectares)**	9.1								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	0.93				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	112	Count		10		420		315		580		265	80%	212.00	109.81	98.04%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	112	109.81	98.04%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	1.3363	0.85	63.49%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Attachment 10: Contribution of the central area of SRF offset within Terrinallum South to the total offset for SRF.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Pimelea spin spin
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	1.909	Hectares	Site survey
			Quality	**7**	Scale 0-10	
			Total quantum of impact	1.34	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		112		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	1.34	Adjusted hectares	Terrinallum (Moyne Shire)	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	1.771	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.17	12.36%	No	
									Future area without offset (adjusted hectares)	1.8	**Future area with offset (adjusted hectares)**	1.8								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**7**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**8**	2.00	90%	1.80	0.93				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	112	Count		10		420		315		580		265	80%	212.00	109.81	98.04%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	112	109.81	98.04%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	1.3363	0.17	12.36%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Attachment 11: Contribution of the western area of SRF offset within Terrinallum South to the total offset for SRF.

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	NTGVVP & Pss
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	**6.8%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	Pss pop	**Area**	1.909	Hectares	Site survey
			Quality	**7**	Scale 0-10	
			Total quantum of impact	1.34	Adjusted hectares	
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	Yes		112		Count	

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	Yes	1.34	Adjusted hectares	Terrinallum (Moyne Shire)	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	2.3641	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%	0.00	90%	0.00	0.00	0.11	8.25%	No	
									Future area without offset (adjusted hectares)	2.4	**Future area with offset (adjusted hectares)**	2.4								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**9**	**Future quality without offset (scale of 0-10)**	**8**	**Future quality with offset (scale of 0-10)**	**9**	1.00	90%	0.90	0.47				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	Yes	112	Count		10		420		315		580		265	80%	212.00	109.81	98.04%	Yes		

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	112	109.81	98.04%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	1.3363	0.11	8.25%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Attachment 12: Striped Legless Lizard Survey 2022-2023: Mia Mia Conservation Property.

vegetationlink

Striped Legless Lizard Survey 2022-2023: Mia Mia Conservation Property

Report date: 03 June 2023

Report prepared by:

- Dr Anna Senior

Objective

To expand on the initial 2021-2022 Striped Legless Lizard (SLL) *Delma impar* surveys at Mia Mia and record additional occupied habitat for the species across the property.

Figure 1 Striped Legless Lizard Delma imar

Background

Mia Mia Conservation Pty Ltd own a property at Heathcote-Redesdale Road, Mia Mia, Victoria. Striped Legless Lizard were found on the property during spring 2021 – autumn 2022 tile grid surveys. Additional tile grids were installed at different locations in June 2022, and surveys were completed for SLL in spring 2022 – summer 2023 (Figure 2).

Vegetation Link provides periodic advice to Mia Mia Conservation Pty Ltd and its parent company on the biodiversity offset market and instigated the SLL surveys in 2021-2022.

Method

Protocols were followed for "artificial shelter site surveys" as per Commonwealth of Australia (2011).

Ten tile grid arrays were installed across the property during the month of June 2022. Locations were chosen with a preference for derived grassland habitat on north facing slopes, with dominance of native tussock grasses and the presence of surface rock. Tile grids consisted of 50 tiles spaced at five metre intervals in a 5x10 array.

The tile grid locations are presented in Figure 2 and latitude and longitude references for each tile grid location is presented in Table 1.

Checking of tile grids commenced on 8th September 2022. The tile grids were checked 11 times over a six-month survey period ending on 9th February 2023. Tiles were then removed and stockpiled on site.

Table 1: Tile Grid Locations

Tile Grid #	Longitude	Latitude
1	144°37'21"E	36°58'26"S
2	144°37'18"E	36°59'26"S
3	144°37'45"E	36°59'28"S
4	144°37'50"E	36°59'21"S
5	144°37'49"E	36°59'2"S
6	144°37'38"E	36°58'46"S
7	144°37'26"E	36°58'38"S
8	144°37'54"E	36°59'45"S
9	144°37'58"E	36°59'58"S
10	144°37'43"E	36°59'57"S

Results

There was a total of 21 detections of SLL occurring at 5 out of the 10 grid arrays (Table 2). Three shed skins were also found, (likely belonging to SLL), with one of these occurring at a grid with no other SLL detections (grid 4). Complete results are presented in Appendix 1.

These results when viewed together with results from previous surveys (2021-2022), SLL has been recorded across much of the property (Refer to Table 2 and Figure 2).

Non-target species found under tiles were several unidentified skinks and snakes, and one Fat-tailed Dunnart – *Sminthopsis crassicaudata.*

Table 2: Results of tile grid survey summarized by tile grid number

Array Number	Total SLL	Unidentified Reptile	Fat-tailed Dunnart
1	1 + skin	4	0
2	4	1	0
3	0	0	0
4	skin	4	0
5	0	1	1
6	0	0	0
7	6 + skin	1	0
8	0	0	0
9	6	1	0
10	4	0	0
Total	21 + 3 skins	12	1

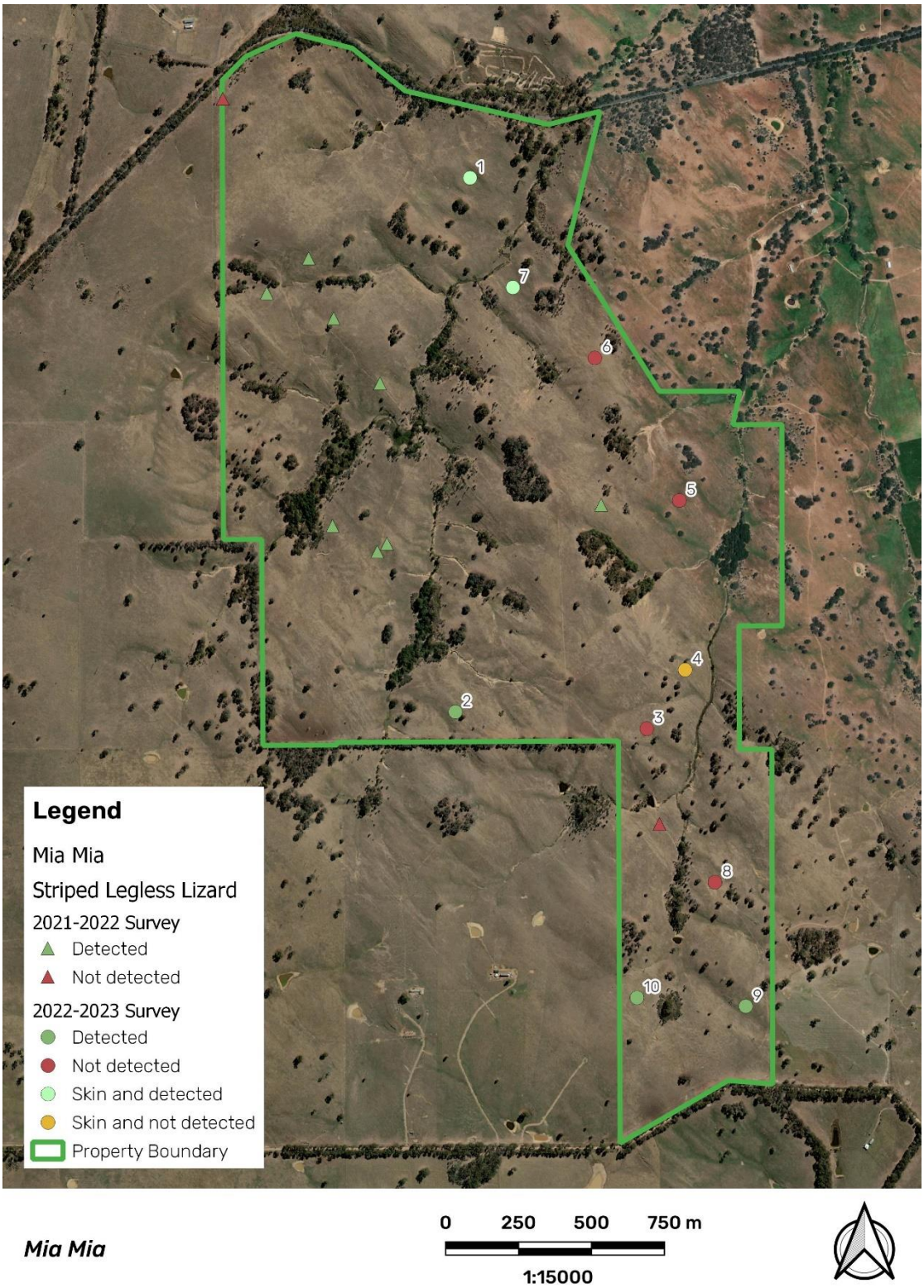


Figure 2 Tile Grid Locations Mia Mia Conservation Property.

Conclusions

When combined with results of 2021-2022 surveys, SLL have now been recorded across much of the Mia Mia Conservation property, with the exception of tile grids through the middle of the property, towards the eastern boundary (Figure 2).

Environmental variables were not taken at tile grid sites, but some observations were made that have informed the conclusions. It is recommended that environmental variables be taken at tile grids to better assist in understanding the presence and detectability of SLL throughout the property. Variables should include, aspect, dominant grass species, a measure of species diversity and number of native/non-native species, average inter-tussock space, average rock cover, presence of soil cracks (taken in summer) and arthropod burrows.

In several instances during the 2022-2023, SLL were detected at tile grids placed in areas that contained largely exotic pasture. For example, grassland at grid 1 contains largely exotic grass species with low structural complexity and rank growth. This area is contiguous to patches of less disturbed grassland (containing *Lomandra* sp.) with scattered surface rock. This is also true of grid 9 and 10 which supports grassland with low floristic diversity and low structural complexity, however almost half (n=10) of the SLL records were detected at this southern end of the property at grids 9 and 10.

The presence of SLL at these tile grids indicates that the species is using habitat at the Mia Mia Conservation property which superficially appears unsuitable for the species. It is likely that other degraded areas within the property support SLL and should be treated as potential habitat for the purposes of future management of the property.

In the eastern section of the property the grassland was observed to be good quality, floristically diverse, containing abundant surface and embedded rock, soil cracks and native grasses, daisies, and *Lomandra* sp. A single shed skin was found (likely from a SLL) under a tile at grid 4, but no other evidence of SLL was found in this part of the property (Figure 2). Future management of the property should assume the presence of the SLL in these areas and be informed by the need to protect and manage their habitat.

The absence of concrete evidence of SLL in this section of the property is counter intuitive, however this result does not necessarily indicate that the species is not present. Striped Legless Lizard detectability may have been influenced by a high availability of alternative refuges such as surface rock and soil cracks that can negatively influence the presence of SLL under tiles (Thompson, 2006). Striped Legless Lizard detectability may have also been influenced by the density of native grass tussocks in this area. Whilst this area is diverse and contained native grass tussocks, the structure of the grassland habitat is varied. In some areas the grassland is dense but in others the inter-tussock spaces are large, with abundant bare ground creating a mosaic of different densities. The less densely vegetated areas may not support a high number of SLL, making detectability more difficult.

For the purposes of future management of the property it is important to understand the distribution of the species on site. The results of this survey only go part way to providing that information. A better understanding of environmental variables throughout the property will help to inform management decisions.

Acknowledgements

The tile grid survey was conducted under the terms of DELWP Wildlife Research Permit #10010146. The survey was co-ordinated by Sid Larwill (Vegetation Link). Tile grid site selection and installation was done by Kim Cornford and Adeline Chew. Tile grid checking was done by Anna Radkovic, Knox Dettmann, Emma Coppel, Amy Cornford, Paul Tilley, Shai Barak, Laura Henderson, Peter Holmes and Adeline Chew (all of Cassinia Environmental Pty Ltd). Data collation by Anna Senior (Vegetation Link) and Adeline Chew (Cassinia Environmental).

References

Commonwealth of Australia (2011) *Environment Protection and Biodiversity Conservation Act 1999* referral guidelines for the vulnerable striped legless lizard, *Delma impar*, Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Thompson, M. J. (2006) The Use of Artificial Refuges to Census Populations of the 'Threatened' Striped Legless Lizard, in Western Victoria (Undergraduate Honours thesis) La Trobe University.

Appendix 1 Tile Grid Array Data surveys 2022-2023

Date	Min. temp. (°C)	Max. temp. (°C)	Wind speed and direction	Cloud cover (%)	Array number	SLL number	other reptiles	mammals
2022-11-10	14	24	19km/h NNE	100	1	1	4	0
2022-09-08	7	13	26km/h NE	20	1	0	0	0
2022-09-20	9	17	13km/h N	40	1	0	0	0
2022-09-29	7	17	24km/h S	0	1	0	0	0
2022-10-17	3	19	7km/h	0	1	0	0	0
2022-11-03	4	12	17km/h SW	80	1	0	0	0
2022-11-24	5	19	4km/h SW	40	1	0	0	0
2022-12-08	5	16	13km/h SW	60	1	0	0	0
2022-12-22	16	30	Nil	40	1	skin	1	0
2023-01-05	9	25	30km/h SSE	0	1	0	0	0
2023-02-09	14	30	7km/h N	0	1	0	0	0
2022-11-03	4	12	17km/h SW	80	2	1	0	0
2022-11-10	14	24	19km/h NNE	100	2	1	0	0
2022-11-24	5	19	4km/h SW	40	2	1	0	0
2022-12-08	5	16	13km/h SW	60	2	1	1	0
2022-09-08	7	13	26km/h NE	20	2	0	0	0
2022-09-20	9	17	13km/h N	40	2	0	0	0
2022-09-29	7	17	24km/h S	0	2	0	0	0
2022-10-17	3	19	7km/h	0	2	0	0	0

Date	Min. temp. (°C)	Max. temp. (°C)	Wind speed and direction	Cloud cover (%)	Array number	SLL number	other reptiles	mammals
2022-12-22	16	30	Nil	40	2	0	0	0
2023-01-05	9	25	30km/h SSE	0	2	0	0	0
2023-02-09	14	30	7km/h N	0	2	0	0	0
2022-09-08	7	13	26km/h NE	20	3	0	0	0
2022-09-20	9	17	13km/h N	40	3	0	0	0
2022-09-29	7	17	24km/h S	0	3	0	0	0
2022-10-17	3	19	7km/h	0	3	0	0	0
2022-11-03	4	12	17 SW	80	3	0	0	0
2022-11-10	14	24	19km/h NNE	100	3	0	0	0
2022-11-24	5	19	4km/h SW	40	3	0	0	0
2022-12-08	5	16	13km/h SW	60	3	0	0	0
2022-12-22	16	30	Nil	40	3	0	0	0
2023-01-05	9	25	30km/h SSE	0	3	0	0	0
2023-02-09	14	30	7km/h N	0	3	0	0	0
2022-09-08	7	13	26km/h NE	20	4	0	0	0
2022-09-20	9	17	13km/h N	40	4	0	1	0
2022-09-29	7	17	24km/h S	0	4	0	1	0
2022-10-17	3	19	7km/h	0	4	0	1	0
2022-11-03	4	12	17km/h SW	80	4	0	0	0
2022-11-10	14	24	19km/h NNE	100	4	0	0	0
2022-11-24	5	19	4km/h SW	40	4	0	0	0
2022-12-08	5	16	13km/h SW	60	4	0	1	0
2022-12-22	16	30	Nil	40	4	skin	0	0

Date	Min. temp. (°C)	Max. temp. (°C)	Wind speed and direction	Cloud cover (%)	Array number	SLL number	other reptiles	mammals
2023-01-05	9	25	30km/h SSE	0	4	0	0	0
2023-02-09	14	30	7km/h N	0	4	0	0	0
2022-09-08	7	13	26km/h NE	20	5	0	0	0
2022-09-20	9	17	13km/h N	40	5	0	0	0
2022-09-29	7	17	24km/h S	0	5	0	0	0
2022-10-17	3	19	7km/h	0	5	0	0	0
2022-11-03	4	12	17km/h SW	80	5	0	1	0
2022-11-10	14	24	19km/h NNE	100	5	0	0	0
2022-11-24	5	19	4km/h SW	40	5	0	0	0
2022-12-08	5	16	13km/h SW	60	5	0	0	0
2022-12-22	16	30	Nil	40	5	0	0	0
2023-01-05	9	25	30km/h SSE	0	5	0	0	1
2023-02-09	14	30	7km/h N	0	5	0	0	0
2022-09-08	7	13	26km/h NE	20	6	0	0	0
2022-09-20	9	17	13km/h N	40	6	0	0	0
2022-09-29	7	17	24km/h S	0	6	0	0	0
2022-10-17	3	19	7km/h	0	6	0	0	0
2022-11-03	4	12	17km/h SW	80	6	0	0	0
2022-11-10	14	24	19km/h NNE	100	6	0	0	0
2022-11-24	5	19	4km/h SW	40	6	0	0	0
2022-12-08	5	16	13km/h SW	60	6	0	0	0
2022-12-22	16	30	Nil	40	6	0	0	0
2023-01-05	9	25	30km/h SSE	0	6	0	0	0

Date	Min. temp. (°C)	Max. temp. (°C)	Wind speed and direction	Cloud cover (%)	Array number	SLL number	other reptiles	mammals
2023-02-09	14	30	7km/h N	0	6	0	0	0
2022-11-24	5	19	4km/h SW	40	7	2	0	0
2022-11-03	4	12	17km/h SW	80	7	1	0	0
2022-11-10	14	24	19km/h NNE	100	7	1	0	0
2022-12-08	5	16	13km/h SW	60	7	1	1	0
2023-01-05	9	25	30km/h SSE	0	7	1	0	0
2022-09-08	7	13	26km/h NE	20	7	0	0	0
2022-09-20	9	17	13km/h N	40	7	0	0	0
2022-09-29	7	17	24km/h S	0	7	0	0	0
2022-10-17	3	19	7km/h	0	7	0	0	0
2022-12-22	16	30	Nil	40	7	0	0	0
2023-02-09	14	30	7km/h N	0	7	skin	0	0
2022-09-08	7	13	26km/h NE	20	8	0	0	0
2022-09-20	9	17	13km/h N	40	8	0	0	0
2022-09-29	7	17	24km/h S	0	8	0	0	0
2022-10-17	3	19	7km/h	0	8	0	0	0
2022-11-03	4	12	17km/h SW	80	8	0	0	0
2022-11-10	14	24	19km/h NNE	100	8	0	0	0
2022-11-24	5	19	4km/h SW	40	8	0	0	0
2022-12-08	5	16	13km/h SW	60	8	0	0	0
2022-12-22	16	30	Nil	40	8	0	0	0
2023-01-05	9	25	30km/h SSE	0	8	0	0	0
2023-02-09	14	30	7km/h N	0	8	0	0	0

Date	Min. temp. (°C)	Max. temp. (°C)	Wind speed and direction	Cloud cover (%)	Array number	SLL number	other reptiles	mammals
2022-11-03	4	12	17km/h SW	80	9	2	0	0
2022-11-24	5	19	4km/h SW	40	9	2	0	0
2022-11-10	14	24	19km/h NNE	100	9	1	0	0
2022-12-08	5	16	13km/h SW	60	9	1	1	0
2022-09-08	7	13	26km/h NE	20	9	0	0	0
2022-09-20	9	17	13km/h N	40	9	0	0	0
2022-09-29	7	17	24km/h S	0	9	0	0	0
2022-10-17	3	19	7km/h	0	9	0	0	0
2022-12-22	16	30	Nil	40	9	0	0	0
2023-01-05	9	25	30km/h SSE	0	9	0	0	0
2023-02-09	14	30	7km/h N	0	9	0	0	0
2022-11-03	4	12	17km/h SW	80	10	1	0	0
2022-11-24	5	19	4km/h SW	40	10	2	0	0
2022-12-08	5	16	13km/h SW	60	10	1	0	0
2022-09-08	7	13	26km/h NE	20	10	0	0	0
2022-09-20	9	17	13km/h N	40	10	0	0	0
2022-09-29	7	17	24km/h S	0	10	0	0	0
2022-10-17	3	19	7km/h	0	10	0	0	0
2022-11-10	14	24	19km/h NNE	100	10	0	0	0
2022-12-22	16	30	Nil	40	10	0	0	0
2023-01-05	9	25	30km/h SSE	0	10	0	0	0
2023-02-09	14	30	7km/h N	0	10	0	0	0